Last Modified: 3-10-2010	6.4 L	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WI506RX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. IGNITION SWITCH EXPRESSIONS

HINT:

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.

EXPRESSION	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition Switch off	LOCK	Off
Ignition Switch ON	ON	On (IG)
Ignition Switch ACC	ACC	On (ACC)
Engine Start	START	Start

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable after the SRS system.

(a) Be careful when replacing parts. Incorrect replacement could affect the performance of the steering system and result in hazardous driving.

3. STEERING SYSTEM HANDLING PRECAUTIONS

(a) Be careful when replacing parts. Incorrect replacement could affect the performance of the steering system and result in hazardous driving.

4. SRS AIRBAG SYSTEM HANDLING PRECAUTIONS

(a) This vehicle is equipped with an SRS (Supplemental Restraint System) which includes parts such as the driver 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 SRS INFO .

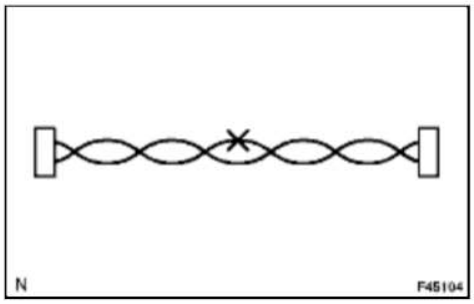
5. BUS WIRE REPAIR

(a) After repairing a bus wire with solder, wrap the repaired part with electrical tape.

NOTICE:

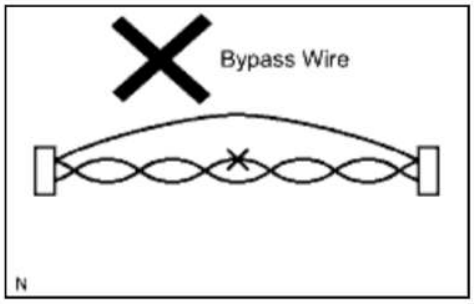
- The CANL bus wire and CANH bus wire must be installed together at all times.
- When installing, make sure that the wires are twisted.
- CAN bus wires are likely to be influenced by electrical

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noise if the bus wires are not twisted.

- The difference in length between the CANL bus wire and CANH bus wire should be 100 mm (3.937 in.) or less.
- Leave approximately 80 mm (3.150 in.) loose in the twisted wires around the connector.

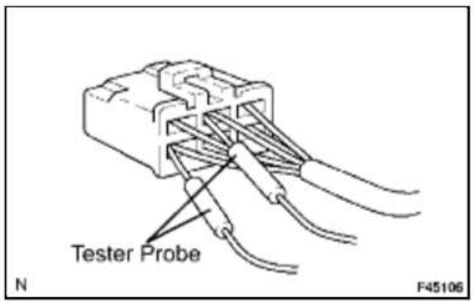


(b) Do not use bypass wiring between the connectors.

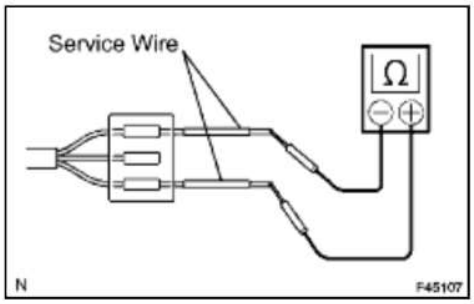
NOTICE:

The ability of the twisted bus wires to resist interference will be lost if bypass wire is used.

6. CONNECTOR HANDLING



(a) When checking resistance with a tester, insert the tester probes from the backside (harness side) of the connector.



(b) Use service wires to check the connector if it is impossible to check continuity from the rear of the connector.

7. PRECAUTIONS FOR INSPECTING OR REPLACING CAN JUNCTION CONNECTOR

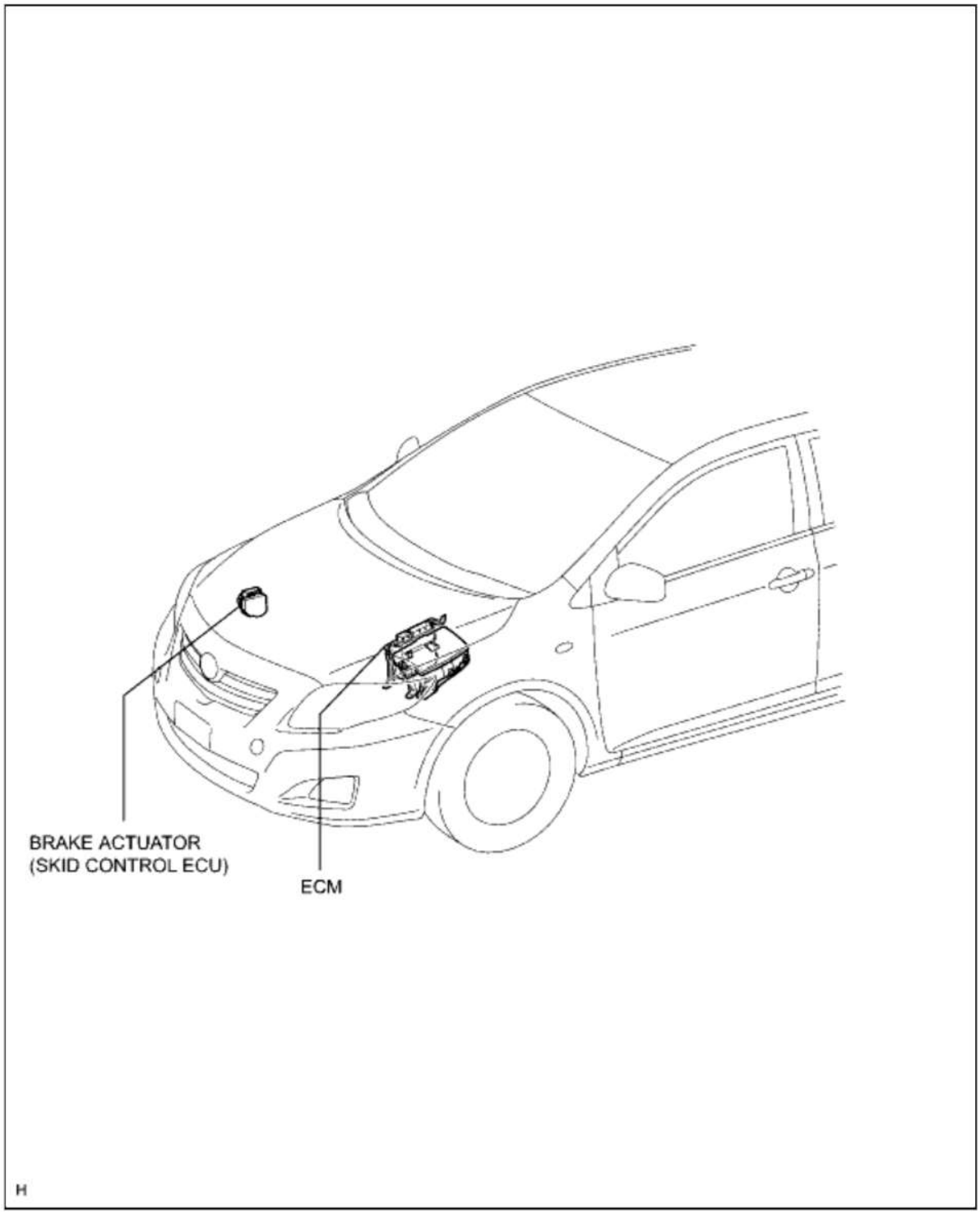
(a) If the CAN junction connector is removed from the vehicle for inspection or replacement, make sure to install the CAN junction connector and all wire harnesses to their original locations with tape and the clamps.

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Last Modified: 3-10-2010	6.4 R	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002DX4018X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: PARTS LOCATION (2010 Corolla)		

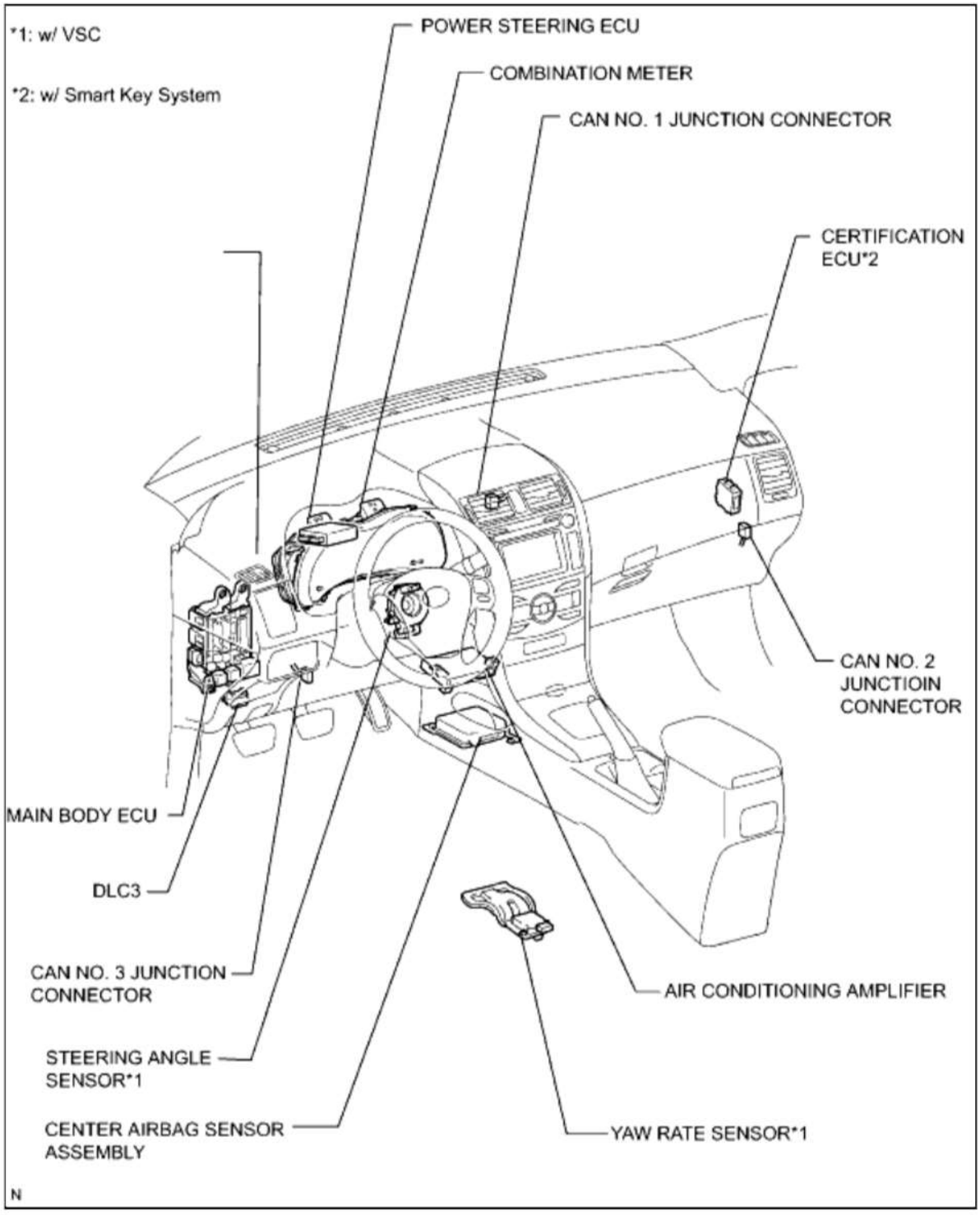
PARTS LOCATION

ILLUSTRATION



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ILLUSTRATION



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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XVK04QX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: TERMINALS OF ECU (2010 Corolla)		

TERMINALS OF ECU

NOTICE:

- Turn the ignition switch off before measuring the resistance of the CAN bus main wires and CAN bus branch wires.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN.

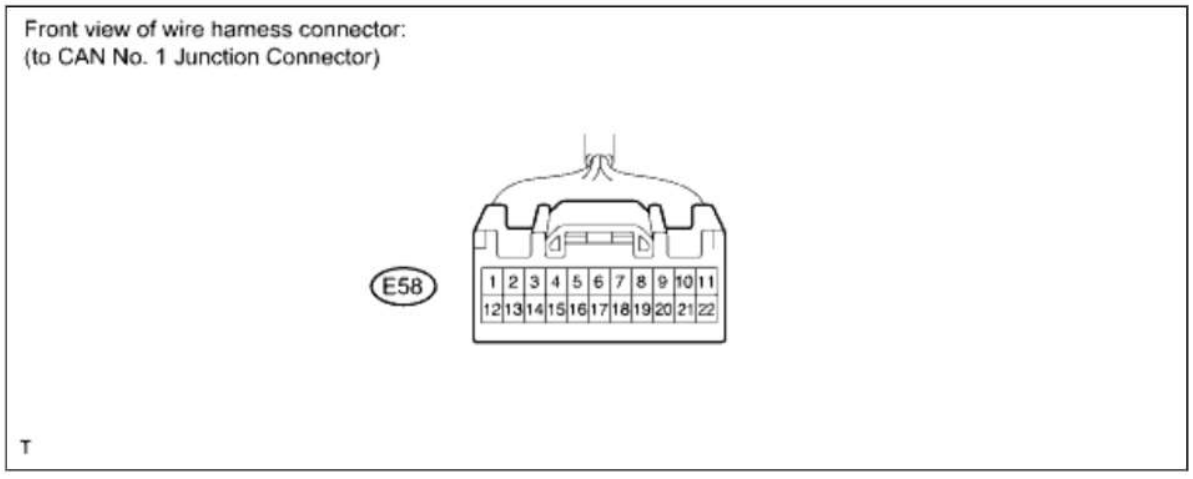
This communication will cause the resistance value to change.

NOTICE:

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

1. JUNCTION CONNECTOR FOR CAN NO. 1 BUS

(a) CAN No. 1 junction connector (TMC made)



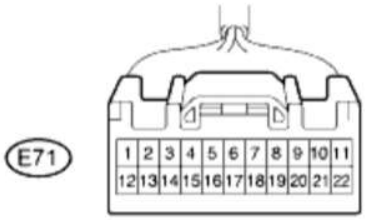
NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E58-2 (CANH)	G	Combination meter
E58-13 (CANL)	W	Combination meter
E58-3 (CANH)	SB	Power steering ECU
E58-14 (CANL)	W	Power steering ECU

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NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E58-4 (CANH)	V	Air conditioning amplifier
E58-15 (CANL)	W	Air conditioning amplifier
E58-5 (CANH)	BR	Steering angle sensor
E58-16 (CANL)	W	Steering angle sensor
E58-6 (CANH)	L	Yaw rate sensor
E58-17 (CANL)	W	Yaw rate sensor
E58-7 (CANH)	LG	DLC3
E58-18 (CANL)	W	DLC3
E58-8 (CANH)	R	Main body ECU
E58-19 (CANL)	W	Main body ECU
E58-9 (CANH)	Y	Center airbag sensor assembly
E58-20 (CANL)	W	Center airbag sensor assembly
E58-10 (CANH)	B	CAN No. 2 junction connector
E58-21 (CANL)	W	CAN No. 2 junction connector
E58-11 (CANH)	GR	Accessory gateway
E58-22 (CANL)	W	Accessory gateway

(b) CAN No. 1 junction connector (Except TMC made)

Front view of wire harness connector:
(to CAN No. 1 Junction Connector)



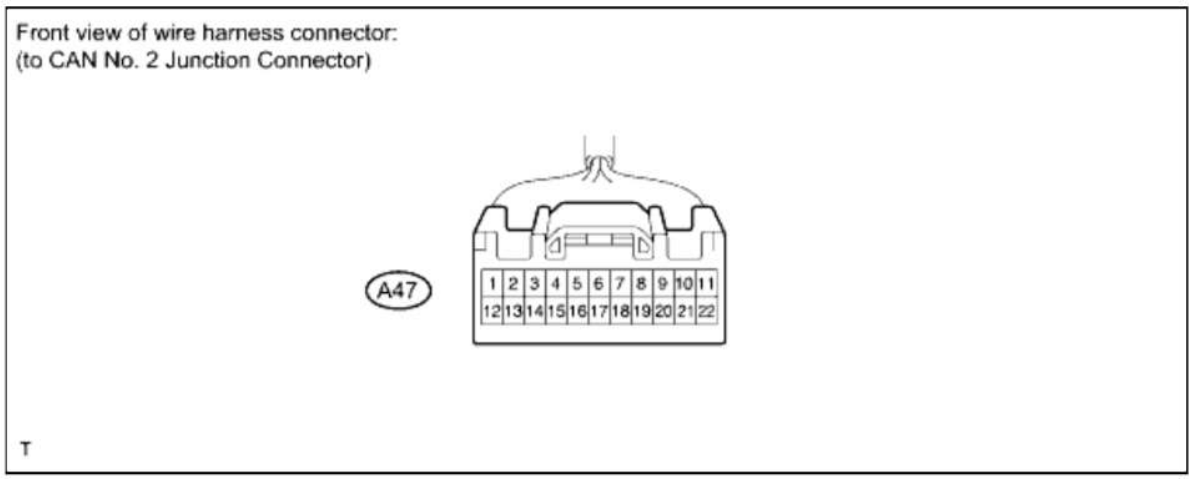
T

NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E7-1 (CANH)	R	Main body ECU
E71-12 (CANL)	W	Main body ECU
E71-2 (CANH)	LG	DLC3

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NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E71-13 (CANL)	W	DLC3
E71-3 (CANH)	SB	Power steering ECU
E71-14 (CANL)	W	Power steering ECU
E71-4 (CANH)	G	Combination meter
E71-15 (CANL)	W	Combination meter
E71-5 (CANH)	Y	Center airbag sensor assembly
E71-16 (CANL)	W	Center airbag sensor assembly
E71-6 (CANH)	B	CAN No. 2 junction connector
E71-17 (CANL)	W	CAN No. 2 junction connector
E71-7 (CANH)	V	Air conditioning amplifier
E71-18 (CANL)	W	Air conditioning amplifier
E71-8 (CANH)	BR	Steering angle sensor
E71-19 (CANL)	W	Steering angle sensor
E71-9 (CANH)	L	Yaw rate sensor
E71-20 (CANL)	W	Yaw rate sensor
E71-11 (CANH)	GR	Accessory gateway
E71-22 (CANL)	W	Accessory gateway

(c) CAN No. 2 junction connector



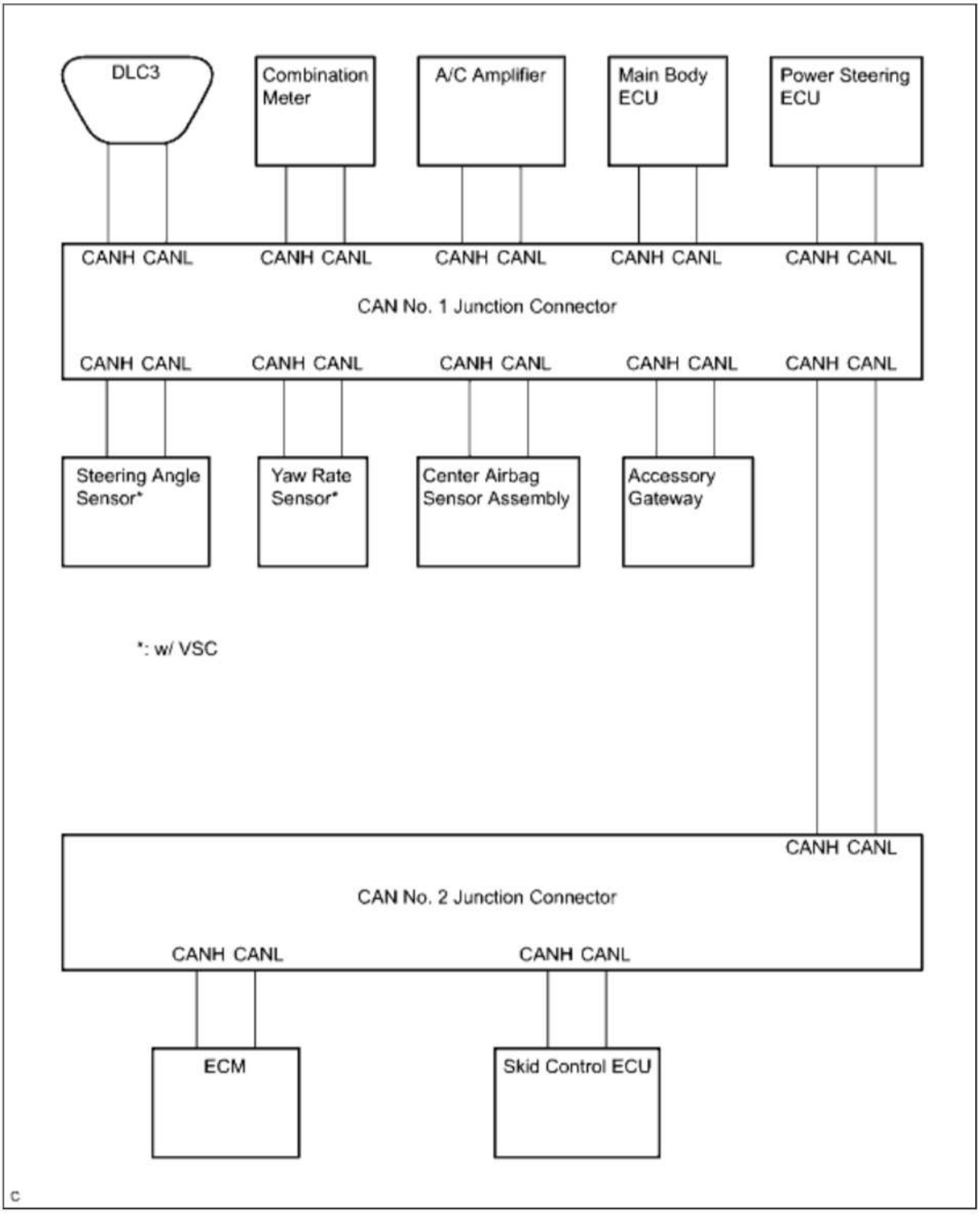
NO. 2 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
A47-8 (CANH)	R	Skid control ECU
A47-19 (CANL)	W	Skid control ECU

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NO. 2 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
A47-9 (CANH)	B	CAN No. 1 junction connector
A47-20 (CANL)	W	CAN No. 1 junction connector
A47-10 (CANH)	Y	ECM
A47-21 (CANL)	W	ECM

(d) The connection diagram of the components which are connected to the CAN junction connector

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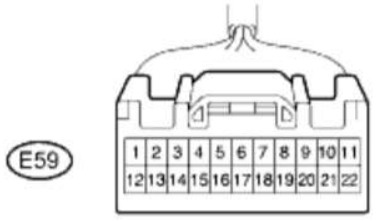


2. JUNCTION CONNECTOR FOR CAN MS BUS

(a) CAN No. 3 junction connector

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Front view of wire harness connector:
(to CAN No.3 Junction Connector)

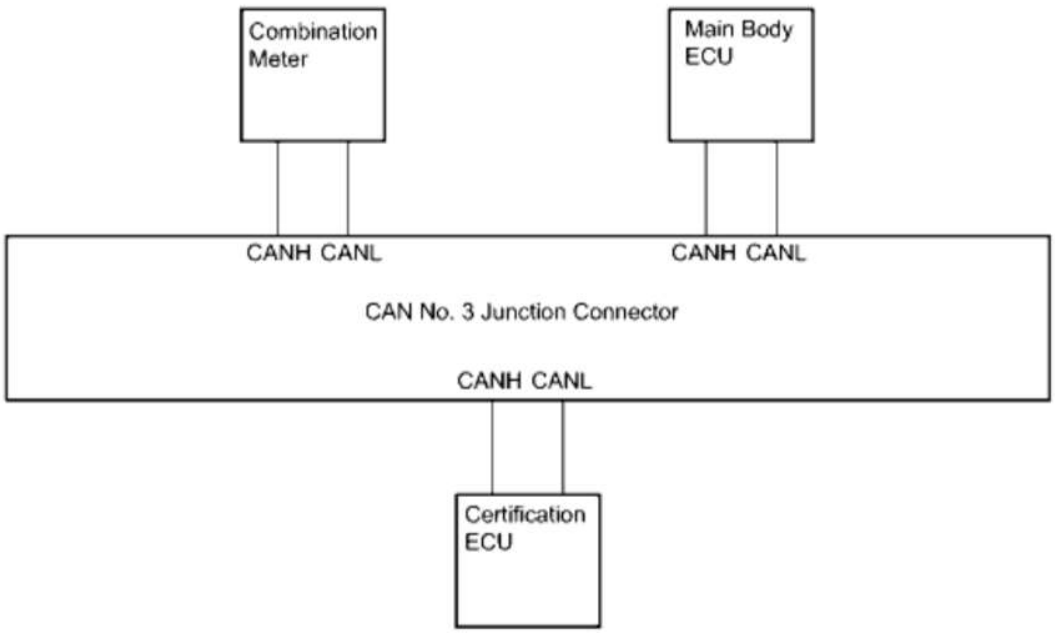


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NO. 3 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E59-7 (CANH)	SB	Certification ECU
E59-18 (CANL)	W	Certification ECU
E59-8 (CANH)	G	Combination meter
E59-19 (CANL)	W	Combination meter
E59-9 (CANH)	R	Main body ECU
E59-20 (CANL)	W	Main body ECU

(b) The connection diagram of the components which are connected to the CAN junction connector.

w/ Smart Key System:

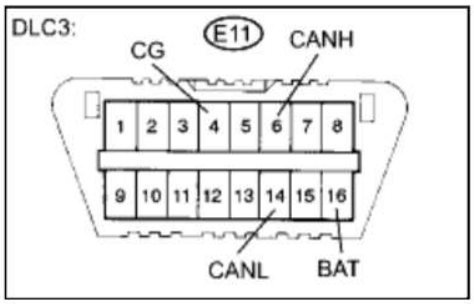


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3. DLC3

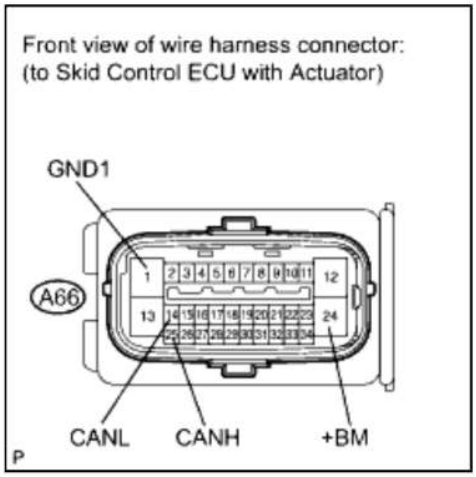
(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	LG - W	Ignition switch off	54 to 69 Ω
E11-6 (CANH) - E11-4 (CG)	LG - W-B	Ignition switch off	200 Ω or higher
E11-14 (CANL) - E11-4 (CG)	W - W-B	Ignition switch off	200 Ω or higher
E11-6 (CANH) - E11-16 (BAT)	LG - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E11-14 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

4. SKID CONTROL ECU WITH ACTUATOR (w/o VSC)



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

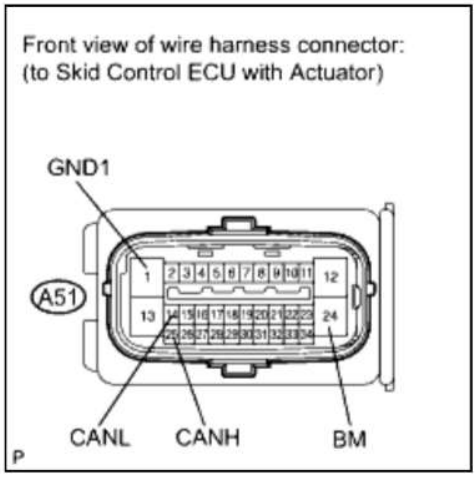
(b) Measure the resistance according to the value(s) in the table below.

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Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
A66-25 (CANH) - A66-14 (CANL)	R - W	Ignition switch off	54 to 69 Ω
A66-25 (CANH) - A66-1 (GND1)	R - W-B	Ignition switch off	200 Ω or higher
A66-14 (CANL) - A66-1 (GND1)	W - W-B	Ignition switch off	200 Ω or higher
A66-25 (CANH) - A66-24 (+BM)	R - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A66-14 (CANL) - A66-24 (+BM)	W - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

5. SKID CONTROL ECU WITH ACTUATOR (w/ VSC)



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

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

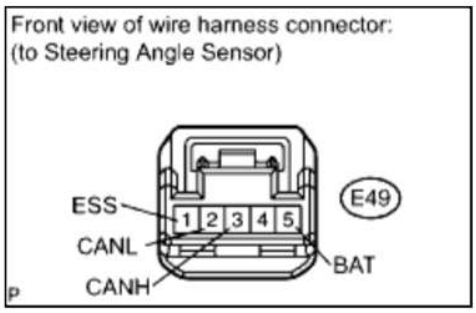
Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
A51-25 (CANH) - A51-14 (CANL)	R - W	Ignition switch off	54 to 69 Ω
A51-25 (CANH) - A51-1 (GND1)	R - W-B	Ignition switch off	200 Ω or higher
A51-14 (CANL) - A51-1 (GND1)	W - W-B	Ignition switch off	200 Ω or higher

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TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
A51-25 (CANH) - A51-24 (BM)	R - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A51-14 (CANL) - A51-24 (BM)	W - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

6. STEERING ANGLE SENSOR



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

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

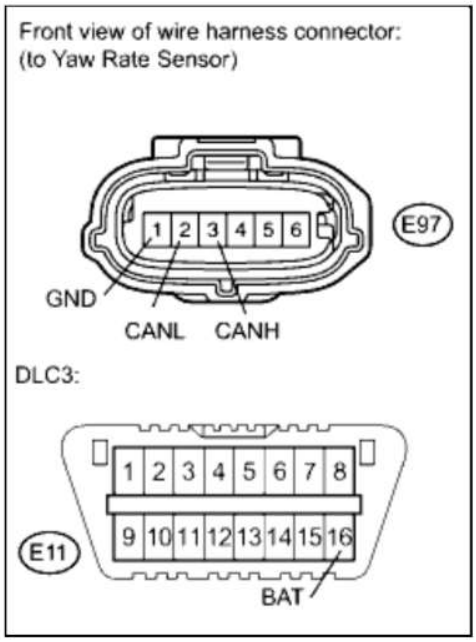
Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E49-3 (CANH) - E49-2 (CANL)	BR - W	Ignition switch off	54 to 69 Ω
E49-3 (CANH) - E49-1 (ESS)	BR - BR	Ignition switch off	200 Ω or higher
E49-2 (CANL) - E49-1 (ESS)	W - BR	Ignition switch off	200 Ω or higher
E49-3 (CANH) - E49-5 (BAT)	BR - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E49-2 (CANL) - E49-5 (BAT)	W - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

7. YAW RATE SENSOR

(a) Disconnect the connector from the yaw rate sensor.

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

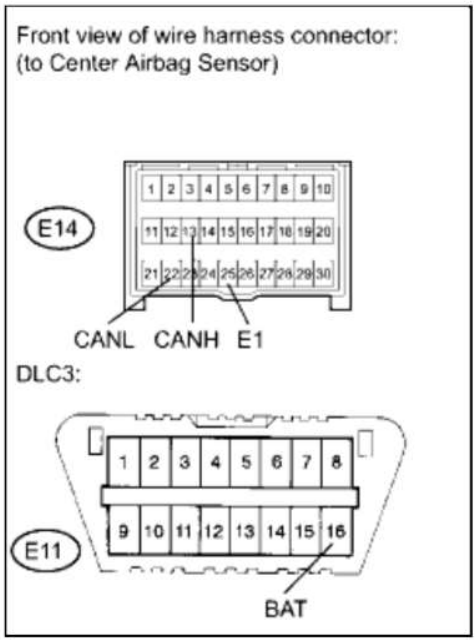
Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E97-3 (CANH) - E97-2 (CANL)	L - W	Ignition switch off	54 to 69 Ω
E97-3 (CANH) - E97-1 (GND)	L - BR	Ignition switch off	200 Ω or higher
E97-2 (CANL) - E97-1 (GND)	W - BR	Ignition switch off	200 Ω or higher
E97-3 (CANH) - E11-16 (BAT)	L - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E97-2 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

8. CENTER AIRBAG SENSOR

(a) Disconnect the connector from the center airbag sensor.

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

Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E14-13 (CANH) - E14-22 (CANL)	Y - W	Ignition switch off	54 to 69 Ω
E14-13 (CANH) - E14-25 (E1)	Y - W-B	Ignition switch off	200 Ω or higher
E14-22 (CANL) - E14-25 (E1)	W - W-B	Ignition switch off	200 Ω or higher
E14-13 (CANH) - E11-16 (BAT)	Y - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E14-22 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

9. ECM

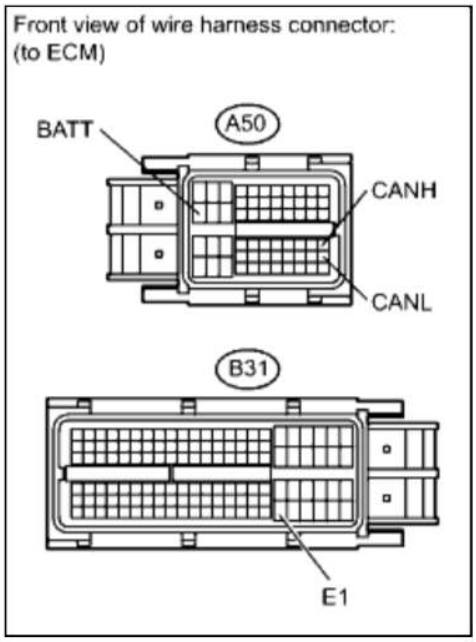
(a) Disconnect the connector from the ECM.

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

Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION

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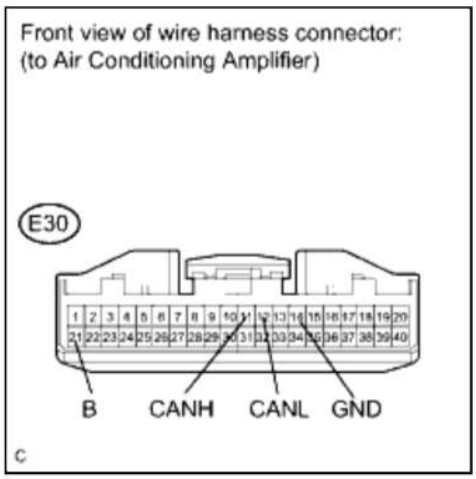
A50-41 (CANH) - A50-49 (CANL)	Y - W	Ignition switch off	108 to 132 Ω
A50-41 (CANH) - B31-104 (E1)	Y - BR	Ignition switch off	200 Ω or higher
A50-49 (CANL) - B31-104 (E1)	W - BR	Ignition switch off	200 Ω or higher
A50-41 (CANH) - A50-20 (BATT)	Y - P	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A50-49 (CANL) - A50-20 (BATT)	W - P	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

10. AIR CONDITIONING AMPLIFIER (for Automatic Air Conditioning System)

(a) Disconnect the amplifier connector.

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

Standard Resistance:



TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E30-11 (CANH) - E30-12 (CANL)	V - W	Ignition switch off	54 to 69 Ω
E30-11 (CANH) - E30-14 (GND)	V - BR	Ignition switch off	200 Ω or higher
E30-12 (CANL) - E30-14 (GND)	W - BR	Ignition switch off	200 Ω or higher

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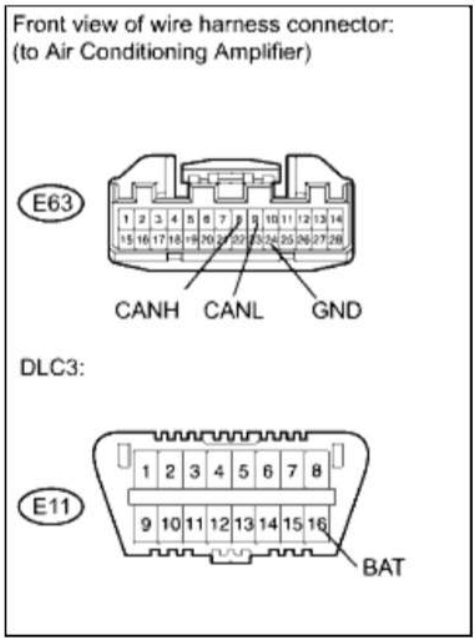
E30-11 (CANH) - E30-21 (B)	V - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E30-12 (CANL) - E30-21 (B)	W - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

11. AIR CONDITIONING AMPLIFIER (for Manual Air Conditioning System)

(a) Disconnect the amplifier connector.

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

Standard Resistance:

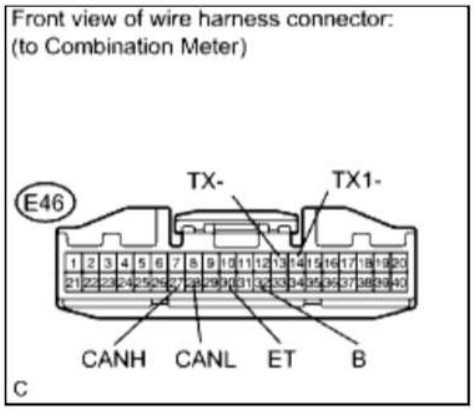


TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E63-8 (CANH) - E63-9 (CANL)	V - W	Ignition switch off	54 to 69 Ω
E63-8 (CANH) - E63-24 (GND)	V - BR	Ignition switch off	200 Ω or higher
E63-9 (CANL) - E63-24 (GND)	W - BR	Ignition switch off	200 Ω or higher
E63-8 (CANH) - E11-16 (BAT)	V - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E63-9 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

12. COMBINATION METER

(a) Disconnect the connector from the combination meter.

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

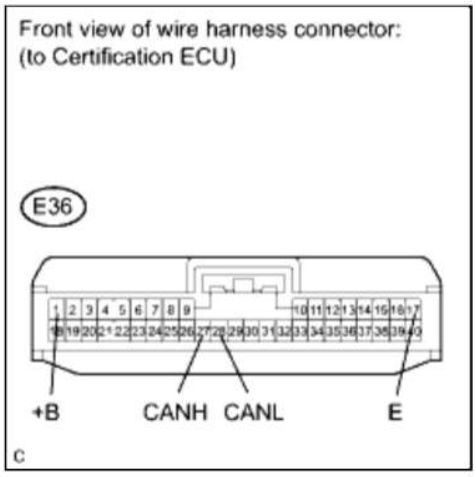
Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E46-27 (CANH) - E46-28 (CANL)	G - W	Ignition switch off	108 to 132 Ω
E46-27 (CANH) - E46-30 (ET)	G - BR	Ignition switch off	200 Ω or higher
E46-28 (CANL) - E46-30 (ET)	W - BR	Ignition switch off	200 Ω or higher
E46-27 (CANH) - E46-32 (B)	G - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E46-28 (CANL) - E46-32 (B)	W - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E46-13 (TX-) - E46-14 (TX1-)	W - G	Ignition switch off	108 to 132 Ω
E46-13 (TX-) - E46-30 (ET)	G - BR	Ignition switch off	200 Ω or higher
E46-14 (TX1-) - E46-30 (ET)	W - BR	Ignition switch off	200 Ω or higher
E46-13 (TX-) - E46-32 (B)	G - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E46-14 (TX1-) - E46-32 (B)	W - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

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13. CERTIFICATION ECU

(a) Disconnect the connector from the certification ECU.



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

Standard Resistance:

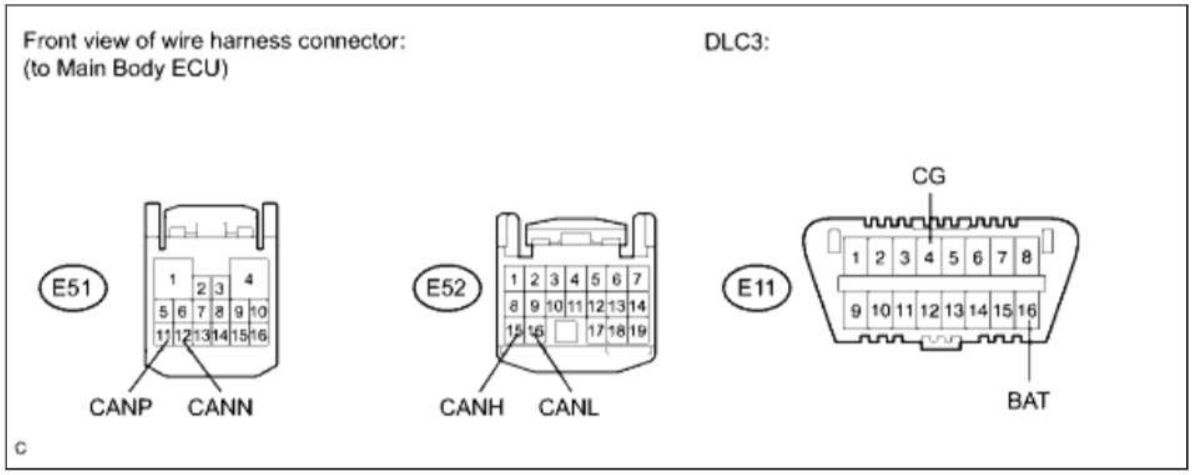
TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E36-27 (CANH) - E36-28 (CANL)	SB - W	Ignition switch off	54 to 69 Ω
E36-27 (CANH) - E36-17 (E)	SB - W-B	Ignition switch off	200 Ω or higher
E36-28 (CANL) - E36-17 (E)	W - W-B	Ignition switch off	200 Ω or higher
E36-27 (CANH) - E36-1 (+B)	SB - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E36-28 (CANL) - E36-1 (+B)	W - W	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

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14. MAIN BODY ECU (w/ Smart Key System or Automatic Light Control System)

(a) Disconnect the connector from the main body ECU.

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



Standard Resistance:

TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E52-15 (CANH) - E52-16 (CANL)	R - W	Ignition switch off	54 to 69 Ω
E52-15 (CANH) - E11-4 (CG)	R - W-B	Ignition switch off	200 Ω or higher
E52-16 (CANL) - E11-4 (CG)	W - W-B	Ignition switch off	200 Ω or higher
E52-15 (CANH) - E11-16 (BAT)	R - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E52-16 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E51-11 (CANP) - E51-12 (CANN)	R - W	Ignition switch off	108 to 132 Ω
E51-11 (CANP) - E11-4 (CG)	R - W-B	Ignition switch off	200 Ω or higher
E51-12 (CANN) - E11-4 (CG)	W - W-B	Ignition switch off	200 Ω or higher
E51-11 (CANP) - E11-16 (BAT)	R - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E51-12 (CANN) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

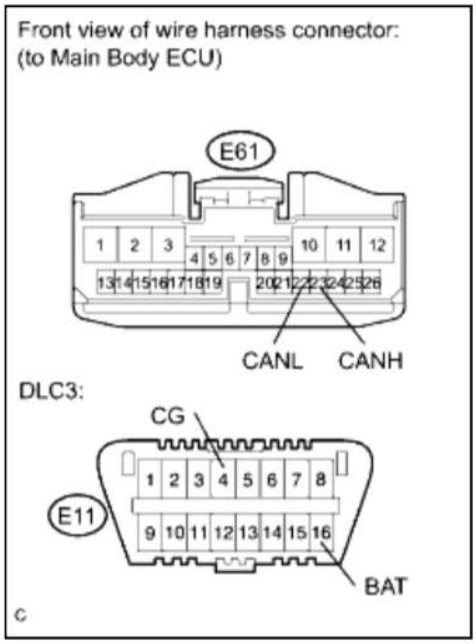
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15. MAIN BODY ECU (w/o Smart Key System, Automatic Light Control System)

(a) Disconnect the connector from the main body ECU.

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

Standard Resistance:

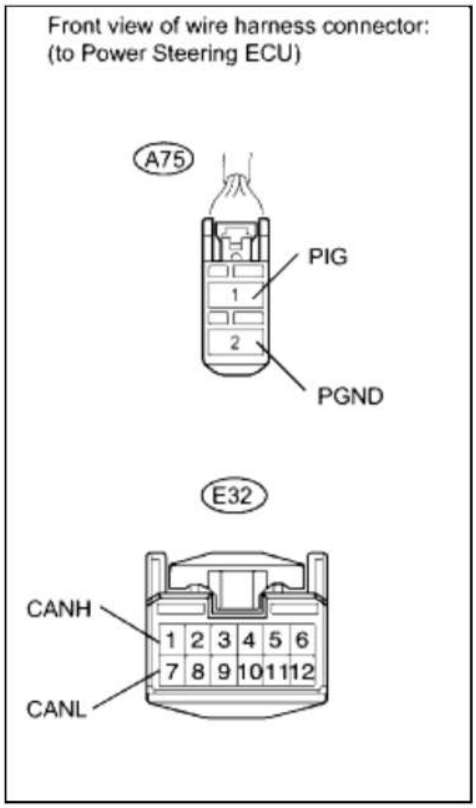


TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E61-23 (CANH) - E61-22 (CANL)	R - W	Ignition switch off	54 to 69 Ω
E61-23 (CANH) - E11-4 (CG)	R - W-B	Ignition switch off	200 Ω or higher
E61-22 (CANL) - E11-4 (CG)	W - W-B	Ignition switch off	200 Ω or higher
E61-23 (CANH) - E11-16 (BAT)	R - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E61-22 (CANL) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

16. POWER STEERING ECU

(a) Disconnect the power steering ECU connectors.

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

Standard Resistance:

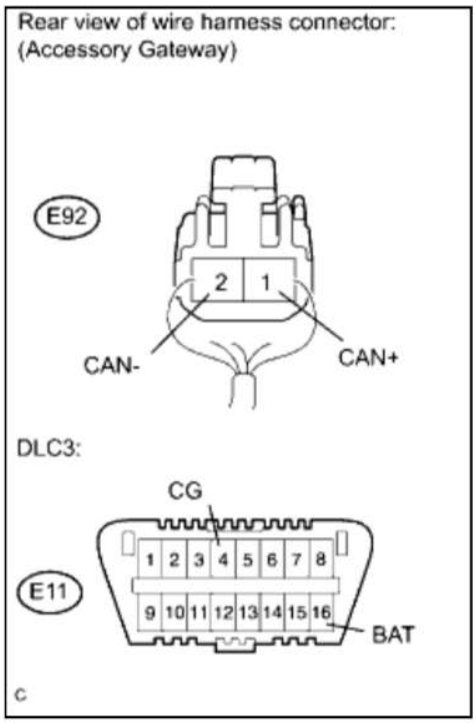
TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E32-1 (CANH) - E32-7 (CANL)	SB - W	Ignition switch off	54 to 69 Ω
E32-1 (CANH) - A75-2 (PGND)	SB - W-B	Ignition switch off	200 Ω or higher
E32-7 (CANL) - A75-2 (PGND)	W - W-B	Ignition switch off	200 Ω or higher
E32-1 (CANH) - A75-1 (PIG)	SB - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E32-7 (CANL) - A75-1 (PIG)	W - L	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

17. ACCESSORY GATEWAY

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

Standard Resistance:

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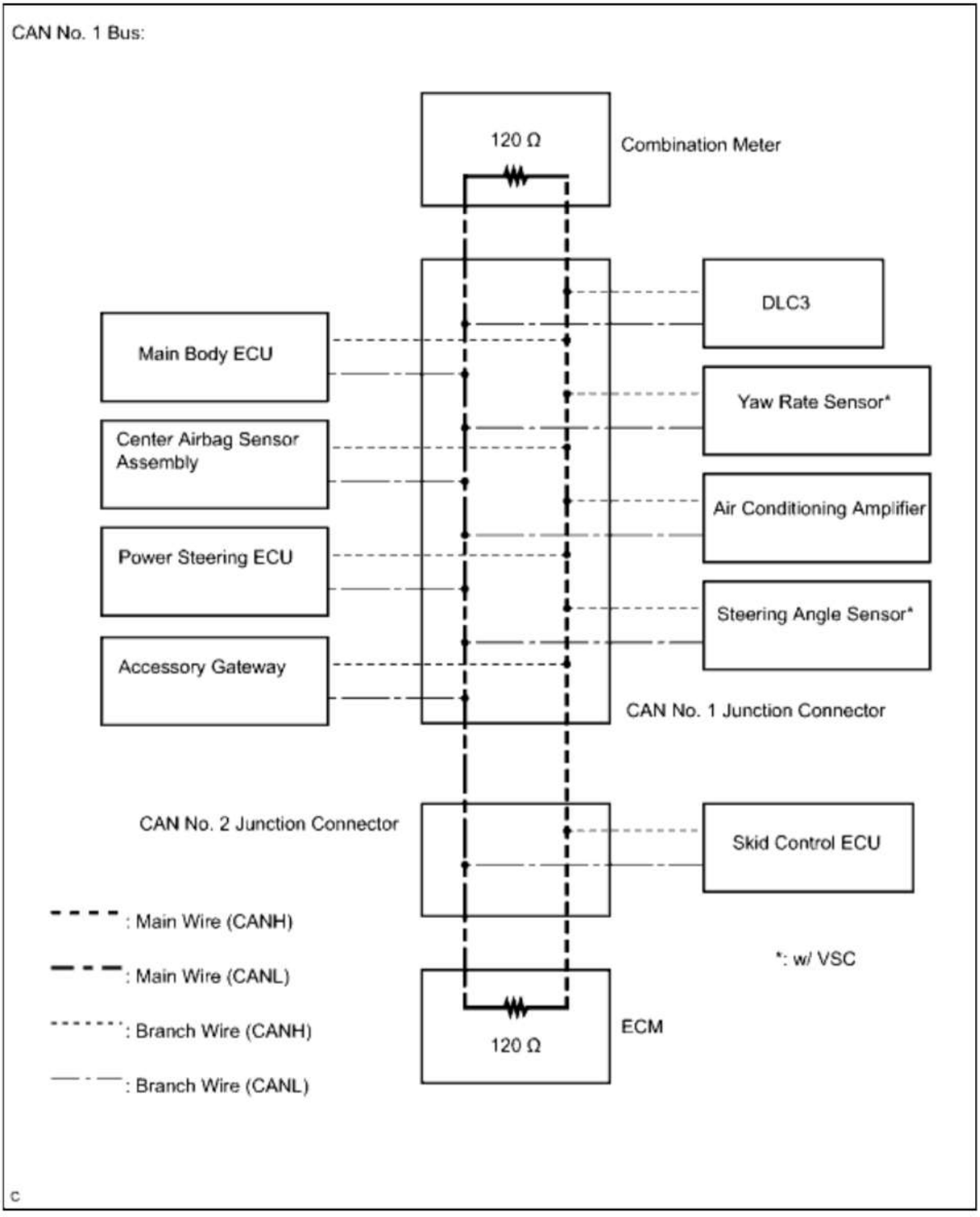


TERMINAL NO. (SYMBOL)	WIRING COLOR	CONDITION	SPECIFIED CONDITION
E92-1 (CAN+) - E92-2 (CAN-)	GR - W	Ignition switch off	54 to 69 Ω
E92-1 (CAN+) - E11-4 (CG)	R - W-B	Ignition switch off	200 Ω or higher
E92-2 (CAN-) - E11-4 (CG)	W - W-B	Ignition switch off	200 Ω or higher
E92-1 (CAN+) - E11-16 (BAT)	R - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E92-2 (CAN-) - E11-16 (BAT)	W - G	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

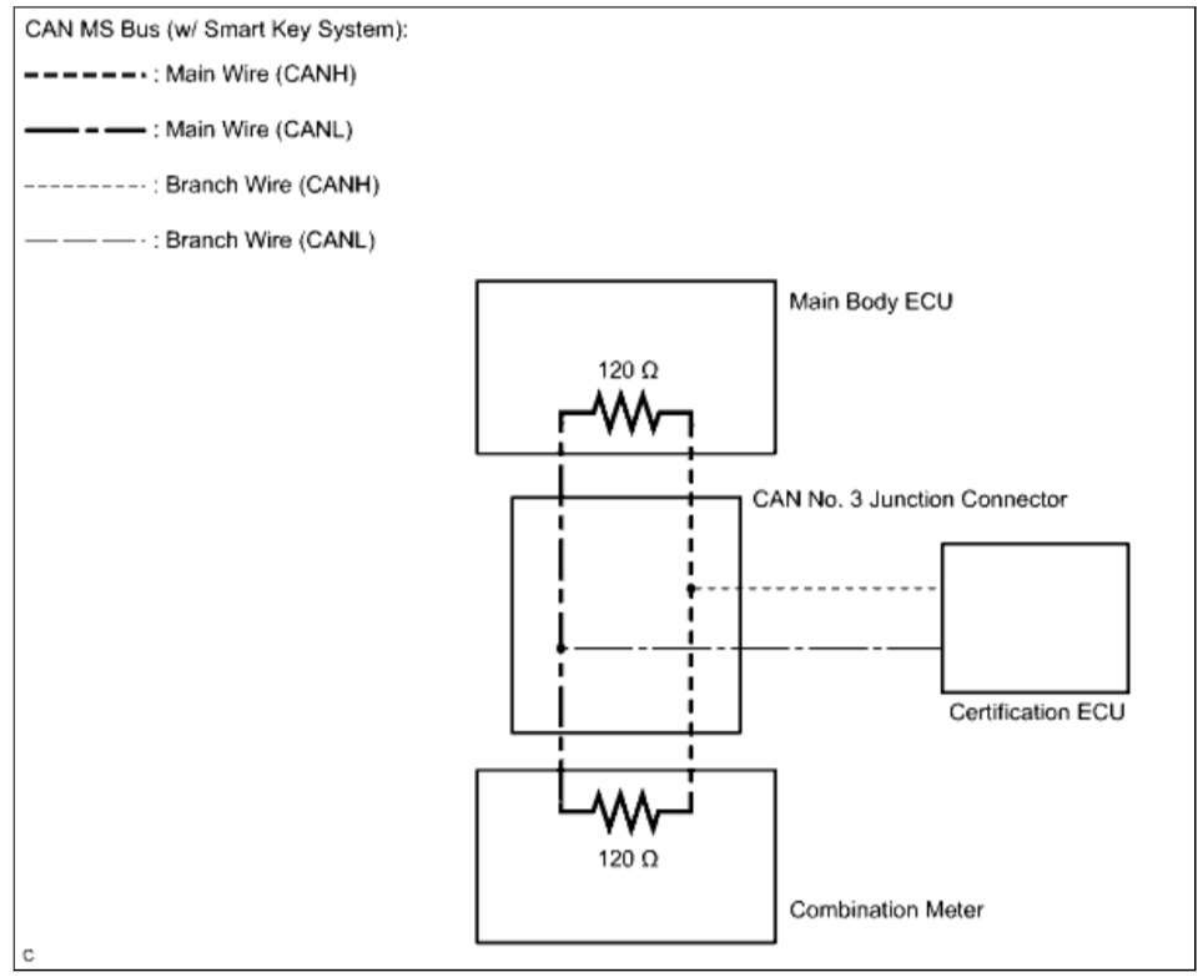
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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002DX501EX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: SYSTEM DIAGRAM (2010 Corolla)		

SYSTEM DIAGRAM



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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WI6053X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 Corolla)		

HOW TO PROCEED WITH TROUBLESHOOTING

NOTICE:

- DTCs for the CAN communication system are as follows: U0073, U0100*1, U0123*1, U0124*1, U0126*1, U0129, U0327*2, U1002*2 and B1499.

  *1: w/ VSC

  *2: w/ Smart key system
- Refer to troubleshooting of each system if DTCs regarding the CAN communication system are not output.

1.	**CHECK AND CLEAR DTCS**

HINT:

- CAN communication DTCs are output when there is an open or short in any of the communication wires. Any problems with the power source of a corresponding ECU or sensor, or problem in the ECU or the sensor itself also cause these DTCs to be output.
- If a CAN communication wire connector is disconnected with the ignition switch ON, the ECUs of the corresponding system and related systems record a DTC.

NEXT

2.	**CHECK CAN NO. 1 BUS WIRE**

(a) Check the CAN bus wire INFO.

HINT:

If the area where an open or short is occurring in a CAN bus wire can be determined, refer to Problem Symptoms Table INFO.

NEXT

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3.	CHECK TECHSTREAM

(a) Using the Techstream, display the "CAN Bus Check" screen INFO.

(b) Observe the screen for approximately 1 minute to check the ECUs and sensors displayed on the screen.

Result:

RESULT	PROCEED TO
All ECUs and sensors connected to the CAN communication system are displayed on the screen. (CAN bus circuit is currently normal.)	A
One of the ECUs and sensors connected to the CAN communication system is not displayed on the screen. (Open in ECU or sensor branch wires, or communication interrupted)	B*1
Some ECUs and sensors repeatedly appear and disappear from the screen, during this check. (Open in one side of ECU or sensor branch wires)	C
• All ECUs and sensors except the main body ECU connected to the CAN MS bus are not displayed on the screen. • The main body ECU outputs DTC U1002. (Open in CAN MS bus main wire or short in CAN MS bus wire)	D
All ECUs and sensors connected to the CAN MS bus are not displayed on the screen. (Open in main body ECU branch wire or main body ECU malfunction)	E

NOTICE:

- The systems (ECUs, sensors) that adopt CAN communication vary depending on the vehicle and optional equipment. Check which systems (ECUs, sensors) are installed on the vehicle INFO.
- Non-installed ECUs or sensors will not be displayed. Do not mistake them for being in the communication stop mode.
- The ECUs and sensors that repeatedly appear and disappear from the screen during this check are considered normal. (The response to the Techstream and the tester display are affected by signals output from other ECUs which have an open circuit in either of their CAN branch wires.)

HINT:

- *1: See DTC Chart instead of Communication Stop Mode Table when some of the ECUs connected to the CAN MS bus are not displayed on the screen INFO.

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- The ECUs connected to the CAN MS bus are displayed on the screen by the main body ECU.

B ▶ **GO TO COMMUNICATION STOP MODE TABLE**

C ▶ **GO TO OPEN IN ONE SIDE OF CAN BRANCH WIRE**

D ▶ **GO TO U1002 (CAN MS BUS)**

E ▶ **GO TO MAIN BODY ECU COMMUNICATION STOP MODE**

A ▼

4.	**RECHECK DTC**

HINT:

- Sometimes CAN communication system DTCs are output, but all the ECUs and sensors connected to the CAN communication system are displayed on the Techstream. In this case, previous or history DTCs may indicate the cause of the problem.
- ECUs related to a problem in the CAN No. 1 bus will store DTCs to indicate communication malfunctions. The communication stop mode in the CAN No. 1 bus can be determined by comparing the combination of DTCs that has been set. Refer to the DTC combination table for the CAN No. 1 bus.
- The main body ECU will store communication error DTCs when the ECUs connected to the CAN MS bus cannot communicate, or if a network malfunction occurs.

Result:

RESULT	PROCEED TO
Communication error DTCs other than the codes output from the main body ECU are output. (A malfunction occurred in the CAN No. 1 bus.)	A
The main body ECU outputs CAN MS bus DTC U1002. (A malfunction occurred in the CAN MS bus.)	B
The main body ECU outputs CAN MS bus DTC U0327. (A malfunction occurred in an ECU branch wire connected to the CAN MS bus.)	C

B ▶ **GO TO "U1002 (CAN MS BUS)"**

C ▶ **GO TO "U0327"**

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A

5.	DTC COMBINATION TABLE

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

HINT:

Previous CAN communication system DTCs may be caused if CAN communication system DTCs are output and all ECUs and sensors connected to the CAN communication system are displayed on the Techstream's "CAN Bus Check" screen.

NEXT

6.	CIRCUIT INSPECTION

NEXT

7.	IDENTIFICATION OF PROBLEM

NEXT

8.	REPAIR OR REPLACE

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NEXT

9.	CONFIRMATION TEST

NEXT END

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YDW05BX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: SYSTEM DESCRIPTION (2010 Corolla)		

SYSTEM DESCRIPTION

1. BRIEF DESCRIPTION

(a) The CAN (Control 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 and the ability to detect malfunctions.

(b) By pairing the CANH and CANL bus wires, 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 wire.

2. DEFINITION OF TERMS

(a) Main bus wire

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

(b) Branch wire

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

(c) Terminating resistors

(1) Two resistors of 120 Ω are installed in parallel across the ends of the CAN main bus wire. They are called terminating resistors. These resistors allow the changes of the voltage differential between the CAN bus wires to be accurately judged. To allow proper function of CAN communication, it is necessary to have both terminating resistors installed. Since the two resistors are installed in parallel, a measurement of resistance between the two CAN bus wires should produce a reading of approximately 60 Ω.

3. CIRCUIT DESCRIPTION

(a) For vehicles with the smart key system: The CAN communication system consists of the CAN No. 1 bus and MS bus, which are connected to each system through the main body ECU.

(b) The CAN No. 1 bus and MS bus each have terminus circuits with 120 Ω x 2 of resistance. High speed communication at 500 kbps and 250 kbps is possible.

4. ECUS OR SENSORS WHICH COMMUNICATE THROUGH CAN COMMUNICATION SYSTEM

(a) Skid control ECU

(b) Yaw rate sensor (w/ VSC)

(c) Steering angle sensor (w/ VSC)

(d) Main body ECU

(e) Center airbag sensor assembly

(f) ECM

(g) Certification ECU (w/ Smart key system)

(h) Air conditioning amplifier

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(i) Combination meter

(j) Power steering ECU

5. DIAGNOSTIC CODE FOR CAN COMMUNICATION SYSTEM

(a) DTCs for the CAN communication system are as follows: U0073, U0100*1, U0123*1, U0124*1, U0126*1, U0129, U0327*2, U1002*2 and B1499.

*1: w/ VSC

*2: w/ Smart key system

6. TROUBLESHOOTING REMARKS

(a) DTCs for the CAN communication system can be checked using the Techstream. The DLC3 is connected to the CAN communication system, but no DTCs exist regarding problems in the DLC3 or the DLC3 branch wires. If there is a trouble in the DLC3 or the DLC3 branch wires, ECUs on the CAN network cannot output codes to the Techstream.

(b) Trouble in the CAN buses (communication wires) can be checked by measuring the resistance between terminals of the DLC3. However, an open circuit in a branch wire other than the DLC3 branch wires cannot be checked from the DLC3.

NOTICE:

Do not insert the tester probes directly into the DLC3. Be sure to use service wires.

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002DX801IX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: U1002 (CAN MS BUS): Lost Communication with Gateway Module (Main body ECU) (2010 Corolla)		

DTC	**U1002 (CAN MS BUS)**	**Lost Communication with Gateway Module (Main body ECU)**

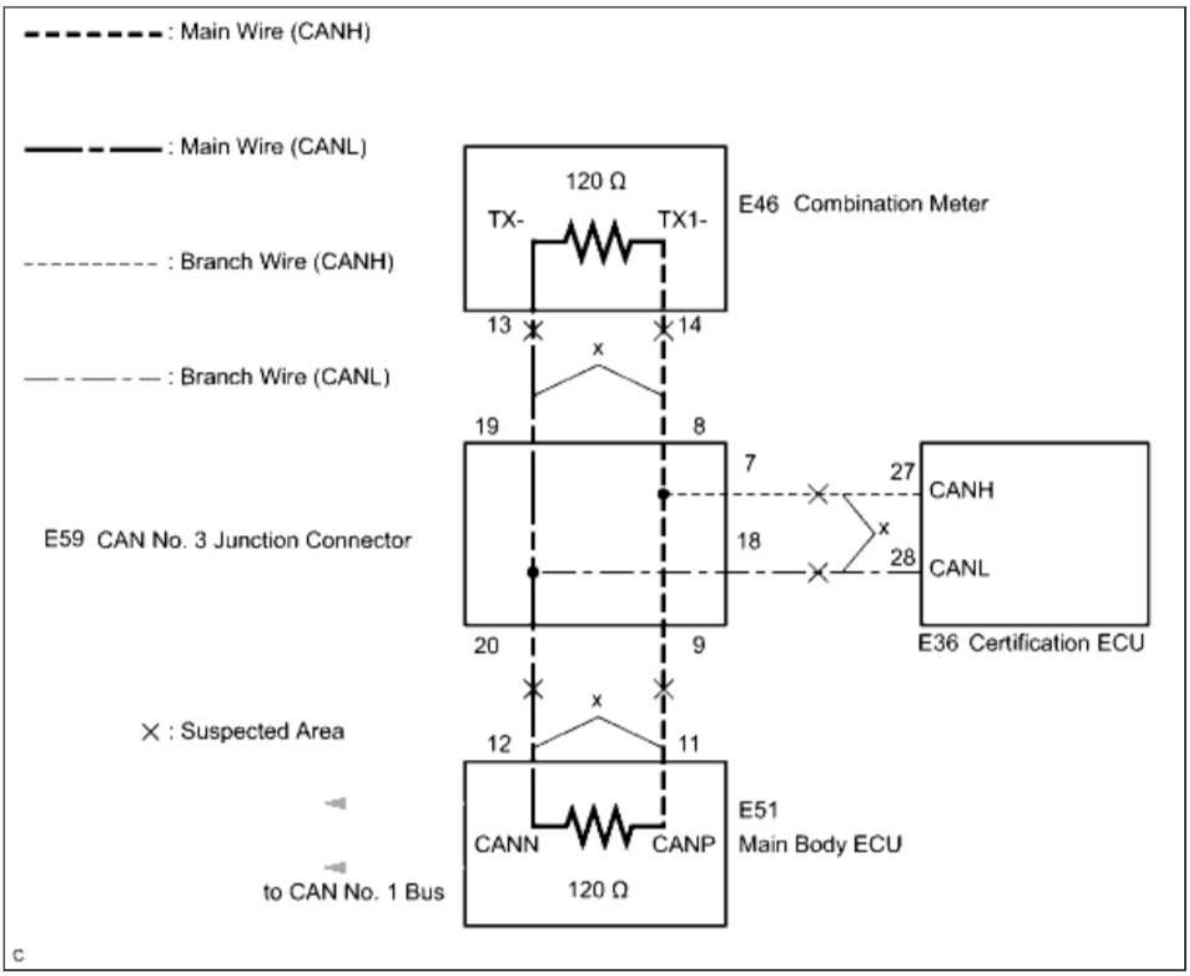
DESCRIPTION

- The main body ECU will store this DTC when no signals can be received from the ECUs that have been memorized as those that are connected to the CAN MS bus.
- When the main body ECU receives a response signal from the ECUs connected to the CAN MS bus, the main body ECU recognizes and memorizes that the ECU is connected to the CAN MS bus. Based on this memorized data, the main body ECU monitors for malfunctions in the ECUs connected to the CAN MS bus when communicating with those ECUs. If the main body ECU cannot receive response signals from the ECUs that have been memorized as those connected to the CAN MS bus, the main body ECU determines that a malfunction exists.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
U1002	Main body ECU cannot receive signals from all ECUs that have been memorized as those connected to the CAN MS bus.	• Open or short in CAN MS bus main wire or connector • Open or short in CAN MS bus branch wire or connector • Certification ECU • Combination meter • Main body ECU • CAN No. 3 junction connector

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the CAN bus main wires and the CAN bus branch wires.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

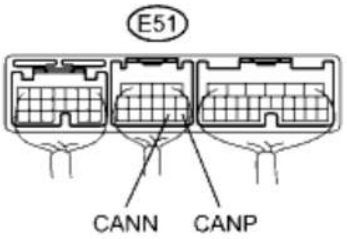
- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	CHECK CAN MS BUS WIRE

Component with harness connected:
(Main Body ECU)



(a) Turn the ignition switch off.

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

Result:

TESTER CONNECTION	SWITCH CONDITION	RESULT	PROCEED TO
E51-11 (CANP) - E51-12 (CANN)	Ignition switch off	54 to 69 Ω	A
E51-11 (CANP) - E51-12 (CANN)	Ignition switch off	70 Ω or higher	B
E51-11 (CANP) - E51-12 (CANN)	Ignition switch off	Less than 54 Ω	C

C ▶ **CHECK FOR SHORT IN CAN MS BUS WIRES (MAIN BODY ECU MAIN WIRE)**

B ▶ **CHECK FOR OPEN IN CAN MS BUS MAIN WIRE (COMBINATION METER MAIN WIRE)**

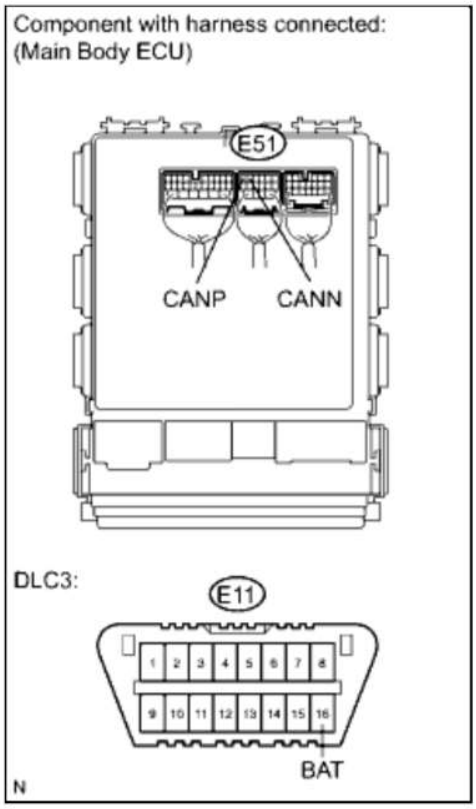
A ▼

2.	CHECK FOR SHORT TO +B IN CAN MS BUS WIRE

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E51-11 (CANP) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E51-12 (CANN) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (MAIN BODY ECU MAIN WIRE)**

OK ▼

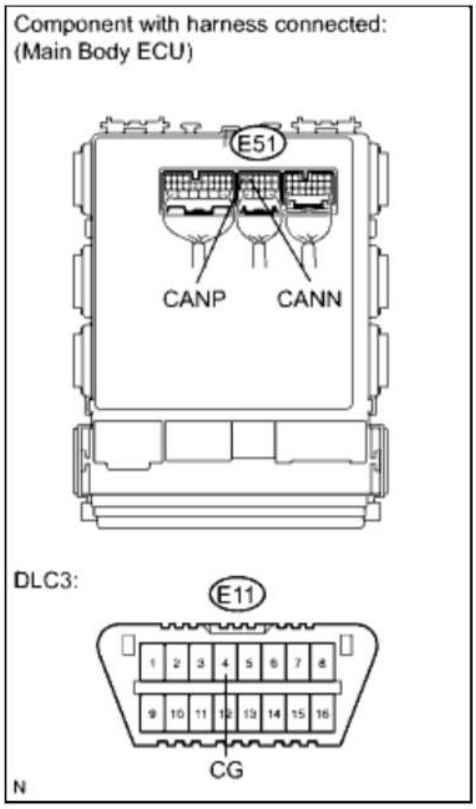
3.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE**

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E51-11 (CANP) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E51-12 (CANN) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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NG ▶ CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (MAIN BODY ECU MAIN WIRE)

OK ▼

4.	CHECK FOR OPEN IN CAN MS BUS WIRE (CAN MS BUS BRANCH WIRE)

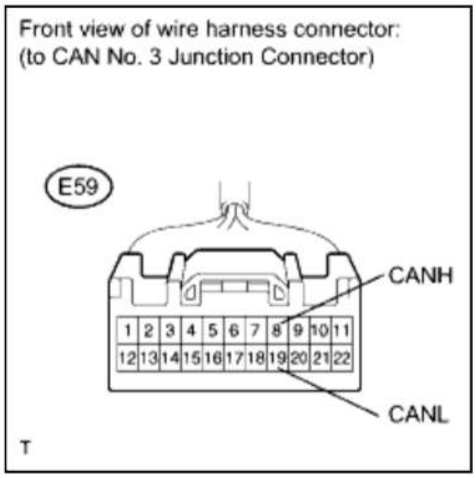
(a) Check for the certification ECU MS bus branch wire INFO.

NG ▶ REPAIR OR REPLACE CAN MS BUS BRANCH WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)

OK ▶ REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)

5.	CHECK FOR OPEN IN CAN MS BUS MAIN WIRE (COMBINATION METER MAIN WIRE)

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(a) Disconnect the CAN No. 3 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E59-19 (CANL)	Ignition switch off	108 to 132 Ω

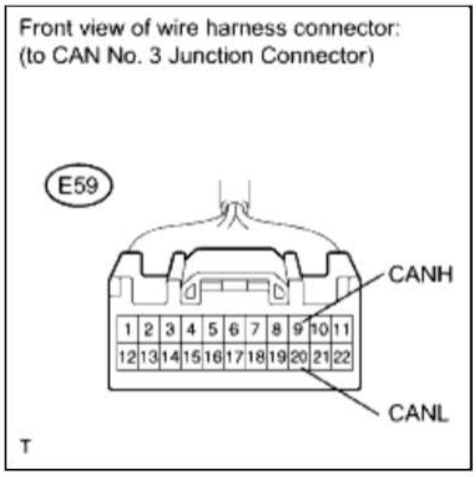
NG ▶ **CHECK FOR OPEN IN CAN MS BUS MAIN WIRE (COMBINATION METER - CAN NO. 3 JUNCTION CONNECTOR)**

OK ▼

6.	**CHECK FOR OPEN IN CAN MS BUS MAIN WIRE (MAIN BODY ECU MAIN WIRE)**

(a) Disconnect the CAN No. 3 junction connector.

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

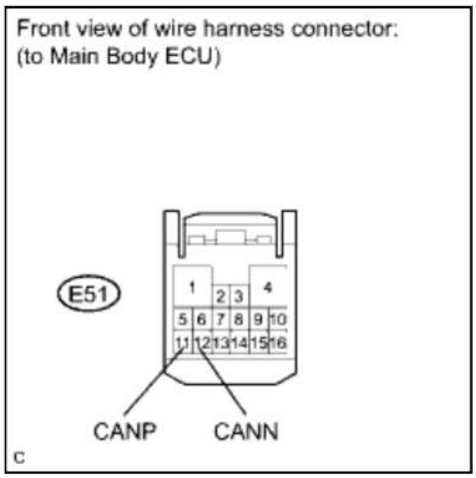
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-9 (CANH) - E59-20 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR OPEN IN CAN BUS MAIN WIRE (MAIN BODY ECU - CAN NO. 3 JUNCTION CONNECTOR)**

OK ▶ **REPLACE CAN NO. 3 JUNCTION CONNECTOR**

7.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (MAIN BODY ECU - CAN NO. 3 JUNCTION CONNECTOR)**



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

(b) Disconnect the main body ECU connector from the main body ECU.

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

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Standard Resistance:

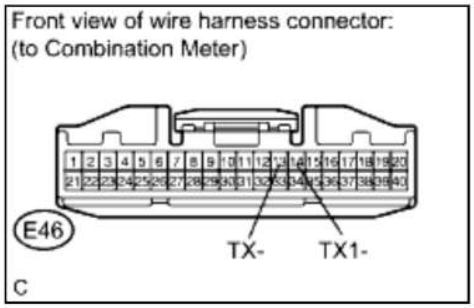
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E51-11 (CANP) - E51-12 (CANN)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

8.	**CHECK FOR OPEN IN CAN MS BUS MAIN WIRE (COMBINATION METER - CAN NO. 3 JUNCTION CONNECTOR)**

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



(b) Disconnect the combination meter connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E46-13 (TX-) - E46-14 (TX1-)	Ignition switch off	108 to 132 Ω

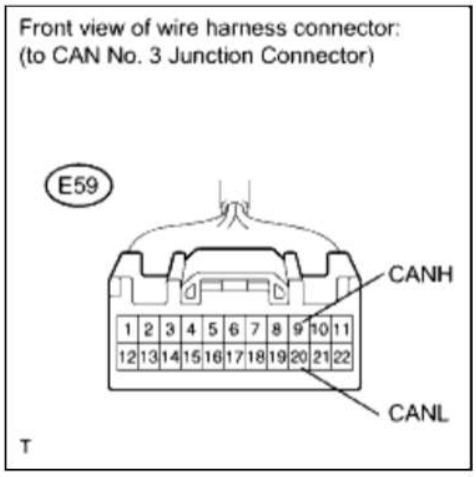
NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

9.	**CHECK FOR SHORT IN CAN MS BUS WIRES (MAIN BODY ECU MAIN WIRE)**

(a) Disconnect the CAN No. 3 junction connector.

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

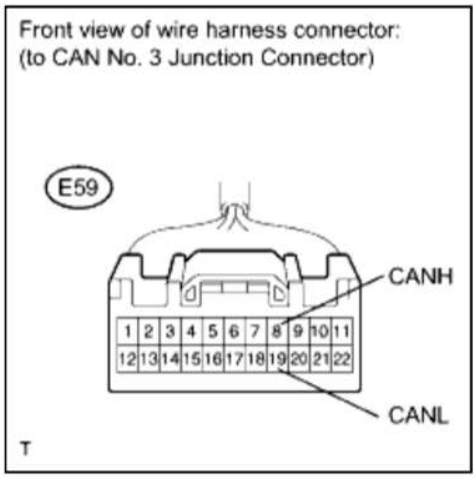
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-9 (CANH) - E59-20 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR SHORT IN CAN BUS MAIN WIRE (MAIN BODY ECU - CAN NO. 3 JUNCTION CONNECTOR)**

OK ▼

10.	CHECK FOR SHORT IN CAN MS BUS WIRES (COMBINATION METER MAIN WIRE)



(a) Disconnect the CAN No. 3 junction connector.

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

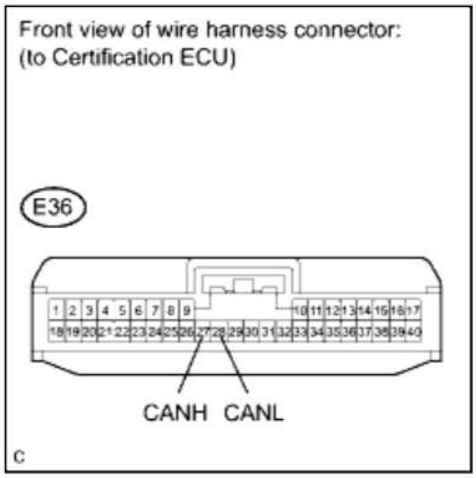
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E59-19 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR SHORT IN CAN MS BUS WIRES (COMBINATION METER - CAN NO. 3 JUNCTION CONNECTOR)**

OK ▼

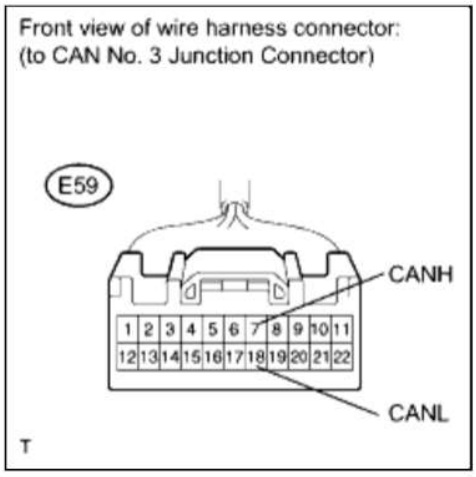
11.	**CHECK FOR SHORT IN CAN MS BUS WIRES (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**



(a) Disconnect the certification ECU connector.

(b) Disconnect the CAN No. 3 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-7 (CANH) - E59-18 (CANL)	Ignition switch off	1 MΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

OK ▼

12.	**CHECK FOR SHORT IN CAN MS BUS WIRES (CAN No. 3 JUNCTION CONNECTOR)**

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

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

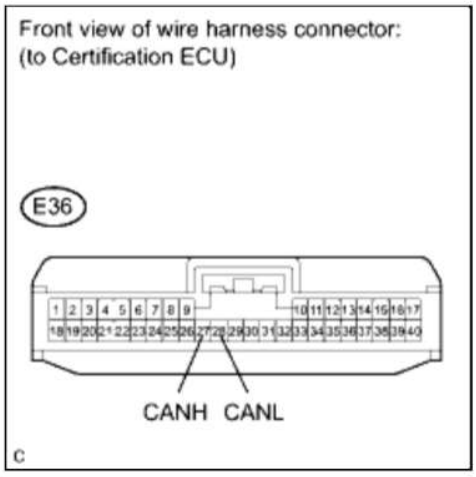
NOTICE:

The resistance must be measured after the main body ECU, combination meter and No. 3 junction connectors are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E36-27 (CANH) -	Ignition switch	54 Ω or higher

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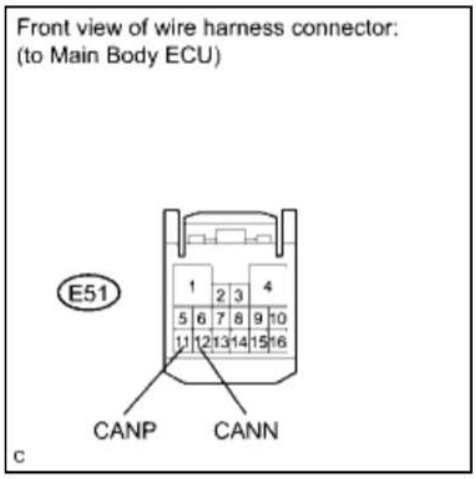
E36-28 (CANL)	off	

NG ▶ **REPLACE CAN NO. 3 JUNCTION CONNECTOR**

OK ▶ **REPLACE CERTIFICATION ECU**

13.	**CHECK FOR SHORT IN CAN BUS MAIN WIRE (MAIN BODY ECU - CAN NO. 3 JUNCTION CONNECTOR)**

(a) Disconnect the main body ECU connector from the main body ECU.



(b) Reconnect the CAN No. 3 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E51-11 (CANP) - E51-12 (CANN)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR -**

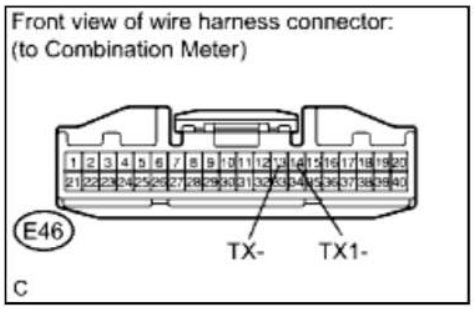
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MAIN BODY ECU)

OK ▶ REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)

14.	CHECK FOR SHORT IN CAN MS BUS WIRES (COMBINATION METER - CAN NO. 3 JUNCTION CONNECTOR)

(a) Disconnect the combination meter connector.



(b) Reconnect the CAN No. 3 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E46-13 (TX-) - E46-14 (TX1-)	Ignition switch off	108 to 132 Ω

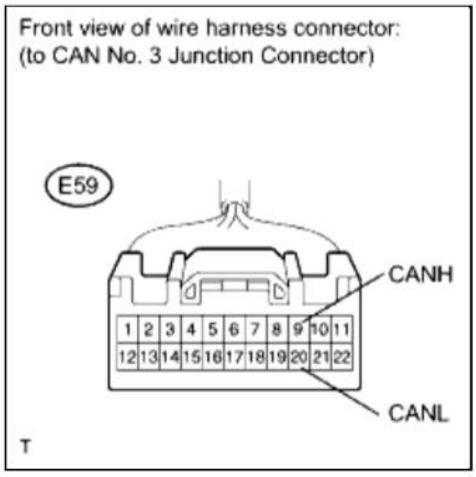
NG ▶ REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)

OK ▶ REPLACE COMBINATION METER ASSEMBLY

15.	CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (MAIN BODY ECU MAIN WIRE)

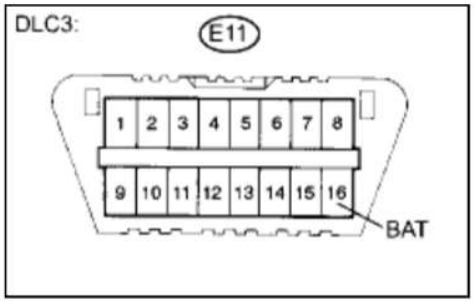
(a) Disconnect the CAN No. 3 junction connector.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E59-9 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E59-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

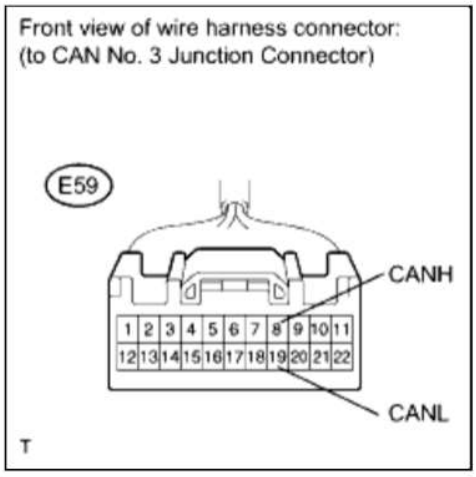
NG ▶ **CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▼

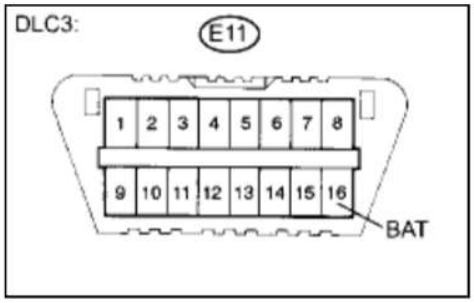
16.	**CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (COMBINATION METER MAIN WIRE)**

(a) Disconnect the CAN No. 3 junction connector.

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



Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E59-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

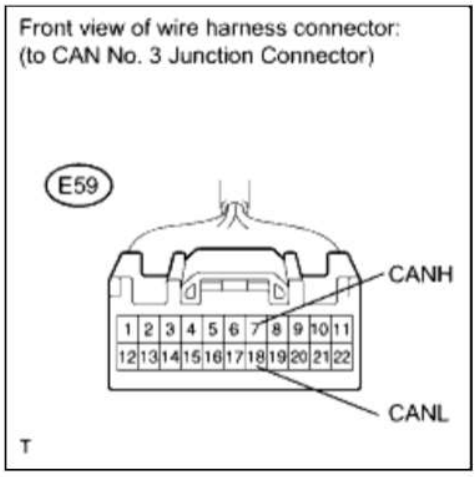
OK ▼

17.	**CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

(a) Disconnect the certification ECU connector.

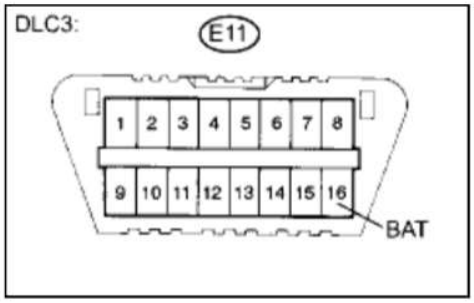
(b) Disconnect the CAN No. 3 junction connector.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E59-7 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E59-18 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

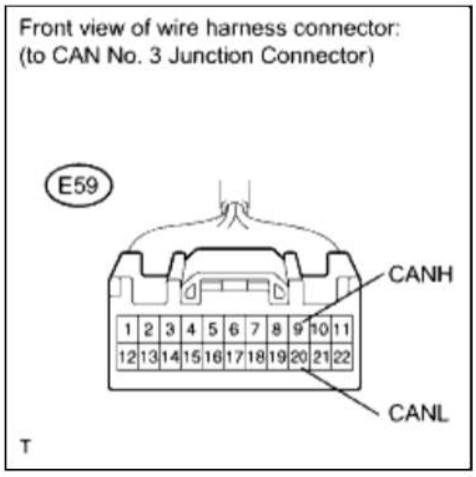
NG ▶ **REPAIR OR REPLACE CAN MS BUS BRANCH WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

OK ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

18.	**CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

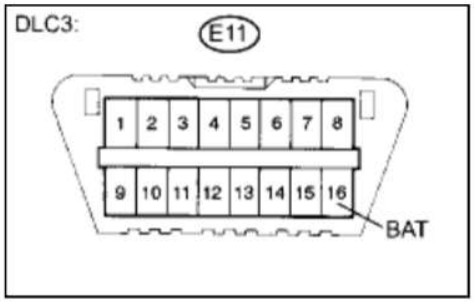
(a) Disconnect the main body ECU connector from the main body ECU.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E59-9 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E59-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

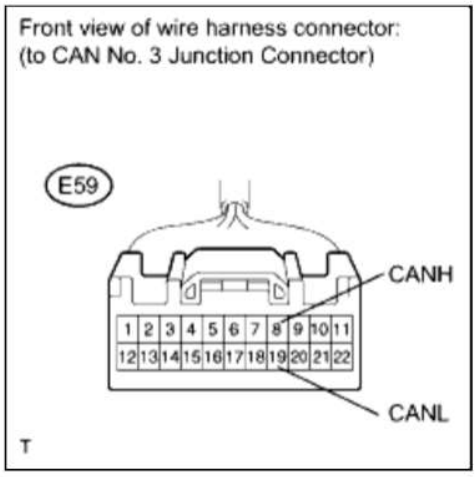
NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

19.	**CHECK FOR SHORT TO +B IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

(a) Disconnect the CAN No. 3 junction connector.

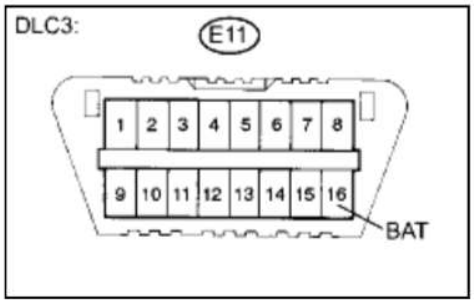
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(b) Disconnect the combination meter connector.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E59-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

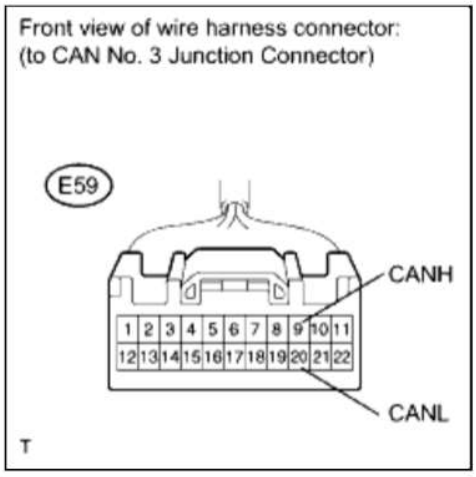
NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

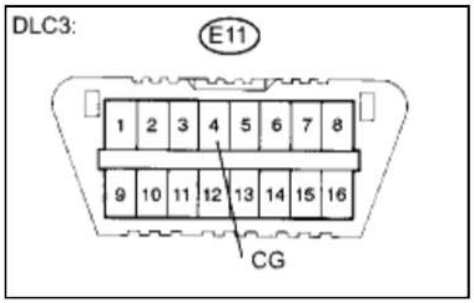
20.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (MAIN BODY ECU MAIN WIRE)**

(a) Disconnect the CAN No. 3 junction connector.

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



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-9 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E59-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

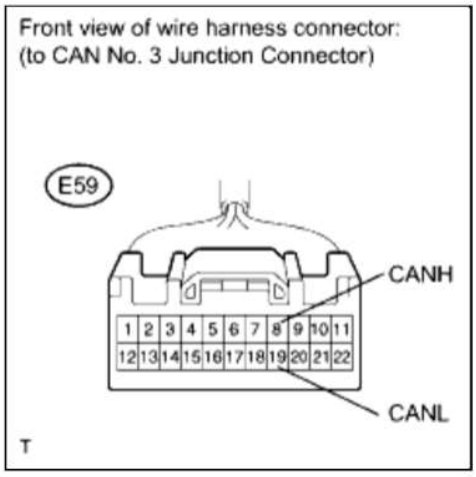
NG ▶ **CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▼

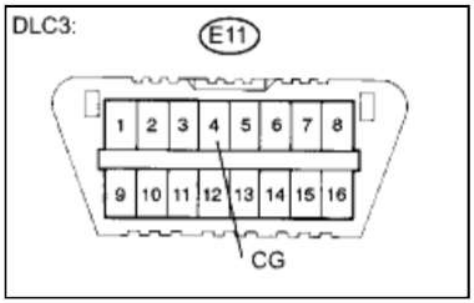
21.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (COMBINATION METER MAIN WIRE)**

(a) Disconnect the CAN No. 3 junction connector.

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



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E59-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

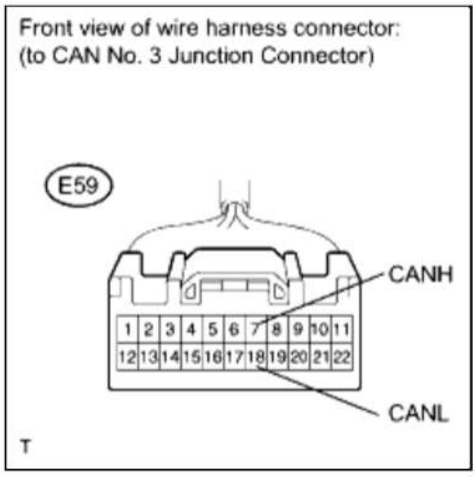
OK ▼

22.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

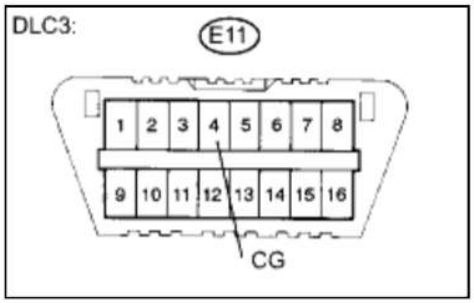
(a) Disconnect the certification ECU connector.

(b) Disconnect the CAN No. 3 junction connector.

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



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-7 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E59-18 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

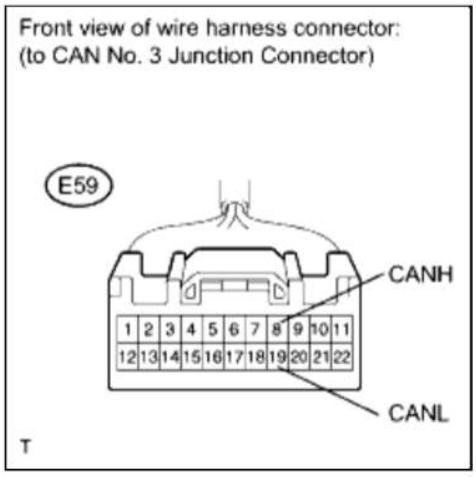
NG ▶ **REPAIR OR REPLACE CAN MS BUS BRANCH WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - CERTIFICATION ECU)**

OK ▶ **REPLACE CERTIFICATION ECU**

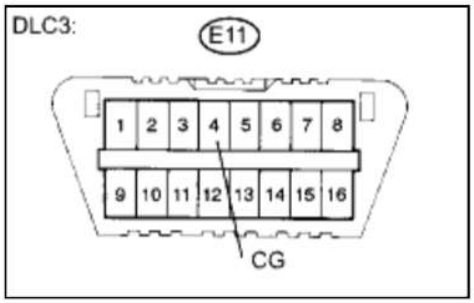
23.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

(a) Disconnect the combination meter connector.

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



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E59-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

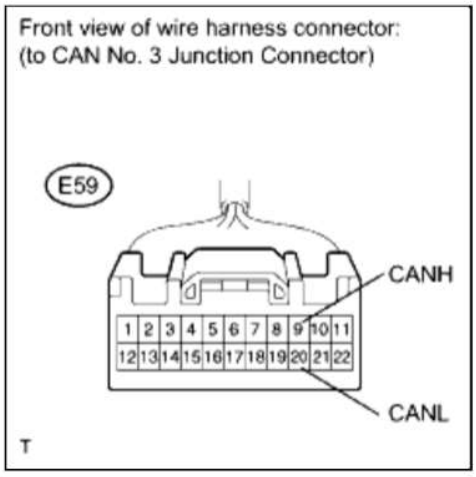
NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

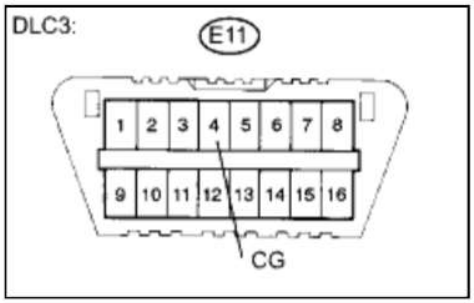
24.	**CHECK FOR SHORT TO GND IN CAN MS BUS WIRE (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

(a) Disconnect the main body ECU connector from the main body ECU.

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



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E59-9 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E59-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN MS BUS MAIN WIRE OR CONNECTOR (CAN NO. 3 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

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Last Modified: 3-10-2010	6.4 T	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WI8057X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: PROBLEM SYMPTOMS TABLE (2010 Corolla)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Result List of CAN Bus Wire Check

SYMPTOM	SUSPECTED AREA	SEE PAGE
The result of "CAN BUS WIRE CHECK" is "Open in CAN Main Bus Line".	Open in CAN Main Bus Line	INFO
The result of "CAN BUS WIRE CHECK" CAN BUS WIRE CHECK" is "Short in CAN Bus Line".	Short in CAN Bus Lines	INFO
The result of "CAN BUS WIRE CHECK" is "Short to B+ in CAN Bus Line".	Short to B+ in CAN Bus Line	INFO
The result of "CAN BUS WIRE CHECK" is "Short to GND in CAN Bus Line".	Short to GND in CAN Bus Line	INFO
The result of "CAN BUS WIRE CHECK" is "Open in One Side of CAN Branch Line".	Open in One Side of CAN Branch Line	INFO

Communication Stop Mode Table

SYMPTOM	SUSPECTED AREA	SEE PAGE
"Engine" is not displayed on the Techstream.	ECM Communication Stop Mode	INFO
"ABS/VSC/TRAC" is not displayed on the Techstream.	Skid Control ECU Communication Stop Mode	INFO
"Steering Angle Sensor" is not displayed on the Techstream.	Steering Angle Sensor Communication Stop Mode	INFO
"Yaw Rate / Decelerate Sensor" is not displayed on the Techstream.	Yaw Rate Sensor Communication Stop Mode	INFO
"EPS" is not displayed on the Techstream.	Power Steering ECU Communication Stop Mode	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
"Air Conditioner" is not displayed on the Techstream.	Air Conditioning Amplifier Communication Stop Mode	INFO
"SRS Airbag" is not displayed on the Techstream.	Center Airbag Sensor Communication Stop Mode	INFO
"Main Body" is not displayed on the Techstream.	Main Body ECU Communication Stop Mode	INFO
"Combination Meter" is not displayed on the Techstream.	Combination Meter ECU Communication Stop Mode	INFO



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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WIB05BX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: DIAGNOSIS SYSTEM (2010 Corolla)		

DIAGNOSIS SYSTEM

1. CAN BUS CHECK

(a) Using the Techstream, select "CAN Bus Check" from the "System Select".

2. CHECK FOR INSTALLED SYSTEMS (ECUS AND 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.

HINT:

ECUs and sensors that are connected to the LIN communication system and the local CAN system are also displayed.

ECU/SENSOR NAME	CHECK METHOD
ECM	Installed on all vehicles
Combination meter	Installed on all vehicles
Air conditioning amplifier	Installed on all vehicles
Center airbag sensor	Installed on all vehicles
Power steering ECU	Installed on all vehicles
Main body ECU	Installed on all vehicles
Skid control ECU	Installed on all vehicles
Steering angle sensor	w/ VSC
Yaw rate sensor	w/ VSC
Certification ECU	w/ Smart key system

3. DTC TABLE BY ECU

HINT:

- In the CAN communication system, CAN communication system DTCs can be displayed by the ECU using the Techstream.
- If CAN communication system DTCs are output, trouble cannot be determined only by the DTCs. Perform troubleshooting according to How to Proceed with Troubleshooting INFO .

(a) SKID CONTROL ECU (w/o VSC)

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
U0073	Control Module Communication Bus Off

(b) SKID CONTROL ECU (w/ VSC)

HINT:

DTC communication uses the CAN communication system.

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) AIR CONDITIONING AMPLIFIER

HINT:

- DTC communication uses the CAN communication system.
- The following DTC is output only for current malfunctions.

DTC NO.	DETECTION ITEM
B1499	Multiplex Communication Circuit

(d) COMBINATION METER

HINT:

DTC communication uses the CAN communication system.

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DTC NO.	DETECTION ITEM
U0100	Lost Communication with ECM/PCM "A"
U0129	Lost Communication with Brake System Control Module

(e) POWER STEERING ECU

HINT:

DTC communication uses the CAN system.

DTC NO.	DETECTION ITEM
U0100	Lost Communication with ECM
U0129	Lost Communication with Anti-lock Brake System (ABS) Control Module

(f) MAIN BODY ECU

HINT:

DTC communication uses the CAN system.

DTC NO.	DETECTION ITEM
U0327	Software Incompatibility with Vehicle Security Control Module
U1002	Lost Communication with Gateway Module

(g) ECM

HINT:

The ECM is connected to the CAN communication system, but CAN communication DTCs are not output.

(h) CENTER AIRBAG SENSOR

HINT:

The center airbag sensor is connected to the CAN communication system, but CAN communication DTCs are not output.

(i) STEERING ANGLE SENSOR (w/ VSC)

HINT:

The steering angle sensor is connected to the CAN communication system, but CAN communication DTCs are not output.

(j) YAW RATE SENSOR (w/ VSC)

HINT:

The yaw rate sensor is connected to the CAN communication system, but CAN communication DTCs are not output.

(k) CERTIFICATION ECU

HINT:

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

4. DTC COMBINATION TABLE

(a) CAN No. 1 Bus (w/o VSC)

DTC		TROUBLE MODE						
OUTPUT FROM	OUTPUT DTC	ECM COMMUNICATION STOP MODE	SKID CONTROL ECU COMMUNICATION STOP MODE	POWER STEERING ECU COMMUNICATION STOP MODE	CENTER AIRBAG SENSOR COMMUNICATION STOP MODE	AIR CONDITIONING AMPLIFIER COMMUNICATION STOP MODE	COMBINATION METER ECU COMMUNICATION STOP MODE	MAIN BODY ECU COMMUNICATION STOP MODE
Skid Control ECU	U0073	X	○*1	X	X	X	X	X
Combination Meter	U0100	○	X	X	X	X	○*1	X
	U0129	X	○	X	X	X	○*1	X
Power Steering ECU	U0100	○	X	○*1	X	X	X	X
	U0129	X	○	○*1	X	X	X	X

HINT:

- ○: Set
- X: Not set or may be set according to the malfunctioning part when one side of the CAN bus wire opens
- *1: Does not output it during communication error

(b) CAN No. 1 Bus (w/ VSC)

DTC	TROUBLE MODE

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OUTPUT FROM	OUTPUT DTC	ECM COMMUNICATION STOP MODE	SKID CONTROL ECU COMMUNICATION STOP MODE	STEERING ANGLE SENSOR COMMUNICATION STOP MODE	YAW RATE SENSOR COMMUNICATION STOP MODE	POWER STEERING ECU COMMUNICATION STOP MODE
Skid Control ECU	U0073	X	○*1	X	X	X
	U0100	○	○*1	X	X	X
	U0123	X	○*1	X	○	X
	U0124	X	○*1	X	○	X
	U0126	X	○*1	○	X	X
Combination Meter	U0100	○	X	X	X	X
	U0129	X	○	X	X	X
Power Steering ECU	U0100	○	X	X	X	○*1
	U0129	X	○	X	X	○*1

HINT:

- ○: Set
- X: Not set or may be set according to the malfunctioning part when one side of the CAN bus wire opens
- *1: Does not output it during communication error

DTC		TROUBLE MODE			
OUTPUT FROM	OUTPUT DTC	CENTER AIRBAG SENSOR COMMUNICATION STOP MODE	AIR CONDITIONING AMPLIFIER COMMUNICATION STOP MODE	COMBINATION METER ECU COMMUNICATION STOP MODE	MAIN BODY ECU COMMUNICATION STOP MODE
Skid Control ECU	U0073	X	X	X	X
	U0100	X	X	X	X
	U0123	X	X	X	X
	U0124	X	X	X	X
	U0126	X	X	X	X
Combination Meter	U0100	X	X	○*1	X
	U0129	X	X	○*1	X
Power Steering ECU	U0100	X	X	X	X
	U0129	X	X	X	X

HINT:

- ○: Set
- X: Not set or may be set according to the malfunctioning part when one side of the CAN bus wire opens
- *1: Does not output it during communication error
- ECM Communication Stop Mode
- Skid Control ECU Communication Stop Mode
- Steering Angle Sensor Communication Stop Mode
- Yaw Rate Sensor Communication Stop Mode
- Combination Meter Communication Stop Mode
- Air Conditioning Amplifier Communication Stop Mode
- Center Airbag Sensor Communication Stop Mode
- Power Steering ECU Communication Stop Mode
- Main Body ECU Communication Stop Mode

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WID04KX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: FAIL-SAFE CHART (2010 Corolla)		

FAIL-SAFE CHART

1. FAIL-SAFE FUNCTION

(a) When communication fails in any of the CAN bus wires (communication wires) 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) The following chart shows the relationships between components, system functions, and effects of communication failure on these functions. (For further details, see the pages for each system.)

FUNCTION (FUNCTION DESCRIPTION)	CONTROL MASTER	SYSTEM RELATED	FAIL-SAFE OPERATION	DTC (DRIVER DETECTABLE)
Air conditioning control	Air Conditioning Amplifier	• ECM • Combination Meter • Main Body ECU • Accessory Gateway	Air conditioning function and PTC heater function stop	B1499 (Air Conditioning inoperative)
VSC control*1 (Controls driving force while VSC in operation)	Skid Control ECU	• ECM • Steering Angle Sensor • Yaw Rate Sensor	VSC control is inoperative (VSC control gradually stops)	U0073, U0100, U0123, U0124, U0126 (Warning light comes on)
VSC control*1 (Engine power control by VSC/TRC)	Skid Control ECU	• ECM • Steering Angle Sensor • Yaw Rate Sensor	VSC control is inoperative (VSC control gradually stops)	U0073, U0100, U0123, U0124, U0126 (Warning light comes on)
ABS control (Controls driving force while ABS in operation)	Skid Control ECU	Yaw Rate Sensor*1	Control inoperative (gradually stops controlling during ABS control)	U0073, U0123*1, U0124*1 (Warning light comes on)
Electric power steering (Speed of vehicle induction type torque control)	Power Steering ECU	• ECM • Skid Control ECU • Steering	VSC Malfunction: Depression of EPS assist (Deterioration of steering)	U0100, U0129 (VSC failure: Warning light comes on, and decrease of assistance power at

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FUNCTION (FUNCTION DESCRIPTION)	CONTROL MASTER	SYSTEM RELATED	FAIL-SAFE OPERATION	DTC (DRIVER DETECTABLE)
		Angle Sensor • Combination Meter	ECM Malfunction (before assist beginning): stop the assist operation ECM Malfunction (after assist beginning): continue the assist operation	vehicle speed 70 km/h) (ECM failure: Warning light comes on [only before assist beginning])
Entry function/Power door lock control*2	Main Body ECU	• ECM • Center Airbag Sensor Assembly • Combination Meter • Certification ECU	Unlock permitted	U0327, U1002 (Wireless door lock cannot operate)
Meter display (Displays operation condition and DTCs)	Combination Meter	• ECM • Skid Control ECU • Power Steering ECU • Center Airbag Sensor Assembly • Air Conditioner Amplifier • Certification ECU • Main Body ECU	Light does not come on, illuminates abnormally, or blinks abnormally	U0100, U0129 (Abnormal light illumination)

*1: w/ VSC

*2: w/ Smart key system

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001FAE01AX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Check CAN Bus Line for Short to +B (2010 Corolla)		

Check CAN Bus Line for Short to +B

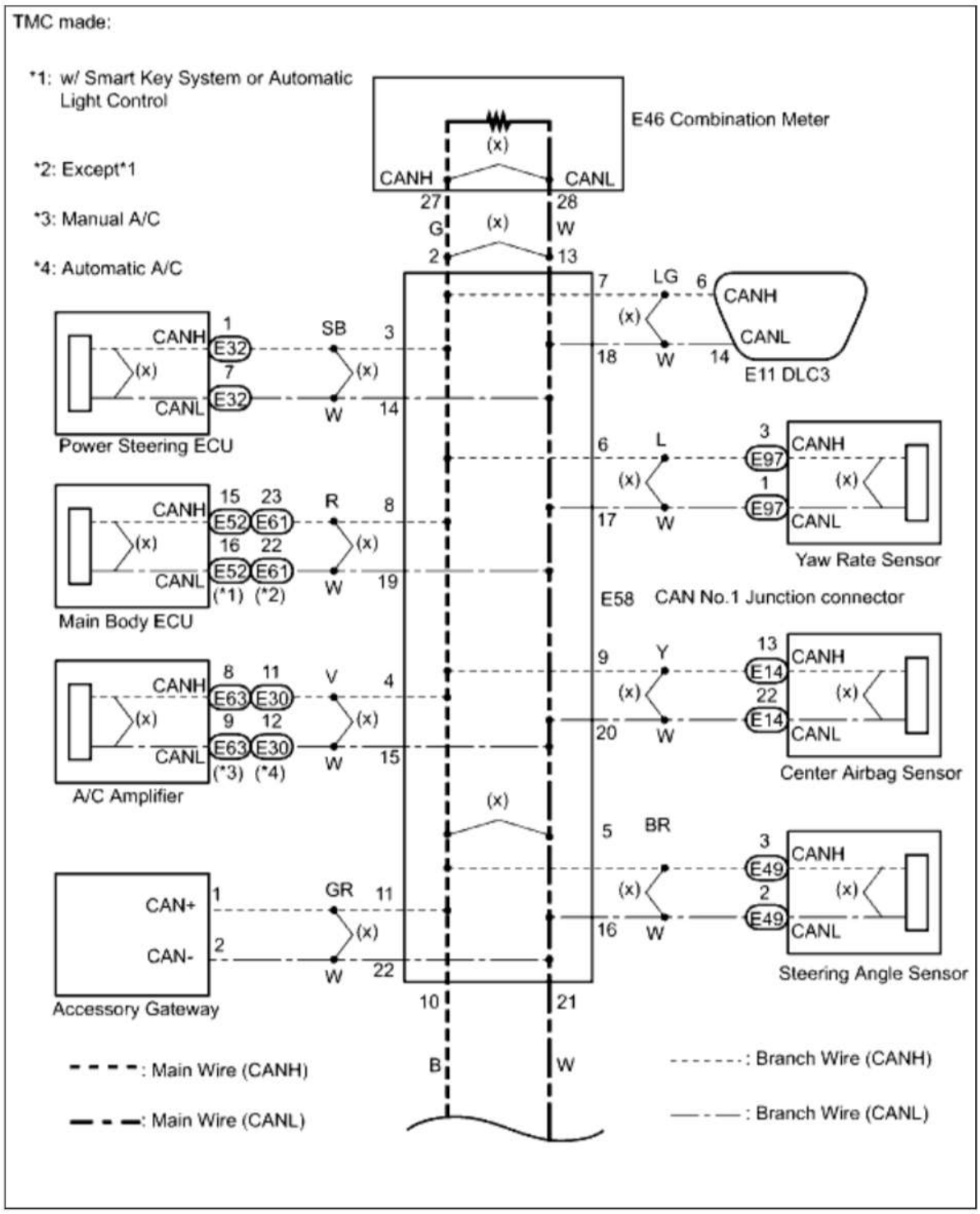
DESCRIPTION

There may be a short circuit between the CAN bus line and +B when no resistance exists between terminals 6 (CANH) and 16 (BAT) or terminals 14 (CANL) and 16 (BAT) of the DLC3.

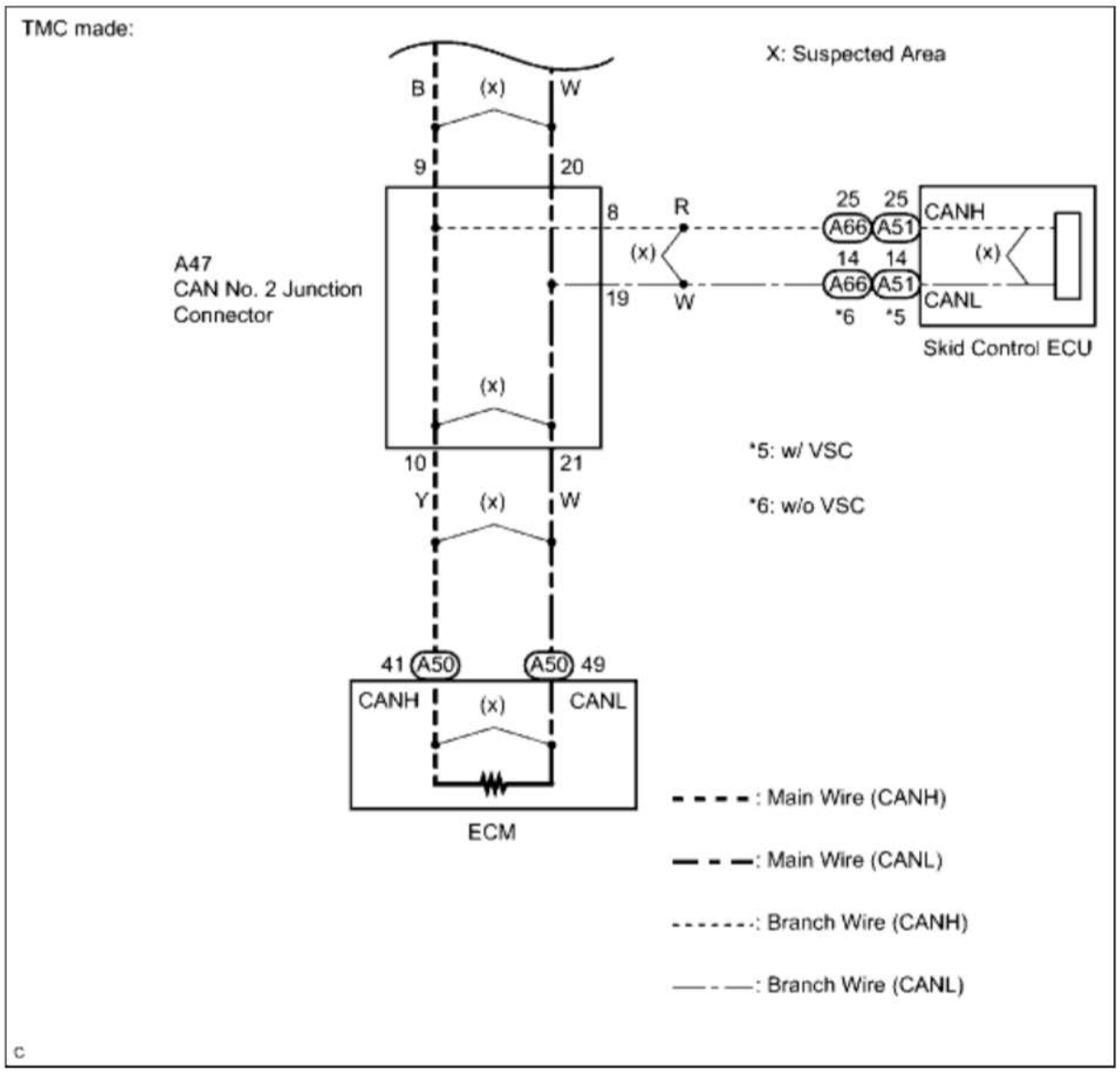
SYMPTOM	TROUBLE AREA
No resistance exists between terminals 6 (CANH) and 16 (BAT) or terminals 14 (CANL) and 16 (BAT) of the DLC3.	Short to +B in CAN bus wire • Skid control ECU • Power steering ECU • Steering angle sensor (w/ VSC) • Yaw rate sensor (w/ VSC) • ECM • Center airbag sensor assembly • Air conditioning amplifier • Combination meter ECU • Main body ECU • Accessory gateway

WIRING DIAGRAM

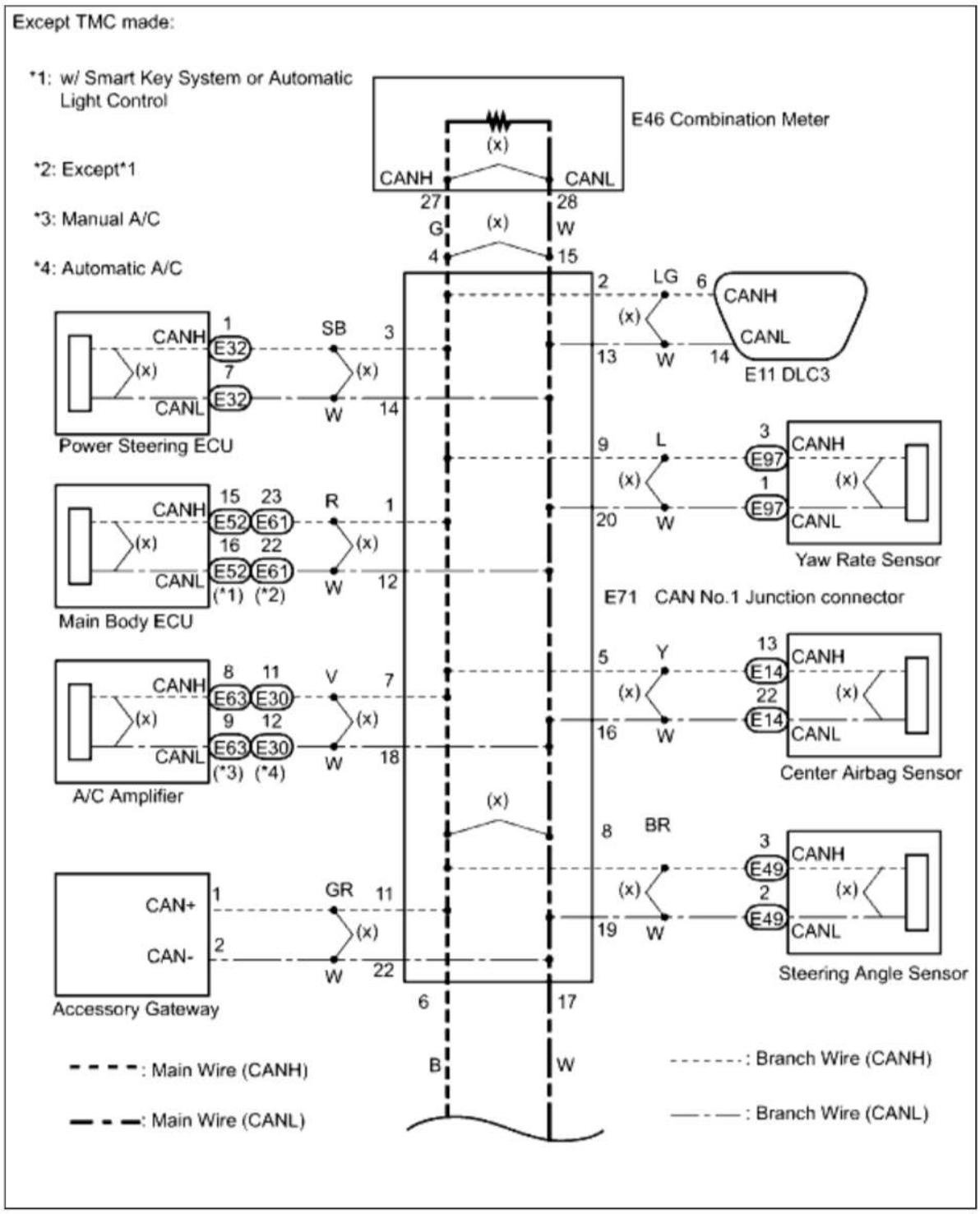
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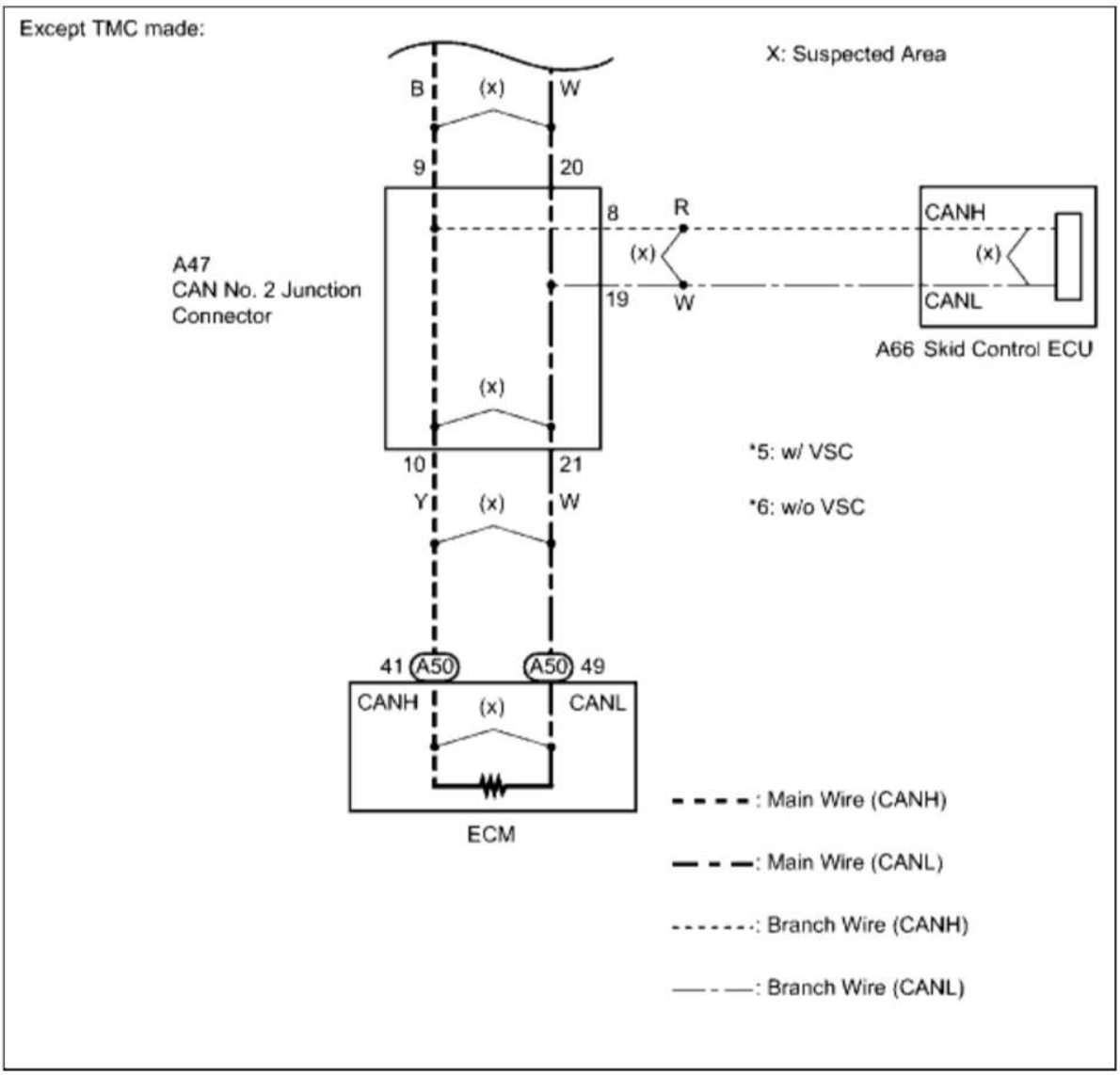
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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

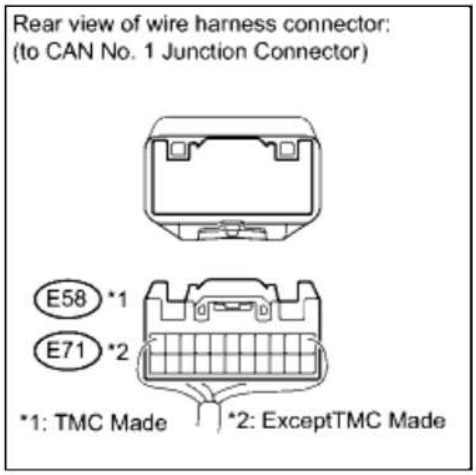
- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

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PROCEDURE

1.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE (DLC3 BRANCH WIRE)

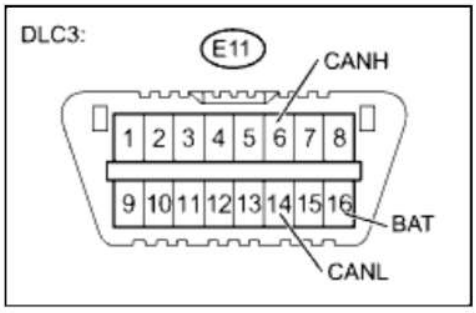
(a) Turn the ignition switch off, and disconnect negative battery terminal.



(b) Disconnect the CAN No. 1 junction connector.

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

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E11-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

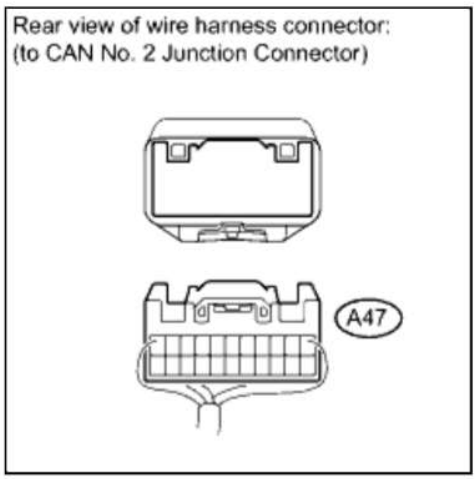
NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3**

OK ▼

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2.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR)

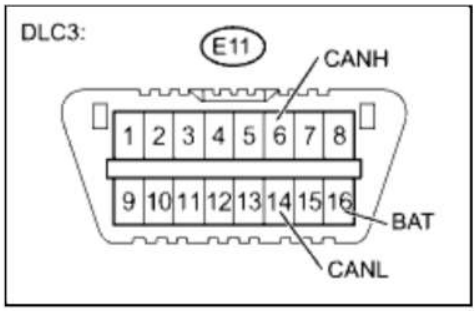
(a) Reconnect the CAN No. 1 junction connector.



(b) Disconnect the CAN No. 2 junction connector.

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

Standard Resistance:



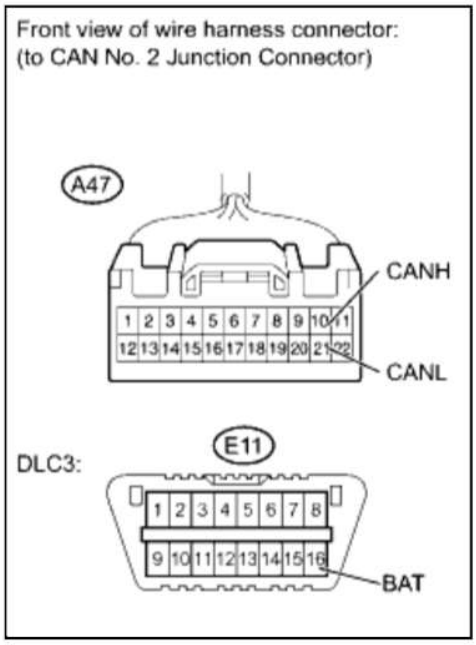
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E11-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (POWER STEERING ECU BRANCH WIRE)**

OK ▼

3.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE (ECM MAIN WIRE)

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

NOTICE:

The resistance must be measured after the CAN No. 2 junction connector is disconnected.

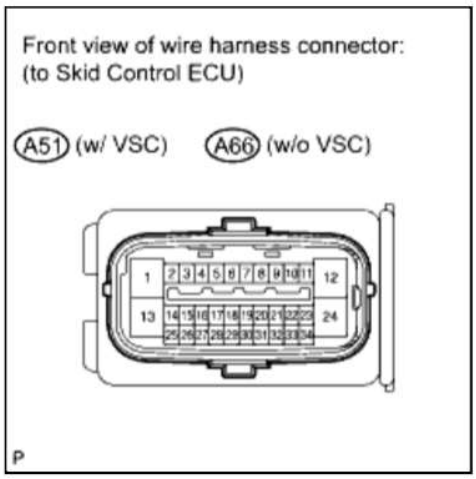
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A47-21 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

OK ▼

4.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**



(a) Disconnect the skid control ECU connector.

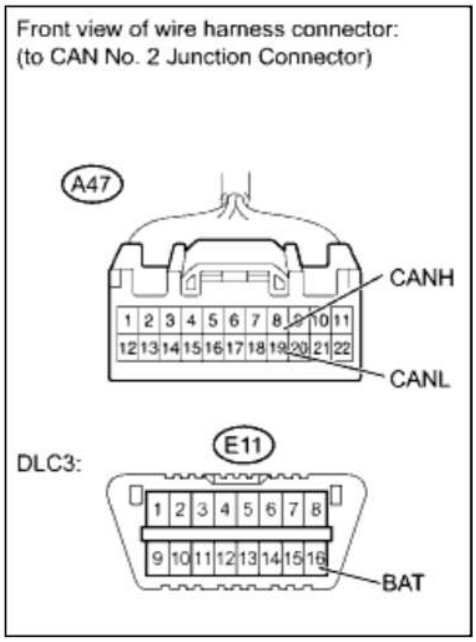
(b) Measure the resistance according to the value(s) in

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the table below.

NOTICE:

The resistance must be measured after the skid control ECU connector and CAN No. 2 junction connector are disconnected.



Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A47-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A47-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

Result:

RESULT	PROCEED TO
OK (w/o VSC)	A
OK (w/ VSC)	B
NG	C

C ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**

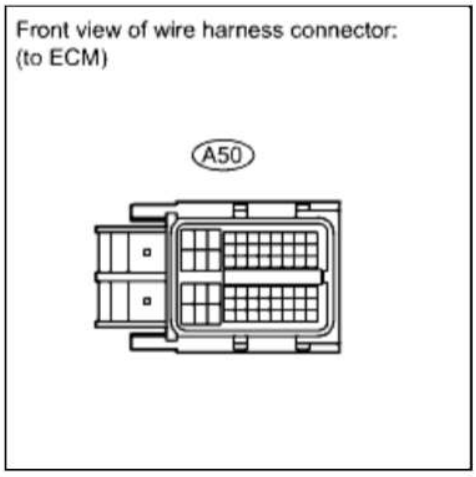
B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

5.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

(a) Disconnect the ECM connector.

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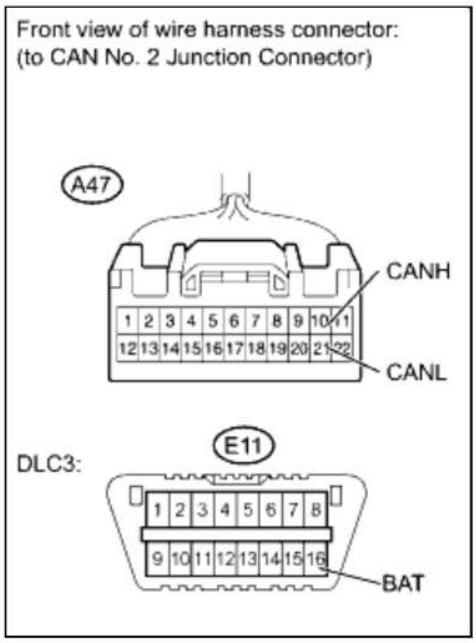
(b) Measure the resistance according to the value(s) in the table below.

NOTICE:

The resistance must be measured after the ECM connector and CAN No. 2 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
A47-21 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher



Result:

RESULT	PROCEED TO
OK (for 2ZR-FE)	A
OK (for 2AZ-FE)	B
NG	C

C ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

B ▶ **REPLACE ECM**

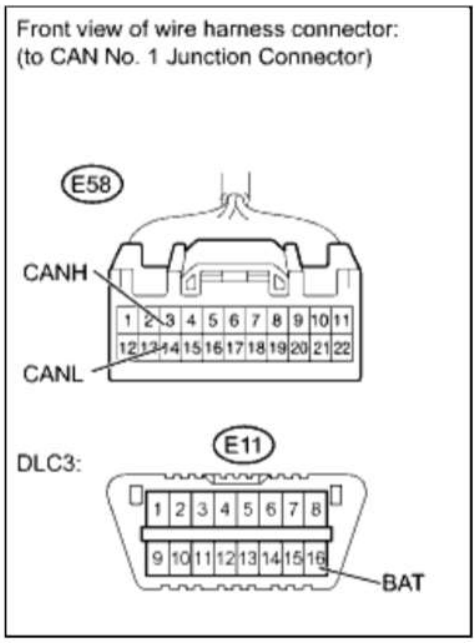
A ▶ **REPLACE ECM**

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6.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (POWER STEERING ECU BRANCH WIRE)**

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

(b) TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

- The resistance must be measured after the CAN No. 2 junction connector is reconnected.
- The resistance must be measured after the CAN No. 1 junction connector is disconnected.

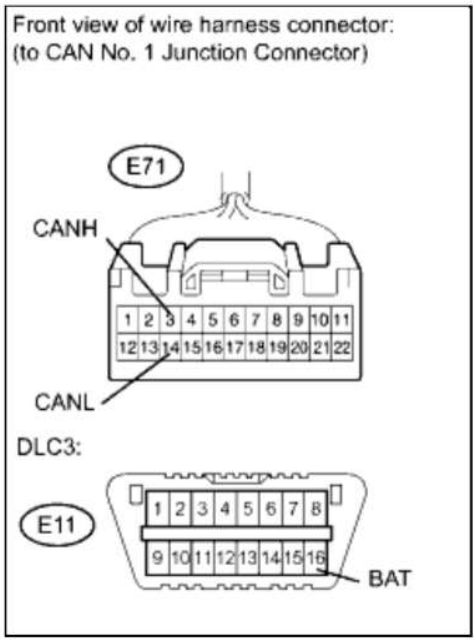
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-3 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:

(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

- The resistance must be measured after the CAN No. 2 junction connector is reconnected.
- The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-3 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

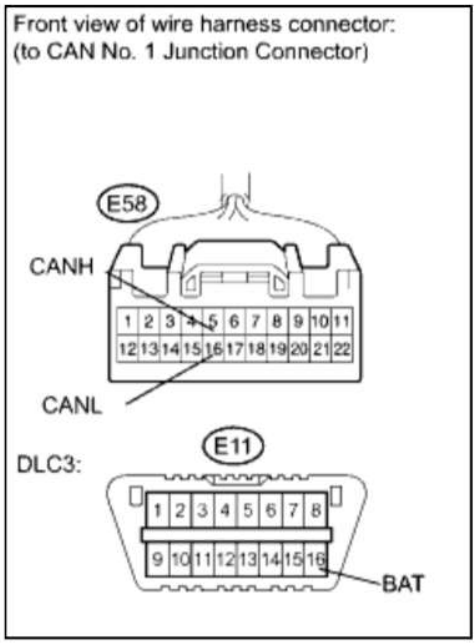
NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**

OK ▼

7.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (STEERING ANGLE SENSOR BRANCH WIRE)**

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(a) TMC made:



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

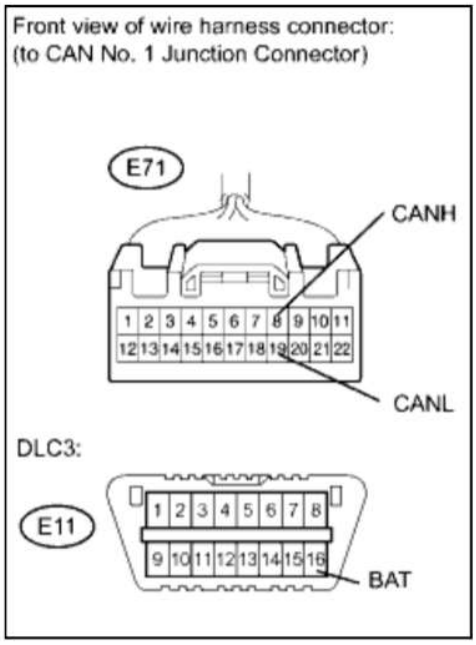
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-5 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-16 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

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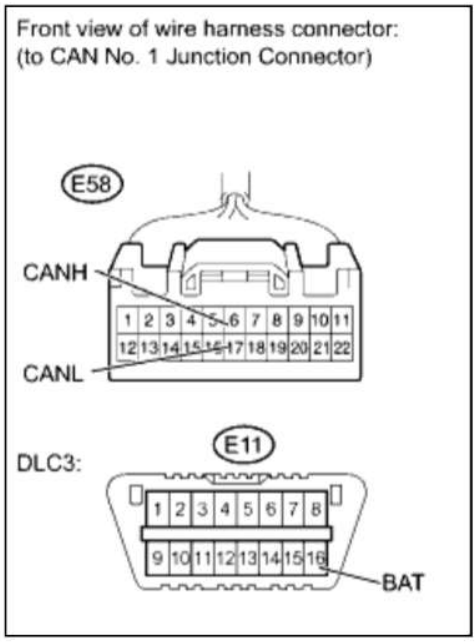
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

OK ▼

8.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE (YAW RATE SENSOR BRANCH WIRE)

(a) TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

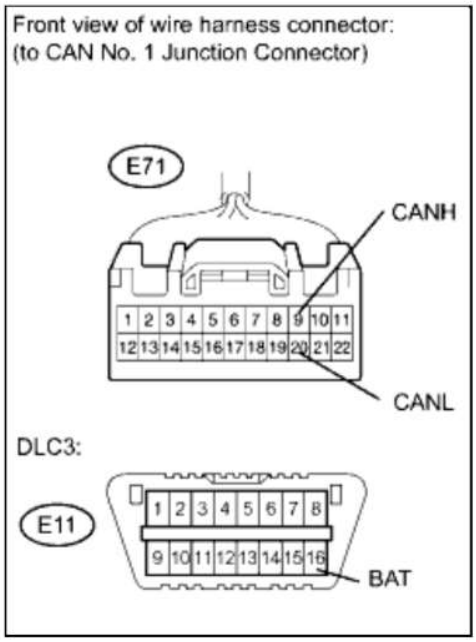
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-6 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-17 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:

(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-9 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

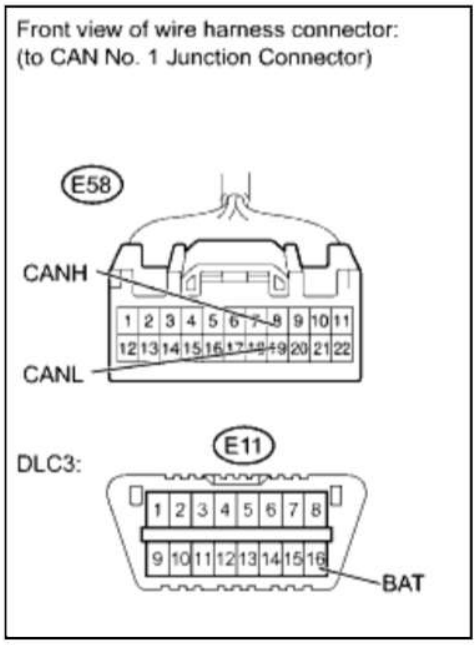
NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

OK ▼

9.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (MAIN BODY ECU BRANCH WIRE)**

(a) TMC made:

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

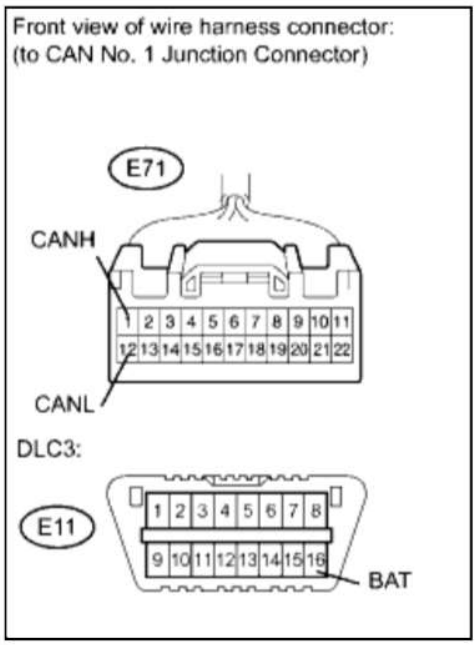
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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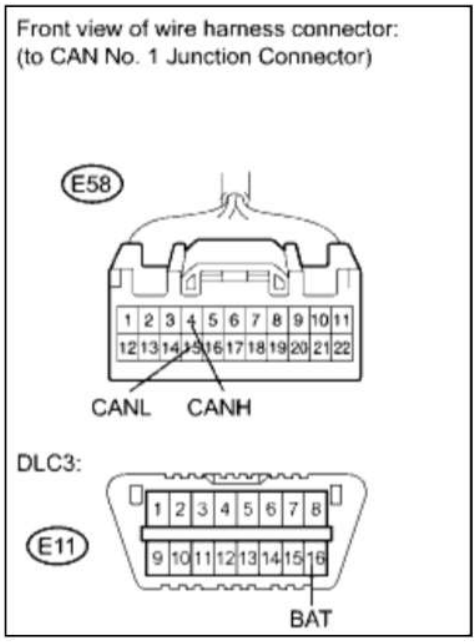
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-1 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-12 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▼

10.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**

(a) TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

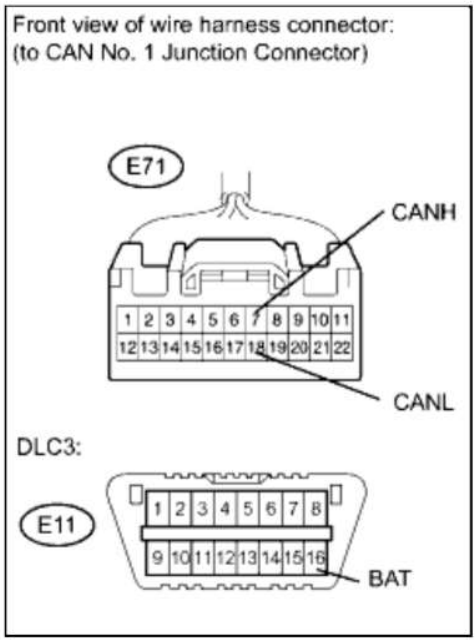
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-4 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-15 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:

(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-7 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-18 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

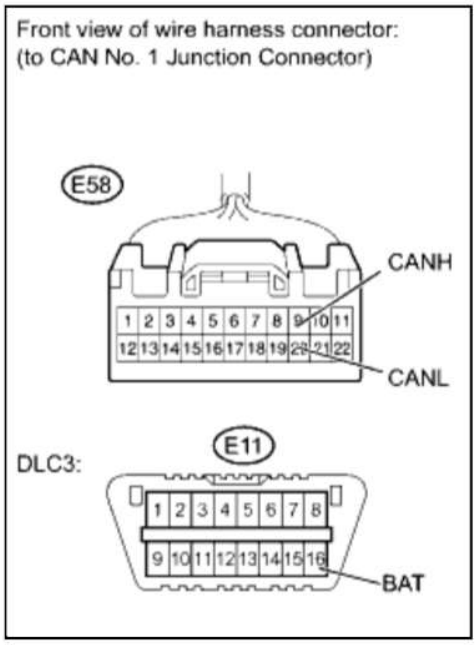
NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

OK ▼

11.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)**

(a) TMC made:

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

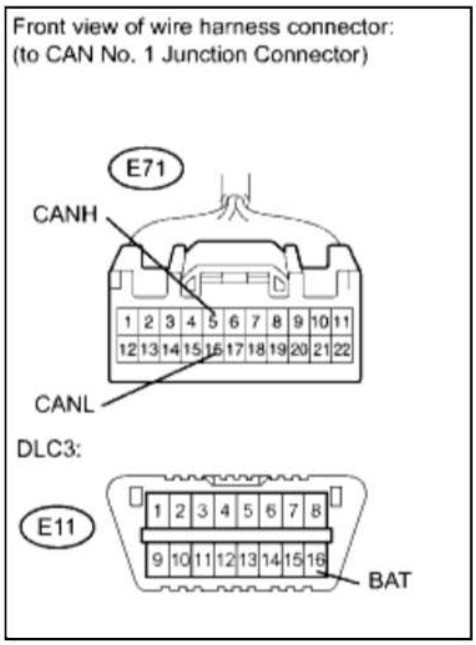
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-9 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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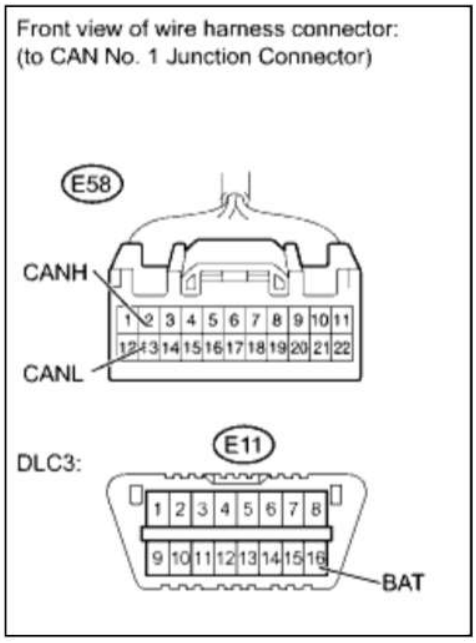
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-5 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-16 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**

OK ▼

12.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE (COMBINATION METER MAIN WIRE)

(a) TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

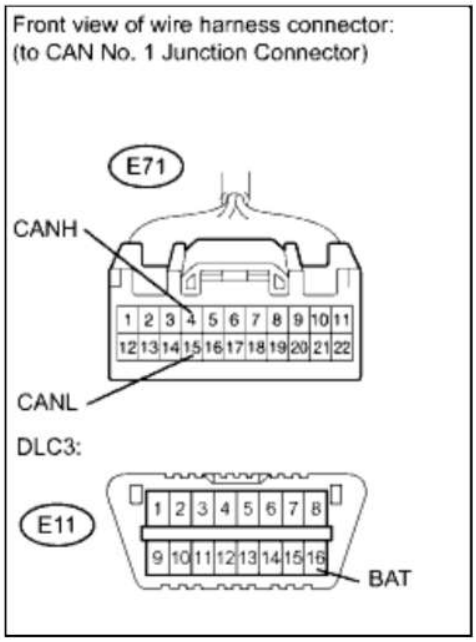
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-13 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:

(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-15 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

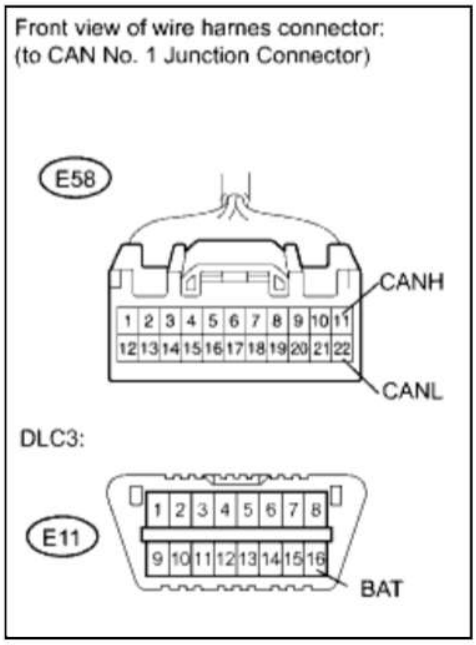
NG ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▼

13.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (ACCESSORY GATEWAY BRANCH WIRE)**

(a) TMC made:

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

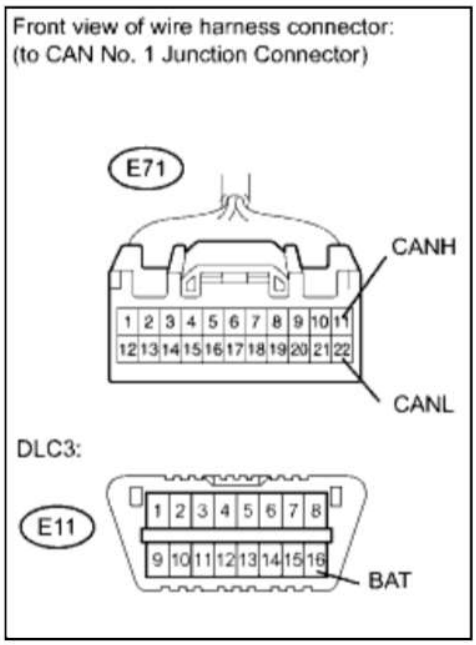
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-11 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-22 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(b) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-11 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-22 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

Result:

RESULT	PROCEED TO
OK	A
NG (w/o remote engine starter)	B
NG (w/ remote engine starter)	C

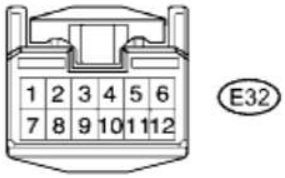
C ▶ **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

B ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

A ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

14.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**

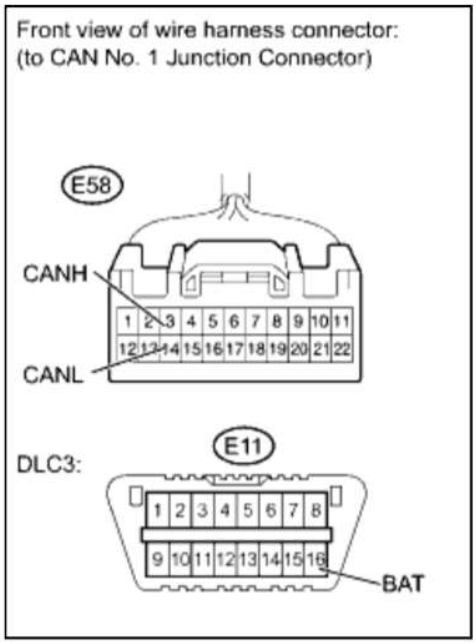
Front view of wire harness connector:
(to Power Steering ECU)



(a) Disconnect the power steering ECU connector.

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(b) TMC made:



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

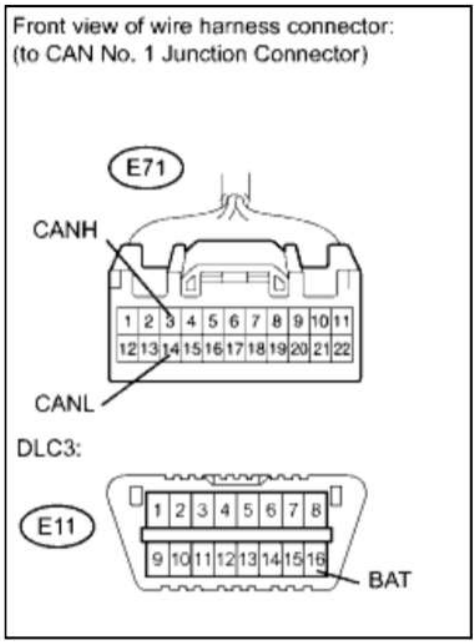
NOTICE:

The resistance must be measured after the power steering ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-3 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the power steering ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-3 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

Result:

RESULT	PROCEED TO
OK (for 2AZ-FE)	A
OK (for 2ZR-FE)	B

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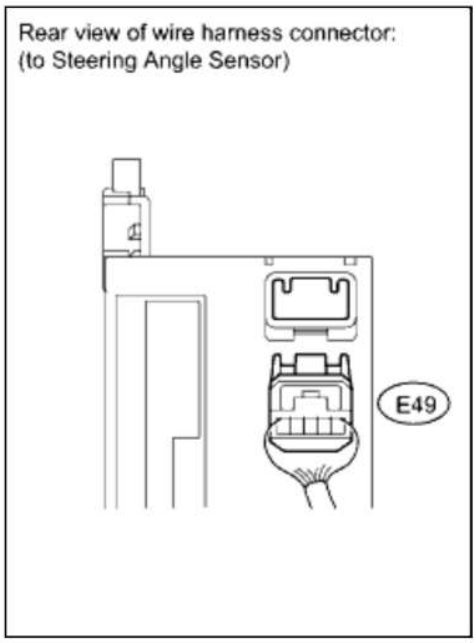
RESULT	PROCEED TO
NG	C

C ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**

B ▶ **REPLACE POWER STEERING ECU**

A ▶ **REPLACE POWER STEERING ECU**

15.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**



(a) Disconnect the steering angle sensor connector.

(b) TMC made:

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

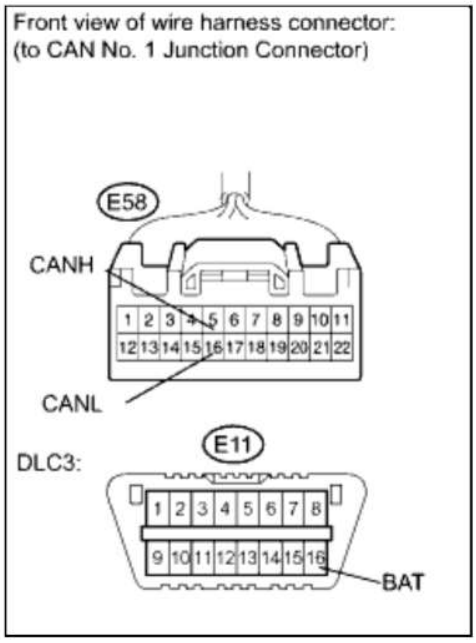
NOTICE:

The resistance must be measured after the steering angle sensor and CAN No. 1 junction connector are disconnected.

Standard Resistance:

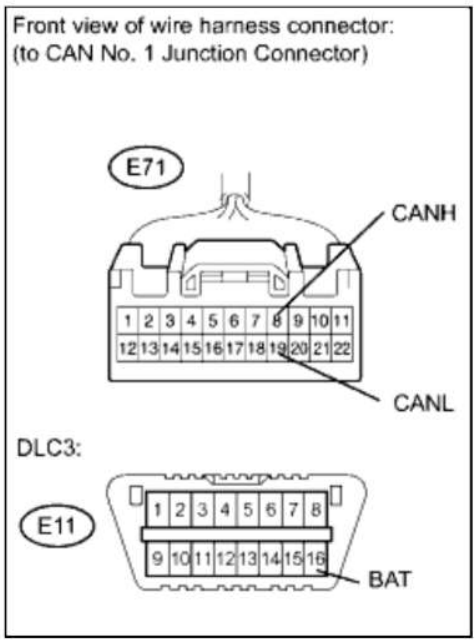
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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E58-5 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-16 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the steering angle sensor and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

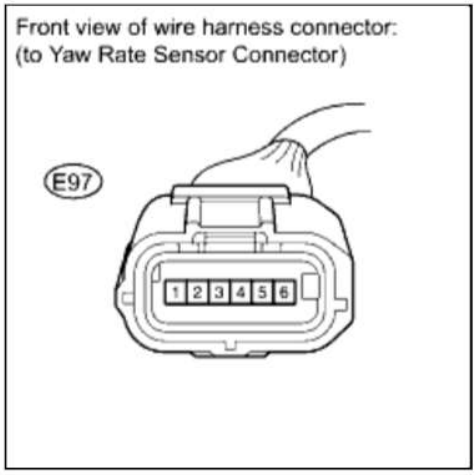
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

OK ▶ **REPLACE STEERING ANGLE SENSOR**

16.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**



(a) Disconnect the yaw rate sensor connector.

(b) TMC made:

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

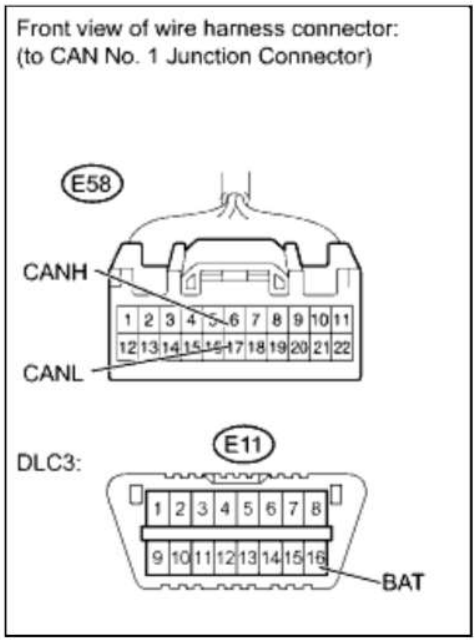
NOTICE:

The resistance must be measured after the yaw rate sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

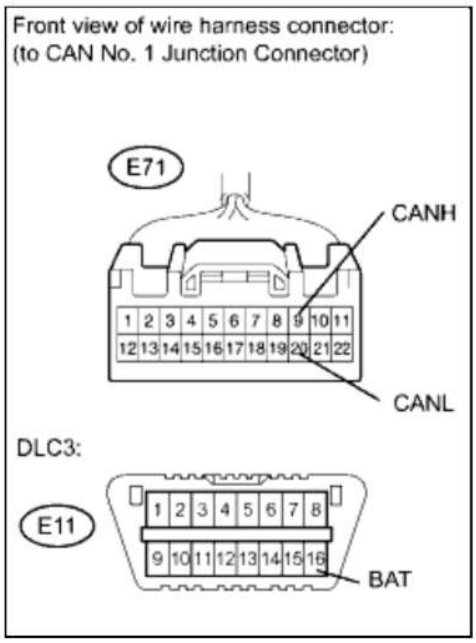
TESTER	CONDITION	SPECIFIED

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CONNECTION		CONDITION
E58-6 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-17 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the yaw rate sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

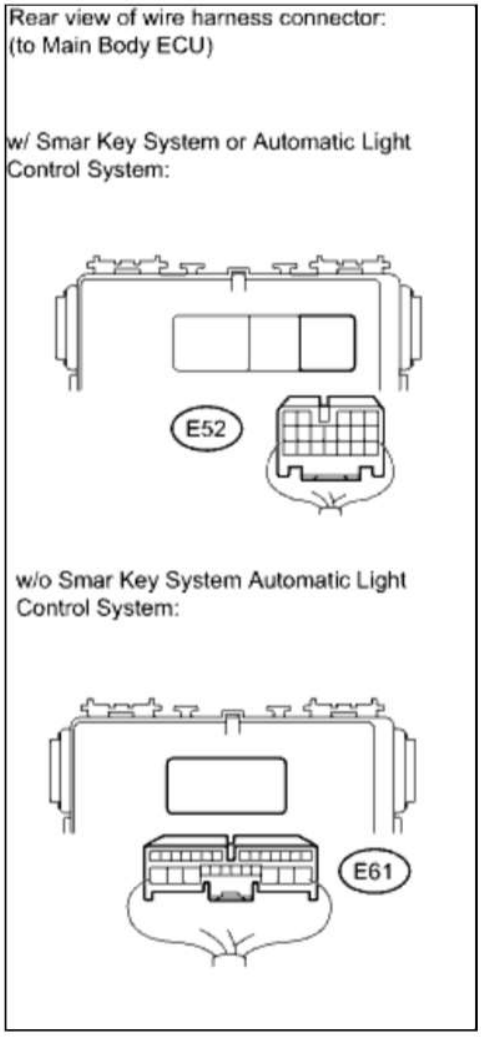
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-9 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

OK ▶ **REPLACE YAW RATE SENSOR**

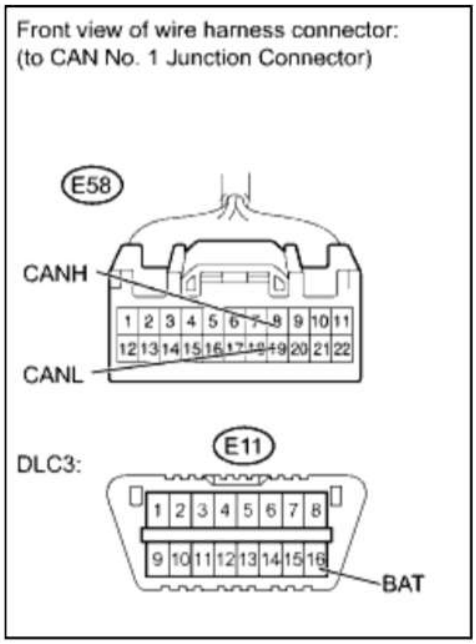
17.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**



(a) Disconnect the main body ECU connector.

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(b) TMC made:



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

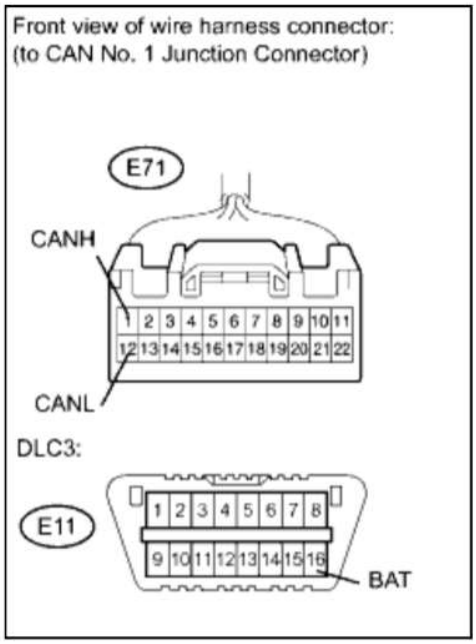
NOTICE:

The resistance must be measured after the main body ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-8 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-19 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the main body ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

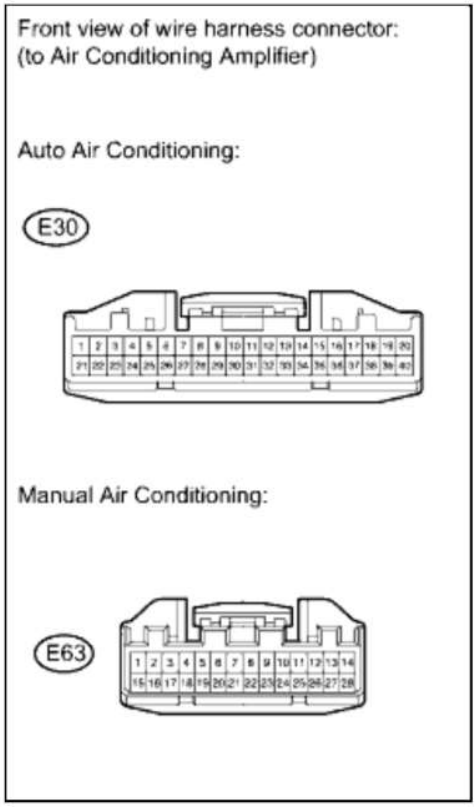
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-1 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-12 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▶ **REPLACE MAIN BODY ECU**

18.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**



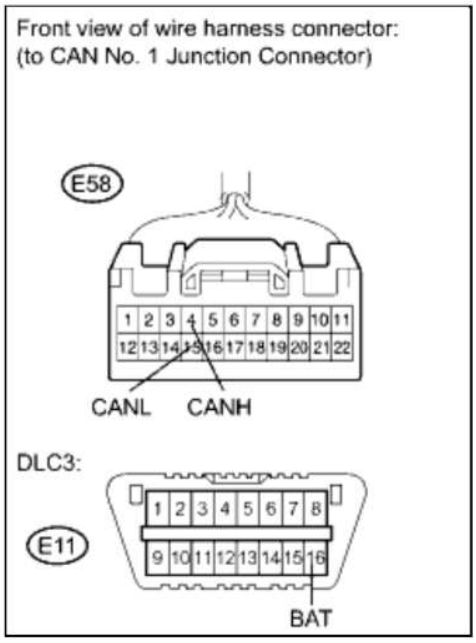
(a) Disconnect the air conditioning amplifier connector.

(b) TMC made:

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

NOTICE:

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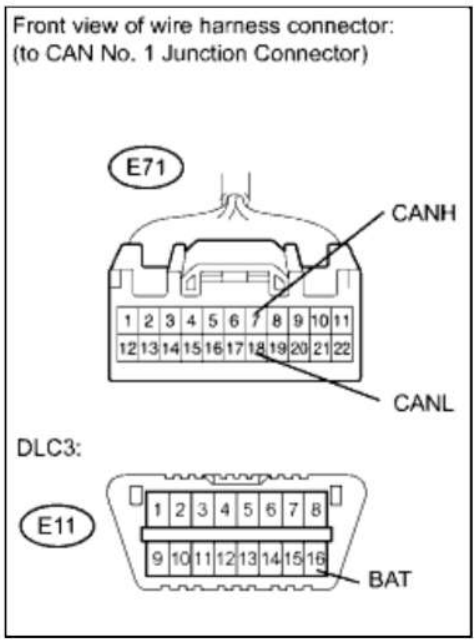


The resistance must be measured after the air conditioning amplifier connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-4 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E58-15 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the air conditioning amplifier connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

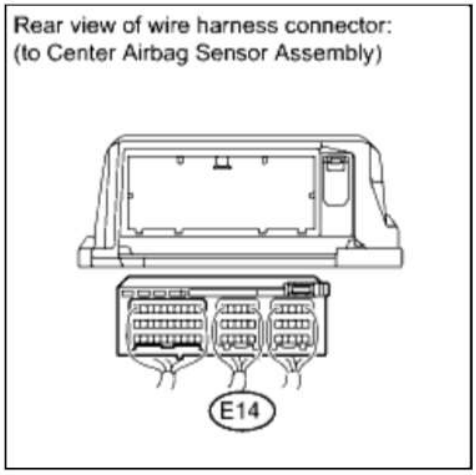
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-7 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-18 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER**

19.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**



(a) Disconnect the center airbag sensor assembly connector.

(b) TMC made:

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

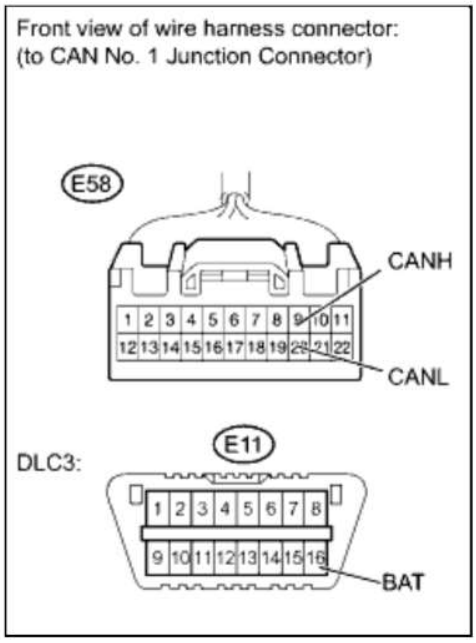
NOTICE:

The resistance must be measured after the center airbag sensor assembly connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

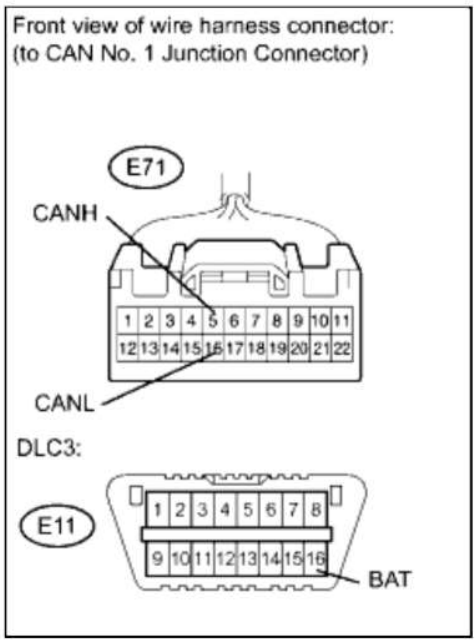
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-9 (CANH) -	Cable is disconnected	6 kΩ or higher

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E11-16 (BAT)	from negative (-) battery terminal	
E58-20 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the center airbag sensor assembly connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

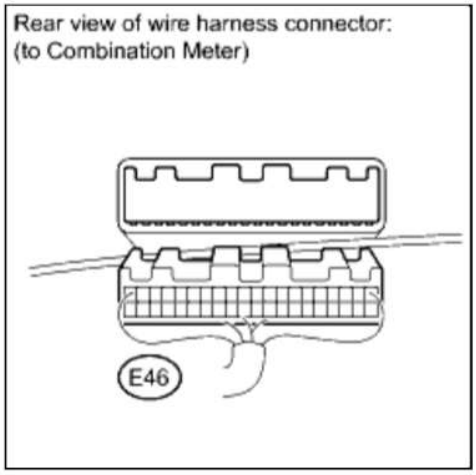
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-5 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-16 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**

OK ▶ **REPLACE CENTER AIRBAG SENSOR ASSEMBLY**

20.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**



(a) Disconnect the combination meter connector.

(b) TMC made:

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

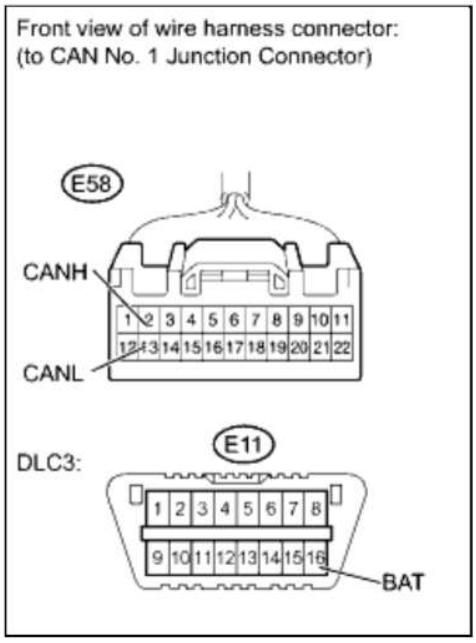
NOTICE:

The resistance must be measured after the combination meter connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

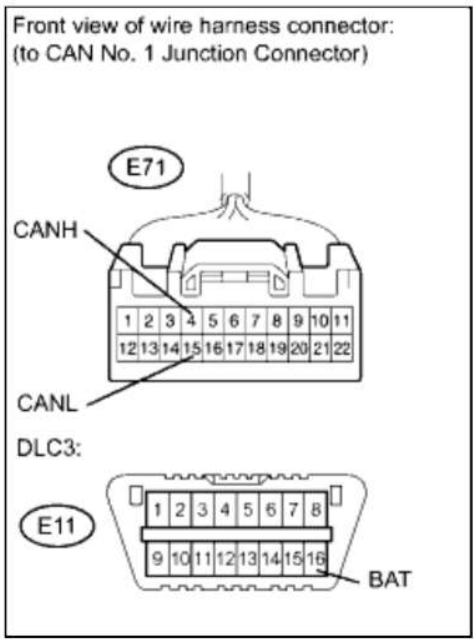
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-2 (CANH) -	Cable is disconnected	6 kΩ or higher

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E11-16 (BAT)	from negative (-) battery terminal	
E58-13 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the combination meter connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

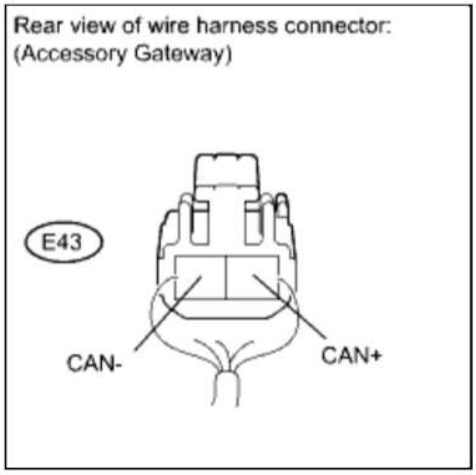
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-15 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▶ **REPLACE COMBINATION METER**

21.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**



(a) Disconnect the accessory gateway connector from the accessory.

(b) TMC made:

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

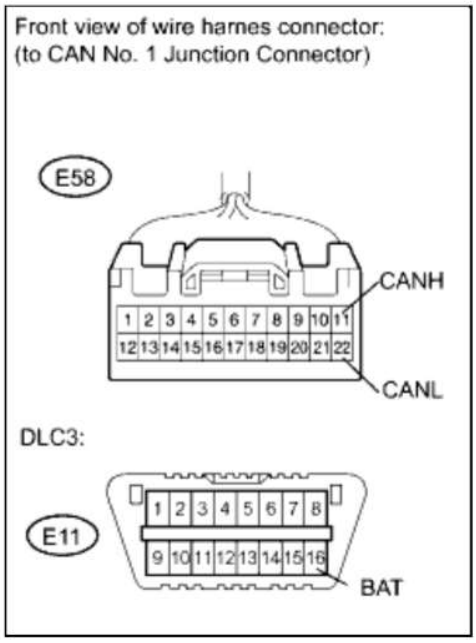
NOTICE:

The resistance must be measured after the accessory option and CAN No. 1 junction connector are disconnected.

Standard Resistance:

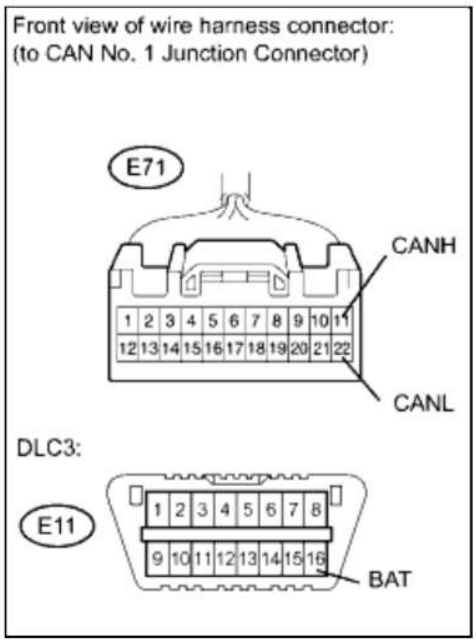
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E58-11 (CANH) -	Cable is disconnected	6 kΩ or higher

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E11-16 (BAT)	from negative (-) battery terminal	
E58-22 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

(c) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the accessory option and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E71-11 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E71-22 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

OK ▶ **REPLACE THE ACCESSORY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002E79019X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: U0327: Software Incompatibility with Vehicle Security Control Module (2010 Corolla)		

DTC	**U0327**	**Software Incompatibility with Vehicle Security Control Module**

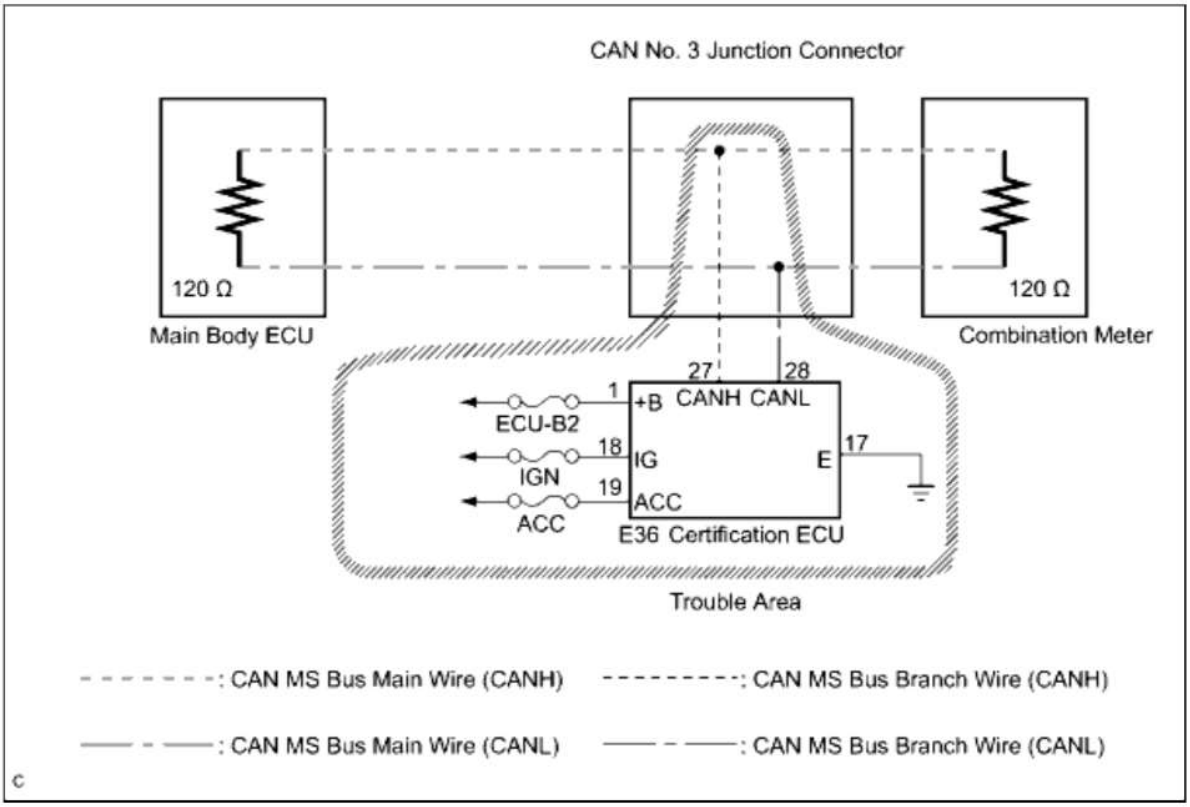
DESCRIPTION

The main body ECU will store this DTC when no signals can be received from the certification ECU while the CAN MS main bus is normal.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
U0327	No communication from certification ECU continues	• Certification ECU power source circuit • Certification ECU • Certification ECU branch wire or connector

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the CAN bus main wires and the CAN bus branch wires.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

1.	**CHECK DTC**

(a) Check the DTC.

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HINT:

If the CAN MS bus communication error DTC U1002 is output, troubleshoot for U1002 and check for malfunctions in the CAN MS main bus circuit INFO .

Result:

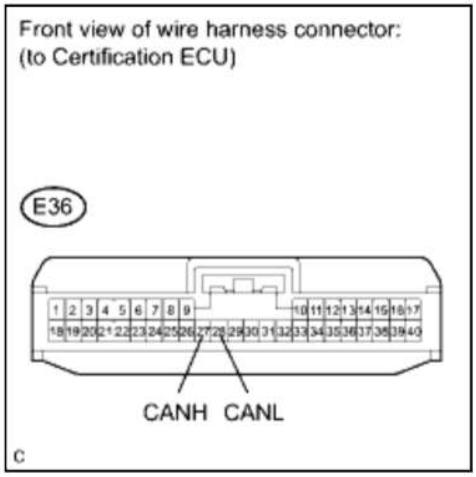
RESULT	PROCEED TO
U1002 is not output	A
U1002 is output	B

B ▶ **GO TO DTC CHART**

A ▼

2.	**CHECK CAN MS BUS WIRE (CERTIFICATION ECU)**

(a) Turn the ignition switch off.



(b) Disconnect the certification ECU connector from the certification ECU.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E36-27 (CANH) - E36-28 (CANL)	Ignition switch off	54 to 69 Ω

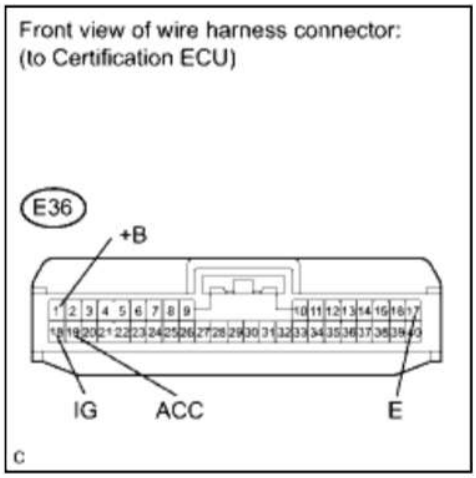
NG ▶ **REPAIR OR REPLACE CAN MS BUS BRANCH WIRE**

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OR CONNECTOR (CERTIFICATION ECU)

OK

3.	CHECK HARNESS AND CONNECTOR (POWER SOURCE CIRCUIT)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-17 (E) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-18 (IG) - Body ground	Ignition switch ON	10 to 14 V
E36-1 (+B) - Body ground	Always	10 to 14 V
E36-19 (ACC) - Body ground	Ignition switch ACC	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE CERTIFICATION ECU**

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Last Modified: 3-10-2010	6.4 S	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002B6V01OX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 Corolla)		

DIAGNOSTIC TROUBLE CODE CHART

CAN Communication System

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
U0327	Software Incompatibility with Vehicle Security Control Module	1. Certification ECU branch wire or connector 2. Certification ECU power source circuit 3. Certification ECU	INFO
U1002 (CAN MS BUS)	Lost Communication with Gateway Module (Main body ECU)	1. Open or short in CAN MS bus main wire or connector 2. Open or short in CAN MS bus branch wire or connector 3. Certification ECU 4. Combination meter 5. Main body ECU 6. CAN No. 3 junction connector	INFO

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001FAF01AX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Check CAN Bus Line for Short to GND (2010 Corolla)		

Check CAN Bus Line for Short to GND

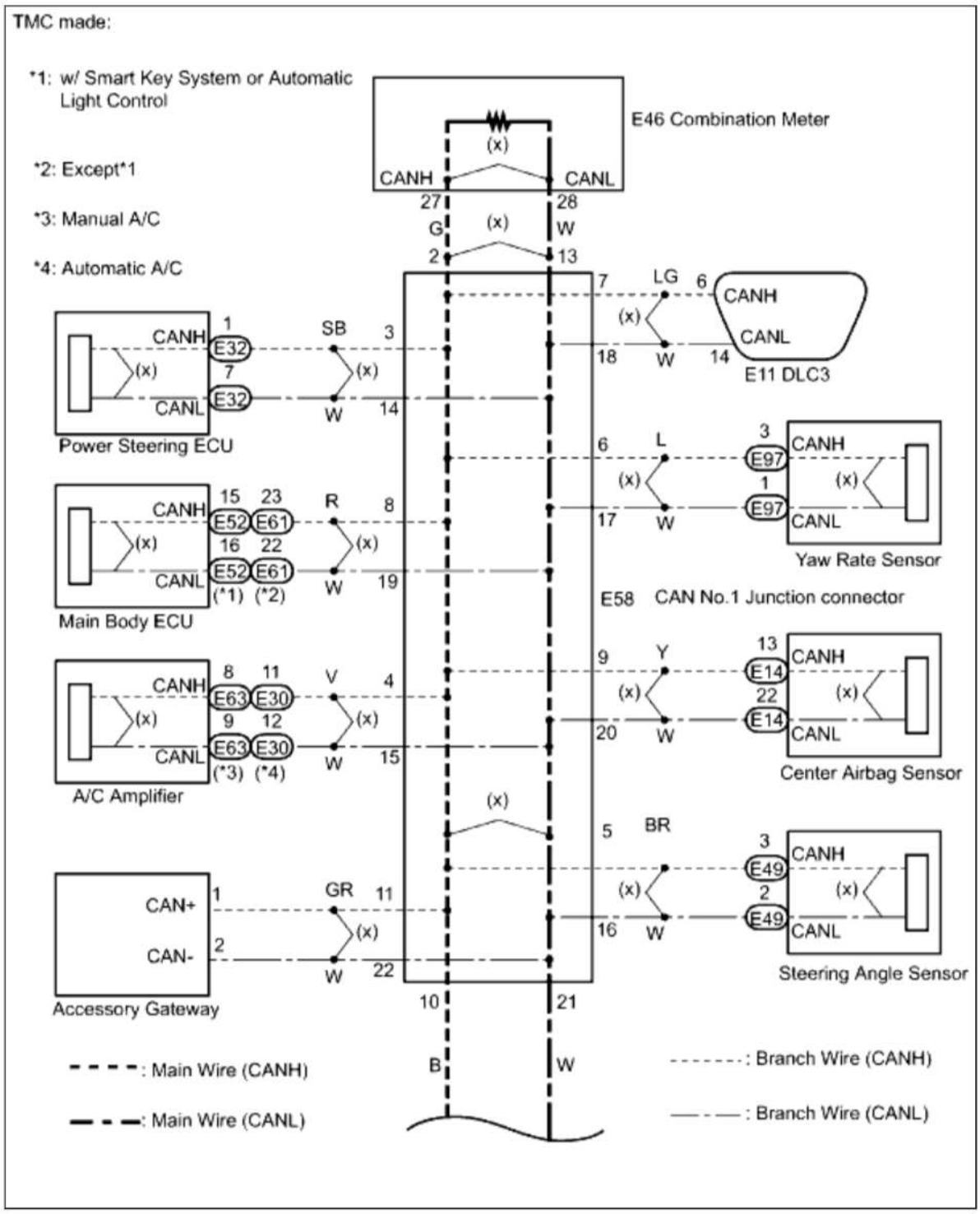
DESCRIPTION

There may be a short circuit between the CAN bus line and GND when there is no resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of the DLC3.

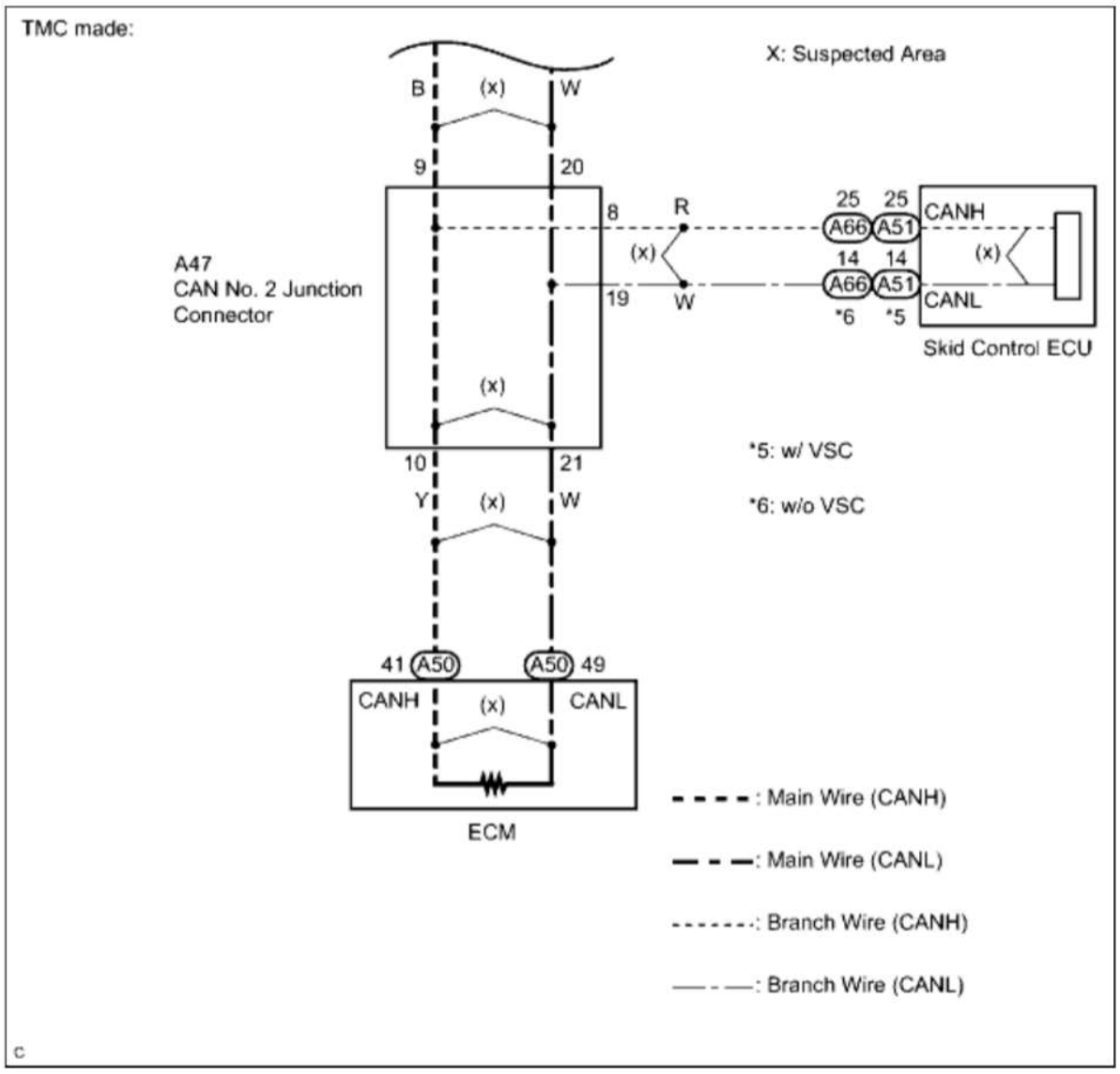
SYMPTOM	TROUBLE AREA
No resistance exists between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of DLC3.	Short to GND in CAN bus wire • Short to GND in CAN bus wire • Skid control ECU • Power steering ECU • Steering angle sensor (w/ VSC) • Yaw rate sensor (w/ VSC) • ECM • Center airbag sensor assembly • Air conditioning amplifier • Combination meter ECU • Main body ECU • Accessory Gateway

WIRING DIAGRAM

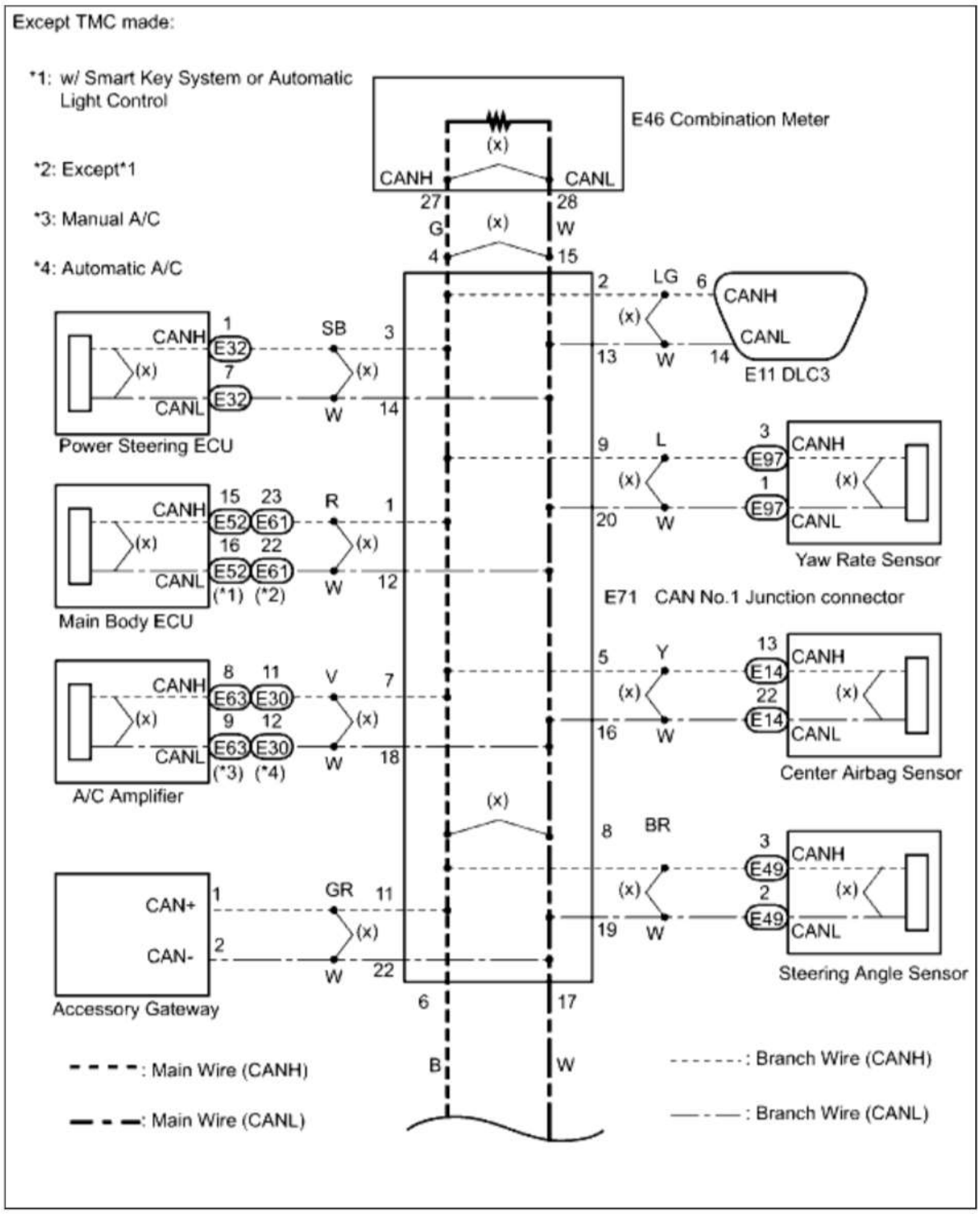
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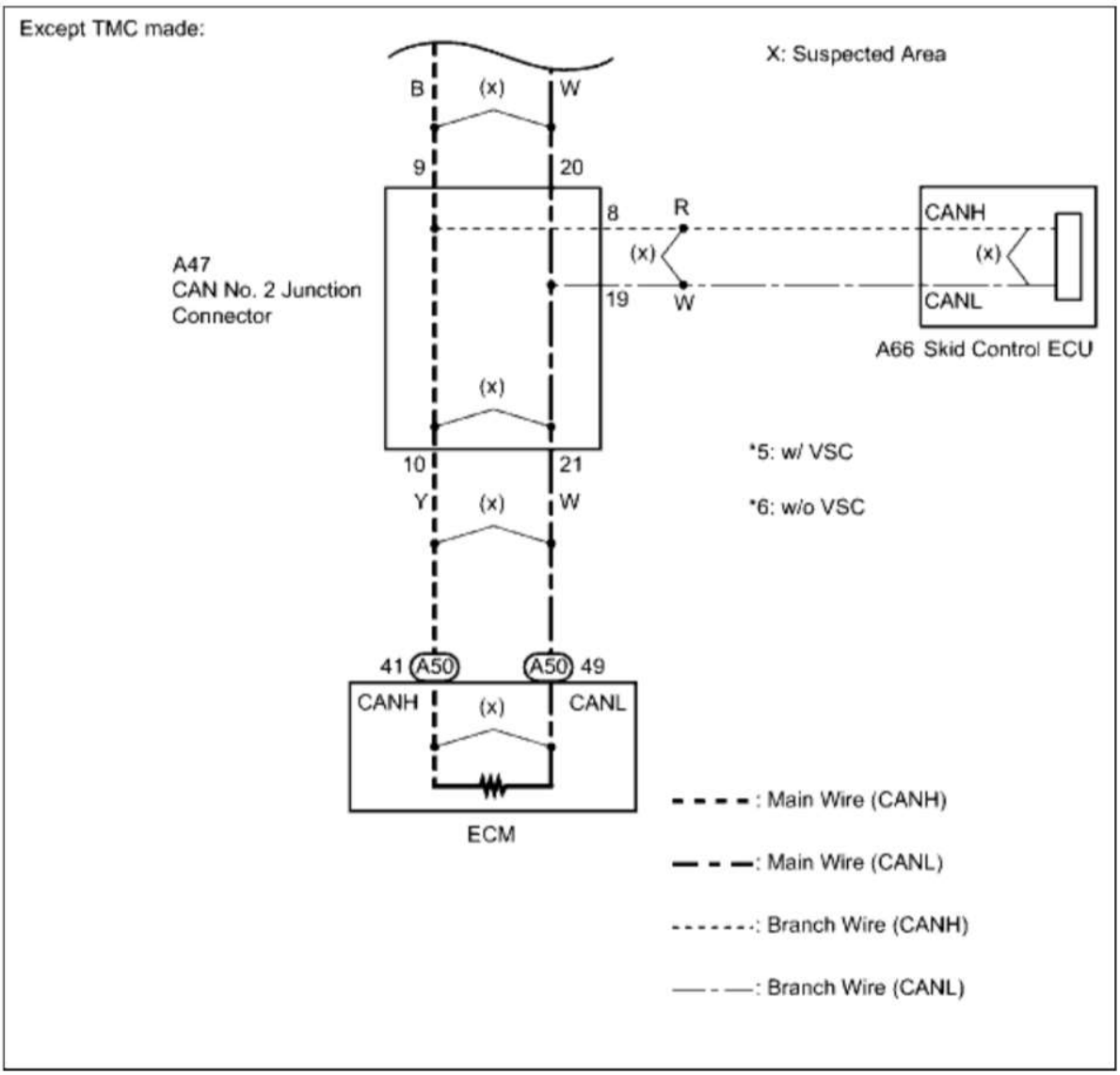
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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

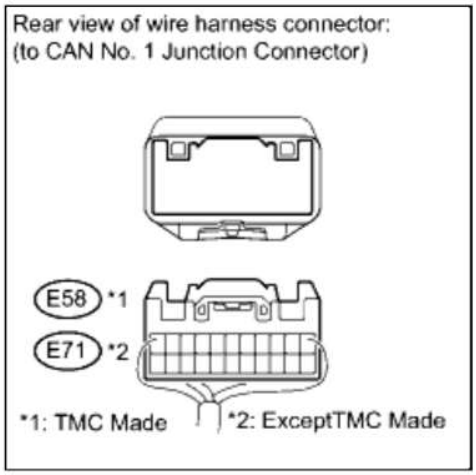
- Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

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PROCEDURE

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

(a) Turn the ignition switch off.

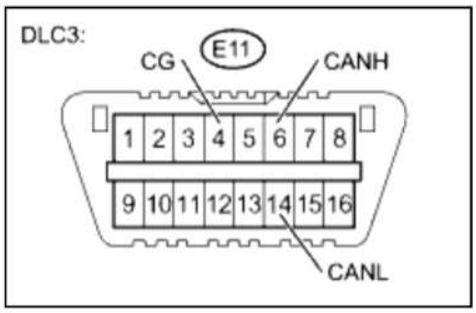


(b) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E11-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

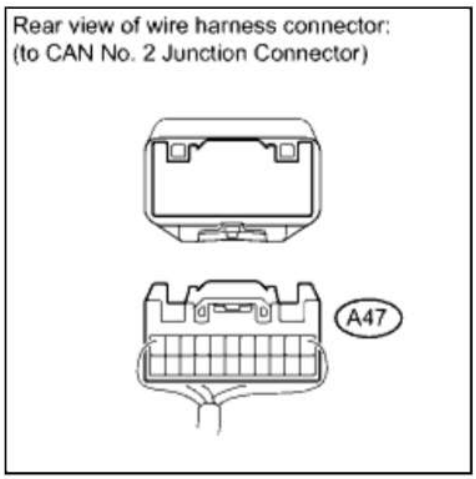
NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3**

OK ▼

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2.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR)

(a) Reconnect the CAN No. 1 junction connector.

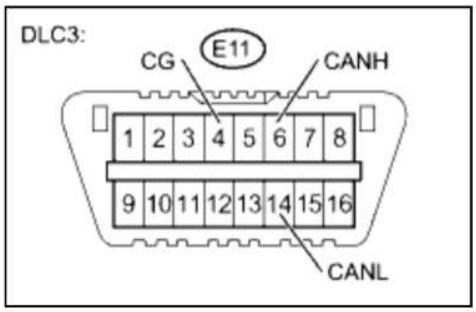


(b) Disconnect the CAN No. 2 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 2 junction connector is disconnected.



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E11-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

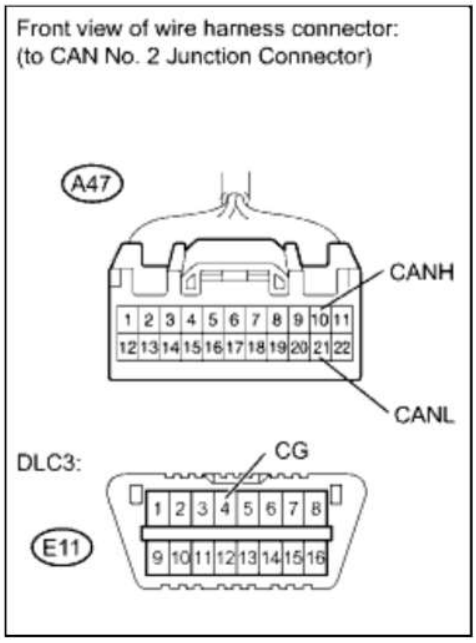
NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (POWER STEERING ECU BRANCH WIRE)**

OK ▼

3.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (ECM MAIN WIRE)

(a) Measure the resistance according to the value(s) in

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the table below.

NOTICE:

The resistance must be measured after the CAN No. 2 junction connector is disconnected.

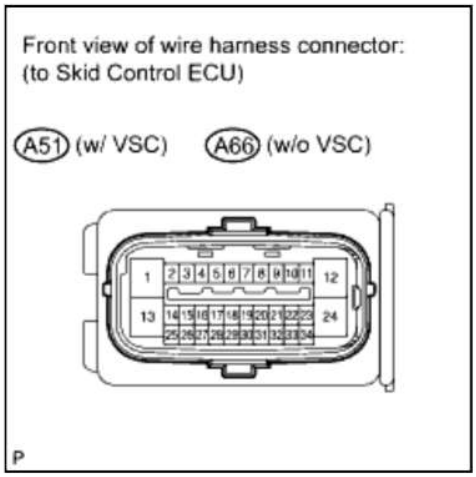
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
A47-21 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

OK ▼

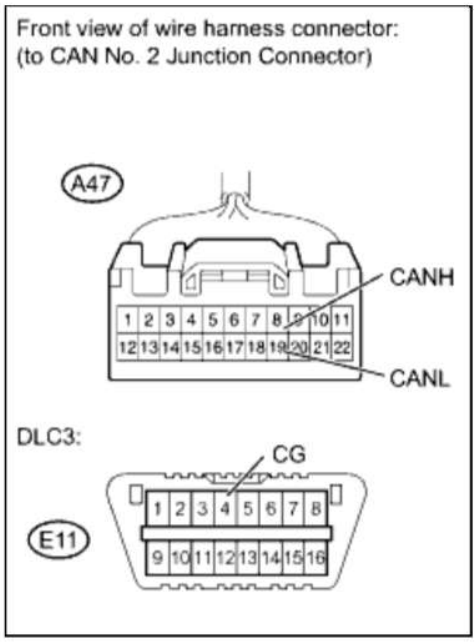
4.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**



(a) Disconnect the skid control ECU connector.

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

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NOTICE:

The resistance must be measured after the skid control ECU connector and CAN No. 2 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
A47-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

Result:

RESULT	PROCEED TO
OK (w/o VSC)	A
OK (w/ VSC)	B
NG	C

C ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**

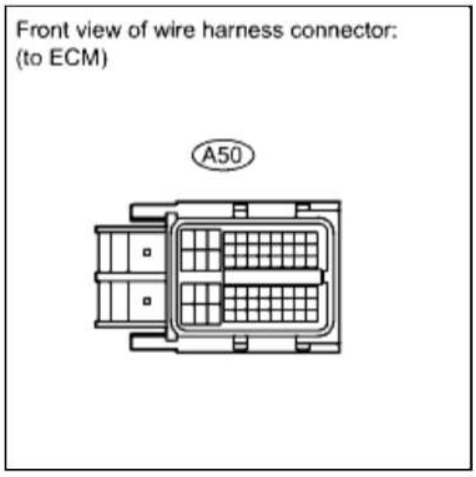
B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

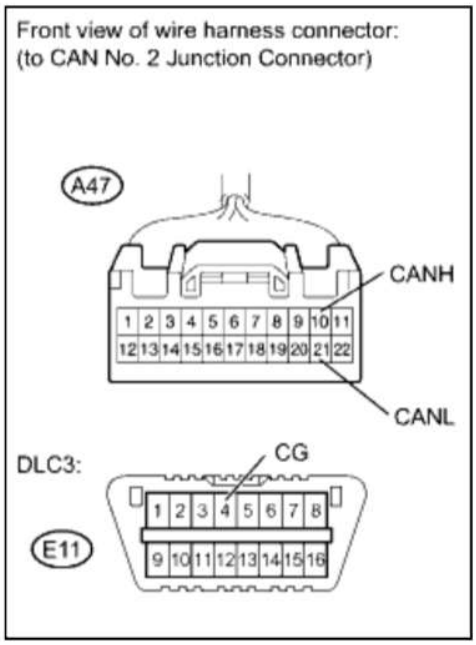
5.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

(a) Disconnect the ECM connector.

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



NOTICE:

The resistance must be measured after the ECM connector and CAN No.2 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
A47-21 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

Result:

RESULT	PROCEED TO
OK (for 2ZR-FE)	A
OK (for 2AZ-FE)	B
NG	C

C ▶ **REPAIR OR REPLACE CAN BUS MAIN WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

B ▶ **REPLACE ECM**

A ▶ **REPLACE ECM**

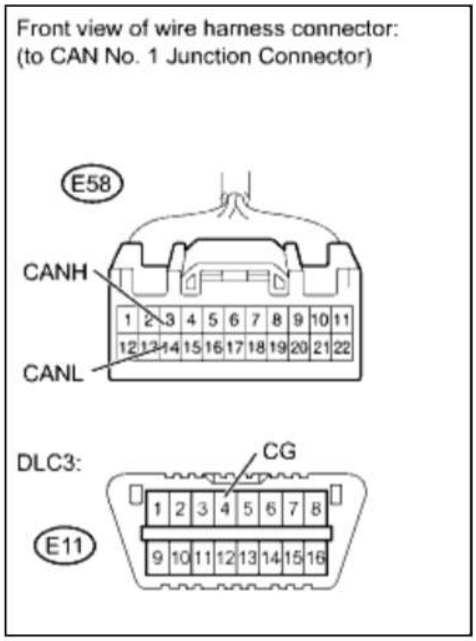
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6.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (POWER STEERING ECU BRANCH WIRE)

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

(b) Disconnect the CAN No. 1 junction connector.

(c) TMC made:



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

NOTICE:

- The resistance must be measured after the CAN No. 2 junction connector is reconnected.
- The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-3 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(d) Except TMC made:

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

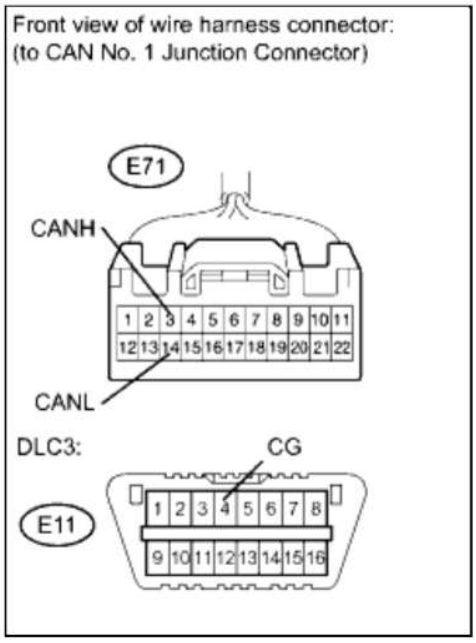
NOTICE:

- The resistance must be measured after the CAN No. 2 junction connector is reconnected.
- The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-3 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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E71-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**

OK ▼

7.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (STEERING ANGLE SENSOR BRANCH WIRE)**

(a) TMC made:

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

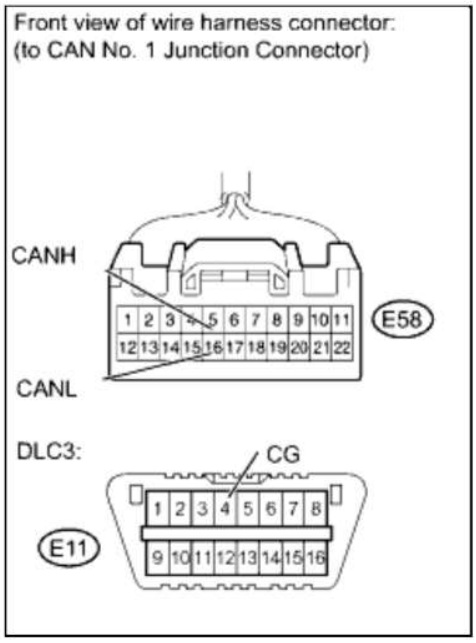
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

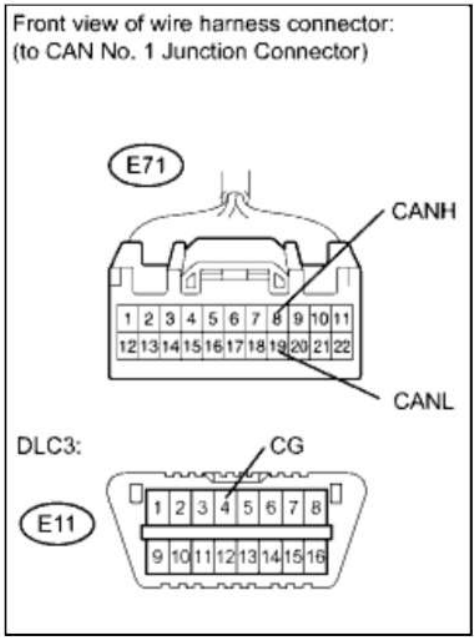
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-5 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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E58-16 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

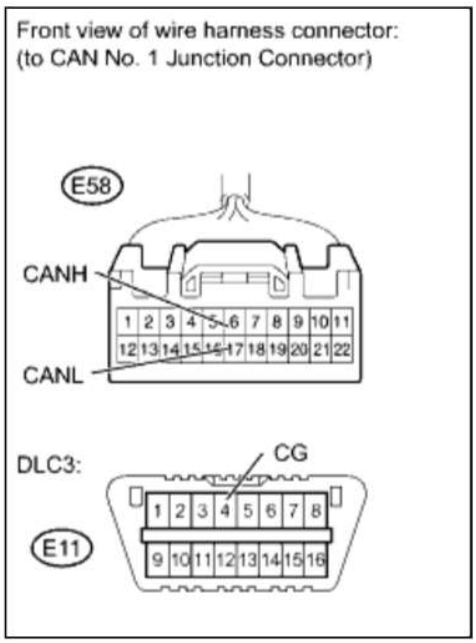
NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

OK ▼

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8.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (YAW RATE SENSOR BRANCH WIRE)

(a) TMC made:



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

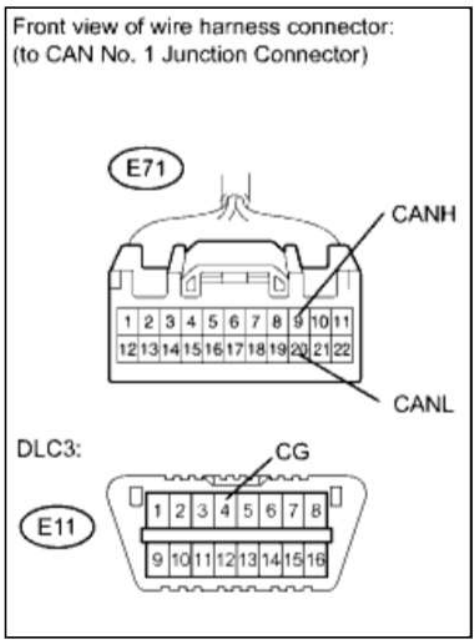
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-6 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-17 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-9 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

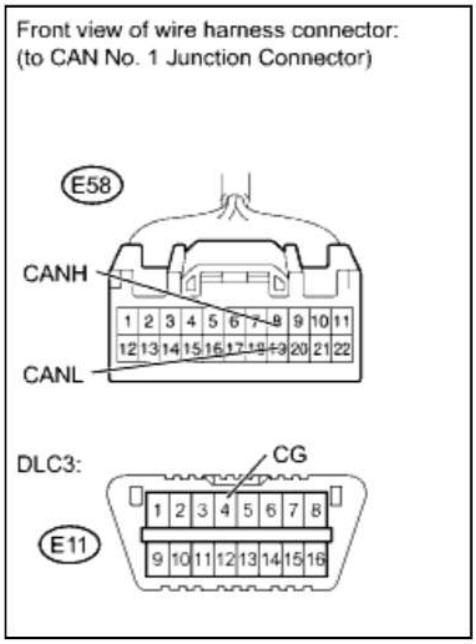
NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

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OK

9.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (MAIN BODY ECU BRANCH WIRE)

(a) TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:

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

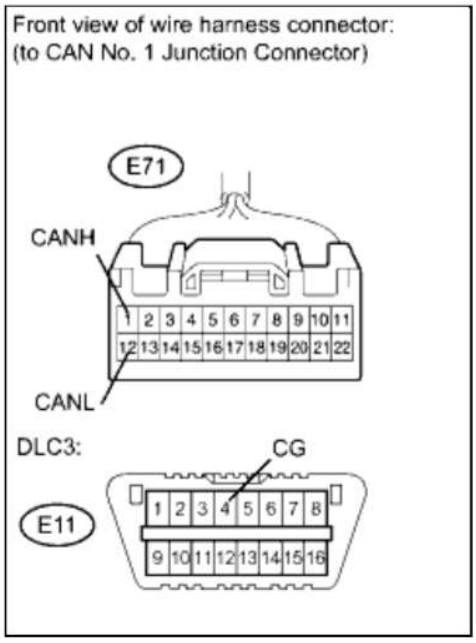
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-1 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-12 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▼

10.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**

(a) TMC made:

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

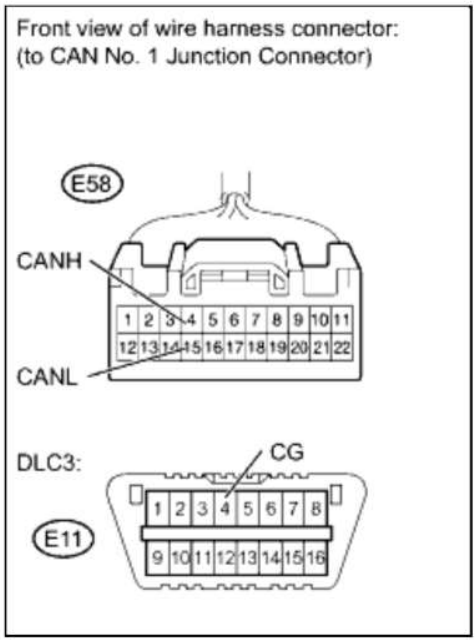
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

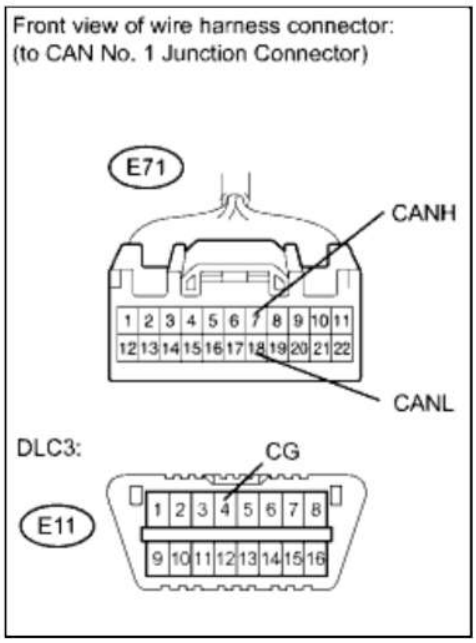
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-4 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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E58-15 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-7 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-18 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

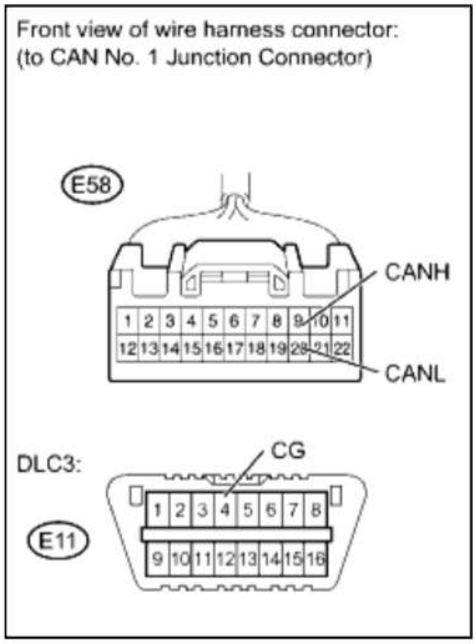
NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

OK ▼

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11.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)

(a) TMC made:



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

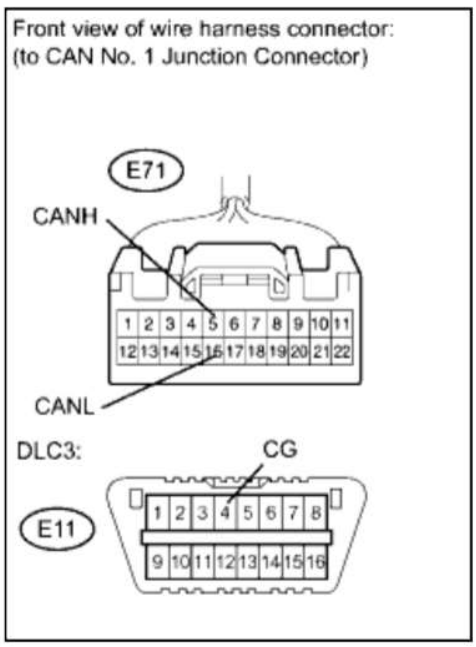
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-9 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-5 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-16 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG**

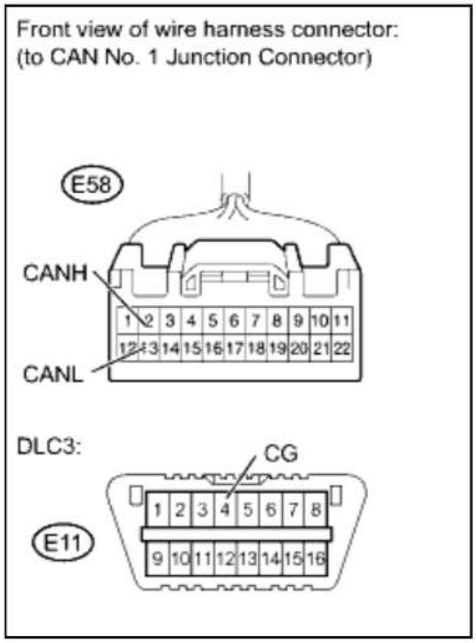
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SENSOR ASSEMBLY)

OK

12.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (COMBINATION METER MAIN WIRE)**

(a) TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-13 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:

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

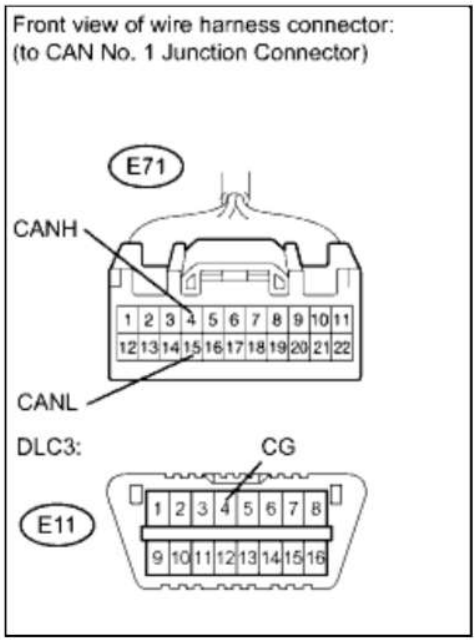
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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E71-15 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▼

13.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (ACCESSORY GATEWAY BRANCH WIRE)**

(a) TMC made:

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

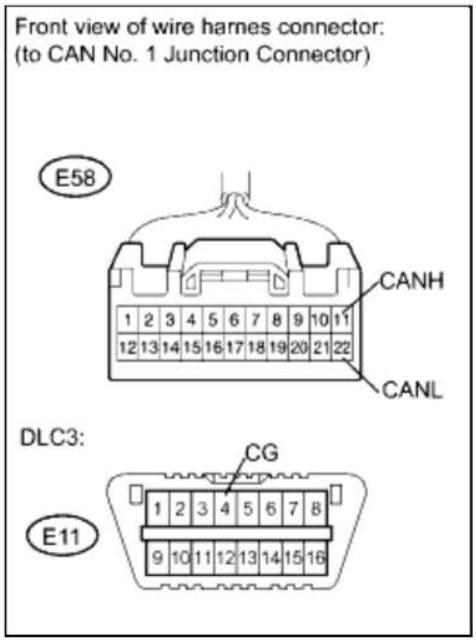
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

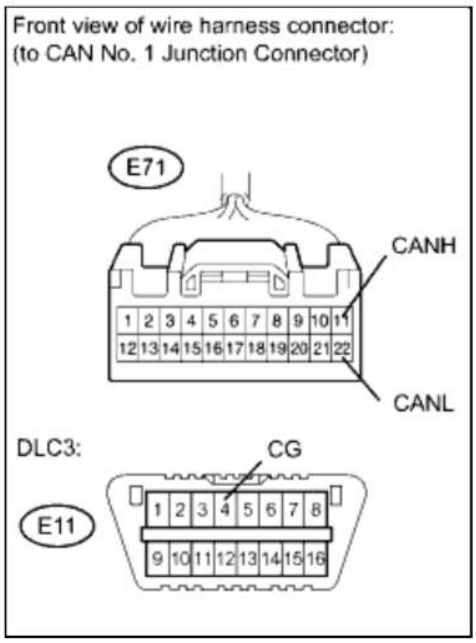
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-11 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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E58-22 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-11 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-22 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

Result:

RESULT	PROCEED TO
OK	A
NG (w/o remote engine start)	B
NG (w/ remote engine start)	C

C ▶ **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN**

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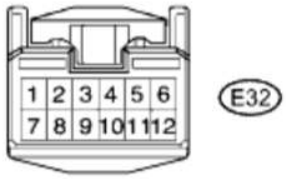
NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)

B ▶ REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)

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

14.	CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)

Front view of wire harness connector:
(to Power Steering ECU)



(a) Disconnect the power steering ECU connector.

(b) TMC made:

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

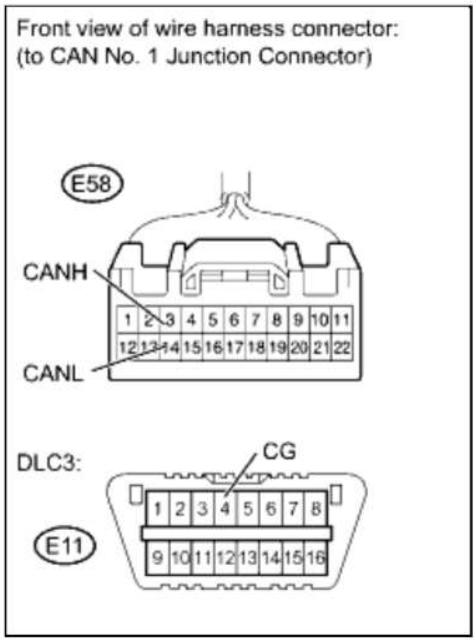
NOTICE:

The resistance must be measured after the power steering ECU and CAN No. 1 junction connector are disconnected.

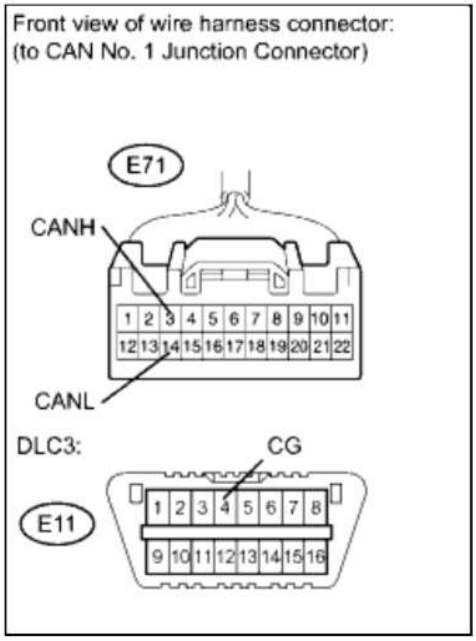
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-3 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the power steering ECU and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-3 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

Result:

RESULT	PROCEED TO
OK (for 2AZ-FE)	A
OK (for 2ZR-FE)	B
NG	C

C ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR**

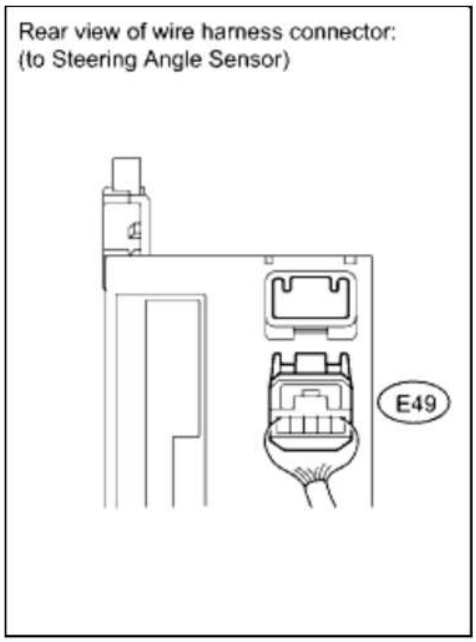
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CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)

B ▶ **REPLACE POWER STEERING ECU**

A ▶ **REPLACE POWER STEERING ECU**

15.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**



(a) Disconnect the steering angle sensor connector.

(b) TMC made:

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

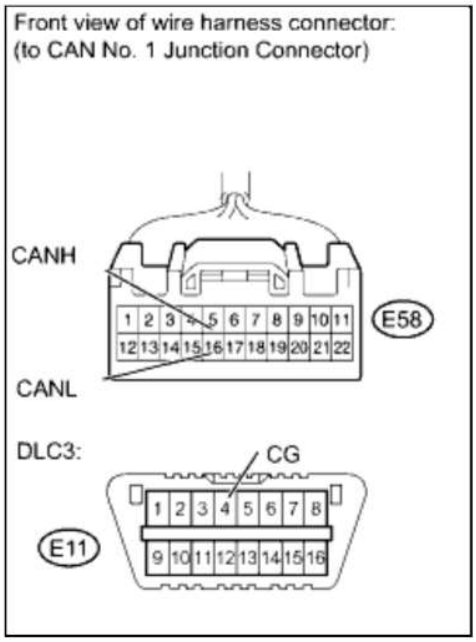
NOTICE:

The resistance must be measured after the steering angle sensor and CAN No. 1 junction connector are disconnected.

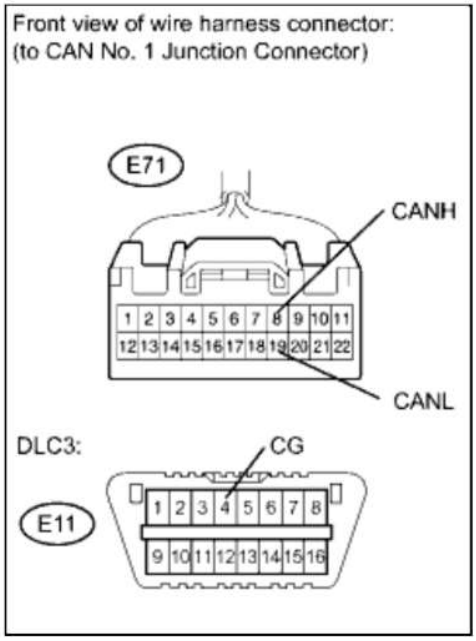
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-5 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-16 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the steering angle sensor and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

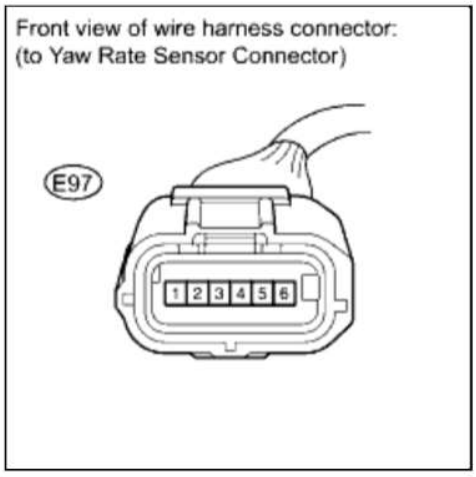
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

OK ▶ **REPLACE STEERING ANGLE SENSOR**

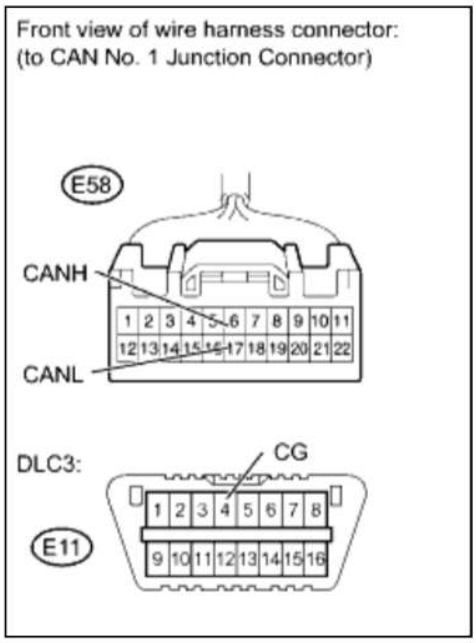
16. CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)

(a) Disconnect the yaw rate sensor connector.

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(b) TMC made:



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

NOTICE:

The resistance must be measured after the yaw rate sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-6 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-17 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(c) Except TMC made:

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

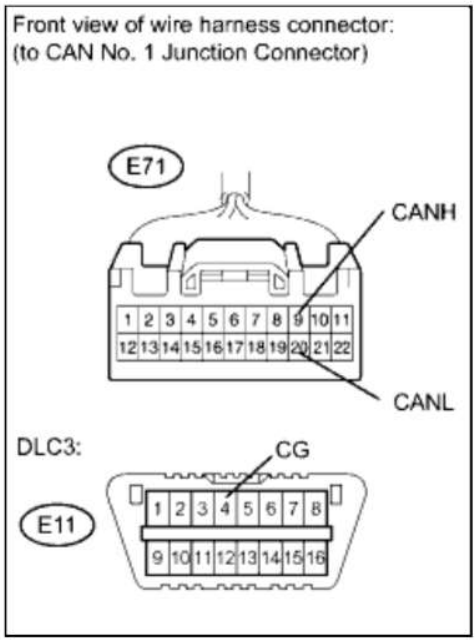
NOTICE:

The resistance must be measured after the yaw rate sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-9 (CANH) -	Ignition switch off	200 Ω or higher

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E11-4 (CG)		
E71-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

OK ▶ **REPLACE YAW RATE SENSOR**

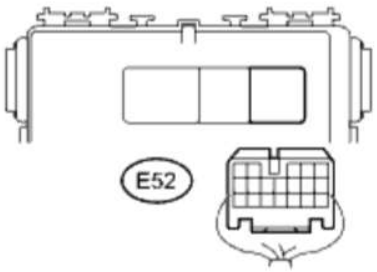
17.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

(a) Disconnect the main body ECU connector.

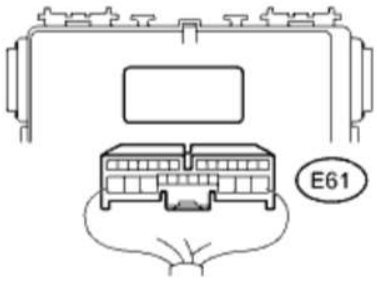
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Rear view of wire harness connector:
(to Main Body ECU)

w/ Smar Key System or Automatic Light Control System:

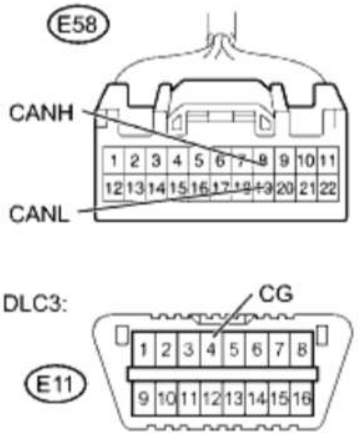


w/o Smar Key System Automatic Light Control System:



(b) TMC made:

Front view of wire harness connector:
(to CAN No. 1 Junction Connector)



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

NOTICE:

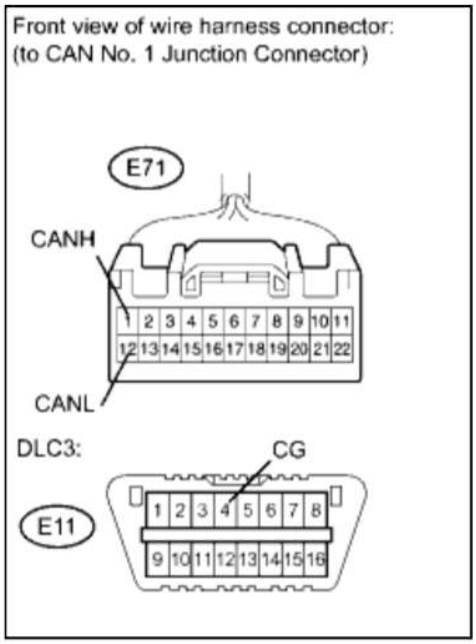
The resistance must be measured after the main body ECU and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-8 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-19 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

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(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the main body ECU and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-1 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-12 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

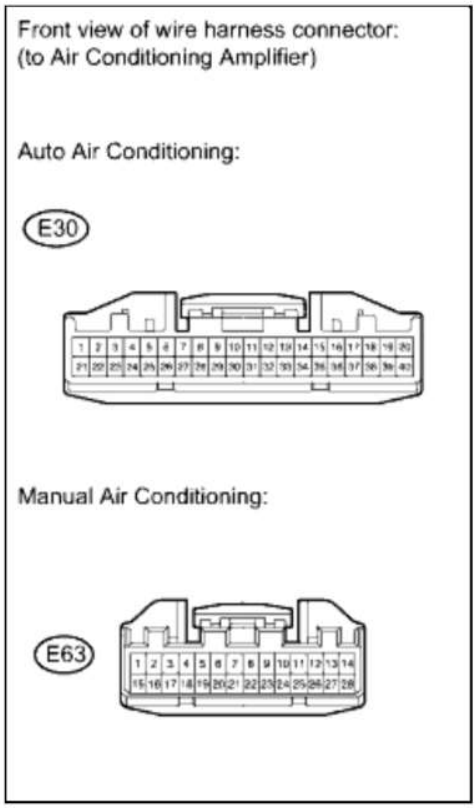
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▶ **REPLACE MAIN BODY ECU**

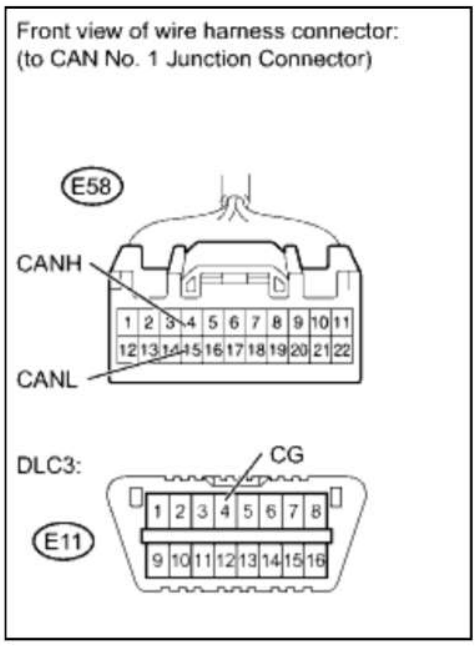
18.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

(a) Disconnect the air conditioning amplifier connector.

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(b) TMC made:



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

NOTICE:

The resistance must be measured after the air conditioning amplifier and CAN No. 1 junction connector are disconnected.

Standard Resistance:

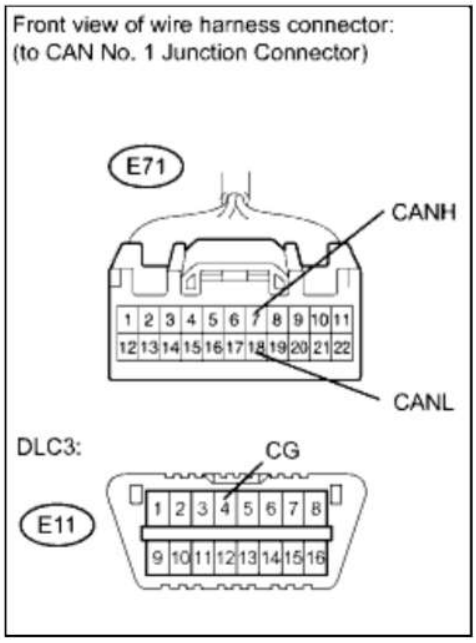
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-4 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-15 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(c) Except TMC made:

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

NOTICE:

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The resistance must be measured after the air conditioning amplifier and CAN No. 1 junction connector are disconnected.

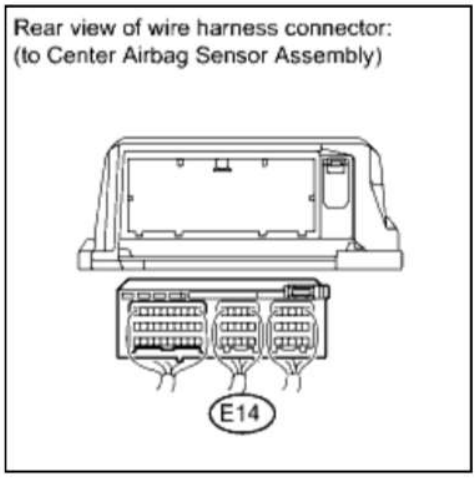
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-7 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-18 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER**

19.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**

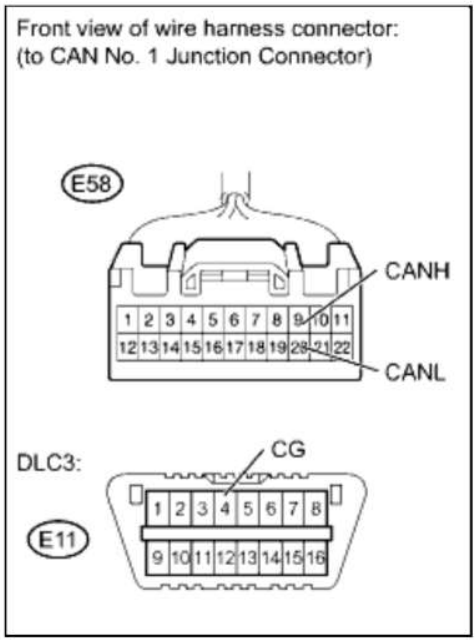


(a) Disconnect the center airbag sensor assembly connector.

(b) TMC made:

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

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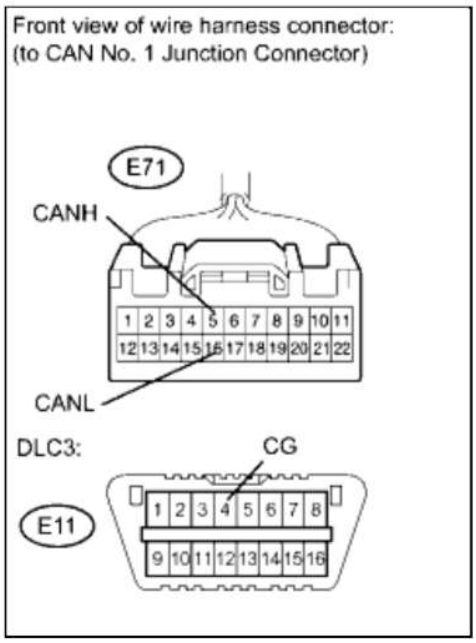
NOTICE:

The resistance must be measured after the center airbag sensor assembly and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-9 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-20 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the center airbag sensor assembly and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-5 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-16 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

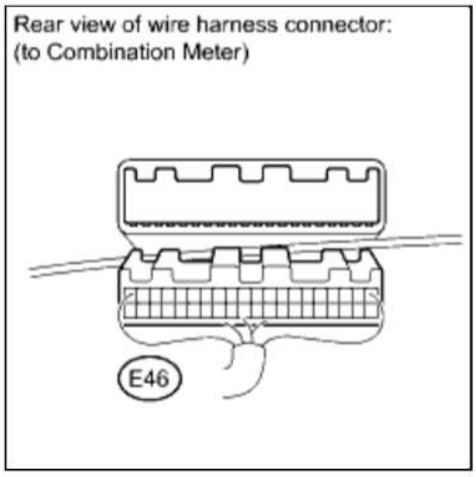
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**

OK ▶ **REPLACE CENTER AIRBAG SENSOR ASSEMBLY**

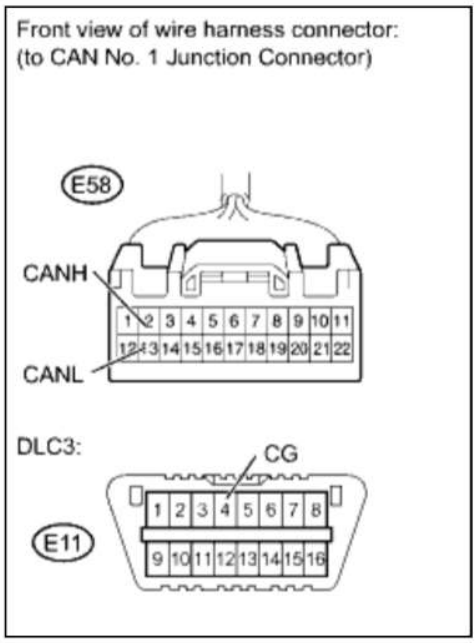
20. CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)

(a) Disconnect the combination meter connector.

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(b) TMC made:



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

NOTICE:

The resistance must be measured after the combination meter and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-13 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(c) Except TMC made:

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

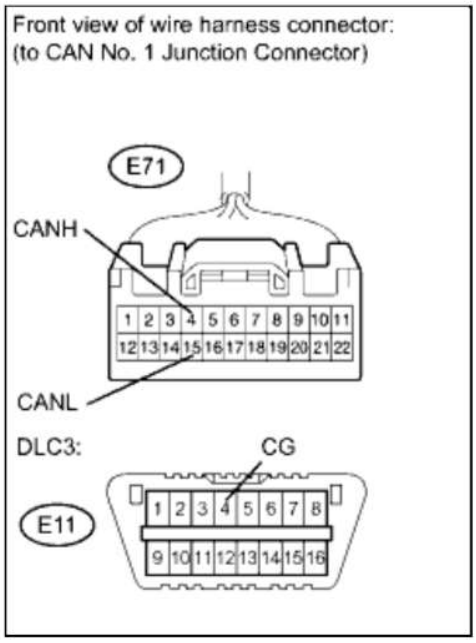
NOTICE:

The resistance must be measured after the combination meter and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-4 (CANH) -	Ignition switch off	200 Ω or higher

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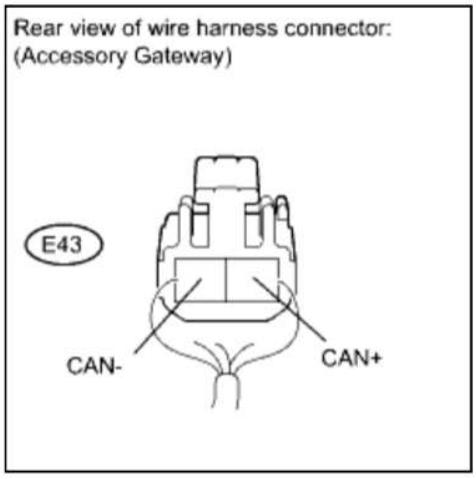


E11-4 (CG)		
E71-15 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN BUS MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▶ **REPLACE COMBINATION METER**

21.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

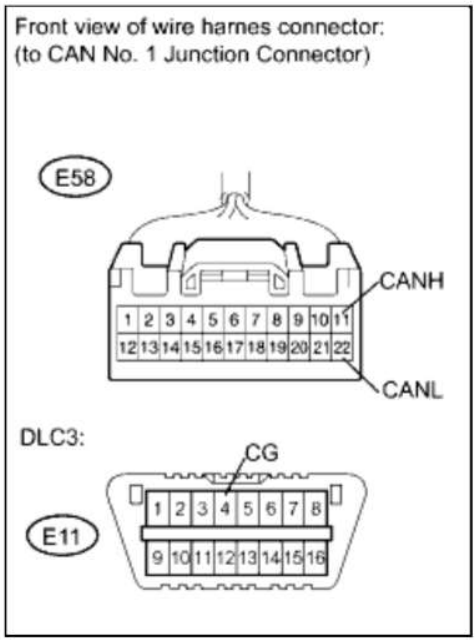


(a) Disconnect the accessory gateway connector from the accessory

(b) TMC made:

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

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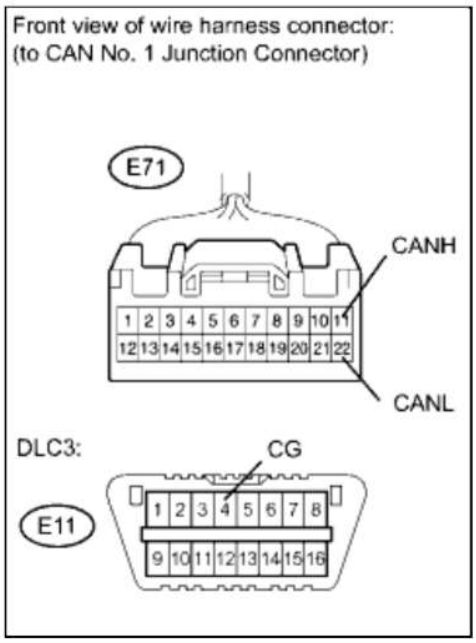
NOTICE:

The resistance must be measured after the accessory option and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-11 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E58-22 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the accessory option and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-11 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E71-22 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

OK ▶ **REPLACE THE ACCESSORY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001V2C01IX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Skid Control ECU Communication Stop Mode (2010 Corolla)		

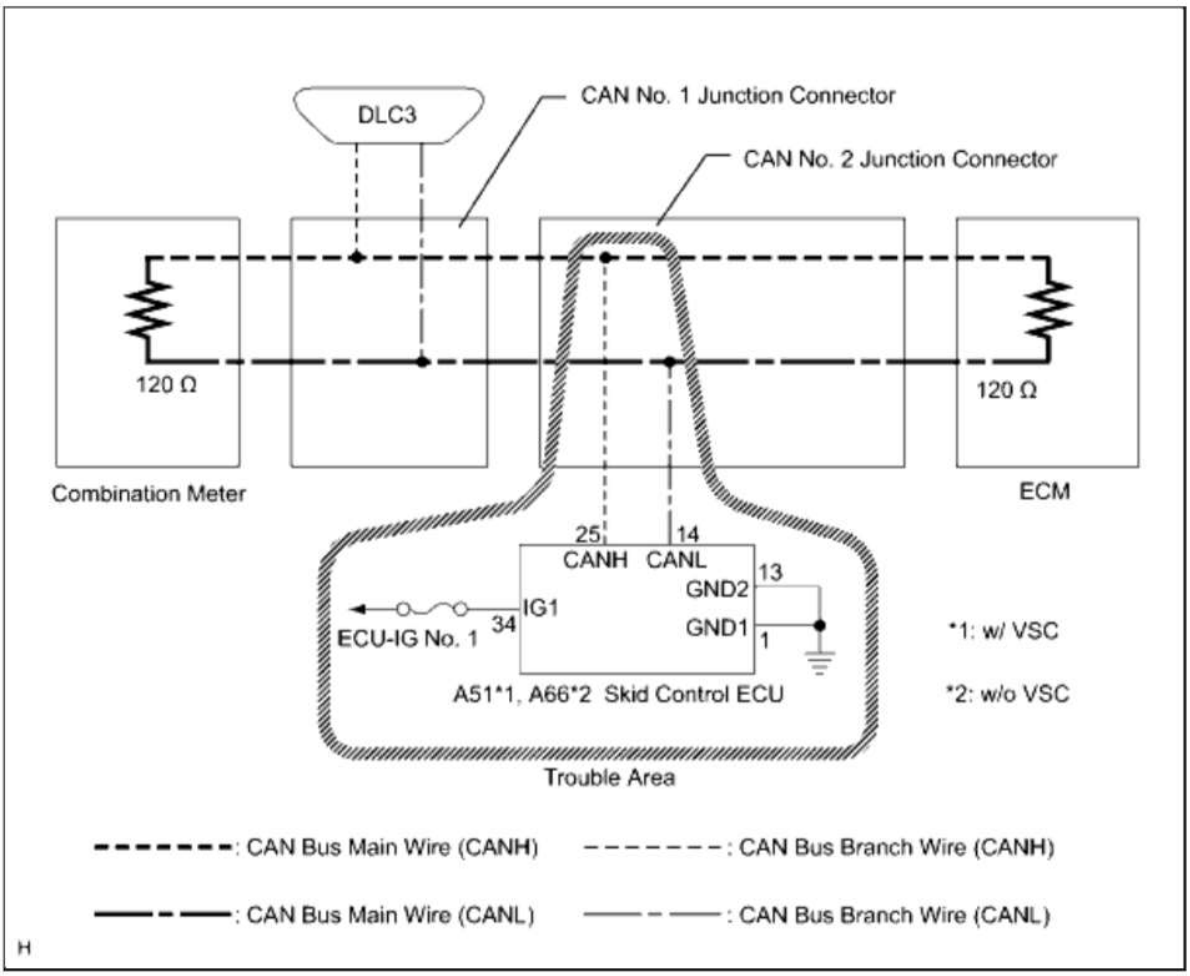
Skid Control ECU Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Skid Control ECU Communication Stop Mode	• "ABS/VSC/TRAC" is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "Skid Control ECU Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of skid control ECU • Skid control ECU branch wire or connector • Skid control ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

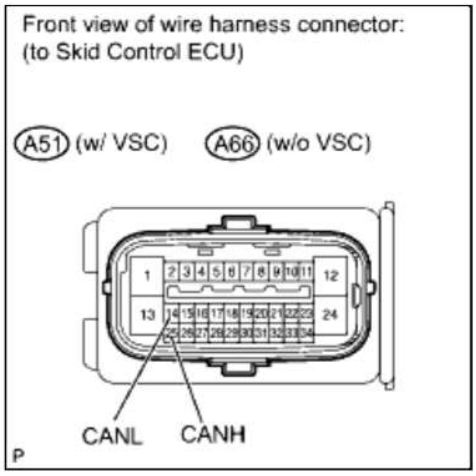
HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	CHECK CAN BUS WIRE FOR DISCONNECTION (SKID CONTROL ECU BRANCH WIRE)



(a) Turn the ignition switch off.

(b) Disconnect the skid control ECU connector.

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

Standard Resistance:

w/ VSC

w/o VSC

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-25 (CANH) - A51-14 (CANL)	Ignition switch off	54 to 69 Ω

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-25 (CANH) - A66-14 (CANL)	Ignition switch off	54 to 69 Ω

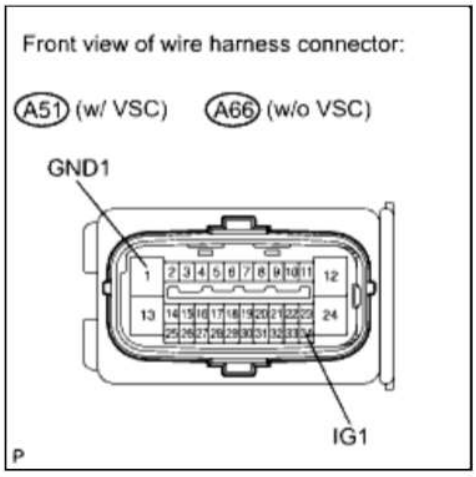
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (SKID CONTROL ECU BRANCH WIRE)**

OK ▼

2.	CHECK HARNESS AND CONNECTOR (IG1, GND1)

(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

w/ VSC

w/o VSC

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-1 (GND1) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

w/ VSC

w/o VSC

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-34 (IG1) - Body ground	Ignition switch ON	10 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-34 (IG1) - Body ground	Ignition switch ON	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

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3.	CHECK DTC OUTPUT

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Turn the Techstream on.

(d) Enter the following menus: Chassis / ABS/VSC/TRC / DTC.

(e) Read the DTC.

OK:

C1241 is not stored.

Result:

RESULT	PROCEED TO
OK (w/o VSC)	A
OK (w/ VSC)	B
NG (w/o VSC)	C
NG (w/ VSC)	D

D ▶ GO TO DTC CHART (C1241 w/ VSC)

C ▶ GO TO DTC CHART (C1241 w/o VSC)

B ▶ REPLACE BRAKE ACTUATOR ASSEMBLY (w/ VSC)

A ▶ REPLACE BRAKE ACTUATOR ASSEMBLY (w/o VSC)

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001F1U02JX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Air Conditioning Amplifier Communication Stop Mode (2010 Corolla)		

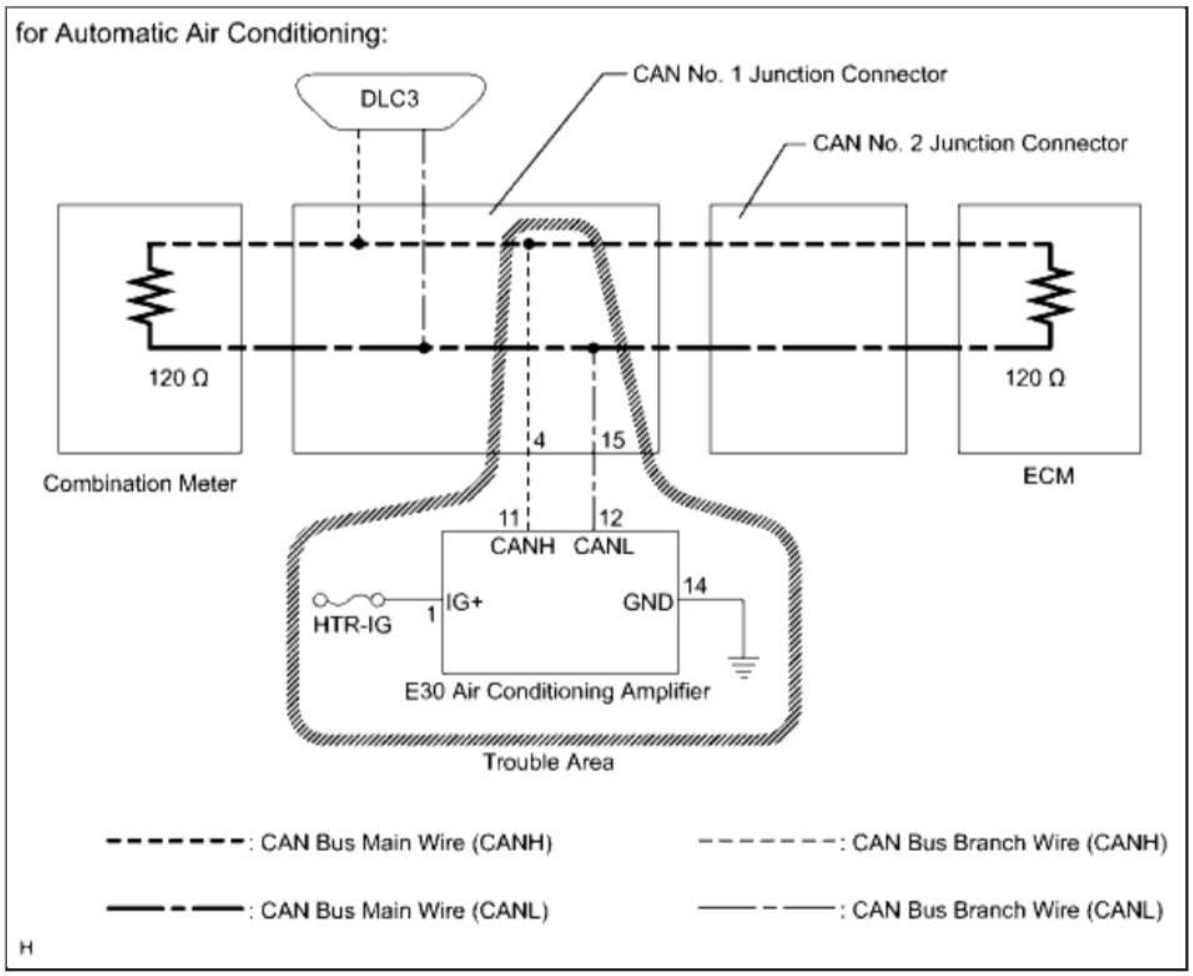
Air Conditioning Amplifier Communication Stop Mode

DESCRIPTION

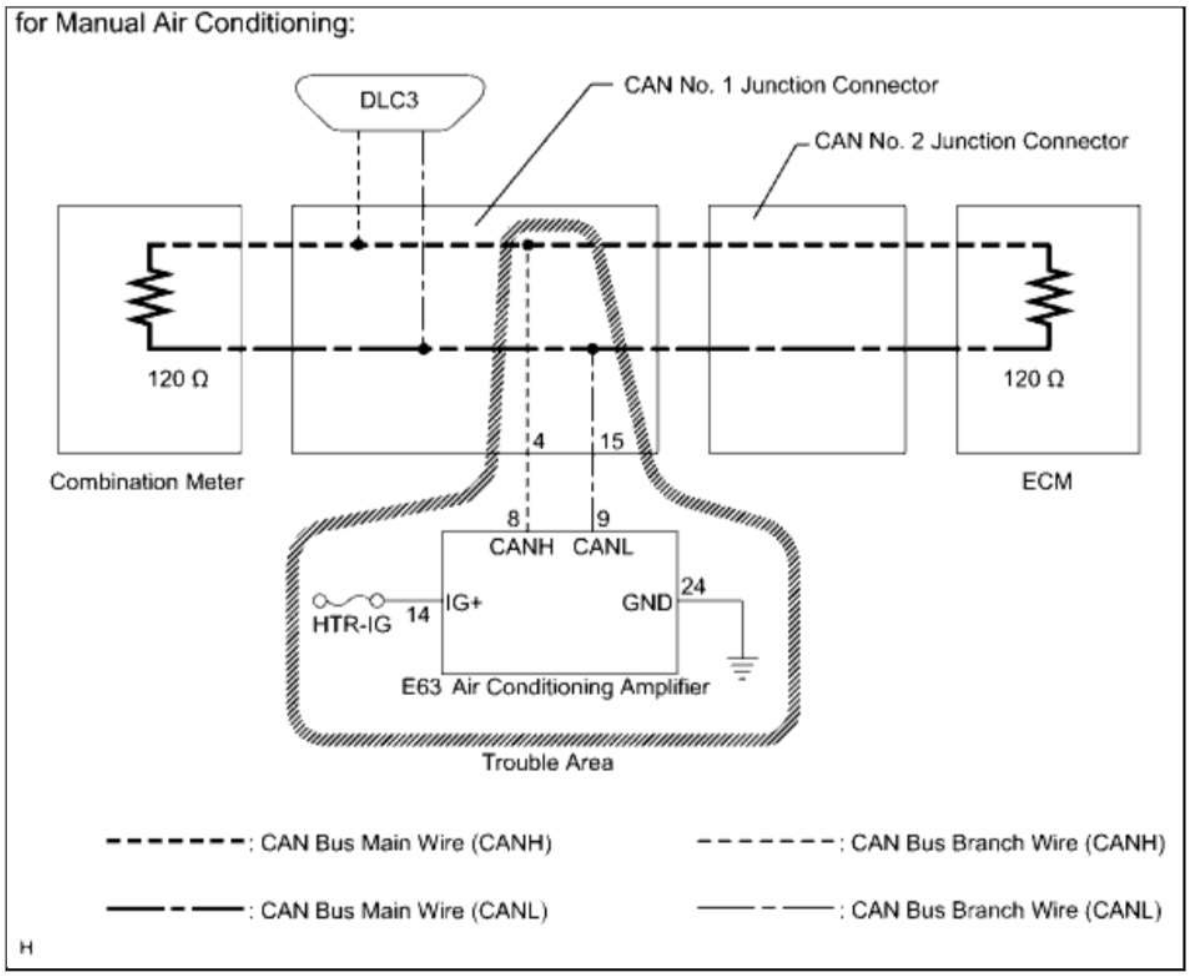
DETECTION ITEM	SYMPTOM	TROUBLE AREA
Air Conditioning Amplifier Communication Stop Mode	• "Air Conditioner" is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "Air Conditioning Amplifier Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of the air conditioning amplifier • Air conditioning amplifier branch wire or connector • Air conditioning amplifier

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

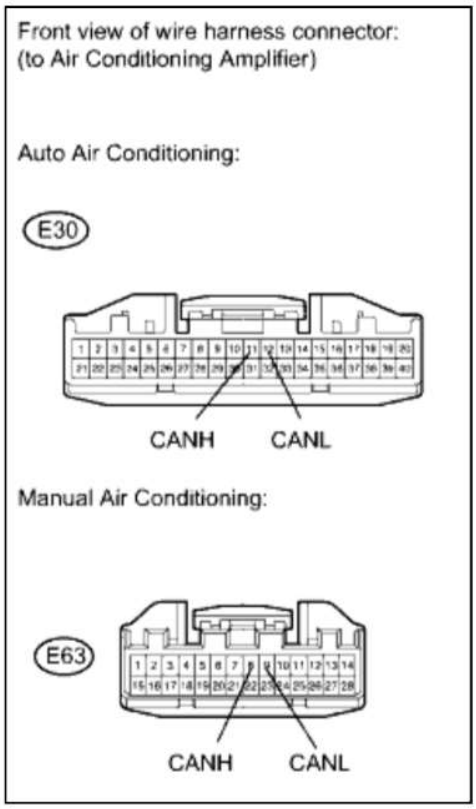
HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	**CHECK CAN BUS LINE FOR DISCONNECTION (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**



(a) Turn the ignition switch off.

(b) Disconnect the air conditioning amplifier connector.

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

Standard Resistance:

Automatic Air Conditioning

Manual Air Conditioning

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E30-11 (CANH) - E30-12 (CANL)	Ignition switch off	54 to 69 Ω

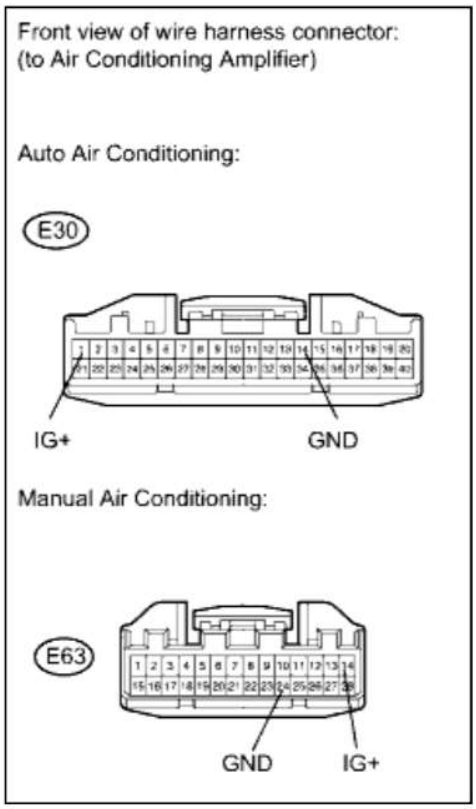
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E63-8 (CANH) - E63-9 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**

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OK

2.	CHECK HARNESS AND CONNECTOR (IG+, GND)



(a) Disconnect the air conditioning amplifier connector.

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

Standard Resistance:

Automatic Air Conditioning

Manual Air Conditioning

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E30-14 (GND) - Body ground	Always	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E63-24 (GND) - Body ground	Always	Below 1 Ω

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

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Standard Voltage:

Automatic Air Conditioning

Manual Air Conditioning

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E30-1 (IG+) - Body ground	Ignition switch ON	10 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E63-14 (IG+) - Body ground	Ignition switch ON	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001FAD01DX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Check CAN Bus Lines for Short Circuit (2010 Corolla)		

Check CAN Bus Lines for Short Circuit

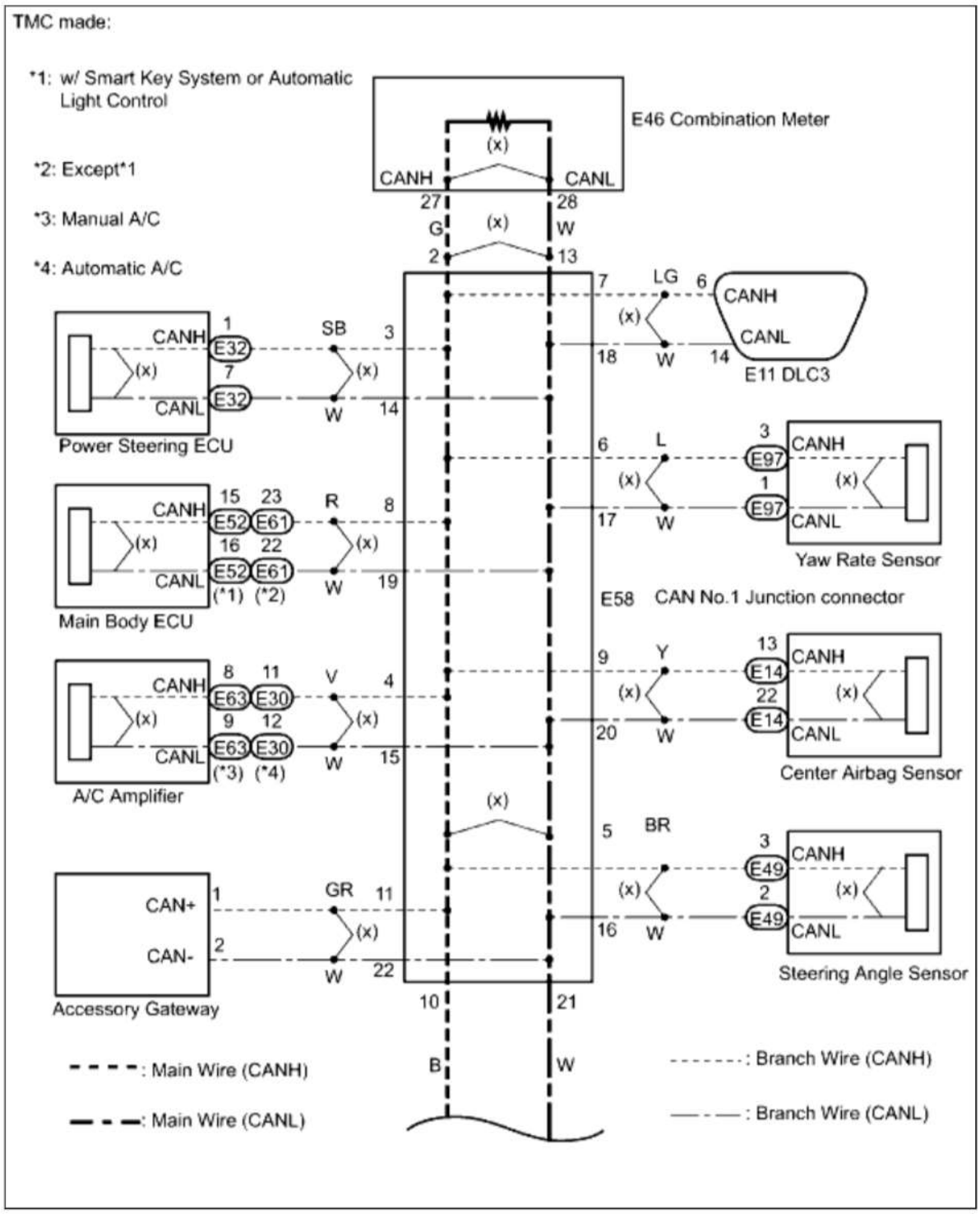
DESCRIPTION

There may be a short circuit in the CAN main wire and/or CAN branch wire when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is below 54 Ω.

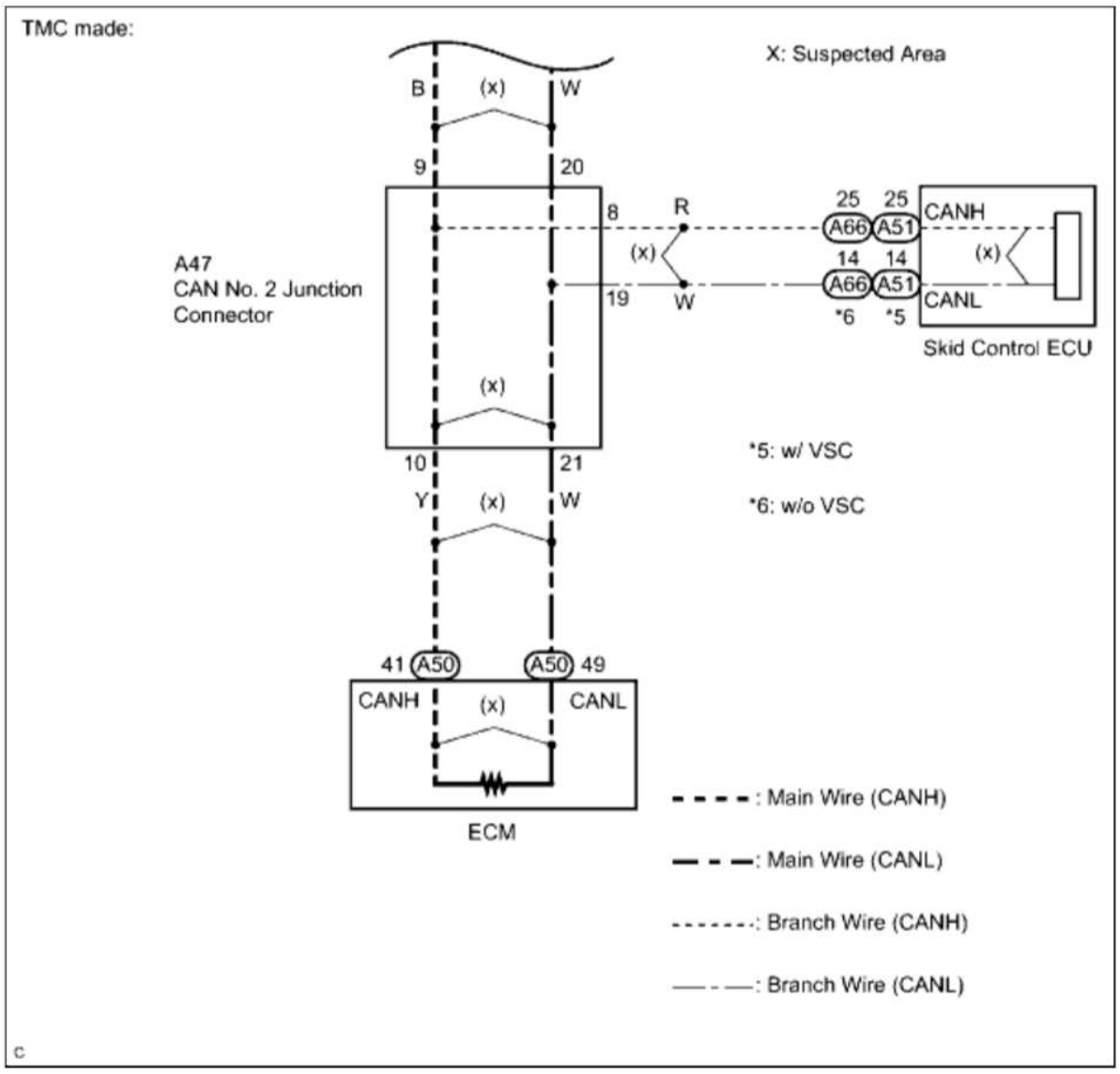
SYMPTOM	TROUBLE AREA
Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is below 54 Ω.	Short in CAN bus wire • Skid control ECU • Power steering ECU • Steering angle sensor • Yaw rate sensor • ECM • Center airbag sensor assembly • Air conditioning amplifier • Combination meter • Main body ECU • Accessory gateway • CAN No. 1 junction connector • CAN No. 2 junction connector

WIRING DIAGRAM

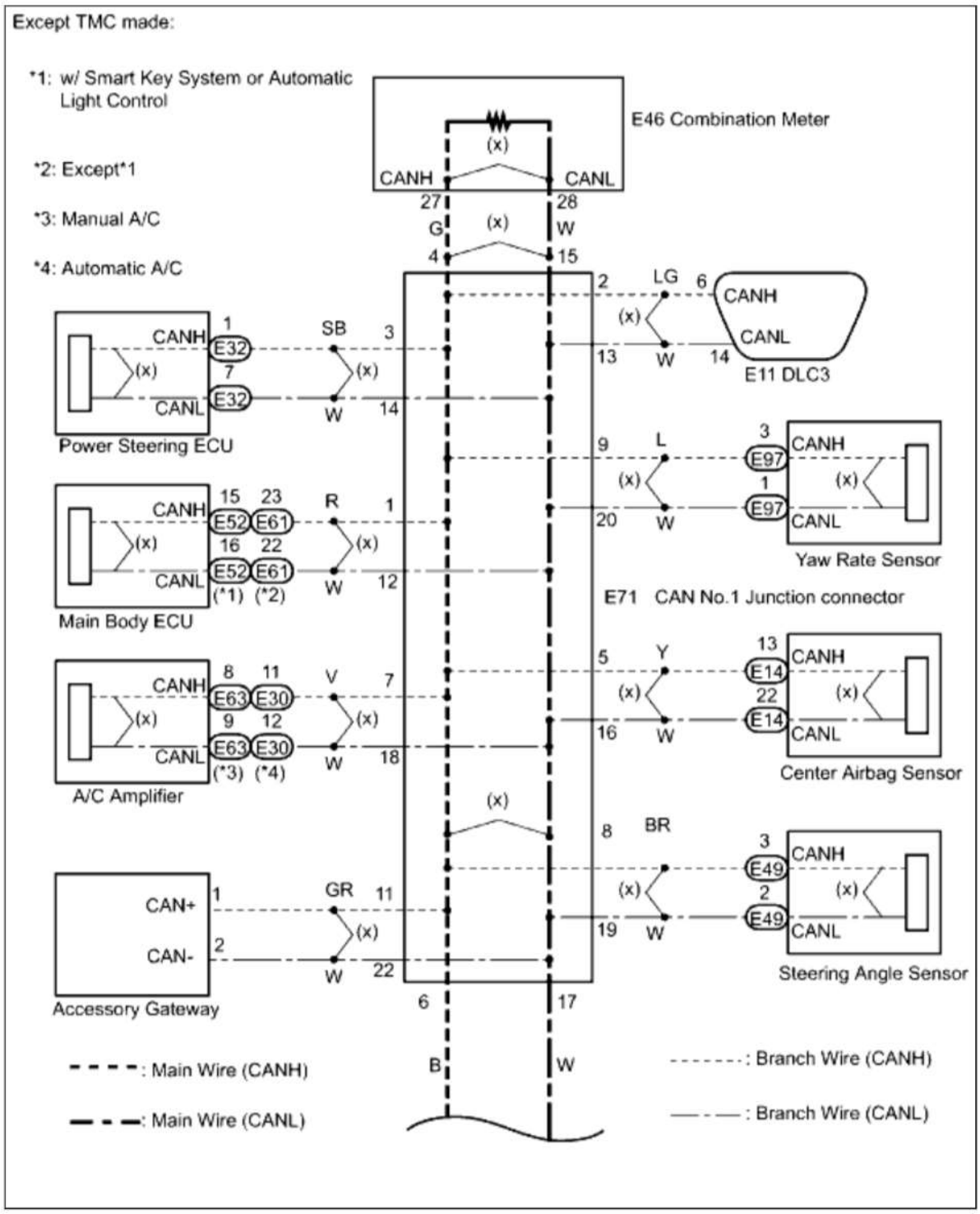
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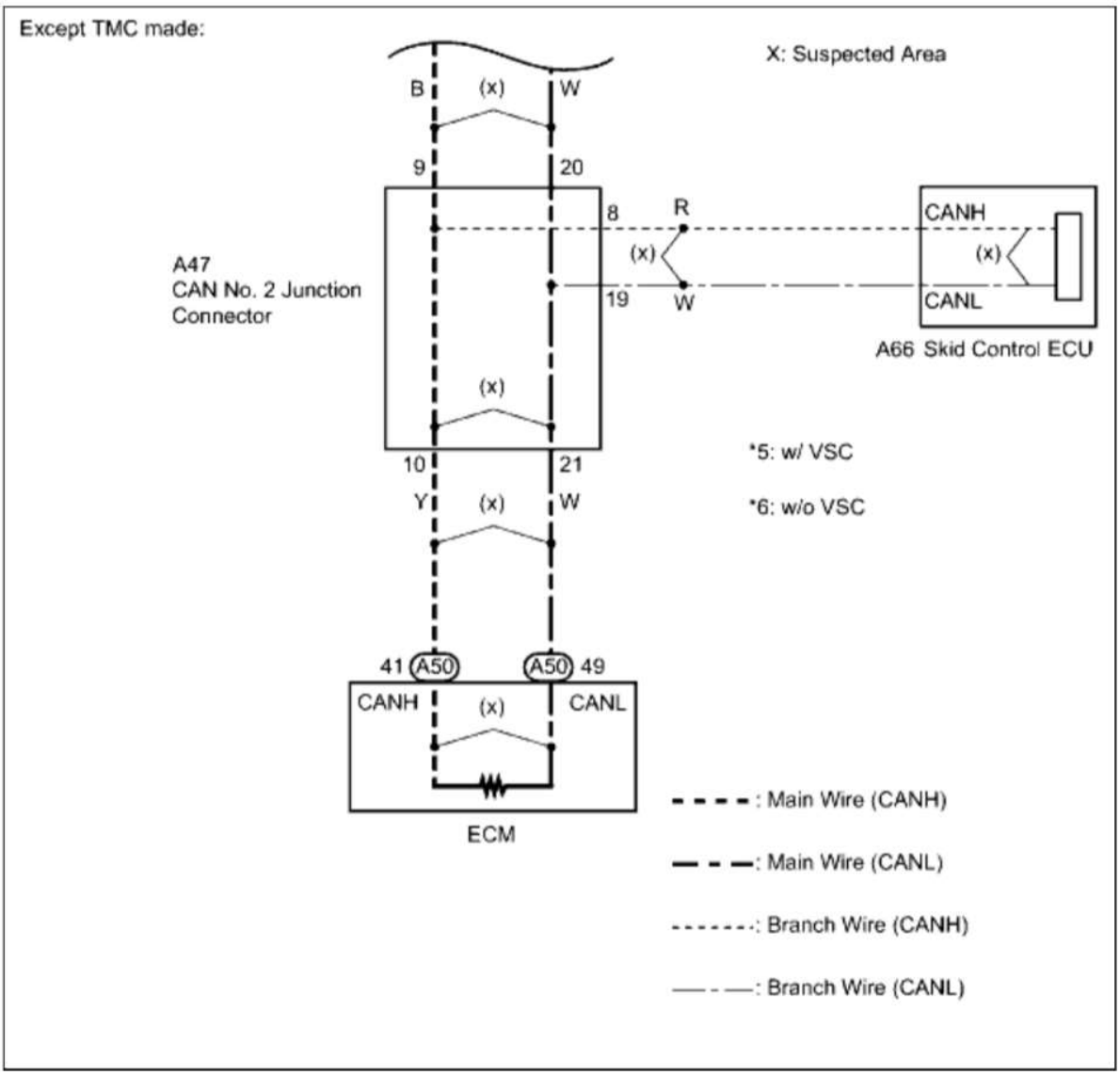
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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

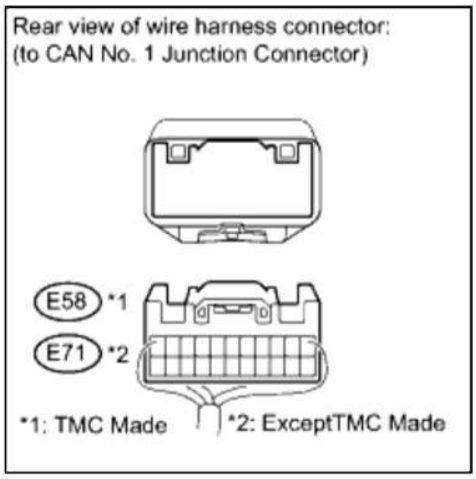
HINT:

- Operating the ignition switch, any other switches, or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

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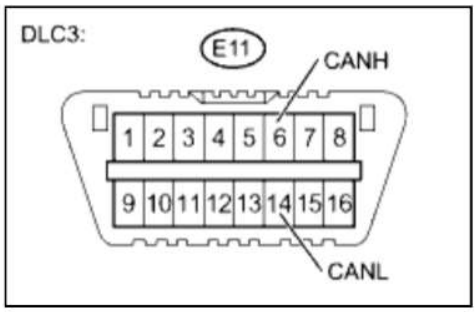
PROCEDURE

1.	CHECK FOR SHORT IN CAN BUS WIRES (DLC3 BRANCH WIRE)



(a) Turn the ignition switch off.

(b) Disconnect the CAN No. 1 junction connector.



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	1 MΩ or higher

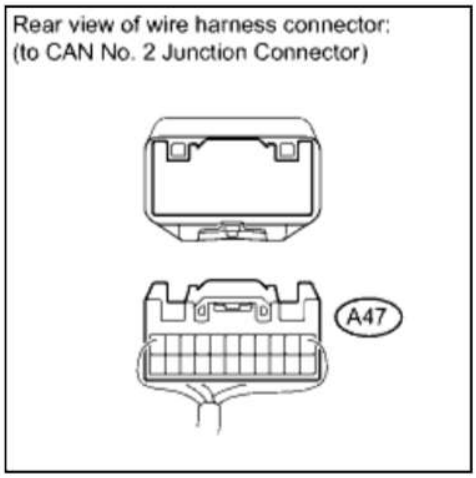
NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3**

OK ▼

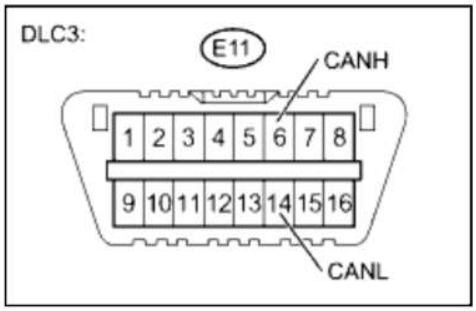
2.	CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 2 JUNCTION CONNECTOR)

(a) Reconnect the CAN No. 1 junction connector.

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(b) Disconnect the CAN No. 2 junction connector.



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

OK ▼

3.	**CHECK FOR SHORT IN CAN BUS WIRES (ECM MAIN WIRE)**

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

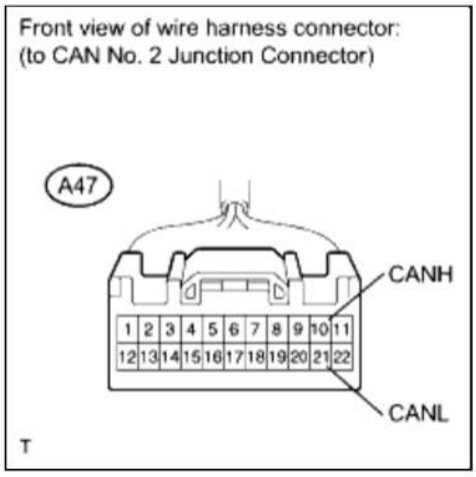
NOTICE:

The resistance must be measured after the CAN No. 2 junction connector is disconnected.

Standard Resistance:

TESTER	SWITCH	SPECIFIED

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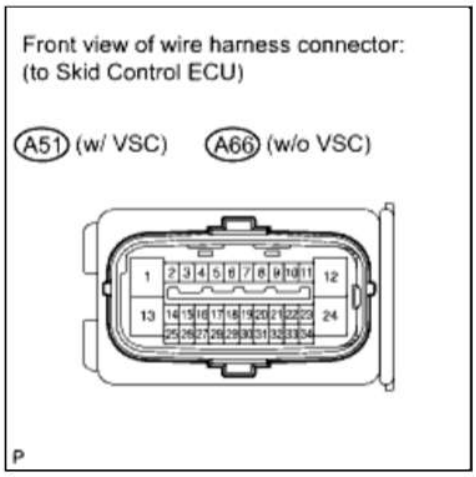


CONNECTION	CONDITION	CONDITION
A47-10 (CANH) - A47-21 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 2 JUNCTION CONNECTOR - ECM MAIN WIRE)**

OK ▼

4.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**



(a) Disconnect the skid control ECU connector.

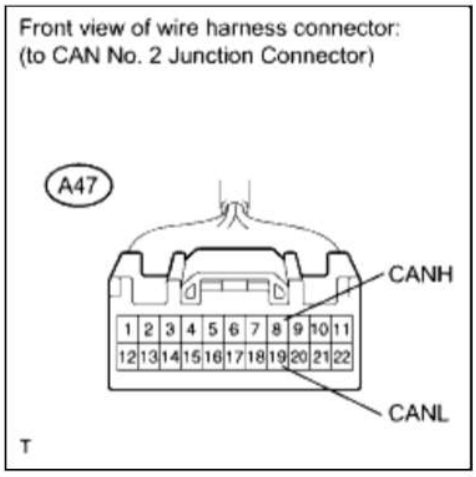
(b) Measure the resistance according to the value(s) in the table below.

NOTICE:

The resistance must be measured after the skid control ECU connector and CAN No. 2 junction connector are disconnected.

Standard Resistance:

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-8 (CANH) - A47-19 (CANL)	Ignition switch off	1 MΩ or higher

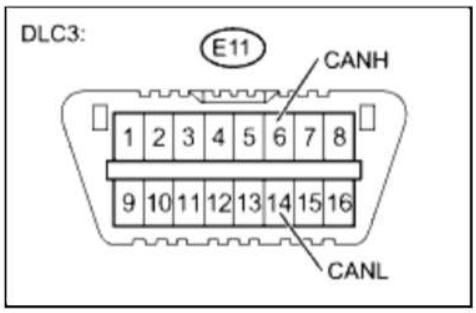
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - SKID CONTROL ECU)**

OK ▼

5.	CHECK FOR SHORT IN CAN BUS WIRES (SKID CONTROL ECU)

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

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



NOTICE:

The resistance must be measured after the skid control ECU connector is disconnected.

The resistance must be measured after the CAN No. 1and CAN No. 2 junction connector are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

Result:

RESULT	PROCEED TO

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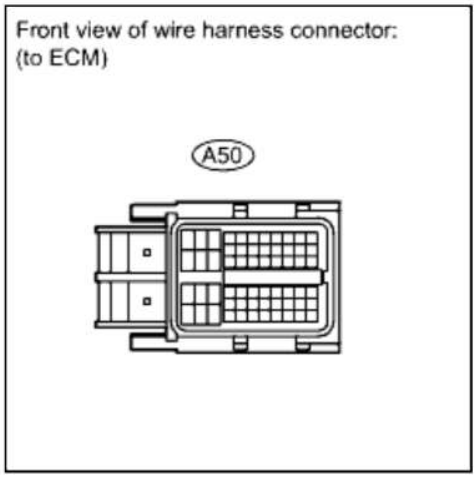
RESULT	PROCEED TO
OK (w/o VSC)	A
OK (w/ VSC)	B
NG	C

C ▶ **REPLACE JUNCTION CONNECTOR (CAN No. 2)**

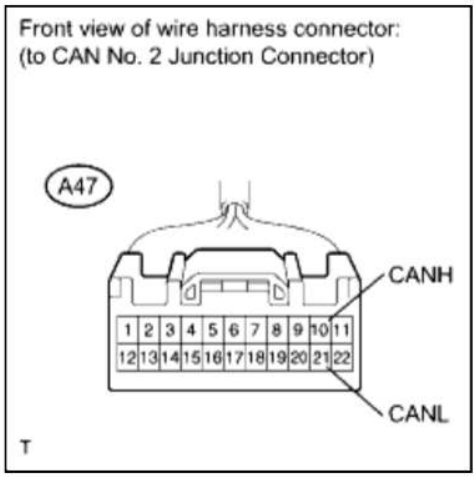
B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

6.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 2 JUNCTION CONNECTOR - ECM MAIN WIRE)**



(a) Disconnect the ECM connector.



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

NOTICE:

The resistance must be measured after the ECM connector and CAN No. 2 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - A47-21 (CANL)	Ignition switch off	1 MΩ or higher

Result:

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RESULT	PROCEED TO
OK (for 2ZR-FE)	A
OK (for 2AZ-FE)	B
NG	C

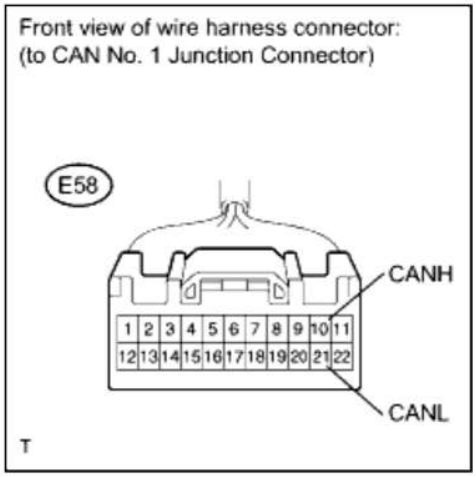
C ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

B ▶ **REPLACE ECM**

A ▶ **REPLACE ECM**

7.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

(a) TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

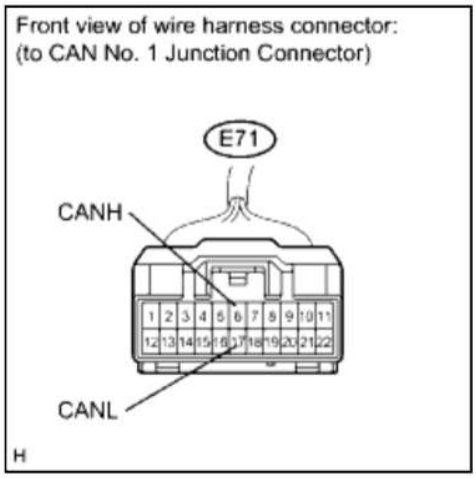
The resistance must be measured after the CAN No. 2 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-10 (CANH) - E58-21 (CANL)	Ignition switch off	1 MΩ or higher

(b) Except TMC made:

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(1) Disconnect the CAN No. 1 junction connector.

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

NOTICE:

The resistance must be measured after the CAN No. 2 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-6 (CANH) - E71-17 (CANL)	Ignition switch off	1 MΩ or higher

NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

OK ▼

8.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

(a) TMC made:

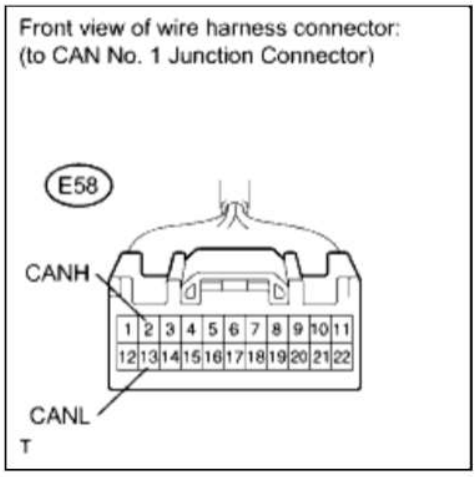
(1) Measure the resistance according to the value(s) in the table below.

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

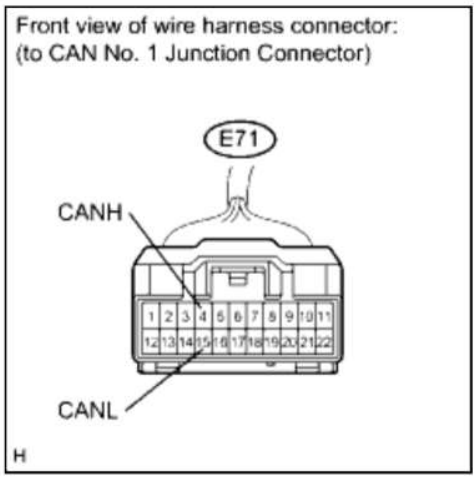
Standard Resistance:

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E58-13 (CANL)	Ignition switch off	108 to 132 Ω

(b) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E71-15 (CANL)	Ignition switch off	1 MΩ or higher

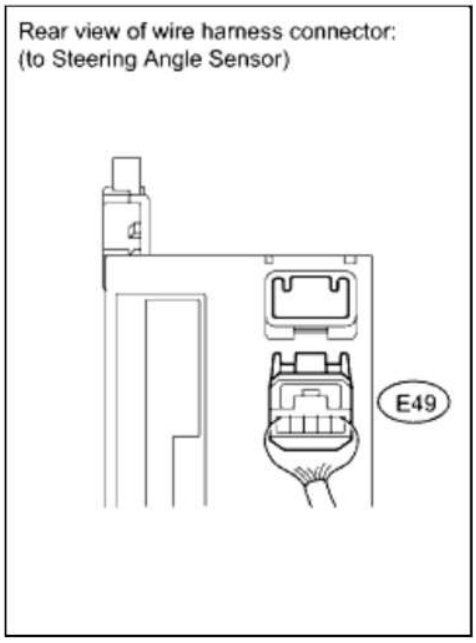
NG ▶ **CHECK FOR SHORT IN CAN BUS WIRES (COMBINATION METER ECU)**

OK
▼

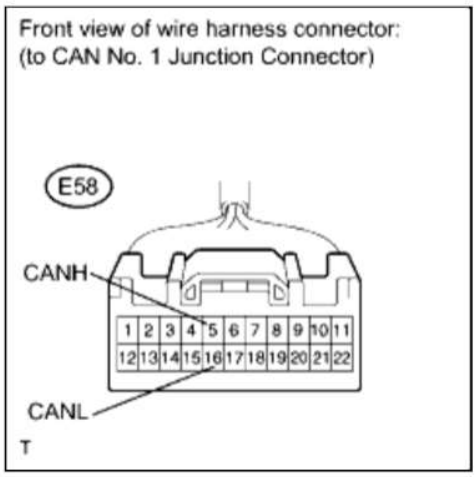
9.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

(a) Disconnect the steering angle sensor connector.

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(b) TMC made:



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

NOTICE:

The resistance must be measured after the steering angle sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-5 (CANH) - E58-16 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:

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

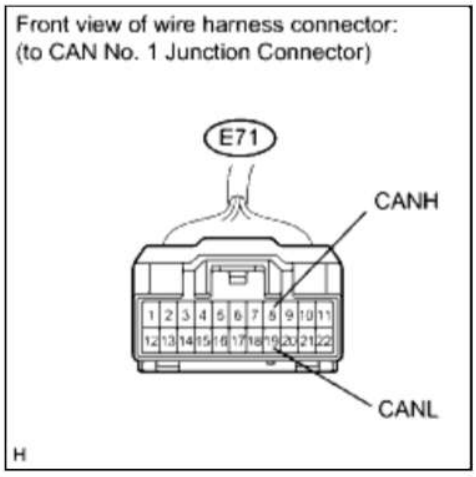
NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-8 (CANH) -	Ignition switch	1 MΩ or higher

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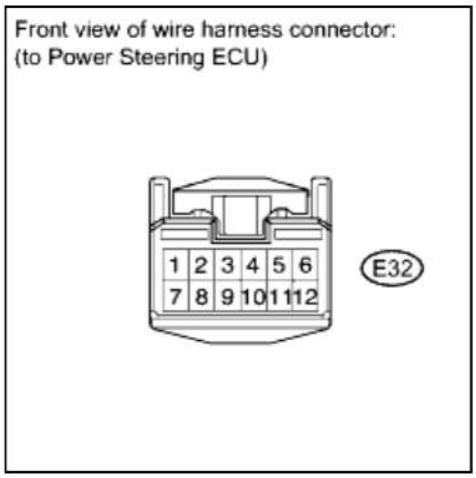


E71-19 (CANL)	off	

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**

OK ▼

10.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**



(a) Disconnect the power steering ECU connector.

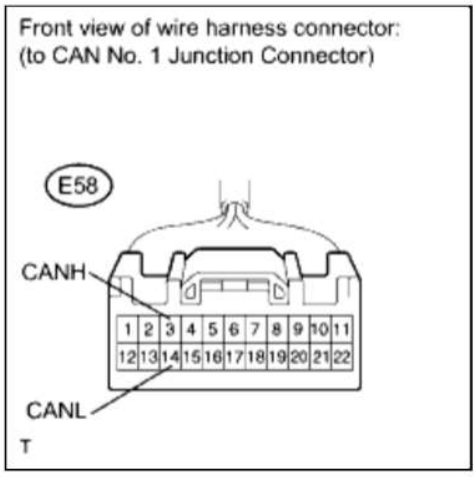
(b) TMC made:

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

NOTICE:

The resistance must be measured after the power steering ECU

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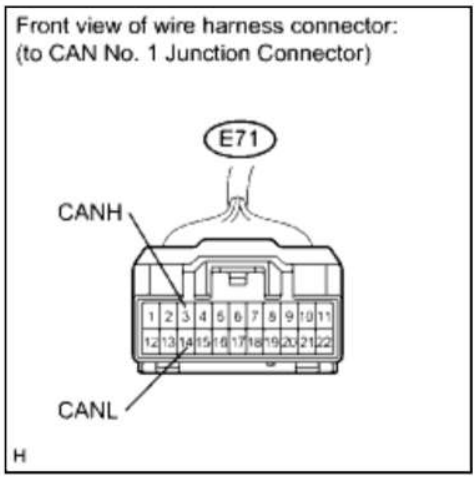


connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-3 (CANH) - E58-14 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-3 (CANH) - E71-14 (CANL)	Ignition switch off	1 MΩ or higher

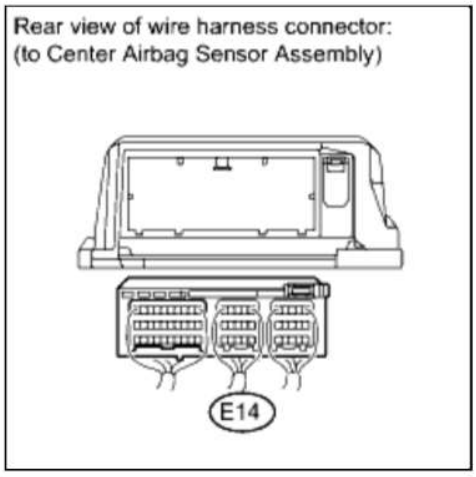
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**

OK ▼

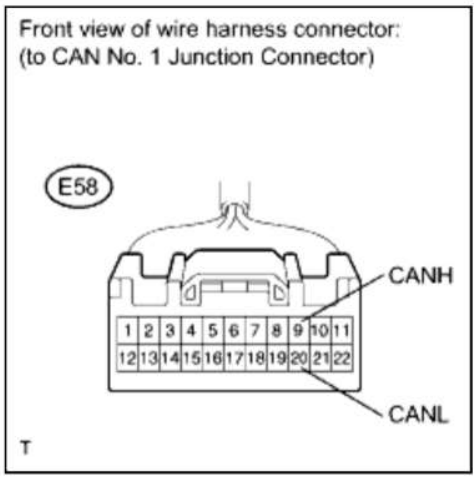
11.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**

(a) Disconnect the center airbag sensor assembly connector.

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(b) TMC made:



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

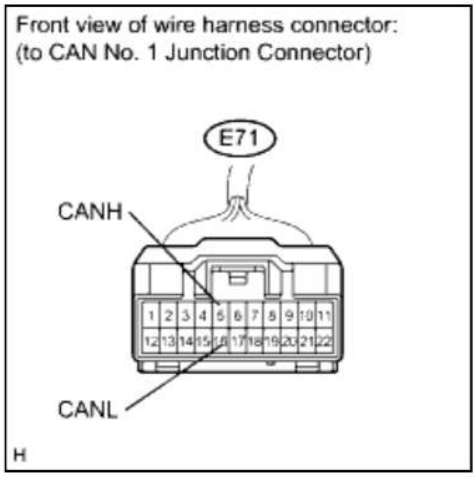
NOTICE:

The resistance must be measured after the center airbag sensor assembly connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-9 (CANH) - E58-20 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-5 (CANH) - E71-16 (CANL)	Ignition switch off	1 MΩ or higher

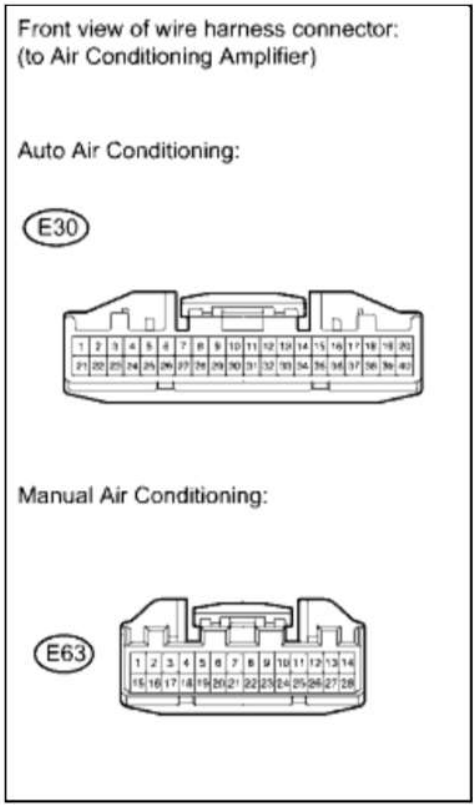
NG ▶ REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR -

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CENTER AIRBAG SENSOR ASSEMBLY)

OK

12.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**



(a) Disconnect the air conditioning amplifier connector.

(b) TMC made:

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

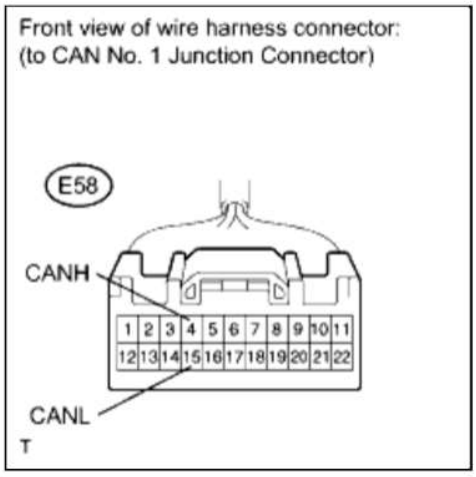
NOTICE:

The resistance must be measured after the air conditioning amplifier connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

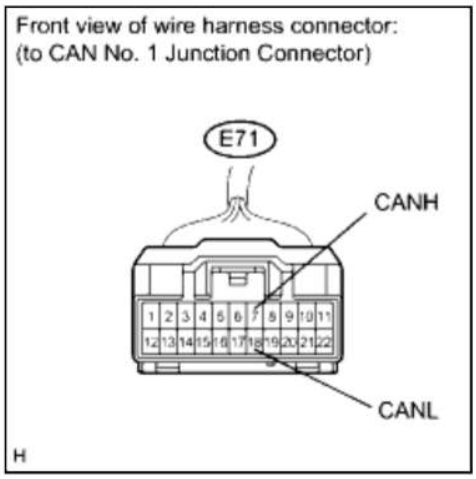
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

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E58-4 (CANH) - E58-15 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-7 (CANH) - E71-18 (CANL)	Ignition switch off	1 MΩ or higher

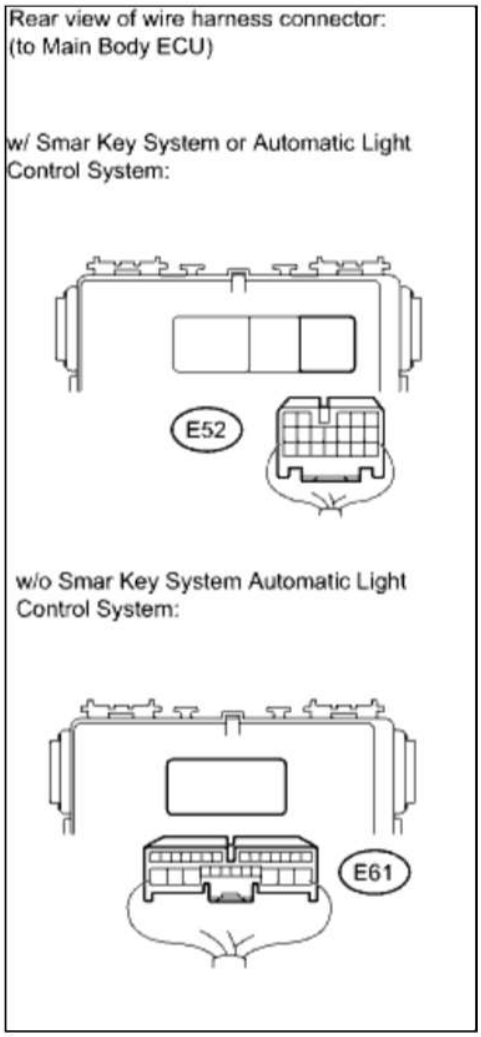
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

OK ▼

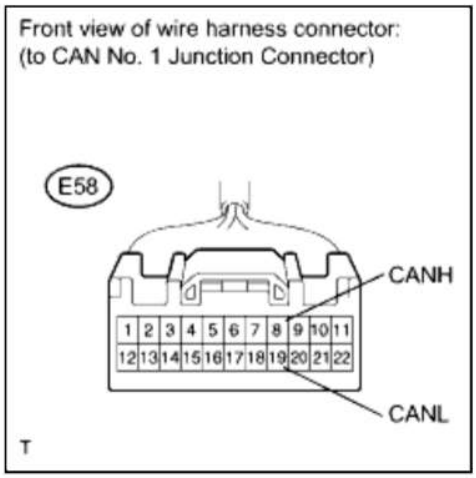
13.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

(a) Disconnect the main body ECU connector.

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(b) TMC made:



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

NOTICE:

The resistance must be measured after the main body ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

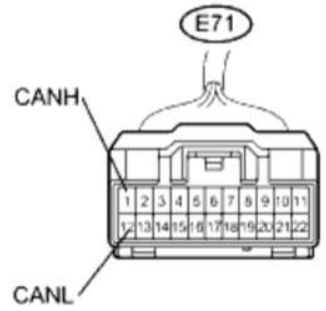
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-8 (CANH) - E58-19 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:

(1) Measure the resistance according to the value(s) in

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Front view of wire harness connector:
(to CAN No. 1 Junction Connector)



H

the table below.

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

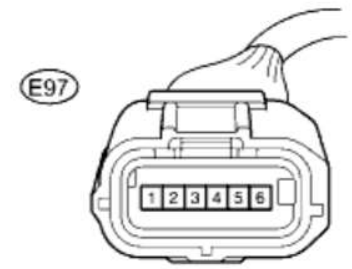
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-1 (CANH) - E71-12 (CANL)	Ignition switch off	1 MΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**

OK ▼

14.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

Front view of wire harness connector:
(to Yaw Rate Sensor Connector)



(a) Disconnect the yaw rate sensor connector.

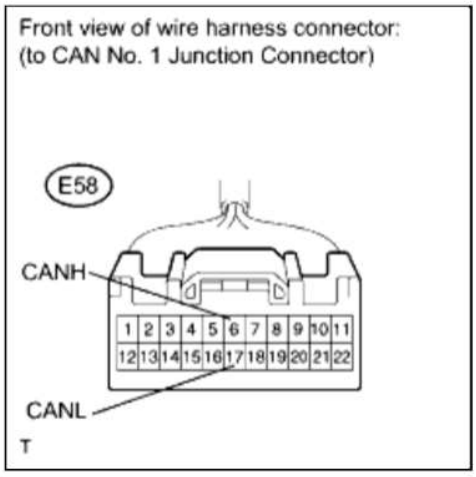
(b) TMC made:

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

NOTICE:

The resistance must be measured after the yaw rate sensor

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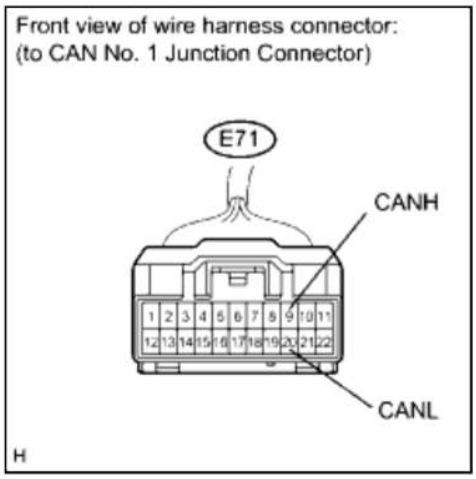


connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-6 (CANH) - E58-17 (CANL)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-9 (CANH) - E71-20 (CANL)	Ignition switch off	1 MΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - YAW RATE SENSOR)**

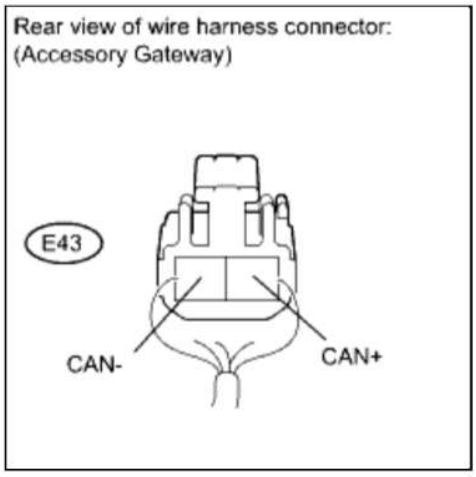
OK ▼

15.	**CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

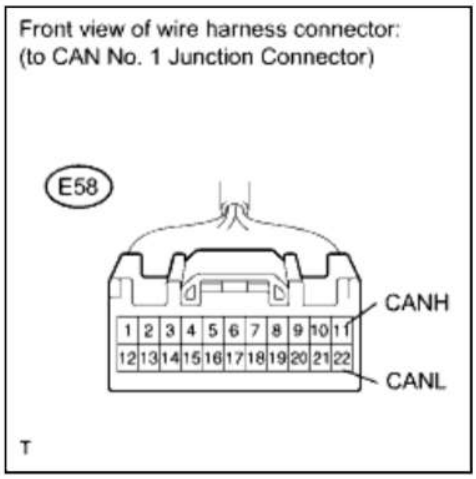
(a) w/ remote engine starter:

(1) Disconnect the accessory gateway connector from the accessory.

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(b) TMC made:



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

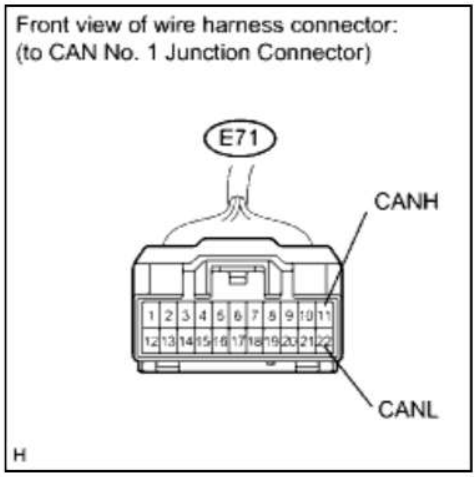
NOTICE:

The resistance must be measured after the yaw rate sensor connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-11 (CAN+) - E58-22 (CAN-)	Ignition switch off	1 MΩ or higher

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the CAN No. 1 junction connector is disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-11 (CANH) - E71-22 (CANL)	Ignition switch off	1 MΩ or higher

Result:

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RESULT	PROCEED TO
OK	A
NG (w/o remote engine starter)	B
NG (w/ remote engine starter)	C

C ▶ **CHECK FOR SHORT IN CAN BUS WIRES (ACCESSORY GATEWAY)**

B ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - ACCESSORY GATEWAY)**

A ▼

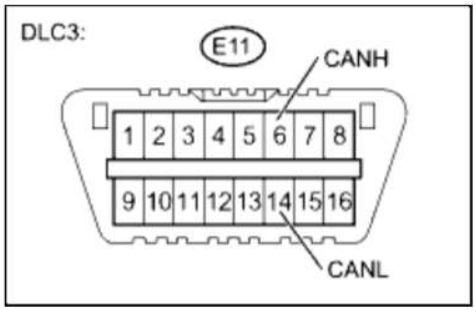
16.	CHECK FOR SHORT IN CAN BUS WIRES (CAN NO. 1 JUNCTION CONNECTOR)

(a) Reconnect the CAN No. 1 junction connector and CAN No. 2 junction connector.

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

NOTICE:

- The resistance must be measured after the main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.
- The resistance must be measured after the all branch wire connected ECUs and sensor connectors are disconnected.



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

NG ▶ **REPLACE JUNCTION CONNECTOR (CAN No. 1)**

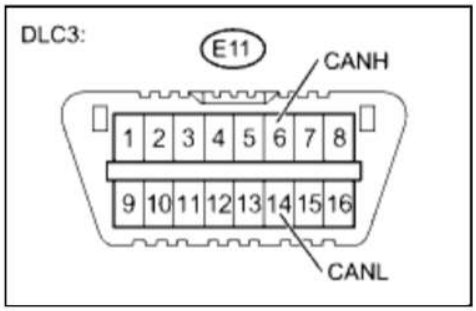
OK

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▼

17.	CHECK FOR SHORT IN CAN BUS WIRES (STEERING ANGLE SENSOR)

(a) Reconnect the steering angle sensor connector.



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

NOTICE:

The resistance must be measured after the steering angle sensor, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

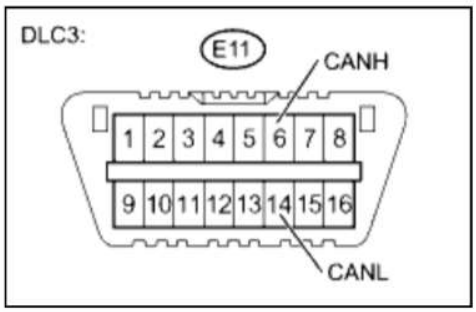
NG ▶ **REPLACE STEERING ANGLE SENSOR**

OK

▼

18.	CHECK FOR SHORT IN CAN BUS WIRES (POWER STEERING ECU)

(a) Reconnect the power steering ECU connector.



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

NOTICE:

The resistance must be measured after the power steering ECU, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

C ▶ **REPLACE POWER STEERING ECU**

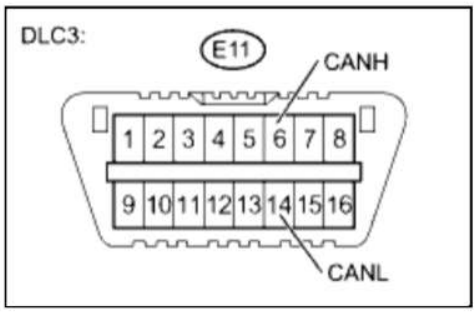
B ▶ **REPLACE POWER STEERING ECU**

A ▼

19.	CHECK FOR SHORT IN CAN BUS WIRES (CENTER AIRBAG SENSOR ASSEMBLY)

(a) Reconnect the center airbag sensor assembly connector.

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



NOTICE:

The resistance must be measured after the center airbag sensor assembly, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

NG ▶ **REPLACE CENTER AIRBAG SENSOR ASSEMBLY**

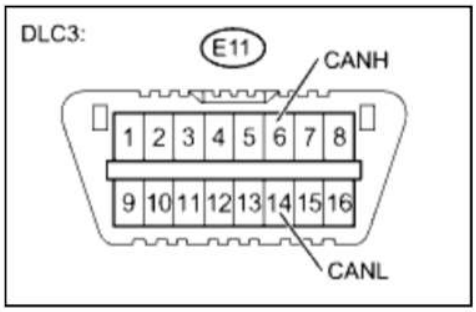
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OK

20.	**CHECK FOR SHORT IN CAN BUS WIRES (AIR CONDITIONING AMPLIFIER)**

(a) Reconnect the air conditioning amplifier connector.

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



NOTICE:

The resistance must be measured after the air conditioning amplifier, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

NG ▶ **REPLACE AIR CONDITIONING AMPLIFIER**

OK

21.	**CHECK FOR SHORT IN CAN BUS WIRES (MAIN BODY ECU)**

(a) Reconnect the main body ECU connector.

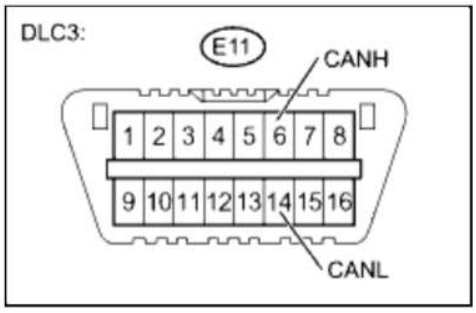
(b) Measure the resistance according to the value(s) in the table below.

NOTICE:

The resistance must be measured after the main body ECU, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

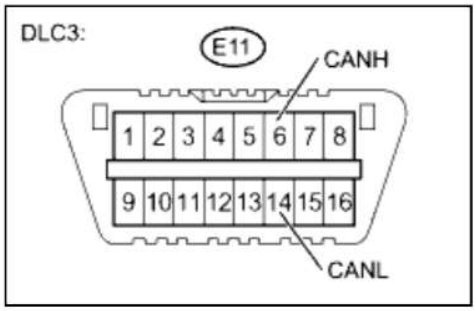
NG ▶ **REPLACE MAIN BODY ECU**

OK ▼

22.	CHECK FOR SHORT IN CAN BUS WIRES (ACCESSORY GATEWAY)

(a) Reconnect the accessory gateway connector.

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



NOTICE:

The resistance must be measured after the main body ECU, main wire connected ECUs (ECM and combination meter), and CAN No. 1 and No. 2 junction connectors are reconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 Ω or higher

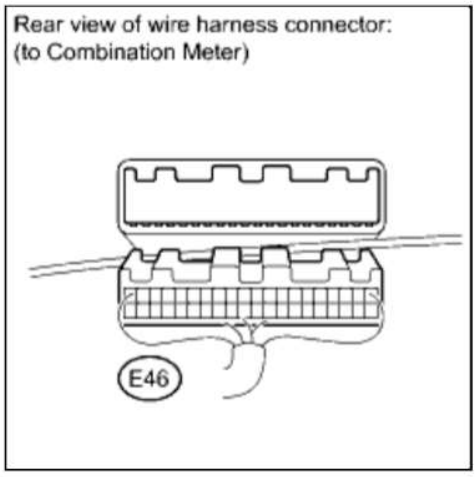
NG ▶ **REPLACE THE ACCESSORY**

OK ▶ **REPLACE YAW RATE SENSOR**

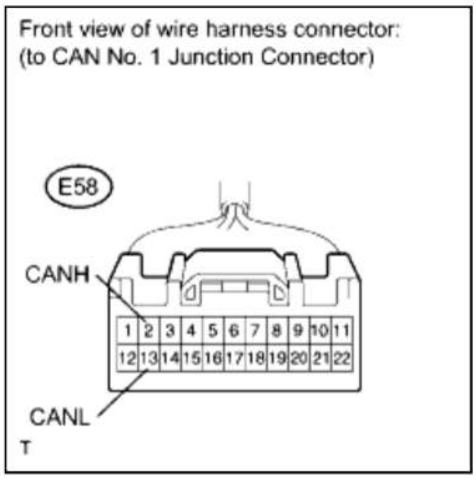
23.	CHECK FOR SHORT IN CAN BUS WIRES (COMBINATION METER ECU)

(a) Disconnect the combination meter ECU connector.

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(b) TMC made:



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

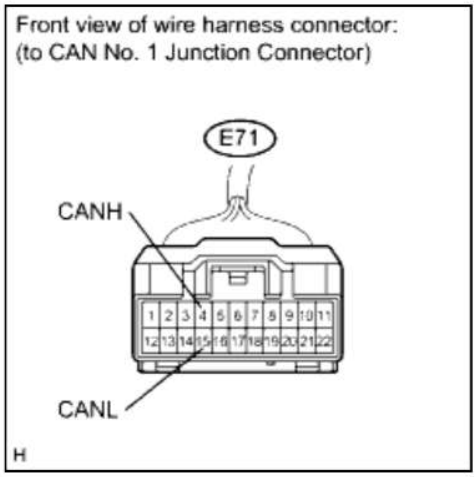
NOTICE:

The resistance must be measured after the combination meter ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E58-13 (CANL)	Ignition switch off	108 to 132 Ω

(c) Except TMC made:



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

NOTICE:

The resistance must be measured after the combination meter ECU connector and CAN No. 1 junction connector are disconnected.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E71-15 (CANL)	Ignition switch off	1 MΩ or higher

NG ▶ REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR -

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COMBINATION METER)

OK ▶ REPLACE COMBINATION METER

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001RT0016X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Power Steering ECU Communication Stop Mode (2010 Corolla)		

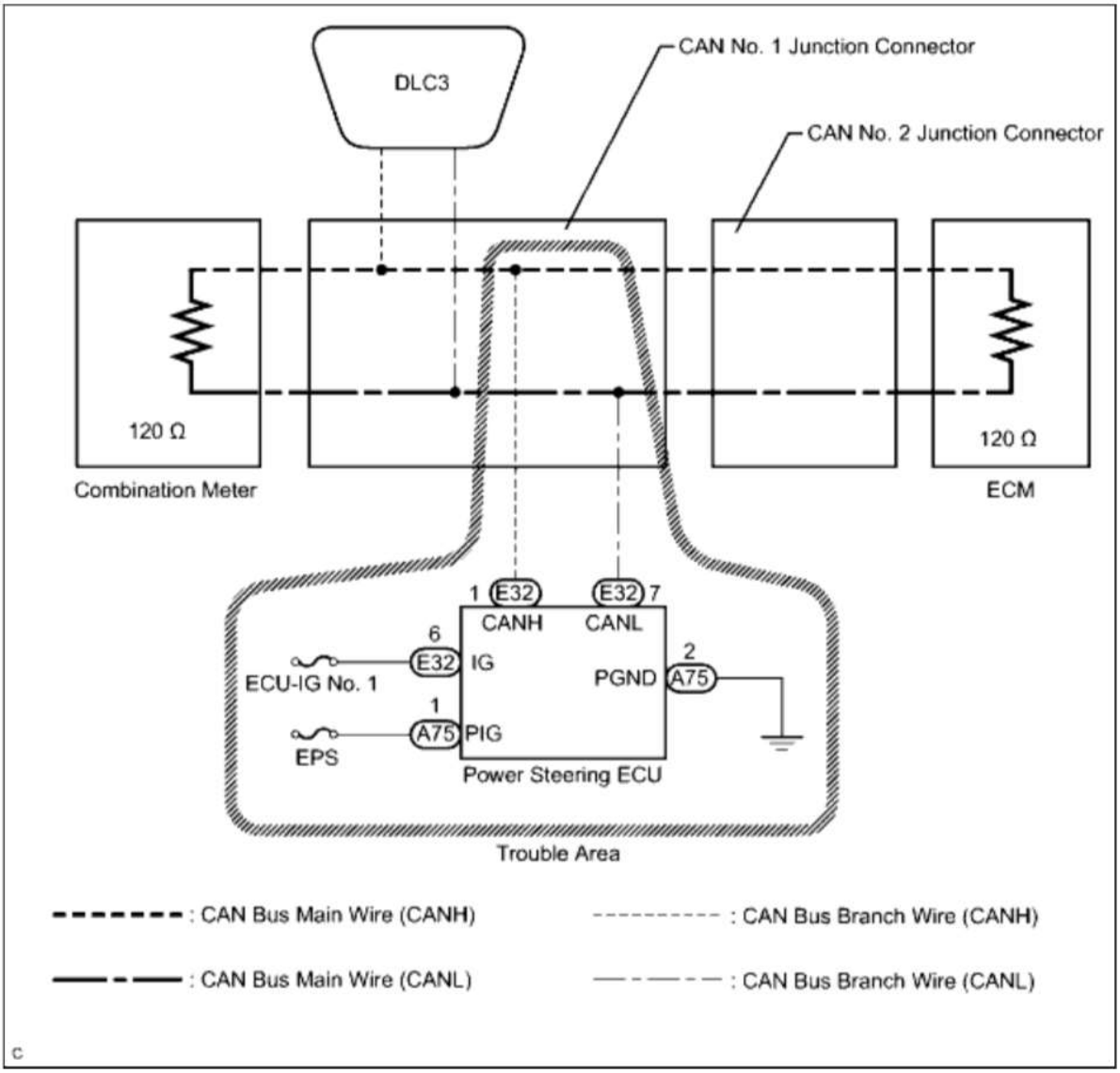
Power Steering ECU Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Power Steering ECU Communication Stop Mode	• EPS is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "POWER STEERING ECU COMMUNICATION STOP MODE" in "DTC Combination Table"	• Power source circuit of the power steering ECU • Power steering ECU branch wire or connector • Power steering ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

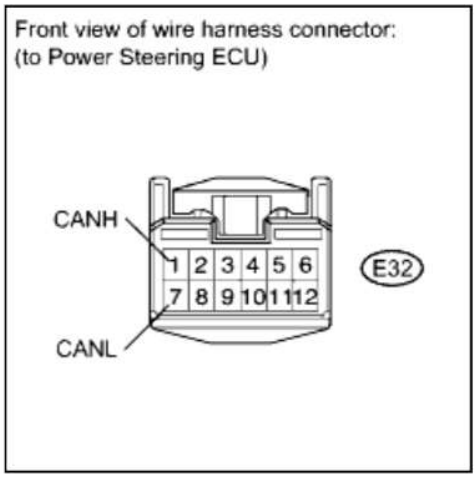
- Operating the ignition switch, any other switches, or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

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PROCEDURE

1.	**CHECK CAN BUS WIRE FOR DISCONNECTION (POWER STEERING ECU BRANCH WIRE)**

(a) Turn the ignition switch off.



(b) Disconnect the power steering ECU connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E32-1 (CANH) - E32-7 (CANL)	Ignition switch off	54 to 69 Ω

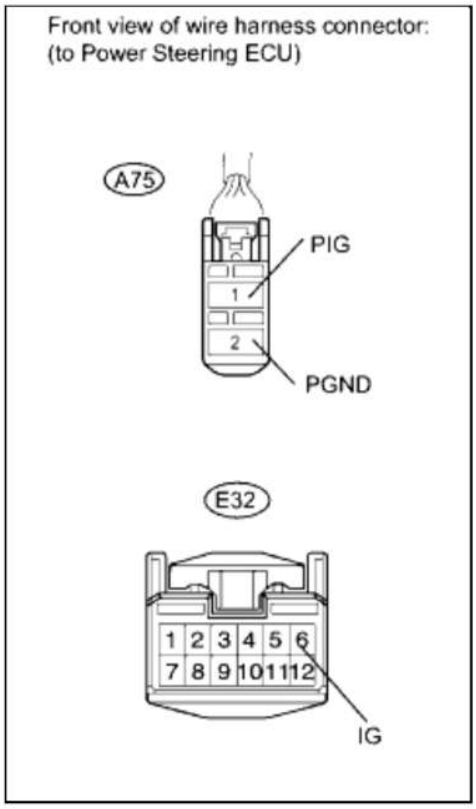
NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (POWER STEERING ECU BRANCH WIRE)**

OK ▼

2.	**CHECK WIRE HARNESS (POWER STEERING ECU - BATTERY AND BODY GROUND)**

(a) Disconnect the power steering ECU connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A75-2 (PGND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A75-1 (PIG) - Body ground	Always	10 to 14 V
E32-6 (IG) - Body ground	Ignition switch ON	10 to 14 V

Result:

RESULT	PROCEED TO
OK (for 2AZ-FE)	A
OK (for 2ZR-FE)	B
NG	C

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

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B ▶ REPLACE POWER STEERING ECU (for 2ZR-FE)

A ▶ REPLACE POWER STEERING ECU (for 2AZ-FE)



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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WIH03KX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Steering Angle Sensor Communication Stop Mode (2010 Corolla)		

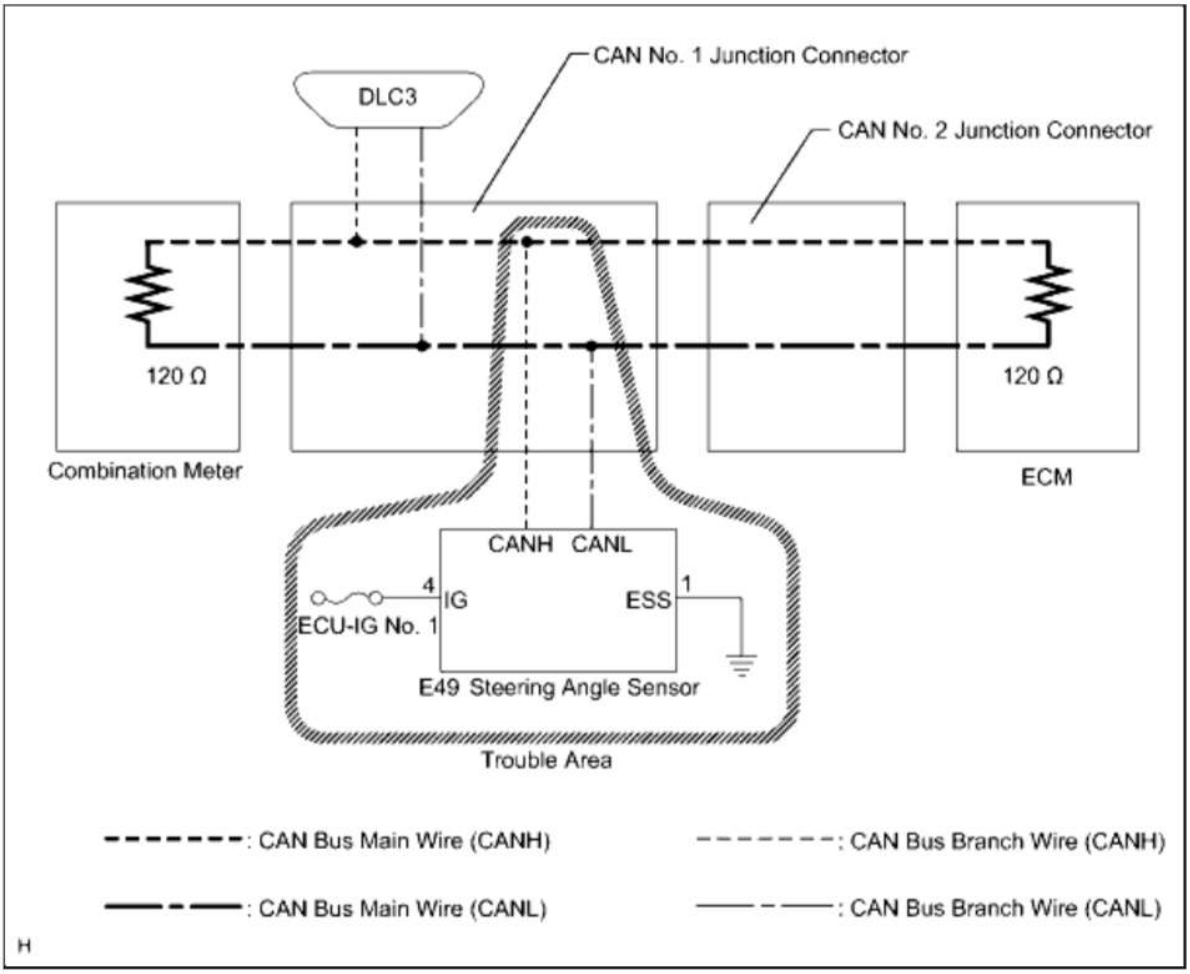
Steering Angle Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Steering Angle Sensor Communication Stop Mode	• "Steering Angle Sensor" is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "Steering Angle Sensor Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of steering angle sensor • Steering angle sensor branch wire or connector • Steering angle sensor

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

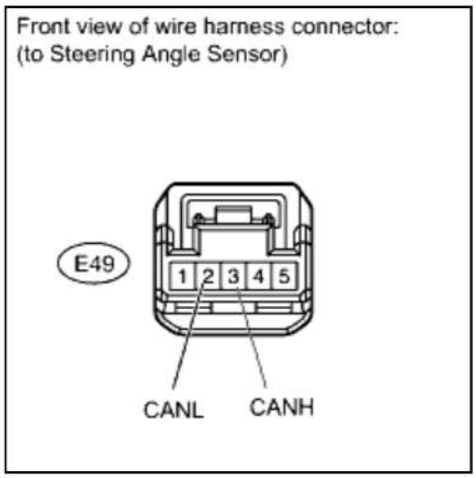
HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	**CHECK CAN BUS LINE FOR DISCONNECTION (STEERING ANGLE SENSOR BRANCH WIRE)**



(a) Turn the ignition switch off.

(b) Disconnect the steering angle sensor connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E49-3 (CANH) - E49-2 (CANL)	Ignition switch off	54 to 69 Ω

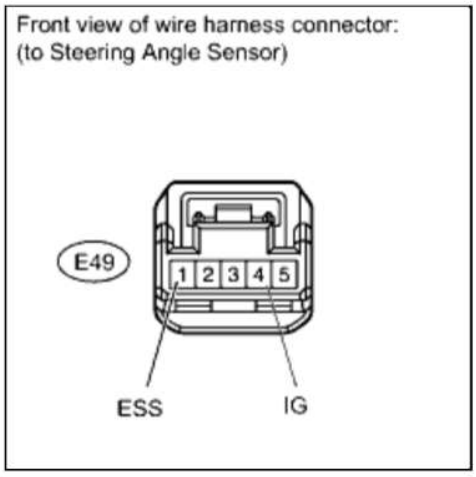
NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO STEERING ANGLE SENSOR**

OK ▼

2.	**CHECK HARNESS AND CONNECTOR (IG, ESS)**

(a) Disconnect the steering angle sensor connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E49-1 (ESS) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E49-4 (IG) - Body ground	Ignition switch ON	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE STEERING ANGLE SENSOR**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WIJ03LX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Yaw Rate Sensor Communication Stop Mode (2010 Corolla)		

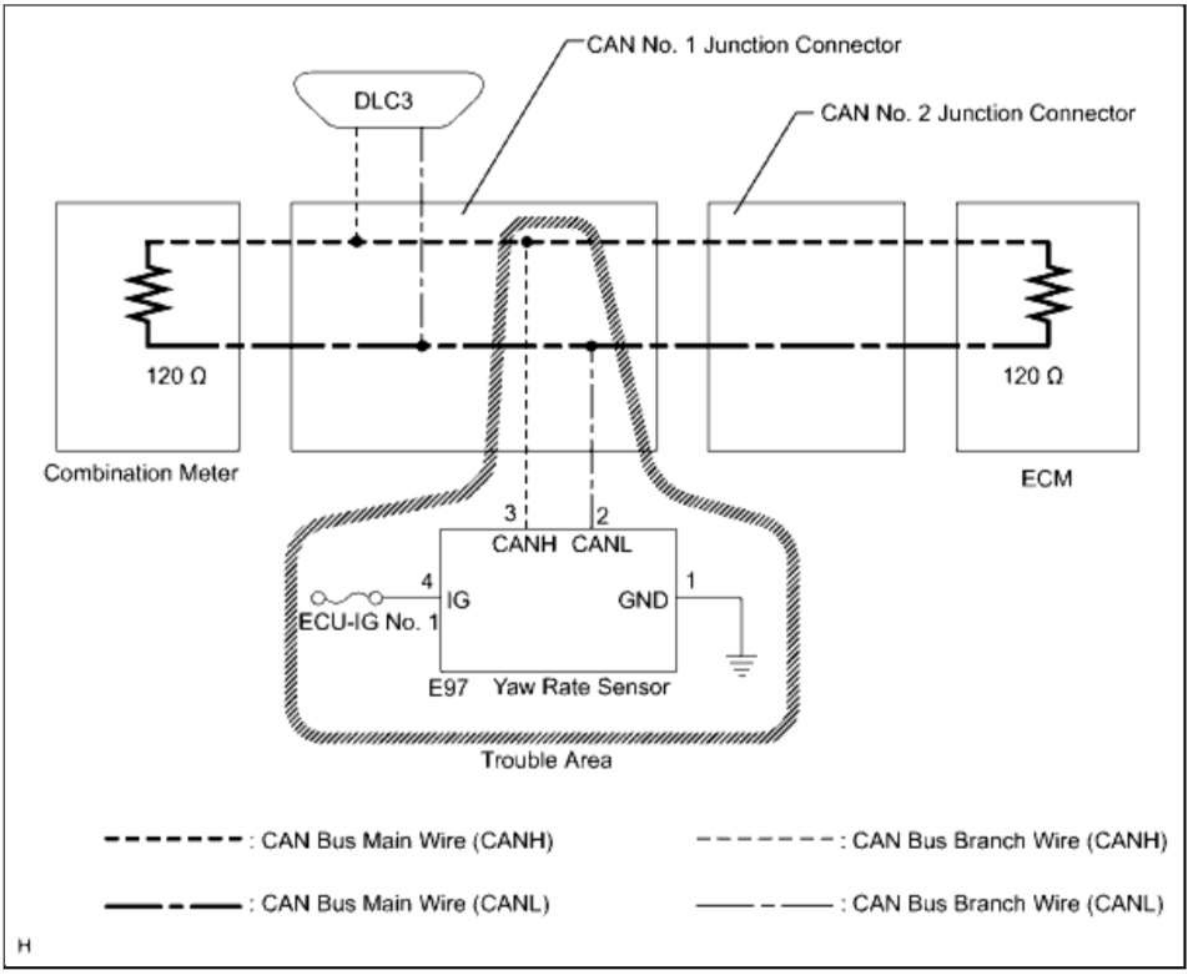
Yaw Rate Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Yaw Rate Sensor Communication Stop Mode	• "Yaw Rate/Decelerate Sensor" is not displayed on "CAN Bus Check" screen of Techstream • Applies to "Yaw Rate Sensor Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of yaw rate sensor • Yaw rate sensor branch wire or connector • Yaw rate sensor

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

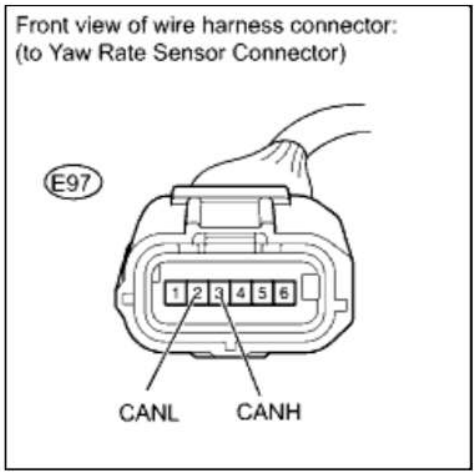
HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	CHECK FOR OPEN IN CAN BUS WIRE (YAW RATE SENSOR BRANCH WIRE)



(a) Turn the ignition switch off.

(b) Disconnect the yaw rate sensor connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E97-3 (CANH) - E97-2 (CANL)	Ignition switch off	54 to 69 Ω

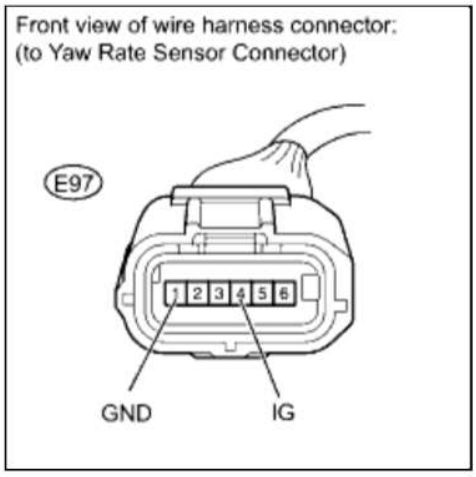
NG ▶ **REPAIR OR REPLACE YAW RATE SENSOR BRANCH WIRE OR CONNECTOR**

OK ▼

2.	CHECK WIRE HARNESS (IG, GND)

(a) Disconnect the yaw rate sensor connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E97-1 (GND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E97-4 (IG) - Body ground	Ignition switch ON	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE YAW RATE SENSOR**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000WIP04FX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: ECM Communication Stop Mode (2010 Corolla)		

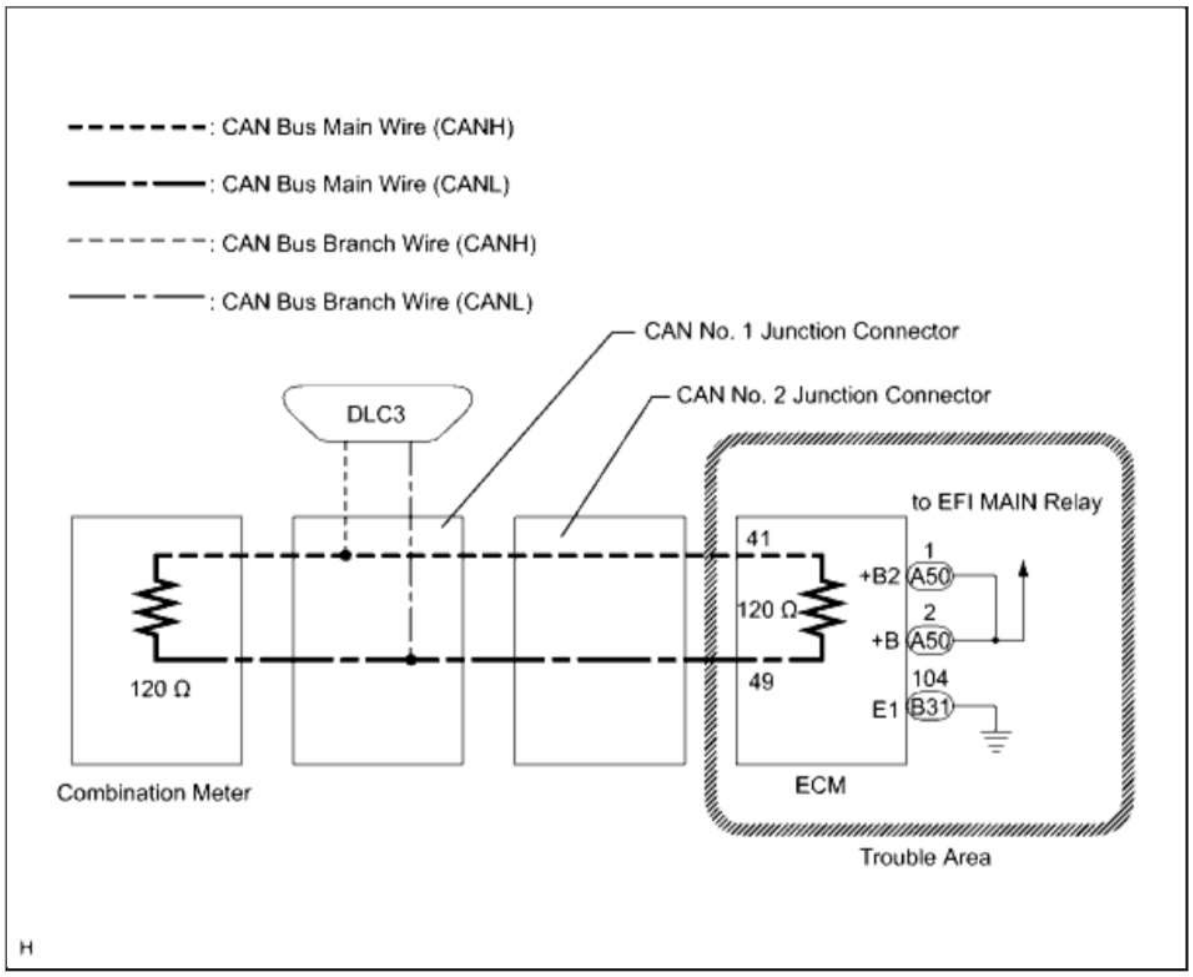
ECM Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
ECM Communication Stop Mode	• "Engine" is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "ECM Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of ECM • ECM

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

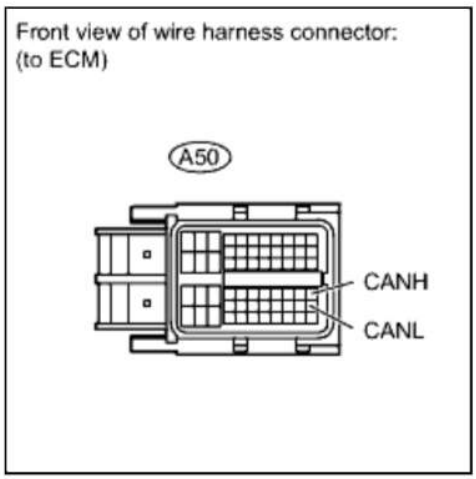
- Operating the ignition switch, any other switches, or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	CHECK FOR OPEN IN CAN NO. 1 BUS MAIN WIRE (ECM MAIN WIRE)

(a) Turn the ignition switch off.



(b) Disconnect the ECM connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A50-41 (CANH) - A50-49 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

2.	CHECK WIRE HARNESS (POWER SOURCE CIRCUIT)

(a) Check the ECM power source circuit (2ZR-FE: INFO , 2AZ-FE: INFO).

Result:

RESULT	PROCEED TO
OK (2ZR-FE)	A
OK (2AZ-FE)	B

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RESULT	PROCEED TO
NG	C

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

B ▶ **REPLACE ECM (2AZ-FE)**

A ▶ **REPLACE ECM (2ZR-FE)**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001F1V02PX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Main Body ECU Communication Stop Mode (2010 Corolla)		

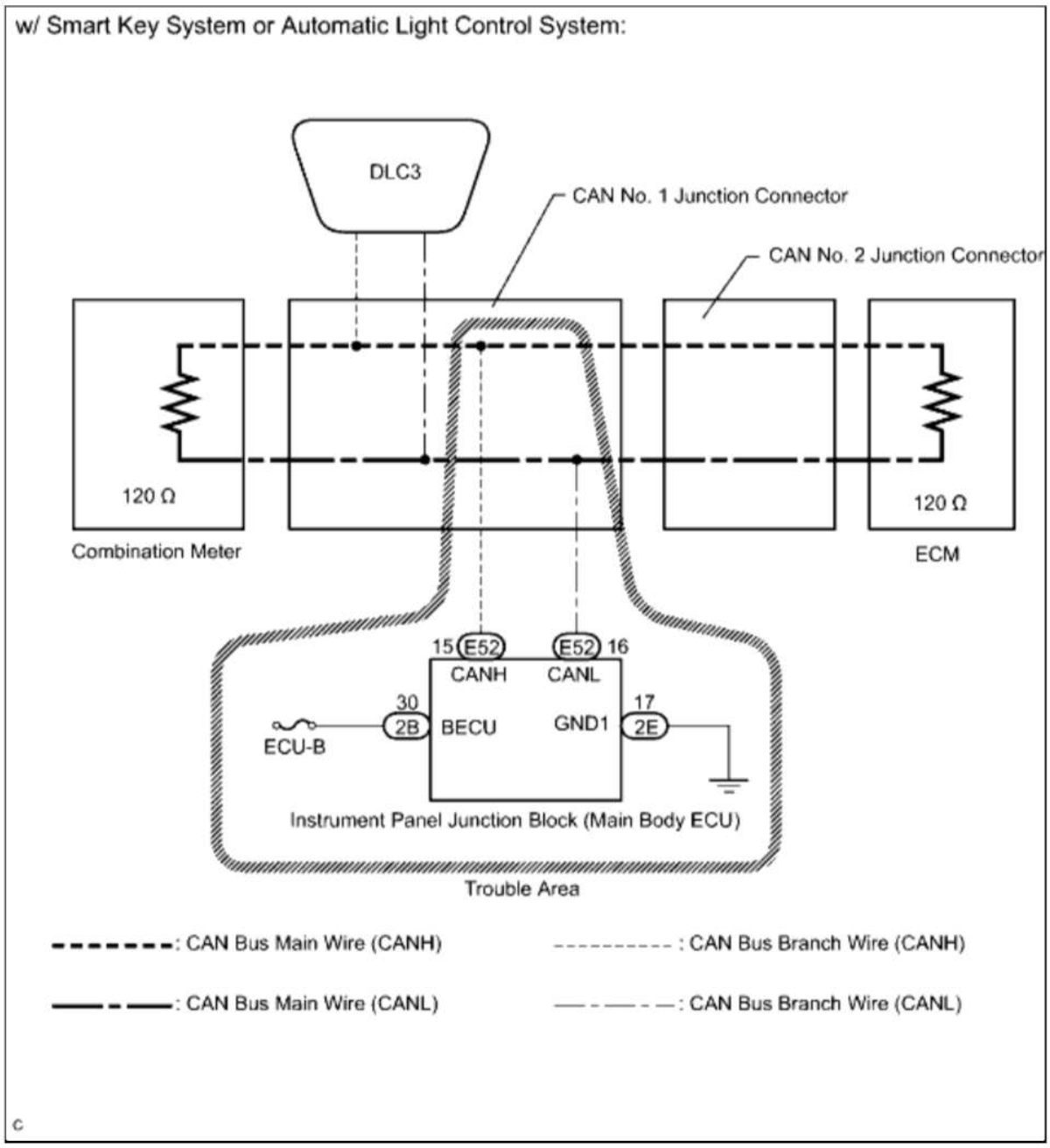
Main Body ECU Communication Stop Mode

DESCRIPTION

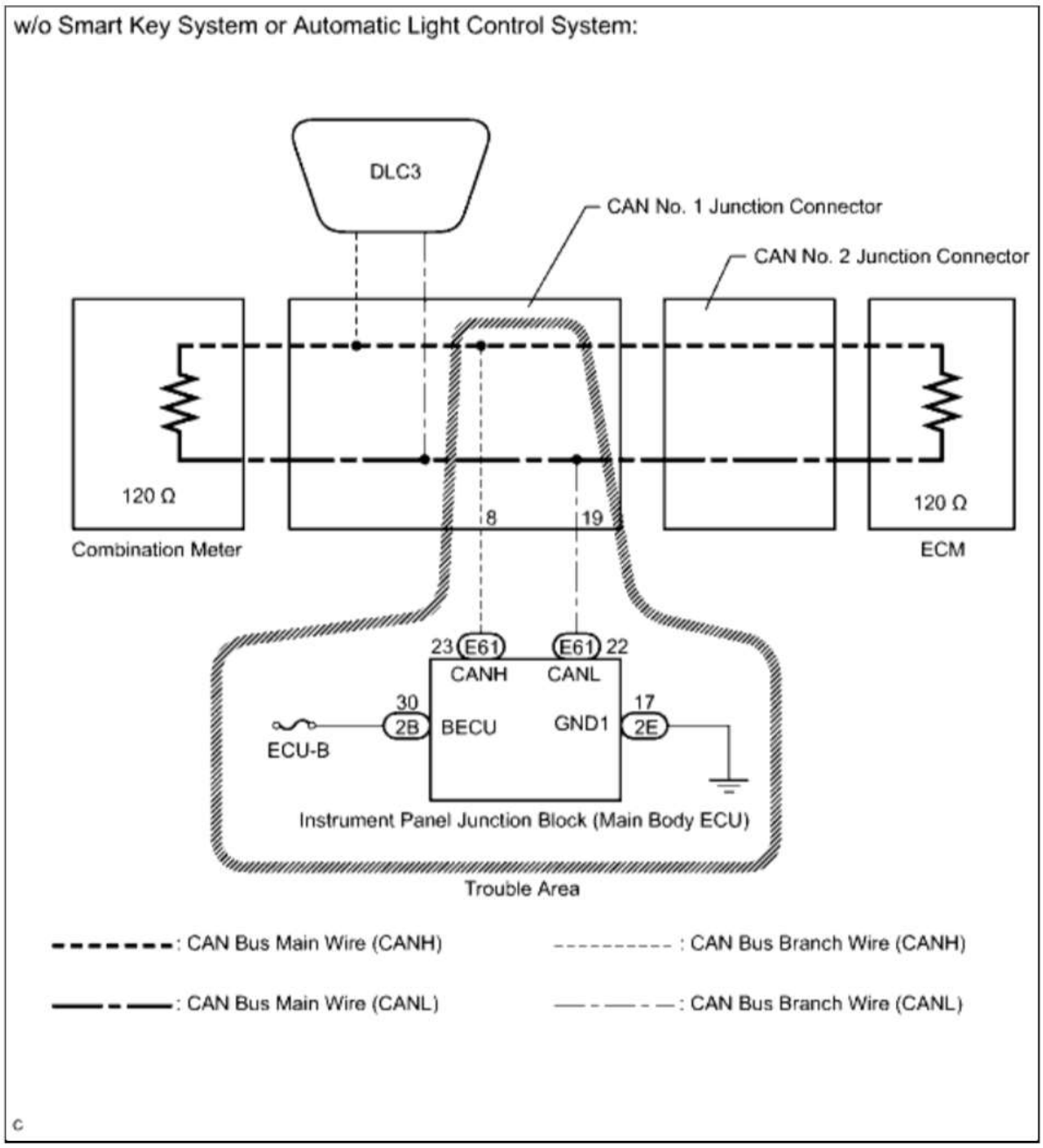
DETECTION ITEM	SYMPTOM	TROUBLE AREA
Main Body ECU Communication Stop Mode	• "Main body" is not displayed on "CAN Bus Check" screen of the Techstream • Applies to "Main Body ECU Communication Stop Mode" in "DTC Combination Table"	• Power source circuit of the main body ECU • Main body ECU branch wire or connector • Main body ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor

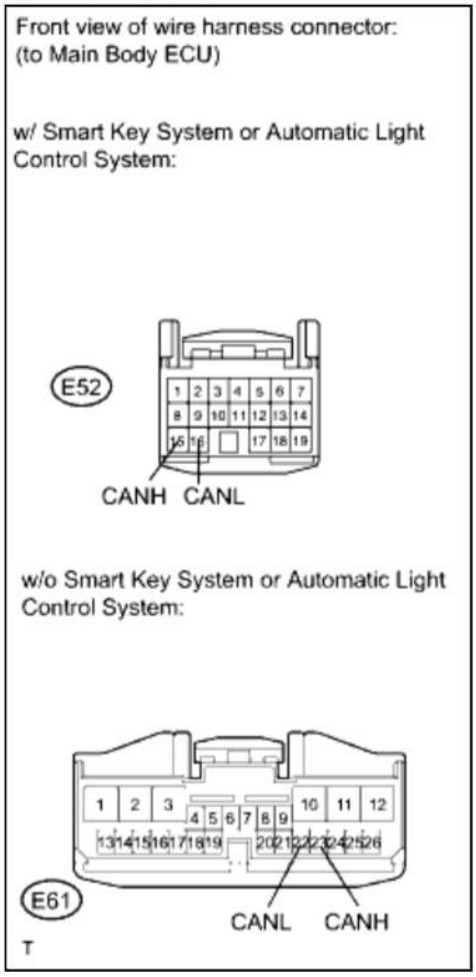
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communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

1.	CHECK CAN BUS LINE FOR DISCONNECTION (MAIN BODY ECU BRANCH WIRE)



(a) Turn the ignition switch off.

(b) Disconnect the main body ECU connector.

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

Standard Resistance:

w/ Smart Key System or Automatic Light Control System

w/o Smart Key and Start System or Automatic Light Control System

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

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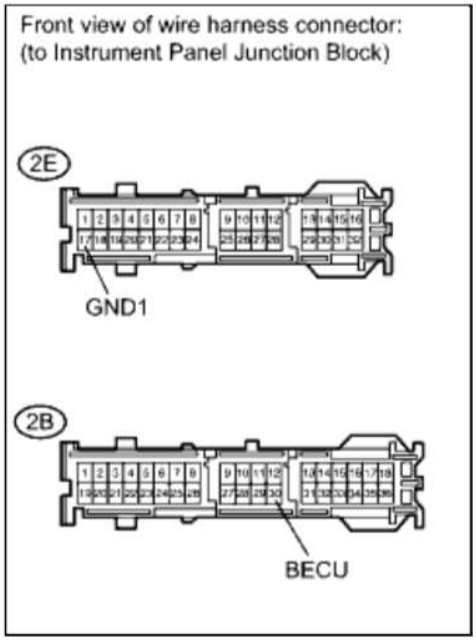
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E52-15 (CANH) - E52-16 (CANL)	Ignition switch off	54 to 69 Ω

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E61-23 (CANH) - E61-22 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (MAIN BODY ECU BRANCH WIRE)**

OK ▼

2.	CHECK HARNESS AND CONNECTOR (BECU, IG, GND1)



(a) Disconnect the instrument panel junction block connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2E-17 (GND1) - Body ground	Always	Below 1 Ω

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

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Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2B-30 (BECU) - Body ground	Always	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001F1S02TX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Combination Meter ECU Communication Stop Mode (2010 Corolla)		

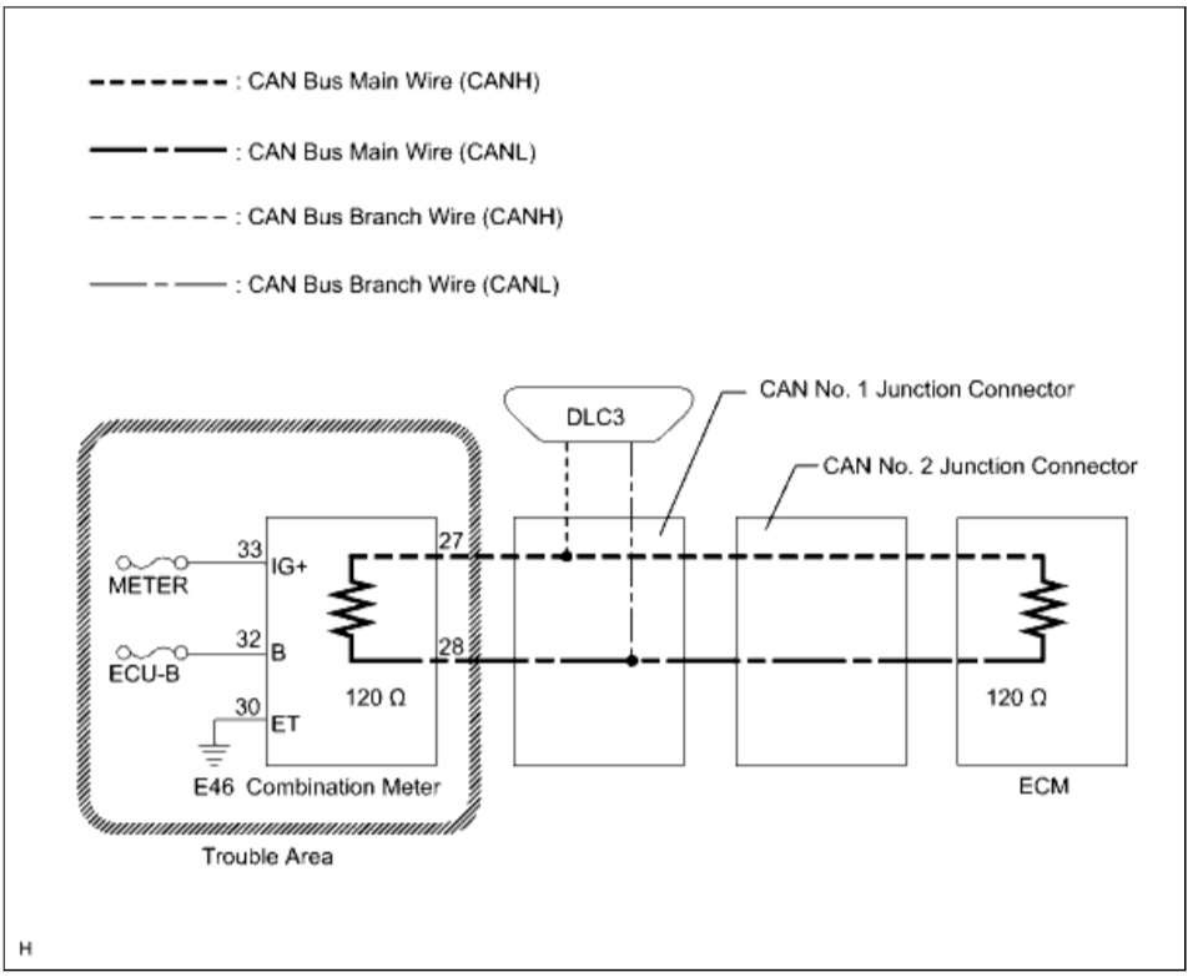
Combination Meter ECU Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Combination Meter ECU Communication Stop Mode	• "Combination Meter" is not displayed on the "CAN Bus Check" screen of the Techsteam • Applies to "Combination Meter ECU Communication Stop Mode" in the "DTC Combination Table"	• Power source circuit of the combination meter • Combination meter main wire or connector • Combination meter

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

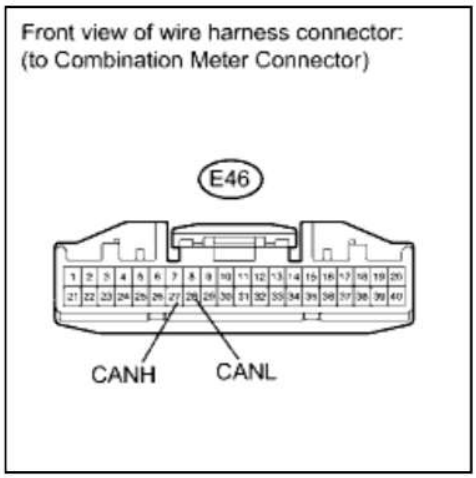
HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	**CHECK FOR OPEN IN CAN NO. 1 BUS WIRE (COMBINATION METER MAIN BUS WIRE)**



(a) Turn the ignition switch off.

(b) Disconnect the combination meter connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E46-27 (CANH) - E46-28 (CANL)	Ignition switch off	108 to 132 Ω

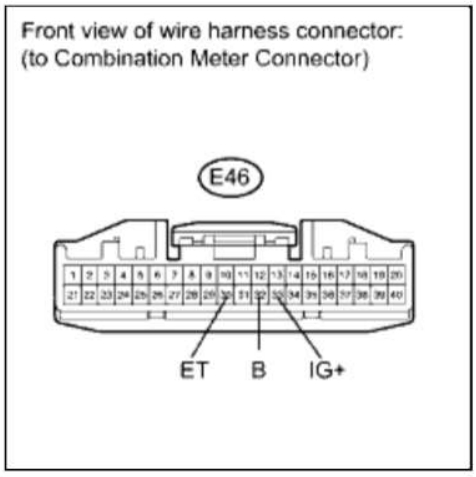
NG ▶ **REPAIR OR REPLACE CAN BUS MAIN WIRE OR CONNECTOR (COMBINATION METER MAIN BUS WIRE)**

OK ▼

2.	**CHECK HARNESS AND CONNECTOR (POWER SOURCE CIRCUIT)**

(a) Disconnect the combination meter connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E46-30 (ET) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E46-33 (IG+) - Body ground	Ignition switch ON	10 to 14 V
E46-32 (B) - Body ground	Always	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001V9P01CX
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Open in CAN Main Bus Line (2010 Corolla)		

Open in CAN Main Bus Line

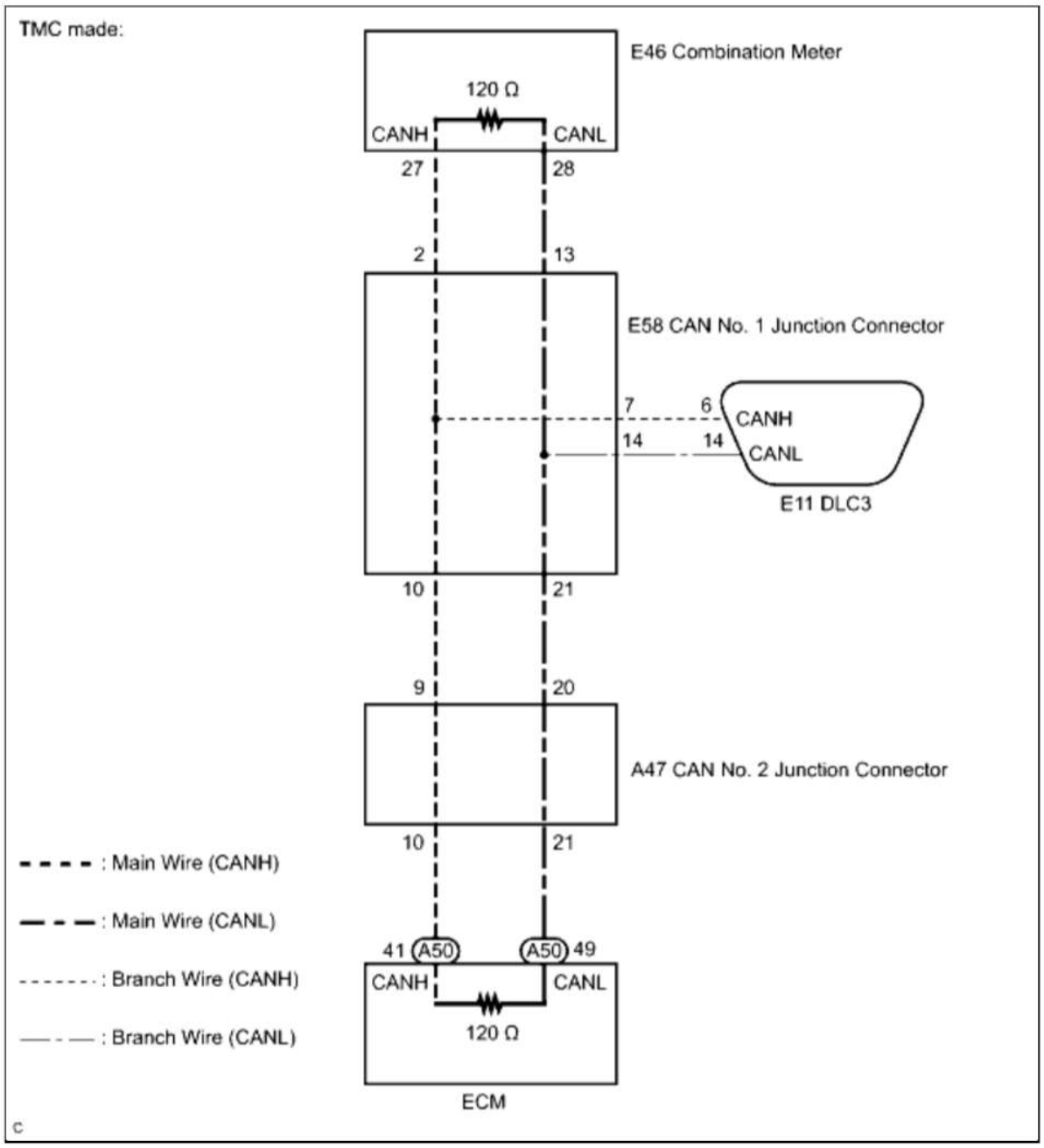
DESCRIPTION

There may be an open circuit in the CAN main wire and/or the DLC3 branch wire when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is 70 Ω or higher.

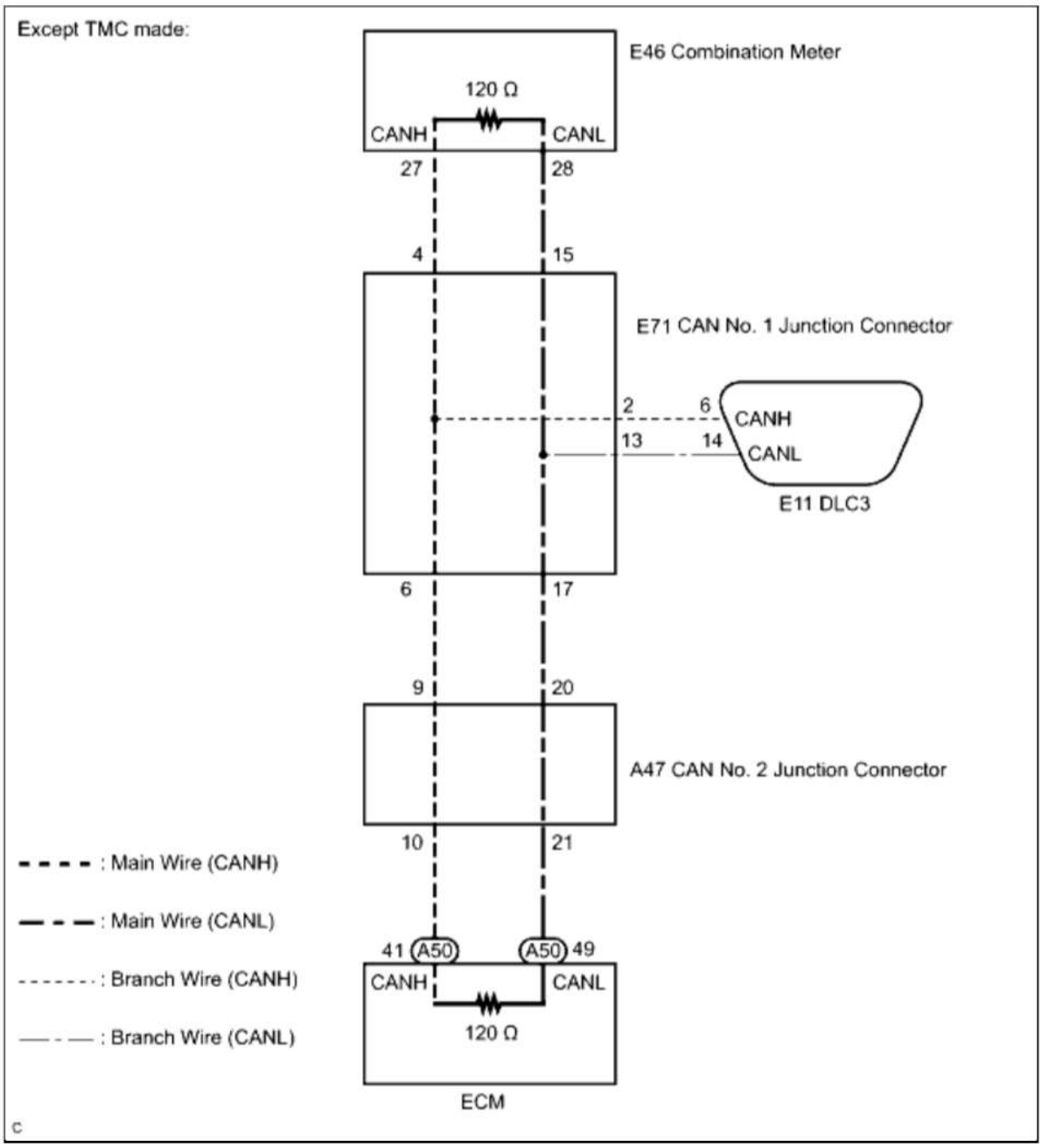
SYMPTOM	TROUBLE AREA
Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is 70 Ω or higher.	• CAN bus main wire or connector • CAN No. 1 junction connector • CAN No. 2 junction connector • ECM • Combination meter

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor

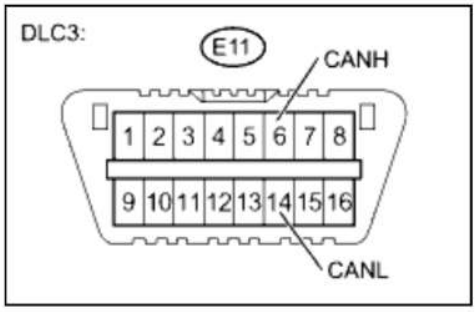
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communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

1.	**CHECK DLC3**



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	108 to 132 Ω

NOTICE:

When the measured value is 132 Ω or higher and a CAN communication system diagnostic trouble code is output, there may be a fault besides disconnection of the DLC3 branch wire. For that reason, troubleshooting should be performed again from How to Proceed with Troubleshooting INFO after repairing the trouble area.

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3**

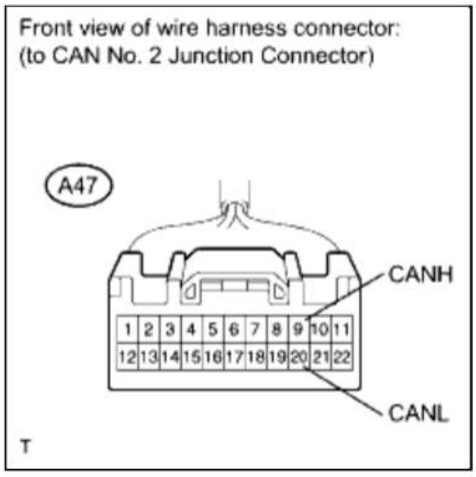
OK

▼

2.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 2 JUNCTION CONNECTOR)**

(a) Turn the ignition switch off.

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(b) Disconnect the CAN No. 2 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-9 (CANH) - A47-20 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER)**

OK ▼

3.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (ECM)**

(a) Turn the ignition switch off.

(b) Reconnect the CAN No. 2 junction connector.

(c) Disconnect the ECM connector.

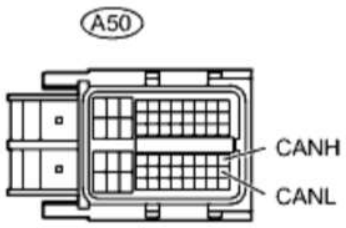
(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

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Front view of wire harness connector:
(to ECM)



A50-41 (CANH) - A50-49 (CANL)	Ignition switch off	108 to 132 Ω

Result:

RESULT	PROCEED TO
OK (for 2ZR-FE)	A
OK (for 2AZ-FE)	B
NG	C

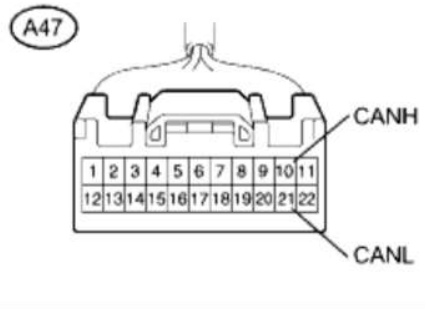
C ▶ **CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

B ▶ **REPLACE ECM**

A ▶ **REPLACE ECM**

4.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

Front view of wire harness connector:
(to CAN No. 2 Junction Connector)



(a) Reconnect the ECM connector.

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(b) Turn the ignition switch off.

(c) Disconnect the CAN No. 2 junction connector.

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

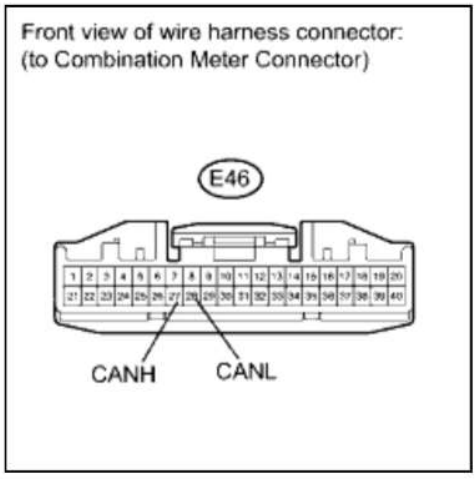
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A47-10 (CANH) - A47-21 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 2 JUNCTION CONNECTOR - ECM)**

OK ▶ **REPLACE CAN NO. 2 JUNCTION CONNECTOR**

5.	CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER)



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

(b) Turn the ignition switch off.

(c) Disconnect the combination meter connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E46-27 (CANH) - E46-28 (CANL)	Ignition switch off	108 to 132 Ω

OK ▶ **CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

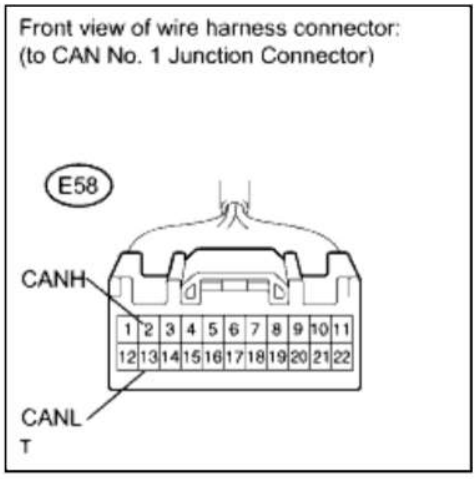
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6.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

(a) Reconnect the combination meter connector.

(b) Turn the ignition switch off.

(c) TMC made:



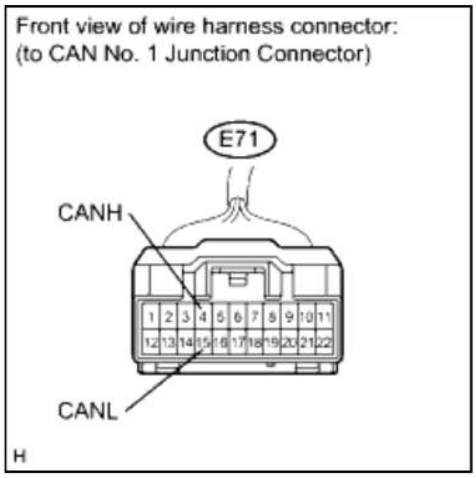
(1) Disconnect the CAN No. 1 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-2 (CANH) - E58-13 (CANL)	Ignition switch off	108 to 132 Ω

(d) Except TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

Standard Resistance:

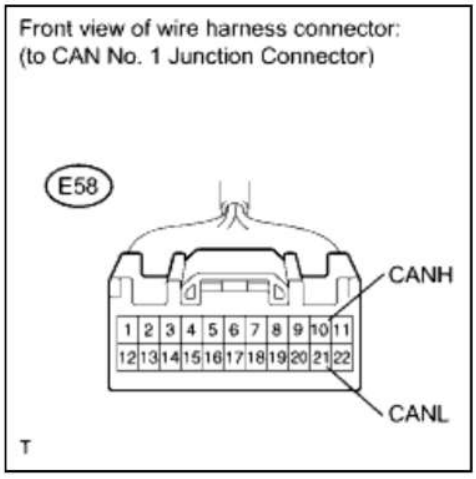
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-4 (CANH) - E71-15 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**

OK ▼

7.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

(a) TMC made:



(1) Disconnect the CAN No. 1 junction connector.

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

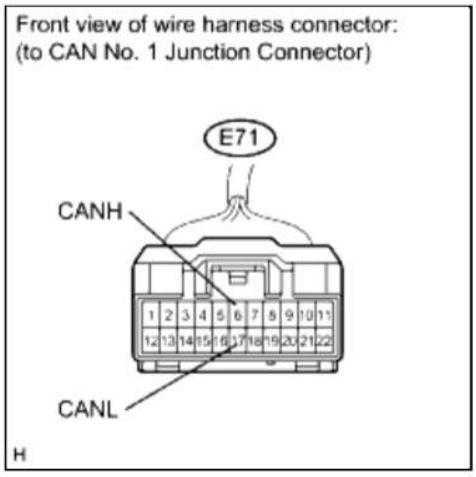
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E58-10 (CANH) - E58-21 (CANL)	Ignition switch off	108 to 132 Ω

(b) Except TMC made:

(1) Disconnect the CAN No. 1 junction connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E71-6 (CANH) - E71-17 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (CAN NO. 1 JUNCTION CONNECTOR - CAN NO. 2 JUNCTION CONNECTOR)**

OK ▶ **REPLACE CAN NO. 1 JUNCTION CONNECTOR**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001WG9021X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Center Airbag Sensor Communication Stop Mode (2010 Corolla)		

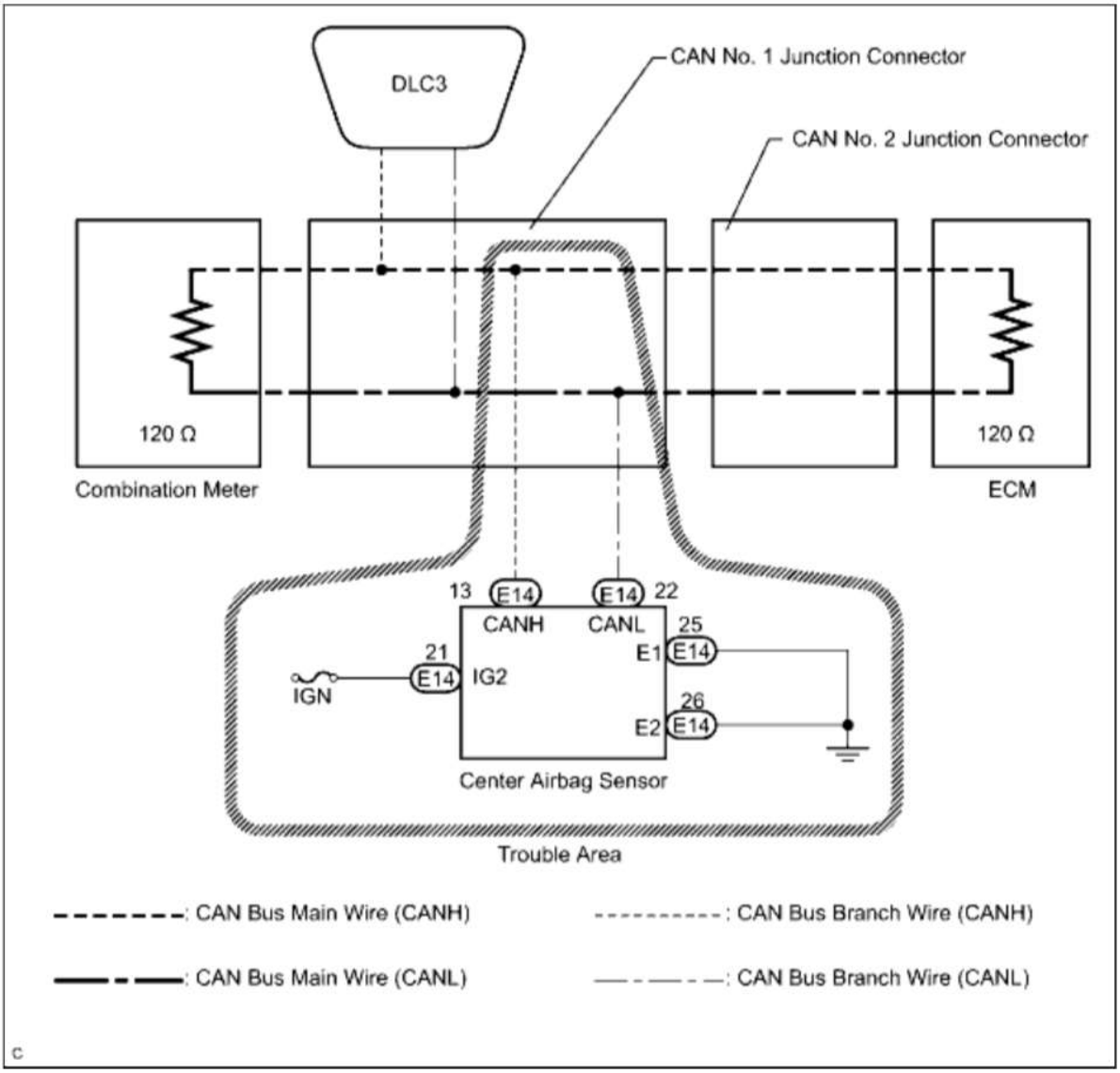
Center Airbag Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Center Airbag Sensor Communication Stop Mode	• "SRS Airbag" is not displayed on the "CAN Bus Check" screen of the Techstream • Applies to "Center Airbag Sensor Communication Stop Mode" in the "DTC Combination Table"	• Power source circuit of the center airbag sensor • Center airbag sensor branch wire or connector • Center airbag sensor assembly

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check the connectors, open the doors and leave them open.

HINT:

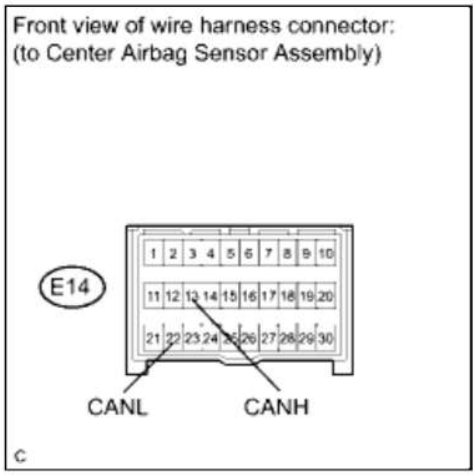
- Operating the ignition switch, any other switches, or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

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PROCEDURE

1.	CHECK FOR OPEN IN CAN BUS WIRE (CENTER AIRBAG SENSOR BRANCH WIRE)

(a) Turn the ignition switch off.



(b) Disconnect the center airbag sensor assembly connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E14-13 (CANH) - E14-22 (CANL)	Ignition switch off	54 to 69 Ω

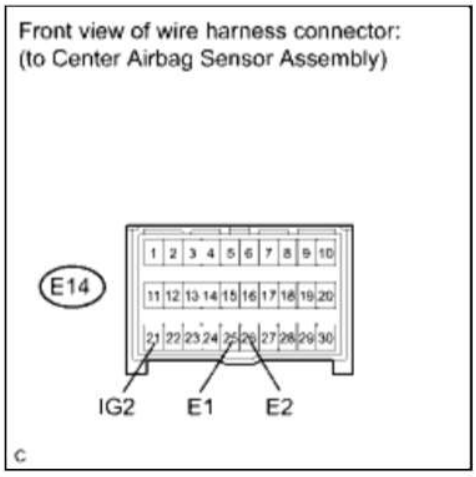
NG ▶ **REPAIR OR REPLACE CAN BUS BRANCH WIRE OR CONNECTOR (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)**

OK
▼

2.	CHECK HARNESS AND CONNECTOR (IG2, E1, E2)

(a) Disconnect the center airbag sensor assembly connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E14-25 (E1) - Body ground	Always	Below 1 Ω
E14-26 (E2) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E14-21 (IG2) - Body ground	Ignition switch ON	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE CENTER AIRBAG SENSOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000VC8010X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Check CAN Bus Line (2010 Corolla)		

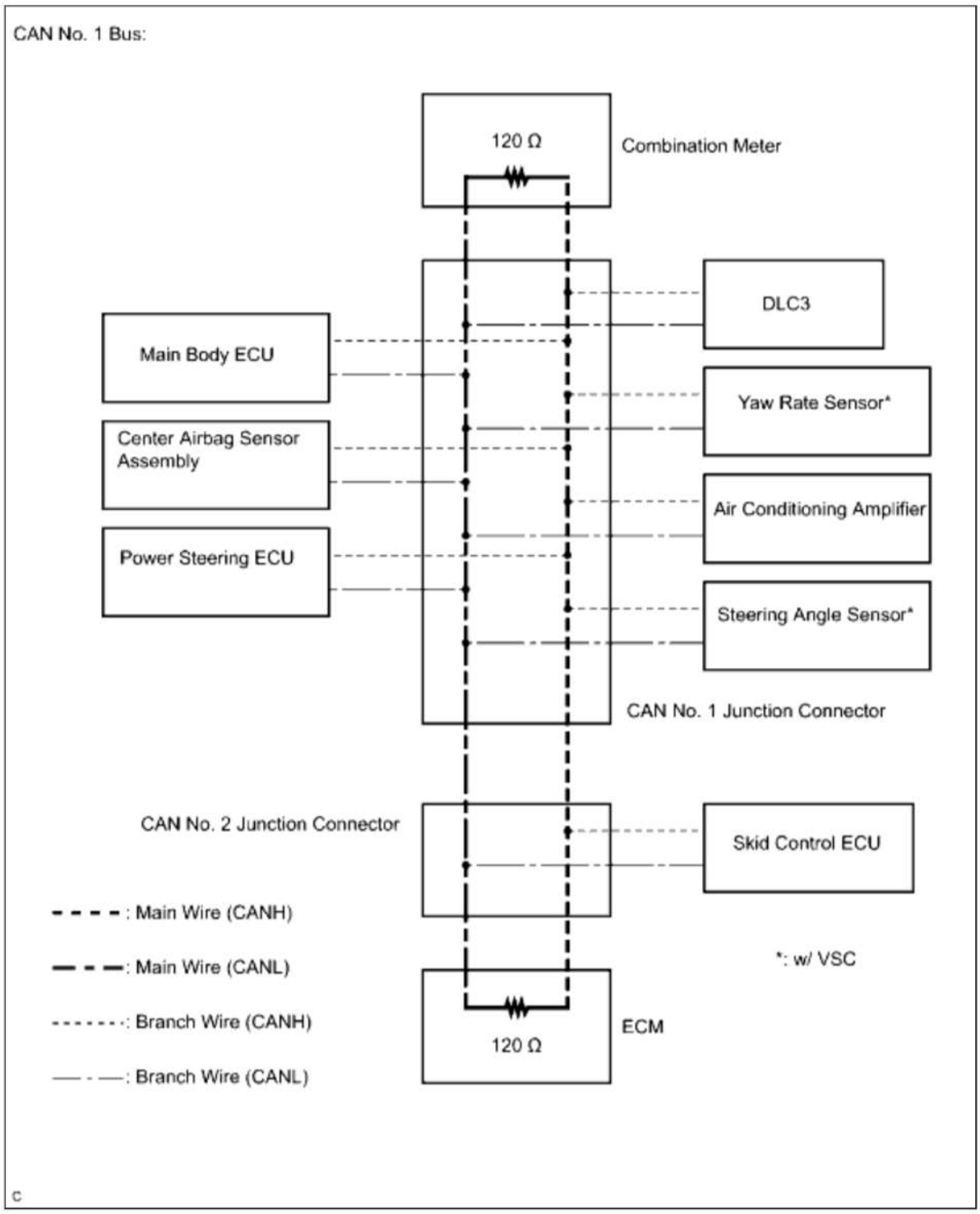
Check CAN Bus Line

DESCRIPTION

If any DTCs from the CAN communication system are not output, first measure the resistance between the terminals of the DLC3 to specify the trouble area, and check that there is no short in the CAN wire, and +B or GND.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

- Turn the ignition switch off before measuring the resistance of the main CAN bus wires and the CAN Bus branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to

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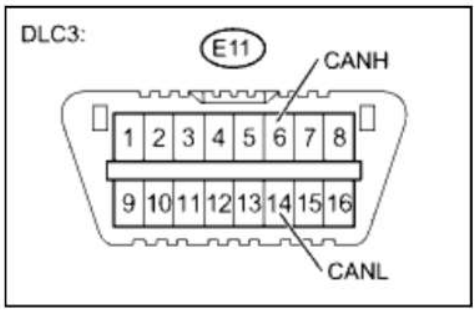
check the connectors, open the doors and leave them open.

HINT:

- Operating the ignition switch, any other switches, or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.
- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

1.	**CHECK CAN BUS WIRE (MAIN WIRE FOR DISCONNECTION, CAN BUS LINES FOR SHORT CIRCUIT)**



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	RESULT	PROCEED TO
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	54 to 69 Ω	A
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	70 Ω or higher	B
E11-6 (CANH) - E11-14 (CANL)	Ignition switch off	Below 54 Ω	C

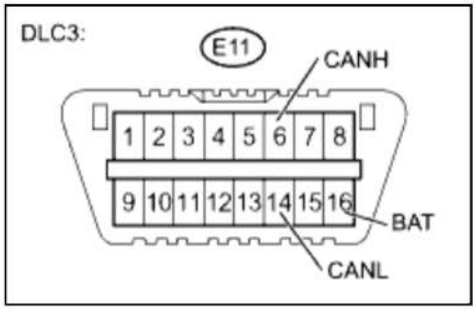
C ▶ **CHECK CAN BUS LINES FOR SHORT CIRCUIT**

B ▶ **CHECK FOR OPEN IN CAN MAIN BUS LINE**

A ▼

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2.	CHECK FOR SHORT TO B+ IN CAN BUS WIRE



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

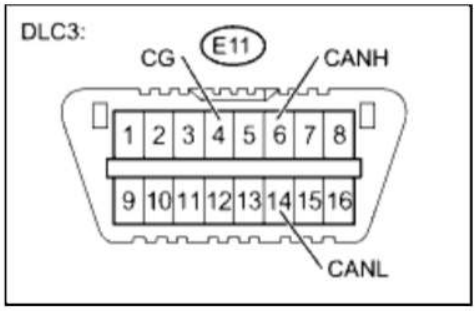
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher
E11-14 (CANL) - E11-16 (BAT)	Cable is disconnected from negative (-) battery terminal	6 kΩ or higher

NG ▶ CHECK CAN BUS LINE FOR SHORT TO +B

OK ▼

3.	CHECK FOR SHORT TO GND IN CAN BUS WIRE



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-6 (CANH) - E11-4 (CG)	Ignition switch off	200 Ω or higher
E11-14 (CANL) - E11-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ CHECK CAN BUS LINE FOR SHORT TO GND

OK ▶ GO TO HOW TO PROCEED WITH TROUBLESHOOTING

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001ZUR022X
Title: NETWORKING: CAN COMMUNICATION SYSTEM: Open in One Side of CAN Branch Line (2010 Corolla)		

Open in One Side of CAN Branch Line

DESCRIPTION

If some ECUs and sensors are not displayed the "CAN Bus Check" on screen of the Techstream and some ECUs and sensors repeatedly appear and disappear from the screen when the CAN main bus wires are normal (there is no open, short, short to B+, or short to GND in the main bus wires), there may be an open circuit in either of the CAN branch wires.

HINT:

If some ECUs and sensors repeatedly appear and disappear the "CAN Bus Check" from screen, communication between the normal ECUs (sensors) and the Techstream may be affected by the incomplete signals that are output from the ECU that has an open circuit in either of its CAN branch wires. In this case, the CAN branch wires for the ECUs and sensors that repeatedly appear and disappear from the screen are normal and the ECU that is not displayed on the screen may be the main cause of the problem (this ECU may have an open circuit in either of its CAN branch wires).

SYMPTOM	TROUBLE AREA
2 or more ECUs and/or sensors do not appear on the Techstream "CAN Bus Check" screen.	One side of the CAN branch wire is open, or output signals are incomplete. • Skid control ECU • Steering angle sensor • Yaw rate sensor • Power steering ECU • Air conditioning amplifier • Main body ECU • Center airbag sensor assembly • ECM • Combination meter • Accessory gateway

INSPECTION PROCEDURE

HINT:

Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below will help determine the cause of the malfunction.

PROCEDURE

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1.	CHECK FOR OPEN IN ONE SIDE OF CAN NO. 1 BUS BRANCH WIRE

(a) Confirm the systems (ECUs and sensors), which use CAN communication, equipped on the vehicle INFO.

(b) Using the Techstream, select and perform "CAN Bus Check" INFO.

(c) Observe the screen for approximately 1 minute to check the ECUs and sensors that are not displayed on the screen and also those that repeatedly appear and disappear from the screen.

(d) Check that the ECUs and sensors, which are connected to the ECUs or sensors that are not displayed on the screen.

(e) Check that the ECUs and sensors, which repeatedly appear and disappear the "Bus Check" screen, are constantly displayed.

NEXT ▶ **GO TO CORRESPONDING COMMUNICATION STOP MODE**

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Last Modified: 3-10-2010	6.4 L	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHH01EX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. PRECAUTIONS WHEN USING TECHSTREAM

(a) When using the Techstream with the engine switch off to troubleshoot: Connect the Techstream to the vehicle, and turn the courtesy light switch on and off at 1.5-second intervals until communication between the Techstream and the vehicle begins.

(b) After all DTCs are cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).

2. PRECAUTIONS WHEN WORKING ON ELECTRIC STEERING LOCK

(a) If the steering lock ECU (steering lock actuator assembly) is replaced, open and close the driver door. The engine may not start until this is performed.

HINT:

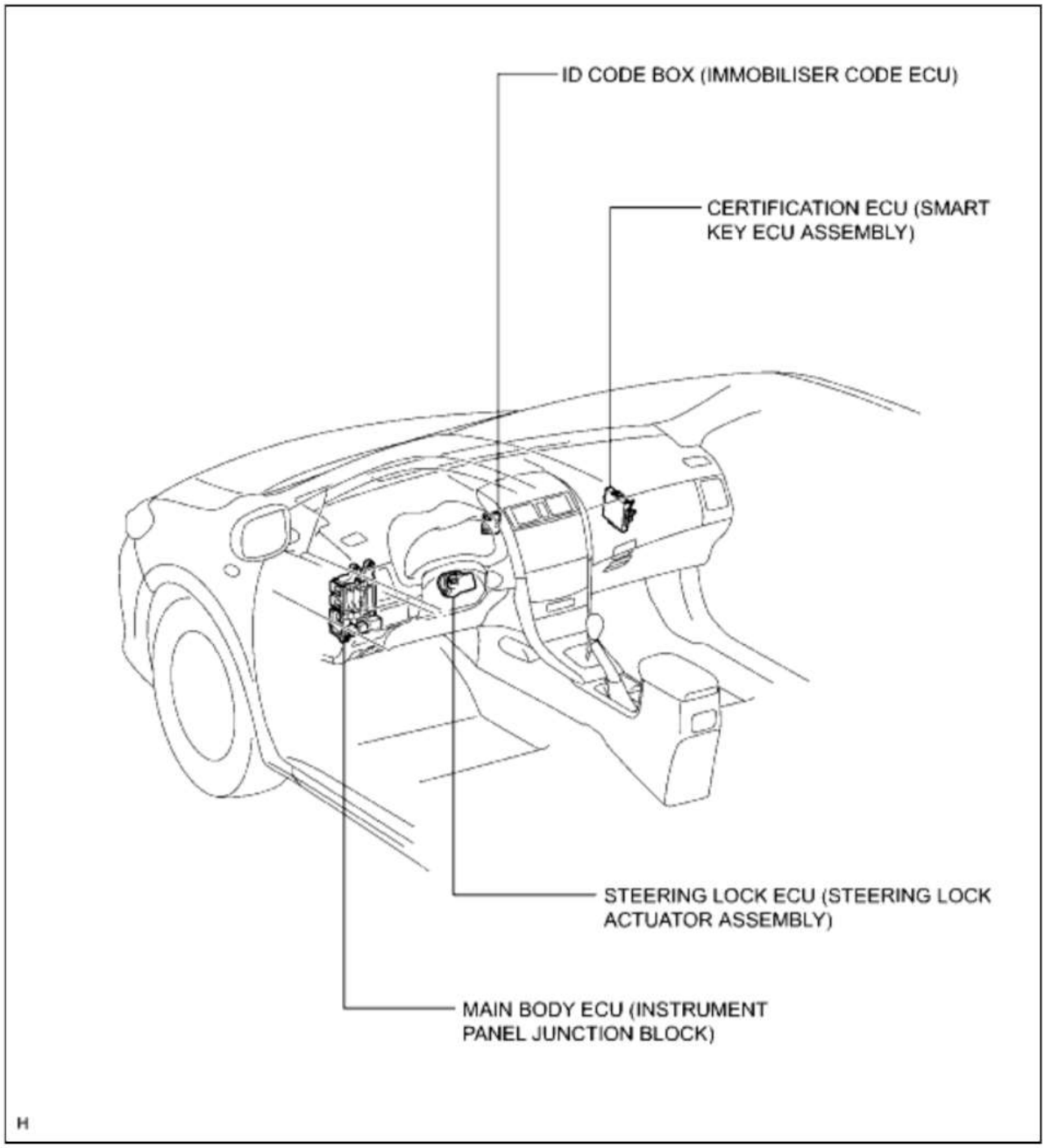
Opening and closing the driver door causes the steering lock ECU (steering lock actuator assembly) to memorize the correct steering lock bar position.

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Last Modified: 3-10-2010	6.4 R	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHK014X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: PARTS LOCATION (2010 Corolla)		

PARTS LOCATION

ILLUSTRATION

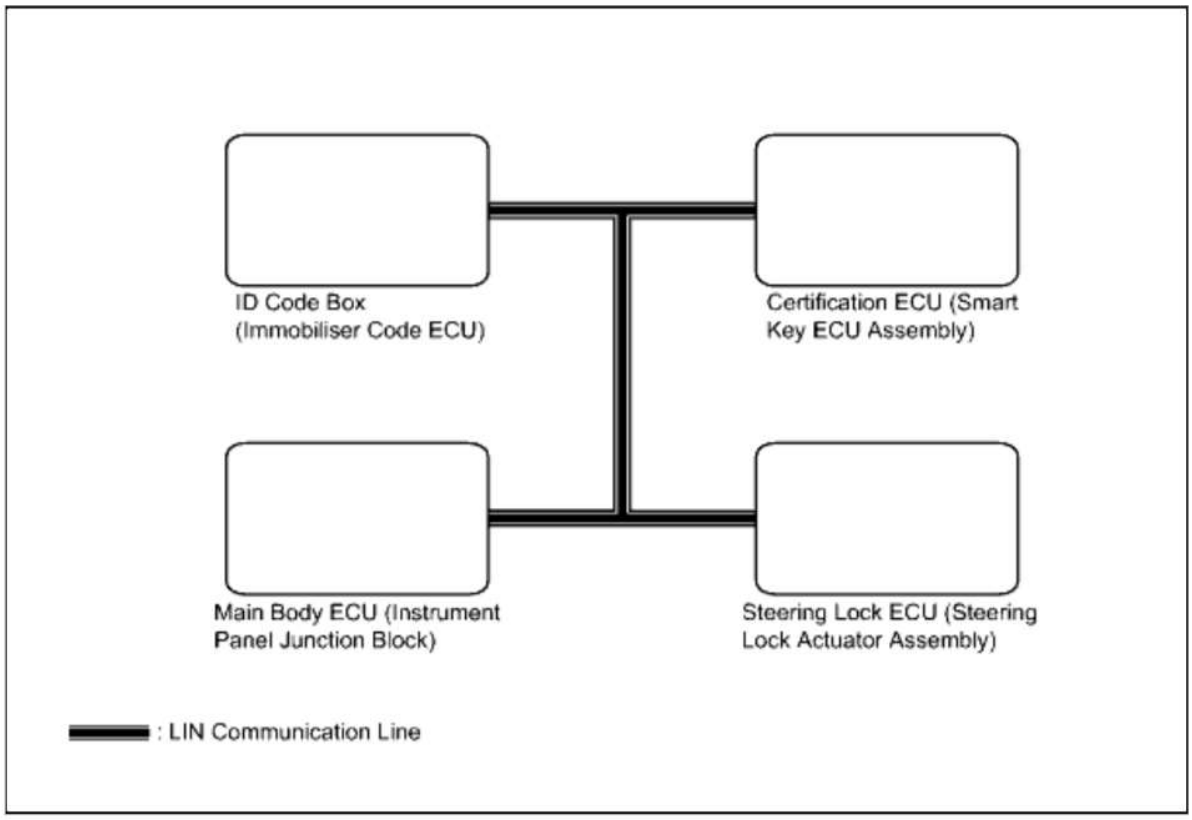


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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHT015X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: SYSTEM DIAGRAM (2010 Corolla)		

SYSTEM DIAGRAM

1. CERTIFICATION ECU BUS LINES



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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHI01IX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 Corolla)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedure to troubleshoot the LIN communication system.
- *: Use the Techstream.

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**CUSTOMER PROBLEM ANALYSIS**

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.
- The following 5 items are important points in the problem analysis:

What	Vehicle, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT

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3.	INSPECT BATTERY VOLTAGE

(a) Measure the battery voltage.

Standard Voltage:
11 to 14 V

HINT:

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

4.	INSPECT COMMUNICATION FUNCTION OF LIN COMMUNICATION SYSTEM*

(a) Using the Techstream, inspect the LIN communication function to ensure there are no malfunctions in the communication system INFO .

Result:

RESULT	PROCEED TO
No DTCs output	A
DTCs output	B

B INFO **Go to DIAGNOSTIC TROUBLE CODE CHART**

A

5.	OVERALL ANALYSIS AND TROUBLESHOOTING

(a) Terminals of ECU INFO

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NEXT

6.	REPAIR OR REPLACE

NEXT

7.	CONFIRMATION TEST

NEXT END

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHQ016X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: SYSTEM DESCRIPTION (2010 Corolla)		

SYSTEM DESCRIPTION

1. LIN COMMUNICATION SYSTEM DESCRIPTION

The multiplex communication system (LIN) is used to control communication between the ECUs of the body system. If communication cannot be performed through the LIN because of an open in the communication lines or other reason, the master control ECU of the relevant system will output a DTC. For the communication system and the connected ECUs, refer to the table below.

HINT:

Each ECU has a fail safe function which activates to maintain the minimum performance of the system and protect the system.

(a) LIN Communication Certification System

ECU	MASTER CONTROL (LIN COMMUNICATION DTC OUTPUT FUNCTION)
Certification ECU (Smart Key ECU Assembly)	○ (with output function)
Main Body ECU (Instrument Panel Junction Block)	○ (with output function)
Steering Lock ECU (Steering Lock Actuator Assembly)	x (no output function)
ID Code Box (Immobiliser Code ECU)	x (no output function)

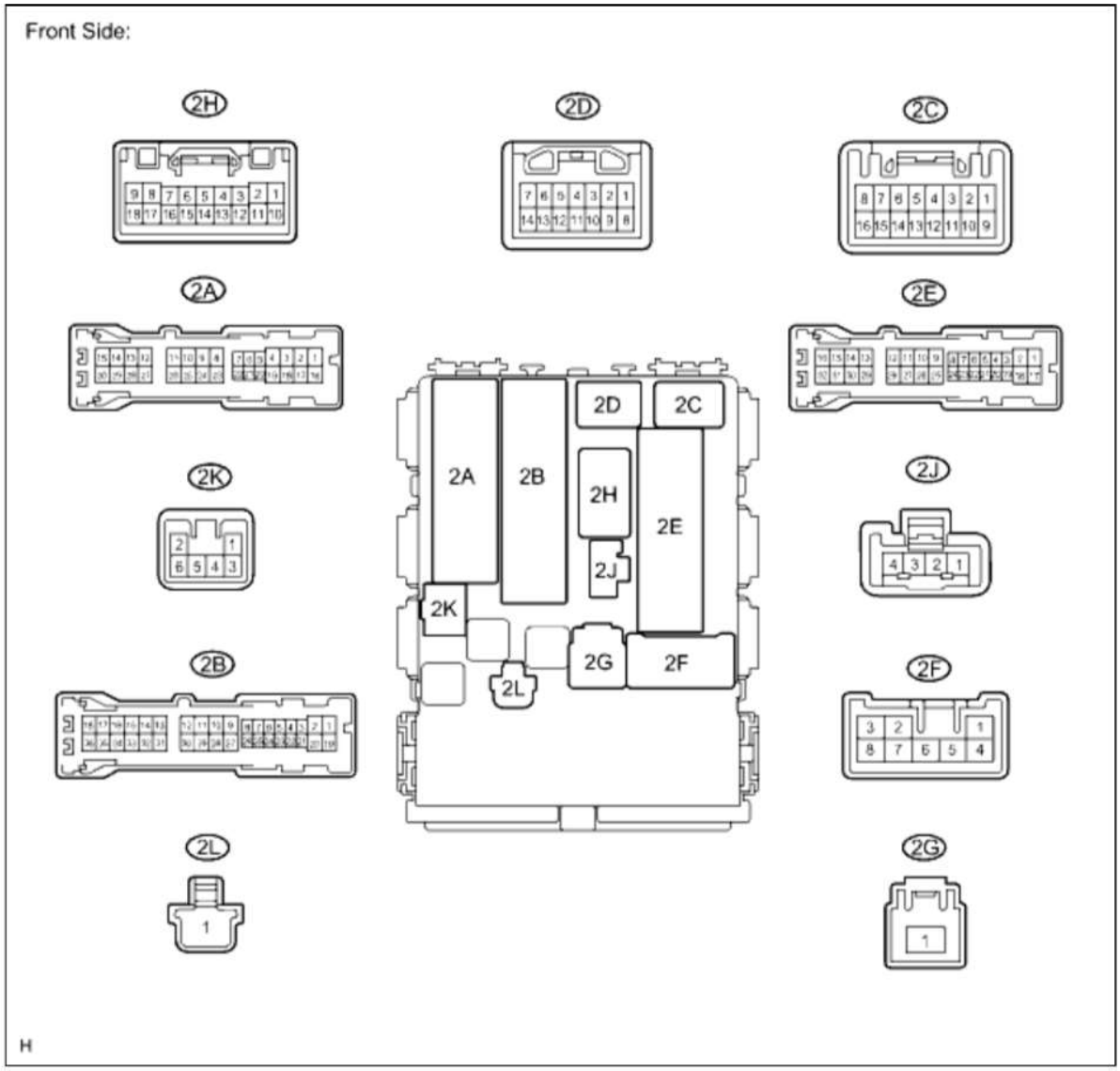
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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHL017X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: TERMINALS OF ECU (2010 Corolla)		

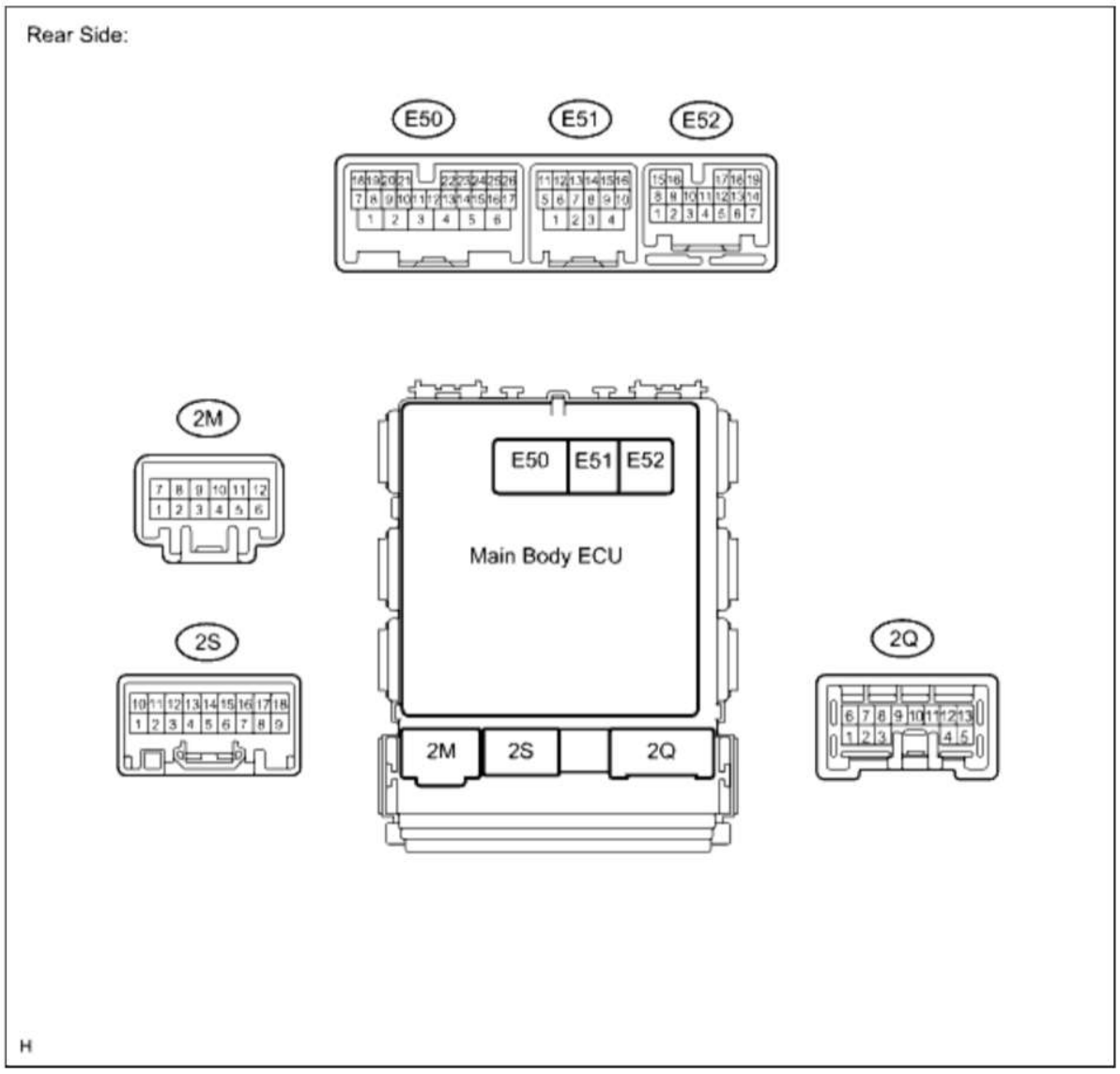
TERMINALS OF ECU

1. CHECK MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

(a) Disconnect the 2B, 2E, 2F and 2G junction block and E51 ECU connectors.



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

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
2B-30 (BECU) - Body ground	W - Body ground	Battery power supply	Always	11 to 14 V
2F-5 (ACC) - Body ground	W - Body ground*1 L - Body ground*2	ACC power supply	Engine switch on (ACC)	11 to 14 V
2G-1 (IG) - Body ground	W - Body ground	Battery power supply	Engine switch on (IG)	11 to 14 V
2E-17 (GND1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

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TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E51-4 (GND2) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

- *1: for TMC Made
- *2: Except for TMC made

If the result is not as specified, there may be a malfunction on the wire harness side.

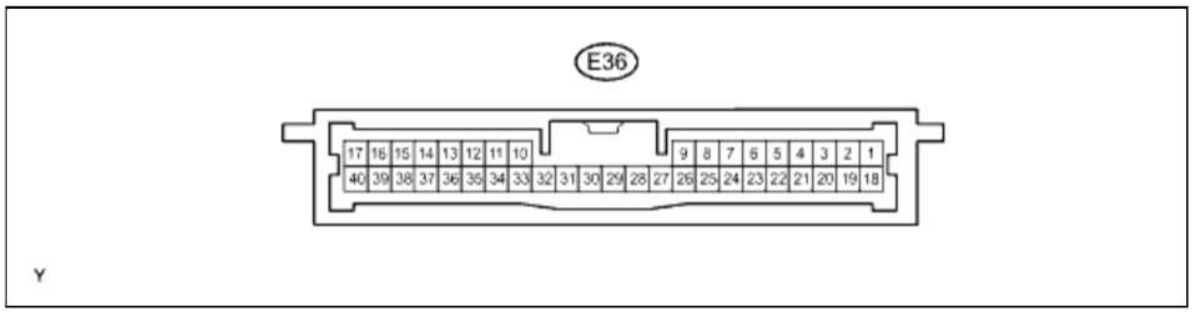
(c) Reconnect the 2B, 2E, 2F and 2G junction block and E51 ECU connectors.

(d) Measure the pulse according to the value(s) in the table below.

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
2C-12 (LIN1) - E51-4 (GND2)	V - W-B	LIN Communication line	Engine switch on (IG)	Pulse generation

If the result is not as specified, the ECU may have a malfunction.

2. CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)



(a) Disconnect the E36 ECU connector.

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

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E36-1 (+B) - E36-17 (E)	W - W-B*1 BR - W-B*2	Battery power supply	Always	11 to 14 V
E36-17 (E) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

- *1: for TMC Made
- *2: Except for TMC made

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the E36 ECU connector.

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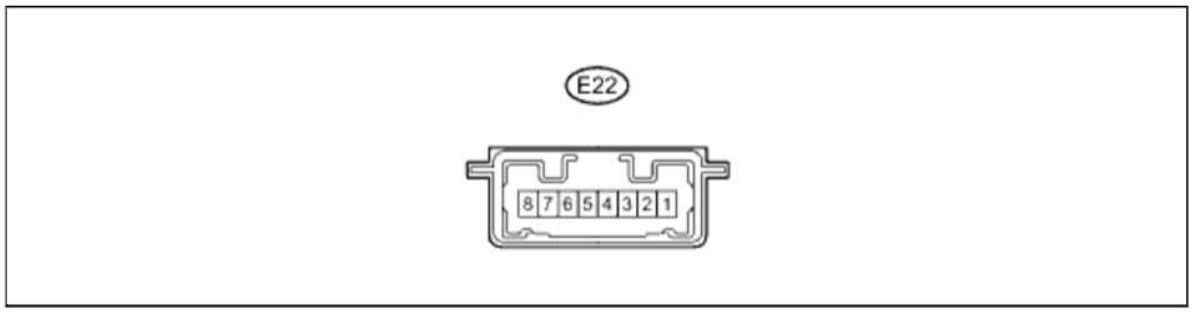
(d) Measure the voltage and pulse according to value(s) in the table below.

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E36-18 (IG) - E36-17 (E)	L - W-B*1 B - W-B*2	Engine switch power supply	Engine switch on (IG)	11 to 14 V
E36-18 (IG) - E36-17 (E)	L - W-B*1 B - W-B*2	Engine switch power supply	Engine switch off	Below 1 V
E36-10 (LIN) - E36-17 (E)	V - W-B	LIN Communication line	Engine switch on (IG)	Pulse generation

- *1: for TMC Made
- *2: Except for TMC made

If the result is not as specified, the ECU may have a malfunction.

3. CHECK ID CODE BOX (IMMOBILISER CODE ECU)



(a) Disconnect the E22 ECU connector.

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

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E22-1 (+B) - E22-8 (GND)	W - BR*1 BR - BR*2	Battery power supply	Always	11 to 14 V
E22-8 (GND) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω

- *1: for TMC Made
- *2: Except for TMC made

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the E22 ECU connector.

(d) Measure the pulse according to value(s) in the table below.

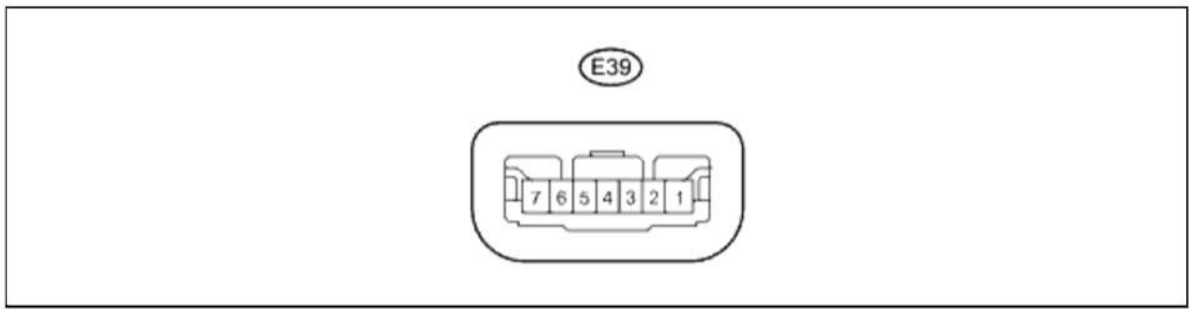
TESTER	WIRING	TERMINAL	CONDITION	SPECIFIED

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CONNECTION	COLOR	DESCRIPTION		CONDITION
E22-3 (LIN1) - E22-8 (GND)	V - BR	LIN Communication line	Engine switch on (IG)	Pulse generation

If the result is not as specified, the ECU may have a malfunction.

4. CHECK STEERING LOCK ECU (STEERING LOCK ACTUATOR ASSEMBLY)



(a) Disconnect the E39 ECU connector.

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

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E39-7 (B) - E39-1 (GND)	L - W-B	Battery power supply	Always	11 to 14 V
E39-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
E39-6 (IG2) - E39-1 (GND)	B - W-B	Engine switch power supply	Engine switch on (IG)	11 to 14 V
E39-6 (IG2) - E39-1 (GND)	B - W-B	Engine switch power supply	Engine switch off	Below 1 V

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the E39 ECU connector.

(d) Measure the pulse according to value(s) in the table below.

TESTER CONNECTION	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E39-5 (LIN) - E39-1 (GND)	V - W-B	LIN Communication line	Engine switch on (IG)	Pulse generation

If the result is not as specified, the ECU may have a malfunction.

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001VJO00TX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: DIAGNOSIS SYSTEM (2010 Corolla)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) The certification ECU (smart key ECU assembly) controls the LIN communication system. LIN communication system data and Diagnostic Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3). When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) Check the DLC3 INFO .

3. INSPECT BATTERY VOLTAGE

(a) Measure the battery voltage.

Standard Voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.



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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHS018X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: DTC CHECK / CLEAR (2010 Corolla)		

DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Body Electrical / Smart Key or Main Body / Trouble Codes.

(e) Check the detail of the DTC(s) INFO.

2. CLEAR DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Body Electrical / Smart Key or Main Body / Trouble Codes.

(e) Clear the DTC(s).

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHW00YX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: B2287: LIN Communication Master Malfunction (2010 Corolla)		

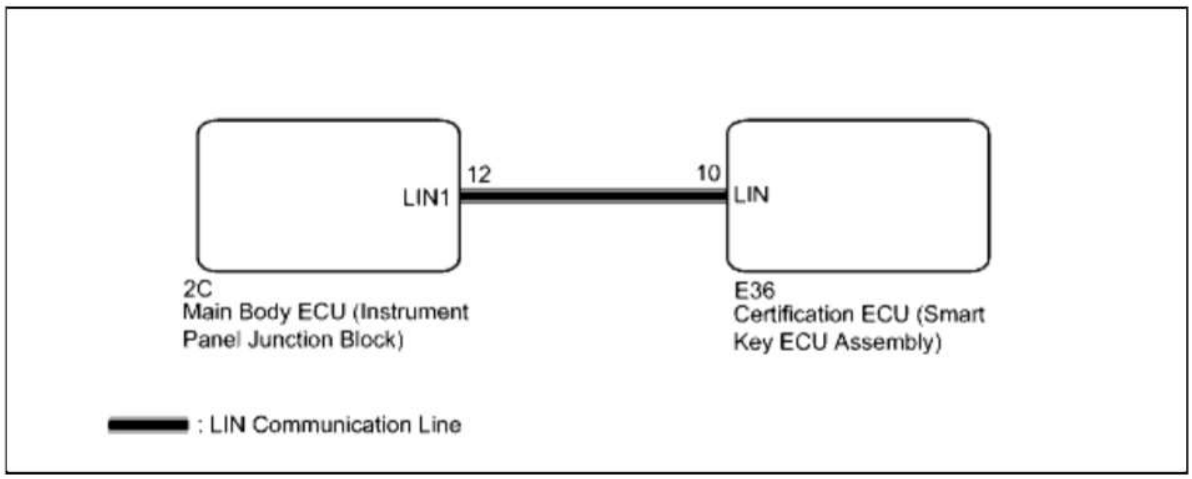
DTC	**B2287**	**LIN Communication Master Malfunction**

DESCRIPTION

This DTC is output when there is an open, short or ECU communication malfunction between the main body ECU (instrument panel junction block) and certification ECU (smart key ECU assembly).

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
B2287	There is an open, short or ECU communication malfunction between the main body ECU (instrument panel junction block) and certification ECU (smart key ECU assembly).	• Certification ECU (smart key ECU assembly) • Main body ECU (instrument panel junction block) • Wire harness or connector

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

When DTC B2785 and B2287 are output simultaneously, perform the troubleshooting for DTC B2785 first.

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NOTICE:

If the certification ECU (smart key ECU assembly) is replaced, register the keys and ECU communication ID INFO .

PROCEDURE

1.	**CLEAR DTC**

(a) Clear the DTC INFO .

NEXT

2.	**CHECK FOR DTC**

(a) Recheck for the DTC INFO .

OK:

B2287 is not output.

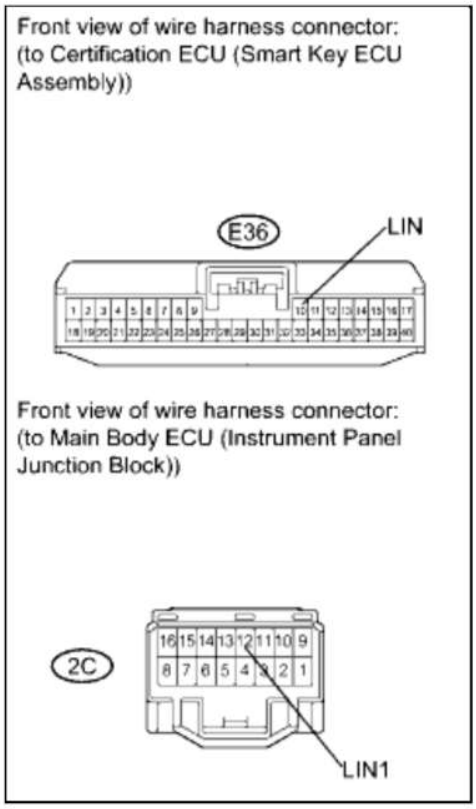
NG ▶ **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - MAIN BODY ECU)**

OK ▶ **USE SIMULATION METHOD TO CHECK**

3.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - MAIN BODY ECU)**

(a) Disconnect the E36 and 2C connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - 2C-12 (LIN1)	Always	Below 1 Ω
E36-10 (LIN) - Body ground	Always	10 kΩ or higher

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - Body ground	Always	Below 1 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)**

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(a) Replace the main body ECU (instrument panel junction block).

NEXT

5.	**CHECK FOR DTC**

(a) Clear the DTC INFO.

(b) Recheck for the DTC.

OK:
B2287 is not output.

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

OK ▶ **END (MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK) IS DEFECTIVE)**

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Last Modified: 3-10-2010	6.4 S	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHJ00ZX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 Corolla)		

DIAGNOSTIC TROUBLE CODE CHART

1. MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK) DIAGNOSTIC TROUBLE CODE CHART

Main Body ECU (Instrument Panel Junction Block)

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B2287	LIN Communication Master Malfunction	1. Certification ECU (smart key ECU assembly) 2. Main body ECU (instrument panel junction block) 3. Wire harness or connector	INFO

2. CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) DIAGNOSTIC TROUBLE CODE CHART

Certification ECU (Smart Key ECU Assembly)

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B2785	Communication Malfunction between ECUs Connected by LIN	1. Certification ECU (smart key ECU assembly) 2. Main body ECU (instrument panel junction block) 3. Steering lock ECU (steering lock actuator assembly) 4. ID code box (immobiliser code ECU) 5. Wire harness or connector	INFO
B2786	No Response from Steering Lock ECU	1. Steering lock ECU (steering lock actuator assembly) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	INFO
B2789	No Response from ID BOX	1. ID code box (immobiliser code ECU) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	INFO

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHV018X
Title: NETWORKING: LIN COMMUNICATION SYSTEM: B2785: Communication Malfunction between ECUs Connected by LIN (2010 Corolla)		

DTC	**B2785**	**Communication Malfunction between ECUs Connected by LIN**

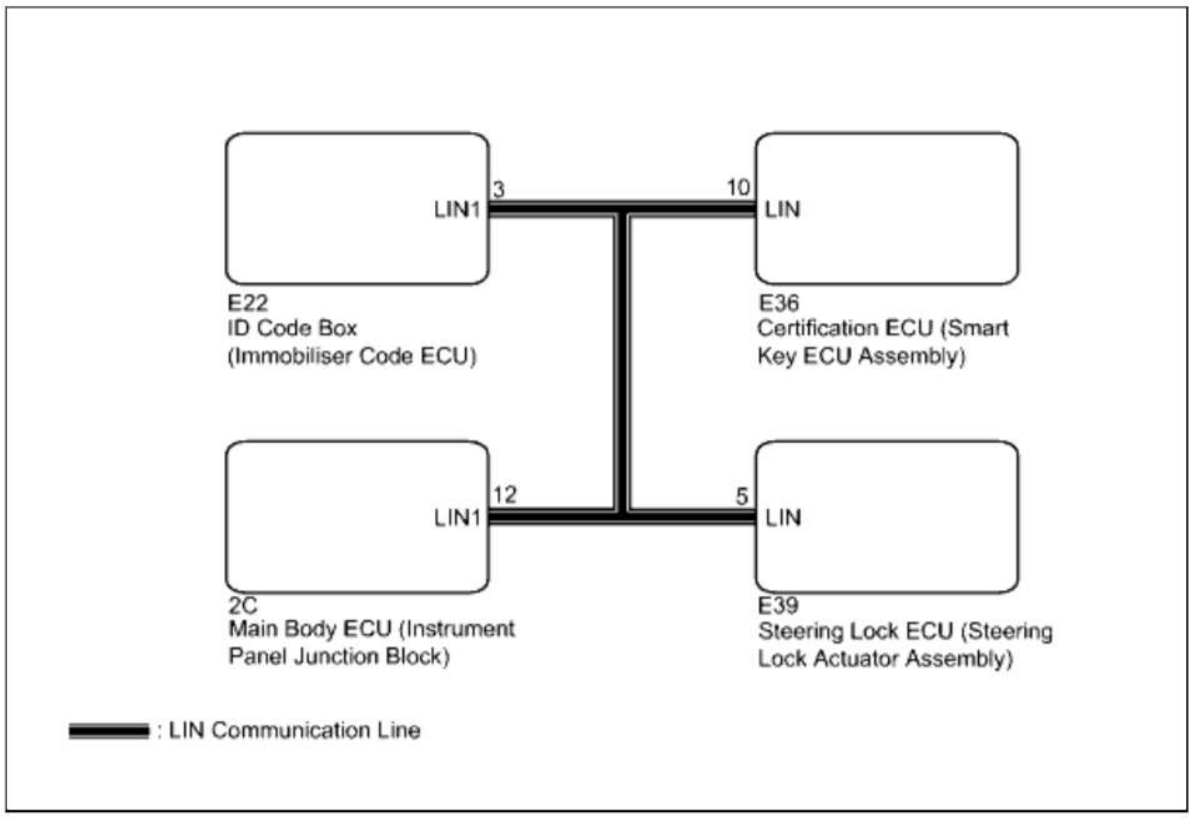
DESCRIPTION

The certification ECU (smart key ECU assembly) monitors communication between all the ECUs connected to the certification ECU system LIN bus lines. When the certification ECU (smart key ECU assembly) detects an error in communication with all the ECUs connected to the certification ECU system LIN bus lines at a set interval and 3 times in a row, DTC B2785 will be output.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
B2785	• Error in LIN communication between ECUs and an open or short in communication lines • LIN communication from the certification ECU (smart key ECU assembly) stops for a set amount of time or more	• Certification ECU (smart key ECU assembly) • Main body ECU (instrument panel junction block) • Steering lock ECU (steering lock actuator assembly) • ID code box (immobiliser code ECU) • Wire harness or connector

WIRING DIAGRAM

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INSPECTION PROCEDURE

HINT:

When DTC B2785 and B2287 are output simultaneously, perform the troubleshooting for DTC B2785 first.

NOTICE:

- If the certification ECU (smart key ECU assembly) is replaced, register the keys and ECU communication ID INFO .
- If the steering lock ECU (steering lock actuator assembly) is replaced, register the ECU code INFO .
- If the ID code box (immobiliser code ECU) is replaced, register the ECU code and ECU communication ID INFO .

PROCEDURE

1.	**CLEAR DTC**

(a) Clear the DTC INFO .

NEXT

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2.	CHECK FOR DTC

(a) Recheck for the DTC INFO.

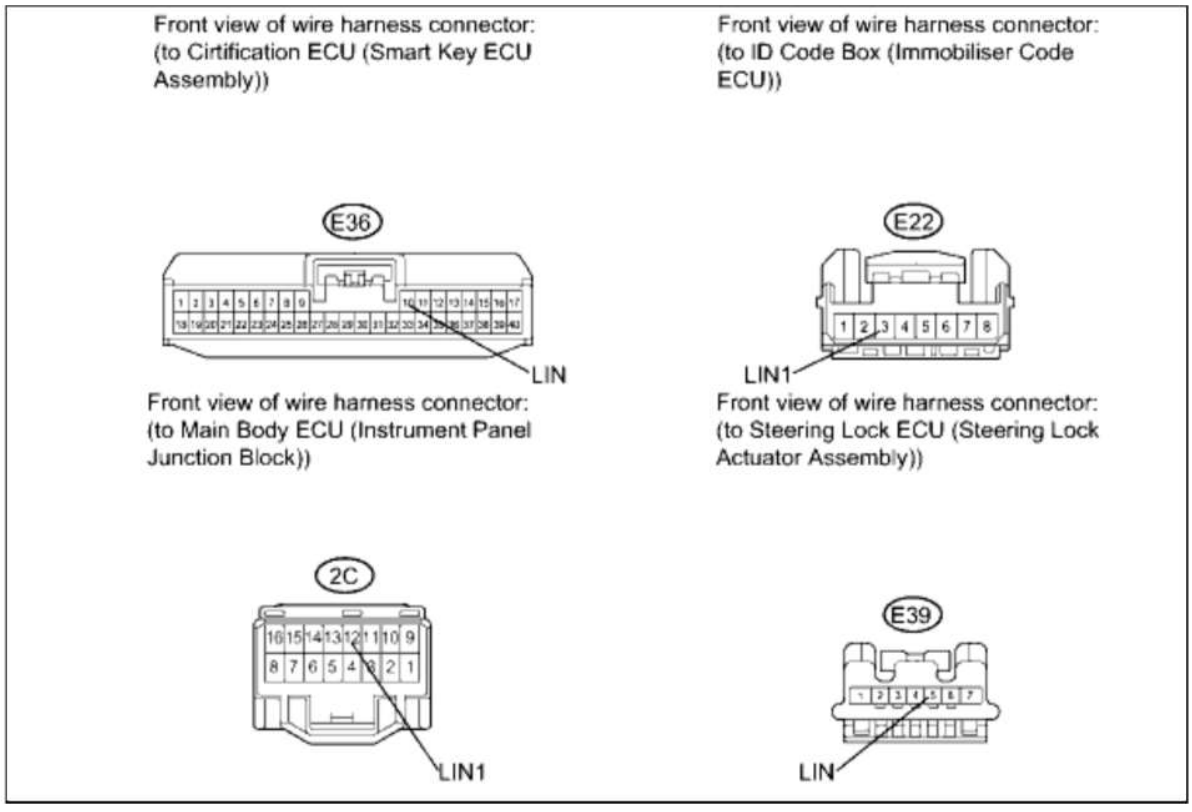
OK:
B2785 is not output.

NG ▶ CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - EACH ECU)

OK ▶ USE SIMULATION METHOD TO CHECK

3.	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - EACH ECU)

(a) Disconnect the E22, E36, E39 and 2C connectors.



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

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Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - E39-5 (LIN)	Always	Below 1 Ω
E36-10 (LIN) - E22-3 (LIN1)	Always	Below 1 Ω
E36-10 (LIN) - 2C-12 (LIN1)	Always	Below 1 Ω
E36-10 (LIN) - Body ground	Always	10 kΩ or higher

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - Body ground	Always	Below 1 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	CHECK FOR DTC (STEERING LOCK ECU)

(a) Reconnect the E36, E22 and 2C connectors.

(b) Clear the DTC INFO.

(c) Recheck for the DTC.

Result:

RESULT	PROCEED TO
B2785 is output	A
B2785 is not output	B

B ▶ **REPLACE STEERING LOCK ECU (STEERING LOCK ACTUATOR ASSEMBLY)**

A ▼

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5.	CHECK FOR DTC (ID CODE BOX)

(a) Reconnect the E39 connector.

(b) Disconnect the E22 connector.

(c) Clear the DTC INFO.

(d) Recheck for the DTC.

Result:

RESULT	PROCEED TO
B2785 is output	A
B2785 is not output	B

B ▶ REPLACE ID CODE BOX (IMMOBILISER CODE ECU)

A ▼

6.	CHECK FOR DTC (MAIN BODY ECU)

(a) Reconnect the E22 connector.

(b) Disconnect the 2C connector.

(c) Clear the DTC INFO.

(d) Recheck for the DTC.

OK:

B2785 is not output.

NG ▶ REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)

OK ▶ REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XHX00VX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: B2786: No Response from Steering Lock ECU (2010 Corolla)		

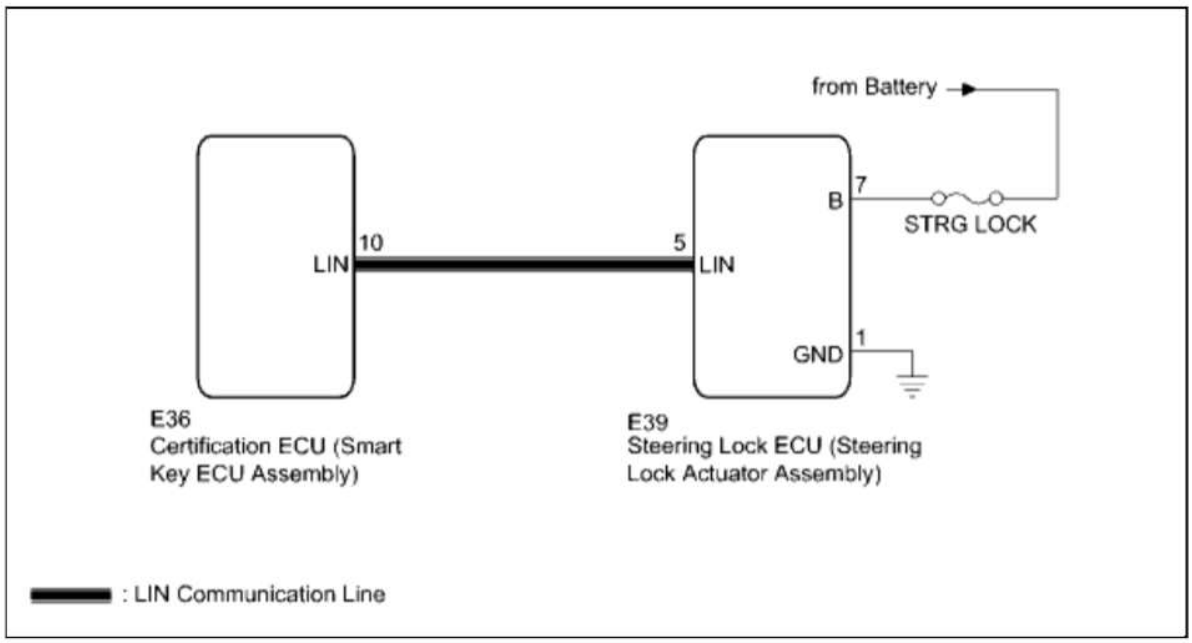
DTC	**B2786**	**No Response from Steering Lock ECU**

DESCRIPTION

This DTC is output when LIN communication between the certification ECU (smart key ECU assembly) and the steering lock ECU (steering lock actuator assembly) stops for more than 10 seconds.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
B2786	No communication between the steering lock ECU (steering lock actuator assembly) and the certification ECU (smart key ECU assembly) for more than 10 seconds	• Steering lock ECU (steering lock actuator assembly) • Certification ECU (smart key ECU assembly) • Wire harness or connector

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

- If the certification ECU (smart key ECU assembly) is replaced, register the keys and ECU communication ID INFO .
- If the steering lock ECU (steering lock actuator assembly) is replaced, register the ECU code INFO .

PROCEDURE

1.	CLEAR DTC

(a) Clear the DTC INFO .

NEXT

2.	CHECK FOR DTC

(a) Recheck for the DTC INFO .

OK:
B2786 is not output.

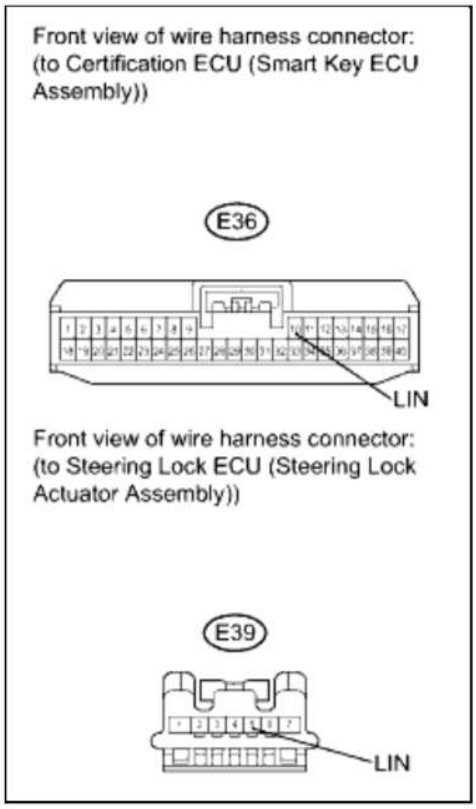
NG ▶ **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - STEERING LOCK ECU)**

OK ▶ **USE SIMULATION METHOD TO CHECK**

3.	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - STEERING LOCK ECU)

(a) Disconnect the E36 and E39 ECU connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - E39-5 (LIN)	Always	Below 1 Ω
E36-10 (LIN) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

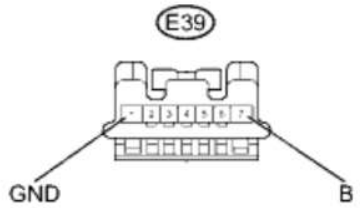
4.	**CHECK HARNESS AND CONNECTOR (STEERING LOCK ECU BATTERY VOLTAGE AND GROUND)**

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

Standard Resistance:

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Front view of wire harness connector:
(to Steering Lock ECU (Steering Lock Actuator Assembly))



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	Always	Below 1 Ω

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-7 (B) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	REPLACE STEERING LOCK ECU

(a) Replace the steering lock ECU (steering lock actuator assembly).

NEXT ▼

6.	CHECK FOR DTC

(a) Clear the DTC [INFO].

(b) Recheck for the DTC.

OK:
B2786 is not output.

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

OK ▶ **END (STEERING LOCK ECU IS DEFECTIVE)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002XI700XX
Title: NETWORKING: LIN COMMUNICATION SYSTEM: B2789: No Response from ID BOX (2010 Corolla)		

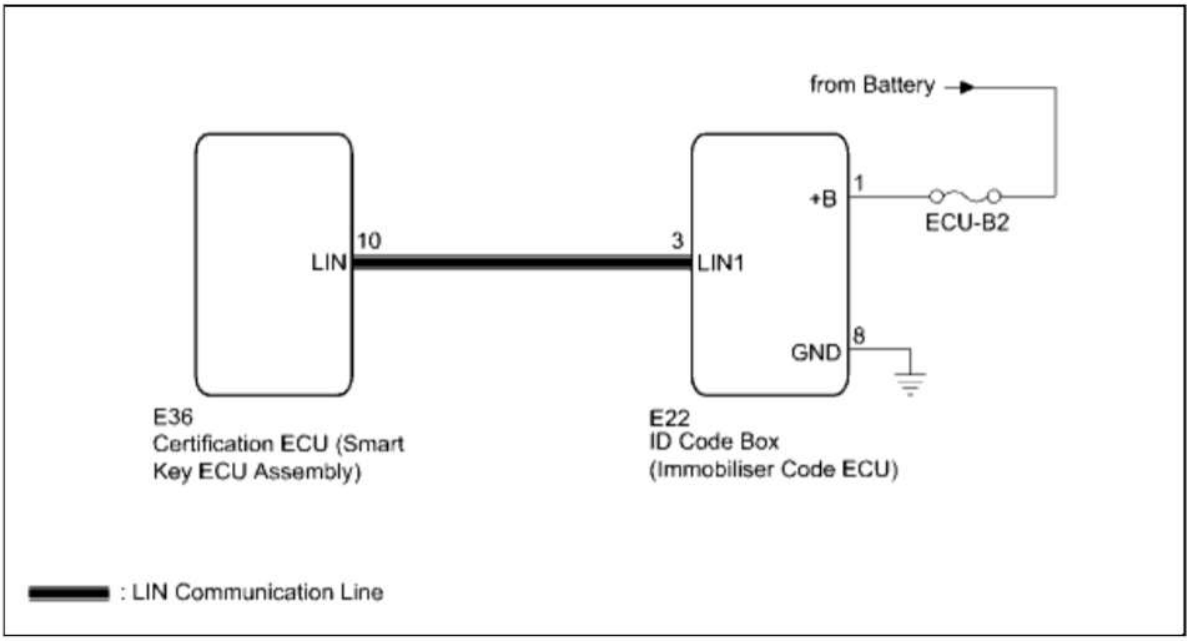
DTC	**B2789**	**No Response from ID BOX**

DESCRIPTION

This DTC is output when LIN communication between the certification ECU (smart key ECU assembly) and the ID code box (immobiliser code ECU) stops for more than 10 seconds.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
B2789	No communication between the certification ECU (smart key ECU assembly) and the ID code box (immobiliser code ECU) for more than 10 seconds	• ID code box (immobiliser code ECU) • Certification ECU (smart key ECU assembly) • Wire harness or connector

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

- If the certification ECU (smart key ECU assembly) is replaced, register the keys and ECU communication ID INFO .
- If the ID code box (immobiliser code ECU) is replaced, register the ECU code and ECU communication ID INFO .

PROCEDURE

1.	**CLEAR DTC**

(a) Clear the DTC INFO .

NEXT

2.	**CHECK FOR DTC**

(a) Recheck for the DTC INFO .

OK:

B2789 is not output.

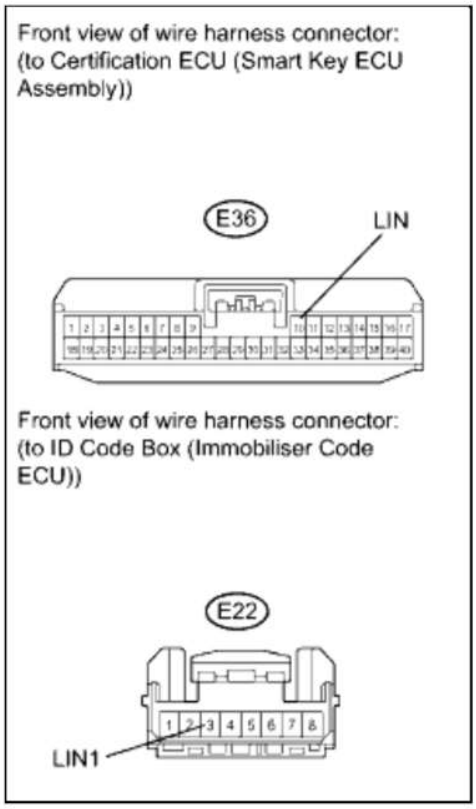
NG ▶ **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ID CODE BOX)**

OK ▶ **USE SIMULATION METHOD TO CHECK**

3.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ID CODE BOX)**

(a) Disconnect the E36 and E22 connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-10 (LIN) - E22-3 (LIN1)	Always	Below 1 Ω
E36-10 (LIN) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

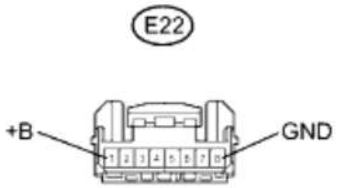
4.	**CHECK HARNESS AND CONNECTOR (ID CODE BOX BATTERY VOLTAGE AND GROUND)**

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

Standard Resistance:

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Front view of wire harness connector: (to ID Code Box (Immobiliser Code ECU))



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E22-8 (GND) - Body ground	Always	Below 1 Ω

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E22-1 (+B) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	REPLACE ID CODE BOX (IMMOBILISER CODE ECU)

(a) Replace the ID code box (immobiliser code ECU) INFO.

NEXT ▼

6.	CHECK FOR DTC

(a) Clear the DTC INFO.

(b) Recheck for the DTC.

OK:
B2789 is not output.

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

OK ▶ **END (ID CODE BOX (IMMOBILISER CODE ECU) IS DEFECTIVE)**

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