Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RTF00GX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: 4WD Control ECU Communication Stop Mode (2011 RAV4)		

4WD Control ECU Communication Stop Mode

DESCRIPTION

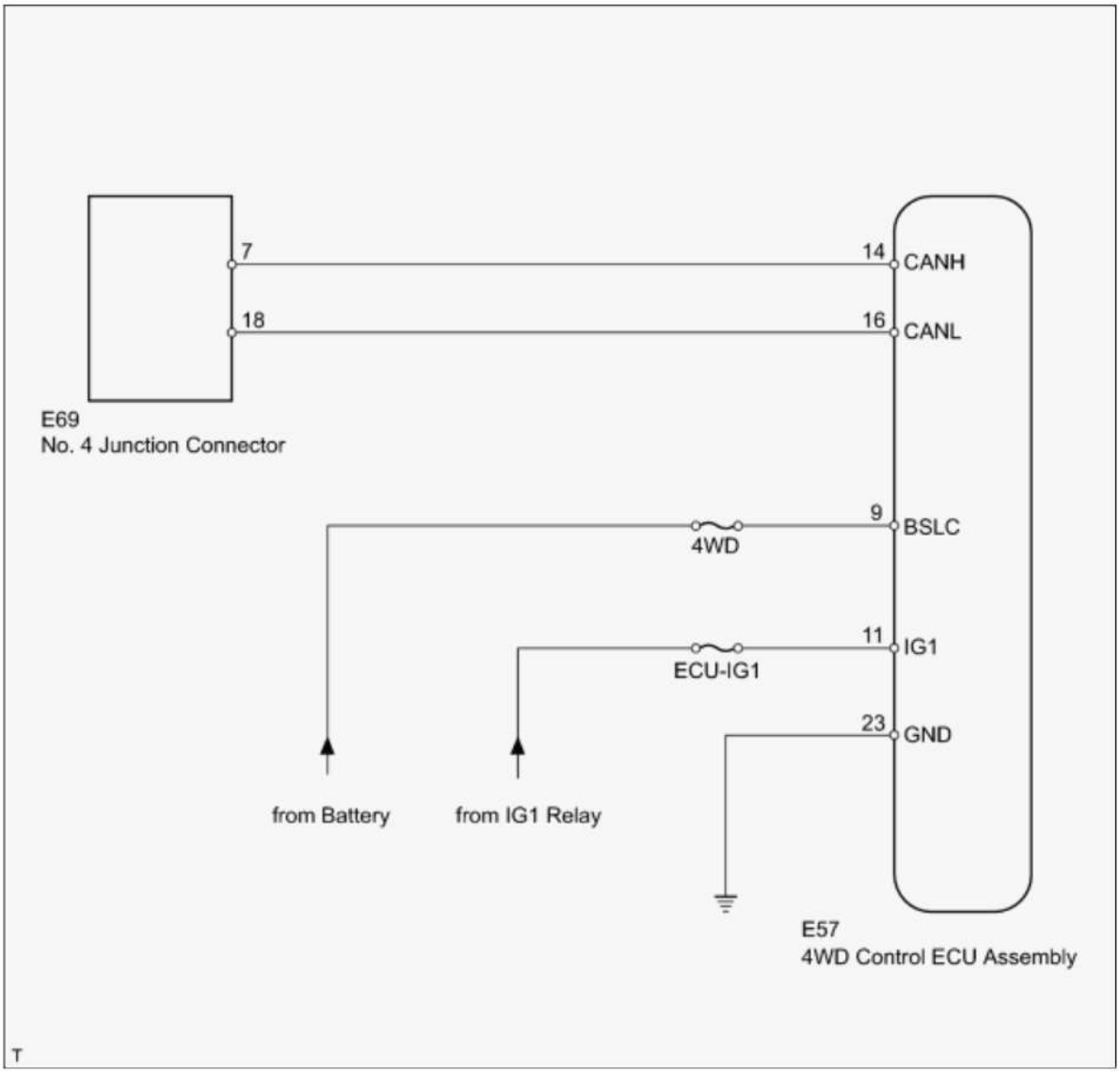
DETECTION ITEM	SYMPTOM	TROUBLE AREA
4WD Control ECU Communication Stop Mode	• "4WD" is not displayed on "CAN Bus Check". • "4WD Control ECU Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside 4WD control ECU assembly • 4WD control ECU assembly branch wire or connector • 4WD control ECU assembly

HINT:

For vehicles with 4WD only.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

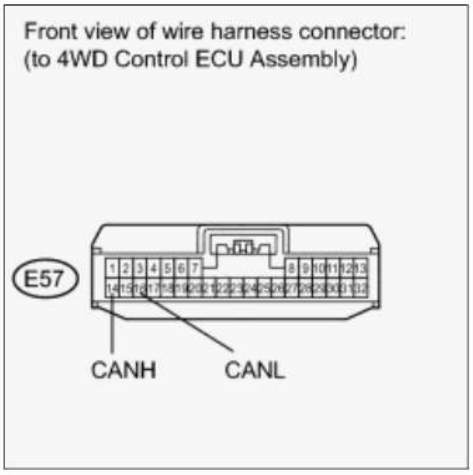
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK FOR OPEN IN CAN BUS WIRE (4WD CONTROL ECU ASSEMBLY BRANCH WIRE)**



(a) Disconnect the E57 4WD control ECU assembly connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E57-14 (CANH) - E57-16 (CANL)	Ignition switch off	54 to 69 Ω

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

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OK

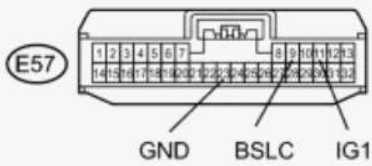
3.	**CHECK HARNESS AND CONNECTOR (4WD CONTROL ECU ASSEMBLY - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

Front view of wire harness connector:
(to 4WD Control ECU Assembly)



(b) Disconnect the E57 4WD control ECU assembly connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E57-23 (GND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E57-9 (BSLC) - Body ground	Always	11 to 14 V
E57-11 (IG1) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE 4WD CONTROL ECU ASSEMBLY**

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001Y6O00FX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode (2011 RAV4)		

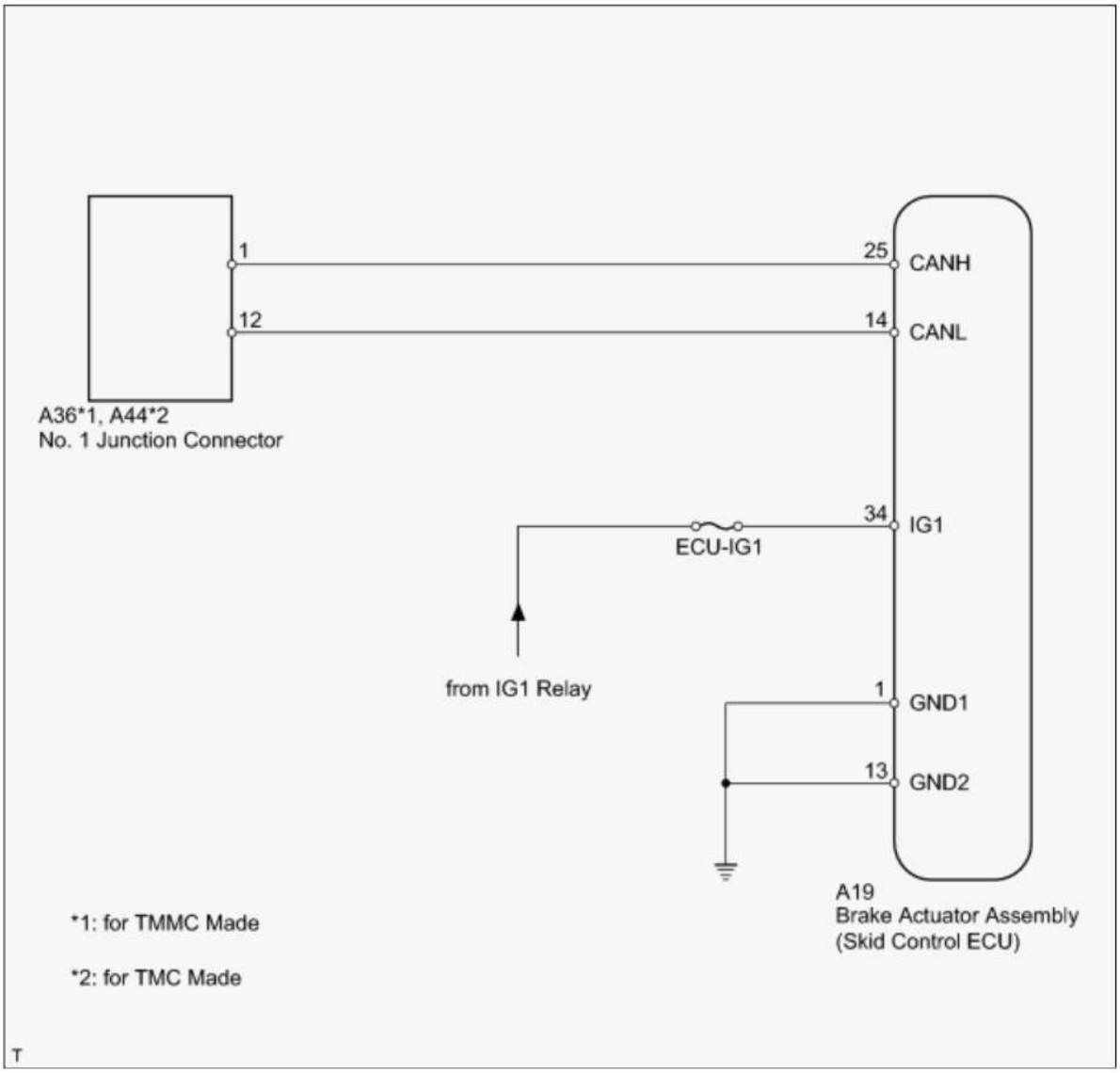
ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode	• "ABS/VSC/TRAC" is not displayed on "CAN Bus Check". • "ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside brake actuator assembly (skid control ECU) • Brake actuator assembly (skid control ECU) branch wire or connector • Brake actuator assembly (skid control ECU)

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

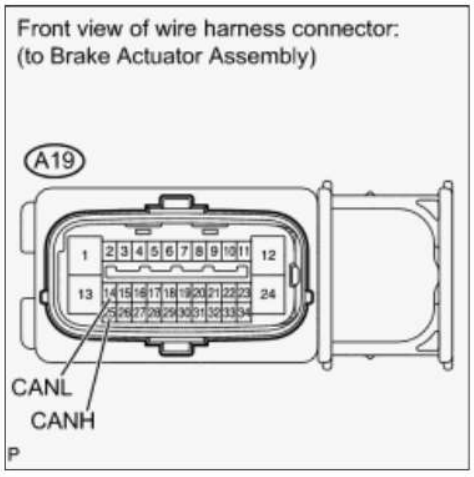
NEXT

2.	CHECK FOR OPEN IN CAN BUS WIRE (BRAKE ACTUATOR ASSEMBLY BRANCH WIRE)

(a) Disconnect the A19 brake actuator assembly (skid control ECU) connector.

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

Standard Resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-25 (CANH) - A19-14 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE BRAKE ACTUATOR BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK

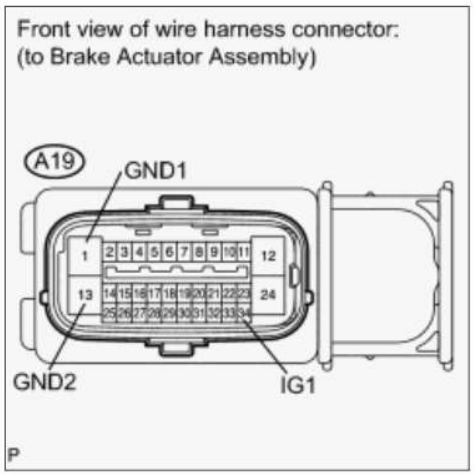
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3.	**CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.



(b) Disconnect the A19 brake actuator assembly (skid control ECU) connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A19-1 (GND1) - Body ground	Always	Below 1 Ω
A19-13 (GND2) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY (SKID**

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CONTROL ECU)

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RTD01NX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Air Conditioning Amplifier Communication Stop Mode (2011 RAV4)		

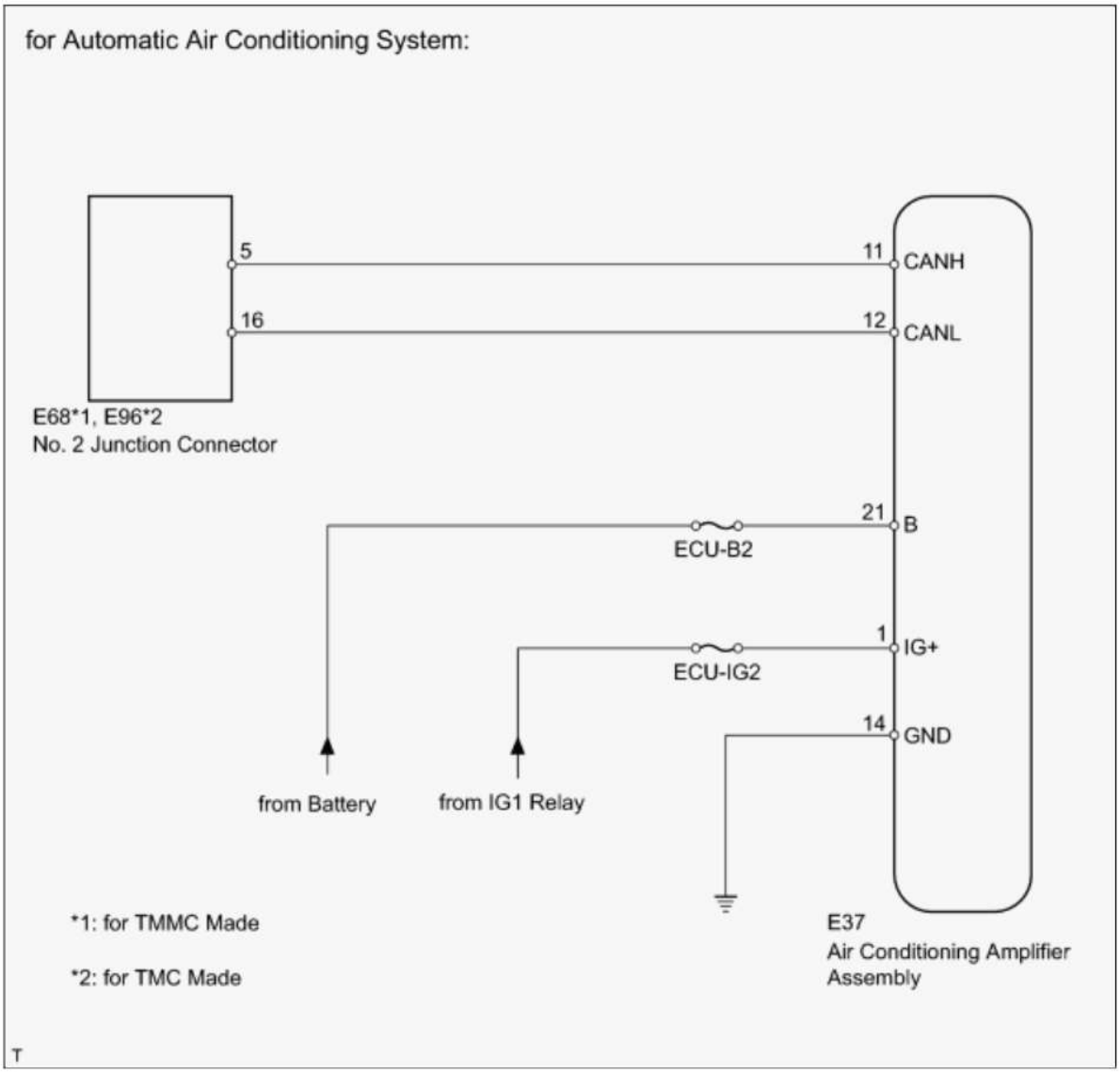
Air Conditioning Amplifier Communication Stop Mode

DESCRIPTION

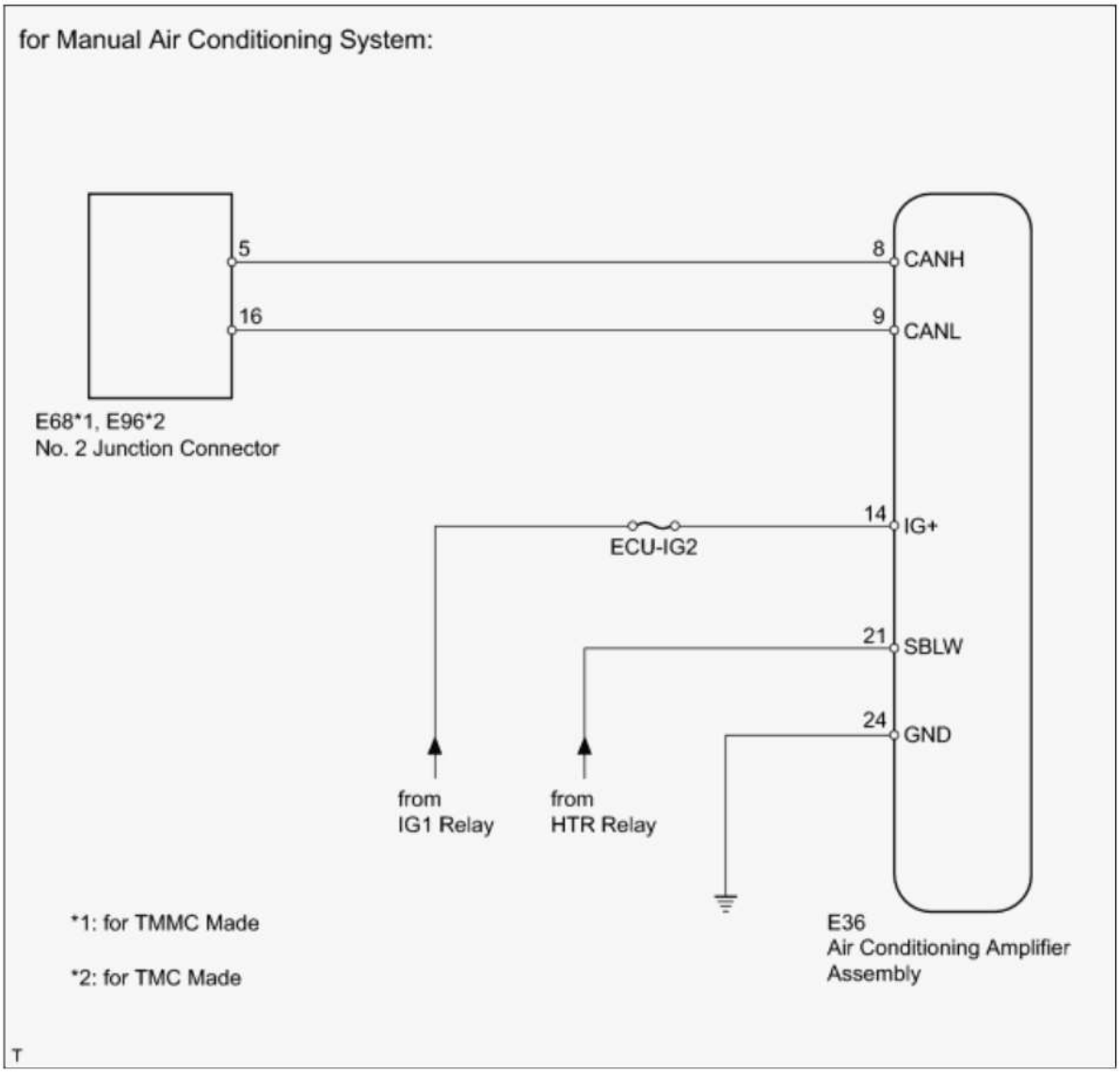
DETECTION ITEM	SYMPTOM	TROUBLE AREA
Air Conditioning Amplifier Communication Stop Mode	• "Air Conditioner" is not displayed on "CAN Bus Check". • "Air Conditioning Amplifier Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside air conditioning amplifier assembly • Air conditioning amplifier assembly branch wire or connector • Air conditioning amplifier assembly

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

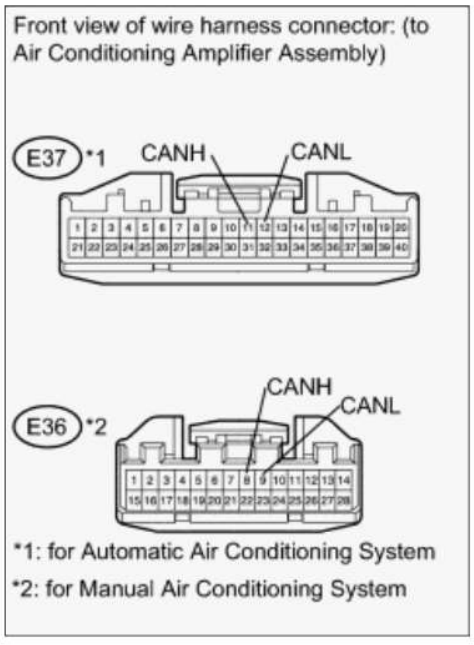
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK FOR OPEN IN CAN BUS WIRE (AIR CONDITIONING AMPLIFIER ASSEMBLY BRANCH WIRE)**



(a) Disconnect the E37*1 or E36*2 air conditioning amplifier assembly connector.

*1: for Automatic Air Conditioning System

*2: for Manual Air Conditioning System

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

Standard Resistance:

for Automatic Air Conditioning System

for Manual Air Conditioning System

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E37-11 (CANH) - E37-12 (CANL)	Ignition switch off	54 to 69 Ω

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E36-8 (CANH) - E36-9 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE AIR CONDITIONING AMPLIFIER BRANCH WIRE OR CONNECTOR (CANH, CANL)**

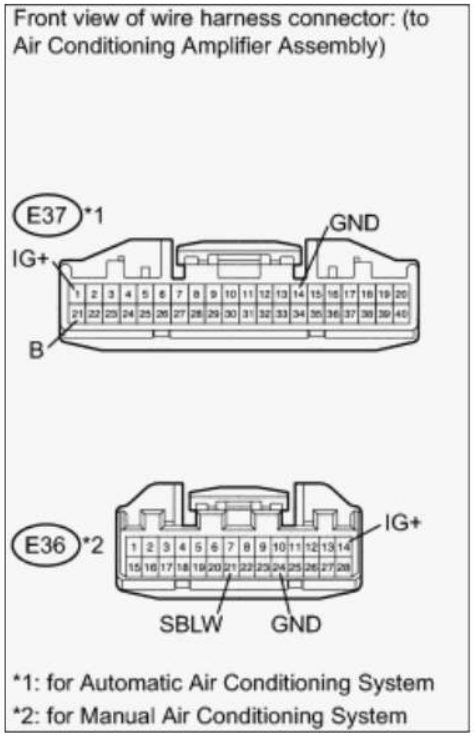
OK ▼

3.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER ASSEMBLY - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.



(b) Disconnect the E37*1 or E36*2 air conditioning amplifier connector.

*1: for Automatic Air Conditioning System

*2: for Manual Air Conditioning System

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

Standard Resistance:

for Automatic Air Conditioning System

for Manual Air Conditioning System

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E37-14 (GND) - Body ground	Always	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E36-24 (GND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

for Automatic Air Conditioning System

for Manual Air Conditioning System

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E37-21 (B) - Body ground	Always	11 to 14 V
E37-1 (IG+) - Body ground	Ignition switch ON	11 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E36-14 (IG+) - Body ground	Ignition switch ON	11 to 14 V
E36-21 (SBLW) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

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Last Modified: 9-7-2011	6.4 C	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001YPY00AX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: B1207: Certification ECU Communication Malfunction (2011 RAV4)		

DTC	**B1207**	**Certification ECU Communication Malfunction**

DESCRIPTION

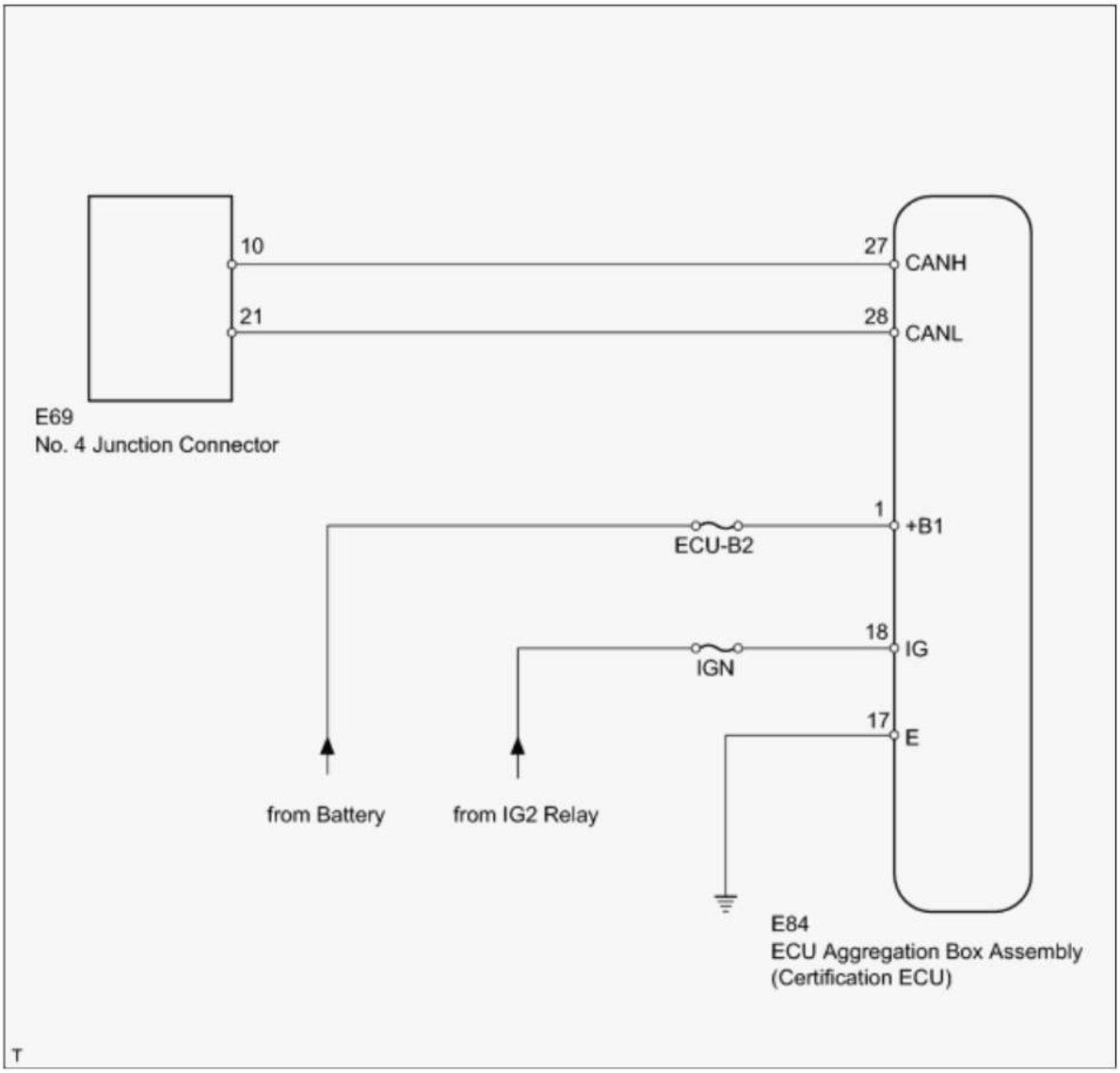
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B1207	There is no communication from the ECU aggregation box assembly (certification ECU).	• Power source circuit of ECU aggregation box assembly (certification ECU) • ECU aggregation box assembly (certification ECU) branch wire or connector • ECU aggregation box assembly (certification ECU)

HINT:

For vehicles with the smart key system only.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Clear the DTCs.

(d) Check for DTCs.

Result

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

B ▶ **Go to SMART KEY SYSTEM**

A

▼

2.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

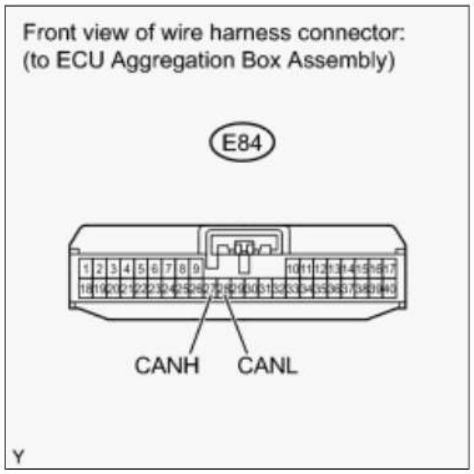
When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

▼

3.	**CHECK FOR OPEN IN CAN BUS WIRE (ECU AGGREGATION BOX ASSEMBLY BRANCH WIRE)**

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(a) Disconnect the E84 ECU aggregation box assembly (certification ECU) connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E84-27 (CANH) - E84-28 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE ECU AGGREGATION BOX ASSEMBLY BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK ▼

4.	**CHECK HARNESS AND CONNECTOR (ECU AGGREGATION BOX - BATTERY AND BODY GROUND)**

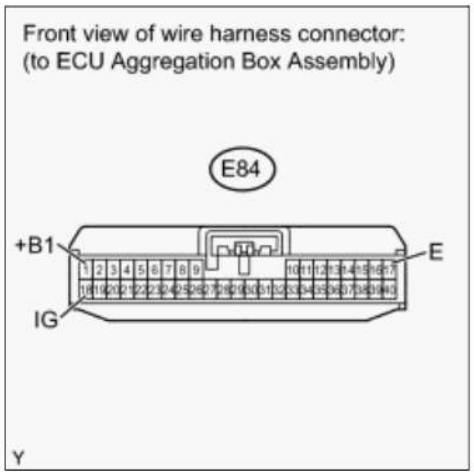
(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

(b) Disconnect the E84 ECU aggregation box assembly (certification ECU) 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
E84-17 (E) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E84-1 (+B1) - Body ground	Always	11 to 14 V
E84-18 (IG) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE ECU AGGREGATION BOX ASSEMBLY (CERTIFICATION ECU)**

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Last Modified: 9-7-2011	6.4 C	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000003O9W005X
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: B2326: CAN MS Bus Line Communication Malfunction (2011 RAV4)		

DTC	**B2326**	**CAN MS Bus Line Communication Malfunction**

DESCRIPTION

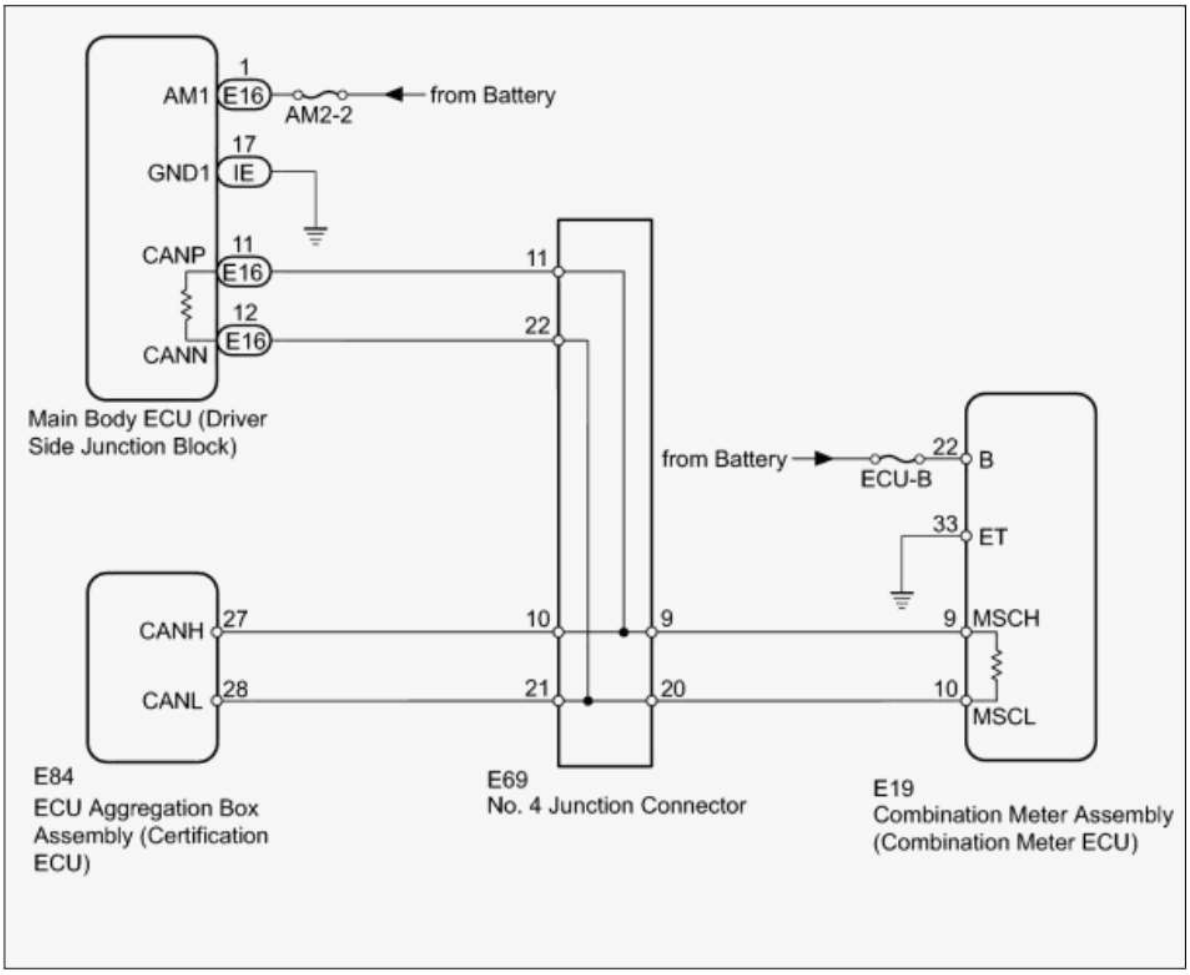
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2326	Lost communication with the certification ECU.	• CAN No. 2 bus circuit • ECU aggregation box assembly (certification ECU) branch wire or connector • Main body ECU (driver side junction block) main wire or connector • Combination meter assembly (combination meter ECU) main wire or connector • ECU aggregation box assembly (certification ECU) • Main body ECU (driver side junction block) • Combination meter assembly (combination meter ECU) • No. 4 junction connector

HINT:

For vehicles with the smart key system only.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

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CAUTION:

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

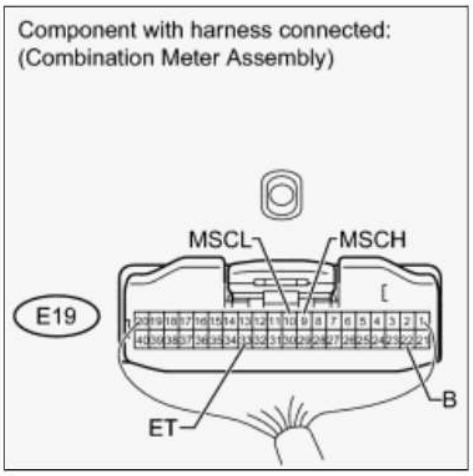
NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK CAN BUS WIRE (MAIN WIRE FOR DISCONNECTION, BUS LINE FOR SHORT CIRCUIT)**

Component with harness connected:
(Combination Meter Assembly)



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION	RESISTANCE OF MALFUNCTION
E19-9 (MSCH) - E19-10 (MSCL)	Ignition switch off	54 to 69 Ω	Below 53 Ω: Short in line
			More than 69 Ω: Open in CAN main bus line
E19-9 (MSCH) - E19-22 (B)	Ignition switch off	6 kΩ or higher	Below 6 kΩ: B+ short
E19-10 (MSCL) - E19-22 (B)	Ignition switch off	6 kΩ or higher	Below 6 kΩ: B+ short
E19-9 (MSCH) - E19-33 (ET)	Ignition switch off	200 Ω or higher	Below 200 Ω: Ground short
E19-10 (MSCL) - E19-33 (ET)	Ignition switch off	200 Ω or higher	Below 200 Ω: Ground short

Result

RESULT	PROCEED TO
NG • Open in CAN main bus line	A

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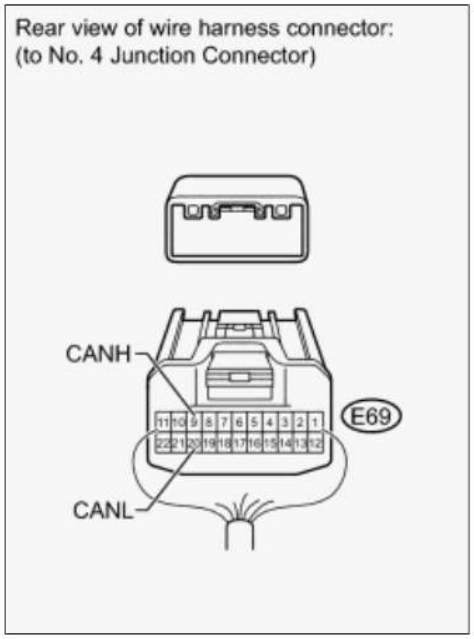
NG • Short in line • B+ short • Ground short	B
OK	C

B ▶ **CHECK FOR SHORT IN CAN BUS WIRES (NO. 4 JUNCTION CONNECTOR - ECU AGGREGATION BOX ASSEMBLY)**

C ▶ **CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - BATTERY AND BODY GROUND)**

A ▼

3.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 4 CAN JUNCTION CONNECTOR - COMBINATION METER ASSEMBLY)**



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

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

Standard Resistance:

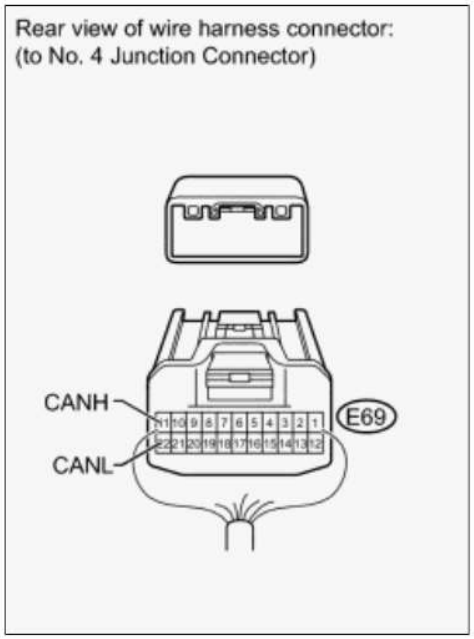
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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-9 (CANH) - E69-20 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CONNECT CONNECTOR**

OK ▼

4.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 4 CAN JUNCTION CONNECTOR - MAIN BODY ECU)**



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-11 (CANH) - E69-22 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CONNECT CONNECTOR**

OK ▶ **REPAIR OR REPLACE NO. 4 JUNCTION CONNECTOR**

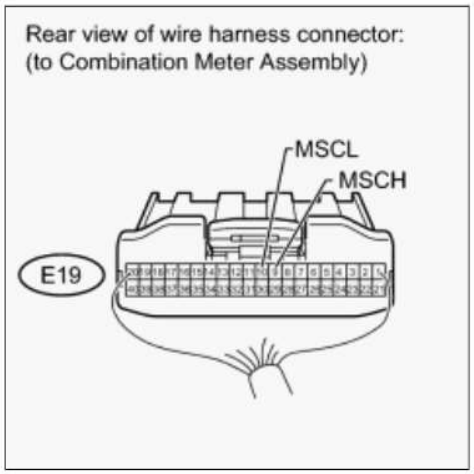
5.	**CONNECT CONNECTOR**

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

NEXT

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6.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER ASSEMBLY - NO. 4 JUNCTION CONNECTOR)**



(a) Disconnect the E19 combination meter assembly (combination meter ECU) connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E19-9 (MSCH) - E19-10 (MSCL)	Ignition switch off	108 to 132 Ω

NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ASSEMBLY (COMBINATION METER ASSEMBLY - NO. 4 JUNCTION CONNECTOR)**

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

7.	**CONNECT CONNECTOR**

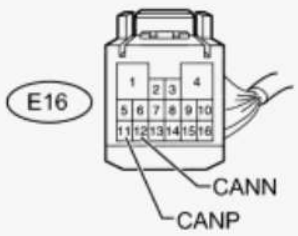
(a) Reconnect the E69 No. 4 junction connector connector.

NEXT

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8.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (MAIN BODY ECU - NO. 4 JUNCTION CONNECTOR)**

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



(a) Disconnect the E16 main body ECU (driver side junction block) connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E16-11 (CANP) - E16-12 (CANN)	Ignition switch off	108 to 132 Ω

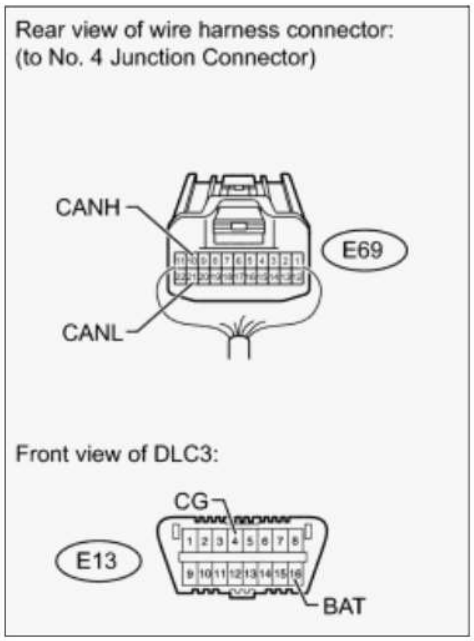
NG ▶ **REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO MAIN BODY ECU (MAIN BODY ECU - NO. 4 JUNCTION CONNECTOR)**

OK ▶ **REPLACE MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)**

9.	**CHECK FOR SHORT IN CAN BUS WIRES (NO. 4 JUNCTION CONNECTOR - ECU AGGREGATION BOX ASSEMBLY)**

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

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

Result

TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E69-10 (CANH) - E69-21 (CANL)	Ignition switch off	1 Ω or higher	OK
E69-10 (CANH) - E69-21 (CANL)	Ignition switch off	Below 1 Ω	NG
E69-10 (CANH) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-21 (CANL) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-10 (CANH) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-21 (CANL) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-10 (CANH) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-21 (CANL) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-10 (CANH) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E69-21 (CANL) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

NG ▶ **CONNECT CONNECTOR**

OK ▼

10.	**CHECK FOR SHORT IN CAN BUS WIRES (NO. 4 JUNCTION CONNECTOR - MAIN BODY ECU)** (a) Measure the resistance according to the value(s) in the table below.

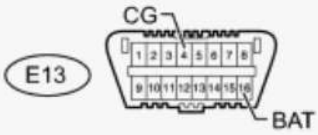
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Result

Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E69-11 (CANH) - E69-22 (CANL)	Ignition switch off	1 Ω or higher	OK
E69-11 (CANH) - E69-22 (CANL)	Ignition switch off	Below 1 Ω	NG
E69-11 (CANH) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-22 (CANL) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-11 (CANH) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-22 (CANL) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-11 (CANH) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-22 (CANL) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-11 (CANH) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E69-22 (CANL) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

NG ▶ **CONNECT CONNECTOR**

OK ▼

11.	**CHECK FOR SHORT IN CAN BUS WIRES (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ASSEMBLY)**

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

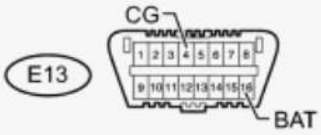
Result

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Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E69-9 (CANH) - E69-20 (CANL)	Ignition switch off	1 Ω or higher	OK
E69-9 (CANH) - E69-20 (CANL)	Ignition switch off	Below 1 Ω	NG
E69-9 (CANH) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-20 (CANL) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E69-9 (CANH) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-20 (CANL) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E69-9 (CANH) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-20 (CANL) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E69-9 (CANH) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E69-20 (CANL) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

NG ▶ **CONNECT CONNECTOR**

OK ▶ **REPLACE NO. 4 JUNCTION CONNECTOR**

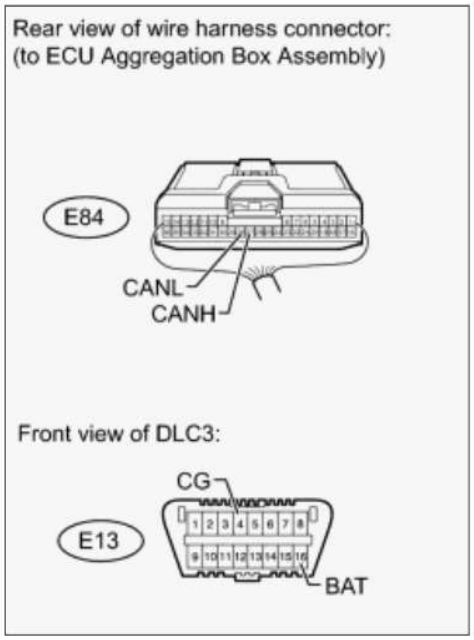
12.	**CONNECT CONNECTOR**

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

NEXT ▼

13.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (ECU AGGREGATION BOX ASSEMBLY)**

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(a) Disconnect the E84 ECU aggregation box assembly (certification ECU) connector.

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

Result

TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E84-27 (CANH) - E84-28 (CANL)	Ignition switch off	1 Ω or higher	OK
E84-27 (CANH) - E84-28 (CANL)	Ignition switch off	Below 1 Ω	NG
E84-27 (CANH) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E84-28 (CANL) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E84-27 (CANH) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E84-28 (CANL) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E84-27 (CANH) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E84-28 (CANL) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E84-27 (CANH) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E84-28 (CANL) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO ECU AGGREGATION BOX ASSEMBLY (CANH, CANL)**

OK ▶ **REPLACE ECU AGGREGATION BOX ASSEMBLY (CERTIFICATION ECU)**

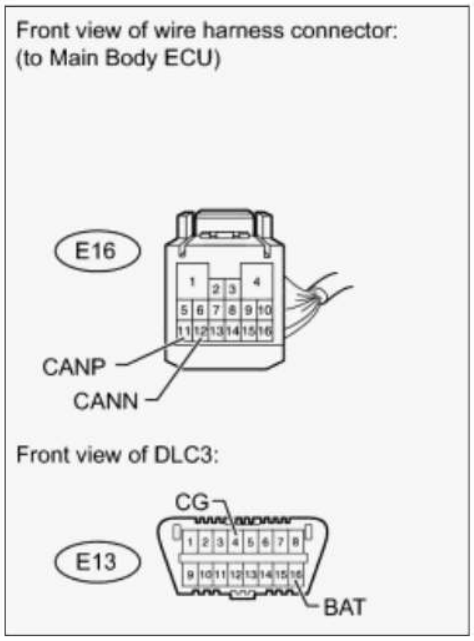
14.	**CONNECT CONNECTOR**

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

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15.	CHECK FOR OPEN IN CAN BUS MAIN WIRE (MAIN BODY ECU)



(a) Disconnect the E16 main body ECU (driver side junction block) connector.

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

Result

TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E16-11 (CANP) - E16-12 (CANN)	Ignition switch off	1 Ω or higher	OK
E16-11 (CANP) - E16-12 (CANN)	Ignition switch off	Below 1 Ω	NG
E16-11 (CANP) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E16-12 (CANN) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E16-11 (CANP) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E16-12 (CANN) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E16-11 (CANP) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E16-12 (CANN) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E16-11 (CANP) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E16-12 (CANN) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

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

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CONNECTED TO MAIN BODY ECU (CANP, CANN)

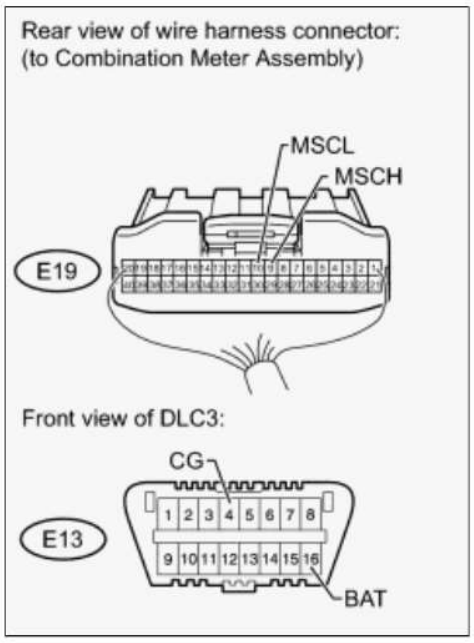
OK ▶ **REPLACE MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)**

16.	**CONNECT CONNECTOR**

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

NEXT ▼

17.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER ASSEMBLY)**



(a) Disconnect the E19 combination meter assembly (combination meter ECU) connector.

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

Result

TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E19-9 (MSCH) - E19-10 (MSCL)	Ignition switch off	1 Ω or higher	OK
E19-9 (MSCH) - E19-10 (MSCL)	Ignition switch off	Below 1 Ω	NG

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TESTER CONNECTION	SWITCH CONDITION	MEASURED RESISTANCE	PROCEED TO
E19-9 (MSCH) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E19-10 (MSCL) - E13-4 (CG)	Ignition switch off	1 Ω or higher	OK
E19-9 (MSCH) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E19-10 (MSCL) - E13-4 (CG)	Ignition switch off	Below 1 Ω	NG
E19-9 (MSCH) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E19-10 (MSCL) - E13-16 (BAT)	Ignition switch off	1 Ω or higher	OK
E19-9 (MSCH) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG
E19-10 (MSCL) - E13-16 (BAT)	Ignition switch off	Below 1 Ω	NG

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO COMBINATION METER ASSEMBLY (MSCL, MSCH)**

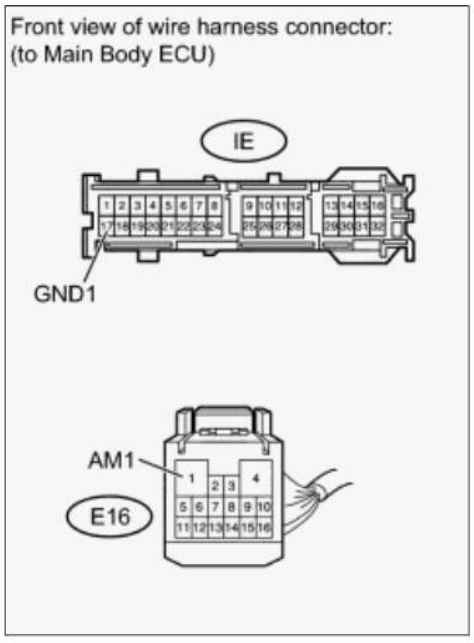
OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

18.	CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - BATTERY AND BODY GROUND)

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.



(b) Disconnect the IE and E16 main body ECU (driver side junction block) connectors.

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

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Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
IE-17 (GND1) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E16-1 (AM1) - Body ground	Always	11 to 14 V

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

OK ▶ **REPLACE MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)**

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001TN901UX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Center Airbag Sensor Communication Stop Mode (2011 RAV4)		

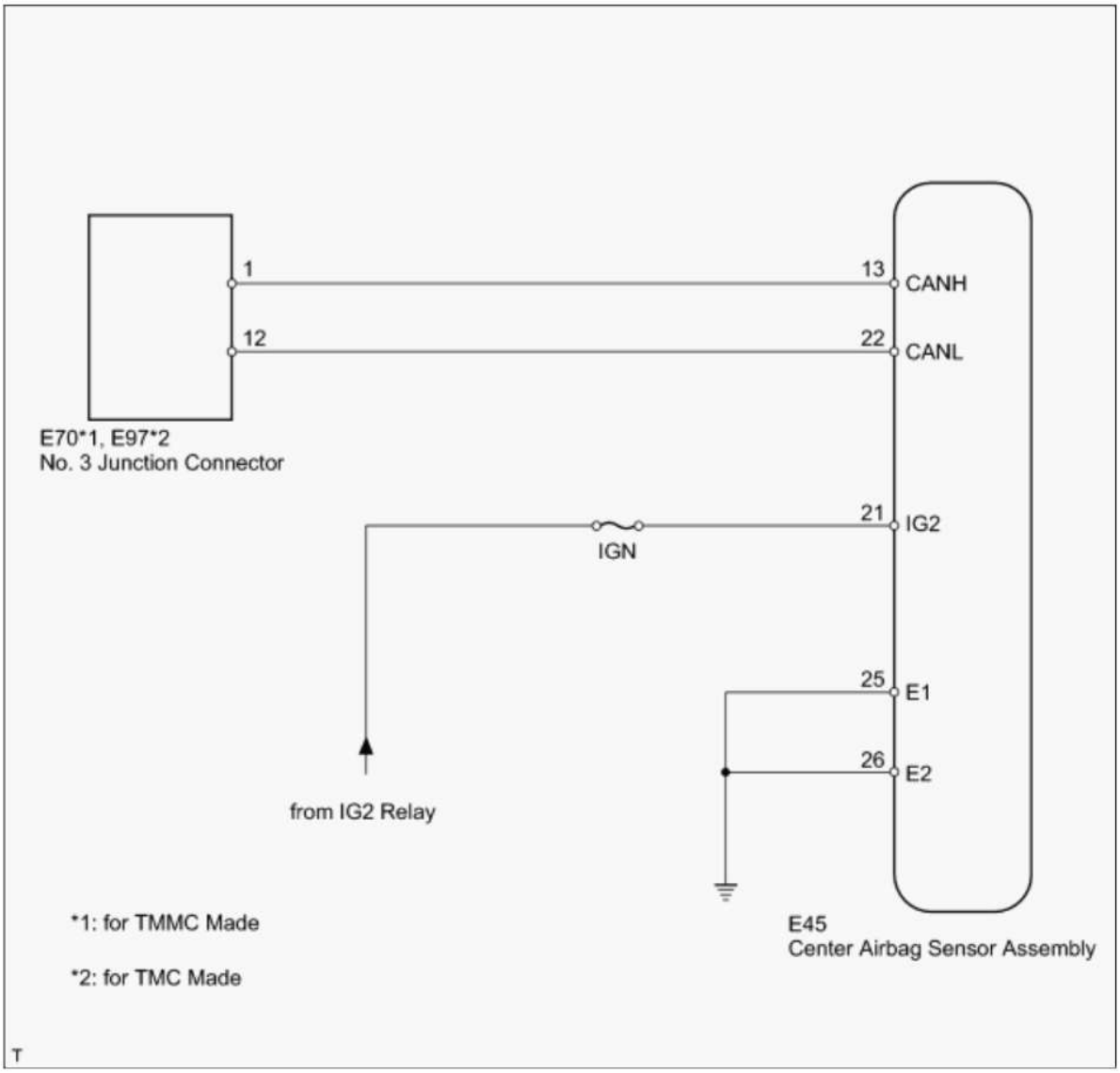
Center Airbag Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Center Airbag Sensor Communication Stop Mode	• "SRS Airbag" is not displayed on "CAN Bus Check". • "Center Airbag Sensor Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside center airbag sensor assembly • Center airbag sensor assembly 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 wire and the branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder buzzer are not in operation.
- Before measuring the resistance, leave the vehicle for at least 1 minute and do not operate the ignition switch, any switches or doors. If doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

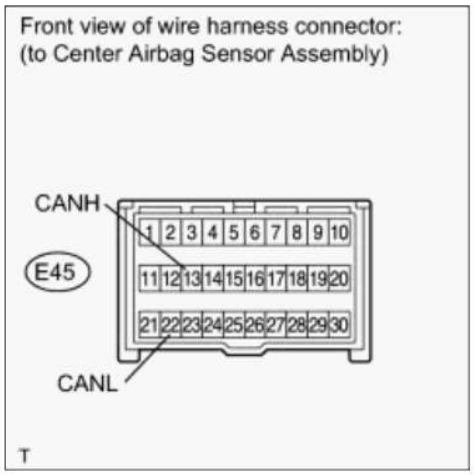
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK FOR OPEN IN CAN BUS WIRE (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)**



(a) Disconnect the E45 center airbag sensor assembly connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E45-13 (CANH) - E45-22 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE OR CONNECTOR (CANH, CANL)**

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OK

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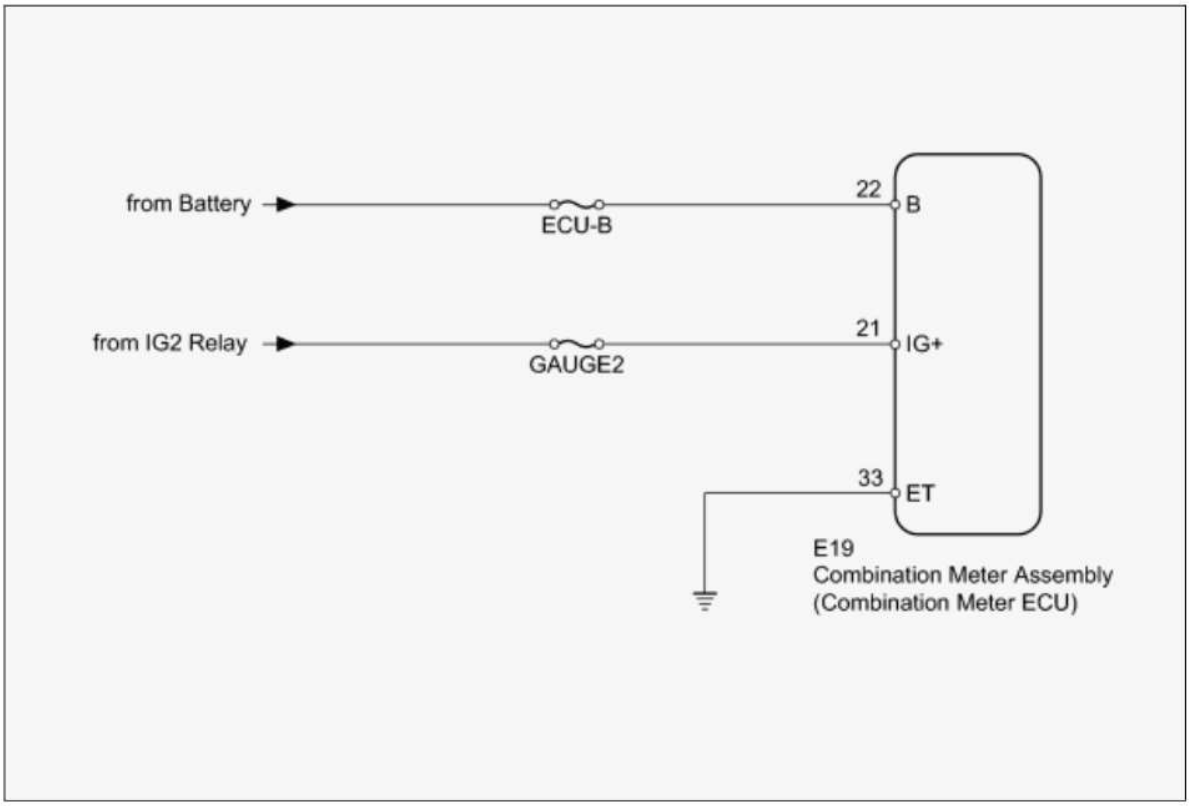
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001TNA01VX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Combination Meter ECU Communication Stop Mode (2011 RAV4)		

Combination Meter ECU Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Combination Meter ECU Communication Stop Mode	• "Combination Meter" is not displayed on "CAN Bus Check". • "Combination Meter ECU Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside combination meter assembly (combination meter ECU) • Combination meter assembly (combination meter ECU) branch wire or connector • Combination meter assembly (combination meter ECU)

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - BATTERY AND BODY GROUND)**

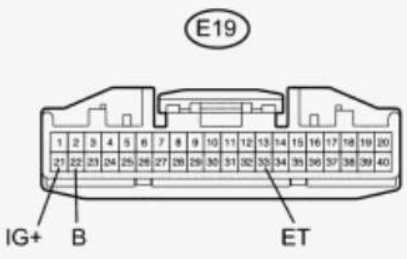
(a) Disconnect the E19 combination meter assembly (combination meter ECU) connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E19-33 (ET) - Body ground	Always	Below 1 Ω

Front view of wire harness connector:
(to Combination Meter Assembly)



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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E19-22 (B) - Body ground	Always	11 to 14 V
E19-21 (IG+) - Body ground	Ignition switch ON	11 to 14 V

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

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OK ▶ REPLACE COMBINATION METER ASSEMBLY

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Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSW01RX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: DIAGNOSIS SYSTEM (2011 RAV4)		

DIAGNOSIS SYSTEM

1. CAN BUS CHECK

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

2. CHECK INSTALLED SYSTEMS (ECUS AND SENSORS) THAT USE CAN COMMUNICATION

(a) System (ECUs and sensors) that use CAN communication vary depending on the vehicle's optional settings. Check which systems (ECUs and sensors) are installed on the vehicle.

ECU / SENSOR NAME	TECHSTREAM DISPLAY	INSTALLED TO
Brake actuator assembly (skid control ECU)	ABS/VSC/TRAC	All vehicles
Steering angle sensor	Steering Angle Sensor	All vehicles
Yaw rate sensor assembly	Yaw Rate / Deceleration Sensor	All vehicles
Air conditioning amplifier assembly	Air Conditioner	All vehicles (Automatic air conditioning system or manual air conditioning system)
ECM	Engine	All vehicles
Center airbag sensor assembly	SRS Airbag	All vehicles
Power steering ECU assembly	EPS	All vehicles
Main body ECU (driver side junction block)	Main Body	All vehicles
Combination meter assembly (combination meter ECU)	Combination Meter	All vehicles
4WD control ECU assembly	Four Wheel Drive Control	Vehicles with 4WD
ECU aggregation box assembly (certification ECU)	Smart Access / Smart Key / Wireless Tuner	Vehicles with smart key system

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3. DTC TABLE BY ECU

HINT:

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

(a) BRAKE ACTUATOR ASSEMBLY (SKID CONTROL ECU)

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM

DTC NO.	DETECTION ITEM
U0073/94	Control Module Communication Bus OFF
U0100/65	Lost Communication with ECM / PCM
U0123/62	Lost Communication with Yaw Rate Sensor Module
U0124/95	Lost Communication with Lateral Acceleration Sensor Module
U0126/63	Lost Communication with Steering Angle Sensor Module

(b) POWER STEERING ECU ASSEMBLY

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
U0073/49	Control Module Communication Bus OFF
U0100/41	Lost Communication with ECM/PCM "A"
U0129/42	Lost Communication with Brake System Control Module

(c) ECM

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
U0122	Lost Communication with Vehicle Dynamic Control Module
U0129	Lost Communication with Brake System Control Module

(d) AIR CONDITIONING AMPLIFIER ASSEMBLY

For vehicles with air conditioning (Automatic air conditioning system or manual air conditioning system).

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
B1499/99	Communication Malfunction (Engine & Meter ECU)

(e) COMBINATION METER ASSEMBLY (COMBINATION METER ECU)

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
U0100	Lost Communication with ECM / PCM "A"

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DTC NO.	DETECTION ITEM
U0129	Lost Communication with Brake System Control ECU

(f) 4WD CONTROL ECU ASSEMBLY

For vehicles with 4WD only.

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
U0073/86	Control Module Communication Bus OFF
U0100/85	Lost Communication with ECM / PCM "A"
U0126/84	Lost Communication with Steering Angle Sensor Module
U0129/83	Lost Communication with Brake System Control Module

(g) MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)

For vehicles with the smart key system.

HINT:

DTC communication uses the CAN communication system.

DTC NO.	DETECTION ITEM
B1207	Smart Key ECU Communication Stop
B2326	MS Bus Failure

For vehicles without the smart key system.

HINT:

The main body ECU (driver side junction block) is connected to the CAN communication system but CAN communication DTCs are not output.

(h) CENTER AIRBAG SENSOR ASSEMBLY

HINT:

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

(i) STEERING ANGLE SENSOR

HINT:

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

(j) YAW RATE SENSOR ASSEMBLY

HINT:

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

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(k) ECU AGGREGATION BOX ASSEMBLY (CERTIFICATION ECU)

HINT:

The ECU aggregation box (certification ECU) is connected to the CAN communication system but CAN communication DTCs are not output.

4. DTC COMBINATION TABLE

DTC		DETECTED COMMUNICATION STOP MODE				
OUTPUT FROM	OUTPUT DTC	ABS AND TRACTION ACTUATOR (SKID CONTROL ECU) COMMUNICATION STOP MODE	POWER STEERING ECU COMMUNICATION STOP MODE	STEERING ANGLE SENSOR COMMUNICATION STOP MODE	YAW RATE SENSOR COMMUNICATION STOP MODE	ECM COMMUNICATION STOP MODE
Brake Actuator Assembly (Skid Control ECU)	U0073/94	○*1	X	X	X	X
	U0100/65	○*1	X	X	X	○
	U0123/62	○*1	X	X	○	X
	U0124/95	○*1	X	X	○	X
	U0126/63	○*1	X	○	X	X
Power Steering ECU Assembly	U0073/49	X	○*1	X	X	X
	U0100/41	X	○*1	X	X	○
	U0129/42	○	○*1	X	X	X
ECM	U0122	○	X	X	X	○*1
	U0129	○	X	X	X	○*1
Air Conditioning Amplifier Assembly	B1499/99*2	X	X	X	X	○*3
Combination Meter Assembly (Combination Meter ECU)	U0100	X	X	X	X	○
	U0129	○	X	X	X	X
4WD Control ECU Assembly	U0073/86	X	X	X	X	X
	U0100/85	X	X	X	X	○
	U0126/84	X	X	○	X	X
	U0129/83	○	X	X	X	X
Main Body ECU (Driver Side Junction Block)	B1207	-	-	-	-	-
	B2326	-	-	-	-	-

HINT:

- ○: Stored.
- X: When one side of branch wire is open, storage may occur.

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- -: Not stored.
- *1: Only stored when communication recovery has occurred. During communication stop, this DTC cannot be stored.
- *2: : Only stored when air conditioning amplifier is malfunctioning.
- *3: Only stored when communication with ECM and combination meter ECU stop simultaneously.

DTC		DETECTED COMMUNICATION STOP 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	4WD CONTROL ECU COMMUNICATION STOP MODE
Brake Actuator Assembly (Skid Control ECU)	U0073/94	X	X	X	X	X
	U0100/65	X	X	X	X	X
	U0123/62	X	X	X	X	X
	U0124/95	X	X	X	X	X
	U0126/63	X	X	X	X	X
Power Steering ECU Assembly	U0073/49	X	X	X	X	X
	U0100/41	X	X	X	X	X
	U0129/42	X	X	X	X	X
ECM	U0122	X	X	X	X	X
	U0129	X	X	X	X	X
Air Conditioning Amplifier Assembly	B1499/99*2	X	X	○*3	X	X
Combination Meter Assembly (Combination Meter ECU)	U0100	X	X	○*1	X	X
	U0129	X	X	○*1	X	X
4WD Control ECU Assembly	U0073/86	X	X	X	X	○*1
	U0100/85	X	X	X	X	○*1
	U0126/84	X	X	X	X	○*1
	U0129/83	X	X	X	X	○*1
Main Body ECU (Driver Side Junction Block)	B1207	-	-	-	-	-
	B2326	-	-	-	-	-

HINT:

- ○: Stored.
- X: When one side of branch wire is open, storage may occur.
- -: Not stored.
- *1: Only stored when communication recovery has occurred. During communication stop, this DTC cannot be stored.
- *2: : Only stored when air conditioning amplifier is malfunctioning.
- *3: Only stored when communication with ECM and combination meter ECU stop simultaneously.

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- Check the stop mode for the center airbag sensor INFO and main body ECU INFO by using the results of the CAN Bus Check.

DTC		DETECTED COMMUNICATION STOP MODE
OUTPUT FROM	OUTPUT DTC	CERTIFICATION ECU COMMUNICATION STOP MODE
Brake Actuator Assembly (Skid Control ECU)	U0073/94	-
	U0100/65	-
	U0123/62	-
	U0124/95	-
	U0126/63	-
Power Steering ECU Assembly	U0073/49	-
	U0100/41	-
	U0129/42	-
ECM	U0122	-
	U0129	-
Air Conditioning Amplifier Assembly	B1499/99	-
Combination Meter Assembly (Combination Meter ECU)	U0100	-
	U0129	-
4WD Control ECU Assembly	U0073/86	-
	U0100/85	-
	U0126/84	-
	U0129/83	-
Main Body ECU (Driver Side Junction Block)	B1207	-
	B2326	-

HINT:

- ○: Stored.
- X: When one side of branch wire is open, storage may occur.
- -: Not stored.
- *1: Only stored when communication recovery has occurred. During communication stop, this DTC cannot be stored.
- *2: : Only stored when air conditioning amplifier is malfunctioning.
- *3: Only stored when communication with ECM and combination meter ECU stop simultaneously.

(a) Perform troubleshooting according to the combination of DTCs output.

- ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode: INFO
- Power Steering ECU Communication Stop Mode: INFO
- Steering Angle Sensor Communication Stop Mode: INFO
- Yaw Rate Sensor Communication Stop Mode: INFO
- ECM Communication Stop Mode: INFO
- Air Conditioning Amplifier Communication Stop Mode: INFO
- Combination Meter ECU Communication Stop Mode: INFO
- 4WD Control ECU Communication Stop Mode: INFO

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Last Modified: 9-7-2011	6.4 S	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000003PXZ002X
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2011 RAV4)		

DIAGNOSTIC TROUBLE CODE CHART

CAN Communication System

DTC CODE	DETECTION ITEM	TROUBLE AREA	DTC OUTPUT FROM	SEE PAGE
B1207	Certification ECU Communication Malfunction	- Power source circuit of ECU aggregation box assembly (certification ECU) - ECU aggregation box assembly (certification ECU) branch wire or connector - ECU aggregation box assembly (certification ECU)	Main body ECU (driver side junction block)	INFO
B2326	CAN MS Bus Line Communication Malfunction	- CAN No. 2 bus circuit - ECU aggregation box assembly (certification ECU) branch wire or connector - Main body ECU (driver side junction block) main wire or connector - Combination meter assembly (combination meter ECU) main wire or connector - ECU aggregation box assembly (certification ECU) - Main body ECU (driver side junction block) - Combination meter assembly (combination meter ECU) - No. 4 junction connector	Main body ECU (driver side junction block)	INFO

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSZ020X
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: ECM Communication Stop Mode (2011 RAV4)		

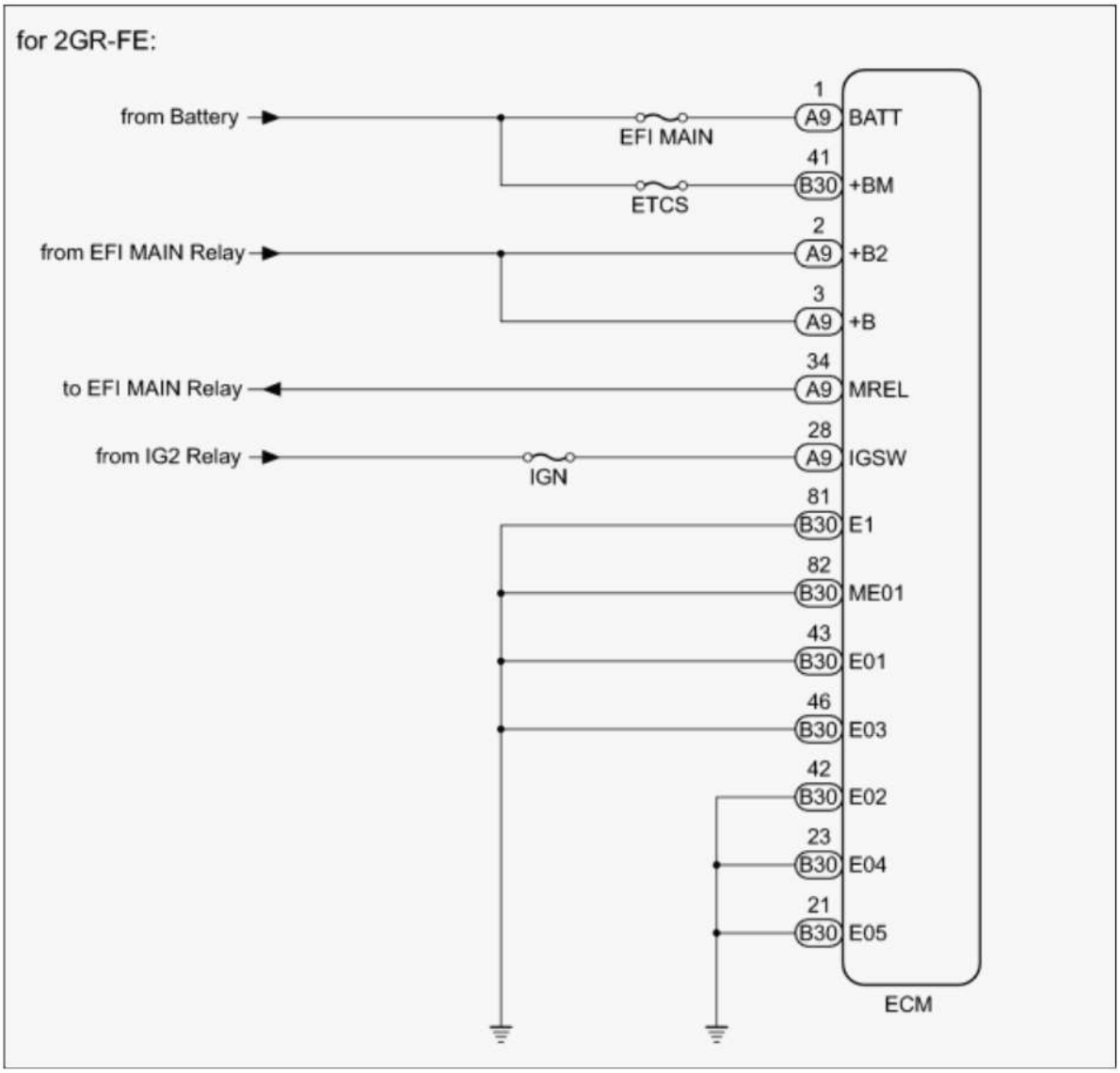
ECM Communication Stop Mode

DESCRIPTION

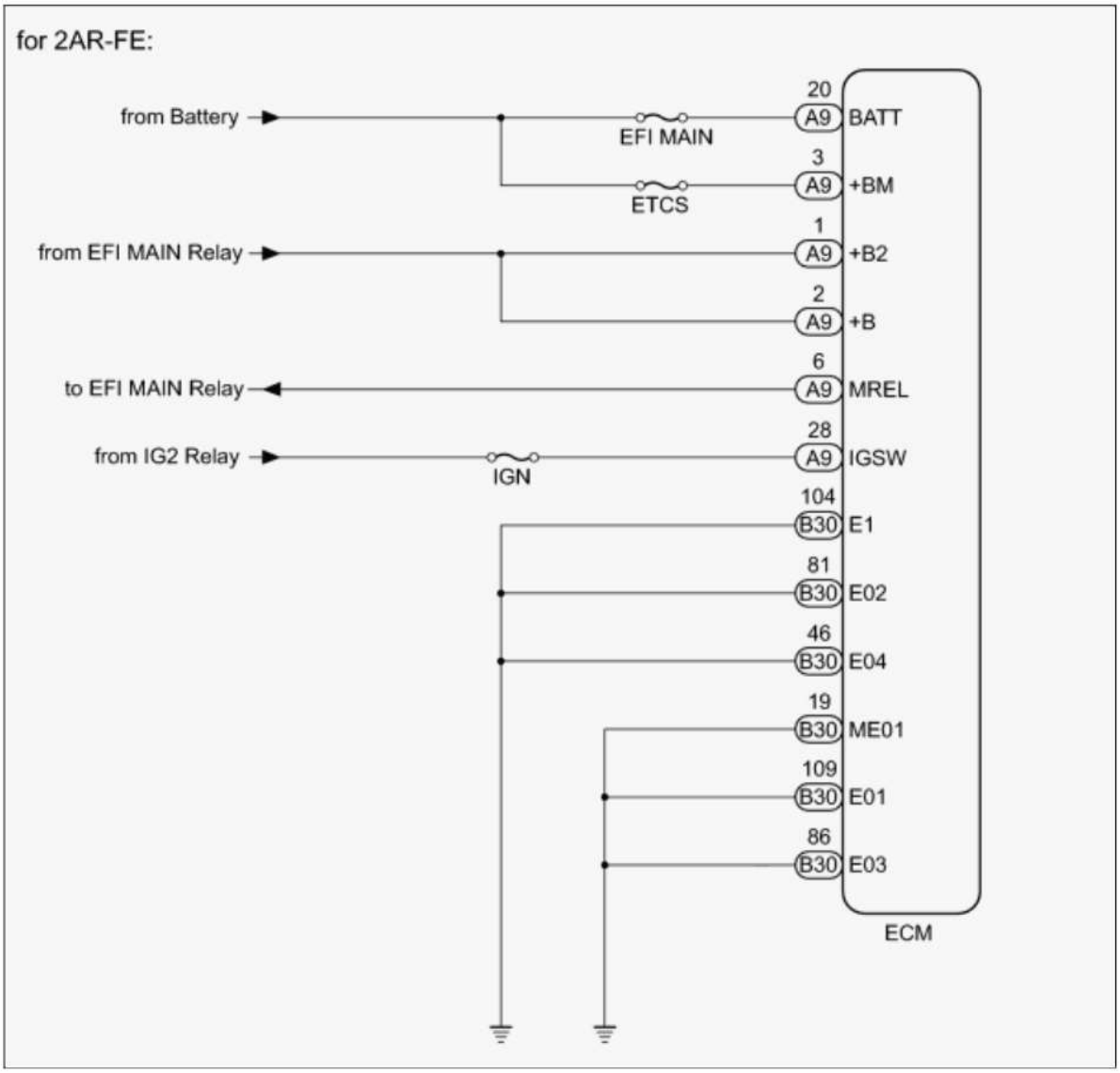
DETECTION ITEM	SYMPTOM	TROUBLE AREA
ECM Communication Stop Mode	• "Engine" is not displayed on "CAN Bus Check". • "ECM Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside ECM • ECM main wire or connector • ECM

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

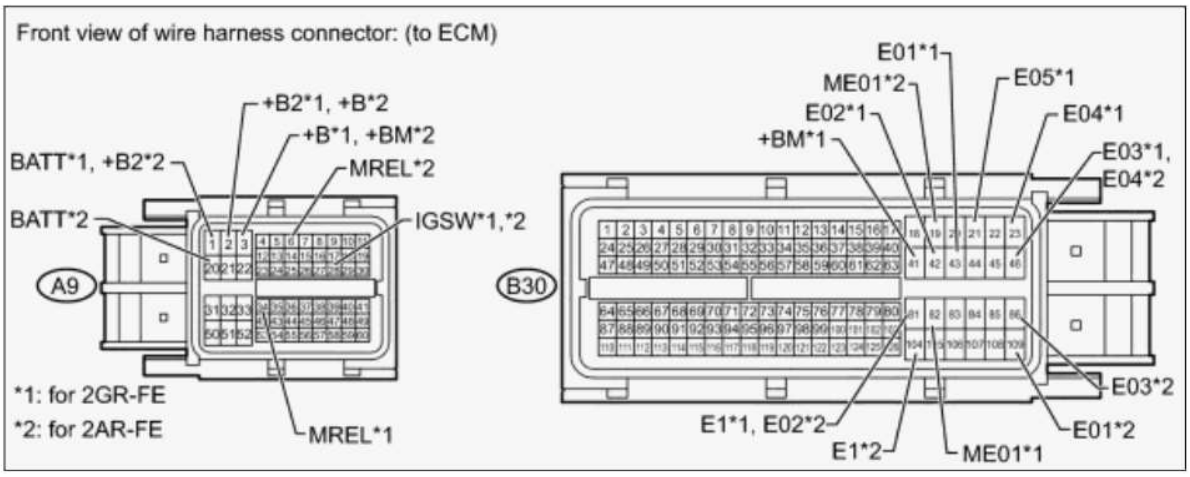
HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (ECM - BATTERY AND BODY GROUND)

(a) Disconnect the A9 and B30 ECM connectors.



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

Standard Resistance:

for 2GR-FE

for 2AR-FE

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
B30-81 (E1) - Body ground	Always	Below 1 Ω
B30-43 (E01) - Body ground	Always	Below 1 Ω
B30-42 (E02) - Body ground	Always	Below 1 Ω
B30-46 (E03) - Body ground	Always	Below 1 Ω
B30-23 (E04) - Body ground	Always	Below 1 Ω
B30-21 (E05) - Body ground	Always	Below 1 Ω
B30-82 (ME01) - Body ground	Always	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
B30-104 (E1) - Body ground	Always	Below 1 Ω
B30-109 (E01) - Body ground	Always	Below 1 Ω
B30-81 (E02) - Body ground	Always	Below 1 Ω
B30-86 (E03) - Body ground	Always	Below 1 Ω
B30-46 (E04) - Body ground	Always	Below 1 Ω
B30-19 (ME01) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

for 2GR-FE

for 2AR-FE

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A9-2 (+B2) - Body ground	Battery's positive (+) voltage is applied to terminal MREL	11 to 14 V
A9-3 (+B) - Body ground	Battery's positive (+) voltage is applied to terminal MREL	11 to 14 V
B30-41 (+BM) - Body ground	Always	11 to 14 V
A9-1 (BATT) - Body ground	Always	11 to 14 V
A9-28 (IGSW) - Body ground	Ignition switch ON	11 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A9-1 (+B2) - Body ground	Battery's positive (+) voltage is applied to terminal MREL	11 to 14 V
A9-2 (+B) - Body ground	Battery's positive (+) voltage is applied to terminal MREL	11 to 14 V
A9-3 (+BM) - Body ground	Always	11 to 14 V
A9-20 (BATT) - Body ground	Always	11 to 14 V
A9-28 (IGSW) - Body ground	Ignition switch ON	11 to 14 V

Result

RESULT	PROCEED TO
OK (for 2GR-FE)	A
OK (for 2AR-FE)	B
NG	C

B ▶ **REPLACE ECM**

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

A ▶ **REPLACE ECM**

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Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSY01QX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: FAIL-SAFE CHART (2011 RAV4)		

FAIL-SAFE CHART

1. FAIL-SAFE FUNCTION

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

(b) The table below shows the effects on each system when communication is impossible. For further details, refer to each system.

FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
TC DTC output (Sends DTCs to the combination meter ECU while receiving a signal from the ECM indicating TC is on.)	1. Center airbag sensor assembly 2. ECM, Combination meter assembly (combination meter ECU)	TC service function stops	Not possible (Recognition by driver not possible)	-
Event Data Recorder (EDR) (Records conditions, such as vehicle speed, amount accelerator is depressed, and shift lever position when the event data recorder recording conditions are met.)	1. Center airbag sensor assembly 2. ECM, Combination meter assembly (combination meter ECU)	Invalid value is stored in EDR	Not possible (Recognition by driver not possible)	-
SRS warning light control (Turns the warning light on/off.)	1. Center airbag sensor assembly 2. Combination meter assembly (combination meter ECU)	SRS warning light turns on	Not possible (Light turns on)	-

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
Driver side seat belt warning light control (Sends "Fastened" and "Unfastened" signals according to the condition of the front seat inner belt assembly LH.)	1. Combination meter assembly (combination meter ECU) 2. Center airbag sensor assembly	Driver side seat belt warning light does not operate	Not possible (Recognition by driver not possible)	-
Front passenger side seat belt warning light control (Sends "Fastened" and "Unfastened" signals according to the condition of the front seat inner belt assembly RH.)	1. Center airbag sensor assembly 2. Combination meter assembly (combination meter ECU)	Front passenger side seat belt warning light does not operate	Not possible (Recognition by driver not possible)	-
Combination meter needle indicator (Controls the combination meter needle indicators in accordance with vehicle speed, engine speed and coolant temperature data.)	1. Combination meter assembly (combination meter ECU) 2. ECM, Brake actuator assembly (skid control ECU)	VSC system does not operate	Possible (Needle indicator does not move)	Stored by combination meter ECU • U0100 • U0129
Warning display (Control that turns on/off or blinks the indicator lights based on warning information.)	1. Combination meter assembly (combination meter ECU) 2. ECM, Brake actuator assembly (skid control ECU), Power steering ECU assembly,	ABS and brake warning lights turn on	Not possible (Light turns on and off)	-

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
	4WD control ECU assembly, Center airbag sensor assembly, ECU aggregation box assembly (certification ECU), Main body ECU (driver side junction block)			
Warning buzzer (Control that sounds/stops the buzzers based on warning information.)	1. Combination meter assembly (combination meter ECU) 2. ECM, Brake actuator assembly (skid control ECU), Power steering ECU assembly, 4WD control ECU assembly, Center airbag sensor assembly, ECU aggregation box assembly (certification ECU), Main body ECU (driver side junction block)	-	Not possible (Buzzer sounds and stops)	-
Drive monitor (Controls drive monitor display based on vehicle speed pulse and fuel injection amount information.)	1. Combination meter assembly (combination meter ECU) 2. ECM, Brake actuator assembly (skid control ECU)	Drive monitor numeric display is blank, vehicle speed pulse and tau integration stop	Not possible (Recognition by driver possible based on behavior described)	-
Vehicle information transmission (Sends outside temperature,	1. Combination meter assembly (combination meter ECU) 2. Brake actuator	-	Not possible (Recognition by driver not possible)	-

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
destination values, odometer values, vehicle speed signals and oil monitor reset information.)	assembly (skid control ECU)			
Warning light control (BRL, ABS) (Controls the warning light operation (on/off, blinking and DTC output).)	1. Brake actuator assembly (skid control ECU) 2. Combination meter assembly (combination meter ECU)	Warning light turns on	Not possible (Light turns on)	-
Warning light control (BRL, ABS, VSC-OFF, SLIP) (Controls the warning light operation (on/off, blinking and DTC output).)	1. Brake actuator assembly (skid control ECU) 2. Combination meter assembly (combination meter ECU)	Warning light turns on	Not possible (Light turns on)	-
ABS control (Controls the ABS in accordance with the yaw rate sensor signal.)	1. Brake actuator assembly (skid control ECU) 2. Yaw rate sensor assembly	ABS system does not operate	Possible (Light turns on)	-
TRC control (Controls the brake and engine torque during acceleration slip.)	1. Brake actuator assembly (skid control ECU) 2. ECM	TRC system does not operate	Possible (Light turns on)	Stored by Brake actuator assembly (skid control ECU) • U0073 • U0100
VSC control (Controls VSC according to the yaw rate sensor and steering angle sensor signals.)	1. Brake actuator assembly (skid control ECU) 2. ECM, Yaw rate sensor assembly, Steering angle sensor	VSC system does not operate	Possible (Light turns on)	Stored by Brake actuator assembly (skid control ECU) • U0073 • U0100 • U0123 • U0124 • U0126

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
Air conditioning system (A/C control inside the vehicle.)	1. Air conditioning ECU 2. ECM, Combination meter assembly (combination meter ECU), Main body ECU (driver side junction block)	A/C control stops	Not possible (Recognition by driver possible due to A/C control stopping)	-
EPS control (Vehicle speed response type torque control.)	1. Power steering ECU assembly 2. ECM, Brake actuator assembly (skid control ECU)	Decrease in EPS assist function (steering wheel becomes harder to turn)	During VSC malfunction: Possible (Light turns on)	Stored by Power steering ECU assembly • U0073 • U0100 • U0129
		• No EPS assist during initial check malfunction only • Engine speed value fixed and no effect on assist while driving	During engine malfunction: Possible (Recognition by driver not possible)	
Entry function (Entry lock/unlock, entry luggage compartment open, entry warning, and entry illumination functions.)	1. ECU aggregation box assembly (certification ECU), Main body ECU (driver side junction block) 2. Combination meter assembly (combination meter ECU)	• Entry lock/unlock does not operate • Entry warning does not operate and buzzer does not operate • Entry illumination does not operate • Operates entry unlock light	Not possible (Recognition by driver possible based on behavior described)	Stored by Main body ECU (driver side junction block) • B1207 • B2326

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
		• Entry warning function does not operate		
Wireless function (Wireless lock/unlock and other functions.)	1. Main body ECU (driver side junction block) 2. ECU aggregation box assembly (certification ECU)	Wireless lock/unlock does not operate	Not possible (Recognition by driver possible based on behavior described)	
Engine system indicator display (Estimates degree of oil deterioration, controls the oil change indicator display on the combination meter and performs other functions.)	1. ECM 2. Combination meter assembly (combination meter ECU)	Meter display clear not possible	Not possible (Indicator does not turn on)	-
Electric load control (Performs idle up due to electric load or other factors.)	1. ECM 2. Air conditioning amplifier assembly, Power steering ECU assembly, Main body ECU (driver side junction block)	Idle up due to electric load or other factors not possible	Not possible (Idling speed change)	-
PTC heater (Performs idle up due to PTC heater and heater requests.)	1. ECM 2. Air conditioning amplifier assembly	PTC heater does not operate	Not possible (Heater performance decreases)	-
Charging control (Performs idle up due to charging requests.)	1. ECM 2. Air conditioning amplifier assembly,	Idle up due to charging request not possible	Not possible (Recognition by driver possible based on	-

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
	Combination meter assembly (combination meter ECU)		behavior described)	
Integrated control (VSC) (Estimates driver requested torque from the operation of the accelerator pedal, and performs torque characteristic control according to various conditions.)	1. ECM 2. Brake actuator assembly (skid control ECU), Steering angle sensor, Yaw rate sensor assembly, Power steering ECU assembly	Integrated control not possible	Not possible (Recognition by driver possible based on behavior described)	-
ECT system indicator display (The shift, switch, mode and other conditions are displayed on the combination meter.)	1. ECM 2. Combination meter assembly (combination meter ECU), Main body ECU (driver side junction block)	-	Not possible (Indicator does not turn on)	-
Neutral control (Reduces engine load and performs idle up.)	1. ECM 2. Brake actuator assembly (skid control ECU)	Neutral control does not operate	Possible (Recognition by driver possible based on behavior described)	Stored by ECM • U0129
Coast down shift (Changes the coast down shift point based on the A/C load.)	1. ECM 2. Air conditioning amplifier assembly	Coast down shift does not operate	Not possible (Coast down shock becomes stronger)	-
Cruise control (Automatically adjusts the throttle valve opening angle while driving.)	1. ECM 2. Combination meter assembly (combination meter ECU)	Normal cruise control stops	Not possible (Cruise main indicator blinks)	-

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FUNCTION	1. CONTROL MASTER ECU 2. RELATED ECU	BEHAVIOR WHEN COMMUNICATION NOT POSSIBLE	DTC DETECTION (RECOGNITION BY DRIVER)	DTC (COMMUNICATION INTERRUPTION MODE)
ATC-4WD (Controls the front/rear driving power distribution based on vehicle driving conditions.)	1. 4WD control ECU assembly 2. ECM, Brake actuator assembly (skid control ECU), Steering angle sensor	4WD control stops (operates similarly to 2WD)	Possible (Light turns on)	Stored by 4WD control ECU assembly • U0073 • U0100 • U0126 • U0129





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Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001MM300UX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2011 RAV4)		

HOW TO PROCEED WITH TROUBLESHOOTING

NOTICE:

- DTCs for the CAN communication system are as follows:

  U0073, U0100, U0122, U0123, U0124, U0126, U0129, B1207, B1499 and B2326.
- Refer to troubleshooting of each system if DTCs regarding the CAN communication system are not output.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder buzzer are not in operation.

HINT:

***: Use the Techstream.**

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**INSPECT BATTERY VOLTAGE**

Standard voltage:
11 to 14 V

HINT:

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3.	**CHECK AND CLEAR DTC***

(a) Using the Techstream, perform the Health Check (all DTCs check).

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NOTICE:

- If there is a CAN communication trouble code that indicates that an ECU or sensor has a power malfunction or interior malfunction which is causing a communication stop, the problem may not be in the communication line.
- When CAN communication related connectors are disconnected with the ignition switch ON or ACC, the ECU related to the connector and ECUs of related systems will store a CAN communication DTC.

NEXT

4.	**CHECK INSTALLED SYSTEMS (ECU AND SENSOR) THAT USE CAN COMMUNICATION**

(a) Based on the vehicle equipment and specifications, confirm the systems that use CAN communication INFO .

NEXT

5.	**CHECK DLC3 BRANCH WIRE AND CAN NO. 1 BUS CIRCUIT MAIN WIRE (CANH - CANL)**

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

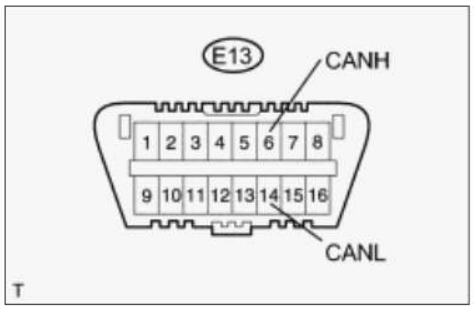
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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



Standard Resistance

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED VALUE	PROCEED TO
E13-6 (CANH) - E13-14 (CANL)	Ignition switch off	54 to 69 Ω	A
E13-6 (CANH) - E13-14 (CANL)	Ignition switch off	70 Ω or higher	B
E13-6 (CANH) - E13-14 (CANL)	Ignition switch off	Below 54 Ω	C

B ▶ INFO **Go to "Open in CAN Main Wire" .**

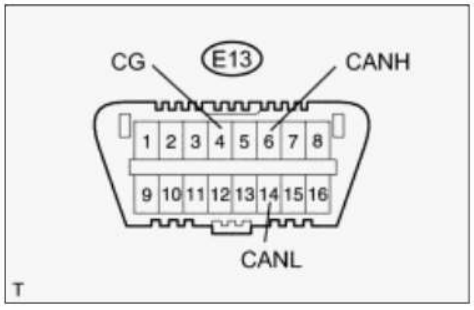
C ▶ INFO **Go to "Short in CAN Bus Lines" .**

A ▼

6.	CHECK FOR SHORT TO GND IN CAN NO. 1 BUS (CANH, CANL - CG)

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

Standard Resistance:



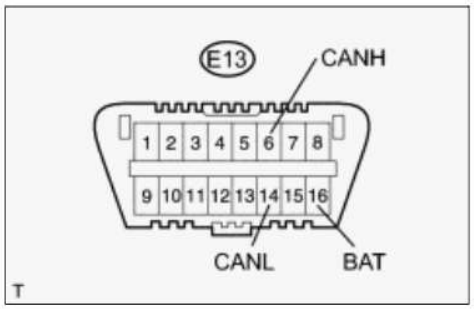
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED VALUE
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ INFO **Go to "Short to GND in CAN Bus Line" .**

OK

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7.	CHECK FOR SHORT TO B+ IN CAN NO. 1 BUS (CANH, CANL - BAT)



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED VALUE
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ INFO **Go to "Short to B+ in CAN Bus Line" .**

OK ▼

8.	CHECK ECUS CONNECTED TO CAN BUS USING TECHSTREAM*

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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

(c) 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

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RESULT	PROCEED TO
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
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

NOTICE:

- The systems (ECUs, sensors) that use CAN communication vary depending on the vehicle and option settings. Check which systems (ECUs, sensors) are installed on the vehicle.
- Non-installed ECUs or sensors are not displayed. Do not mistake them for being in the communication stop mode.
- The Techstream is affected by signals output from ECUs which have an open circuit in either of their CAN branch wires.

B ▶ INFO **Go to "Communication Stop Mode Table" .**

C ▶ INFO **Go to "Open in One Side of CAN Branch Wire" .**

A
▼

9.	DTC COMBINATION TABLE

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

HINT:

- Sometimes, CAN communication system DTCs are output but all the ECUs and sensors connected to the CAN communication system are displayed on Techstream. In this case, previous or history DTCs may indicate the cause of the problem.
- ECUs related to a problem in the CAN bus will store DTCs to indicate communication malfunctions. The communication stop mode in the CAN bus can be determined by comparing the combination of DTCs that has been set. Refer to the DTC combination table for the CAN bus.

NEXT
▼

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10.	CIRCUIT INSPECTION

NEXT

11.	IDENTIFICATION OF PROBLEM

NEXT

12.	REPAIR OR REPLACE

NEXT

13.	CLEAR DTC*

(a) Using the Techstream, clear the DTCs.

NEXT

14.	CONFIRMATION TEST

NEXT END

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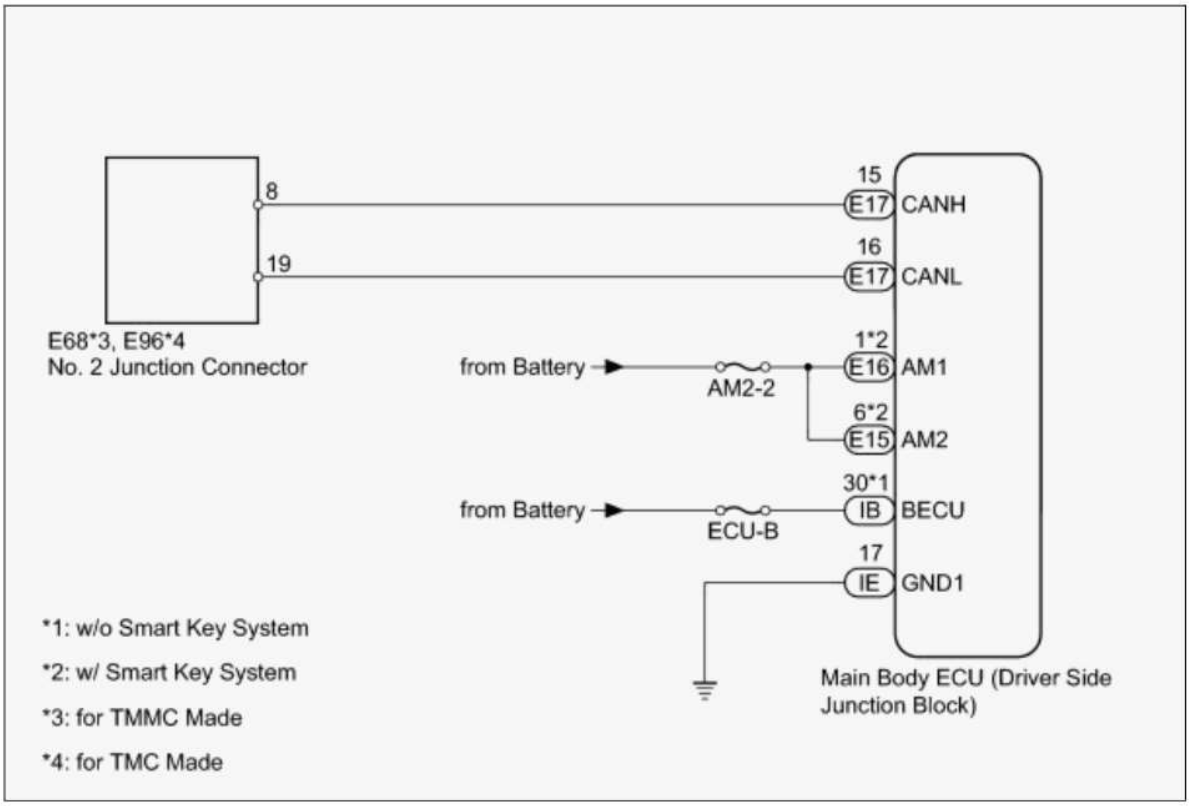
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RTG01VX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Main Body ECU Communication Stop Mode (2011 RAV4)		

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". • "Main Body ECU Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside main body ECU (driver side junction block) • Main body ECU (driver side junction block) branch wire or connector • Main body ECU (driver side junction block)

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

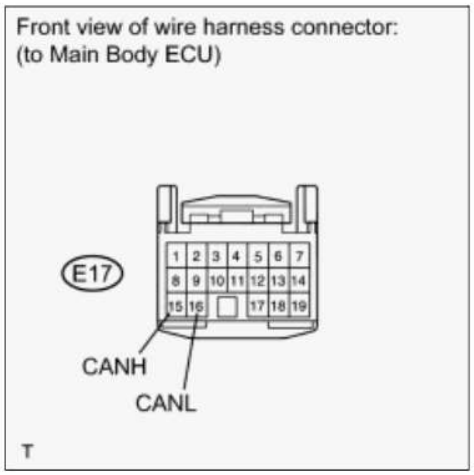
When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK FOR OPEN IN CAN BUS WIRE (MAIN BODY ECU BRANCH WIRE)**

(a) Disconnect the E17 main body ECU (driver side junction block) 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
E17-15 (CANH) - E17-16 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE MAIN BODY ECU BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK ▼

3.	**CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

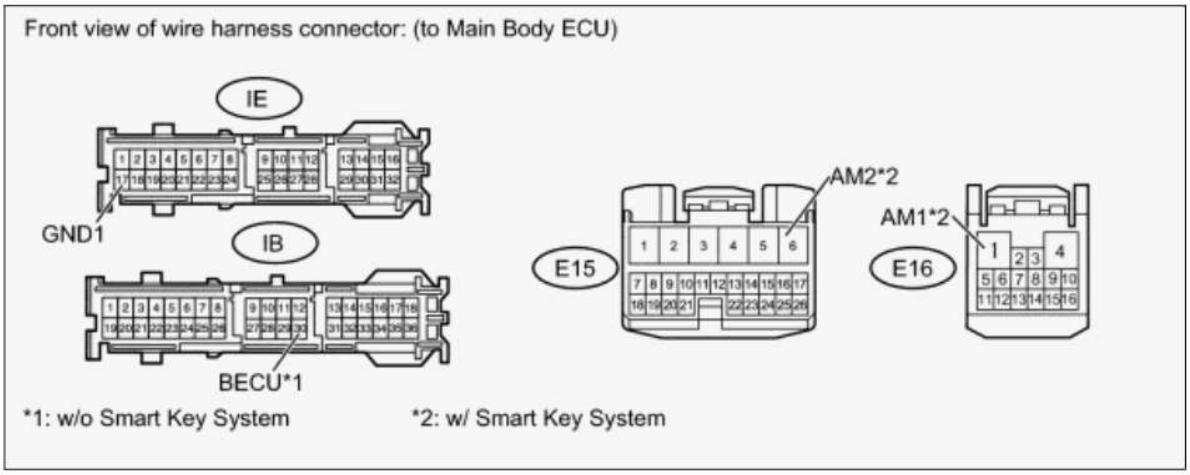
When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

(b) Disconnect the IB*1, IE, E15*2 and E16*2 main body ECU (driver side junction block) connectors.

*1: w/o Smart Key System

*2: w/ Smart Key System

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
IE-17 (GND1) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
IB-30 (BECU) - Body ground*1	Always	11 to 14 V
E15-6 (AM2) - Body ground*2	Always	11 to 14 V
E16-1 (AM1) - Body ground*2	Always	11 to 14 V

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

OK ▶ **REPLACE MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)**

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001X2T00AX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Open in CAN Main Wire (2011 RAV4)		

Open in CAN Main Wire

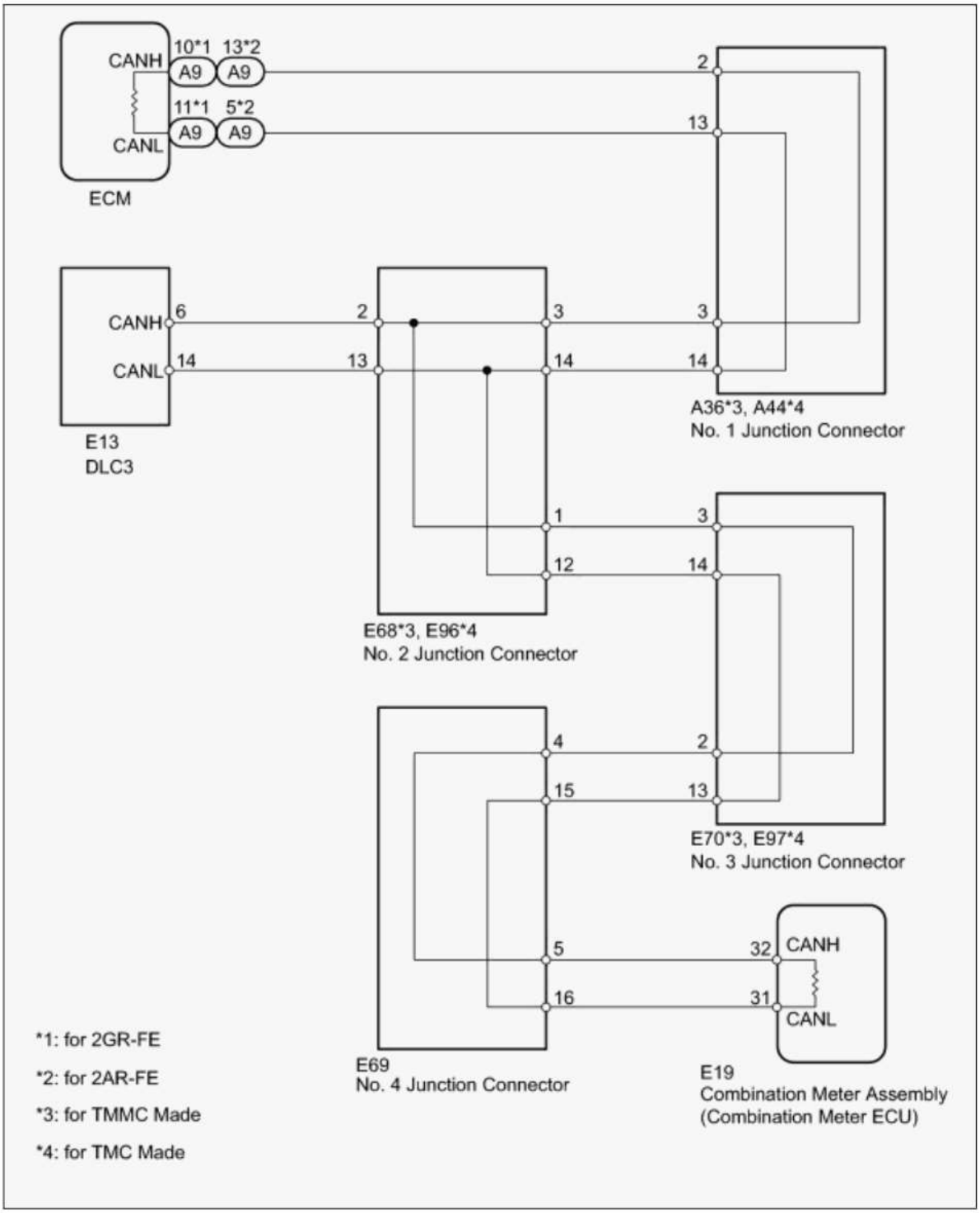
DESCRIPTION

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 main wire or connector • No. 1 junction connector • No. 2 junction connector • No. 3 junction connector • No. 4 junction connector • ECM • Combination meter assembly (combination meter ECU)

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

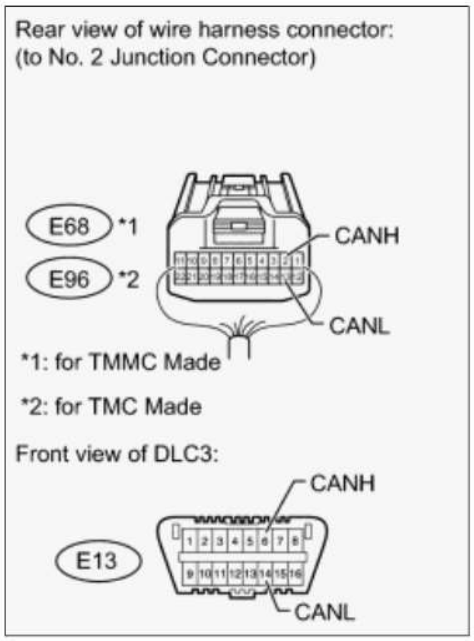
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK DLC3**



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

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

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Standard Resistance:

for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E68-2 (CANH) - E13-6 (CANH)	Ignition switch off	Below 1 Ω
E68-13 (CANL) - E13-14 (CANL)	Ignition switch off	Below 1 Ω

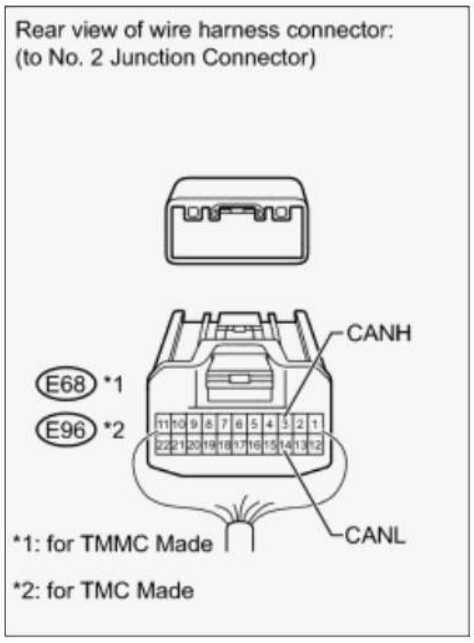
for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E96-2 (CANH) - E13-6 (CANH)	Ignition switch off	Below 1 Ω
E96-13 (CANL) - E13-14 (CANL)	Ignition switch off	Below 1 Ω

B ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3 (CANH, CANL)**

A ▼

3.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 2 JUNCTION CONNECTOR - ECM)**



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

Standard Resistance:

for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E68-3 (CANH) - E68-14 (CANL)	Ignition switch off	108 to 132 Ω

for TMC Made

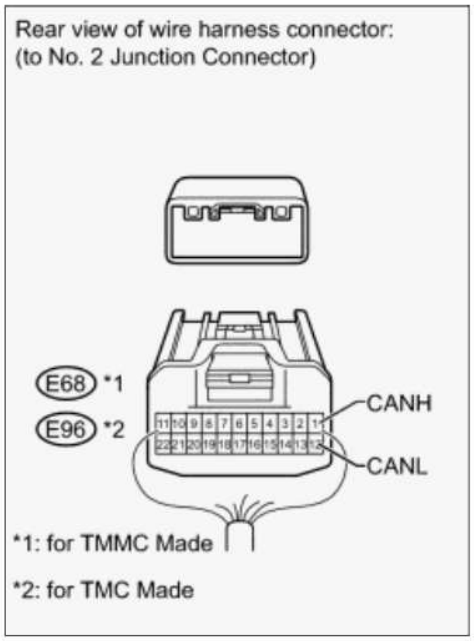
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E96-3 (CANH) - E96-14 (CANL)	Ignition switch off	108 to 132 Ω

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NG ▶ **CONNECT CONNECTOR**

OK ▼

4.	**CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 2 JUNCTION CONNECTOR - COMBINATION METER ASSEMBLY)**



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

Standard Resistance:

for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E68-1 (CANH) - E68-12 (CANL)	Ignition switch off	108 to 132 Ω

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E96-1 (CANH) - E96-12 (CANL)	Ignition switch off	108 to 132 Ω

NG ▶ **CONNECT CONNECTOR**

OK ▶ **REPLACE NO. 2 JUNCTION CONNECTOR**

5.	**CONNECT CONNECTOR**

(a) Reconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

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NEXT

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001YZM02PX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Open in One Side of CAN Branch Line (2011 RAV4)		

Open in One Side of CAN Branch Line

DESCRIPTION

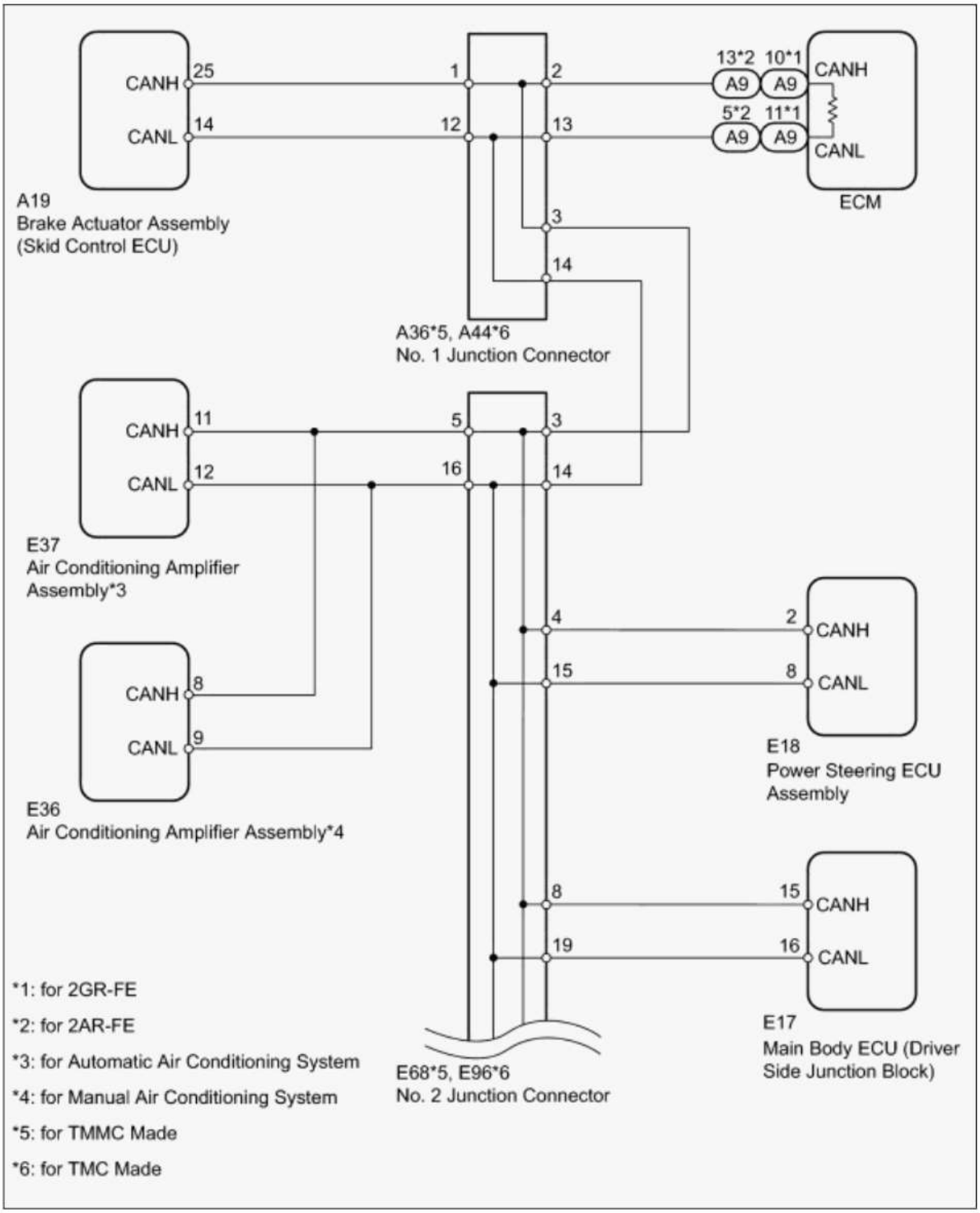
If 2 or more ECUs and/or sensors do not appear on the Techstream's "CAN Bus Check" screen, one side of the CAN branch wire may be open. (One side of the CANH [branch wire]/CANL [branch wire] of the ECU and/or sensor is open.)

SYMPTOM	TROUBLE AREA
2 or more ECUs and/or sensors do not appear on the Techstream "CAN Bus Check" screen.	• One side of CAN branch wire is open • Brake actuator assembly (skid control ECU) • Power steering ECU assembly • Steering angle sensor • Yaw rate sensor assembly • Center airbag sensor assembly • Air conditioning amplifier assembly • Main body ECU (driver side junction block) • 4WD control ECU assembly* • No. 1 junction connector • No. 2 junction connector • No. 3 junction connector • No. 4 junction connector

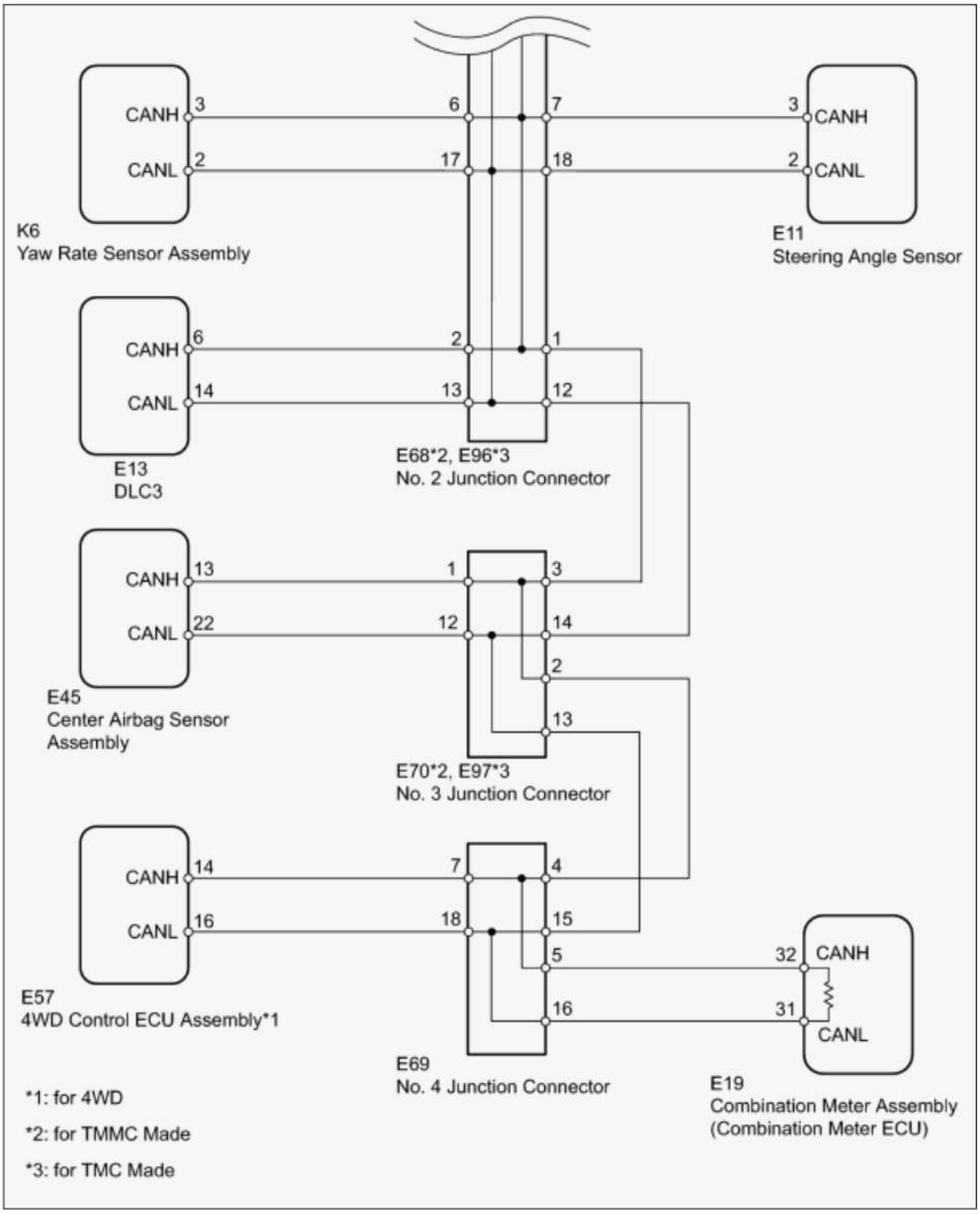
*: for 4WD

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (BRAKE ACTUATOR ASSEMBLY)**

(a) Disconnect the A19 brake actuator assembly (skid control ECU) connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"ABS/VSC/TRAC" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "ABS/VSC/TRAC" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (YAW RATE SENSOR ASSEMBLY)**

A ▼

2.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (BRAKE ACTUATOR ASSEMBLY BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

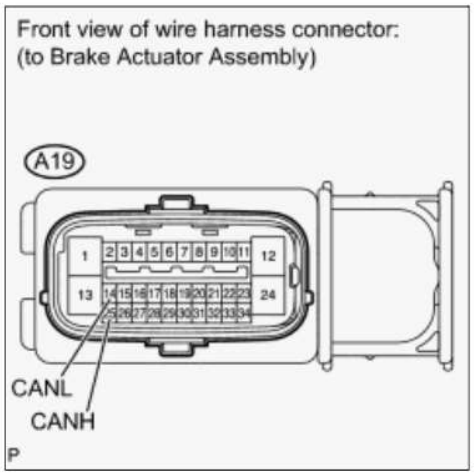
NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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

Standard Resistance:

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-25 (CANH) - A19-14 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (BRAKE ACTUATOR ASSEMBLY)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY (SKID CONTROL ECU)**

3.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (YAW RATE SENSOR ASSEMBLY)**

(a) Disconnect the K6 yaw rate sensor assembly connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"Yaw Rate / Deceleration Sensor Sensor" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "Yaw Rate / Deceleration Sensor Sensor" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER STEERING ECU ASSEMBLY)**

A ▼

4.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (YAW RATE SENSOR ASSEMBLY BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

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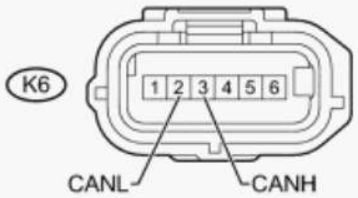
CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
K6-3 (CANH) - K6-2 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (YAW RATE SENSOR ASSEMBLY)**

OK ▶ **REPLACE YAW RATE SENSOR ASSEMBLY**

5.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER STEERING ECU ASSEMBLY)**

(a) Disconnect the E18 power steering ECU assembly connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"EPS" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "EPS" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (MAIN BODY ECU)**

A ▼

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6.	CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER STEERING ECU ASSEMBLY BRANCH WIRE)

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

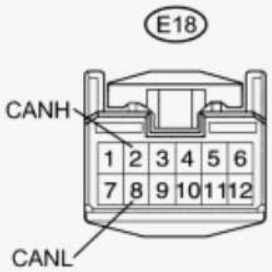
CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E18-2 (CANH) - E18-8 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (POWER STEERING ECU ASSEMBLY)**

OK ▶ **REPLACE POWER STEERING ECU ASSEMBLY**

7.	CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (MAIN BODY ECU)

(a) Disconnect the E17 main body ECU (driver side junction block) connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"Main Body" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "Main Body" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE**

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(AIR CONDITIONING AMPLIFIER ASSEMBLY)

A

8.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (MAIN BODY ECU BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

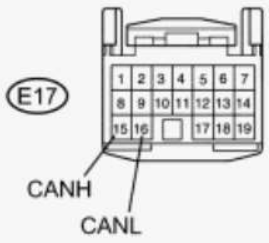
CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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



T

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E17-15 (CANH) - E17-16 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (MAIN BODY ECU)**

OK ▶ **REPLACE MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)**

9.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (AIR CONDITIONING AMPLIFIER ASSEMBLY)**

(a) Disconnect the E37*1 or E36*2 air conditioning amplifier assembly connector.

*1: for Automatic Air Conditioning System

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*2: for Manual Air Conditioning System

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"Air Conditioner" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "Air Conditioner" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (STEERING ANGLE SENSOR)**

A ▼

10.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (AIR CONDITIONING AMPLIFIER ASSEMBLY BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

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

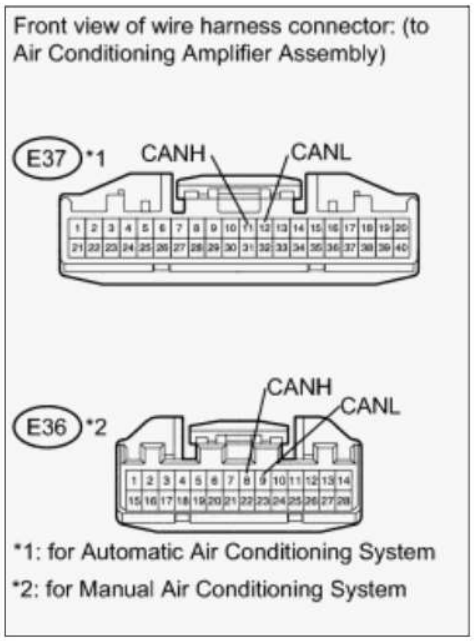
Standard Resistance:

for Automatic Air Conditioning System

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E37-11 (CANH) - E37-12 (CANL)	Ignition switch off	54 to 69 Ω

for Manual Air Conditioning System

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E36-8 (CANH) - E36-9 (CANL)	Ignition switch off	54 to 69 Ω

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

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

11.	CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (STEERING ANGLE SENSOR)

(a) Disconnect the E11 steering angle sensor connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

RESULT	PROCEED TO
"Steering Angle Sensor" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "Steering Angle Sensor" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (4WD CONTROL ECU ASSEMBLY)**

A

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12.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (STEERING ANGLE SENSOR BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

Rear view of wire harness connector:
(to Steering Angle Sensor)



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-3 (CANH) - E11-2 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (STEERING ANGLE SENSOR)**

OK ▶ **REPLACE STEERING ANGLE SENSOR**

13.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (4WD CONTROL ECU ASSEMBLY)**

NOTICE:

For vehicles without 4WD, go to "Check for Open in One Side of Branch Wire (Center Airbag Sensor Assembly Branch Wire)".

(a) Disconnect the E57 4WD control ECU assembly connector.

(b) Select "CAN Bus Check" on the Techstream INFO .

Result

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RESULT	PROCEED TO
"4WD" is not displayed on the Techstream.	A
Several ECUs and sensors in addition to "4WD" are not displayed on the Techstream.	B

B ▶ **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)**

A ▼

14.	**CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (4WD CONTROL ECU ASSEMBLY BRANCH WIRE)**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

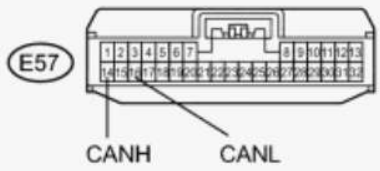
CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

Front view of wire harness connector:
(to 4WD Control ECU Assembly)



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E57-14 (CANH) - E57-16 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (4WD CONTROL ECU ASSEMBLY)**

OK ▶ **REPLACE 4WD CONTROL ECU ASSEMBLY**

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15.	CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

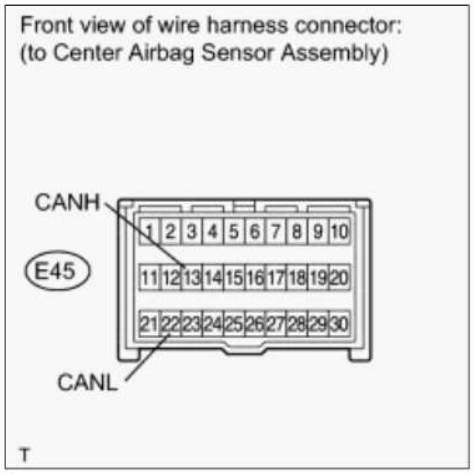
NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

(b) Disconnect the E45 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
E45-13 (CANH) - E45-22 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (CENTER AIRBAG SENSOR ASSEMBLY)**

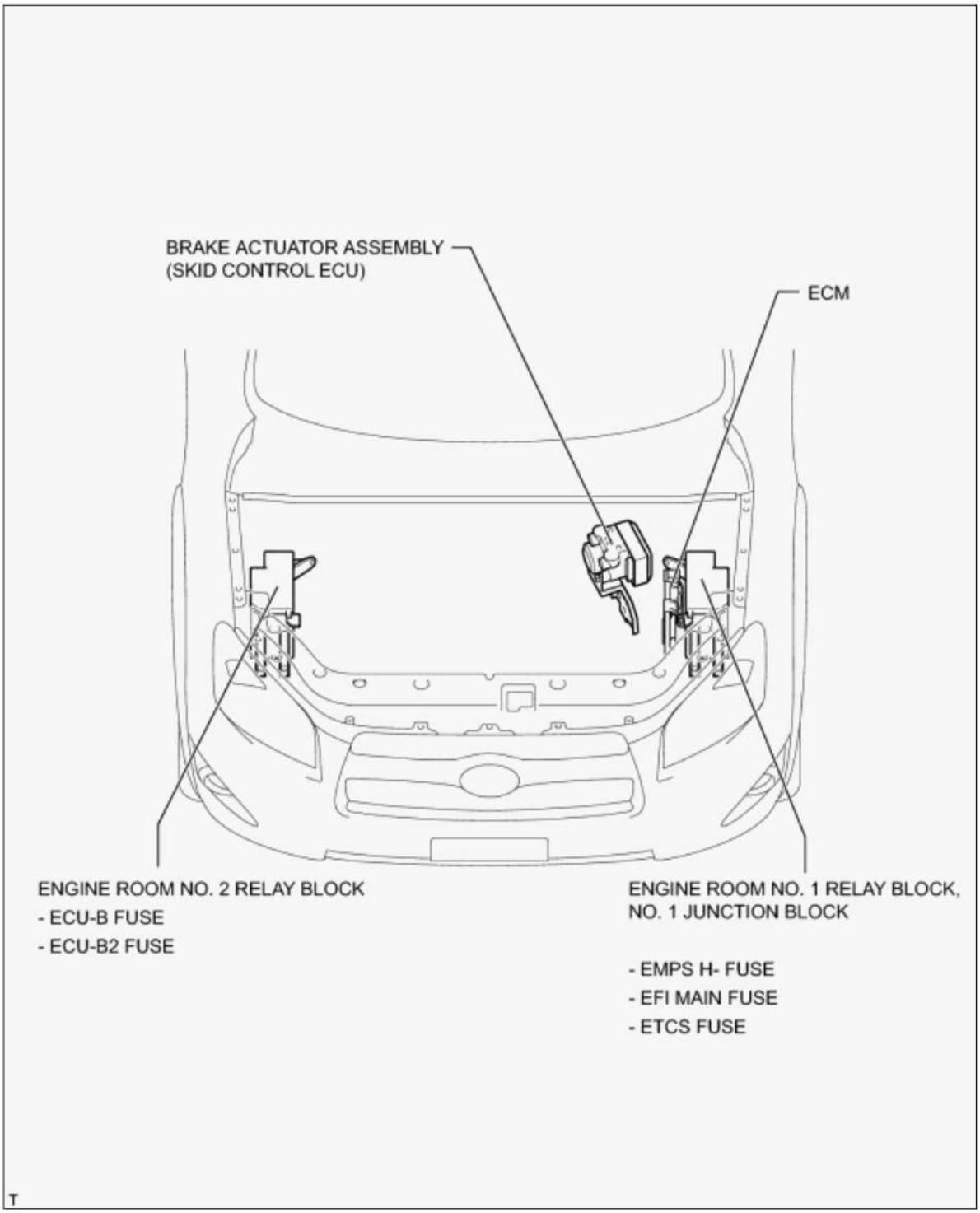
OK ▶ **REPLACE CENTER AIRBAG SENSOR ASSEMBLY**

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Last Modified: 9-7-2011	6.4 R	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSP00KX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: PARTS LOCATION (2011 RAV4)		

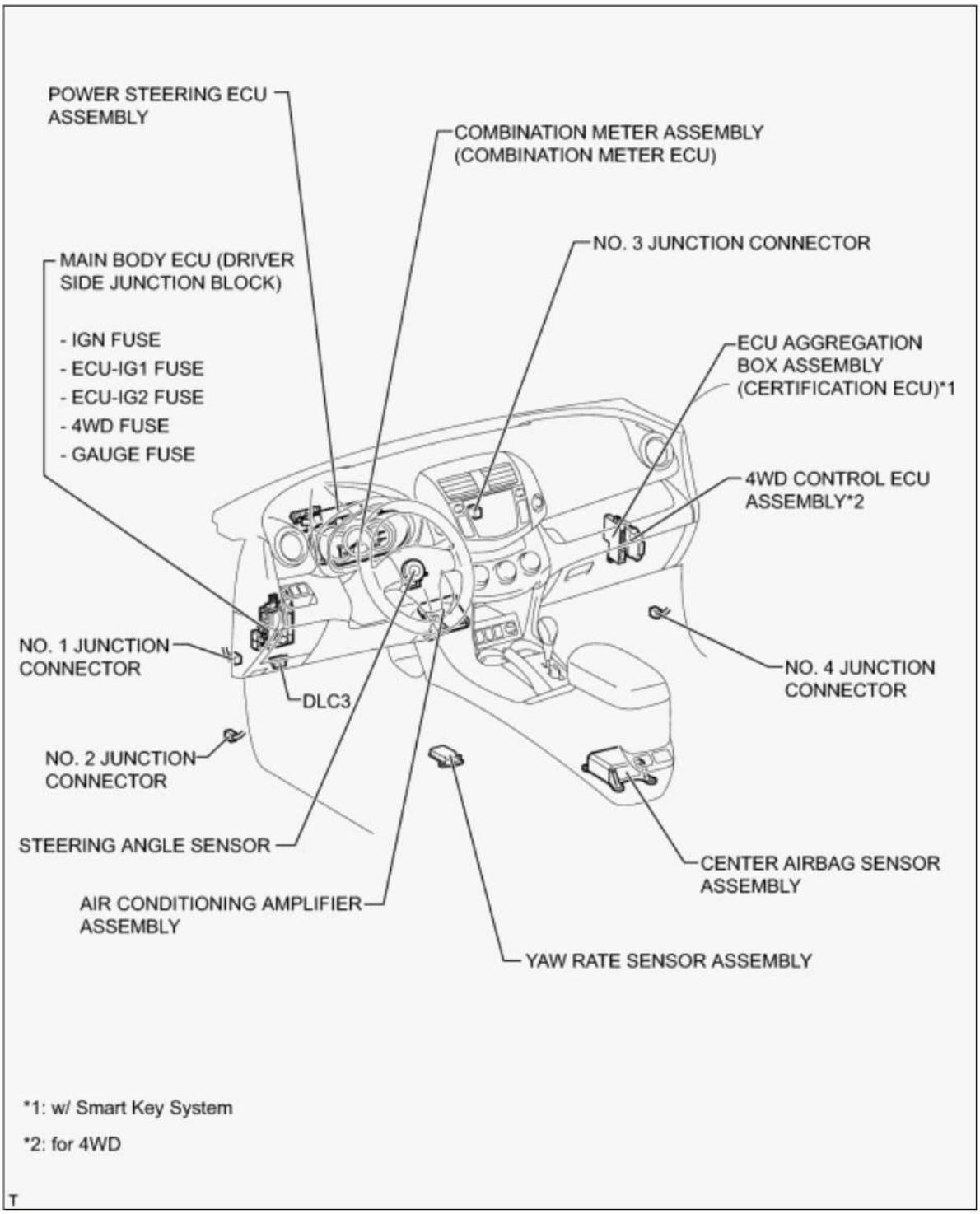
PARTS LOCATION

ILLUSTRATION



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ILLUSTRATION



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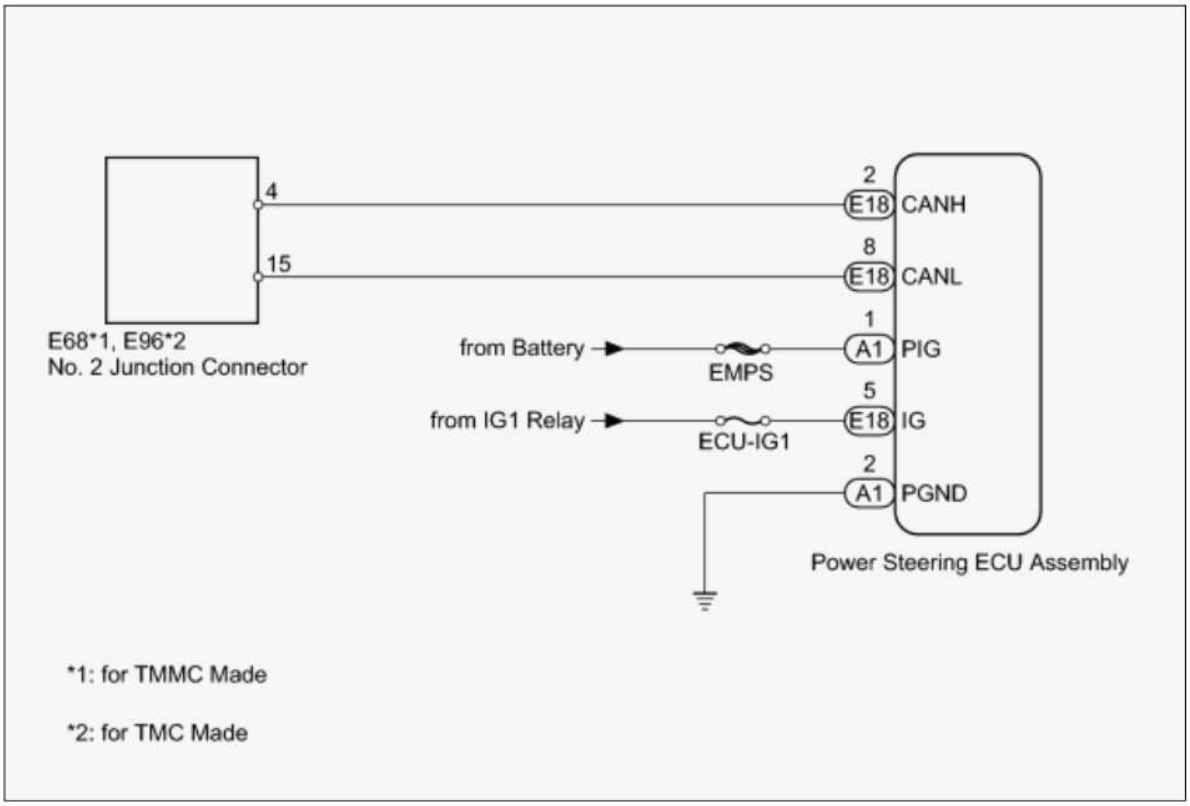
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RT002CX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Power Steering ECU Communication Stop Mode (2011 RAV4)		

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". • "Power Steering ECU Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside power steering ECU assembly • Power steering ECU assembly branch wire or connector • Power steering ECU assembly

WIRING DIAGRAM



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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

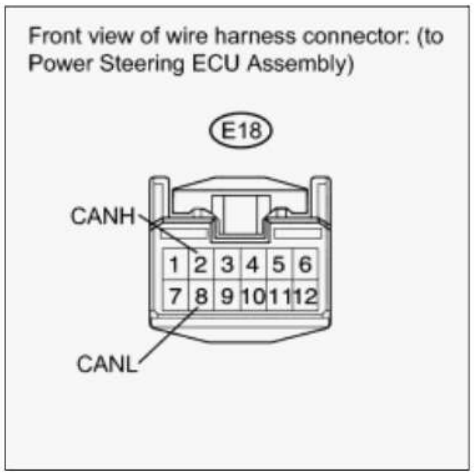
When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

2.	**CHECK FOR OPEN IN CAN BUS WIRE (POWER STEERING ECU ASSEMBLY BRANCH WIRE)**

(a) Disconnect the E18 power steering ECU assembly 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
E18-2 (CANH) - E18-8 (CANL)	Ignition switch off	54 to 69 Ω

NG ▶ **REPAIR OR REPLACE POWER STEERING ECU BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK ▼

3.	**CHECK HARNESS AND CONNECTOR (POWER STEERING ECU ASSEMBLY - BATTERY AND BODY GROUND)**

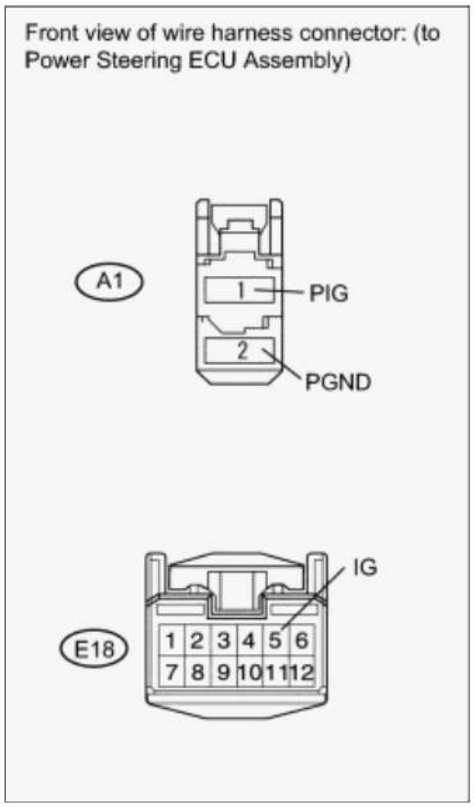
(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

(b) Disconnect the A1 and E18 power steering ECU assembly connectors.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A1-2 (PGND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A1-1 (PIG) - Body ground	Always	11 to 14 V
E18-5 (IG) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE POWER STEERING ECU ASSEMBLY**

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Last Modified: 9-7-2011	6.4 L	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSN01WX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: PRECAUTION (2011 RAV4)		

PRECAUTION

1. IGNITION SWITCH EXPRESSION

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	Off	Off
Ignition Switch ON	ON	On (IG)
Ignition Switch ACC	ACC	On (ACC)
Engine Start	START	Start

2. PRECAUTION

(a) Turn the ignition switch off before measuring the resistance of the main wire and the branch wire.

(b) After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not in operation.

(c) Before measuring the resistance, leave the vehicle for at least 1 minute and do not operate the ignition switch, any switches or doors. If doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

3. STEERING SYSTEM HANDLING PRECAUTIONS

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

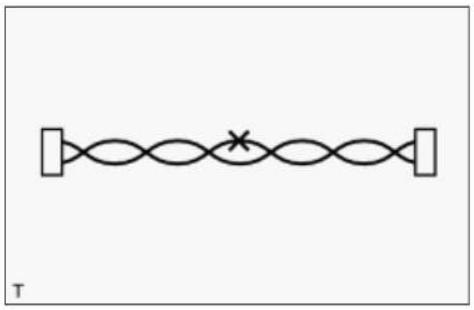
4. SRS AIRBAG SYSTEM HANDLING PRECAUTIONS

(a) This vehicle is equipped with an SRS (Supplemental Restraint System), which includes components 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 installation/removal, inspection and replacement of parts), be sure to read the precautionary notice for the Supplemental Restraint System INFO .

5. BUS LINE REPAIR

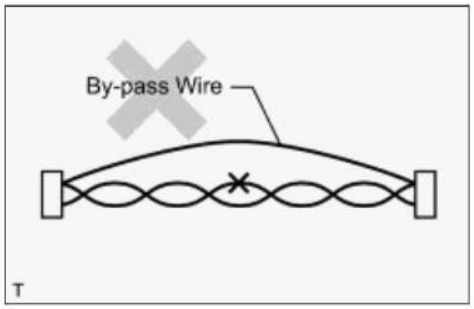
(a) After repairing the bus line with solder, wrap the repaired part with vinyl tape INFO .

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NOTICE:

- The CANL bus line and CANH bus line must be installed together.
- When installing, twist the CANL and CANH bus line together.
- CAN bus lines are likely to be influenced by noise if the bus lines are not twisted together.
- The difference in length between the CANL bus line and CANH bus line should be less than 100 mm (3.937 in.).
- Leave approximately 80 mm (3.150 in.) loose in the twisted wires around the connectors.

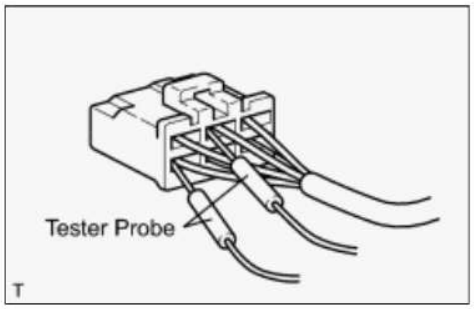


(b) Do not use bypass wiring between the connectors.

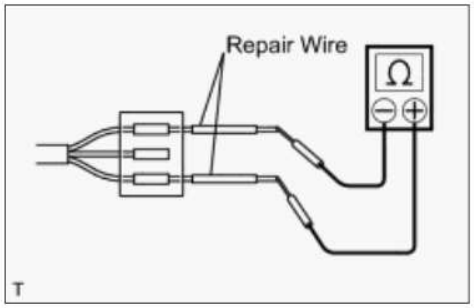
NOTICE:

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

6. CONNECTOR HANDLING



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



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

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Last Modified: 9-7-2011	6.4 T	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSR01GX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: PROBLEM SYMPTOMS TABLE (2011 RAV4)		

PROBLEM SYMPTOMS TABLE

Result List of Check CAN Bus Line

SYMPTOM	SUSPECTED AREA	SEE PAGE
The result of "How to Proceed with Troubleshooting" is "Open in CAN Main Wire".	Open in CAN Main Wire	INFO
The result of "How to Proceed with Troubleshooting" is "Short in CAN Bus Lines".	Short in CAN Bus Lines	INFO
The result of "How to Proceed with Troubleshooting" is "Short to B+ in CAN Bus Line".	Short to B+ in CAN Bus Line	INFO
The result of "How to Proceed with Troubleshooting" is "Short to GND in CAN Bus Line".	Short to GND in CAN Bus Line	INFO
The result of "How to Proceed with Troubleshooting" 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
"ABS / VSC / TRAC" not displayed on the Techstream.	ABS and Traction Actuator (Skid Control ECU) Communication Stop Mode	INFO
"EPS" not displayed on the Techstream.	Power Steering ECU Communication Stop Mode	INFO
"Steering Angle Sensor" not displayed on the Techstream.	Steering Angle Sensor Communication Stop Mode	INFO
"Yaw Rate / Deceleration" not displayed on the Techstream.	Yaw Rate Sensor Communication Stop Mode	INFO
"Engine" not displayed on the Techstream.	ECM Communication Stop Mode	INFO
"SRS" not displayed on the Techstream.	Center Airbag Sensor Communication Stop Mode	INFO
"Air Conditioner" not displayed on the Techstream.	Air Conditioner Amplifier Communication Stop Mode	INFO
"Combination Meter" not displayed on the Techstream.	Combination Meter ECU Communication Stop Mode	INFO
"Main Body" not displayed on the Techstream.	Main Body ECU Communication Stop Mode	INFO
"4WD" not displayed on the Techstream*.	4WD Control ECU Communication Stop Mode	INFO

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001X2D00AX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Short in CAN Bus Lines (2011 RAV4)		

Short in CAN Bus Lines

DESCRIPTION

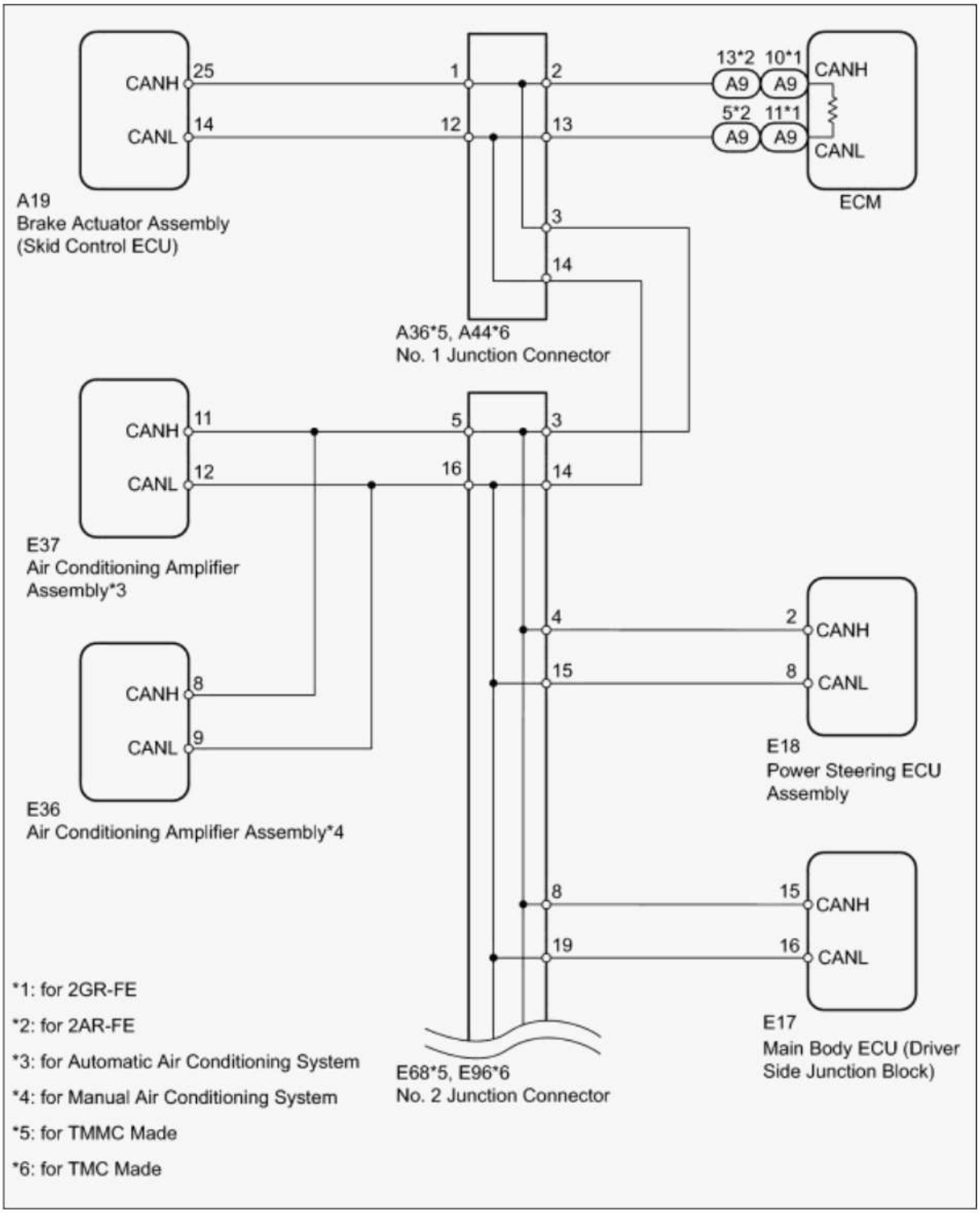
There may be a short circuit between the CAN bus lines when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is below 54 Ω.

SYMPTOM	TROUBLE AREA
Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is below 54 Ω.	• Short between CAN bus lines • Brake actuator assembly (skid control ECU) • Power steering ECU assembly • Steering angle sensor • Yaw rate sensor assembly • ECM • Center airbag sensor assembly • Air conditioning amplifier assembly • Combination meter assembly (combination meter ECU) • Main body ECU (driver side junction block) • 4WD control ECU assembly* • No. 1 junction connector • No. 2 junction connector • No. 3 junction connector • No. 4 junction connector

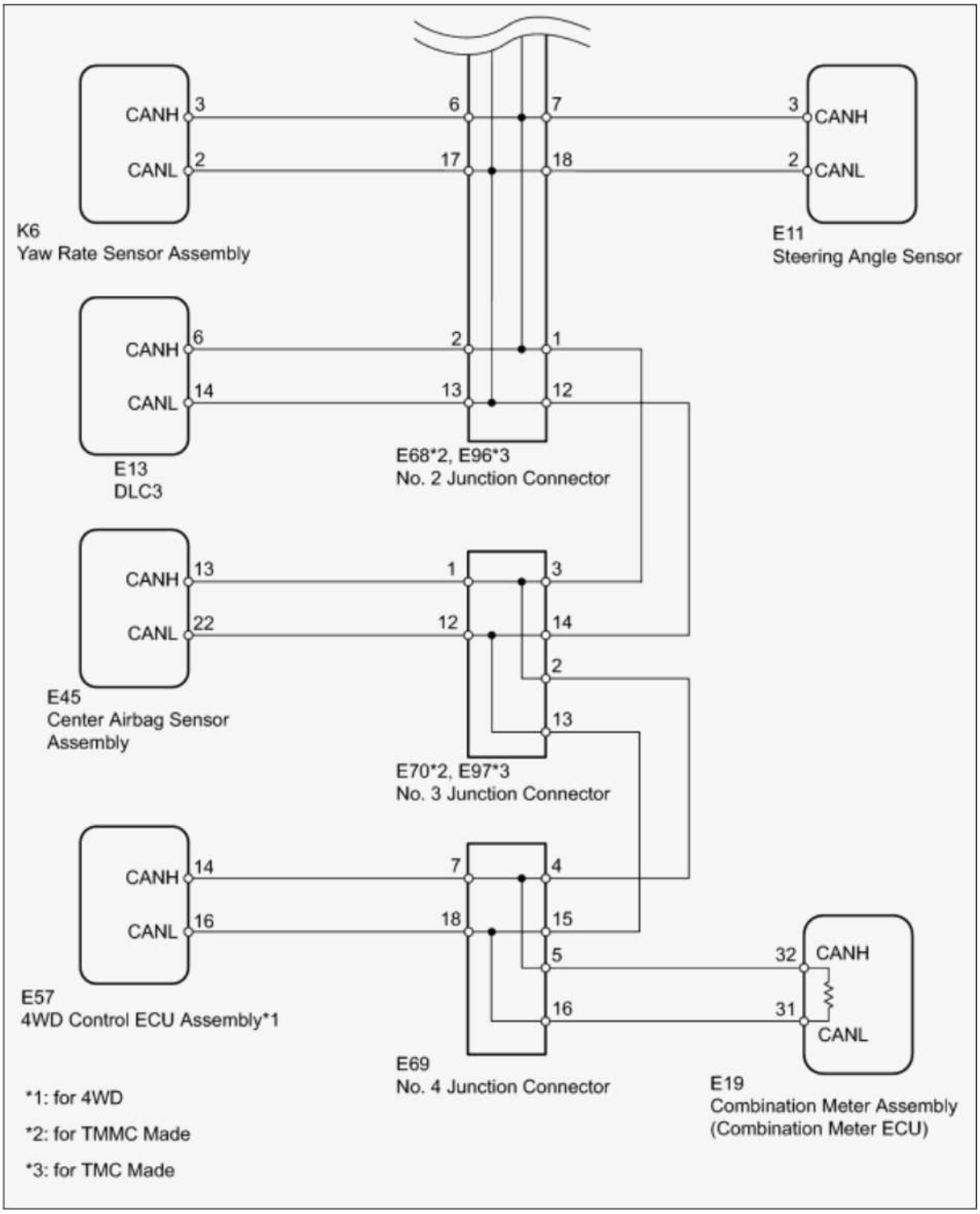
*: for 4WD

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

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HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

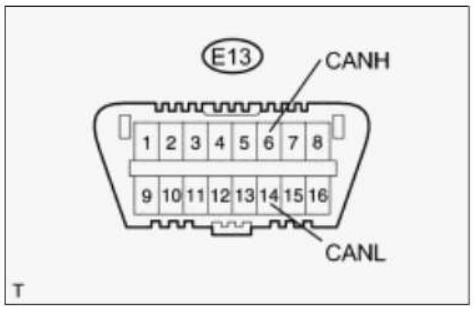
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

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



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-14 (CANL)	Ignition switch off	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE DLC3 BRANCH WIRE OR CONNECTOR (CANH, CANL)**

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OK

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001X2L00AX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Short to B+ in CAN Bus Line (2011 RAV4)		

Short to B+ in CAN Bus Line

DESCRIPTION

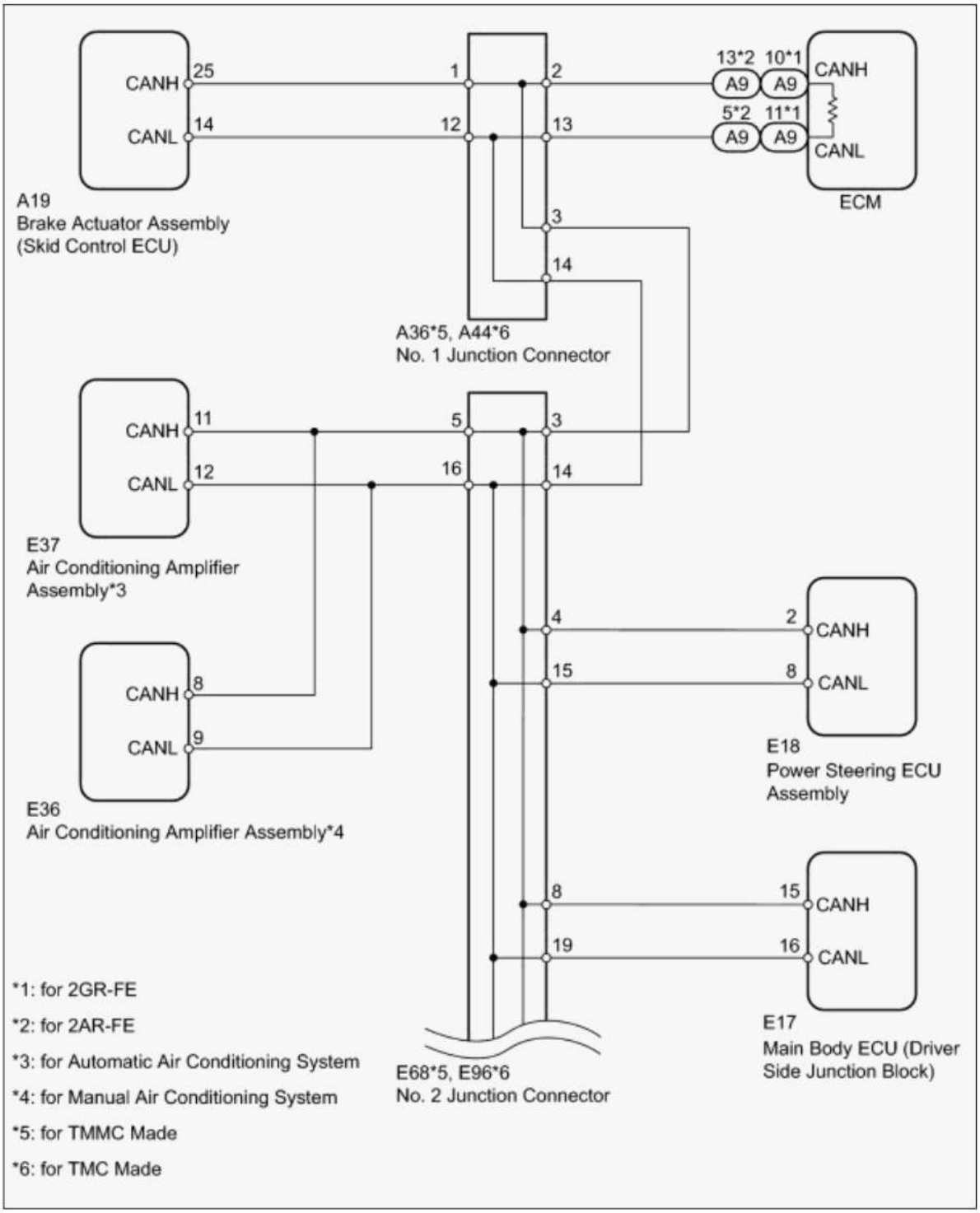
There may be a short circuit between the CAN bus line and B+ when the resistance between terminals 6 (CANH) and 16 (BAT) or terminals 14 (CANL) and 16 (BAT) of the DLC3 is below 6 kΩ.

SYMPTOM	TROUBLE AREA
The resistance between terminals 6 (CANH) and 16 (BAT) or terminals 14 (CANL) and 16 (BAT) of DLC3 is below 6 kΩ.	• Short to B+ • Brake actuator assembly (skid control ECU) • Power steering ECU assembly • Steering angle sensor • Yaw rate sensor assembly • ECM • Center airbag sensor assembly • Combination meter assembly (combination meter ECU) • Air conditioning amplifier assembly • Main body ECU (driver side junction block) • 4WD control ECU assembly*

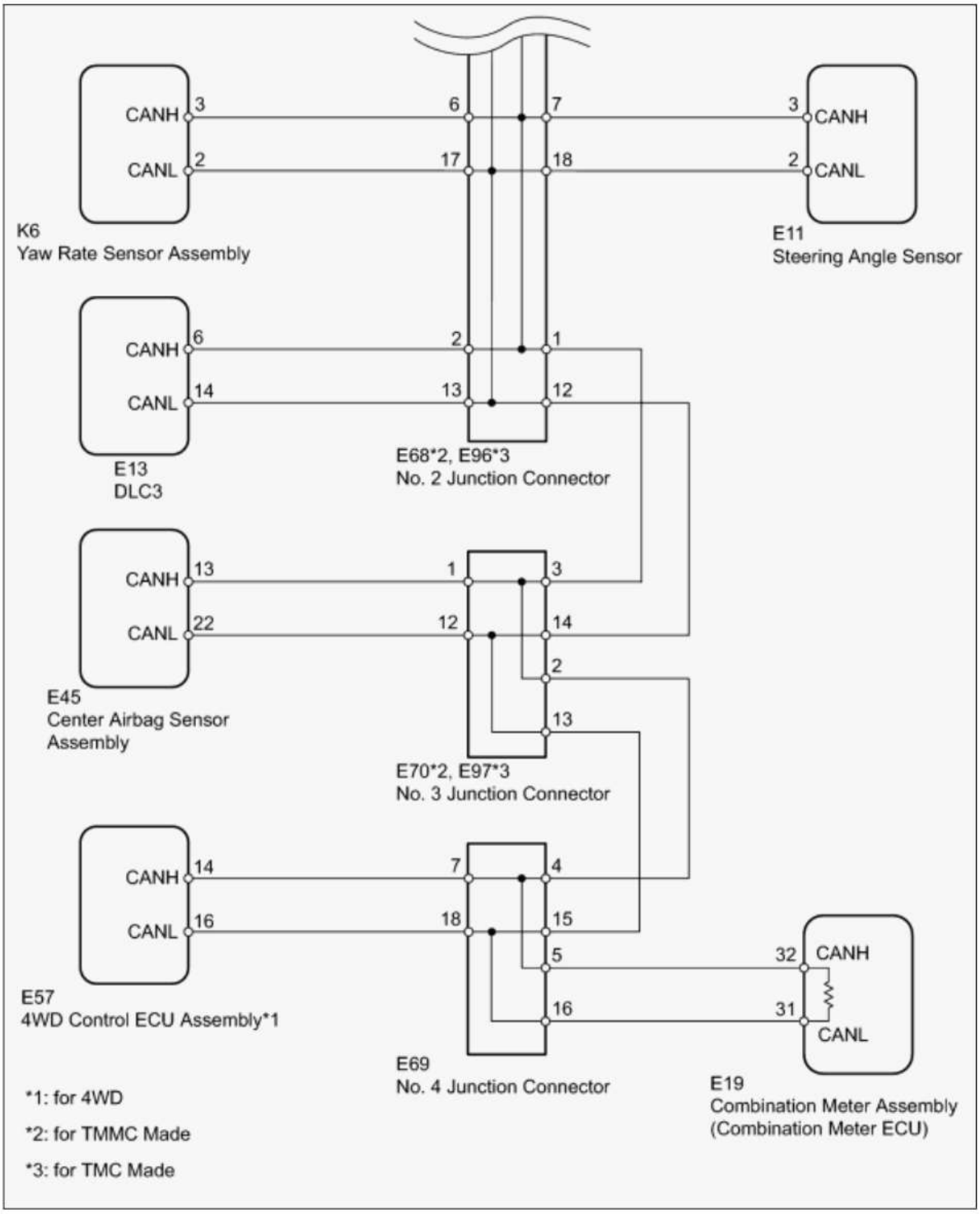
*: for 4WD

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

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HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

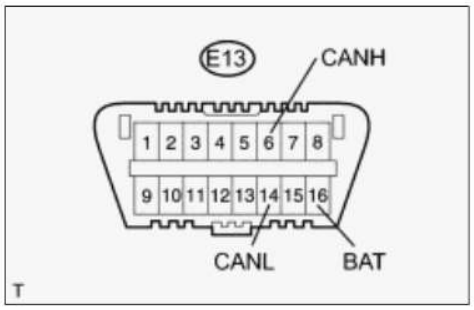
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

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



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

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

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CONNECTED TO DLC3 (CANH, CANL)

OK

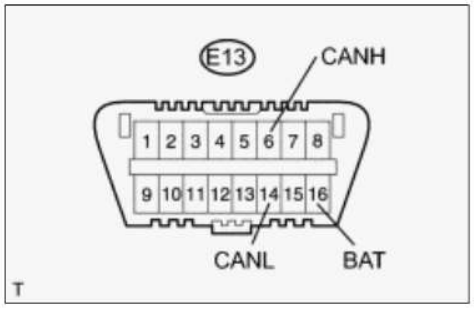
3.	**CONNECT CONNECTOR**

(a) Reconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

4.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR SIDE)**



(a) Disconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

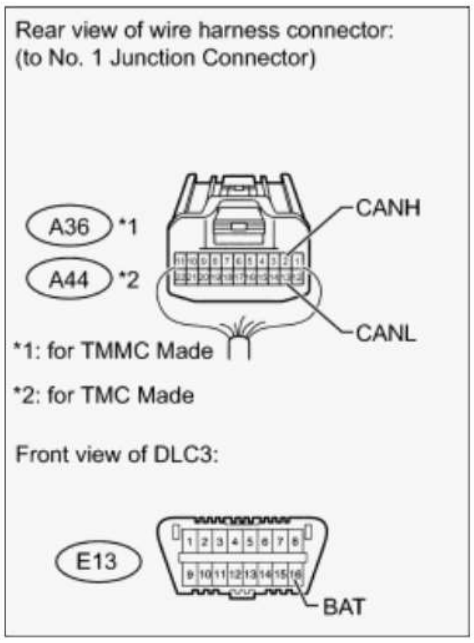
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OK

5.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - ECM)**

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

Standard Resistance:



for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A36-2 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
A36-13 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A44-2 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
A44-13 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

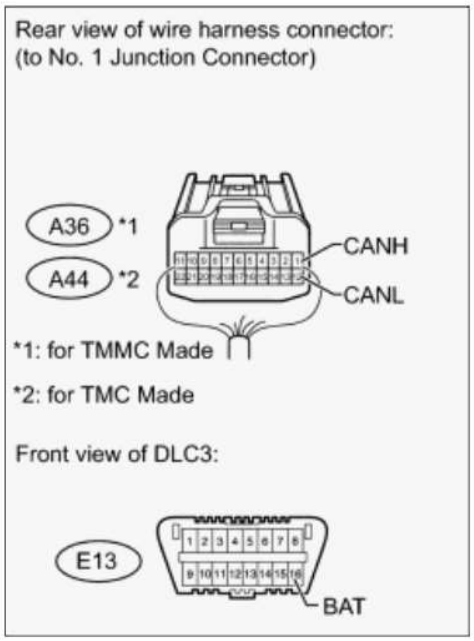
OK

6.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - BRAKE ACTUATOR ASSEMBLY)**

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

Standard Resistance:



for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A36-1 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
A36-12 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A44-1 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
A44-12 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

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

7.	**CONNECT CONNECTOR**

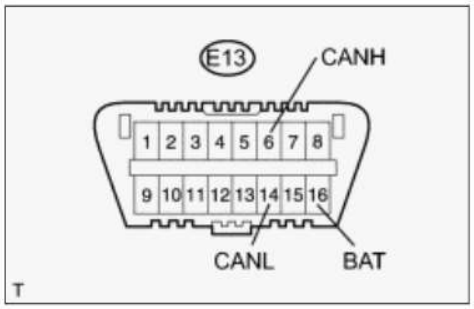
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT ▼

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8.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (ECM)**



(a) Disconnect the A9 ECM connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

Result

RESULT	PROCEED TO
OK (for 2GR-FE)	A
OK (for 2AR-FE)	B
NG	C

B ▶ **REPLACE ECM**

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

A ▶ **REPLACE ECM**

9.	**CONNECT CONNECTOR**

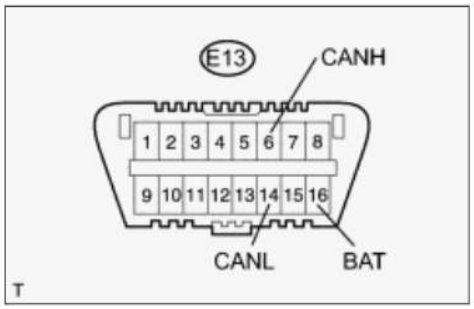
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

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NEXT

10.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (BRAKE ACTUATOR ASSEMBLY)**



(a) Disconnect the A19 brake actuator (skid control ECU) connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO BRAKE ACTUATOR ASSEMBLY (CANH, CANL)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY (SKID CONTROL ECU)**

11.	**CONNECT CONNECTOR**

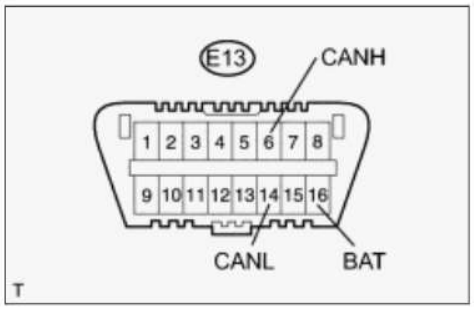
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

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12.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 3 JUNCTION CONNECTOR, NO. 4 JUNCTION CONNECTOR SIDE)**



(a) Disconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

OK

13.	**CONNECT CONNECTOR**

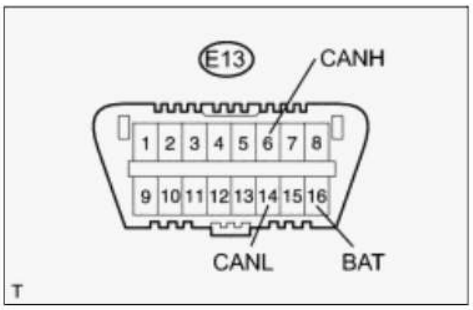
(a) Reconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

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14.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 4 JUNCTION CONNECTOR SIDE)**



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

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

OK

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

NOTICE:

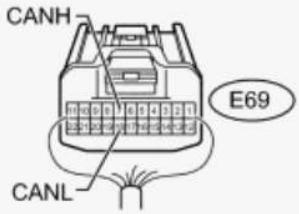
For vehicles without 4WD, go to "Check for Short to B+ in CAN Bus Wire (No. 4 Junction Connector - Combination Meter Assembly)".

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

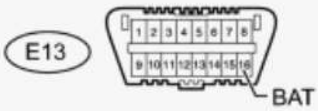
Standard Resistance:

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Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



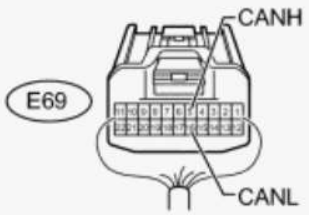
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-7 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E69-18 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

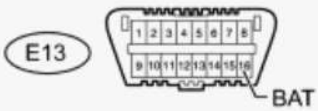
OK ▼

16.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ASSEMBLY)**

Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-5 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E69-16 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

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NG ▶ **CONNECT CONNECTOR**

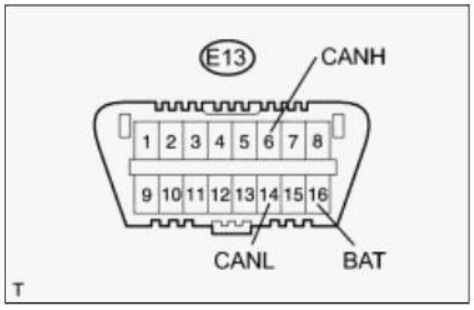
OK ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 4 JUNCTION CONNECTOR - NO. 3 JUNCTION CONNECTOR)**

17.	**CONNECT CONNECTOR**

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

NEXT ▼

18.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (4WD CONTROL ECU ASSEMBLY)**



(a) Disconnect the E57 4WD control ECU assembly connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

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

OK ▶ **REPLACE 4WD CONTROL ECU ASSEMBLY**

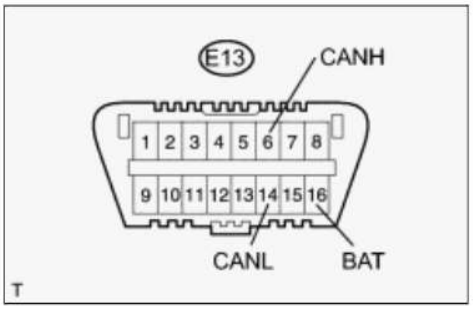
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19.	**CONNECT CONNECTOR**

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

NEXT

20.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (COMBINATION METER ASSEMBLY)**



(a) Disconnect the E19 combination meter assembly (combination meter ECU) connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

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

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

21.	**CONNECT CONNECTOR**

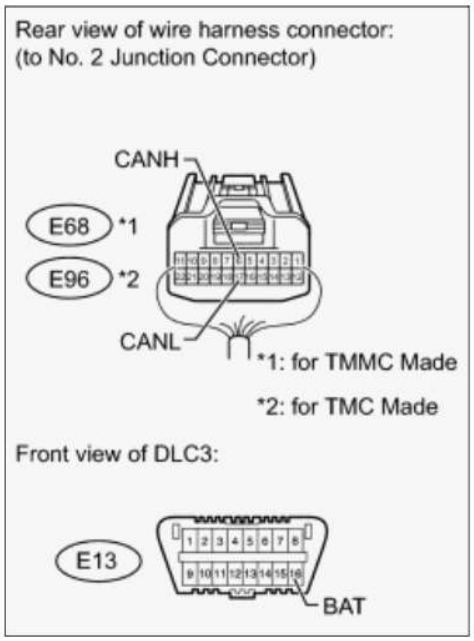
(a) Reconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

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NEXT

22.	**CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR - YAW RATE SENSOR ASSEMBLY)**



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

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

Standard Resistance:

for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E68-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E68-17 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E96-6 (CANH) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher
E96-17 (CANL) - E13-16 (BAT)	Ignition switch off	6 kΩ or higher

NG ▶ **CONNECT CONNECTOR**

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OK

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001X2M00CX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Short to GND in CAN Bus Line (2011 RAV4)		

Short to GND in CAN Bus Line

DESCRIPTION

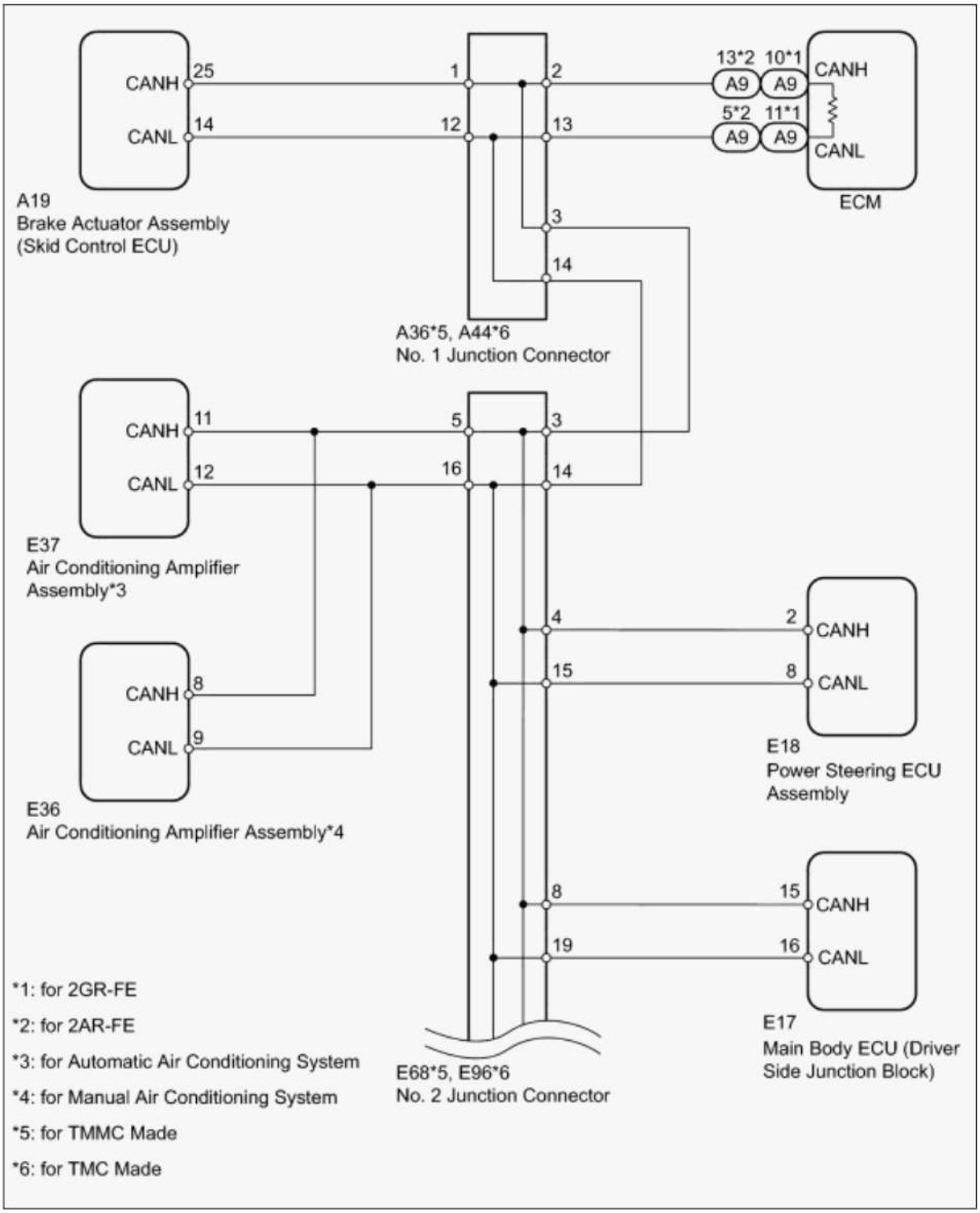
There may be a short circuit between the CAN bus line and GND when the resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of the DLC3 is below 200 Ω.

SYMPTOM	TROUBLE AREA
The resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of the DLC3 is below 200 Ω.	• Short to GND • Brake actuator assembly (skid control ECU) • Power steering ECU assembly • Steering angle sensor • Yaw rate sensor assembly • ECM • Center airbag sensor assembly • Air conditioning amplifier assembly • Combination meter assembly (combination meter ECU) • Main body ECU (driver side junction block) • 4WD control ECU assembly*

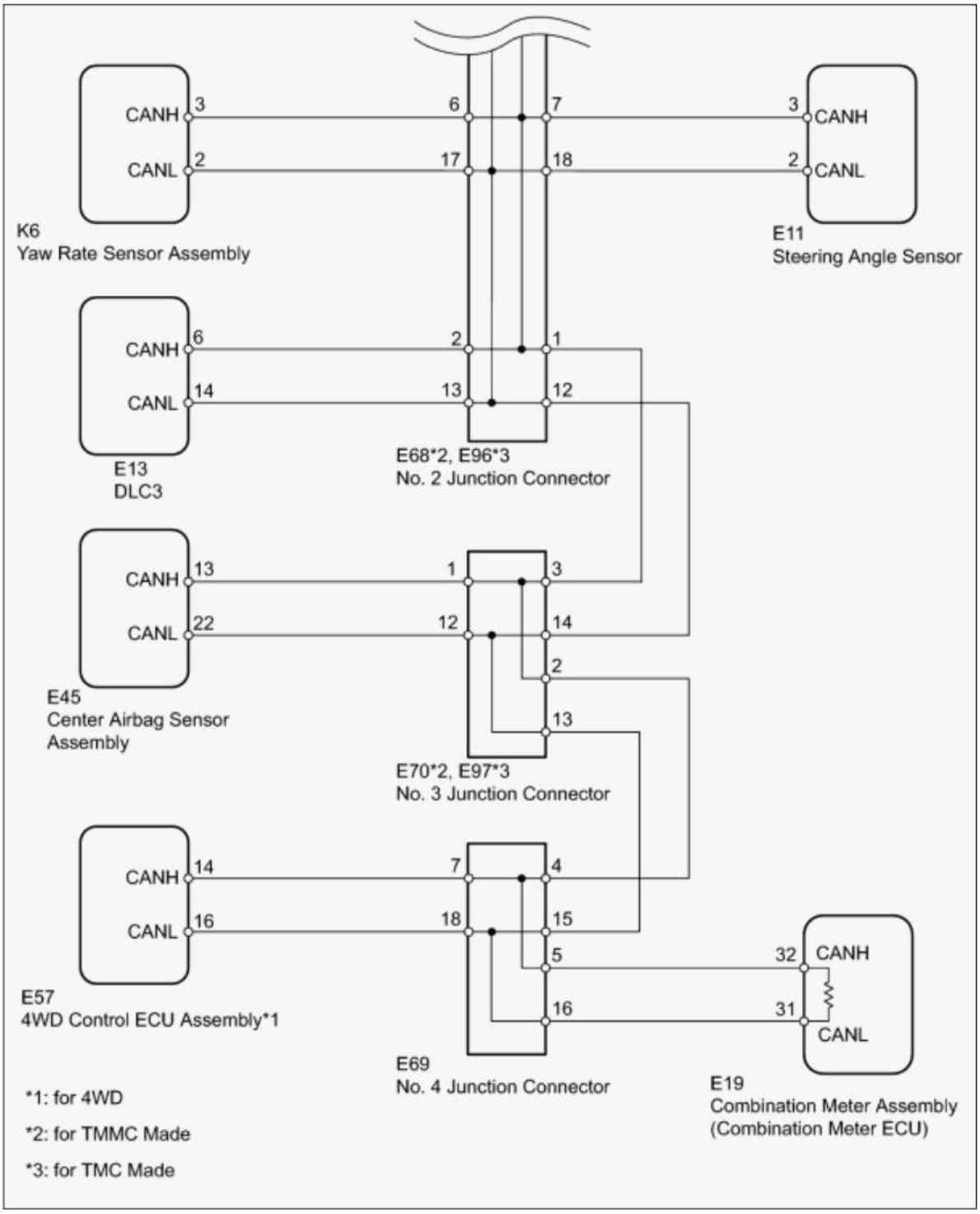
*: for 4WD

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

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HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	**DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

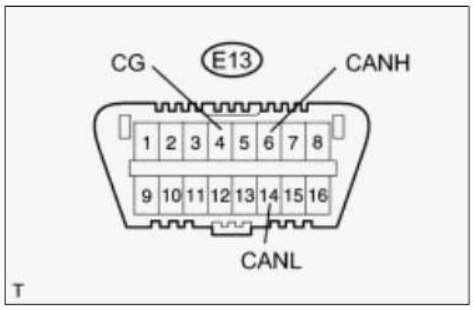
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

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



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

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

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CONNECTED TO DLC3 (CANH, CANL)

OK

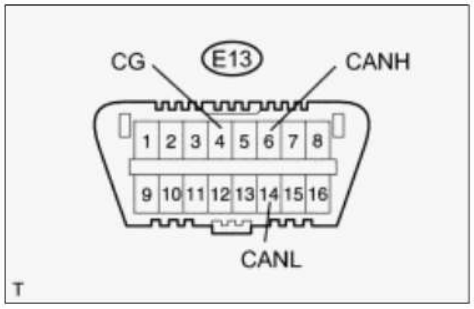
3.	**CONNECT CONNECTOR**

(a) Reconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

4.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR)**



(a) Disconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

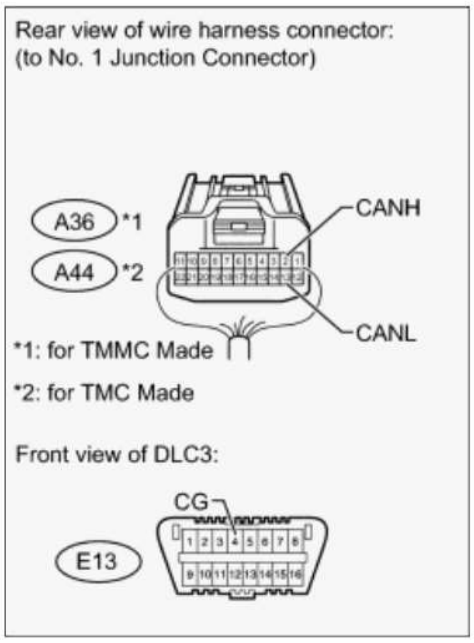
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OK

5.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - ECM)**

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

Standard Resistance:



for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A36-2 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
A36-13 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A44-2 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
A44-13 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

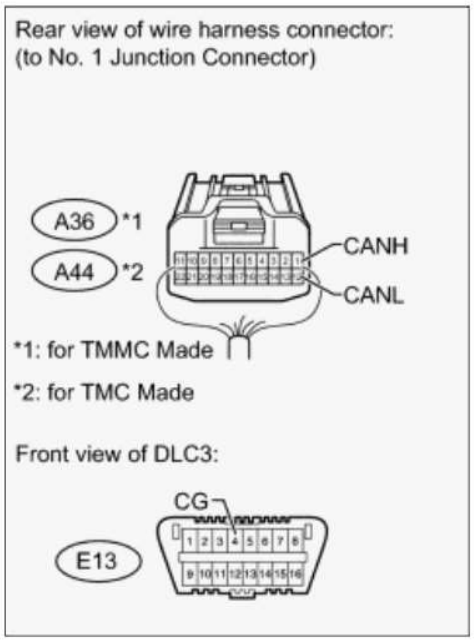
OK

6.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - BRAKE ACTUATOR ASSEMBLY)**

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

Standard Resistance:



for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A36-1 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
A36-12 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A44-1 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
A44-12 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

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

7.	**CONNECT CONNECTOR**

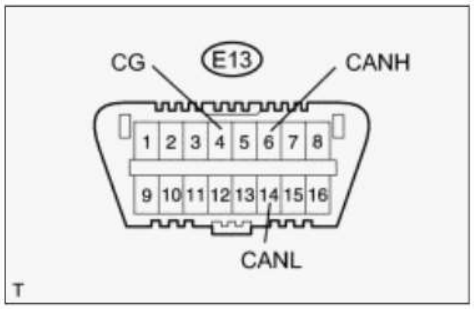
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT ▼

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



(a) Disconnect the A9 ECM connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

Result

RESULT	PROCEED TO
OK (for 2GR-FE)	A
OK (for 2AR-FE)	B
NG	C

B ▶ **REPLACE ECM**

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

A ▶ **REPLACE ECM**

9.	CONNECT CONNECTOR

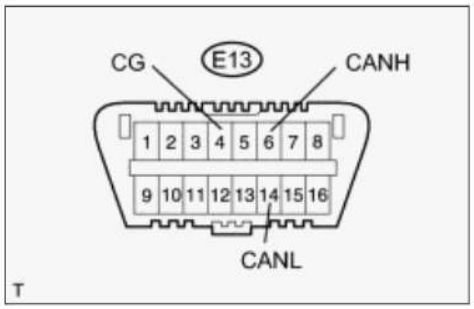
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

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NEXT

10.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (BRAKE ACTUATOR ASSEMBLY)**



(a) Disconnect the A19 brake actuator assembly (skid control ECU) connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO BRAKE ACTUATOR ASSEMBLY (CANH, CANL)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY (SKID CONTROL ECU)**

11.	**CONNECT CONNECTOR**

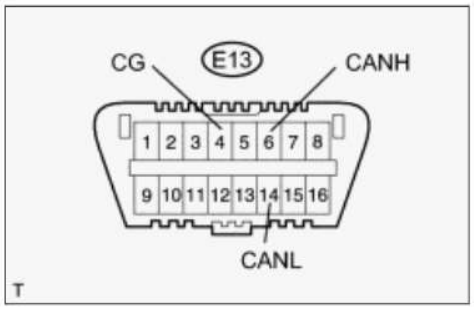
(a) Reconnect the A36*1 or A44*2 No. 1 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

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12.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 3 JUNCTION CONNECTOR, NO. 4 JUNCTION CONNECTOR SIDE)**



(a) Disconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

OK

▼

13.	**CONNECT CONNECTOR**

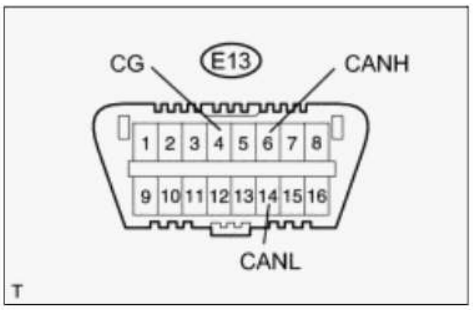
(a) Reconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

NEXT

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14.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 4 JUNCTION CONNECTOR SIDE)**



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

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

OK ▼

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

NOTICE:

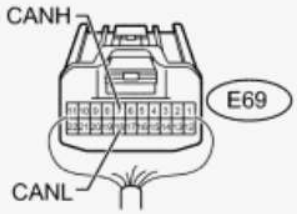
For vehicles without 4WD, go to "Check for Short to GND in CAN Bus Wire (No. 4 Junction Connector - Combination Meter Assembly)".

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

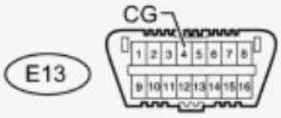
Standard Resistance:

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Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



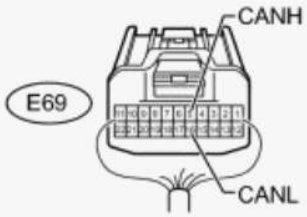
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-7 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E69-18 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

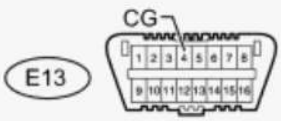
OK ▼

16.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ASSEMBLY)**

Rear view of wire harness connector:
(to No. 4 Junction Connector)



Front view of DLC3:



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E69-5 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E69-16 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

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NG ▶ **CONNECT CONNECTOR**

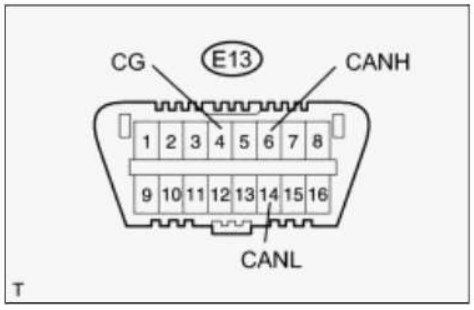
OK ▶ **REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 4 JUNCTION CONNECTOR - NO. 3 JUNCTION CONNECTOR)**

17.	**CONNECT CONNECTOR**

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

NEXT ▼

18.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (4WD CONTROL ECU ASSEMBLY)**



(a) Disconnect the E57 4WD control ECU assembly connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

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

OK ▶ **REPLACE 4WD CONTROL ECU ASSEMBLY**

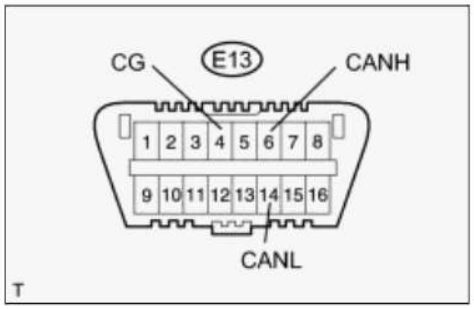
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19.	**CONNECT CONNECTOR**

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

NEXT

20.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (COMBINATION METER ASSEMBLY)**



(a) Disconnect the E19 combination meter assembly (combination meter ECU) connector.

(b) Measure the resistance of the DLC3.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E13-14 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

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

OK ▶ **REPLACE COMBINATION METER ASSEMBLY**

21.	**CONNECT CONNECTOR**

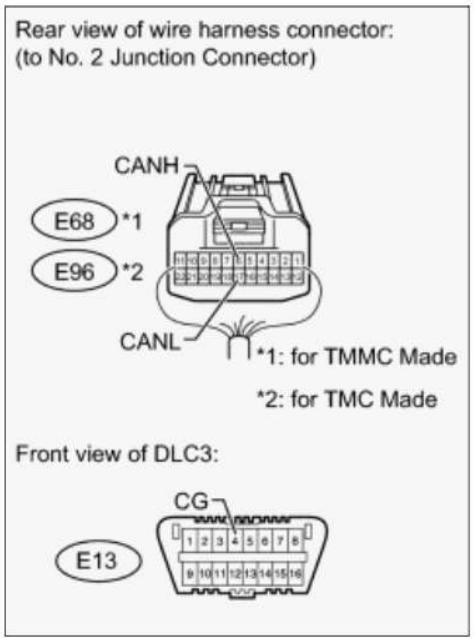
(a) Reconnect the E70*1 or E97*2 No. 3 junction connector connector.

*1: for TMMC Made
*2: for TMC Made

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NEXT

22.	**CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR - YAW RATE SENSOR ASSEMBLY)**



(a) Disconnect the E68*1 or E96*2 No. 2 junction connector connector.

*1: for TMMC Made

*2: for TMC Made

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

Standard Resistance:

for TMMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E68-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E68-17 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

for TMC Made

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E96-6 (CANH) - E13-4 (CG)	Ignition switch off	200 Ω or higher
E96-17 (CANL) - E13-4 (CG)	Ignition switch off	200 Ω or higher

NG ▶ **CONNECT CONNECTOR**

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OK

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSS00KX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Steering Angle Sensor Communication Stop Mode (2011 RAV4)		

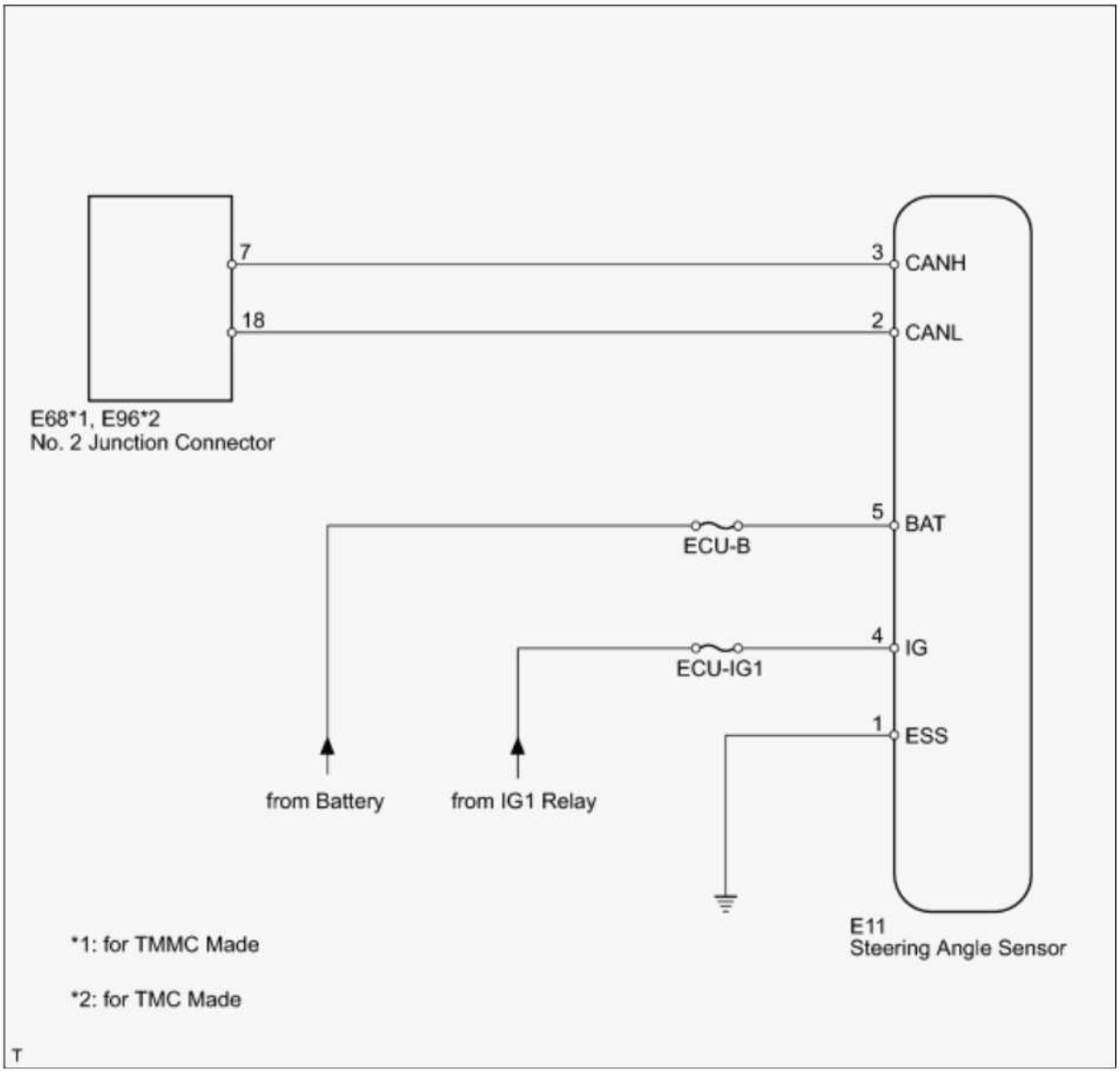
Steering Angle Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Steering Angle Sensor Communication Stop Mode	• "Steering Angle Sensor" is not displayed on "CAN Bus Check". • "Steering Angle Sensor Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside 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 wire and the branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder buzzer are not in operation.
- Before measuring the resistance, leave the vehicle for at least 1 minute and do not operate the ignition switch, any switches or doors. If doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

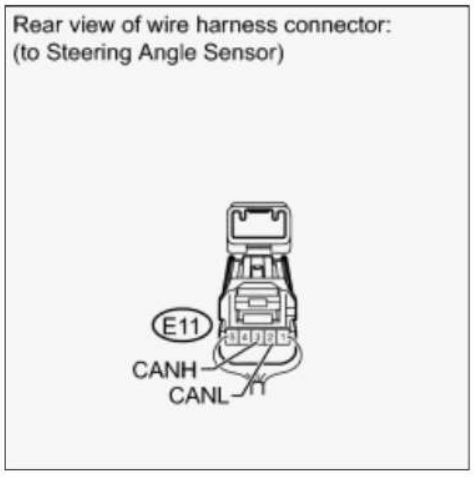
2.	CHECK FOR OPEN IN CAN BUS WIRE (STEERING ANGLE SENSOR BRANCH WIRE)

(a) Disconnect the E11 steering angle sensor connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-3 (CANH) - E11-2 (CANL)	Ignition switch off	54 to 69 Ω



NG ▶ **REPAIR OR REPLACE STEERING ANGLE SENSOR BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK

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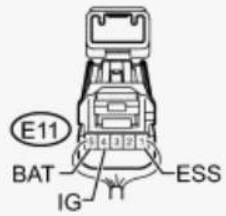
3.	**CHECK HARNESS AND CONNECTOR (STEERING ANGLE SENSOR - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

Rear view of wire harness connector:
(to Steering Angle Sensor)



(b) Disconnect the E11 steering angle sensor connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-1 (ESS) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-5 (BAT) - Body ground	Always	11 to 14 V
E11-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE STEERING ANGLE SENSOR**

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Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSV012X
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: SYSTEM DESCRIPTION (2011 RAV4)		

SYSTEM DESCRIPTION

1. BRIEF DESCRIPTION

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

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

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

(d) The CAN has 2 resistors of 120 Ω which are necessary to communicate with the main wire.

2. DEFINITION OF TERMS

(a) Main wire

(1) The main wire is a wire harness between the 2 termination circuits on the bus (communication line). 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 wire to an ECU or sensor.

(c) Termination circuit

(1) The termination circuit is a circuit which converts the communication current used in CAN communication into the bus voltage. It consists of a resistor and capacitor. 2 termination circuits are necessary on a bus.

(d) CAN J/C

(1) The CAN J/C is a junction designed for CAN communication, which contains a termination circuit.

3. CIRCUIT DESCRIPTION

(a) In vehicles equipped with the smart key system, the CAN communication system is composed of a main body ECU and 2 bus circuits (CAN No. 1 bus and CAN No. 2 bus), which are controlled by the main body ECU.

(b) The CAN No. 1 bus and CAN No. 2 bus each have termination circuits which use 120 Ω of resistance, and are capable of high speed communication (500 kbps for the CAN No. 1 bus, and 250 kbps for the CAN No. 2 bus).

4. ECU OR SENSOR WHICH COMMUNICATE VIA CAN COMMUNICATION SYSTEM

(a) Brake actuator assembly (skid control ECU)

(b) Power steering ECU assembly

(c) Steering angle sensor

(d) Yaw rate sensor assembly

(e) ECM

(f) Center airbag sensor assembly

(g) Air conditioning amplifier assembly

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(h) Combination meter assembly (combination meter ECU)

(i) Main body ECU (driver side junction block)

(j) 4WD control ECU assembly*1

(k) ECU aggregation box assembly (certification ECU)*2

*1: for 4WD

*2: w/ Smart Key System

5. DIAGNOSTIC CODES FOR CAN COMMUNICATION SYSTEM

(a) DTCs for the CAN communication system are as follows: U0073, U0100, U0122, U0123, U0124, U0126, U0129, B1207, B1499 and B2326.

6. NOTES REGARDING TROUBLESHOOTING

(a) Trouble in the CAN bus (communication line) can be checked through the DLC3 (except when there is a wire break in the branch wire of the DLC3).

NOTICE:

Do not connect the tester directly to the DLC3. Be sure to use a service wire.

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

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



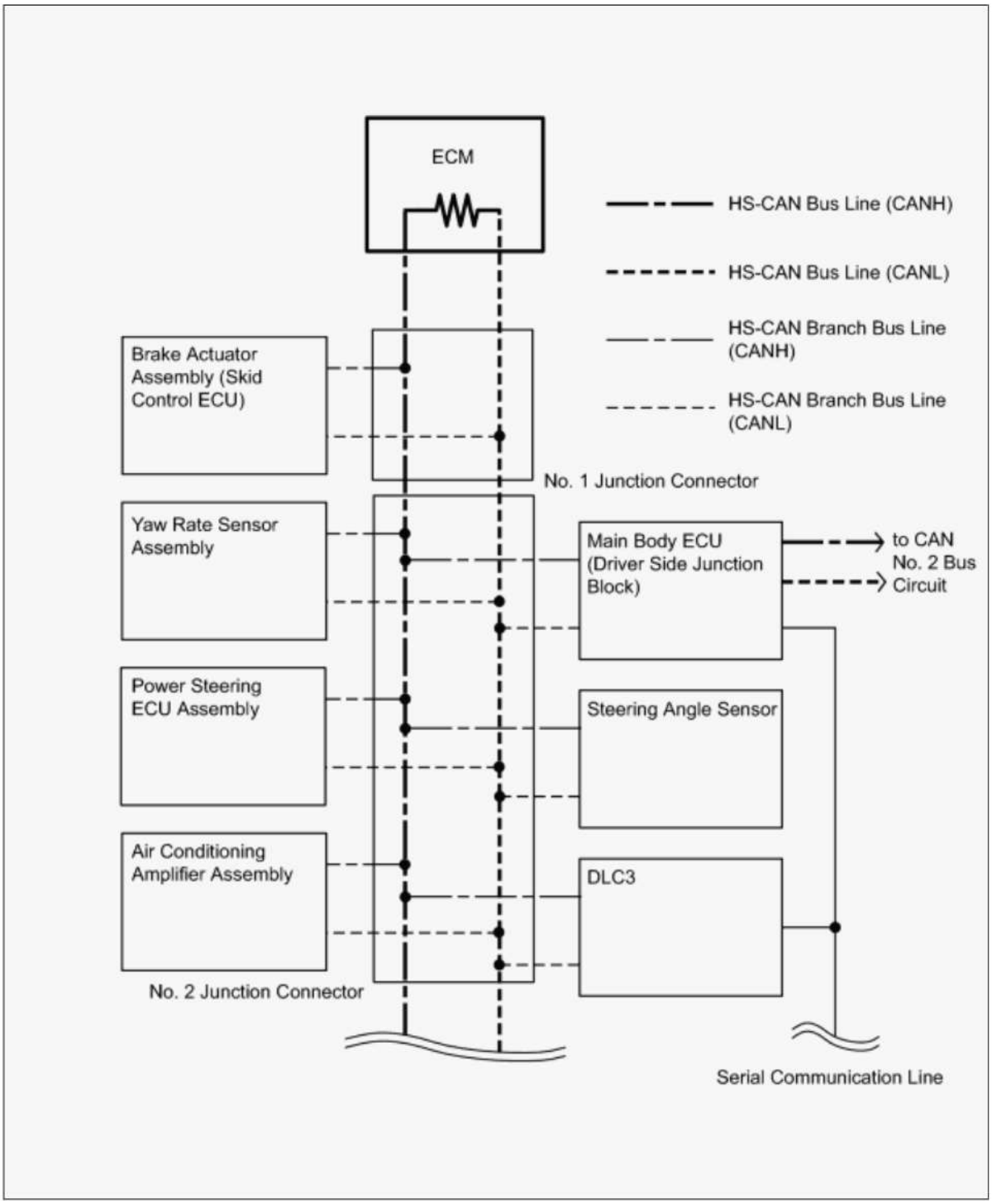


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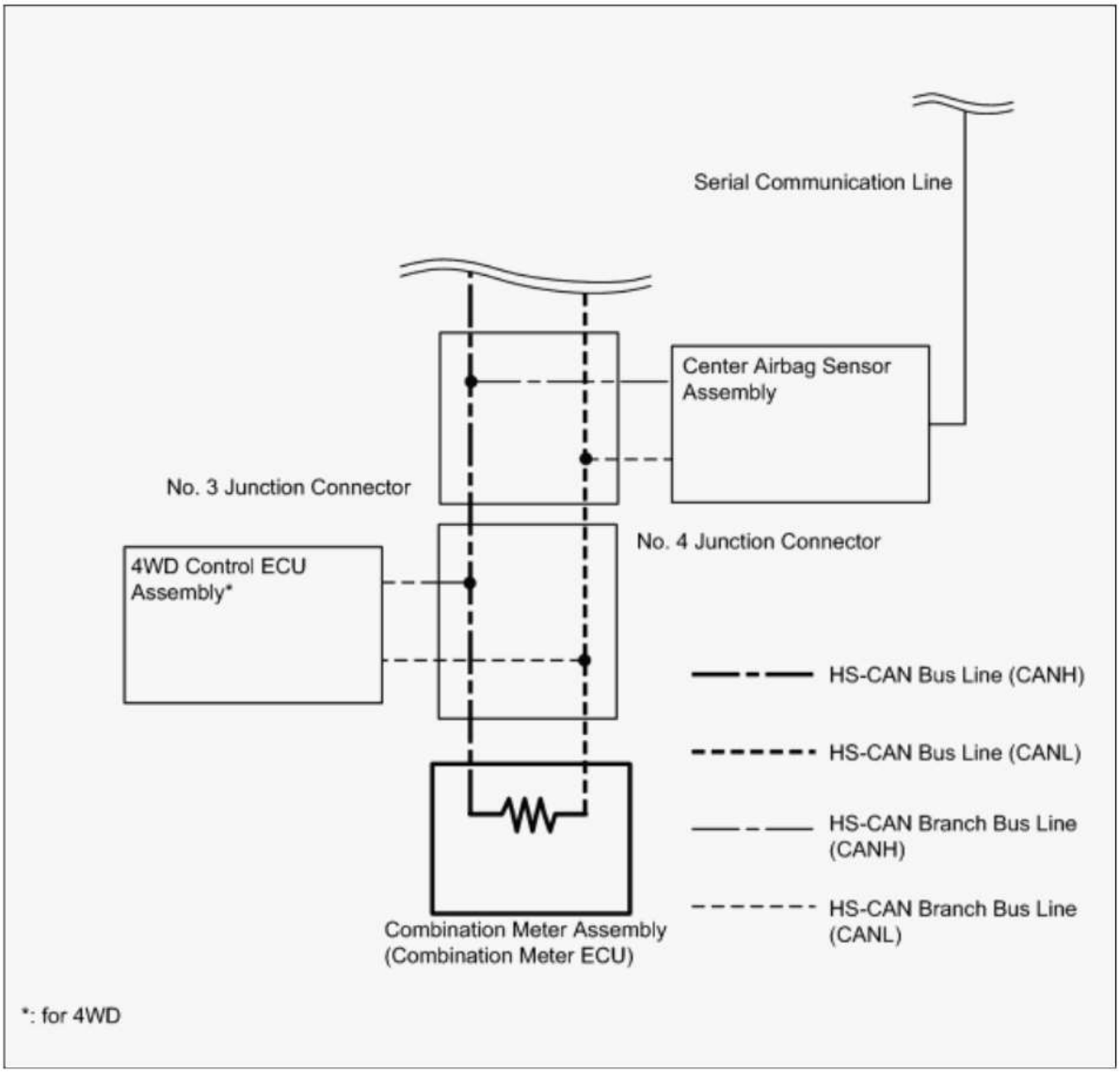
Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSX00TX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: SYSTEM DIAGRAM (2011 RAV4)		

SYSTEM DIAGRAM

1. CAN NO. 1 BUS CIRCUIT



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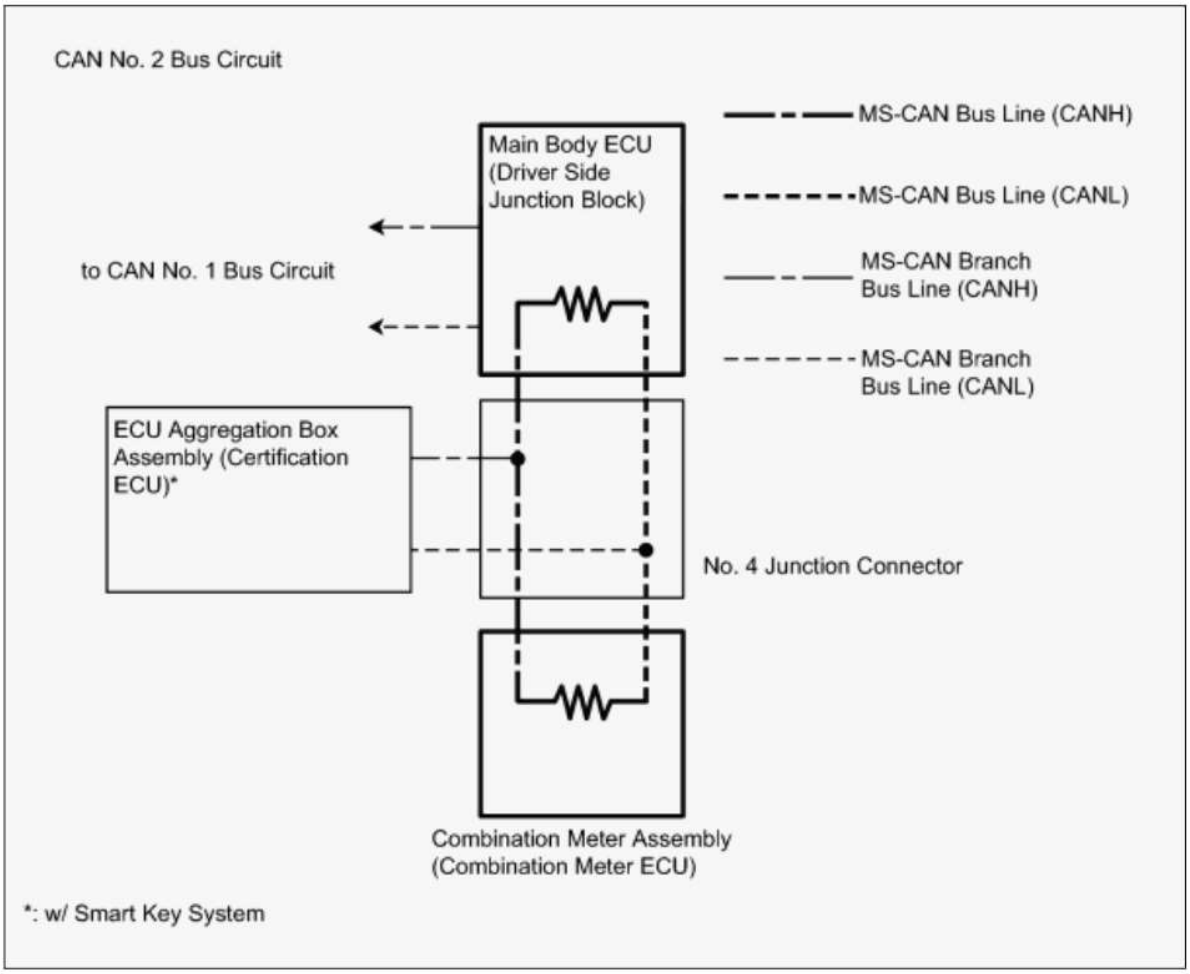


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HINT:

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

2. CAN NO. 2 BUS CIRCUIT



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Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSQ01XX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: TERMINALS OF ECU (2011 RAV4)		

TERMINALS OF ECU

NOTICE:

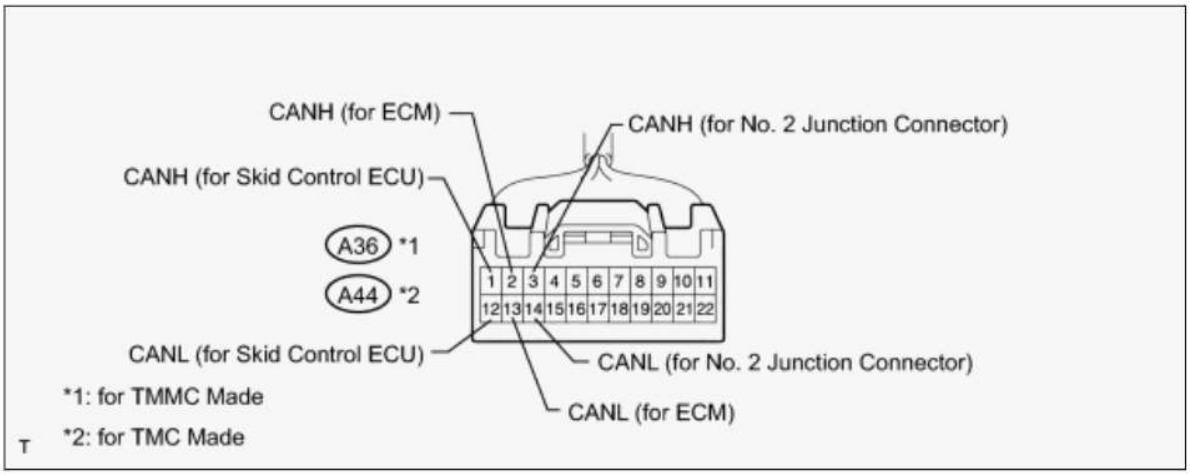
- Turn the ignition switch off before measuring the resistance of the main wire and the branch wire.
- After the ignition switch is turned off, check that the key reminder warning system and light reminder buzzer are not in operation.
- Before measuring the resistance, leave the vehicle as is for at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

HINT:

Operating the ignition switch, any other switches or the doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

1. JUNCTION CONNECTOR

(a) No. 1 junction connector



for TMMC Made

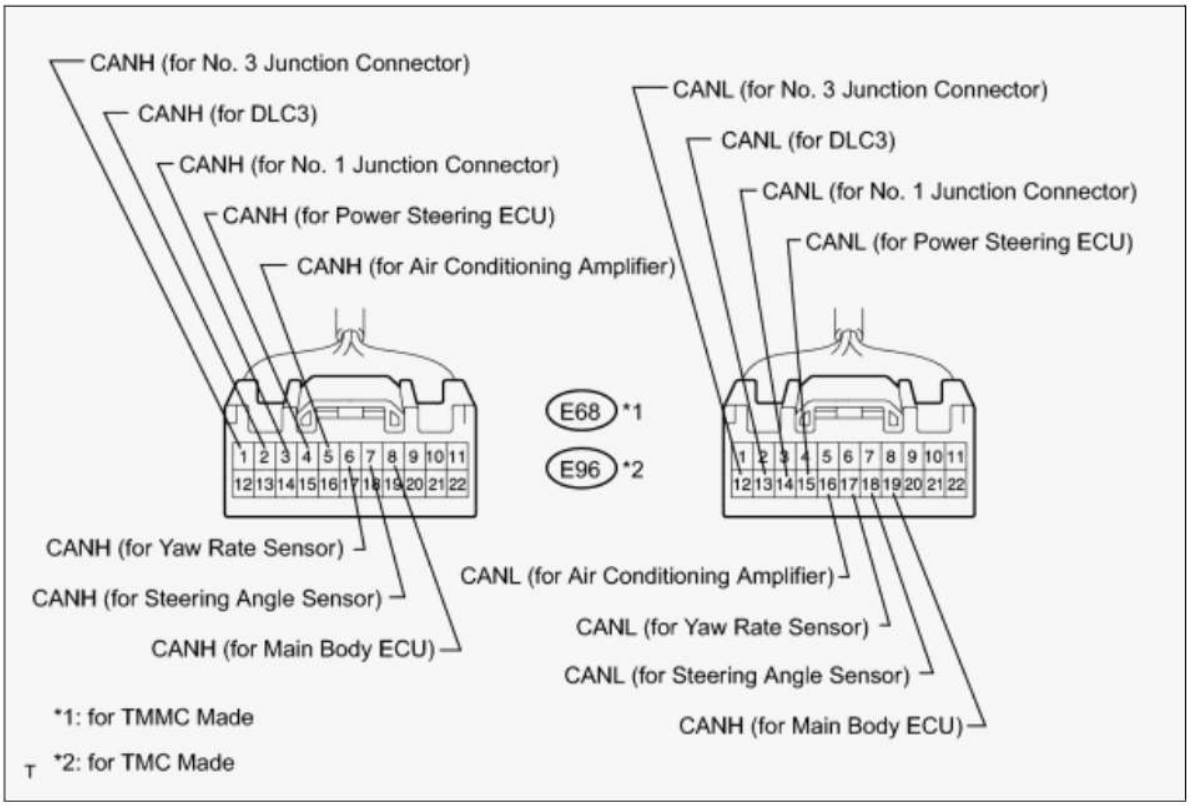
NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
A36-1 (CANH)	R	Skid control ECU
A36-12 (CANL)	W	
A36-2 (CANH)	Y	ECM
A36-13 (CANL)	W	
A36-3 (CANH)	L	No. 2 junction connector
A36-14 (CANL)	W	

for TMC Made

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NO. 1 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
A44-1 (CANH)	R	Skid control ECU
A44-12 (CANL)	W	
A44-2 (CANH)	Y	ECM
A44-13 (CANL)	W	
A44-3 (CANH)	L	No. 2 junction connector
A44-14 (CANL)	W	

(b) No. 2 junction connector



for TMMC Made

NO. 2 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E68-1 (CANH)	SB	No. 3 junction connector
E68-12 (CANL)	W	
E68-2 (CANH)	B	DLC3
E68-13 (CANL)	W	
E68-3 (CANH)	L	No. 1 junction connector
E68-14 (CANL)	W	
E68-4 (CANH)	Y	Power steering ECU

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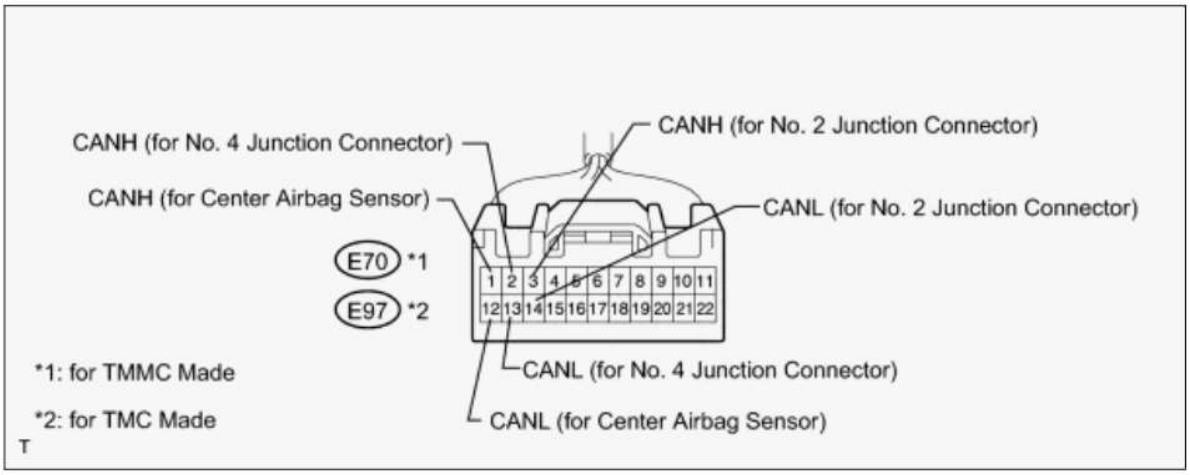
NO. 2 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E68-15 (CANL)	W	
E68-5 (CANH)	V	Air conditioning amplifier
E68-16 (CANL)	W	
E68-6 (CANH)	L	Yaw rate sensor
E68-17 (CANL)	W	
E68-7 (CANH)	BR	Steering angle sensor
E68-18 (CANL)	W	
E68-8 (CANH)	R	Main body ECU
E68-19 (CANL)	W	

for TMC Made

NO. 2 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E96-1 (CANH)	SB	No. 3 junction connector
E96-12 (CANL)	W	
E96-2 (CANH)	B	DLC3
E96-13 (CANL)	W	
E96-3 (CANH)	L	No. 1 junction connector
E96-14 (CANL)	W	
E96-4 (CANH)	Y	Power steering ECU
E96-15 (CANL)	W	
E96-5 (CANH)	V	Air conditioning amplifier
E96-16 (CANL)	W	
E96-6 (CANH)	L	Yaw rate sensor
E96-17 (CANL)	W	
E96-7 (CANH)	BR	Steering angle sensor
E96-18 (CANL)	W	
E96-8 (CANH)	R	Main body ECU
E96-19 (CANL)	W	

(c) No. 3 junction connector

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for TMMC Made

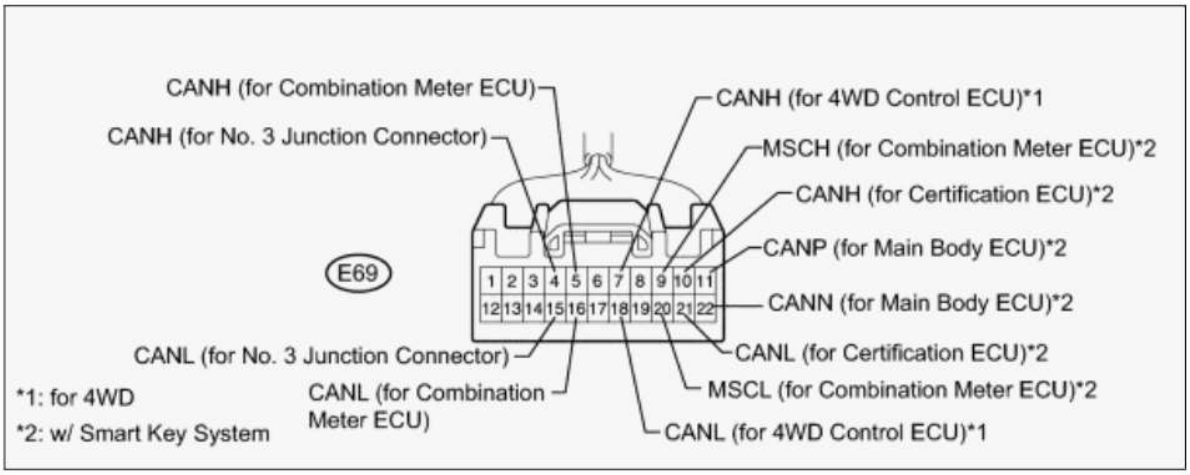
NO. 3 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E70-1 (CANH)	B	Center airbag sensor
E70-12 (CANL)	W	
E70-2 (CANH)	V	No. 4 junction connector
E70-13 (CANL)	W	
E70-3 (CANH)	SB	No. 2 junction connector
E70-14 (CANL)	W	

for TMC Made

NO. 3 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E97-1 (CANH)	B	Center airbag sensor
E97-12 (CANL)	W	
E97-2 (CANH)	V	No. 4 junction connector
E97-13 (CANL)	W	
E97-3 (CANH)	SB	No. 2 junction connector
E97-14 (CANL)	W	

(d) No. 4 junction connector

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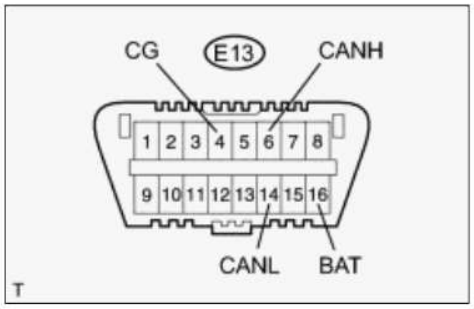
NO. 4 JUNCTION CONNECTOR	WIRING COLOR	CONNECT TO
E69-4 (CANH)	V	No. 3 junction connector
E69-15 (CANL)	W	
E69-5 (CANH)	G	Combination meter ECU
E69-16 (CANL)	W	
E69-7 (CANH)	P	4WD control ECU*1
E69-18 (CANL)	W	
E69-9 (MSCH)	LG	Combination meter ECU*2
E69-20 (MSCL)	W	
E69-10 (CANH)	SB	Certification ECU*2
E69-21 (CANL)	W	
E69-11 (CANP)	Y	Main Body ECU*2
E69-22 (CANN)	W	

*1: for 4WD

*2: w/ Smart Key System

2. CHECK DLC3

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

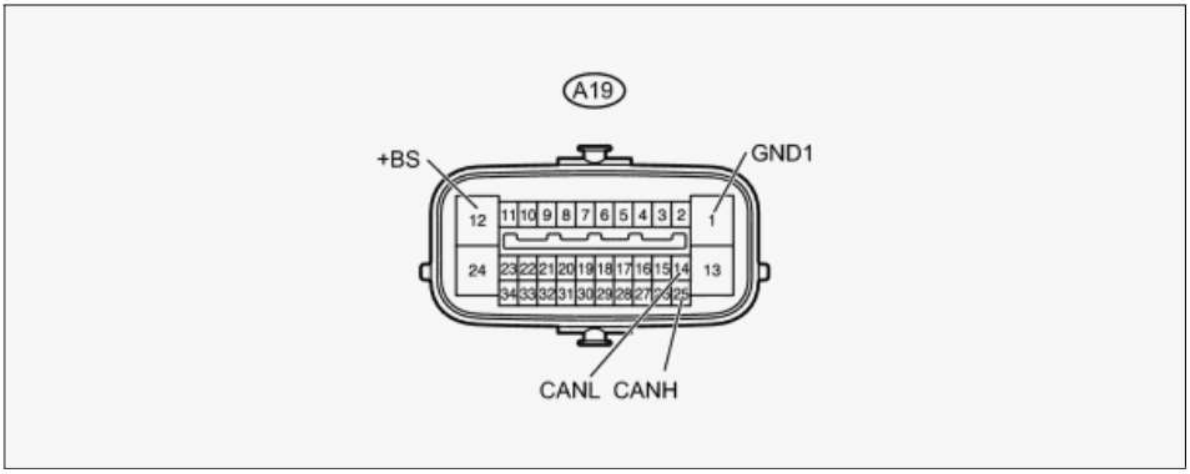


TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E13-6 (CANH) - E13-14 (CANL)	B - W	Ignition switch off	54 to 69 Ω
E13-6 (CANH) - E13-4 (CG)	B - BR	Ignition switch off	200 Ω or higher

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E13-14 (CANL) - E13-4 (CG)	W - BR	Ignition switch off	200 Ω or higher
E13-6 (CANH) - E13-16 (BAT)	B - L	Ignition switch off	6 kΩ or higher
E13-14 (CANL) - E13-16 (BAT)	W - L	Ignition switch off	6 kΩ or higher

3. CHECK BRAKE ACTUATOR ASSEMBLY (SKID CONTROL ECU)

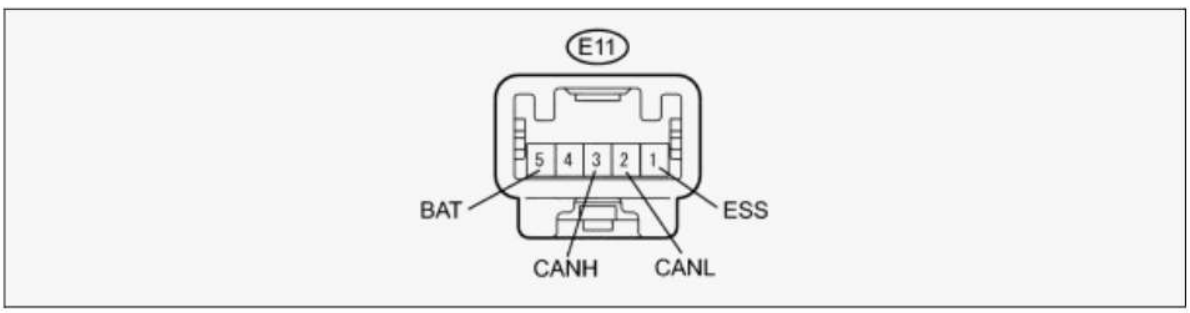


(a) Disconnect the A19 ECU connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
A19-25 (CANH) - A19-14 (CANL)	R - W	Ignition switch off	54 to 69 Ω
A19-25 (CANH) - A19-1 (GND1)	R - W-B	Ignition switch off	200 Ω or higher
A19-14 (CANL) - A19-1 (GND1)	W - W-B	Ignition switch off	200 Ω or higher
A19-25 (CANH) - A19-12 (+BS)	R - W	Ignition switch off	6 kΩ or higher
A19-14 (CANL) - A19-12 (+BS)	W - W	Ignition switch off	6 kΩ or higher

4. CHECK STEERING ANGLE SENSOR



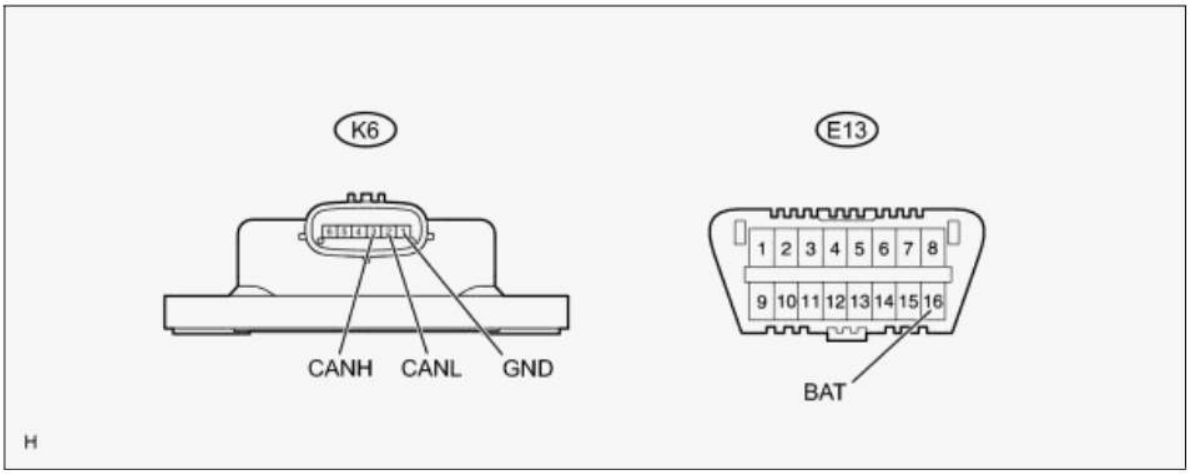
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(a) Disconnect the E11 sensor connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E11-3 (CANH) - E11-2 (CANL)	BR - W	Ignition switch off	54 to 69 Ω
E11-3 (CANH) - E11-1 (ESS)	BR - W-B	Ignition switch off	200 Ω or higher
E11-2 (CANL) - E11-1 (ESS)	W - W-B	Ignition switch off	200 Ω or higher
E11-3 (CANH) - E11-5 (BAT)	BR - R	Ignition switch off	6 kΩ or higher
E11-2 (CANL) - E11-5 (BAT)	W - R	Ignition switch off	6 kΩ or higher

5. CHECK YAW RATE SENSOR ASSEMBLY



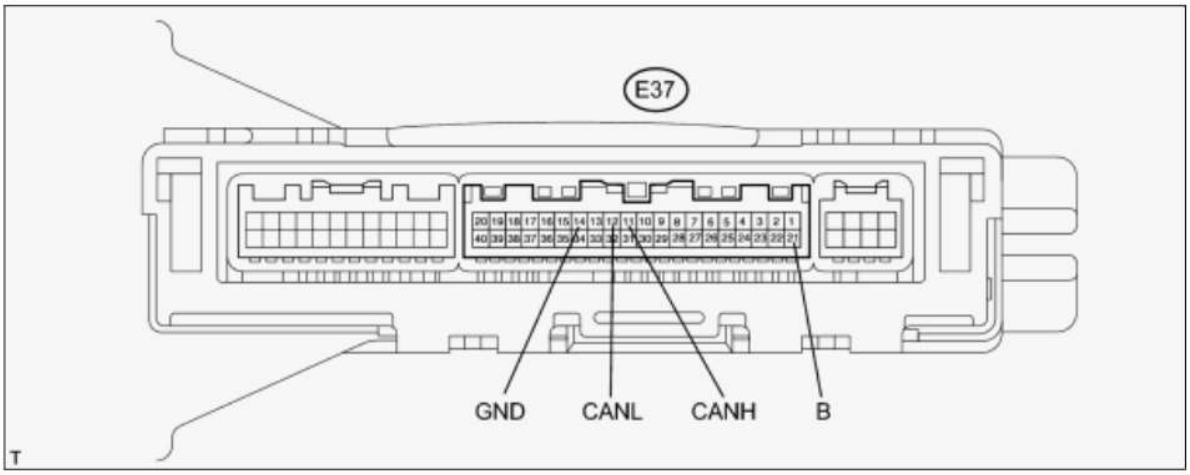
(a) Disconnect the K6 sensor connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
K6-3 (CANH) - K6-2 (CANL)	L - W	Ignition switch off	54 to 69 Ω
K6-3 (CANH) - K6-1 (GND)	L - W-B	Ignition switch off	200 Ω or higher
K6-2 (CANL) - K6-1 (GND)	W - W-B	Ignition switch off	200 Ω or higher
K6-3 (CANH) - E13-16 (BAT)	L - L	Ignition switch off	6 kΩ or higher
K6-2 (CANL) - E13-16 (BAT)	W - L	Ignition switch off	6 kΩ or higher

6. CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (for Automatic Air Conditioning System)

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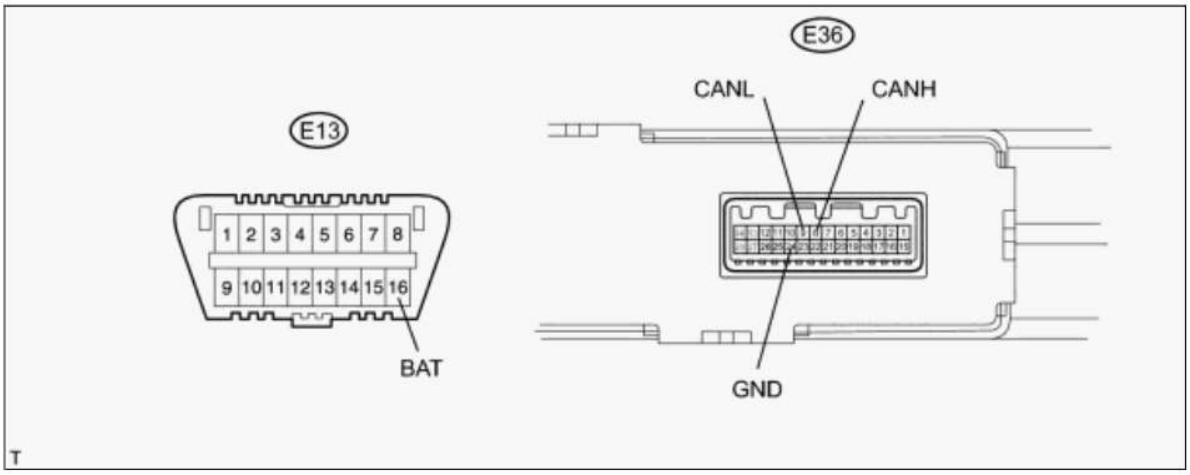


(a) Disconnect the E37 amplifier connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E37-11 (CANH) - E37-12 (CANL)	V - W	Ignition switch off	54 to 69 Ω
E37-11 (CANH) - E37-14 (GND)	V - W-B	Ignition switch off	200 Ω or higher
E37-12 (CANL) - E37-14 (GND)	W - W-B	Ignition switch off	200 Ω or higher
E37-11 (CANH) - E37-21 (B)	V - R	Ignition switch off	6 kΩ or higher
E37-12 (CANL) - E37-21 (B)	W - R	Ignition switch off	6 kΩ or higher

7. CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (for Manual Air Conditioning System)



(a) Disconnect the E36 amplifier connector.

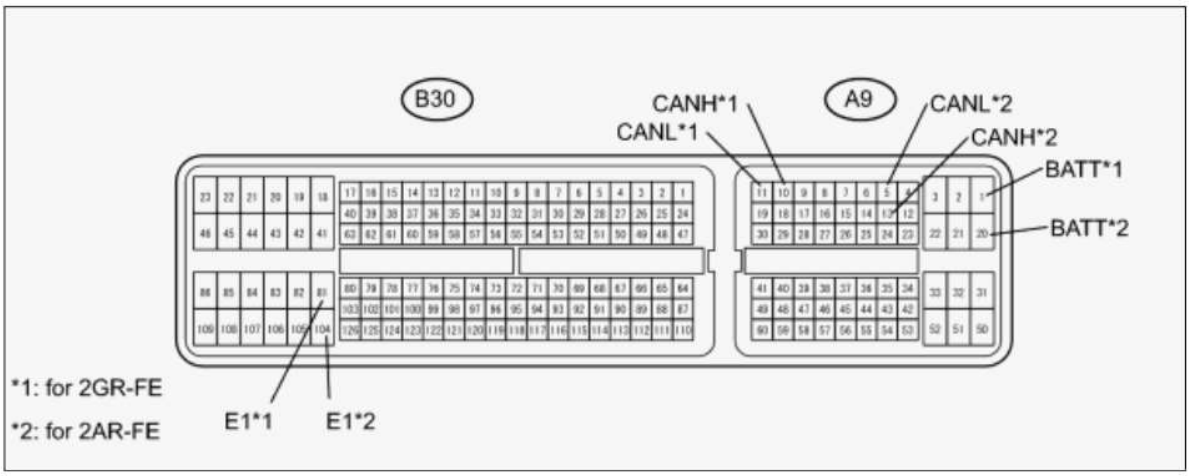
(b) Measure the resistance according to the value(s) in the table below.

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E36-8 (CANH) - E36-9 (CANL)	V - W	Ignition switch off	54 to 69 Ω

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TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E36-8 (CANH) - E36-24 (GND)	V - W-B	Ignition switch off	200 Ω or higher
E36-9 (CANL) - E36-24 (GND)	W - W-B	Ignition switch off	200 Ω or higher
E36-8 (CANH) - E13-16 (BAT)	V - L	Ignition switch off	6 kΩ or higher
E36-9 (CANL) - E13-16 (BAT)	W - L	Ignition switch off	6 kΩ or higher

8. CHECK ECM



(a) Disconnect the A9 and B30 ECM connectors.

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

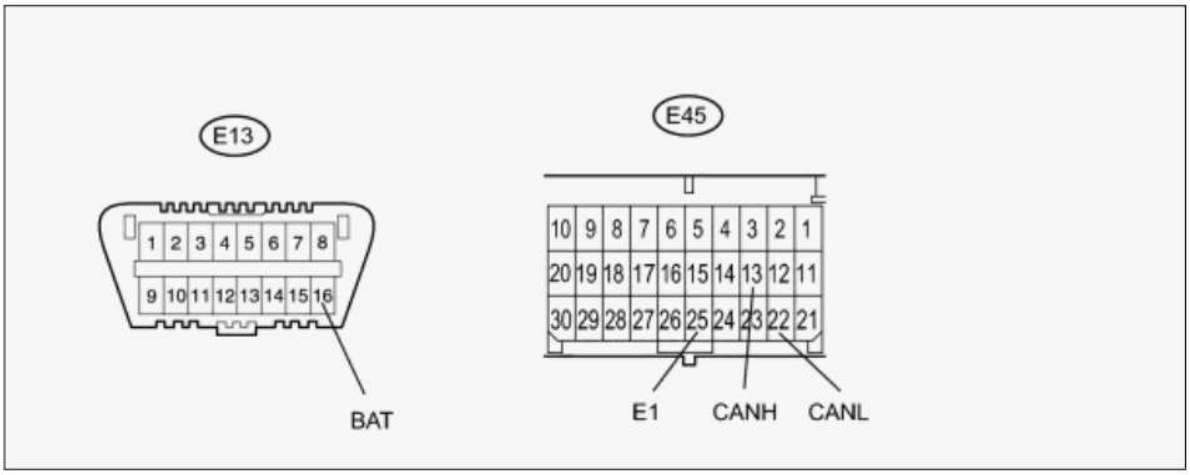
TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
A9-10 (CANH) - A9-11 (CANL)*1	Y - W	Ignition switch off	108 to 132 Ω
A9-10 (CANH) - B30-81 (E1)*1	Y - BR	Ignition switch off	200 Ω or higher
A9-11 (CANL) - B30-81 (E1)*1	W - BR	Ignition switch off	200 Ω or higher
A9-10 (CANH) - A9-1 (BATT)*1	Y - W	Ignition switch off	6 kΩ or higher
A9-11 (CANL) - A9-1 (BATT)*1	W - W	Ignition switch off	6 kΩ or higher
A9-13 (CANH) - A9-5 (CANL)*2	Y - W	Ignition switch off	108 to 132 Ω
A9-13 (CANH) - B30-104 (E1)*2	Y - BR	Ignition switch off	200 Ω or higher
A9-5 (CANL) - B30-104 (E1)*2	W - BR	Ignition switch off	200 Ω or higher
A9-13 (CANH) - A9-20 (BATT)*2	Y - W	Ignition switch off	6 kΩ or higher
A9-5 (CANL) - A9-20 (BATT)*2	W - W	Ignition switch off	6 kΩ or higher

*1: for 2GR-FE

*2: for 2AR-FE

9. CHECK CENTER AIRBAG SENSOR ASSEMBLY

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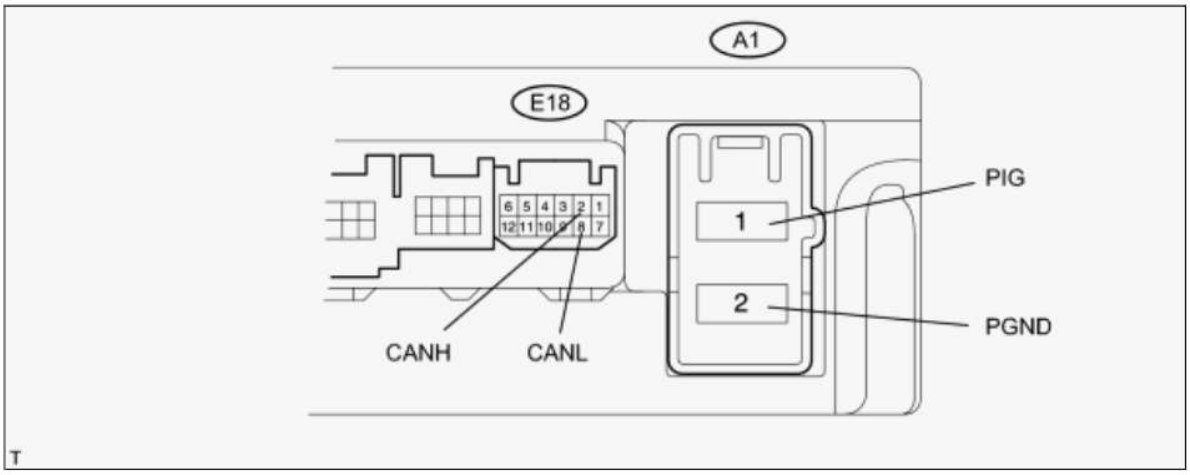


(a) Disconnect the E45 sensor connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E45-13 (CANH) - E45-22 (CANL)	B - W	Ignition switch off	54 to 69 Ω
E45-13 (CANH) - E45-25 (E1)	B - W-B	Ignition switch off	200 Ω or higher
E45-22 (CANL) - E45-25 (E1)	W - W-B	Ignition switch off	200 Ω or higher
E45-13 (CANH) - E13-16 (BAT)	B - L	Ignition switch off	6 kΩ or higher
E45-22 (CANL) - E13-16 (BAT)	W - L	Ignition switch off	6 kΩ or higher

10. CHECK POWER STEERING ECU ASSEMBLY



(a) Disconnect the A1 and E18 ECU connectors.

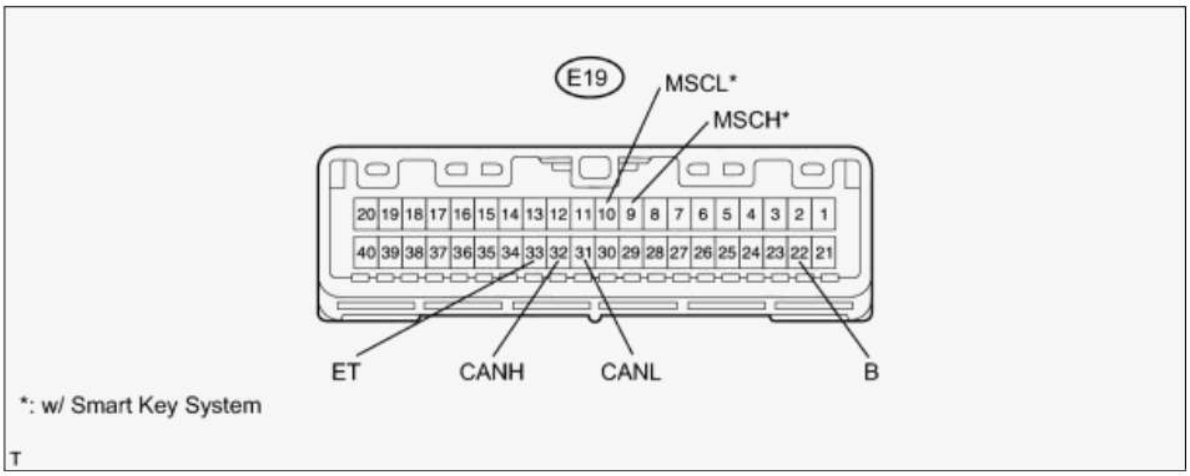
(b) Measure the resistance according to the value(s) in the table below.

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E18-2 (CANH) - E18-8 (CANL)	Y - W	Ignition switch off	54 to 69 Ω

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TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E18-2 (CANH) - A1-2 (PGND)	Y - W-B	Ignition switch off	200 Ω or higher
E18-8 (CANL) - A1-2 (PGND)	W - W-B	Ignition switch off	200 Ω or higher
E18-2 (CANH) - A1-1 (PIG)	Y - W-B	Ignition switch off	6 kΩ or higher
E18-8 (CANL) - A1-1 (PIG)	W - W-B	Ignition switch off	6 kΩ or higher

11. CHECK COMBINATION METER ASSEMBLY (COMBINATION METER ECU)



(a) Disconnect the E19 ECU connector.

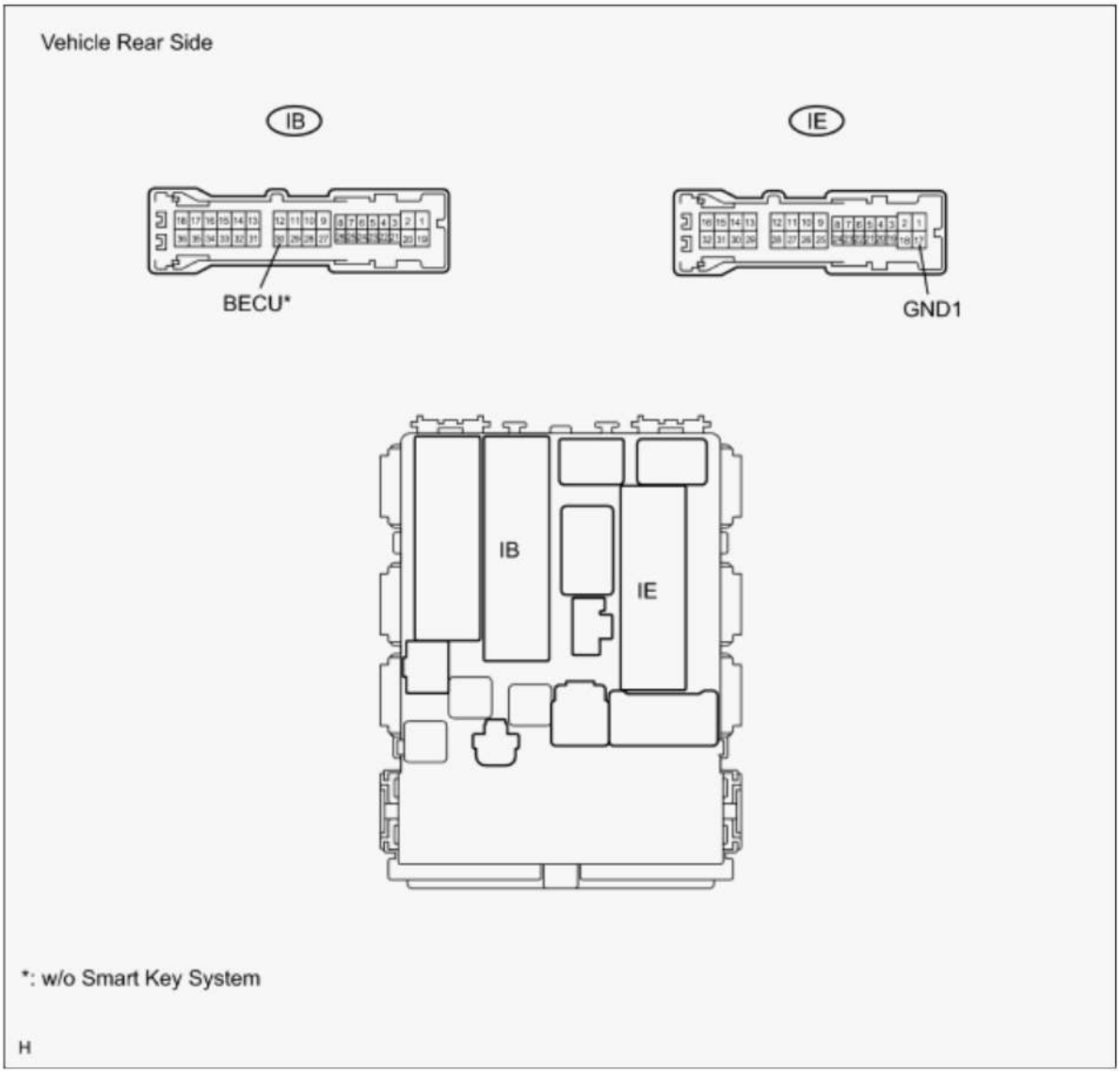
(b) Measure the resistance according to the value(s) in the table below.

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E19-32 (CANH) - E19-31 (CANL)	G - W	Ignition switch off	108 to 132 Ω
E19-32 (CANH) - E19-33 (ET)	G - BR	Ignition switch off	200 Ω or higher
E19-31 (CANL) - E19-33 (ET)	W - BR	Ignition switch off	200 Ω or higher
E19-32 (CANH) - E19-22 (B)	G - R	Ignition switch off	6 kΩ or higher
E19-31 (CANL) - E19-22 (B)	W - R	Ignition switch off	6 kΩ or higher
E19-9 (MSCH) - E19-10 (MSCL)*	LG - W	Ignition switch off	108 to 132 Ω
E19-9 (MSCH) - E19-33 (ET)*	LG - BR	Ignition switch off	200 Ω or higher
E19-10 (MSCL) - E19-33 (ET)*	W - BR	Ignition switch off	200 Ω or higher
E19-9 (MSCH) - E19-22 (B)*	LG - R	Ignition switch off	6 kΩ or higher
E19-10 (MSCL) - E19-22 (B)*	W - R	Ignition switch off	6 kΩ or higher

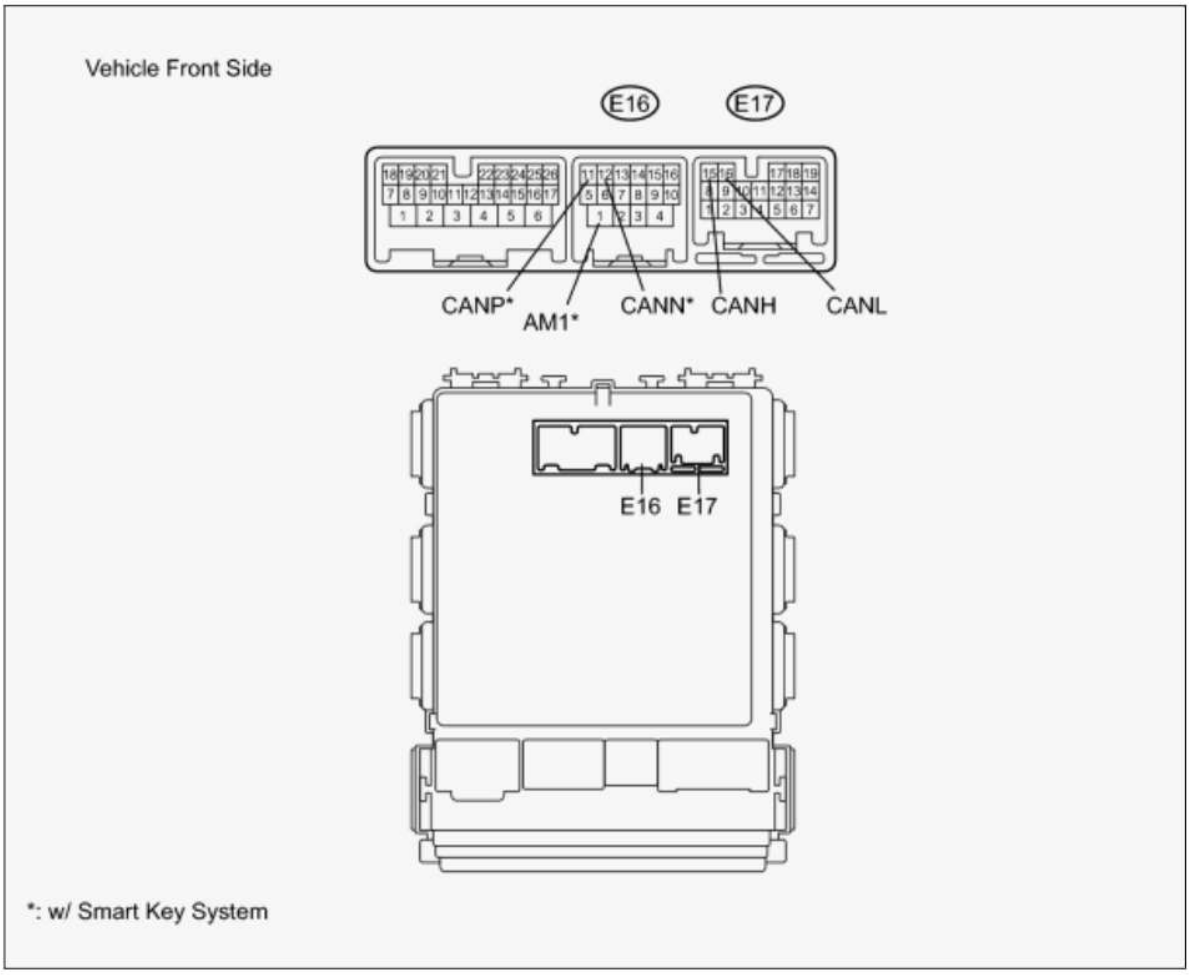
*: w/ Smart Key System

12. CHECK MAIN BODY ECU (DRIVER SIDE JUNCTION BLOCK)

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(a) Disconnect the IB*1 and IE junction block connectors.

*1: w/o Smart Key System

(b) Disconnect the E16*2 and E17 ECU connectors.

*2: w/ Smart Key System

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

w/o Smart Key System

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E17-15 (CANH) - E17-16 (CANL)	R - W	Ignition switch off	54 to 69 Ω
E17-15 (CANH) - IE-17 (GND1)	R - W-B	Ignition switch off	200 Ω or higher
E17-16 (CANL) - IE-17 (GND1)	W - W-B	Ignition switch off	200 Ω or higher
E17-15 (CANH) - IB-30 (BECU)	R - R	Ignition switch off	6 kΩ or higher
E17-16 (CANL) - IB-30 (BECU)	W - R	Ignition switch off	6 kΩ or higher

w/ Smart Key System

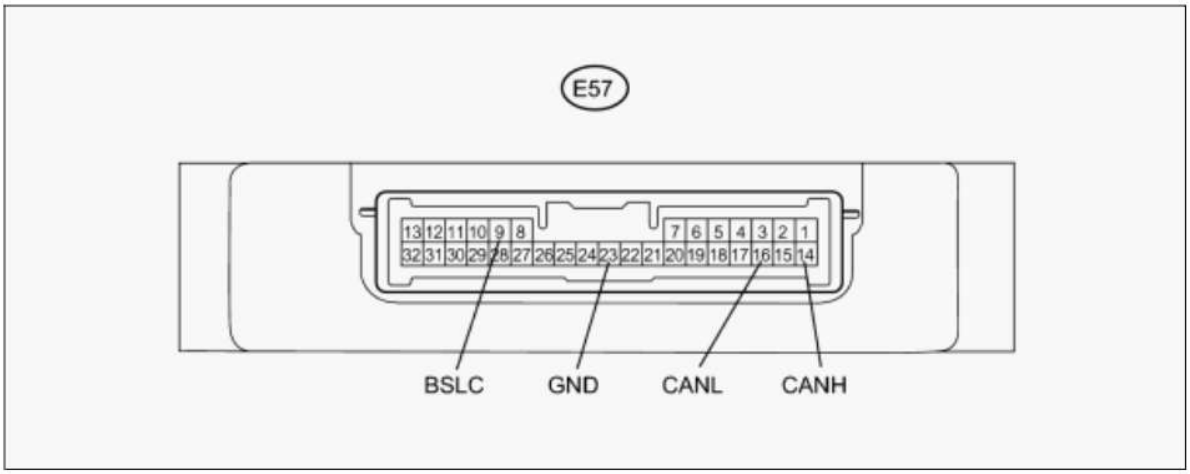
TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E16-11 (CANP) - E16-12 (CANN)	Y - W	Ignition switch off	108 to 132 Ω

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TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E16-11 (CANP) - IE-17 (GND1)	Y - W-B	Ignition switch off	200 Ω or higher
E16-12 (CANN) - IE-17 (GND1)	W - W-B	Ignition switch off	200 Ω or higher
E16-11 (CANP) - E16-1 (AM1)	Y - W	Ignition switch off	6 kΩ or higher
E16-12 (CANN) - E16-1 (AM1)	W - W	Ignition switch off	6 kΩ or higher

13. CHECK 4WD CONTROL ECU ASSEMBLY

For vehicles with 4WD only.



(a) Disconnect the E57 ECU connector.

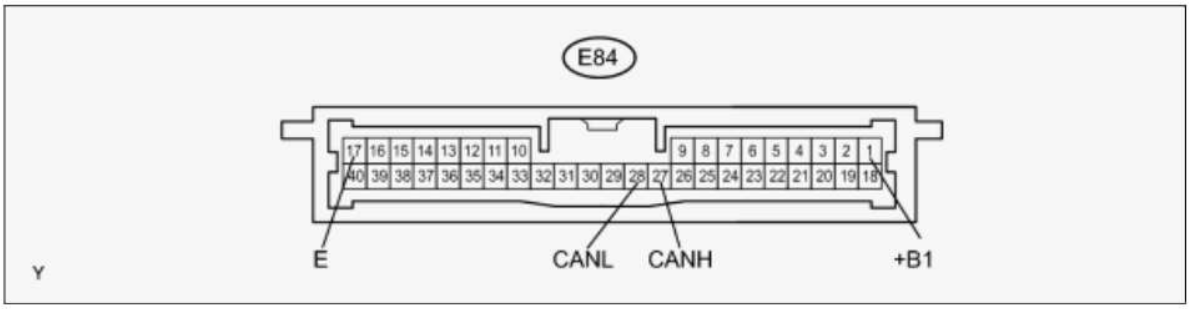
(b) Measure the resistance according to the value(s) in the table below.

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E57-14 (CANH) - E57-16 (CANL)	P - W	Ignition switch off	54 to 69 Ω
E57-14 (CANH) - E57-23 (GND)	P - W-B	Ignition switch off	200 Ω or higher
E57-16 (CANL) - E57-23 (GND)	W - W-B	Ignition switch off	200 Ω or higher
E57-14 (CANH) - E57-9 (BSLC)	P - R	Ignition switch off	6 kΩ or higher
E57-16 (CANL) - E57-9 (BSLC)	W -R	Ignition switch off	6 kΩ or higher

14. CHECK ECU AGGREGATION BOX ASSEMBLY (CERTIFICATION ECU)

For vehicles with the smart key system only.

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(a) Disconnect the E84 ECU connector.

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

TERMINAL NO. (SYMBOL)	WIRING COLOR	SWITCH CONDITION	SPECIFIED CONDITION
E84-27 (CANH) - E84-28 (CANL)	SB - W	Ignition switch off	54 to 69 Ω
E84-27 (CANH) - E84-17 (E)	SB- W-B	Ignition switch off	200 Ω or higher
E84-28 (CANL) - E84-17 (E)	W - W-B	Ignition switch off	200 Ω or higher
E84-27 (CANH) - E84-1 (+B1)	SB - R	Ignition switch off	6 kΩ or higher
E84-28 (CANL) - E84-1 (+B1)	W - R	Ignition switch off	6 kΩ or higher

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Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001RSU00FX
Title: CAN COMMUNICATION: CAN COMMUNICATION SYSTEM: Yaw Rate Sensor Communication Stop Mode (2011 RAV4)		

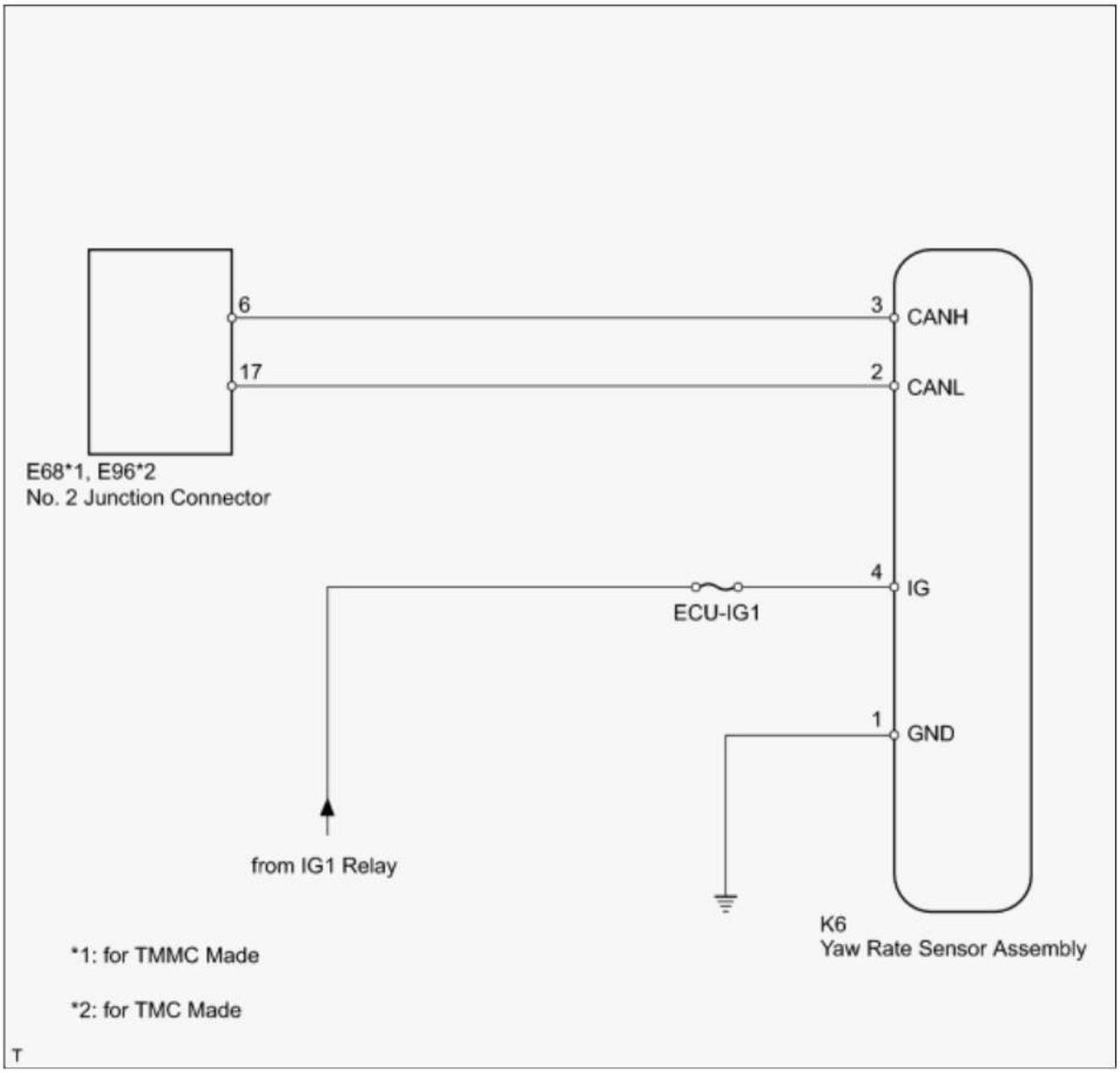
Yaw Rate Sensor Communication Stop Mode

DESCRIPTION

DETECTION ITEM	SYMPTOM	TROUBLE AREA
Yaw Rate Sensor Communication Stop Mode	• "Yaw Rate/ Deceleration Sensor" is not displayed on "CAN Bus Check". • "Yaw Rate Sensor Communication Stop Mode" in "DTC Combination Table" applies.	• Power source or inside yaw rate sensor assembly • Yaw rate sensor assembly branch wire or connector • Yaw rate sensor assembly

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

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

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

PROCEDURE

1.	DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

(a) Disconnect the cable from the negative (-) battery terminal before measuring the resistance of the main wire and the branch wire.

CAUTION:

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

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.

NEXT

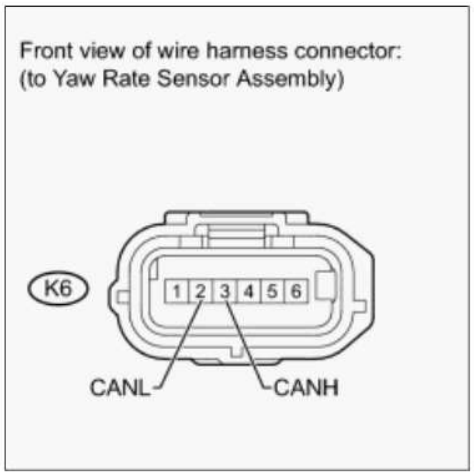
2.	CHECK FOR OPEN IN CAN BUS WIRE (YAW RATE SENSOR ASSEMBLY BRANCH WIRE)

(a) Disconnect the K6 yaw rate sensor assembly connector.

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
K6-3 (CANH) - K6-2 (CANL)	Ignition switch off	54 to 69 Ω



NG → **REPAIR OR REPLACE YAW RATE SENSOR BRANCH WIRE OR CONNECTOR (CANH, CANL)**

OK

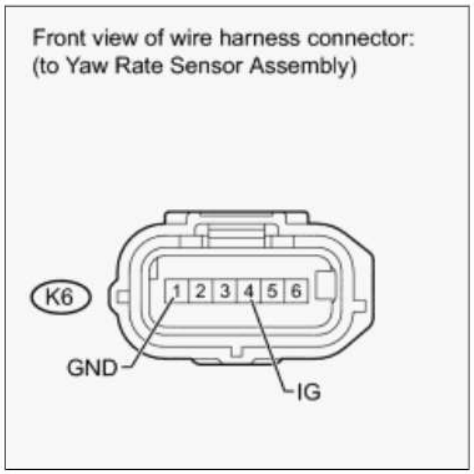
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3.	**CHECK HARNESS AND CONNECTOR (YAW RATE SENSOR ASSEMBLY - BATTERY AND BODY GROUND)**

(a) Connect the cable to the negative (-) battery terminal.

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected.



(b) Disconnect the K6 yaw rate sensor assembly connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K6-1 (GND) - Body ground	Always	Below 1 Ω

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
K6-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▶ **REPLACE YAW RATE SENSOR ASSEMBLY**

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