CAN COMMUNICATION SYSTEM

PRECAUTION

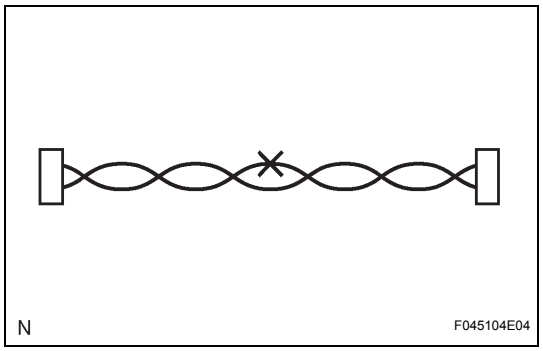
1. STEERING SYSTEM HANDLING PRECAUTIONS

(a) Care must be taken when replacing parts. Incorrect replacement could affect the performance of the steering system and result in hazardous driving.

2. SRS AIRBAG SYSTEM HANDLING PRECAUTIONS

(a) This vehicle is equipped with an SRS (Supplemental Restraint System) such as the driver's airbag and front passenger airbag. Failure to carry out service operations in the correct sequence could cause unexpected SRS deployment during servicing and may lead to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the Supplemental Restraint System (See page RS-1).

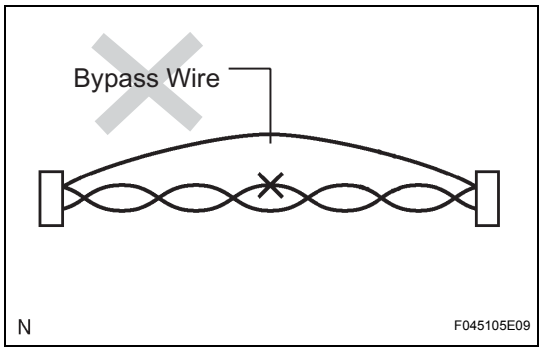
3. BUS LINE REPAIR



(a) After repairing the bus line with solder, wrap the repaired part with vinyl tape (See page IN-31).

NOTICE:

- **The CANL bus line and CANH bus line must be installed together, all the time.**
- **When installing, make sure to twist them.**
- **CAN bus lines are likely to be influenced by noise if the bus lines are not twisted.**
- **The difference in length of the CANL bus line and CANH bus line should be within 100mm (3.937 in.).**
- **Leave approximately 80 mm (3.150 in.) loose in the twist around the connector.**

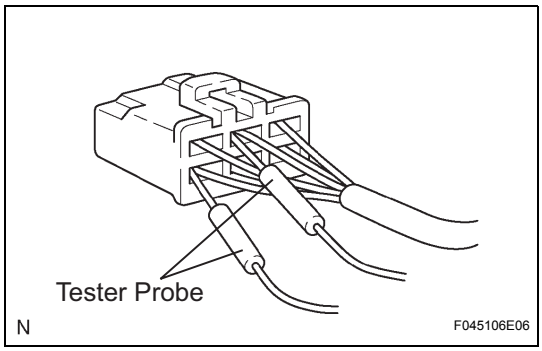


(b) Do not use bypass wiring between the connectors.

NOTICE:

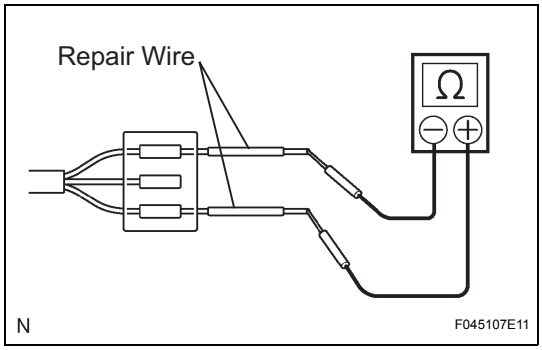
The feature of the twisted wire harness will be lost if you use bypass wiring.

CA



4. CONNECTOR HANDLING

(a) When inserting tester probes into a connector, insert them from the rear of the connector.



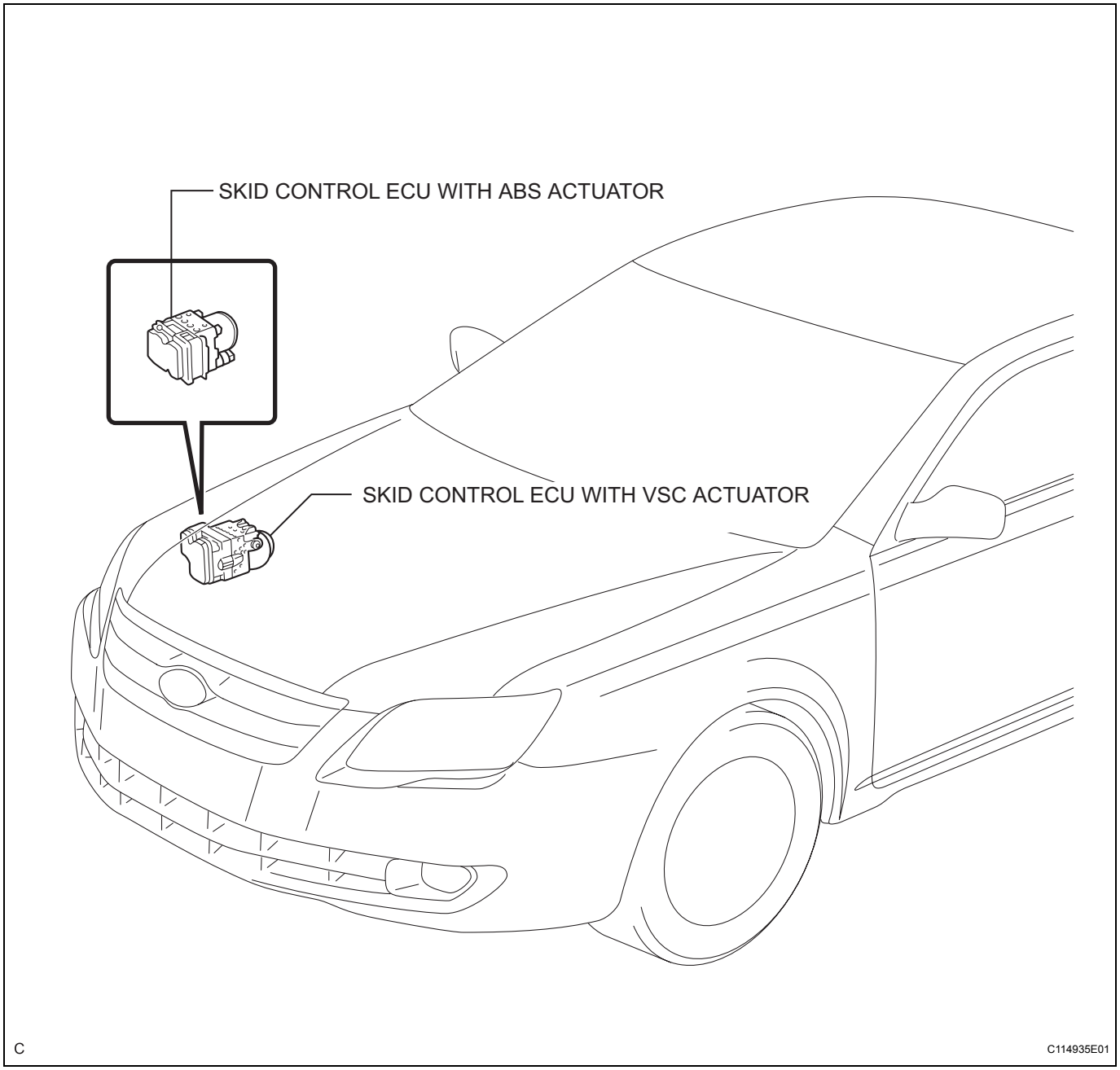
(b) Use a repair wire to check the connector if it is impossible to check continuity from the rear of the connector.

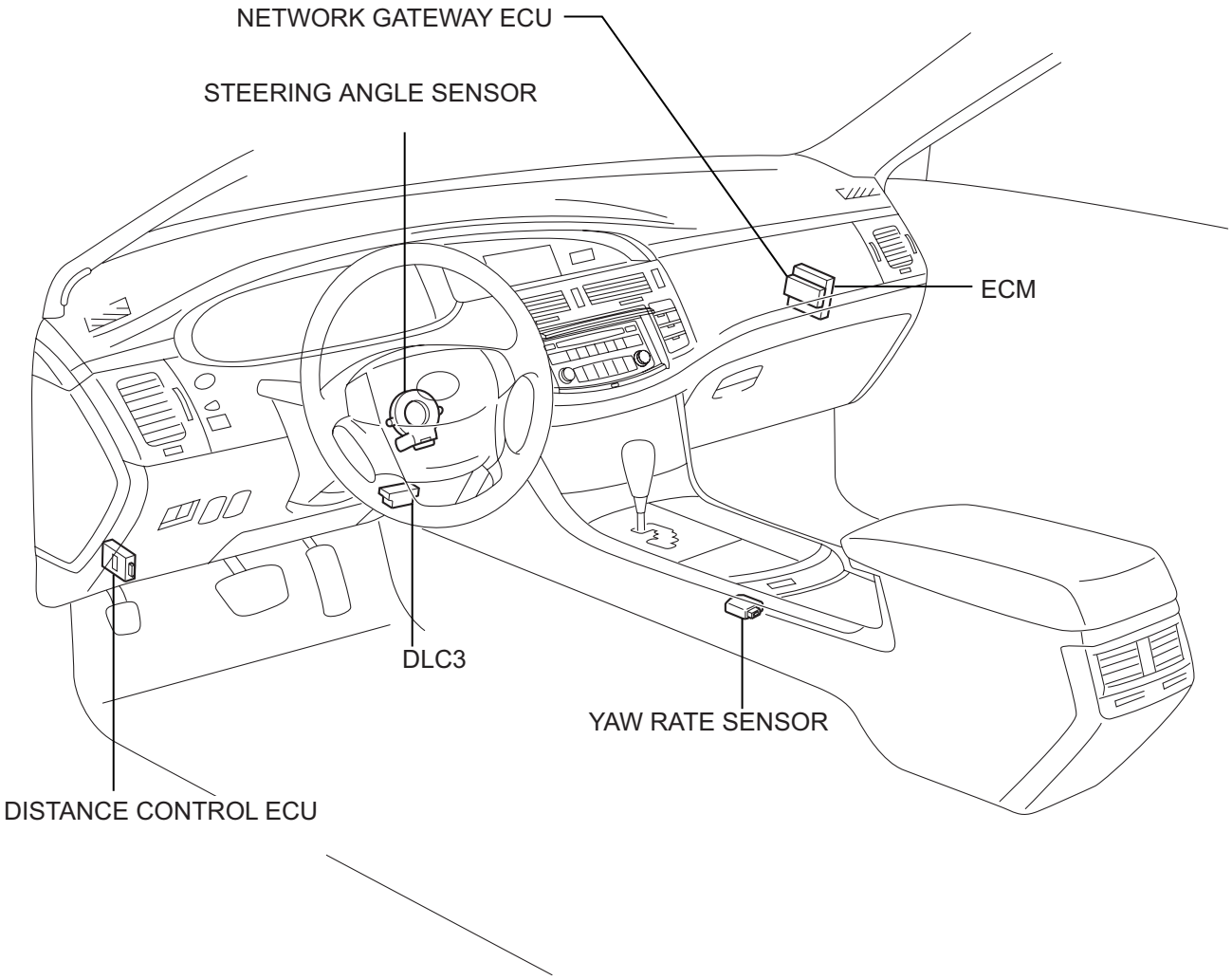
5. EXPRESSIONS OF IGNITION SWITCH

(a) The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

Switch Type		Ignition Switch (position)	Engine Switch (condition)
Expression	Ignition Switch off	LOCK	Off
	Ignition Switch on (IG)	ON	On (IG)
	Ignition Switch on (ACC)	ACC	On (ACC)
	Engine Start	START	Start

PARTS LOCATION

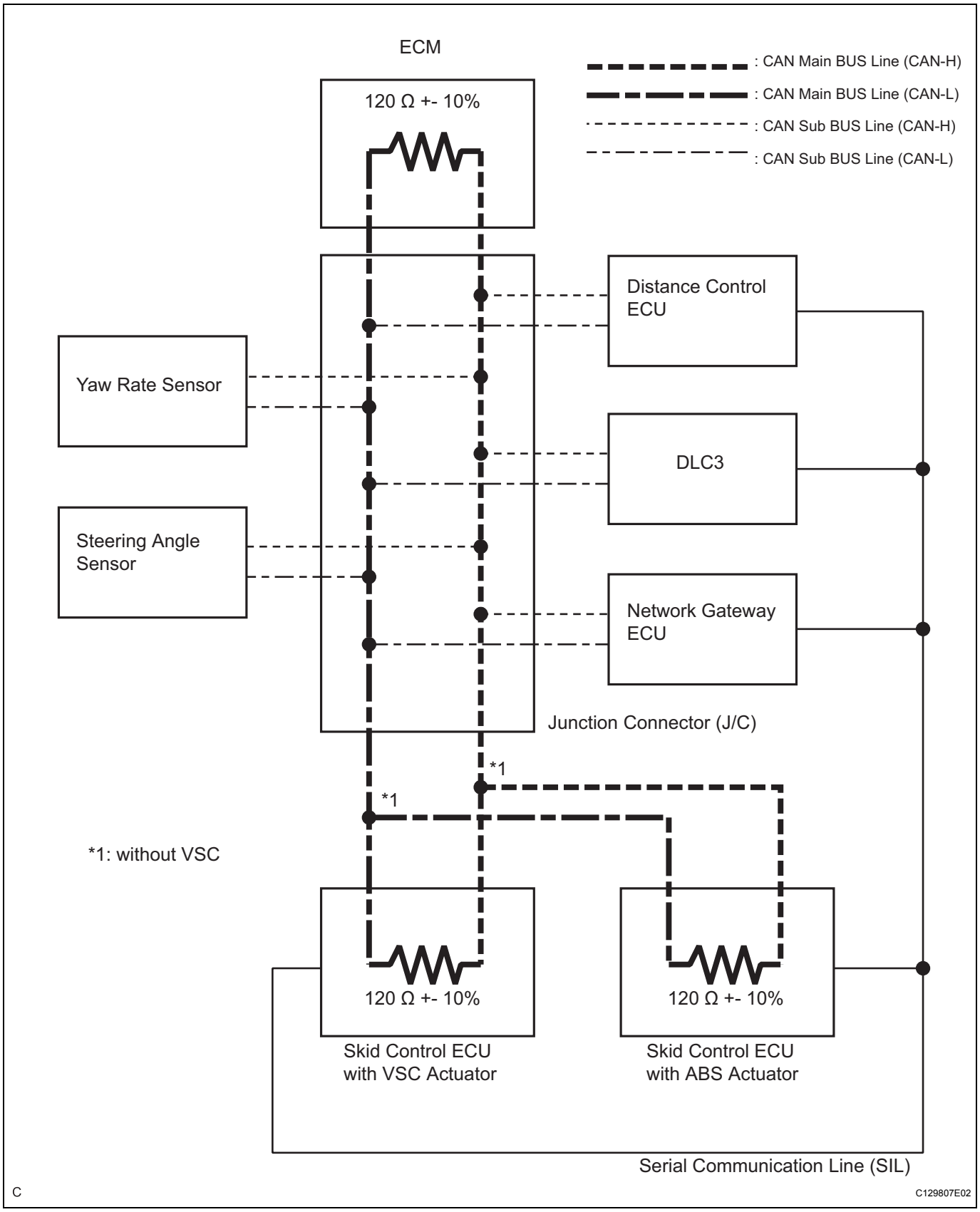




C

C114936E01

SYSTEM DIAGRAM



CA

HINT:

- The skid control ECU with actuator detects and stores steering angle sensor and yaw rate sensor DTCs and performs DTC communication by receiving information from the steering angle sensor and yaw rate sensor.
- The ECM uses the CAN communication system to perform DTC communication instead of the conventional communication line (SIL).

SYSTEM DESCRIPTION

1. BRIEF DESCRIPTION

(a) The CAN (Controller Area Network) is a serial data communication system for real time application. It is a vehicle multiplex communication system which has a high communication speed (500 kbps) and the ability to detect malfunctions.

(b) By pairing the CANH and CANL bus lines, the CAN performs communication based on differential voltage.

(c) Many ECUs (sensors) installed on the vehicle operate by sharing information and communicating with each other.

(d) The CAN has two resistors of 120 Ω which are necessary to communicate with the main bus line.

2. DEFINITION OF TERMS

(a) Main bus line

(1) The main bus line is a wire harness between the two terminus circuits on the bus (communication line). This is the main bus in the CAN communication system.

(b) Sub bus line

(1) The sub bus line is a wire harness which diverges from the main bus line to a ECU or sensor.

(c) Terminus circuit

(1) The terminus circuit is a circuit which is placed to convert communication current of the CAN communication into bus voltage. It consists of a resistor and condenser. Two terminus circuits are necessary on a bus.

3. ECUS OR SENSORS WHICH COMMUNICATE THROUGH CAN COMMUNICATION SYSTEM

(a) Skid Control ECU with ABS Actuator

(b) Skid Control ECU with VSC Actuator

(c) Yaw Rate Sensor

(d) Steering Angle Sensor

(e) Distance Control ECU

(f) ECM

(g) Network Gateway ECU

4. DIAGNOSTIC CODE FOR CAN COMMUNICATION SYSTEM

(a) DTCs for the CAN communication system are as follows:

U0073, U0100, U0101, U0122, U0123, U0124, U0126, U0132, U1101

NOTICE:

U0001, U0235, and U1102 are displayed on the intelligent tester "Communication Malfunction DTC" (See page ES-60) screen, but they are not DTCs in the CAN communication system. Refer to troubleshooting of each system.

5. REMARK FOR TROUBLESHOOTING

(a) Trouble in the CAN bus (communication line) can be checked from the DLC3 (except when there is a wire break other than in the sub bus line of the DLC3).
NOTICE:
Do not insert the tester directly into the DLC3 connector. Be sure to use a service wire.

(b) DTCs regarding the CAN communication system can be checked using the intelligent tester.

(c) The CAN communication system cannot detect trouble in the sub bus line of the DLC3 even though the DLC3 is also connected to the CAN communication system.

6. HOW TO DISTINGUISH THE JUNCTION CONNECTOR (J/C)

(a) In the CAN communication system, the shape of all connectors connected to the J/C is the same. The connectors connected to the J/C can be distinguished by the colors of the bus lines and the connecting side of the connector.
HINT:
See "TERMINALS OF ECU" (See page CA-10) for bus line color or the type of connecting surface.

HOW TO PROCEED WITH TROUBLESHOOTING

NOTICE:

- **DTCs for the CAN communication system are as follows:**
  U0073, U0100, U0101, U0122, U0123, U0124, U0126, U0132, U0145, U1101.
- **Refer to troubleshooting of each system if DTCs regarding the CAN communication system are not output.**

1	**CHECK AND CLEAR DTCs**

NEXT

2	**CHECK FOR INSTALLED SYSTEMS (ECUS & SENSORS) THAT ADOPT CAN COMMUNICATION**

(a) Check which of the following is adopted: dynamic radar / laser cruise control and vehicle stability control.

NEXT

3	**CHECK CAN BUS LINE**

NEXT

4	**CHECK INTELLIGENT TESTER VIA CAN VIM**

(a) Select "BUS CHECK" (See page CA-35)
Standard:
All ECUs and sensors connected to the CAN communication system are displayed.
NOTICE:

- **The systems (ECUs, sensors) that adopt CAN communication vary depending on the vehicle and option settings. Check which systems (ECUs, sensors) are installed on the vehicle.**
- **Non-installed ECUs or sensors are not displayed. Do not mistake them for being in the communication stop mode.**

NO → **COMMUNICATION STOP MODE TABLE**

YES

5	**DTC COMBINATION TABLE**

(a) Confirm trouble according to the combination of output DTCs regarding the CAN communication system.

CA

HINT:
Previous CAN communication system DTCs may be the cause if CAN communication system DTCs are output and all ECUs and sensors connected to the CAN communication system are displayed on the intelligent tester's "BUS CHECK" screen via the CAN VIM.

NEXT

6	CIRCUIT INSPECTION

NEXT

7	IDENTIFICATION OF PROBLEM

NEXT

8	REPAIR OR REPLACE

NEXT

9	CONFIRMATION TEST

NEXT

END

PROBLEM SYMPTOMS TABLE

1. COMMUNICATION STOP MODE TABLE

(a) Check that there is no open circuit in the CAN main bus line, short between the lines, or short to +B in the "CHECK CAN BUS LINE" . Select "BUS CHECK" on the intelligent tester via the CAN VIM.

(b) Check that the communication stop mode of the ECUs or sensors is not displayed among the following: "ENGINE", "ECT", "CRUISE CONTROL", "ABS / VSC / TRAC", "YAW / DECELERAT", "STEERING SENSOR", and "BODY / GATEWAY".

NOTICE:

- **Systems using the CAN communication system differ according to optional settings. Check which ECUs or sensors are installed on the vehicle.**
- **Non-installed ECUs or sensors are not displayed. Be careful not to consider that they are in communication stop mode.**
- **If 2 or more ECUs or sensors are not displayed on the intelligent tester via the CAN VIM, perform troubleshooting for communication stop mode for each undisplayed ECU or sensor. (Either side of the CAN bus lines may be open.)**

CAN COMMUNICATION SYSTEM

Symptom	Suspected area	See page
"ENGINE" and "ECT" are not displayed on the intelligent tester via CAN VIM. (*1)	ECM COMMUNICATION STOP MODE	CA-29
"ABS / VSC / TRAC" is not displayed on the intelligent tester via CAN VIM. (*1)	SKID CONTROL ECU COMMUNICATION STOP MODE	CA-18
"ABS / VSC / TRAC" is not displayed on the intelligent tester via CAN VIM. (*1)	SKID CONTROL ECU WITH ACTUATOR COMMUNICATION STOP MODE	CA-18
"STEERING SENSOR" is not displayed on the intelligent tester via CAN VIM. (*1)	STEERING SENSOR COMMUNICATION STOP MODE	CA-25
"YAW / DECELERAT" is not displayed on the intelligent tester via CAN VIM. (*1)	YAW RATE SENSOR COMMUNICATION STOP MODE	CA-27
"CRUISE CONTROL" is not displayed on the intelligent tester via CAN VIM. (*2)	DISTANCE CONTROL ECU COMMUNICATION STOP MODE	CA-21
"BODY / GATEWAY" is not displayed on the intelligent tester via CAN VIM. (*1)	GATEWAY ECU COMMUNICATION STOP MODE	CA-23

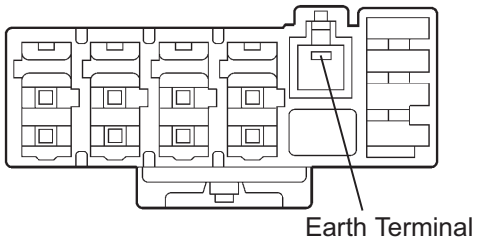
TERMINALS OF ECU

HINT:
This section describes the standard CAN values for all CAN related components.

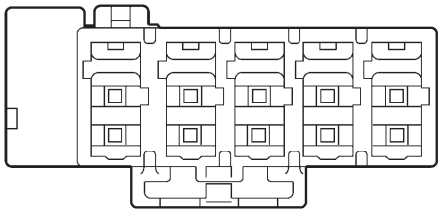
1. JUNCTION CONNECTOR (J/C)

(a) CAN J/C A side (w/ earth terminal) and CAN J/C B side (w/o earth terminal):
HINT:
- The connectors connected to the junction connector (J/C) can be distinguished by the colors of the bus lines and the connecting side of the connector.
- The connectors can be connected to any terminals on the same side.

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



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



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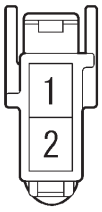
CAN J/C Connectors (A side, w/ earth terminal)	Color (CAN-H Side)	Color (CAN-L Side)
Steering sensor	L	W
Yaw rate sensor	R	W
ECM	G	W
DLC3	P	W

CAN J/C Connectors (B side, w/o earth terminal)	Color (CAN-H Side)	Color (CAN-L Side)
Skid control ECU with VSC actuator	B	W
Skid control ECU with ABS actuator	B	W
Distance control ECU	L	W
Network gateway ECU	W	V

(b) The terminals on connectors for the J/C:

CAN J/C Connector Front View:



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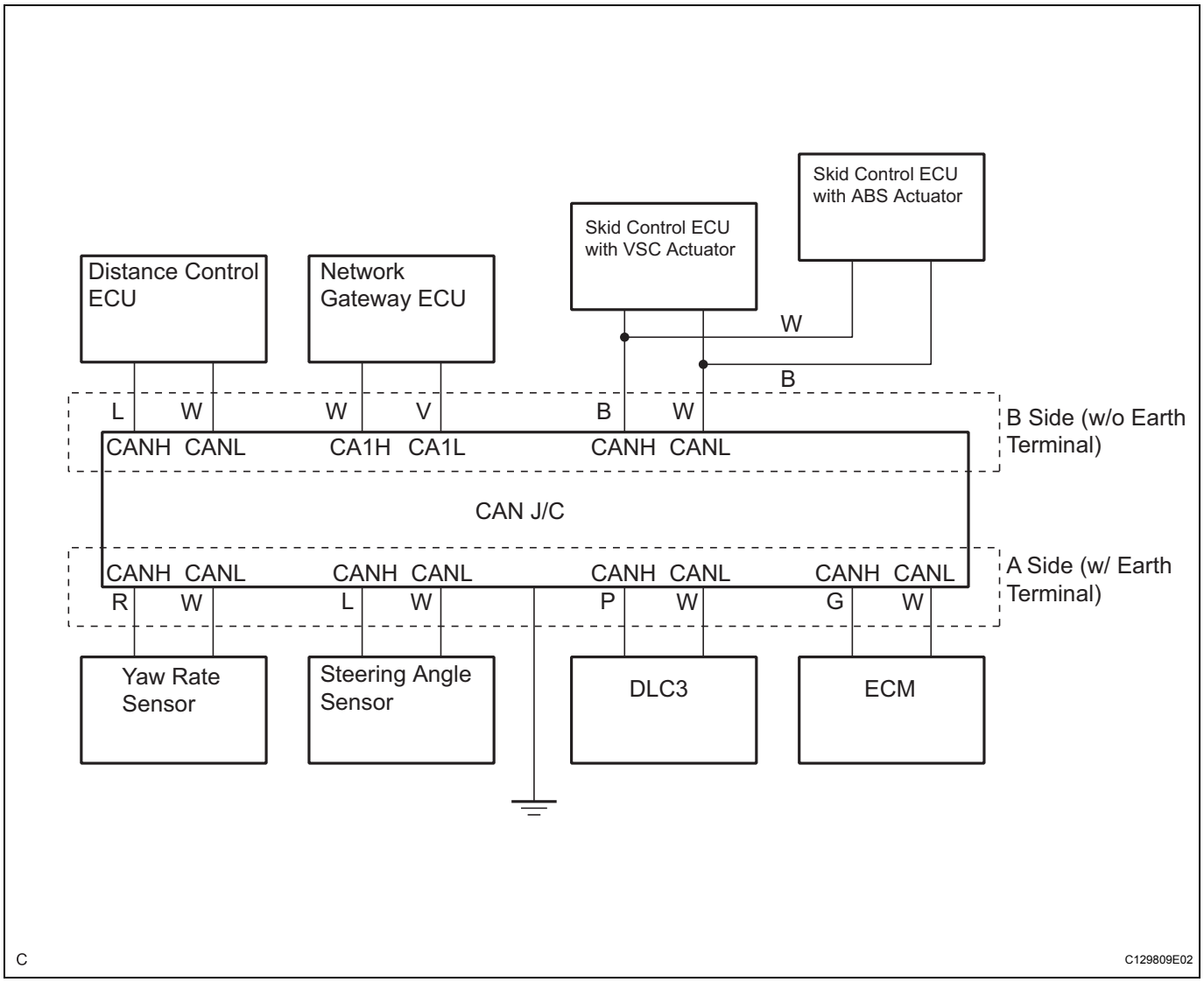
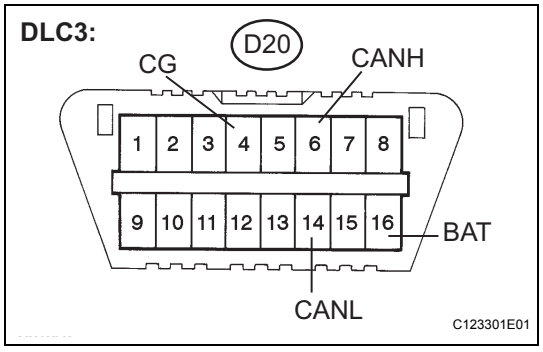
Terminal	Terminal symbol
1	CANH
2	CANL

CA

(c) WIRING DIAGRAM FOR IDENTIFYING J/C CONNECTORS



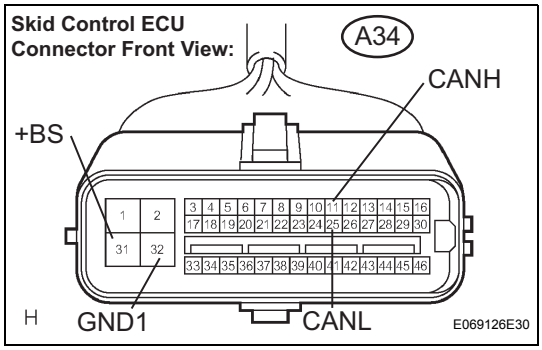


2. DLC3

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
D20-6 (CANH) - D20-14 (CANL)	P - W	Ignition switch off	54 to 69 Ω
D20-6 (CANH) - D20-4 (CG)	P - W-B	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	W - W-B	Ignition switch off	1 kΩ or more
D20-6 (CANH) - D20-16 (BAT)	P - L	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	W - L	Ignition switch off	1 MΩ or more



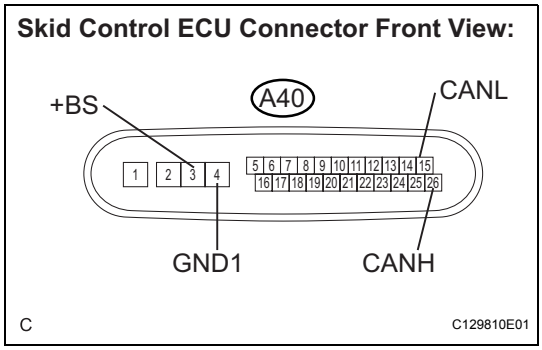
3. SKID CONTROL ECU (Skid control ECU with VSC Actuator)

(a) Disconnect the connector from the skid control ECU.

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
A34-11 (CANH) - A34-25 (CANL)	B - W	Ignition switch off	108 to 132 Ω
A34-11 (CANH) - A34-32 (GND1)	B - W-B	Ignition switch off	1 kΩ or more
A34-25 (CANL) - A34-32 (GND1)	W - W-B	Ignition switch off	1 kΩ or more
A34-11 (CANH) - A34-31 (+BS)	B - L	Ignition switch off	1 MΩ or more
A34-25 (CANL) - A34-31 (+BS)	W - L	Ignition switch off	1 MΩ or more



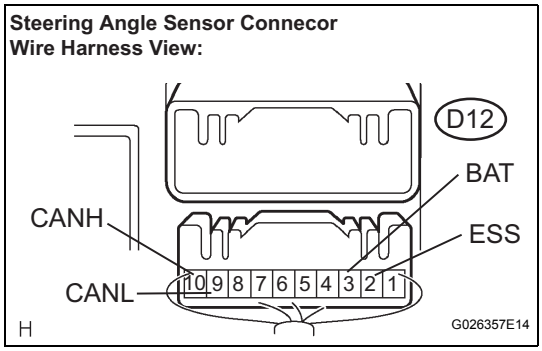
4. SKID CONTROL ECU (Skid control ECU with ABS Actuator)

(a) Disconnect the connector from the skid control ECU.

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
A40-26 (CANH) - A40-15 (CANL)	B - W	Ignition switch off	108 to 132 Ω
A40-26 (CANH) - A40-4 (GND1)	B - W-B	Ignition switch off	1 kΩ or more
A40-15 (CANL) - A40-4 (GND1)	W - W-B	Ignition switch off	1 kΩ or more
A40-26 (CANH) - A40-3 (+BS)	B - L	Ignition switch off	1 MΩ or more
A40-15 (CANL) - A40-3 (+BS)	W - L	Ignition switch off	1 MΩ or more



5. STEERING ANGLE SENSOR

(a) Disconnect the connector from the steering angel sensor.

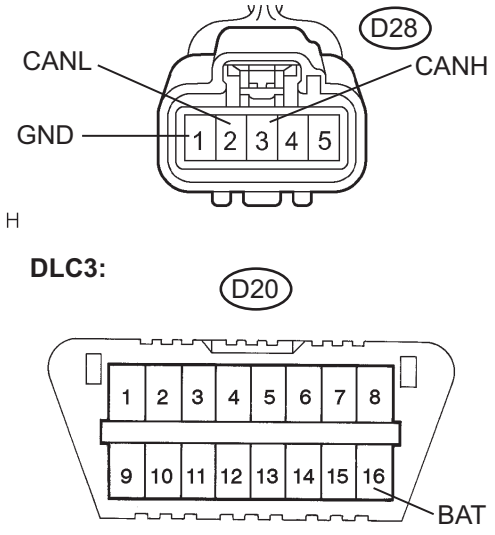
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Terminals	Wiring Color	Condition	Specified Condition
D12-10 (CANH) - D12-9 (CANL)	L - W	Ignition switch off	54 to 69 Ω
D12-10 (CANH) - D12-2 (ESS)	L - W-B	Ignition switch off	1 kΩ or more
D12-9 (CANL) - D12-2 (ESS)	W - W-B	Ignition switch off	1 kΩ or more
D12-10 (CANH) - D12-3 (BAT)	L - LG	Ignition switch off	1 MΩ or more

Terminals	Wiring Color	Condition	Specified Condition
D12-9 (CANL) - D12-3 (BAT)	W - LG	Ignition switch off	1 MΩ or more

Yaw Rate Sensor Connector Front View:



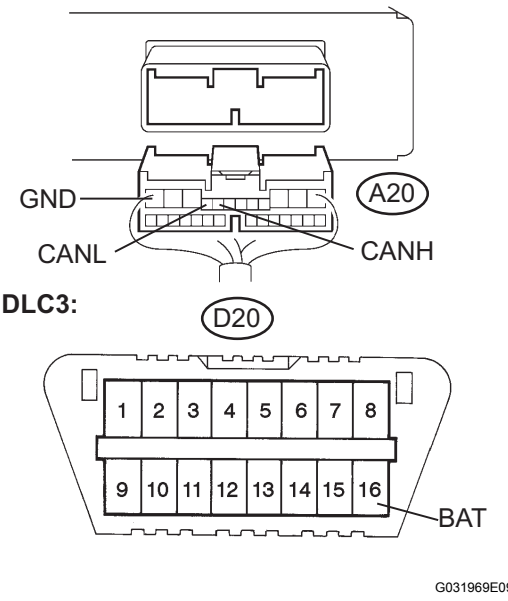
6. YAW RATE SENSOR

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
D28-3 (CANH) - D28-2 (CANL)	R - W	Ignition switch off	54 to 69 Ω
D28-3 (CANH) - D28-1 (GND)	R - W-B	Ignition switch off	1 kΩ or more
D28-2 (CANL) - D28-1 (GND)	W - W-B	Ignition switch off	1 kΩ or more
D28-3 (CANH) - D20-16 (BAT)	R - L	Ignition switch off	1 MΩ or more
D28-2 (CANL) - D20-16 (BAT)	W - L	Ignition switch off	1 MΩ or more

Distance Control ECU Connector Wire Harness View:



7. Distance CONTROL ECU

(a) Disconnect the connector from the distance control ECU.

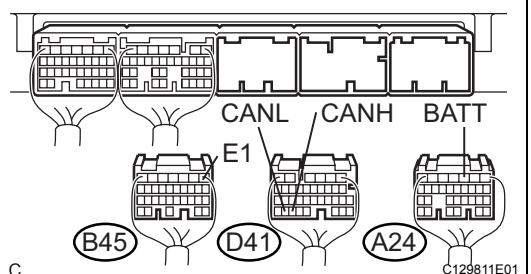
CA

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
A20-8 (CANH) - A20-9 (CANL)	L - W	Ignition switch off	54 to 69 Ω
A20-8 (CANH) - A20-12 (GND)	L - R	Ignition switch off	1 kΩ or more
A20-9 (CANL) - A20-12 (GND)	W - R	Ignition switch off	1 kΩ or more
A20-8 (CANH) - D20-16 (BAT)	L - L	Ignition switch off	1 MΩ or more
A20-9 (CANL) - D20-16 (BAT)	W - L	Ignition switch off	1 MΩ or more

ECM Connector Wire Harness View:



8. ECM

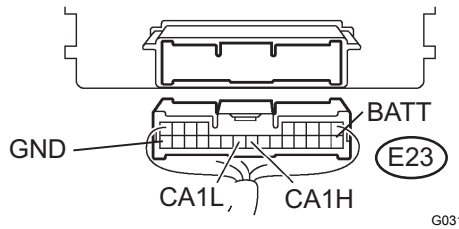
(a) Disconnect the connector from the ECM (A24) (B25) (D41).

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

Resistance

Terminals	Wiring Color	Condition	Specified Condition
D41-33 (CANH) - D41-34 (CANL)	G - W	Ignition switch off	108 to 132 Ω
D41-33 (CANH) - B24-1 (E1)	G	Ignition switch off	1 kΩ or more
D41-34 (CANL) - B24-1 (E1)	W	Ignition switch off	1 kΩ or more
D41-33 (CANH) - A24-3 (BATT)	G - B	Ignition switch off	1 MΩ or more
D41-34 (CANL) - A24-3 (BATT)	W - B	Ignition switch off	1 MΩ or more

Network Gateway ECU Connector Wire Harness View:



9. NETWORK GATEWAY ECU

(a) Disconnect the connector from the network gateway ECU (E23).

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

Resistance

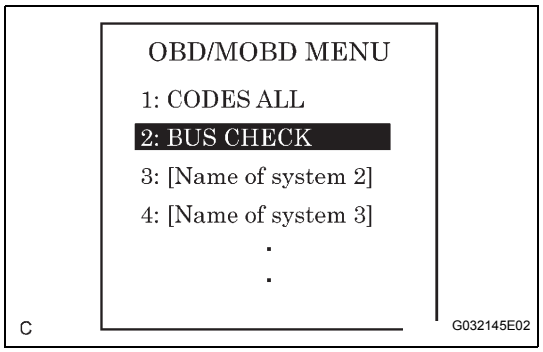
Terminals	Wiring Color	Condition	Specified Condition
E23-17 (CA1H) - E23-18 (CA1L)	W - V	Ignition switch off	54 to 69 Ω
E23-17 (CA1H) - E23-24 (GND)	W - W-B	Ignition switch off	1 kΩ or more
E23-18 (CA1L) - E23-24 (GND)	V - W-B	Ignition switch off	1 kΩ or more
E23-17 (CA1H) - E23-10 (BATT)	W - B	Ignition switch off	1 MΩ or more
E23-18 (CA1L) - E23-10 (BATT)	V - B	Ignition switch off	1 MΩ or more

DIAGNOSIS SYSTEM

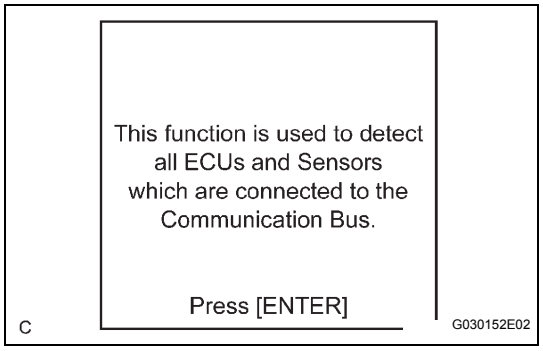
1. BUS CHECK

HINT:
The ECUs and sensors that are properly connected to the CAN communication system can be displayed using the intelligent tester via CAN VIM.

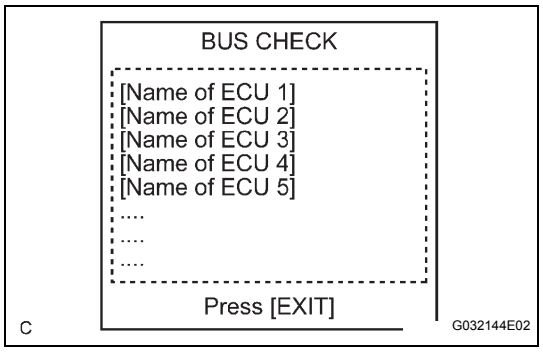
(a) Select "BUS CHECK" from the "OBD / MOBD MENU" screen.



(b) Press "ENTER" on the intelligent tester via CAN VIM.



(c) The screen displays the ECUs and sensors that are properly connected to the CAN communication system.
HINT:
There is a communication stop in the system of any properly connected ECUs or sensors that are not displayed.



2. CHECK FOR INSTALLED SYSTEMS (ECUS & SENSORS) THAT ADOPT CAN COMMUNICATION

(a) Systems (ECUs, sensors) that adopt CAN communication vary depending on the vehicle's optional settings. Check which systems (ECUs, sensors) are installed on the vehicle.

ECU / Sensor name	Check method
Skid control ECU	Installed on all vehicles.
Steering angle sensor	Installed on all vehicles.
Yaw rate sensor	Installed on all vehicles.
ECM	Installed on all vehicles.
Distance control ECU *1	The millimeter wave laser sensor is installed on the front of the vehicles.
Gateway ECU	Installed on all vehicles.

HINT:
*1: with Dynamic laser cruise control system only.

CA

3. DTC TABLE BY ECU

HINT:

- In the CAN communication system, CAN communication system DTCs can be displayed by the ECU using the intelligent tester (See page CA-9).
- If CAN communication system DTCs are output, trouble cannot be determined only by the DTCs. Perform troubleshooting according to "HOW TO PROCEED WITH TROUBLE SHOOTING" (See page CA-7). (If, however, U0235 or U1102 is output alone, check the dynamic laser cruise control system.)

(a) ECM

HINT:

- DTC communication uses the CAN communication system.
- Cruise control ECU data is also output.

DTC No.	Detection Item
U0001 (*1)	High Speed CAN Communication Bus
U0100 (*3)	Lost Communication With ECM/PCM "A"
U0122 (*3)	Lost Communication With Vehicle Dynamics Control Module
U0123 (*3)	Lost Communication With Yaw Rate Sensor Module
U0126 (*3)	Lost Communication With Steering Angle Sensor Module
U0235 (*2) (*3)	Lost Communication With Cruise Control Front Distance Range Sensor
U1101 (*3)	Lost Communication With Distance Control ECU
U1102 (*2) (*3)	Lost Communication With Distance Control ECU

- *1: The ECM is malfunctioning if U0001 is output alone. Replace the ECM.
- *2: Displayed on the "Communication Malfunction DTC" screen of the intelligent tester. If U0235 or U1102 is output alone, CAN communication is normal (See page CC-85 or CC-88).
- *3: Dynamic laser cruise control system DTC.

(b) SKID CONTROL ECU

HINT:

DTC communication uses the SIL line.

DTC No.	Detection Item
U0073	Control Module Communication Bus Off
U0100	Lost Communication With ECM/PCM "A"
U0123	Lost Communication With Yaw Rate Sensor Module
U0124	Lost Communication With Lateral Acceleration Sensor Module
U0126	Lost Communication With Steering Angle Sensor Module

(c) NETWORK GATEWAY ECU

HINT:

The gateway ECU is connected to the CAN communication system but CAN communication system DTCs are not output.

FAIL-SAFE CHART

1. FAIL-SAFE FUNCTION

(a) When communication fails in any of the CAN bus lines (communication lines) due to a short circuit or other causes, the fail-safe function, which is specified for each system, operates to prevent the system from malfunctioning.

(b) It is effective on each system when communication is impossible. (For further details, see the pages for each system.)

Function	ECM	Skid Control ECU (with VSC)	Skid Control ECU (without VSC)	Steering Sensor	Yaw Rate Sensor	Cruise Control ECU	Gateway ECU	Condition when communication is impossible	DTC detection (Driver detectable)
VSC Control (Controls driving force while VSC is in operation)	○	●	-	○	○	-	-	VSC function stops	Detectable (Light comes on)
Dynamic Laser Cruise (Maintains vehicle-to-vehicle distance)	○	○	-	○	○	●	-	Vehicle-to-vehicle distance control does not operate	Detectable (Light comes on)
Meter Display (Displays operation condition and DTCs)	○	○	○	-	-	-	● (Meter)	Light does not come on or remains on	Recognizable from indicator lamp malfunction

HINT:

- ●: Control master
- ○: System related

CA

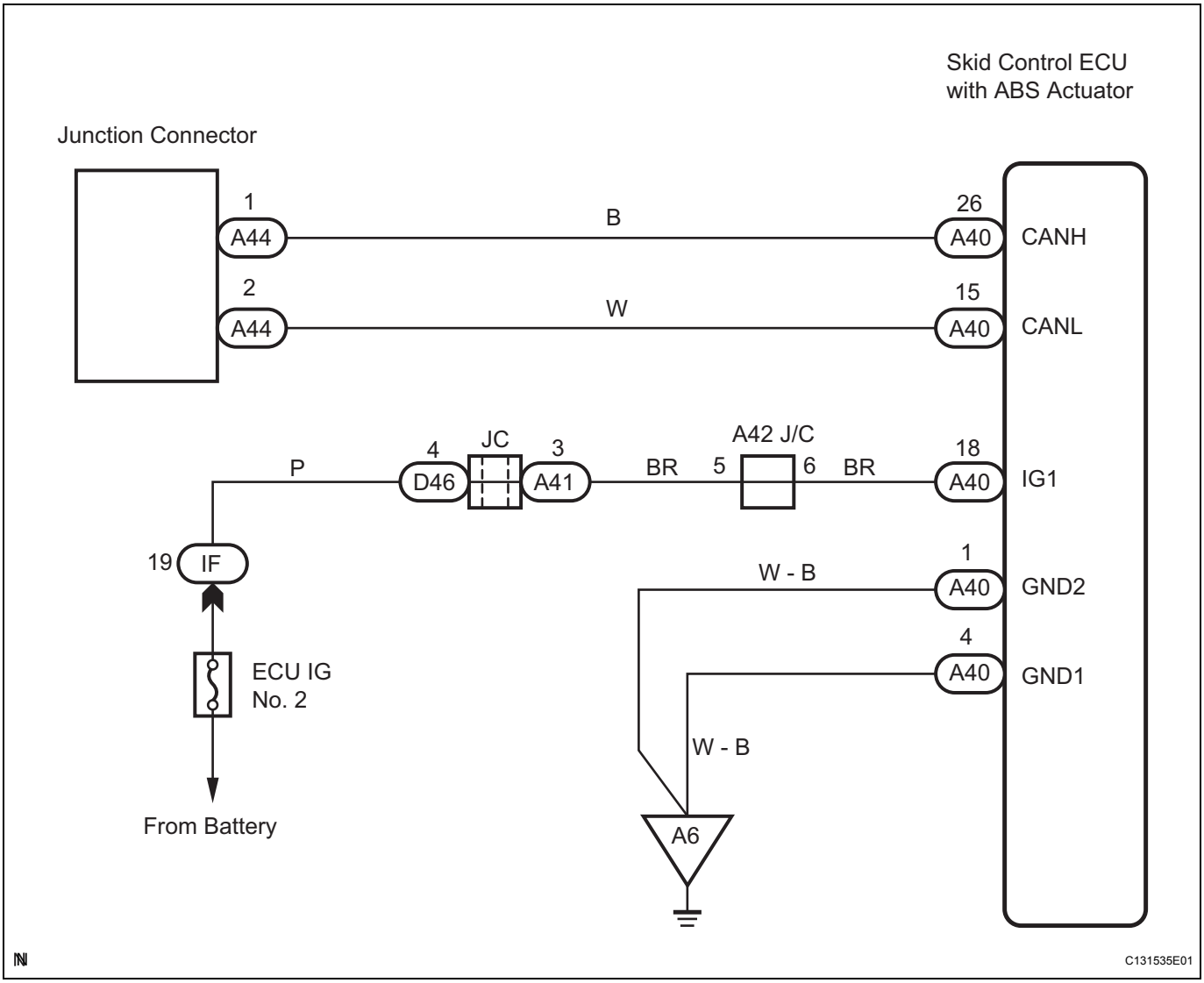
Skid Control ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
SKID CONTROL ECU COMMUNICATION STOP MODE (*1)	• "ABS/VSC/TRAC" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "SKID CONTROL ECU COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the skid control ECU with ABS actuator • Skid control ECU with ABS actuator main bus line or connector
SKID CONTROL ECU COMMUNICATION STOP MODE (*2)	• "ABS/VSC/TRAC" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "SKID CONTROL ECU COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the skid control ECU with ABS actuator • Skid control ECU with ABS actuator main bus line or connector

HINT:
- *1: without VSC
- *2: with VSC

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK VEHICLE

(a) Check the vehicle type.

Result

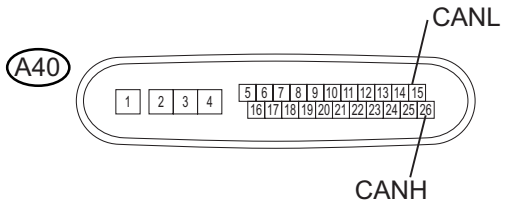
Vehicle type	Proceed to
without VSC	A
with VSC	B

B → Go to step 4

A →

2 CHECK CAN BUS LINE (SKID CONTROL ECU MAIN BUS LINE DISCONNECTION)

Skid Control ECU Connector Wire Harness View:



(a) Turn the ignition switch off.
(b) Disconnect the skid control ECU connector (A40).
(c) Measure the resistance according to the value(s) in the table below.
Resistance

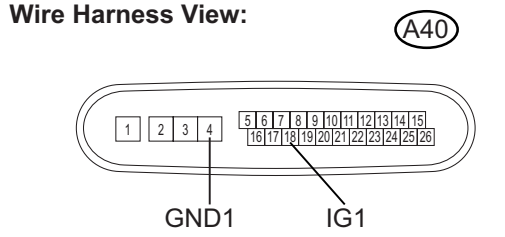
Tester Connection	Condition	Specified value
A40-26 (CANH) - A40-15 (CANL)	Ignition switch off	108 to 132 Ω

NG → REPAIR OR REPLACE WIRE HARNESS AND CONNECTOR (CAN-H, CAN-L)

OK →

3 CHECK WIRE HARNESS (IG1, GND1)

Skid Control ECU Connector Wire Harness View:



(a) Measure the resistance and voltage according to the value(s) in the table below.
Resistance and voltage

Tester Connection	Condition	Specified value
A40-4 (GND1) - Body ground	Always	Below 1 Ω
A40-3 (IG1) - Body ground	Ignition switch on (IG)	10 to 14 V

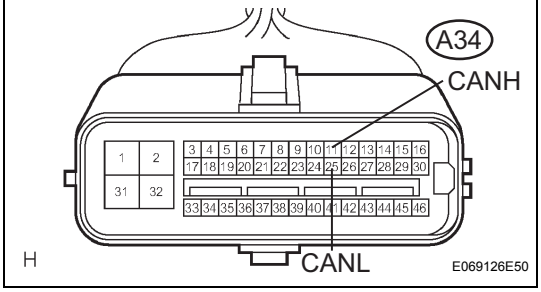
NG → REPAIR OR REPLACE WIRE HARNESS AND CONNECTOR

OK →

REPLACE SKID CONTROL ECU WITH ACTUATOR

4	CHECK CAN BUS LINE (SKID CONTROL ECU MAIN BUS LINE DISCONNECTION)

Skid Control ECU Connector Front View:



(a) Turn the ignition switch off.
(b) Disconnect the skid control ECU connector (A34).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

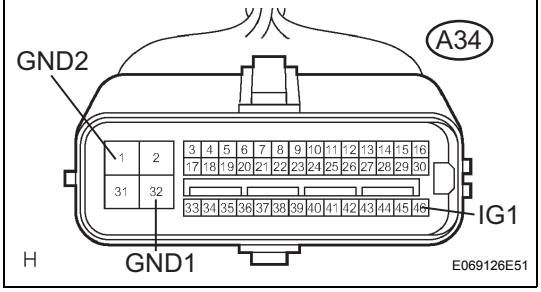
Tester Connection	Condition	Specified value
A34-11 (CANH) - A34-25 (CANL)	Ignition switch off	108 to 132 Ω

NG → **REPAIR OR REPLACE WIRE HARNESS AND CONNECTOR (CAN-H, CAN-L)**

OK

5	CHECK WIRE HARNESS (IG1, GND1, GND2)

Skid Control ECU Connector Front View:



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

Resistance and voltage

Tester Connection	Condition	Specified value
A34-1 (GND2) - Body ground	Always	Below 1 Ω
A34-32 (GND1) - Body ground	Always	Below 1 Ω
A34-46 (IG1) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE WIRE HARNESS AND CONNECTOR**

OK

REPLACE SKID CONTROL ECU WITH ACTUATOR

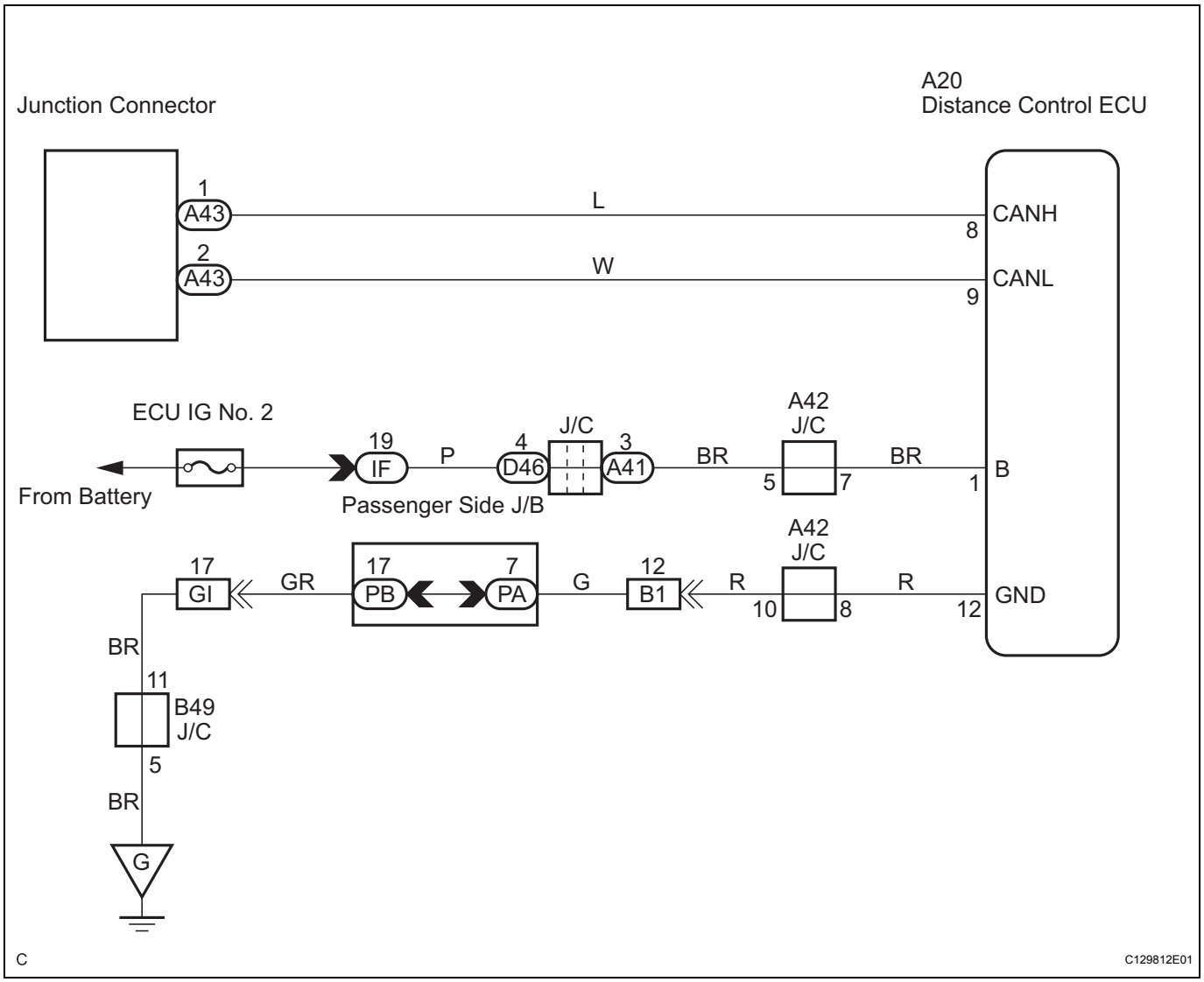
Distance Control ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
DISTANCE CONTROL ECU COMMUNICATION STOP MODE	• "CRUISE CONTROL" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "DISTANCE CONTROL ECU COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the distance control ECU • Distance control ECU sub bus line or connector

NOTICE:
This is not applicable to a vehicle without a dynamic laser cruise control system.

WIRING DIAGRAM

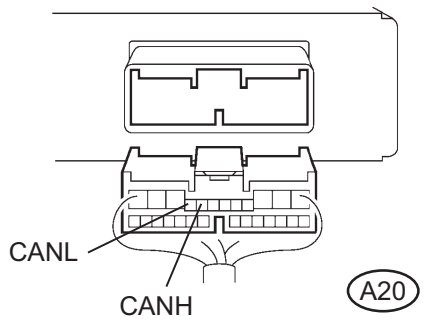


CA

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE DISCONNECTION)

Distance Control ECU
Wire Harness View:



G030159E14

(a) Turn the ignition switch off.
(b) Disconnect the distance control ECU connector (A20).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

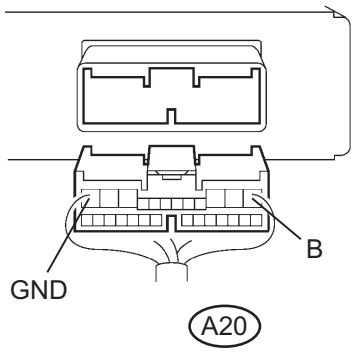
Tester Connection	Condition	Specified Condition
A20-8 (CANH) - A20-9 (CANL)	Ignition switch off	54 to 69 Ω

NG → **REPAIR OR REPLACE DISTANCE CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)**

OK

2	CHECK WIRE HARNESS (B, GND)

Distance Control ECU
Wire Harness View:



G030160E02

(a) Measure the resistance and voltage according to the value(s) in the table below.

Resistance and voltage

Tester Connection	Condition	Specified Condition
A20-12 (GND) - Body ground	Always	Below 1 Ω
A20-1 (B) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

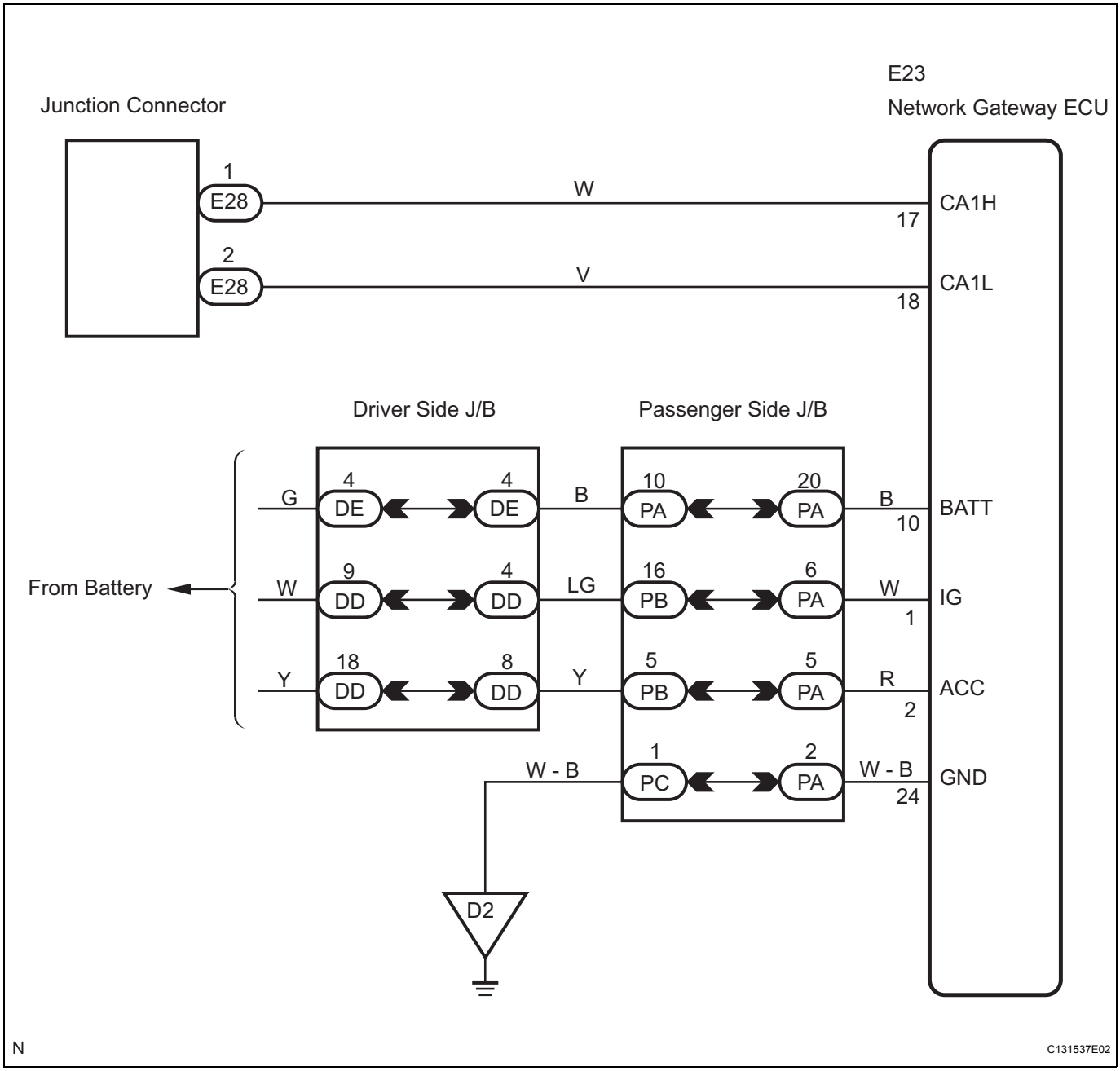
REPAIR OR REPLACE DISTANCE CONTROL ECU

Gateway ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
GATEWAY ECU COMMUNICATION STOP MODE	• "BODY / GATEWAY" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "GATEWAY ECU COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the gateway ECU • Gateway ECU sub bus line or connector

WIRING DIAGRAM

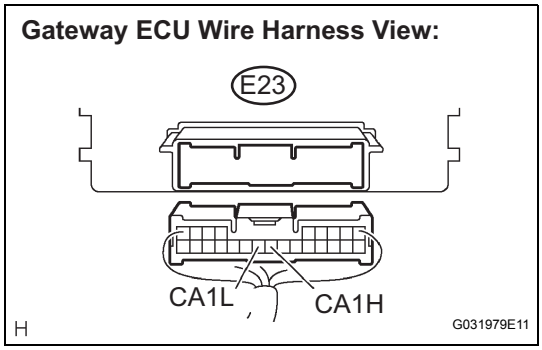


CA

INSPECTION PROCEDURE

1 CHECK CAN BUS LINE (GATEWAY ECU SUB BUS LINE DISCONNECTION)

Gateway ECU Wire Harness View:



(a) Turn the ignition switch off.
(b) Disconnect the gateway ECU connector (E23).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

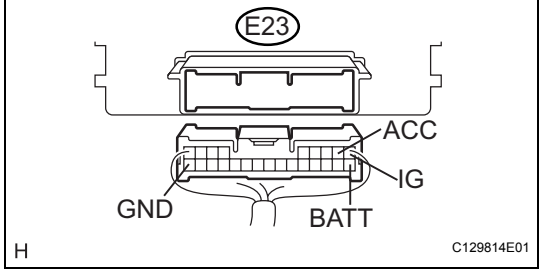
Tester Connection	Condition	Specified Condition
E23-17 (CA1H) - E23-18 (CA1L)	Ignition switch off	54 to 69 Ω

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

OK

2 CHECK WIRE HARNESS (BATT, ACC, IG, GND)

Gateway ECU Wire Harness View:



(a) Measure the resistance and voltage according to the value(s) in the table below.

Resistance and voltage

Tester Connection	Condition	Specified Condition
E23-24 (GND) - Body ground	Always	Below 1 Ω
E23-10 (BATT) - Body ground	Always	10 to 14 V
E23-2 (ACC) - Body ground	Ignition switch on (ACC)	10 to 14 V
E23-1 (IG) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

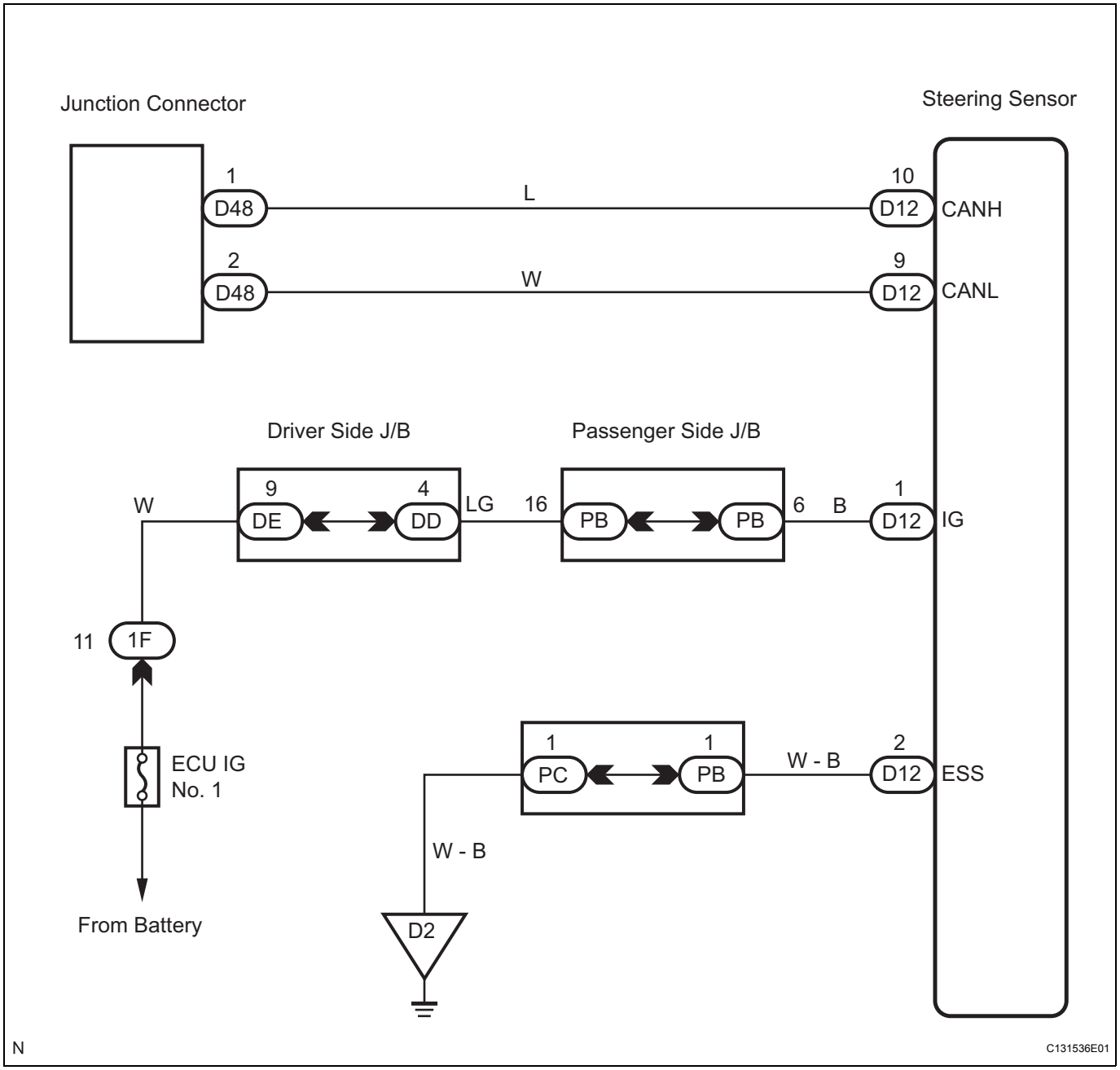
REPLACE GATEWAY ECU

Steering Angle Sensor Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
STEERING SENSOR COMMUNICATION STOP MODE	• "STEERING SENSOR" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "STEERING SENSOR COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the steering sensor • Steering sensor sub bus line or connector

WIRING DIAGRAM

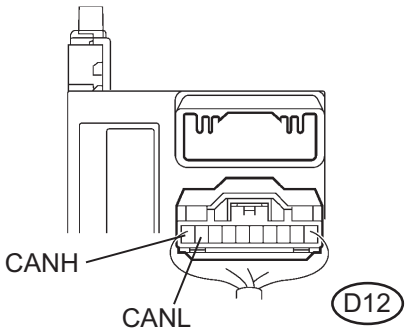


CA

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE DISCONNECTION)

Steering Sensor
Wire Harness View:



G030155E33

(a) Turn the ignition switch off.
(b) Disconnect the steering sensor connector (D12).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

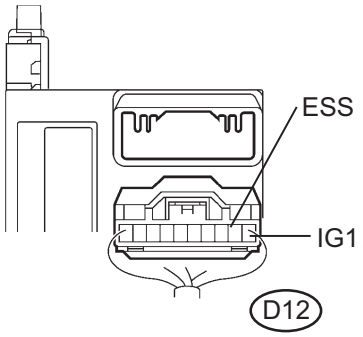
Tester Connection	Condition	Specified value
D12-10 (CANH) - D12-9 (CANL)	Ignition switch off	54 to 69 Ω

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

OK

2	CHECK WIRE HARNESS (IG1, ESS)

Steering Sensor
Wire Harness View:



G030156E06

(a) Measure the resistance and voltage according to the value(s) in the table below.

Resistance and voltage

Tester Connection	Condition	Specified Condition
D12-2 (ESS) - Body ground	Always	Below 1 Ω
D12-1 (IG1) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

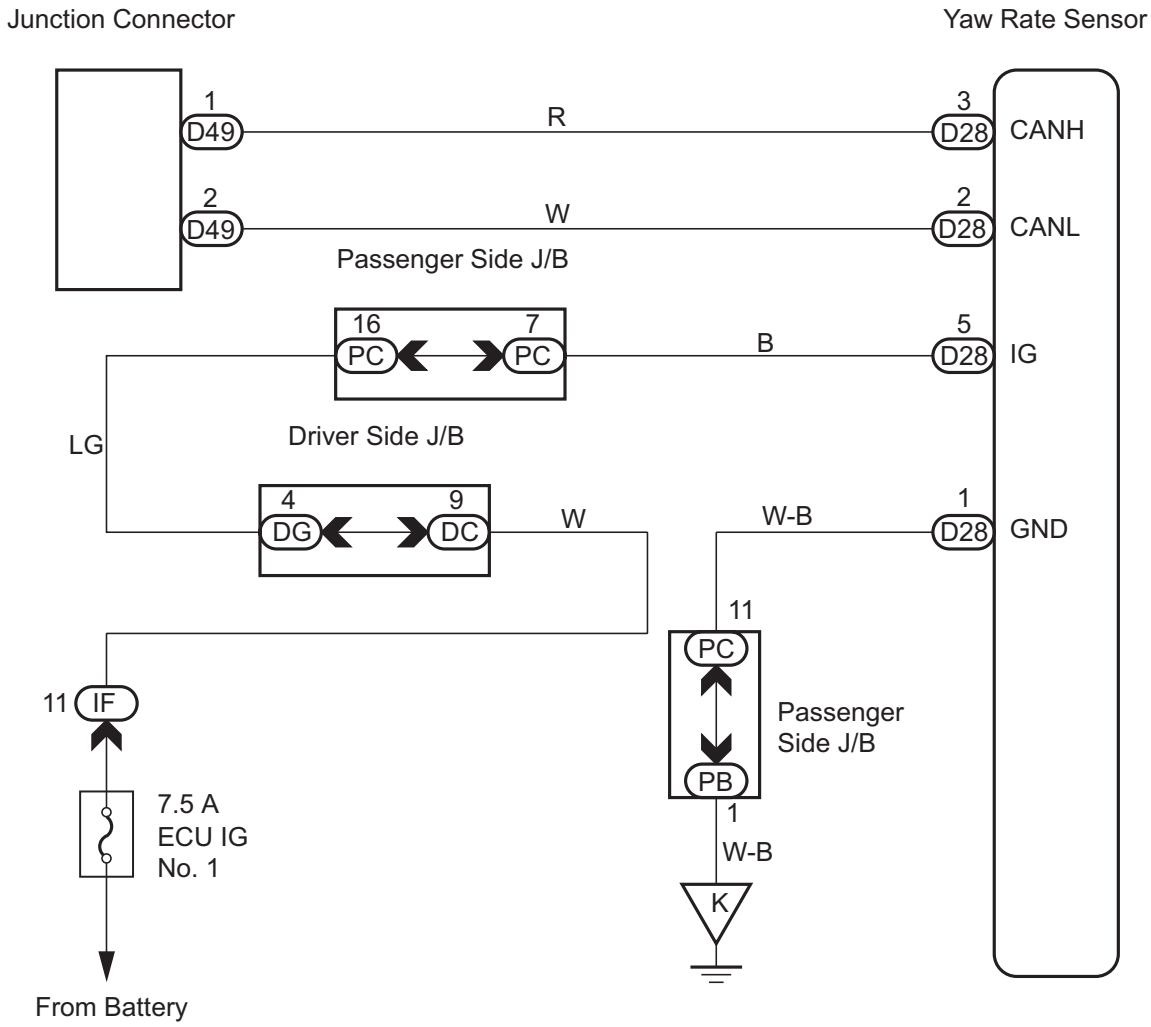
REPLACE STEERING SENSOR

Yaw Rate Sensor Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
YAW RATE SENSOR COMMUNICATION STOP MODE	• "YAW / DECELERAT" is not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "YAW RATE SENSOR COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the yaw rate sensor • Yaw rate sensor sub bus line or connector

WIRING DIAGRAM

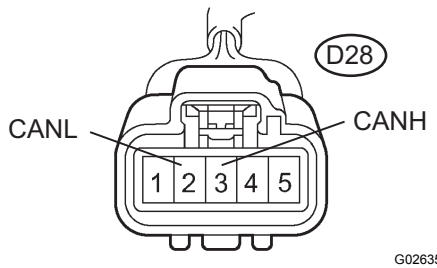


CA

INSPECTION PROCEDURE

1 **CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE DISCONNECTION)**

Yaw Rate Sensor Connector Front View:



(a) Turn the ignition switch off.
(b) Disconnect the yaw rate sensor connector (D28).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

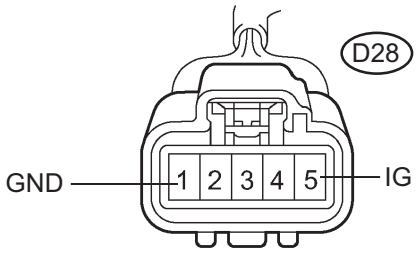
Tester Connection	Condition	Specified value
D28-2 (CANL) - D28-3 (CANH)	Ignition switch off	54 to 69 Ω

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

OK

2 **CHECK WIRE HARNESS (IG, GND)**

Yaw Rate Sensor Connector Front View:



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

Resistance and voltage

Tester Connection	Condition	Specified Condition
D28-1 (GND) - Body ground	Always	Below 1 Ω
D28-5 (IG) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

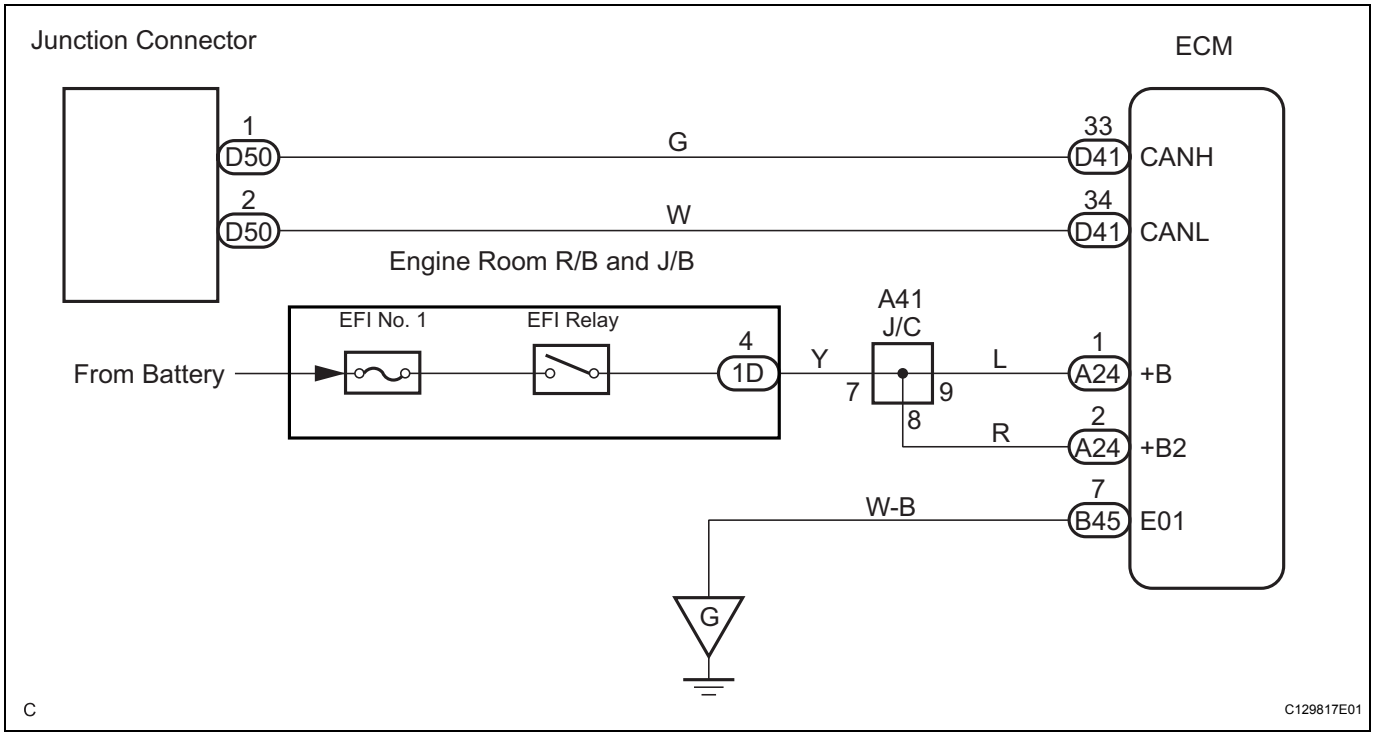
REPLACE YAW RATE SENSOR

ECM Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
ECM COMMUNICATION STOP MODE	• "ENGINE" and "ECT" are not displayed on the "BUS CHECK" screen of the intelligent tester. • Applies to "ECM COMMUNICATION STOP MODE" in the "DTC COMBINATION TABLE".	• Power source or inside the ECM • ECM main bus line or connector

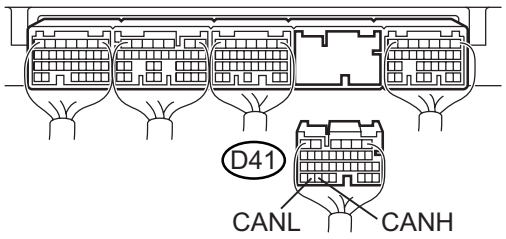
WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (ECM MAIN BUS LINE DISCONNECTION)

ECM Wire Harness View:



(a) Turn the ignition switch off.
(b) Disconnect the ECM connector (D41).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D41-33 (CANH) - D41-34 (CANL)	Ignition switch off	108 to 132 Ω

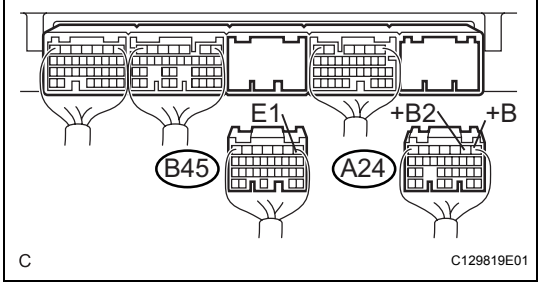
NG → **REPAIR OR REPLACE ECM MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)**

OK

CA

2	CHECK WIRE HARNESS (+B1, +B, E1)

ECM Wire Harness View:



(a) Reconnect the ECM connector (D41).
(b) Disconnect the ECM connector (A24) (B45).
(c) Measure the resistance and voltage according to the value(s) in the table below.

Resistance and voltage

Tester Connection	Condition	Specified Condition
B45-1 (E1) - Body ground	Always	Below 1 Ω
A24-1 (+B) - Body ground	Ignition switch on (IG)	10 to 14 V
A24-2 (+B2) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM

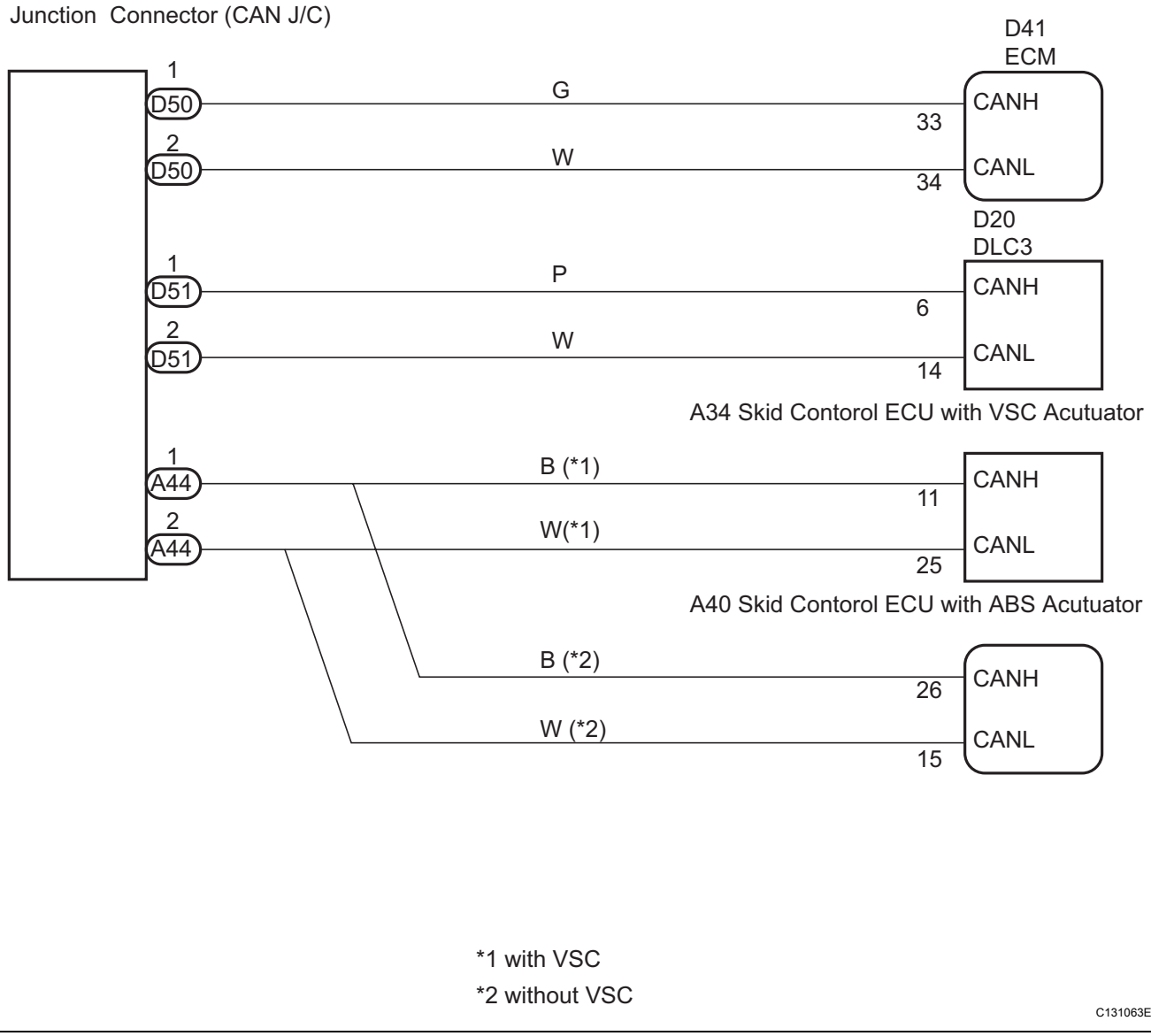
Can Main Bus Line for Disconnection

DESCRIPTION

There may be an open circuit in the CAN main bus line and/or the DLC3 sub bus line when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is 69 Ω or more.

Symptom	Trouble Area
Resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is 69 Ω or more.	• CAN main bus line or connector • Junction connector (CAN J/C) • DLC3 sub bus line or connector • ECM • Skid control ECU with VSC actuator • Skid control ECU with ABS actuator

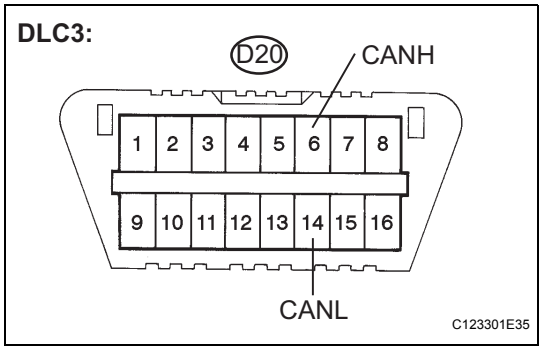
WIRING DIAGRAM



CA

INSPECTION PROCEDURE

1 CHECK DLC3



(a) Turn the ignition switch off.
(b) Measure the resistance according to the value(s) in the table below.

Result

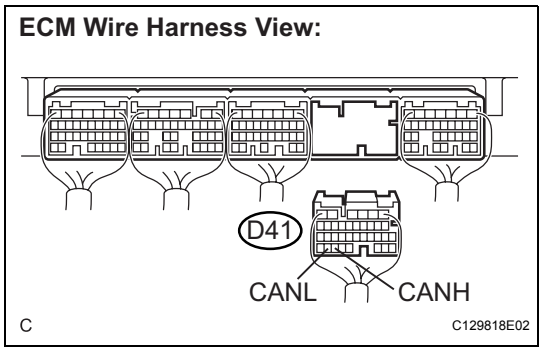
Tester connection	Condition	Specified value	Result
D20-6 (CANH) - D20-14 (CANL)	ignition switch off	54 to 69 Ω	A
D20-6 (CANH) - D20-14 (CANL)	ignition switch off	69 Ω or more	B

NOTICE:
When the measured value is 69 Ω or more and a CAN communication system diagnostic trouble code is output, there may be a fault besides disconnection of the DLC3 sub bus line. For that reason, troubleshooting should be performed again from "HOW TO PROCEED WITH TROUBLESHOOTING" (See page CA-7) after repairing the trouble area.

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

A

2 CHECK CAN MAIN BUS LINE FOR DISCONNECTION



(a) Turn the ignition switch off.
(b) Disconnect the ECM connector (D41).
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D41 -33 (CANH) - D41-34 (CANL)	Ignition switch off	108 to 132 Ω

OK → **REPLACE ECM**

NG

3 CONNECT CONNECTOR

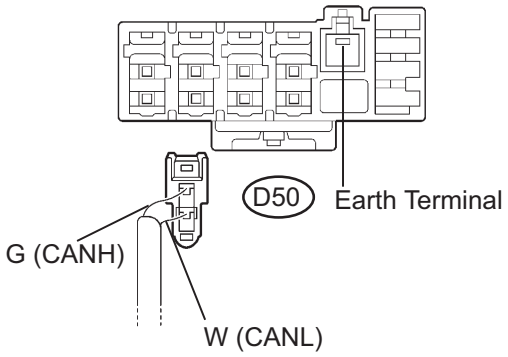
(a) Reconnect the ECM connector (D41) to the ECM.

NEXT

CA

4	CHECK CAN MAIN BUS LINE FOR DISCONNECTION

CAN J/C Side (with Earth Terminal) Wire Harness View:



G031957E07

(a) Disconnect the CAN main bus line connector (D50) from the 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.
Resistance

Tester Connection	Condition	Specified value
D50-1 (CANH) - D50-2 (CANL)	Ignition switch off	108 to 132 Ω

NG → **REPAIR OR REPLACE CAN MAIN BUS LINE OR CONNECTOR (D50-D41)**

OK

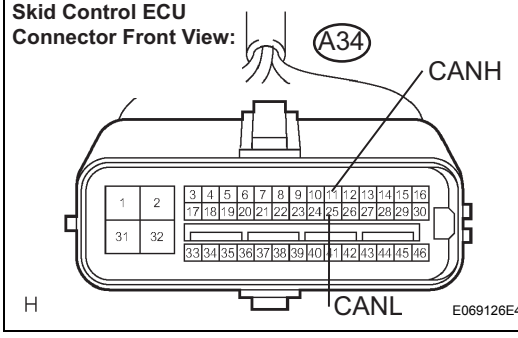
5	CONNECT CONNECTOR

(a) Reconnect the CAN main bus line connector (D50) to the CAN J/C Aside (without earth terminal).

NEXT

6	CHECK CAN MAIN BUS LINE FOR DISCONNECTION (CAN J/C)

Skid Control ECU Connector Front View:



E069126E49

NOTICE:
For vehicles without VSC, go to step 7

(a) Turn the ignition switch off.
(b) Disconnect the skid control ECU connector (A34).
(c) Measure the resistance according to the value(s) in the table below.
Resistance

Tester Connection	Condition	Specified value
A34-11 (CANH) - A34-25 (CANL)	Ignition switch off	108 to 132 Ω

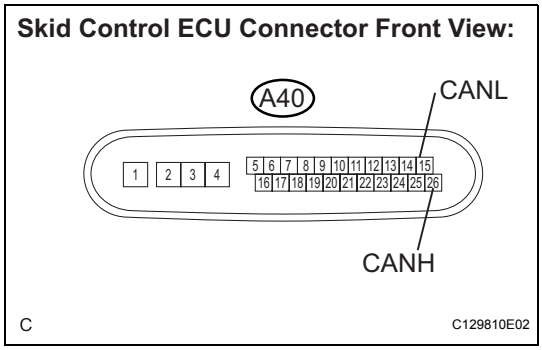
NG → **Go to step 8**

OK

REPLACE SKID CONTROL ECU WITH ACTUATOR

CA

7	CHECK CAN MAIN BUS LINE FOR DISCONNECTION



(a) Turn the ignition switch off.
(b) Disconnect the skid control ECU connector (A40).
(c) Measure the resistance according to the value(s) in the table below.
Resistance

Tester Connection	Condition	Specified value
A40-26 (CANH) - A40-15(CANL)	Ignition switch off	108 to 132 Ω

OK → **REPLACE SKID CONTROL ECU WITH ACTUATOR**

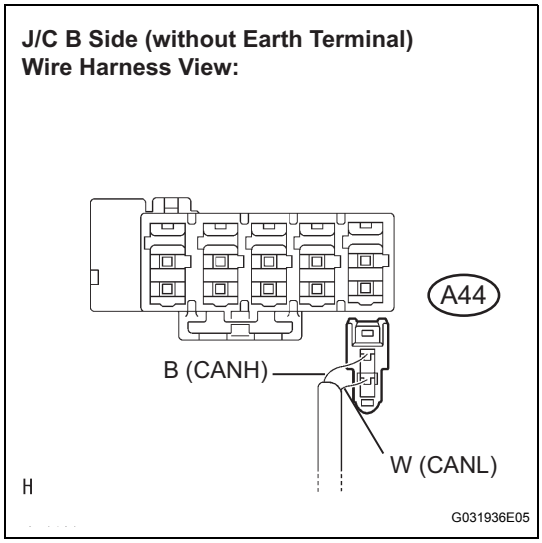
NG

8	CONNECT CONNECTOR

(a) Reconnect the skid control ECU connector (A34) or (A40) to the skid control ECU.

NEXT

9	CHECK CAN MAIN BUS LINE FOR DISCONNECTION



(a) Disconnect the CAN main bus line connector (A44) from the 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.
Resistance

Tester Connection	Condition	Specified value
A44-1 (CANH) - A44-2 (CANL)	Ignition switch off	108 to 132 Ω

NG → **REPAIR OR REPLACE CAN MAIN BUS LINE OR CONNECTOR (D44-A34(A40))**

CA

OK

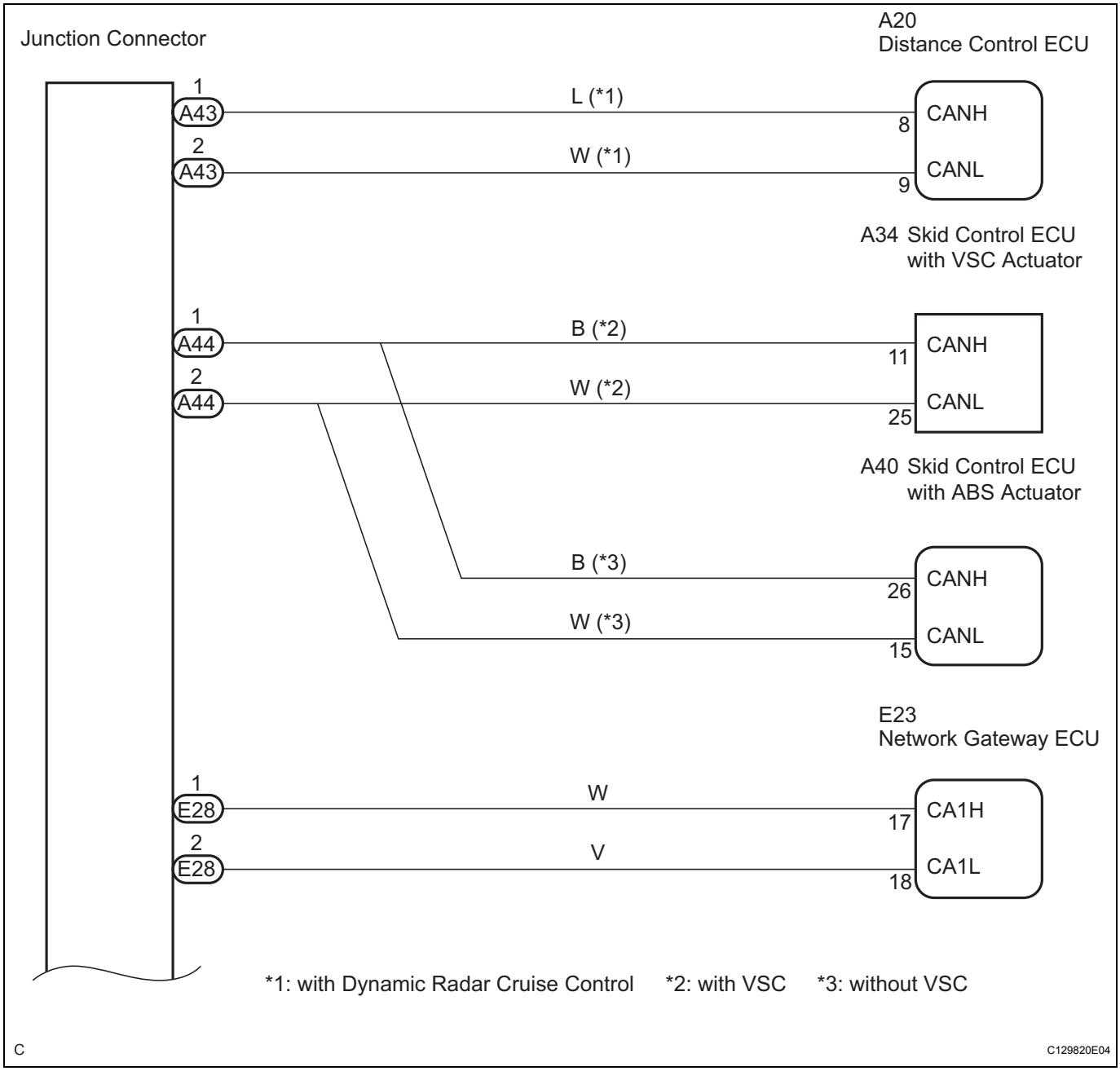
REPLACE JUNCTION CONNECTOR

Check CAN Bus Line

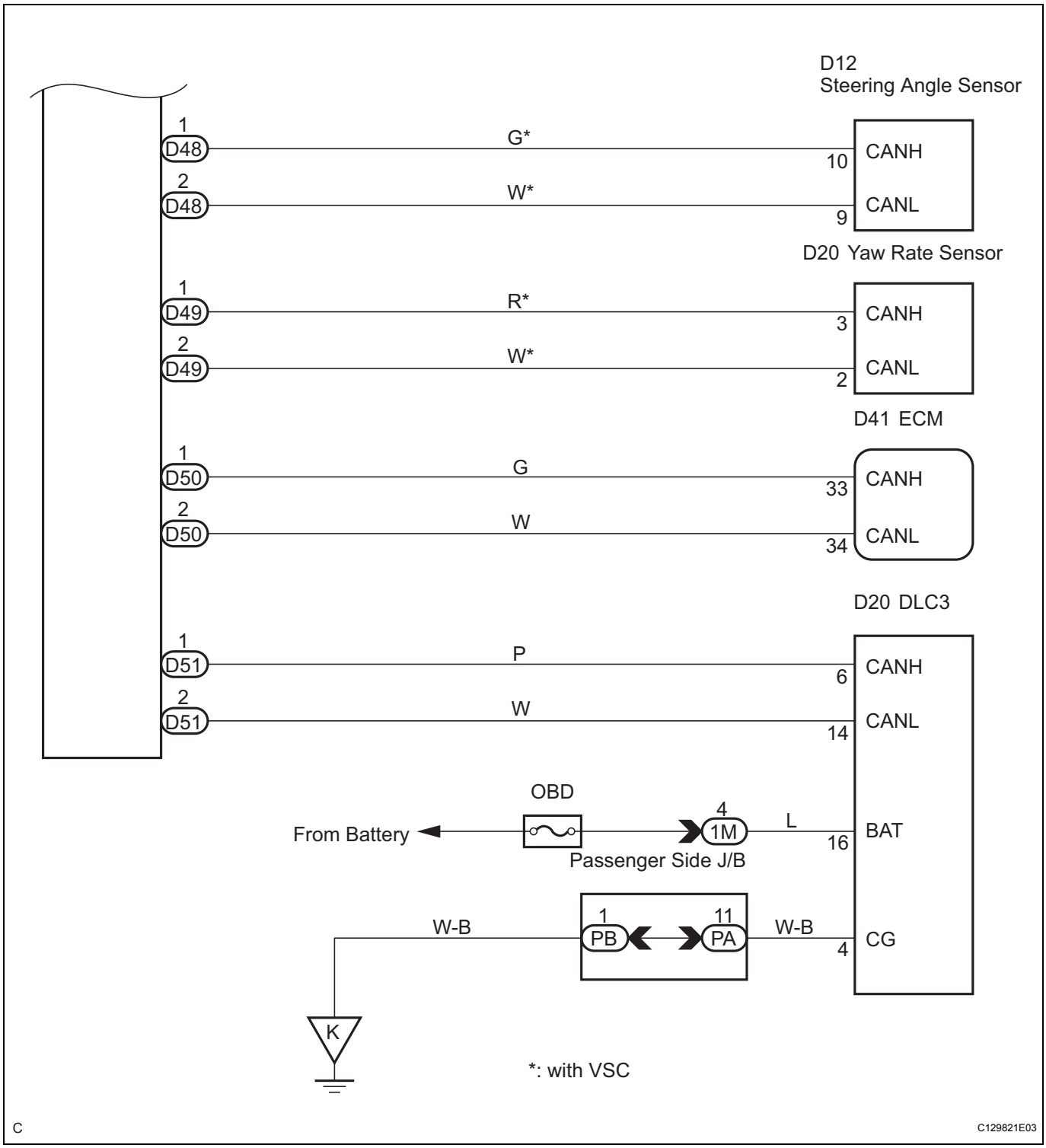
DESCRIPTION

When any DTC for the CAN communication system is output, first measure the resistance between the terminals of the DLC3 to specify the trouble area, and the check that there is no short in the CAN main bus line, between the CAN bus lines, to +B or to GND.

WIRING DIAGRAM

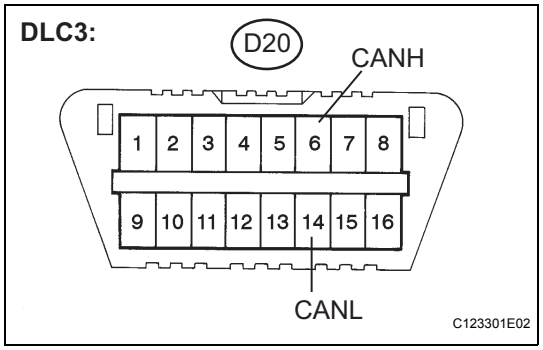


CA


D12
Steering Angle Sensor
1
D48
G*
10
CANH
2
D48
W*
9
CANL
D20 Yaw Rate Sensor
1
D49
R*
3
CANH
2
D49
W*
2
CANL
D41 ECM
1
D50
G
33
CANH
2
D50
W
34
CANL
D20 DLC3
1
D51
P
6
CANH
2
D51
W
14
CANL
OBD
From Battery
4
1M
L
16
BAT
Passenger Side J/B
W-B
1
PB
11
PA
W-B
4
CG
K
*: with VSC
C
C129821E03

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (MAIN BUS LINE FOR DISCONNECTION, BUS LINES FOR SHORT CIRCUIT)



(a) Turn the ignition switch off.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

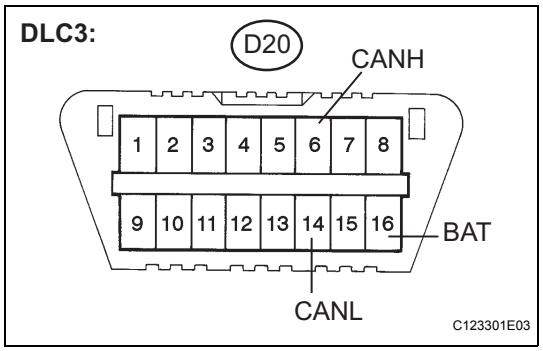
Tester Connection	Condition	Specified value	Result
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω	OK
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	69 Ω or more	NG-A
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 Ω or less	NG-B

NG-A → **CHECK CAN MAIN BUS LINE (DISCONNECTION)**

NG-B → **CHECK CAN BUS LINE (SHORT CIRCUIT)**

OK

2	CHECK CAN BUS LINE (SHORT TO +B)



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

Resistance

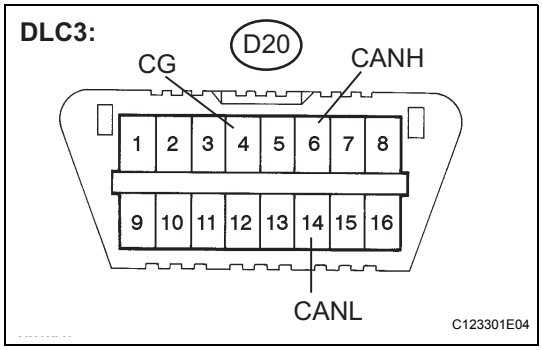
Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

NG → **CHECK CAN BUS LINE (SHORT TO +B)**

OK

CA

3	CHECK CAN BUS LINE (SHORT TO GND)



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

Resistance

Tester Connection	Condition	Specified value
D20-4 (CG) - D20-6 (CANH)	Ignition switch off	1 kΩ or more
D20-4 (CG) - D20-14 (CANL)	Ignition switch off	1 kΩ or more

NG → CHECK CAN BUS LINE (SHORT TO GND)

OK

HOW TO PROCEED WITH TROUBLESHOOTING

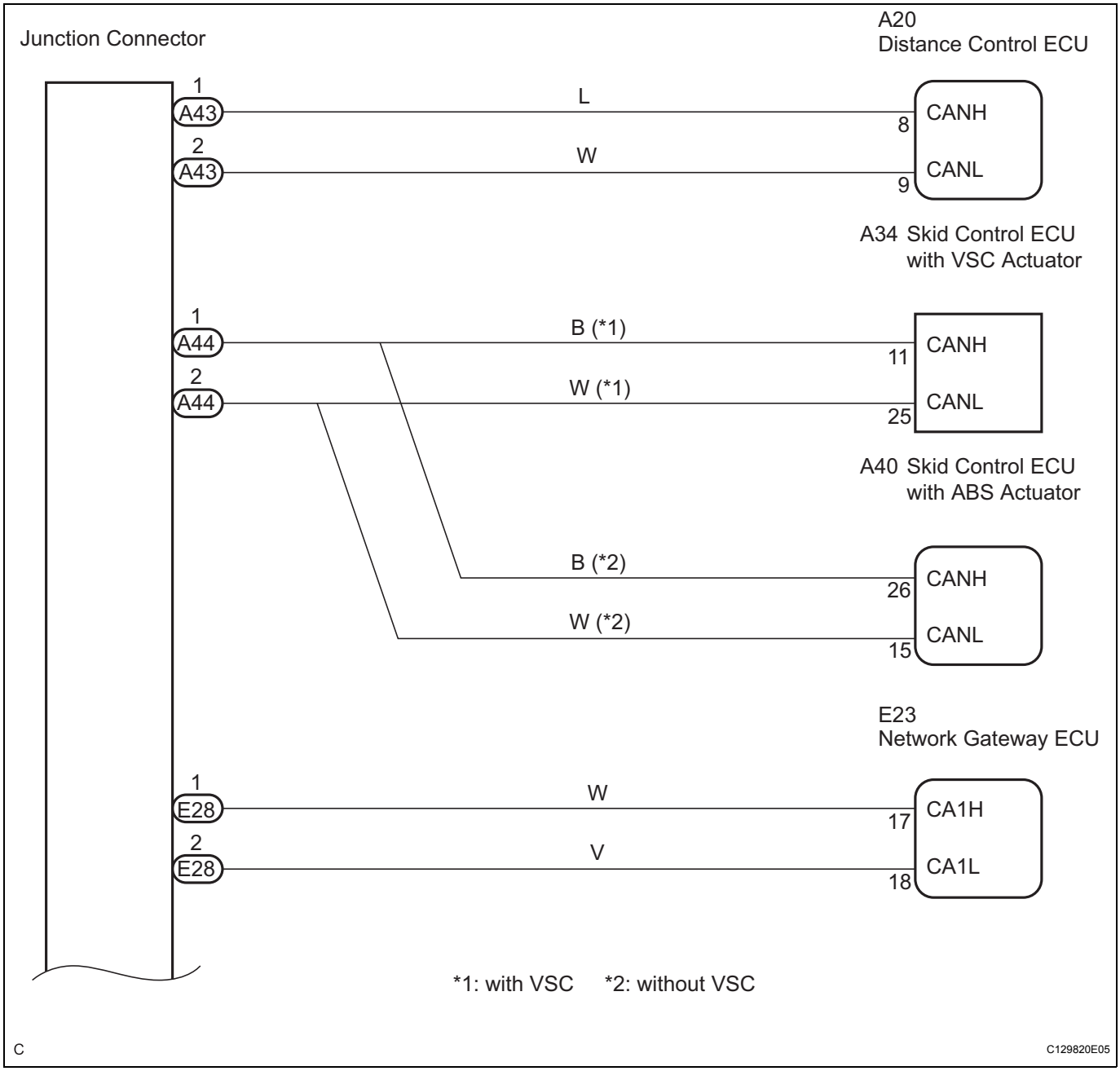
Check CAN Bus Lines for Short Circuit

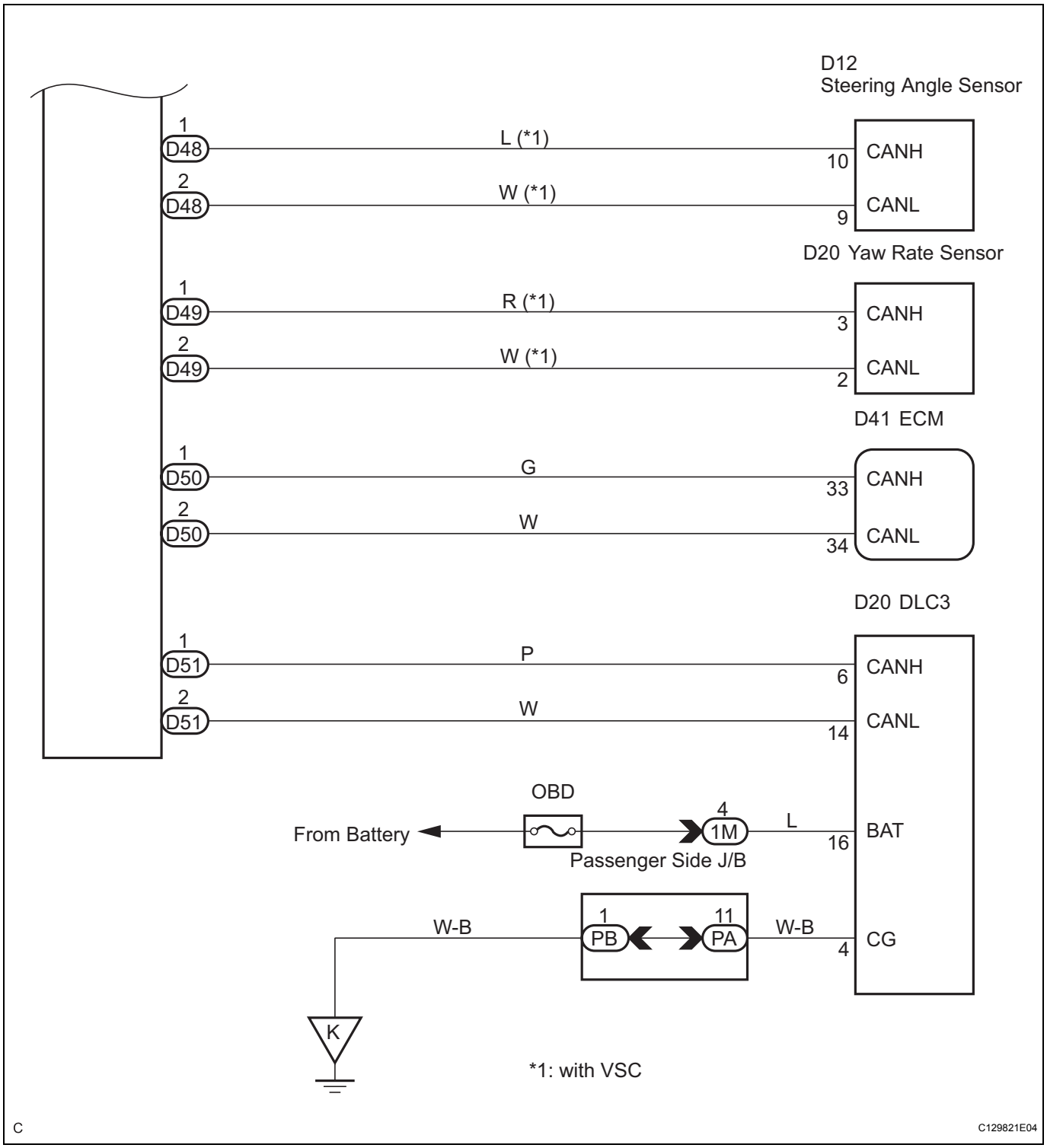
DESCRIPTION

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 (CANL) of the DLC 3 is below 54 Ω	• Short between CAN bus lines • Distance control ECU • Skid control ECU with VSC actuator • Skid control ECU with ABS actuator • Steering sensor • Yaw rate sensor • ECM • Network gateway ECU • Junction connector (CAN J/C)

WIRING DIAGRAM



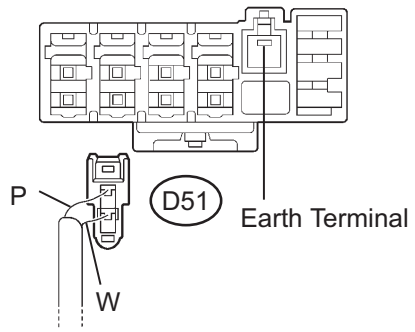

D12
Steering Angle Sensor
1
D48
L (*1)
10
CANH
2
D48
W (*1)
9
CANL
D20 Yaw Rate Sensor
1
D49
R (*1)
3
CANH
2
D49
W (*1)
2
CANL
D41 ECM
1
D50
G
33
CANH
2
D50
W
34
CANL
D20 DLC3
1
D51
P
6
CANH
2
D51
W
14
CANL
OBD
From Battery
4
1M
L
16
BAT
Passenger Side J/B
1
PB
11
PA
W-B
W-B
4
CG
K
*1: with VSC
C
C129821E04

CA

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (DLC3 SUB BUS LINE)

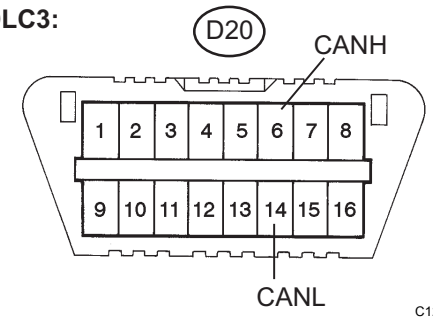
CAN J/C A Side (w/ Earth Terminal) Wire Harness View:



G031933E26

(a) Turn the ignition switch off.
(b) Disconnect the DLC3 sub bus line connector (D51) from the 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:



C123301E07

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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	1 MΩ or more

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

OK

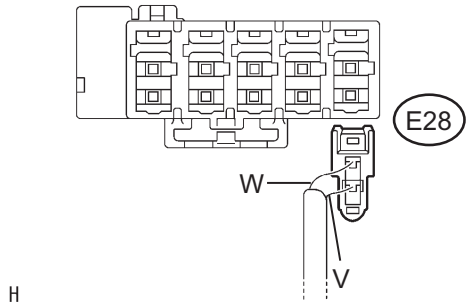
2	CONNECT CONNECTOR

(a) Reconnect the DLC3 sub bus line connector (D51) to the CAN J/C A side (w/ earth terminal).

NEXT

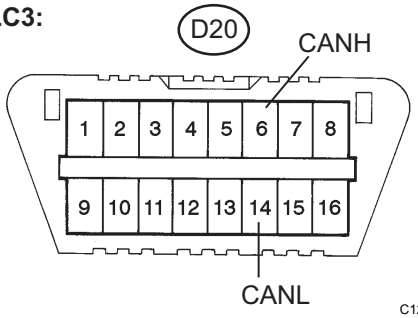
3	CHECK CAN BUS LINE (GATEWAY ECU)

CAN J/C B side (w/o Earth Terminal) Wire Harness View:



(a) Disconnect the gateway ECU sub bus line connector (E28) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **Go to step 10**

NG

4	CONNECT CONNECTOR

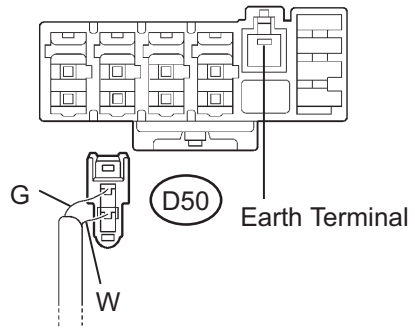
(a) Reconnect the gateway ECU sub bus line connector (E28) to the CAN J/C B side (w/o earth terminal).

NEXT

CA

5	CHECK CAN BUS LINE (ECM MAIN BUS LINE)

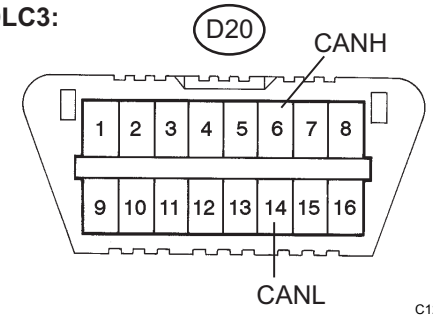
CAN J/C A Side (w/ Earth Terminal) Wire Harness View:



G031933E27

(a) Disconnect the ECM main bus line connector (D50) from the 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:



C123301E07

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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	108 to 132 Ω

OK → **Go to step 12**

NG

6	CONNECT CONNECTOR

(a) Reconnect the ECM main bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

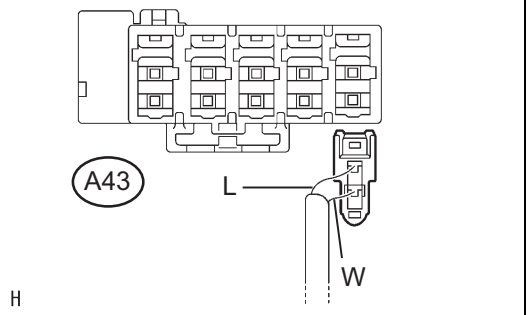
NEXT

7	CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

NOTICE:
For vehicles without dynamic radar / laser cruise control, go to step 15.

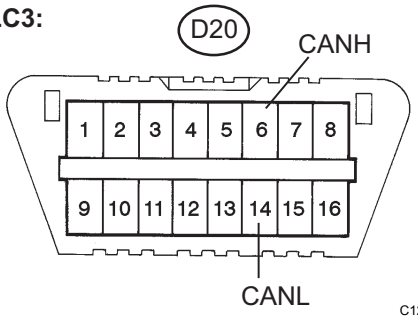
CA

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



(a) Disconnect the distance control ECU sub bus line connector (A43) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

NG → **Go to step 14**

OK

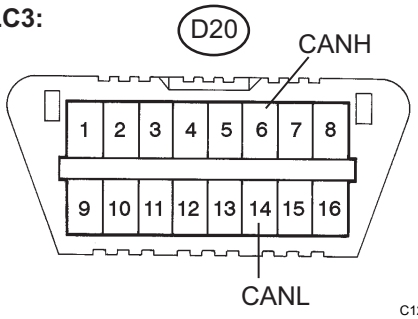
8 CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

NEXT

9 CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

DLC3:



(a) Disconnect the distance control ECU connector (A20).
(b) Measure the resistance according to the value(s) in the table below.
Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **REPLACE DISTANCE CONTROL ECU**

CA

NG

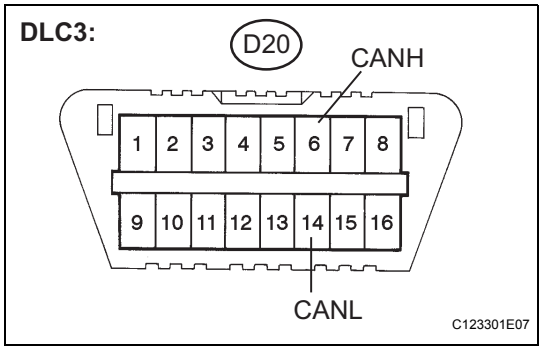
REPAIR OR REPLACE DISTANCE CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)

10	CONNECT CONNECTOR

(a) Reconnect the network gateway ECU sub bus line connector (B28) to the CAN J/C B side (w/o earth terminal).

NEXT

11	CHECK CAN BUS LINE (GATEWAY ECU SUB BUS LINE)



(a) Disconnect the gateway ECU connector (E23).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **REPLACE GATEWAY ECU**

NG

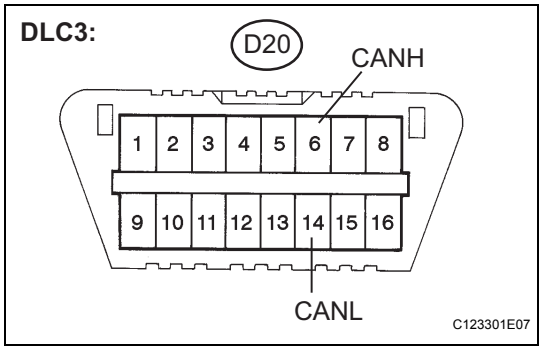
REPAIR OR REPLACE GATEWAY ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

12	CONNECT CONNECTOR

(a) Reconnect the ECM main bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

NEXT

13	CHECK CAN BUS LINE (ECU MAIN BUS LINE)



(a) Disconnect the ECM connector (D41).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	108 to 132 Ω

OK → REPLACE ECM

NG

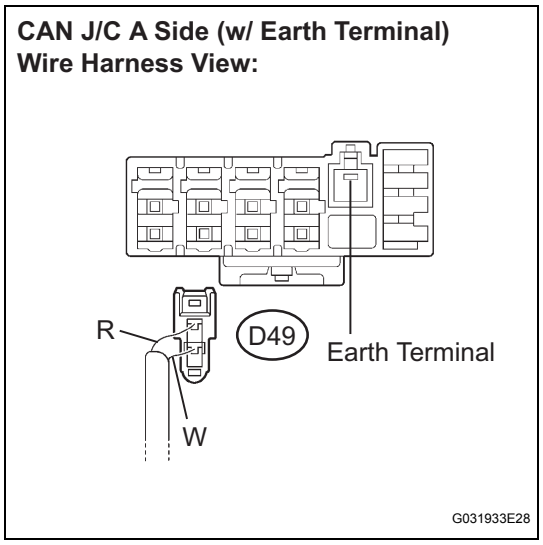
REPAIR OR REPLACE ECM MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)

14	CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

NEXT

15	CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE)



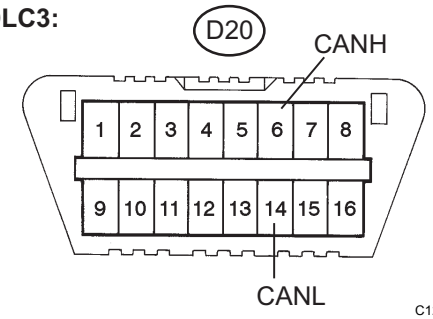
(a) Disconnect the yaw rate sensor sub bus line connector (D49) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

CA

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **Go to step 22**

NG

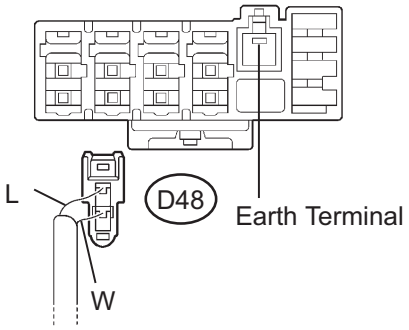
16 CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D28) to the CAN J/C A side (w/ earth terminal).

NEXT

17 CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)

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

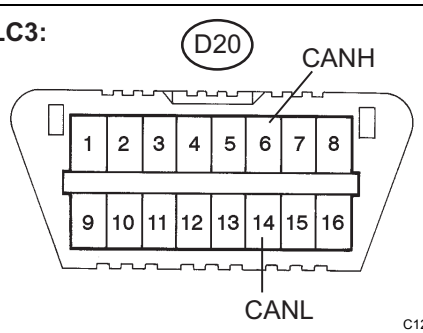


(a) Disconnect the steering sensor sub bus line connector (D48) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **Go to step 24**

NG

CA

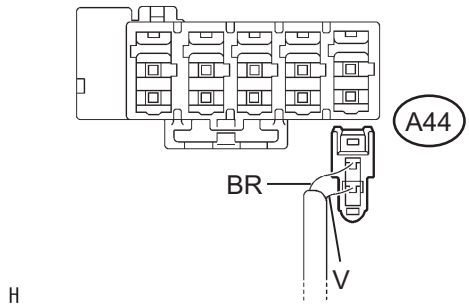
18	CONNECT CONNECTOR

(a) Reconnect the steering sensor sub bus line connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

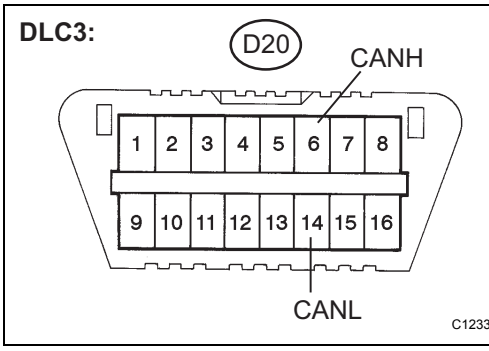
19	CHECK CAN BUS LINE (SKID CONTROL ECU WITH ACTUATOR MAIN BUS LINE)

CAN J/C B side (w/o Earth Terminal) Wire Harness View:



(a) Disconnect the skid control ECU main bus line connector (A44) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

NG → **REPLACE JUNCTION CONNECTOR**

OK

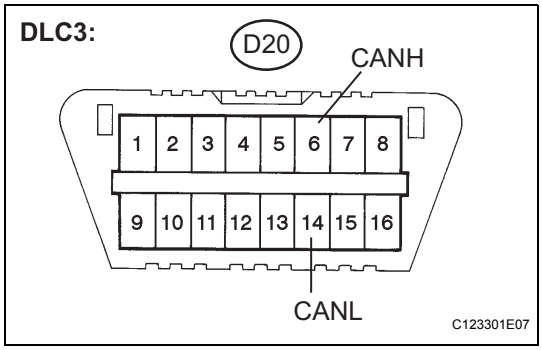
20	CONNECT CONNECTOR

(a) Reconnect the skid control ECU main bus line connector (A44) to the CAN J/C B side (w/o earth terminal).

NEXT

CA

21	CHECK CAN BUS LINE (SKID CONTROL ECU MAIN BUS LINE)



(a) Disconnect the skid control ECU connector (A34) or (A40).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	108 to 132 Ω

OK → REPLACE SKID CONTROL ECU WITH ACTUATOR

NG

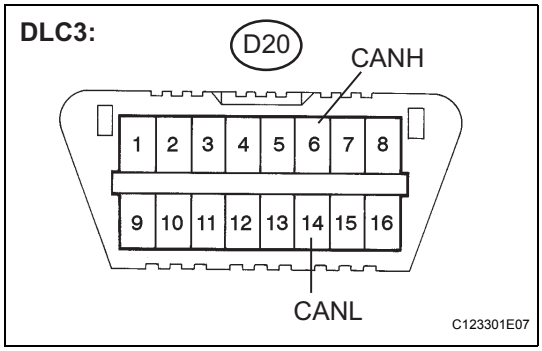
REPAIR OR REPLACE SKID CONTROL ECU MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)

22	CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D49) to the CAN J/C A side (w/ earth terminal).

NEXT

23	CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE)



(a) Disconnect the yaw rate sensor connector (D28).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → REPLACE YAW RATE AND ACCELERATION SENSOR

NG

CA

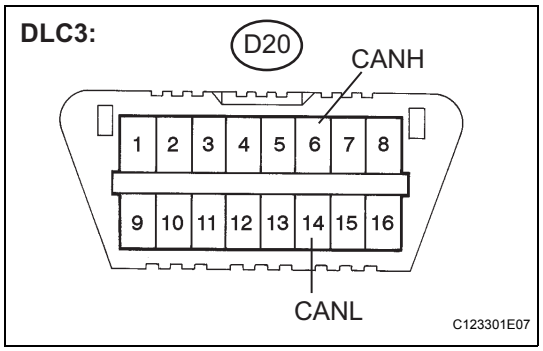
REPAIR OR REPLACE YAW RATE SENSOR SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

24	CONNECT CONNECTOR

(a) Reconnect the steering sensor sub bus line connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

25	CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)



(a) Disconnect the steering sensor connector (D12).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-14 (CANL)	Ignition switch off	54 to 69 Ω

OK → **REPLACE STEERING SENSOR**

NG

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

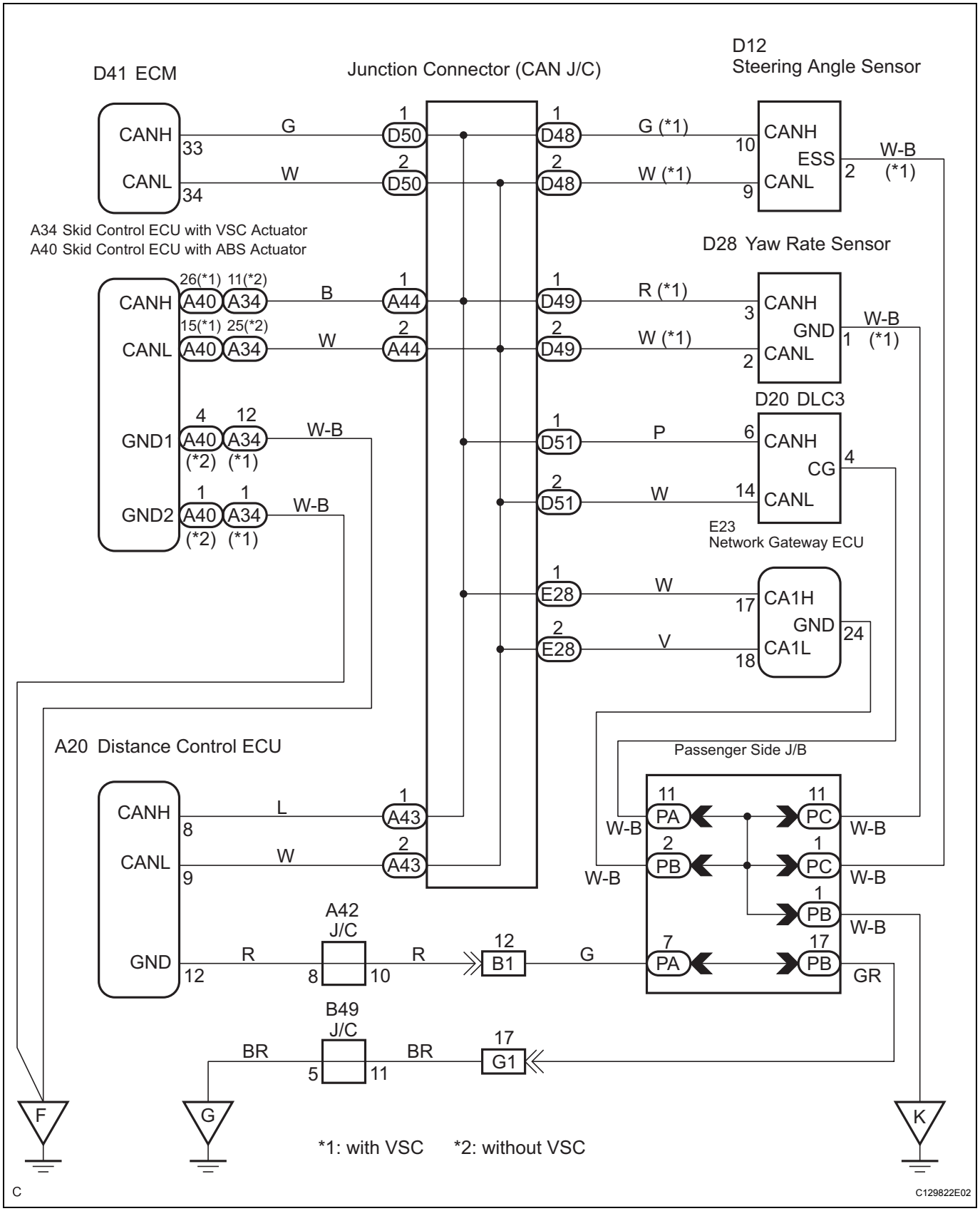
Check CAN Bus Line for Short to GND

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 • Distance control ECU • Skid control ECU with VSC actuator • Skid control ECU with ABS actuator • Steering sensor • Yaw rate sensor • ECM • Network gateway ECU • Junction connector (CAN J/C)

WIRING DIAGRAM

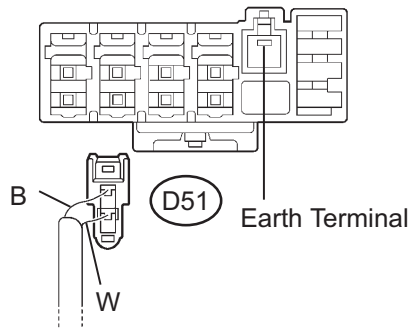


CA

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (DLC3 SUB BUS LINE)

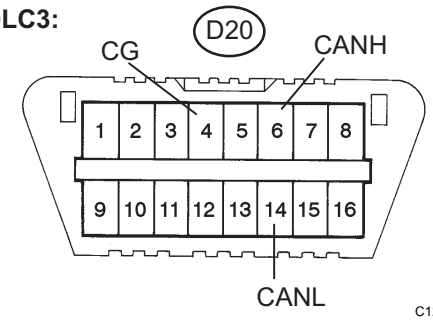
CAN J/C A Side (w/ Earth Terminal) Wire Harness View:



G031933E30

(a) Turn the ignition switch off.
(b) Disconnect the DLC3 sub bus line connector (D51) from the 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:



C123301E09

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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 MΩ or more

NG → **REPAIR OR REPLACE DLC3 BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)**

OK

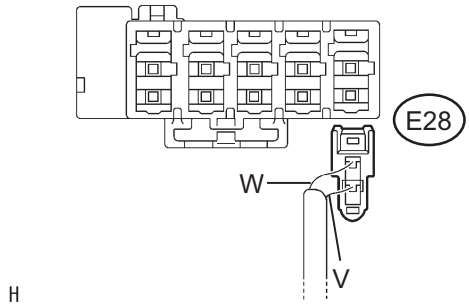
2	CONNECT CONNECTOR

(a) Reconnect the DLC3 sub bus line connector (D51) to the CAN J/C A side (w/ earth terminal).

NEXT

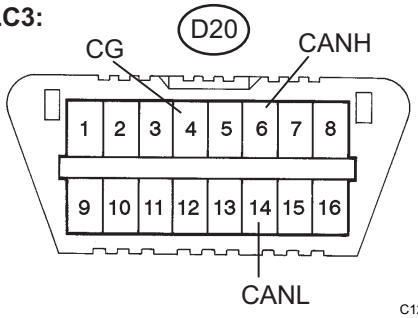
3	CHECK CAN BUS LINE (GATEWAY ECU)

CAN J/C B side (w/o Earth Terminal) Wire Harness View:



(a) Disconnect the gateway ECU sub bus line connector (E28) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → **Go to step 10**

NG

4	CONNECT CONNECTOR

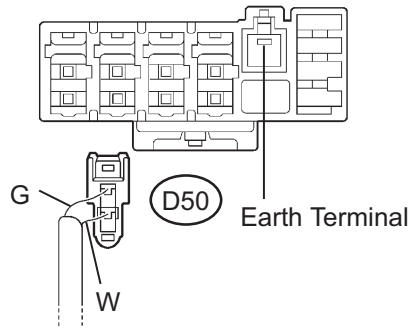
(a) Reconnect the gateway ECU sub bus line connector (E28) to the CAN J/C B side (w/o earth terminal).

NEXT

CA

5	CHECK CAN BUS LINE (ECM SUB MAIN LINE)

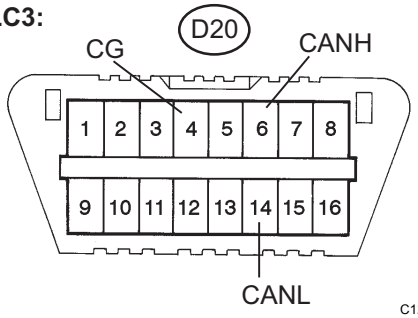
CAN J/C A Side (w/ Earth Terminal) Wire Harness View:



G031933E27

(a) Disconnect the ECM main bus line connector (D50) from the 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:



C123301E09

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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → **Go to step 12**

NG

6	CONNECT CONNECTOR

(a) Reconnect the ECM main bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

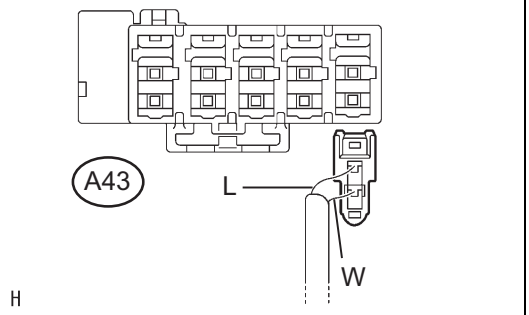
NEXT

7	CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

NOTICE:
For vehicles without dynamic radar cruise control, go to step 15.

CA

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

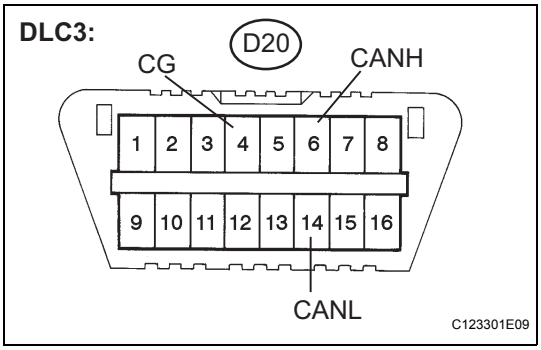


(a) Disconnect the distance control ECU sub bus line connector (A43) from the CAN J/C B side (w/o earth terminal).

NOTICE:

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

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

NG → **Go to step 14**

OK

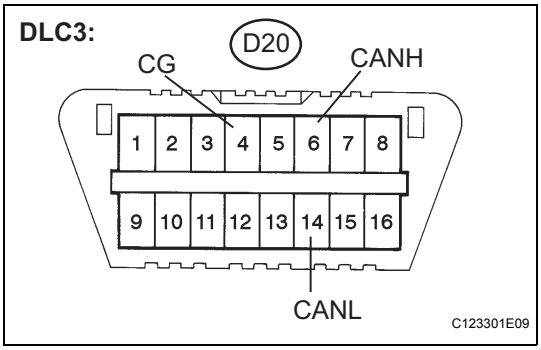
8 CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

NEXT

9 CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

DLC3:



(a) Disconnect the distance control ECU connector (A43).

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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → **REPLACE DISTANCE CONTROL ECU**

CA

NG

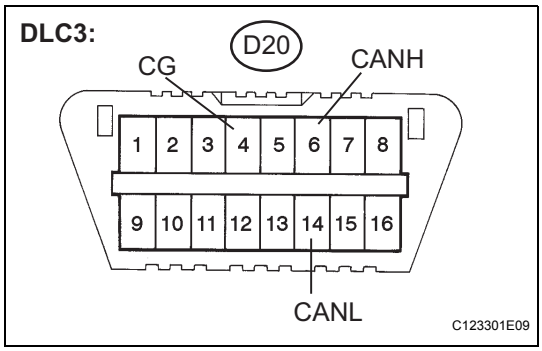
REPAIR OR REPLACE DISTANCE CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)

10	CONNECT CONNECTOR

(a) Reconnect the gateway ECU sub bus line connector (E28) to the CAN J/C B side (w/o earth terminal).

NEXT

11	CHECK CAN BUS LINE (GATEWAY ECU SUB BUS LINE)



(a) Disconnect the gateway ECU connector (E23).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → REPLACE GATEWAY ECU

NG

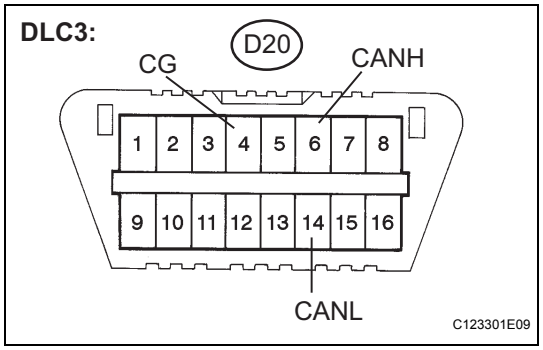
REPAIR OR REPLACE GATEWAY ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

12	CONNECT CONNECTOR

(a) Reconnect the ECM sub bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

NEXT

13	CHECK CAN BUS LINE (ECM MAIN BUS LINE)



(a) Disconnect the ECM connector (D41).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → **REPLACE ECM**

NG

REPAIR OR REPLACE ECM MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)

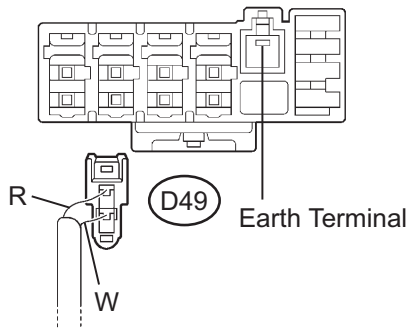
14	CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

MEXT

15	CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE)

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



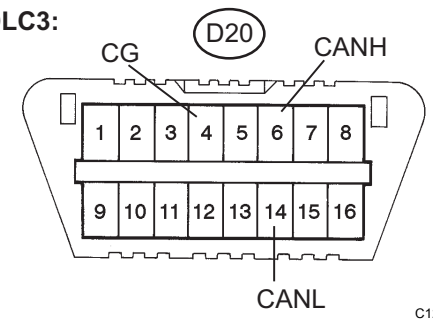
(a) Disconnect the yaw rate sensor sub bus line connector (D49) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

CA

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → Go to step 22

NG

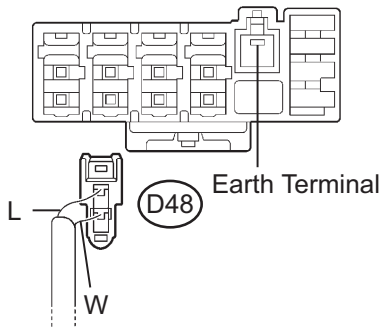
16 CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D49) to the CAN J/C A side (w/ earth terminal).

NEXT

17 CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)

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

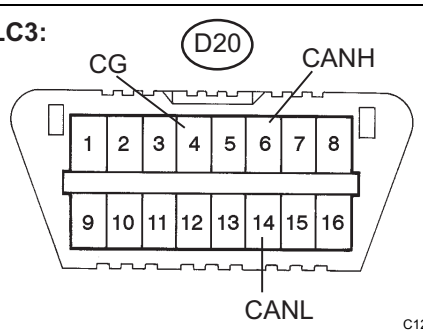


(a) Disconnect the steering sensor sub bus line connector (D48) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → Go to step 24

NG

CA

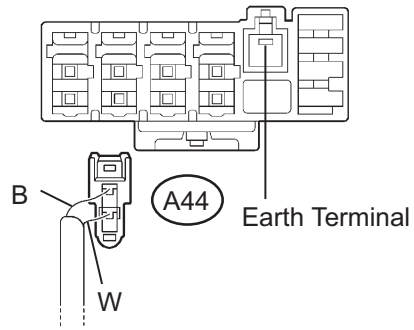
18	CONNECT CONNECTOR

(a) Reconnect the steering sensor sub bus line connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

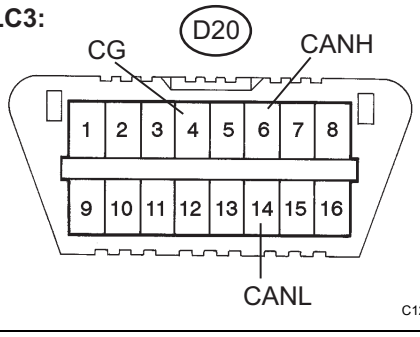
19	CHECK CAN BUS LINE (SKID CONTROL ECU WITH ACTUATOR MAIN BUS LINE)

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



(a) Disconnect the skid control ECU main bus line connector (A44) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

NG → **REPLACE JUNCTION CONNECTOR**

OK

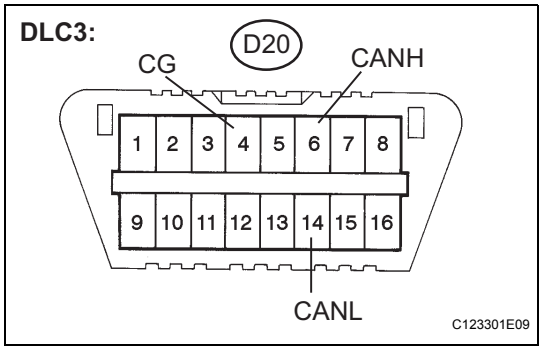
20	CONNECT CONNECTOR

(a) Reconnect the skid control ECU main bus line connector (A44) to the CAN J/C A side (w/ earth terminal).

NEXT

CA

21	CHECK CAN BUS LINE (SKID CONTROL ECU MAIN BUS LINE)



(a) Disconnect the skid control ECU connector (A34) or (A40).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → REPLACE SKID CONTROL ECU WITH ACTUATOR

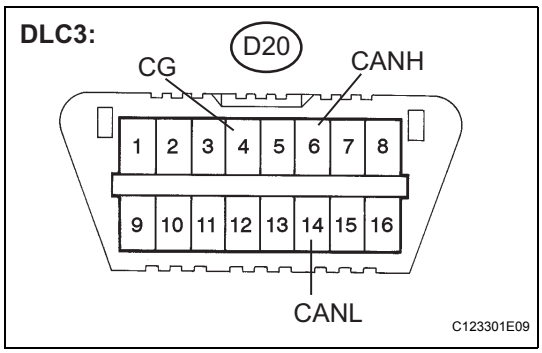
NG → REPAIR OR REPLACE SKID CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)

22	CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D49) to the CAN J/C A side (w/ earth terminal).

NEXT

23	CHECK CAN BUS LINE (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.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → REPLACE YAW RATE AND ACCELERATION SENSOR

NG → REPAIR OR REPLACE YAW RATE SENSOR SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

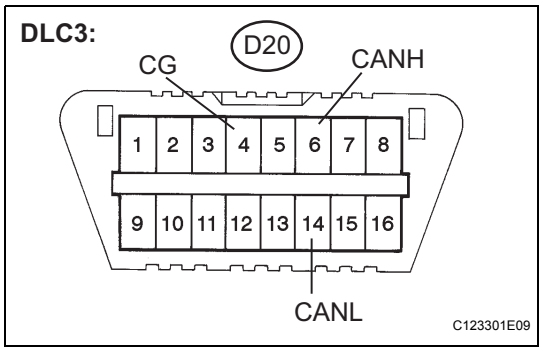
CA

24	CONNECT CONNECTOR

(a) Reconnect the steering sensor sub bus line connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

25	CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)



(a) Disconnect the steering sensor connector (D12).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-4 (CG)	Ignition switch off	1 kΩ or more
D20-14 (CANL) - D20-4 (CG)	Ignition switch off	1 kΩ or more

OK → REPLACE STEERING SENSOR

NG

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

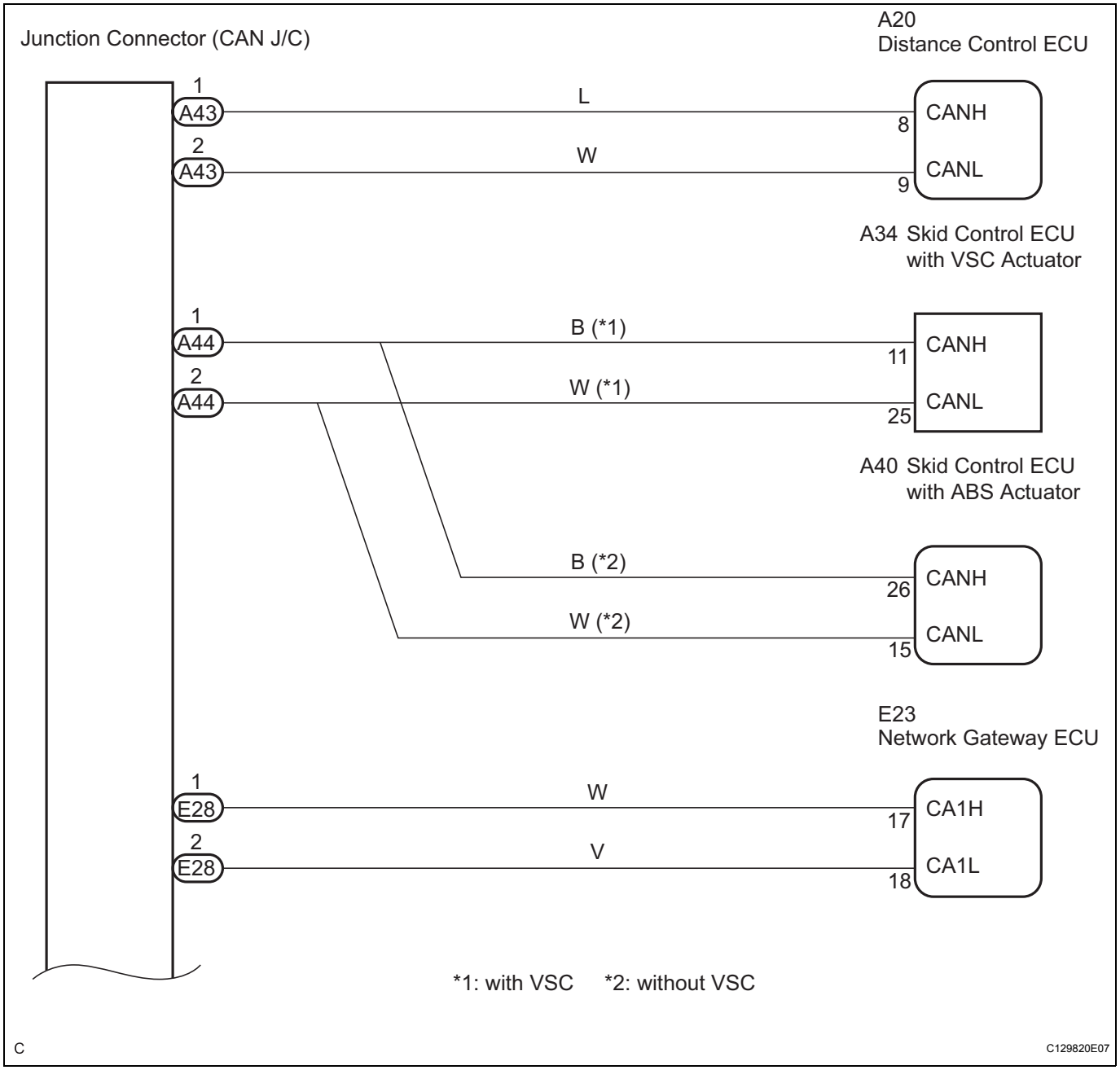
Check CAN Bus Line for Short to +B (LHD Models)

DESCRIPTION

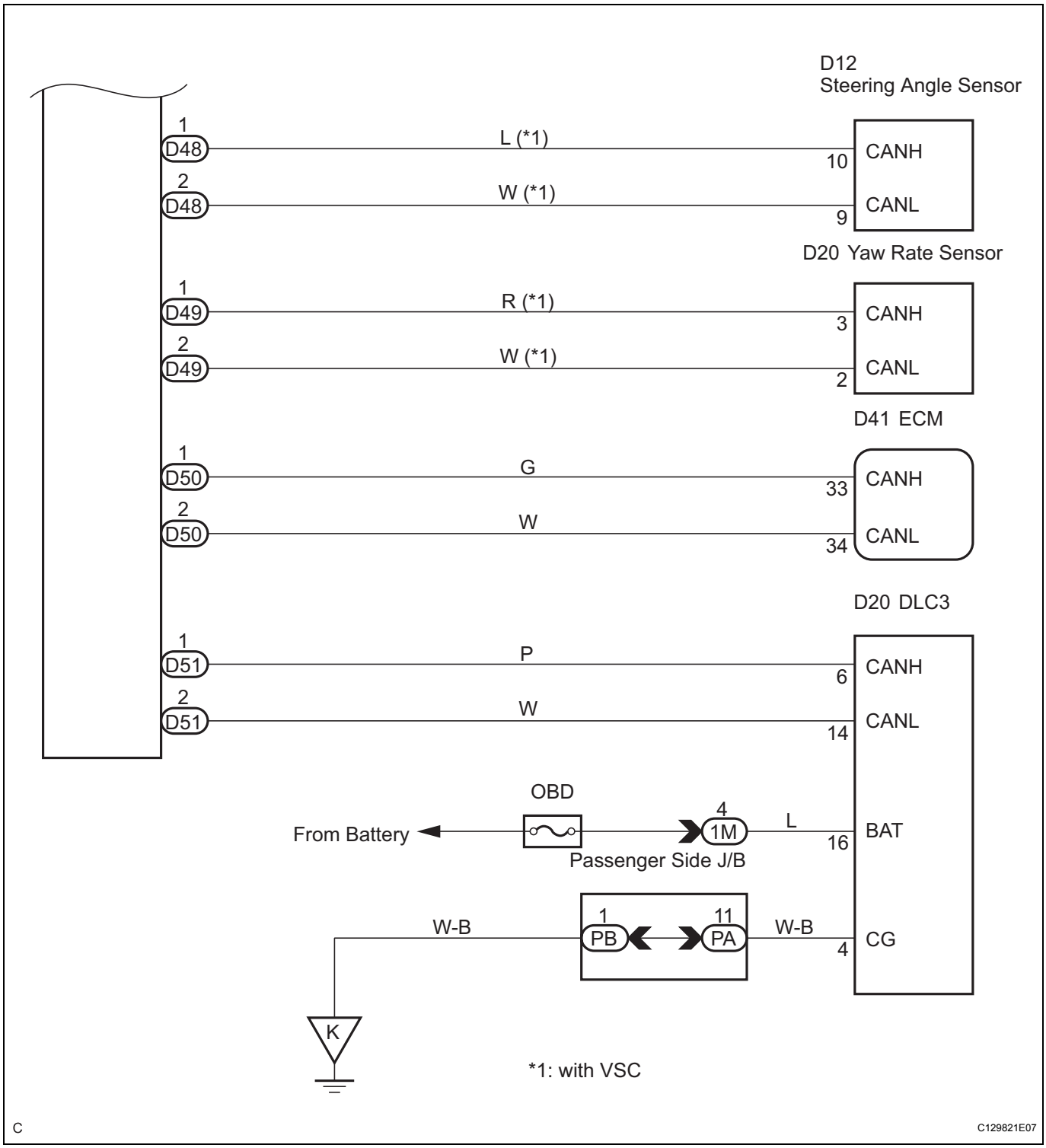
There may be a short circuit between the CAN bus line and +B when there is resistance between terminals 6 (CANH) and 16 (BAT), or terminals 14 (CANL) and 16 (BAT), of the DLC3.

Symptom	Trouble Area
There is resistance between terminals 6 (CANH) and 16 (BAT), or terminals 14 (CANL) and 16 (BAT), of the DLC3.	• Short to +B • Distance control ECU • Skid control ECU with VSC actuator • Skid control ECU with ABS actuator • Steering sensor • Yaw rate sensor • Suspension control ECU • ECM • Network gateway ECU

WIRING DIAGRAM



CA

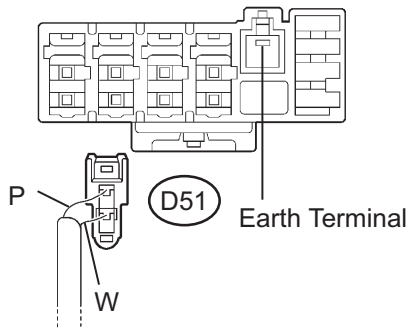

D12
Steering Angle Sensor
1
D48
L (*1)
10
CANH
2
D48
W (*1)
9
CANL
D20 Yaw Rate Sensor
1
D49
R (*1)
3
CANH
2
D49
W (*1)
2
CANL
D41 ECM
1
D50
G
33
CANH
2
D50
W
34
CANL
D20 DLC3
1
D51
P
6
CANH
2
D51
W
14
CANL
OBD
From Battery
4
1M
L
16
BAT
Passenger Side J/B
W-B
1
PB
11
PA
W-B
4
CG
K
*1: with VSC
C
C129821E07

CA

INSPECTION PROCEDURE

1	CHECK CAN BUS LINE (DLC3 SUB BUS LINE)

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



G031933E26

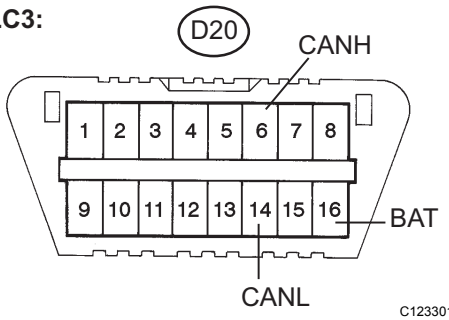
(a) Turn the ignition switch off.

(b) Disconnect the DLC3 sub bus line connector (D51) from the 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:



C123301E08

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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

NG → **REPAIR OR REPLACE DLC3 BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)**

OK

2	CONNECT CONNECTOR

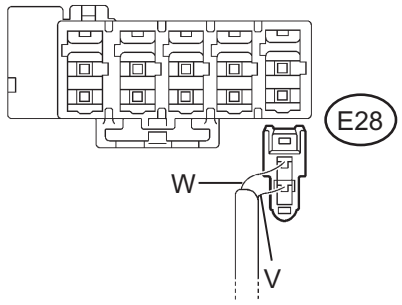
(a) Reconnect the DLC3 sub bus line connector (D51) to the CAN J/C A side (w/ earth terminal).

NEXT

CA

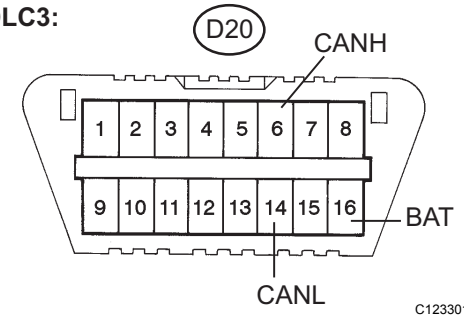
3	CHECK CAN BUS LINE (GATEWAY ECU SUB BUS LINE)

CAN J/C B side (w/o Earth Terminal) Wire Harness View:



(a) Disconnect the gateway ECU sub bus line connector (E28) from the 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:



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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **Go to step 10**

NG

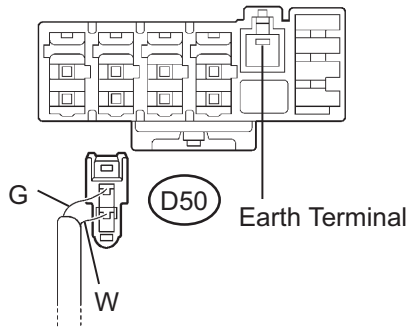
4	CONNECT CONNECTOR

(a) Reconnect the gateway ECU sub bus line connector (E28) to the CAN J/C B side (w/o earth terminal).

NEXT

5	CHECK CAN BUS LINE (ECM MAIN BUS LINE)

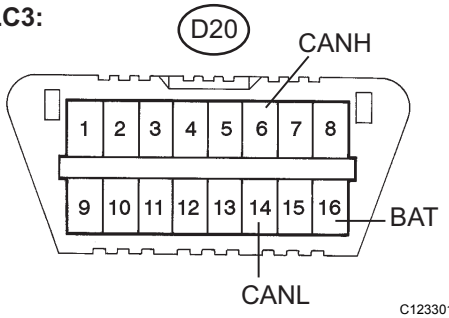
CAN J/C A Side (w/ Earth Terminal) Wire Harness View:



G031933E27

(a) Disconnect the ECM main bus line connector (D50) from the 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:



C123301E08

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

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **Go to step 12**

NG

6	CONNECT CONNECTOR

(a) Reconnect the ECM sub bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

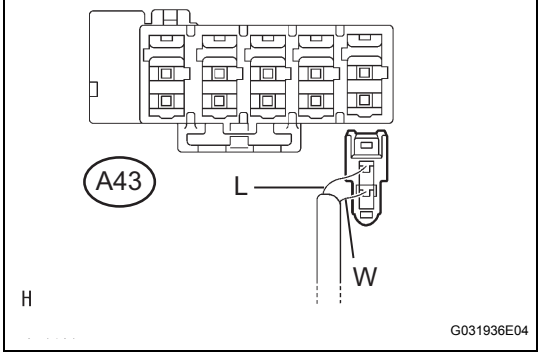
NEXT

7	CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

NOTICE:
For vehicles without dynamic radar cruise control, go to step 15.

CA

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

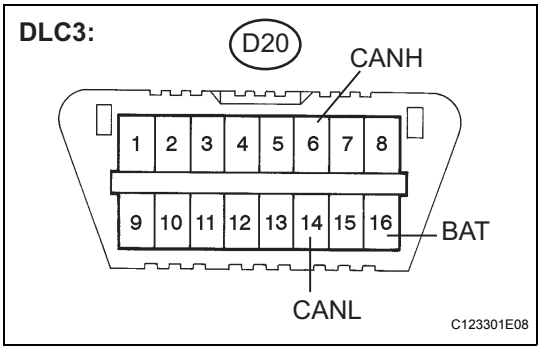


(a) Disconnect the distance control ECU sub bus line connector (A43) from the CAN J/C B side (w/o earth terminal).

NOTICE:

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

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

NG → **Go to step 14**

OK

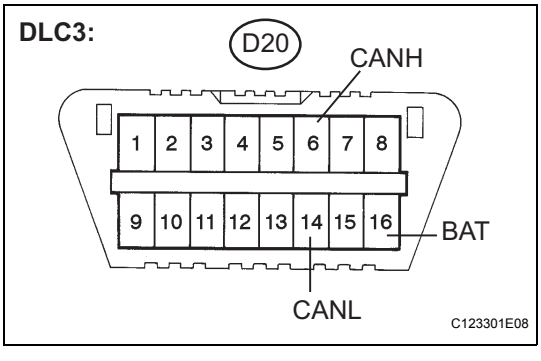
8 CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

NEXT

9 CHECK CAN BUS LINE (DISTANCE CONTROL ECU SUB BUS LINE)

DLC3:



(a) Disconnect the distance control ECU connector (A29).

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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

NG → **REPAIR OR REPLACE DISTANCE CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)**

CA

OK

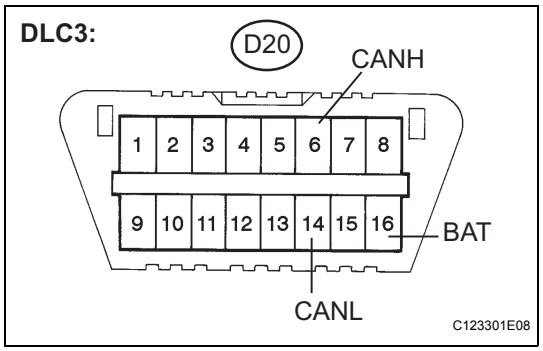
REPLACE DISTANCE CONTROL ECU

10	CONNECT CONNECTOR

(a) Reconnect the gateway ECU sub bus line connector (E28) to the CAN J/C B side (w/o earth terminal).

NEXT

11	CHECK CAN BUS LINE (GATEWAY ECU SUB BUS LINE)



(a) Disconnect the gateway ECU sub bus line connector (E23).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **REPLACE GATEWAY ECU**

NG

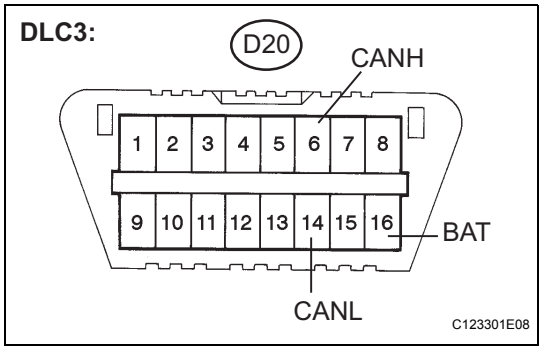
REPAIR OR REPLACE GATEWAY ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

12	CONNECT CONNECTOR

(a) Reconnect the ECM main bus line connector (D50) to the CAN J/C A side (w/ earth terminal).

NEXT

13	CHECK CAN BUS LINE (ECM MAIN BUS LINE)



(a) Disconnect the ECM connector (E41).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → REPLACE ECM

NG

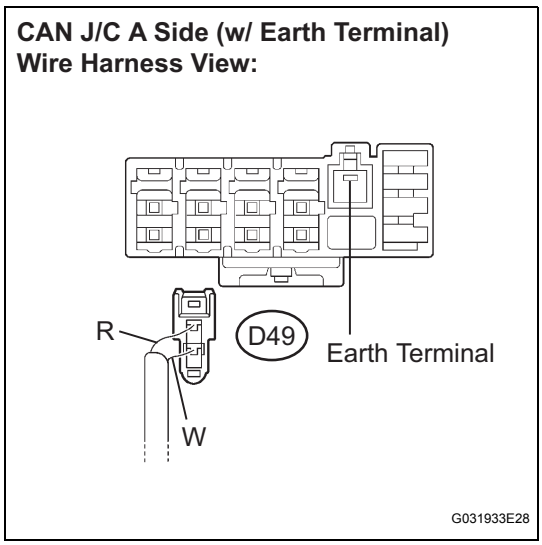
REPAIR OR REPLACE ECM MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)

14	CONNECT CONNECTOR

(a) Reconnect the distance control ECU sub bus line connector (A43) to the CAN J/C B side (w/o earth terminal).

NEXT

15	CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE)



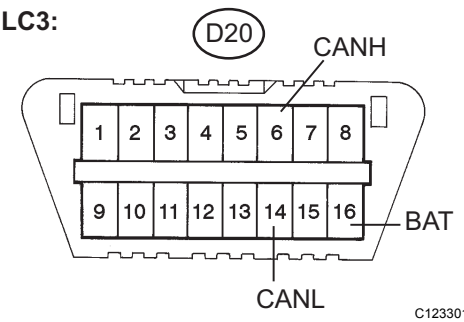
(a) Disconnect the yaw rate sensor sub bus line connector (D49) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

CA

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **Go to step 22**

NG

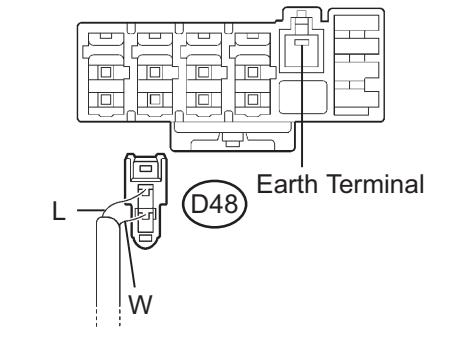
16 CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D49) to the CAN J/C A side (w/ earth terminal).

NEXT

17 CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)

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

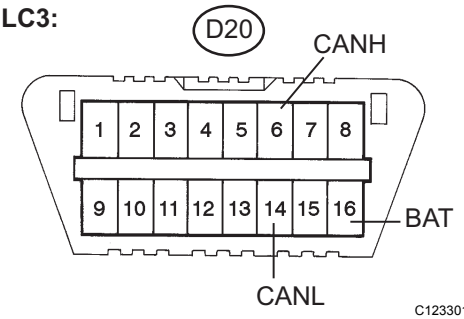


(a) Disconnect the steering sensor sub bus line connector (D48) from the CAN J/C A side (w/ earth terminal).

NOTICE:

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

DLC3:



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

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **Go to step 20**

NG

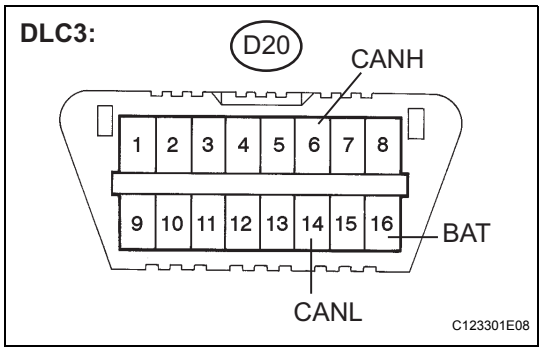
CA

18	CONNECT CONNECTOR

(a) Reconnect the steering sensor connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

19	CHECK CAN BUS LINE (SKID CONTROL ECU MAIN BUS LINE)



(a) Disconnect the skid control ECU connector (A34) or (A40).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → REPLACE SKID CONTROL ECU WITH ACTUATOR

NG

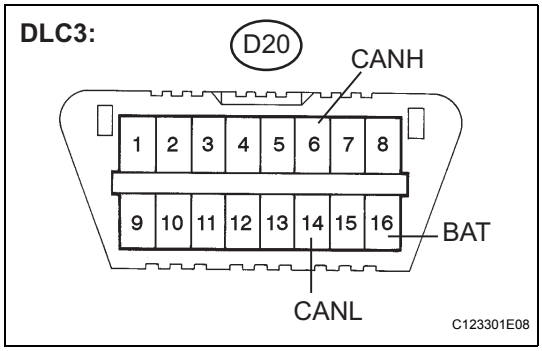
REPAIR OR REPLACE SKID CONTROL ECU MAIN BUS LINE OR CONNECTOR (CAN-H, CAN-L)

20	CONNECT CONNECTOR

(a) Reconnect the steering sensor sub bus line connector (D48) to the CAN J/C A side (w/ earth terminal).

NEXT

21	CHECK CAN BUS LINE (STEERING SENSOR SUB BUS LINE)



(a) Disconnect the steering sensor connector (D12).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → REPLACE STEERING SENSOR

CA

NG

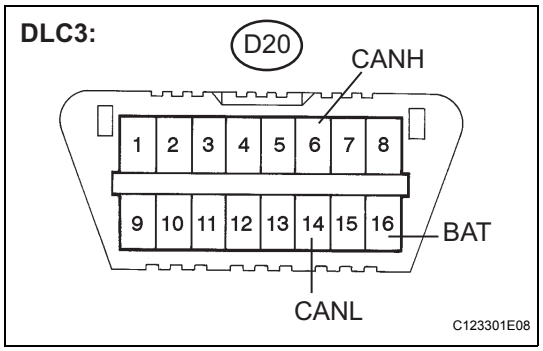
REPAIR OR REPLACE STEERING SENSOR SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

22	CONNECT CONNECTOR

(a) Reconnect the yaw rate sensor sub bus line connector (D49) to the CAN J/C A side (w/ earth terminal).

NEXT

23	CHECK CAN BUS LINE (YAW RATE SENSOR SUB BUS LINE)



(a) Disconnect the yaw rate sensor connector (D28).
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified value
D20-6 (CANH) - D20-16 (BAT)	Ignition switch off	1 MΩ or more
D20-14 (CANL) - D20-16 (BAT)	Ignition switch off	1 MΩ or more

OK → **REPLACE YAW RATE AND ACCELERATION SENSOR**

NG

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

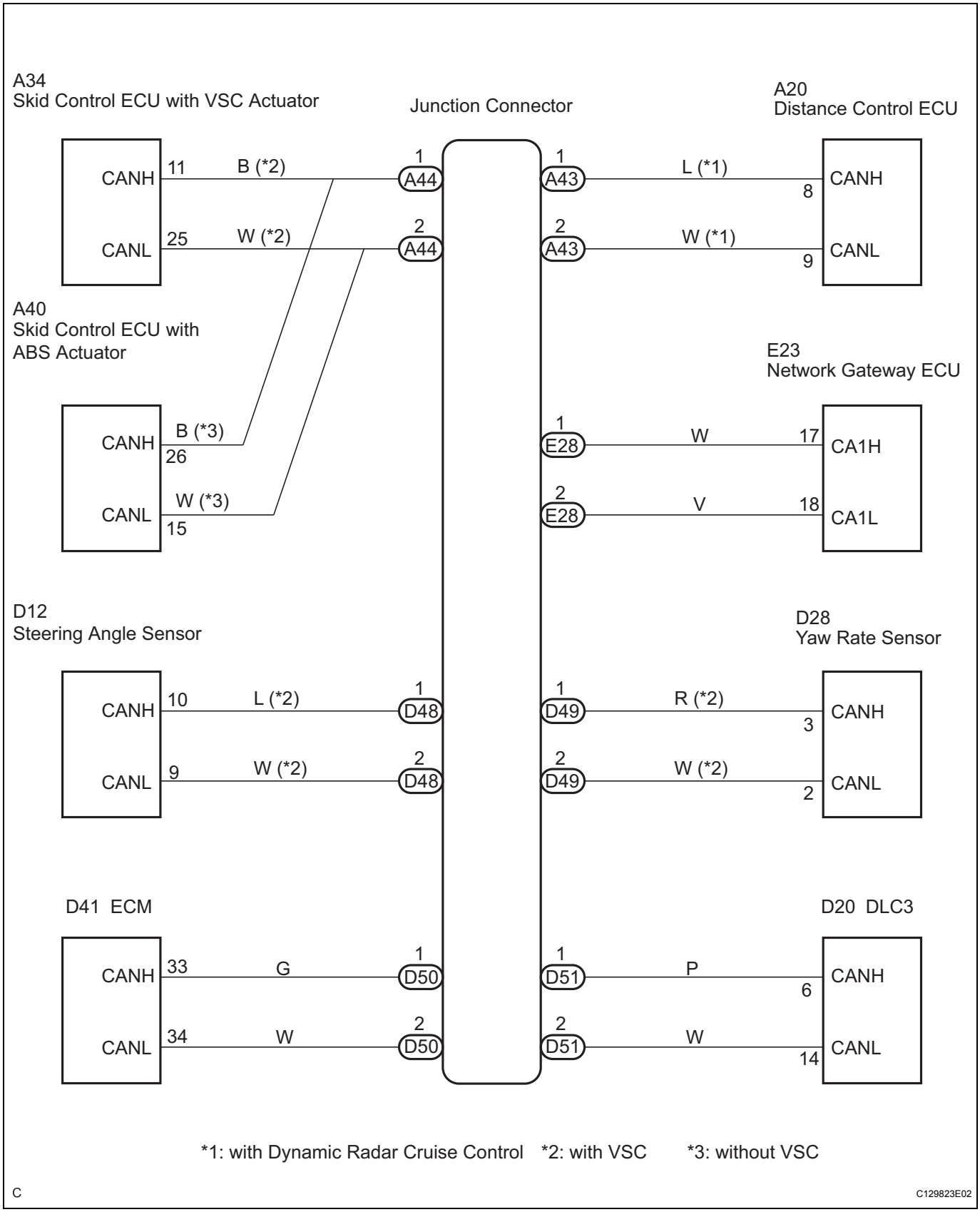
Open in One Side of CAN Sub Bus Line

DESCRIPTION

If 2 or more ECUs and / or sensors do not appear on the intelligent tester's "BUS CHECK" screen via the CAN VIM, one side of the CAN sub-bus line may be open. (One side of the CAN-H [sub-bus line] / CAN-L [sub-bus line] of the ECU and / or sensor is open.)

Symptom	Trouble Area
2 or more ECUs and / or sensors do not appear on the intelligent tester's "BUS CHECK" screen via the CAN VIM.	• One side of the CAN sub-bus line is open • Skid control ECU with VSC actuator • Skid control ECU with ABS actuator • Steering angle sensor • Yaw rate sensor • ECM • Distance control ECU • Network gateway ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

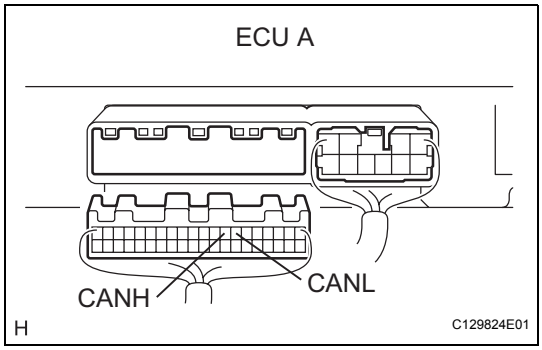
HINT:

- The following is the troubleshooting procedure of an open in either CANH or CANL of the ECU A.

CA

- Perform the following inspection for the ECUs (sensors) which are not displayed on the intelligent tester. If a malfunction cannot be identified, then perform the following inspections for the ECUs (sensors) connected to CAN communication.

1 CHECK CAN BUS LINE



(a) Disconnect the connector with terminals CANH and CANL of the ECU A.
(b) Select "CHECK the ECU connected to CAN BUS" on the intelligent tester.

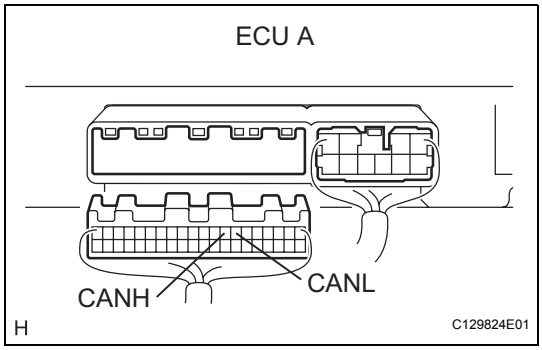
Standard

A	B
Only ECUs are not displayed on the intelligent tester.	Several ECUs and sensor are not displayed on the intelligent tester.

B → **CONNECT THE ECU A CONNECTOR TO THE ECU (SENSOR) AND INSPECT OTHER ECUS (SENSORS) TO MEET "STANDARD A"**

A

2 CHECK CAN BUS LINE



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

Resistance

ECUs (sensors)	Specified Condition
ECM	108 to 132 Ω
Skid control ECU	108 to 132 Ω
Other ECUs (sensor)	54 to 69 Ω

NG → **REPAIR OR REPLACE ECU A BUS LINE OR CONNECTOR**

OK

REPLACE ECU A