CAN COMMUNICATION SYSTEM

DTC U0100: LOST COMMUNICATION WITH ECM / PCM

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0100	No Communication from the ECM.	• ECM main wire or connector • Power source circuit of ECM • ECM

WIRING DIAGRAM

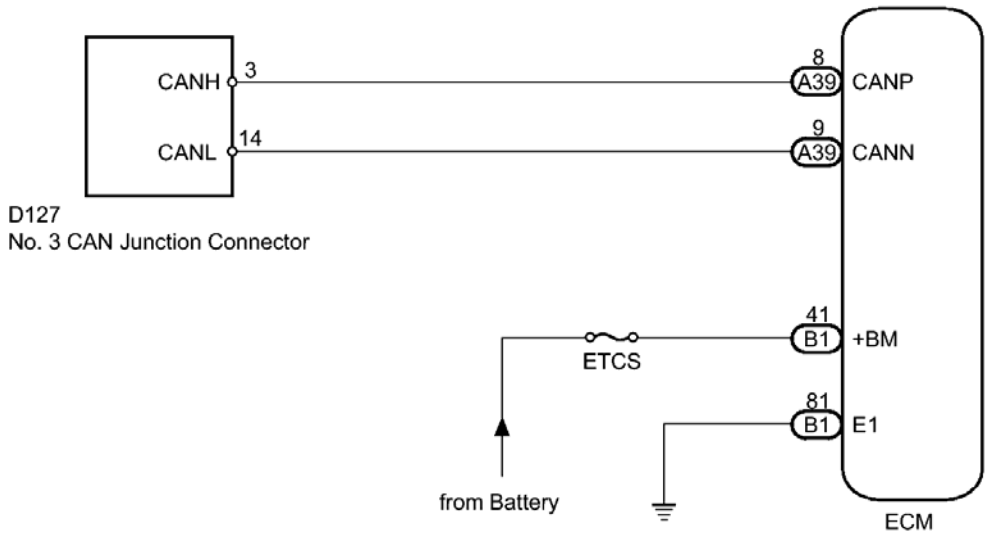


Fig. 1: ECM Power Supply Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**

- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (ECM MAIN WIRE)**
   a. Disconnect the A39 ECM connector.

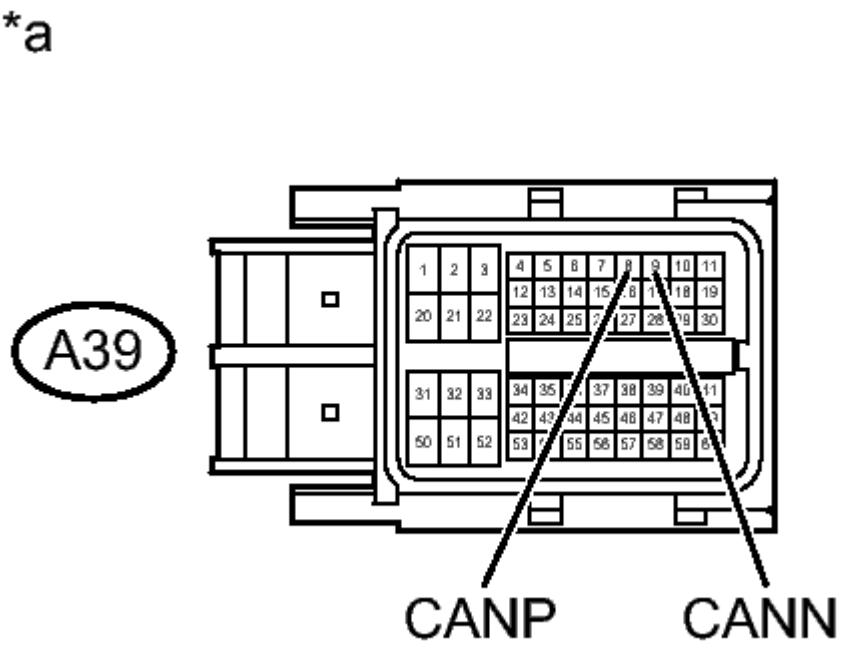


Fig. 2: Checking For Open In CAN BUS Wire (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-8 (CANP) - A39-9 (CANN)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

NG --> REPAIR OR REPLACE ECM MAIN WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

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

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

b. Disconnect the B1 ECM connectors.

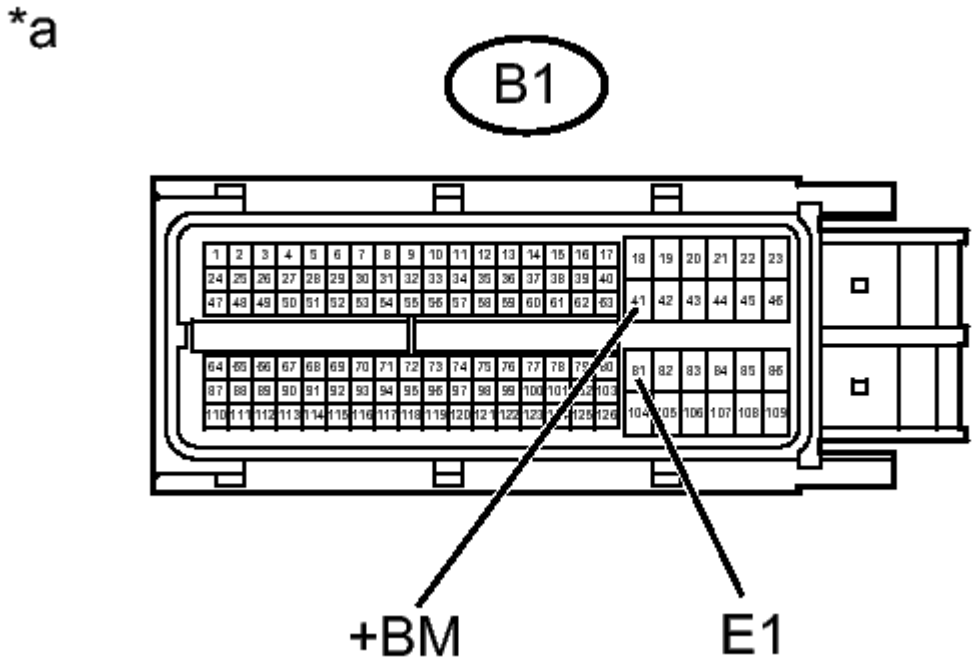


Fig. 3: Measuring Resistance Of ECM Harness Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
B1-81 (E1) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector

	(to ECM)

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

Standard Voltage

Tester Connection	Condition	Specified Condition
B1-41 (+BM) - Body ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE ECM. Refer to REMOVAL**

DTC U0104: LOST COMMUNICATION WITH DRIVING SUPPORT ECU

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0104	No communication from the driving support ECU.	• Driving support ECU branch wire or connector • Power source circuit of driving support ECU • Driving support ECU

WIRING DIAGRAM

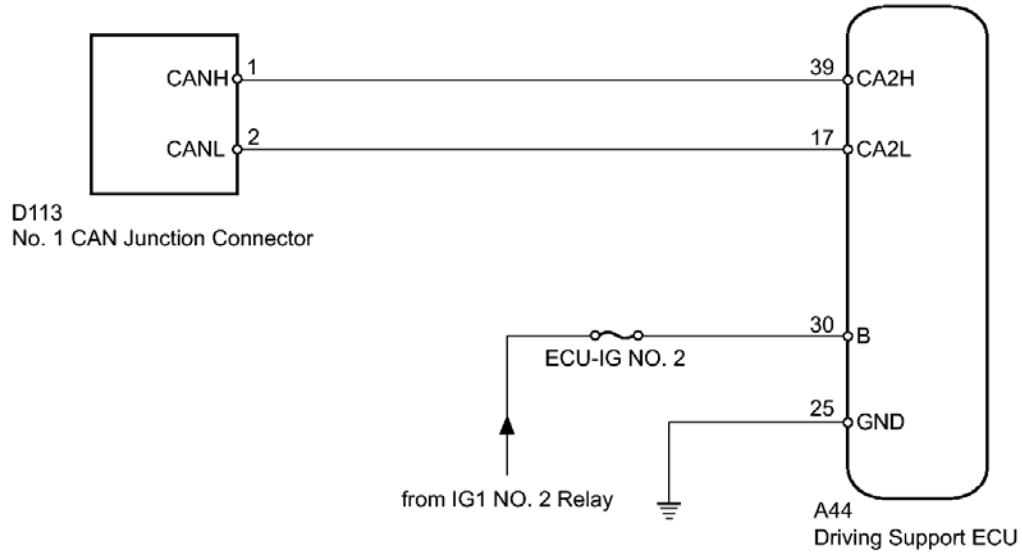


Fig. 4: Driving Support ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

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

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

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (DRIVING SUPPORT ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the A44 driving support ECU connector.

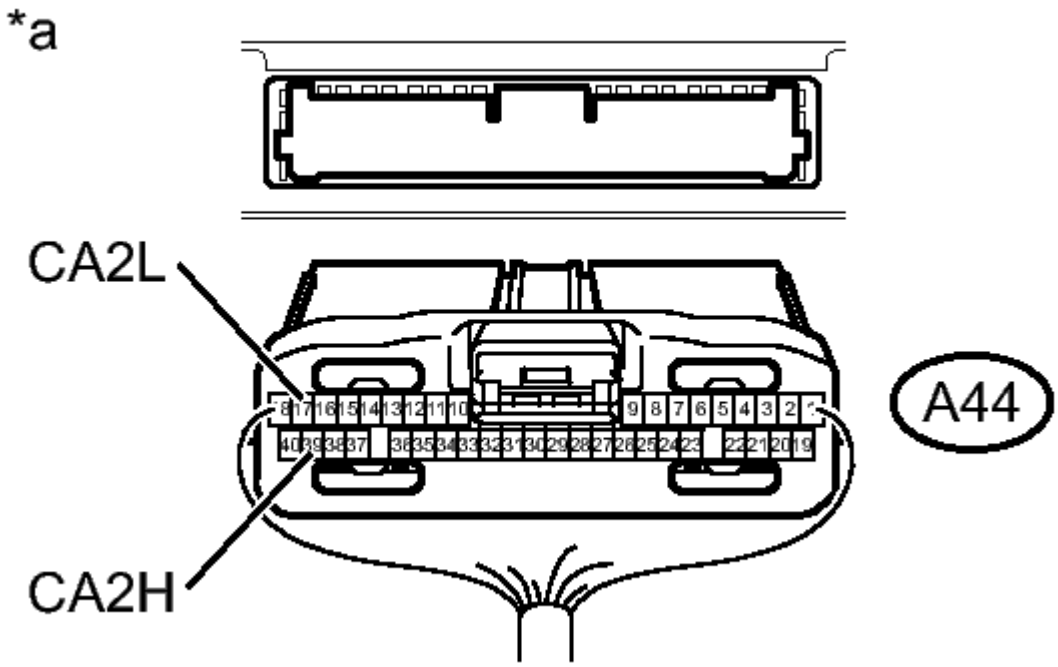


Fig. 5: Checking For Open In CAN BUS Wire (Driving Support ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition

A44-39 (CA2H) - A44-17 (CA2L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Driving Support ECU)

NG --> REPAIR OR REPLACE BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (DRIVING SUPPORT ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

   b. Turn the ignition switch to ON.
   c. Measure the voltage according to the value(s) in the table below.

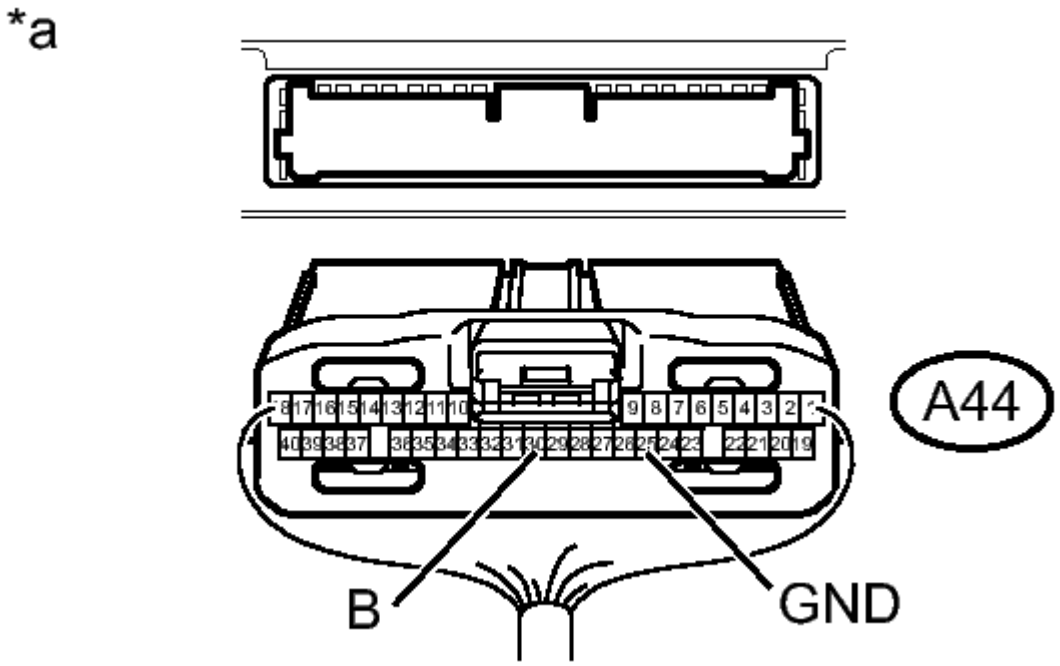


Fig. 6: Measuring Voltage Of Harness And Connector (Driving Support ECU - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
A44-30 (B) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Driving Support ECU)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
A44-25 (GND) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE DRIVING SUPPORT ECU. Refer to REMOVAL**

DTC U0164: LOST COMMUNICATION WITH A/C ECU

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0164	No communication from air conditioning amplifier.	• Air conditioning amplifier branch wire or connector • Power source circuit of air conditioning amplifier • Air conditioning amplifier

WIRING DIAGRAM

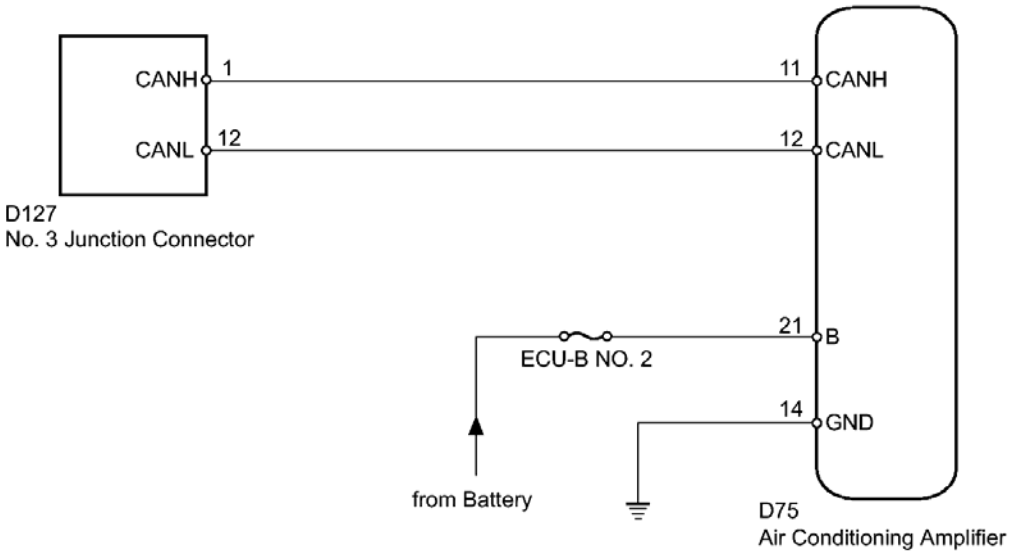


Fig. 7: Air Conditioning Amplifier Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**
   a. Disconnect the D75 air conditioning amplifier connector.

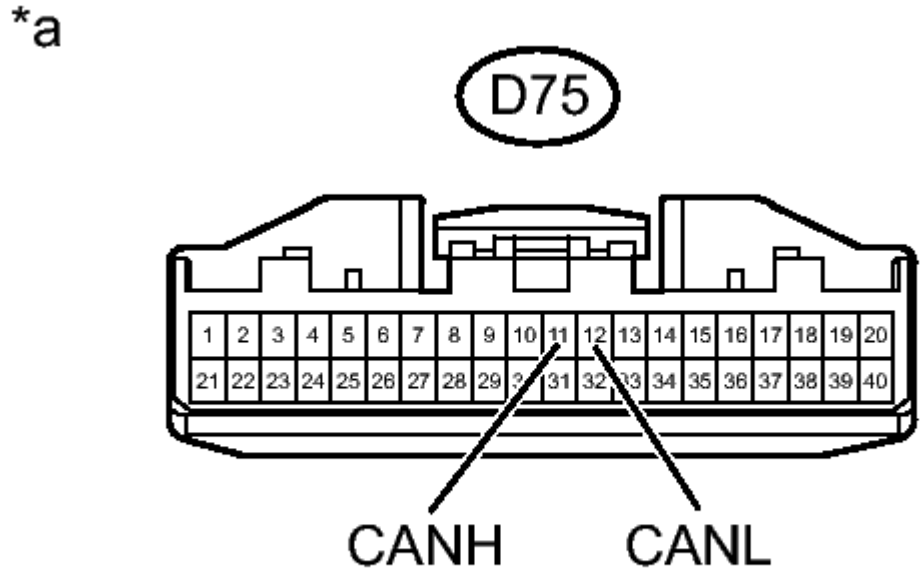


Fig. 8: Checking For Open In CAN BUS Wire (Air Conditioning Amplifier Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Air Conditioning Amplifier)

NG --> REPAIR OR REPLACE AIR CONDITIONING AMPLIFIER BRANCH WIRE (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

   b. Disconnect the D75 air conditioning amplifier connectors.

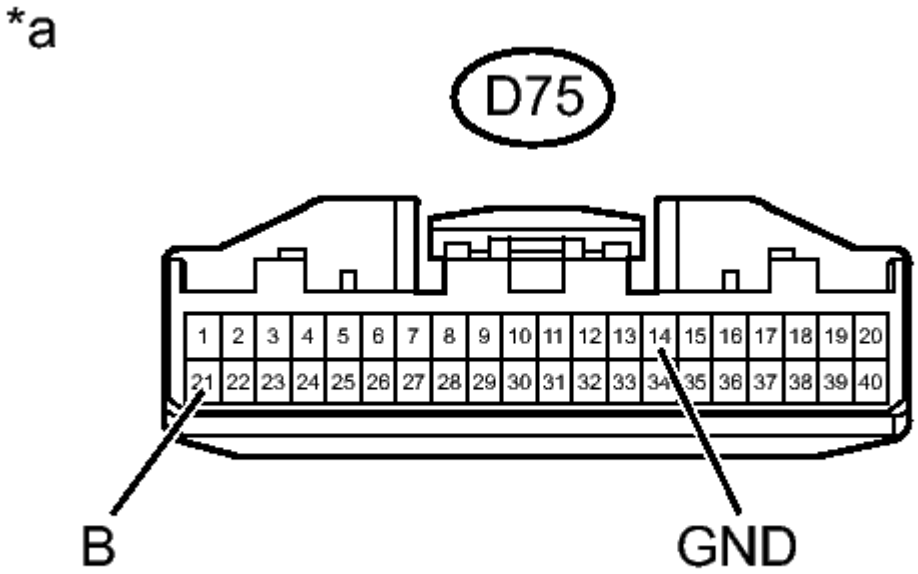


Fig. 9: Measuring Resistance Of Air Conditioning Amplifier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-14 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

	Front view of wire

*a	harness connector (to Air Conditioning Amplifier)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D75-21 (B) - Body ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**

DTC U0182: LOST COMMUNICATION WITH AFS ECU

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0182	No communication from the AFS ECU.	• AFS ECU branch wire or connector • Power source circuit of AFS ECU • AFS ECU

WIRING DIAGRAM

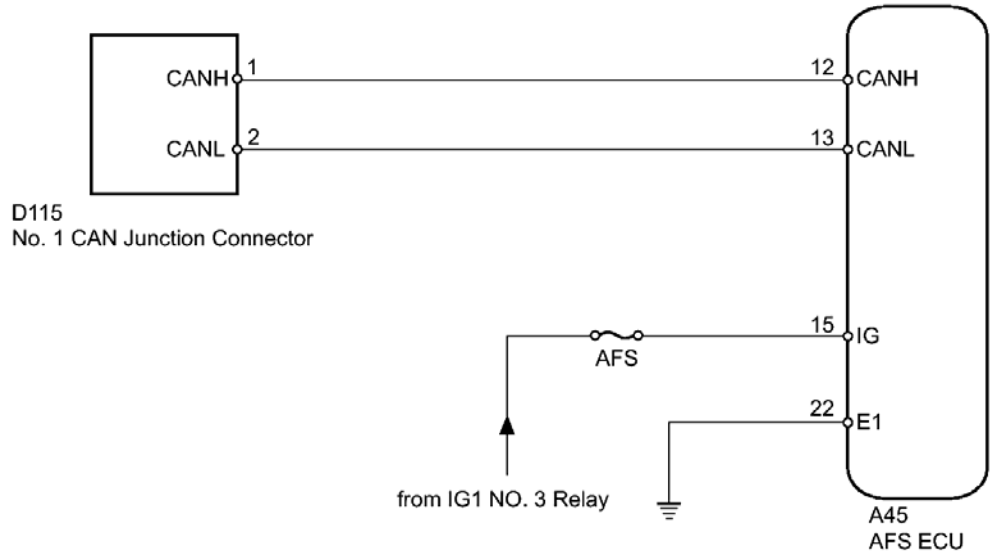


Fig. 10: AFS ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

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

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

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (AFS ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the A45 AFS ECU connector.

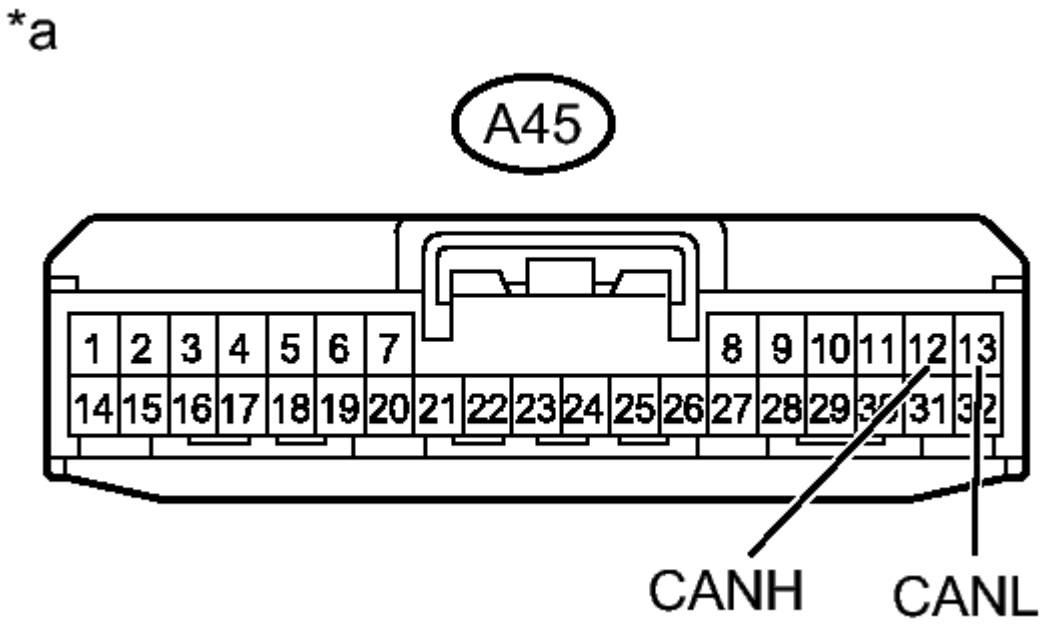


Fig. 11: Checking For Open In CAN BUS Wire (AFS ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to AFS

ECU)

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A45-12 (CANH) - A45-13 (CANL)	Ignition switch off	54 to 69 ohms

NG --> REPAIR OR REPLACE BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (AFS ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .**

   b. Turn the ignition switch to ON.
   c. Measure the voltage according to the value(s) in the table below.

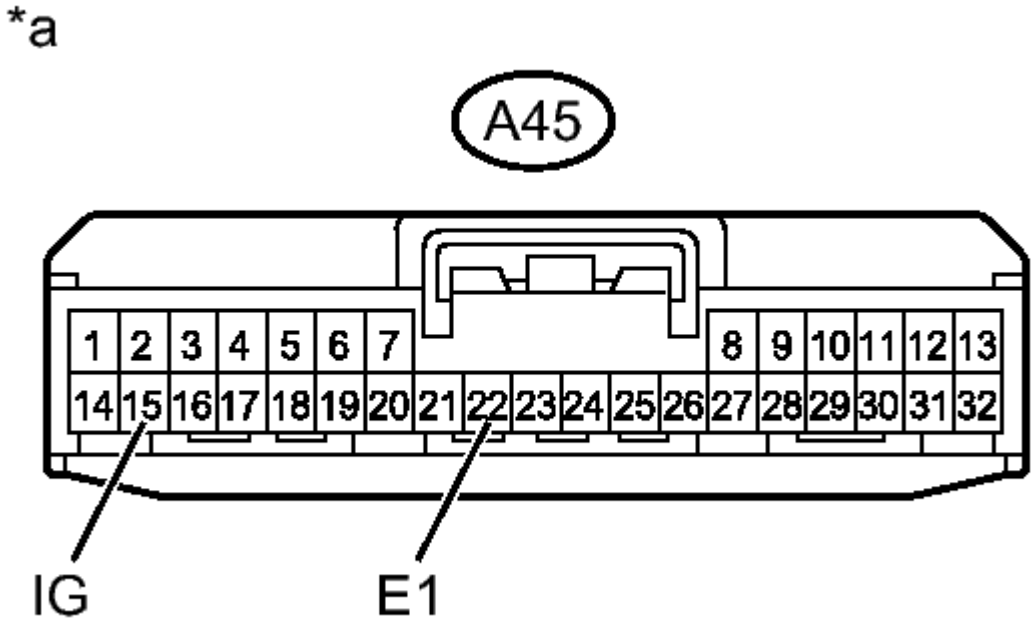


Fig. 12: Checking Harness And Connector (AFS ECU - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
A45-15 (IG) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to AFS ECU)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
A45-22 (E1) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE AFS ECU. Refer to REMOVAL**

DTC U0199: LOST COMMUNICATION WITH "DOOR CONTROL MODULE A"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0199	No communication from the outer mirror control ECU RH.	• Outer mirror control ECU RH branch wire or connector • Power source circuit of outer mirror control ECU RH

		• Outer mirror control ECU RH

WIRING DIAGRAM

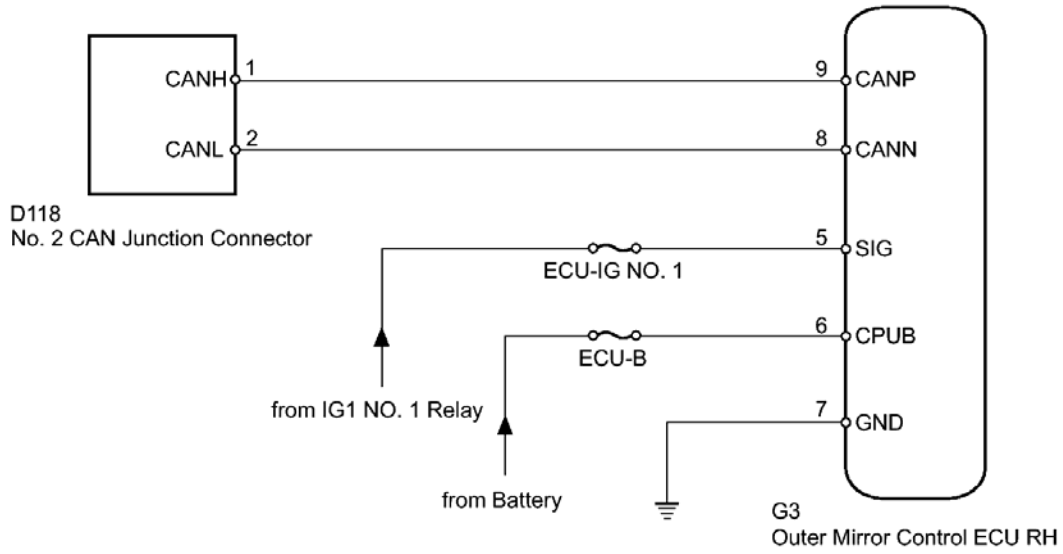


Fig. 13: Outer Mirror Control ECU RH Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

WARNING: **Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.**

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .**

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (OUTER MIRROR CONTROL ECU RH BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the G3 outer mirror control ECU RH connector.

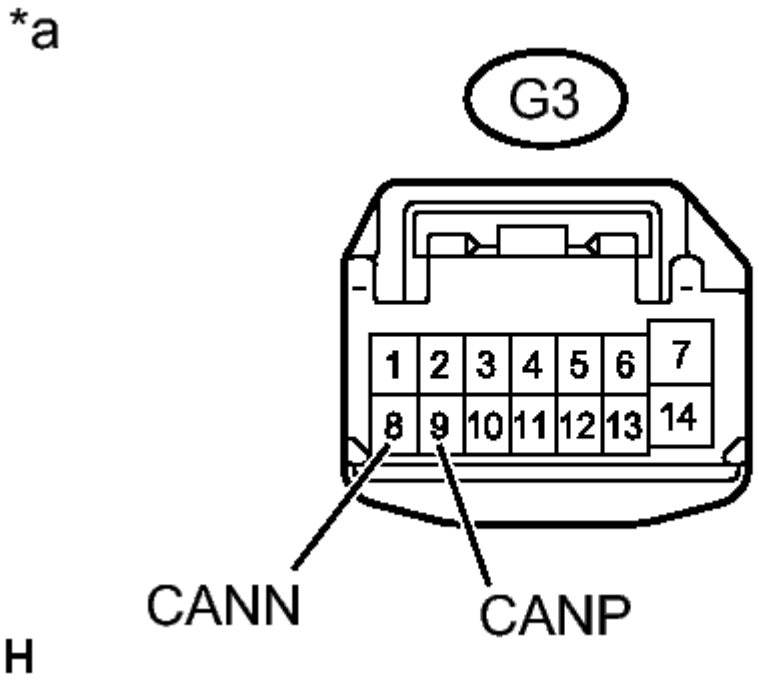


Fig. 14: Checking For Open In CAN BUS Wire (Outer Mirror Control ECU RH Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU RH)

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
G3-9 (CANP) - G3-8 (CANN)	Ignition switch off	54 to 69 ohms

NG --> REPAIR OR REPLACE BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (OUTER MIRROR CONTROL ECU RH - BATTERY AND BODY GROUND)**

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

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

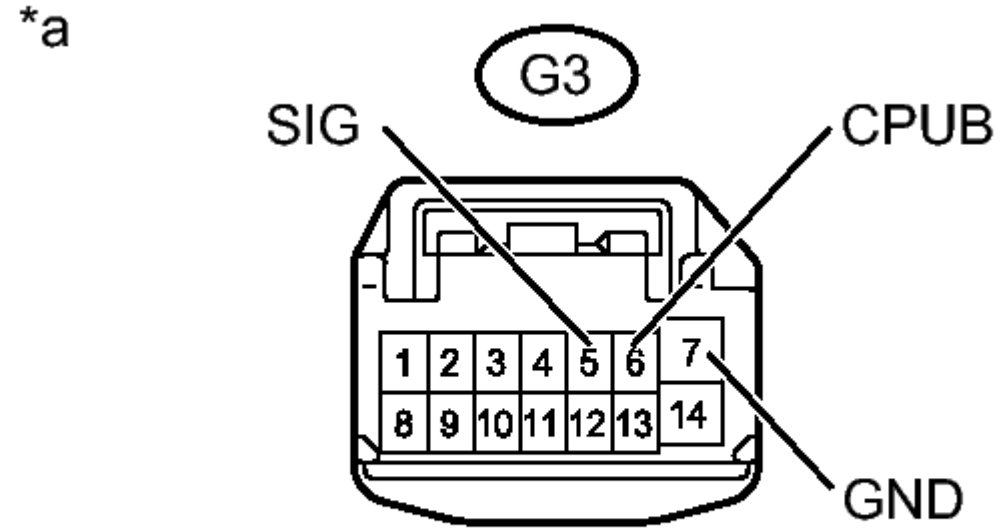


Fig. 15: Checking Harness And Connector (Outer Mirror Control ECU RH - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
G3-6 (CPUB) - Body ground	Always	11 to 14 V
G3-5 (SIG) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU RH)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
G3-7 (GND) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY RH. Refer to REMOVAL**

DTC U0200: LOST COMMUNICATION WITH "DOOR CONTROL MODULE B"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0200	No communication from the outer mirror control ECU LH.	• Outer mirror control ECU LH branch wire or connector • Power source circuit of outer mirror control ECU LH • Outer mirror control ECU LH

WIRING DIAGRAM

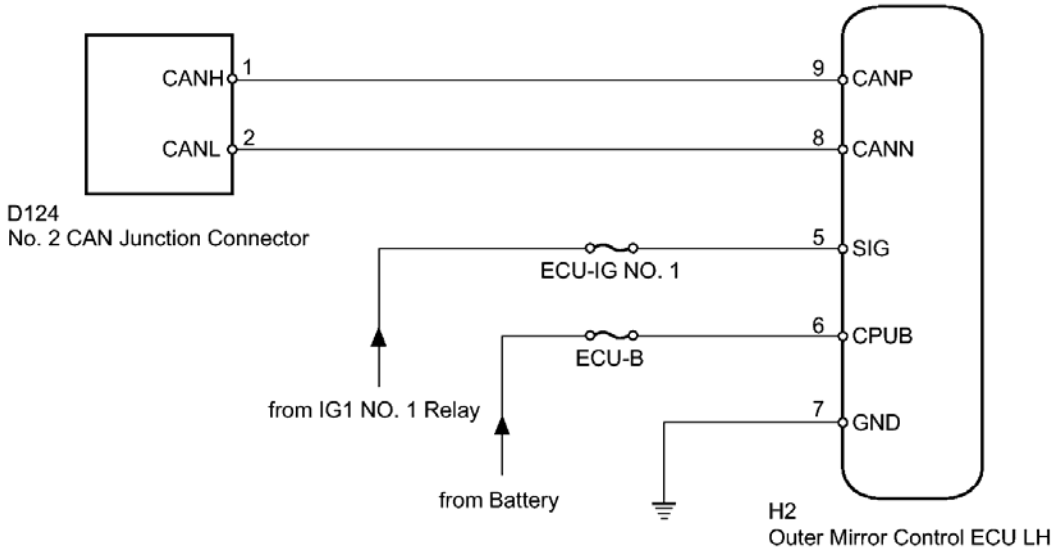


Fig. 16: Outer Mirror Control ECU LH Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

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

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

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (OUTER MIRROR CONTROL ECU LH BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the H2 outer mirror control ECU LH connector.

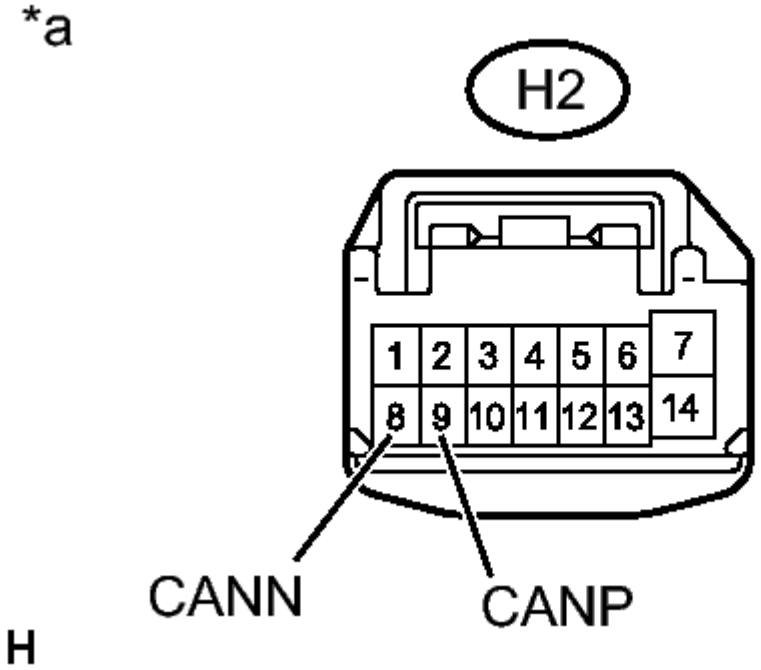


Fig. 17: Checking For Open In CAN BUS Wire (Outer Mirror Control ECU LH Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Front view of wire harness

*a	connector (to Outer Mirror Control ECU LH)

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
H2-9 (CANP) - H2-8 (CANN)	Ignition switch off	54 to 69 ohms

NG --> REPAIR OR REPLACE BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

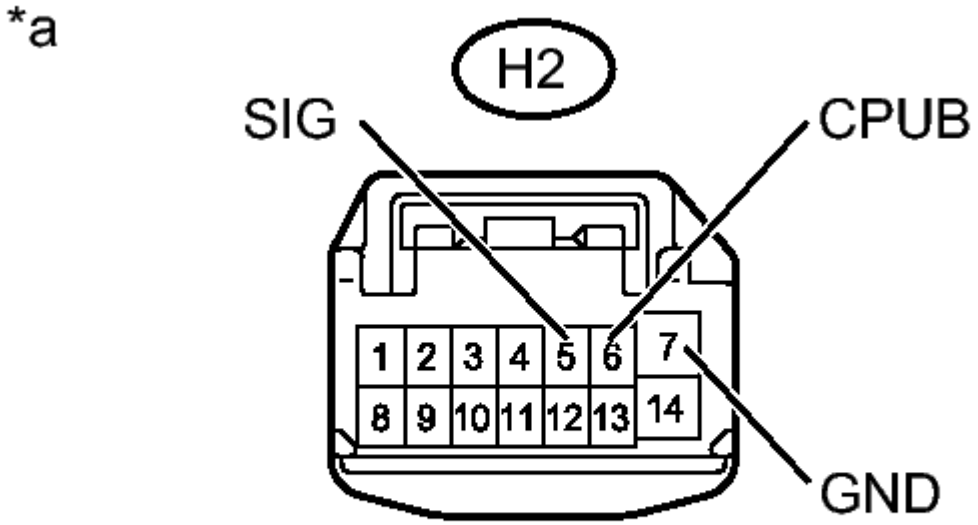
OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (OUTER MIRROR CONTROL ECU LH - BATTERY AND BODY GROUND)**

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

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



H

Fig. 18: Checking Harness And Connector (Outer Mirror Control ECU LH - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
H2-6 (CPUB) - Body ground	Always	11 to 14 V
H2-5 (SIG) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU LH)

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

Standard Resistance

Tester Connection	Condition	Specified Condition
H2-7 (GND) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE OUTER MIRROR CONTROL ECU LH. Refer to REMOVAL**

DTC U0201: LOST COMMUNICATION WITH "DOOR CONTROL MODULE C"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0201	No communication from rear multiplex network door ECU RH.	• Power source circuit of slide door motor unit RH • Slide door motor unit RH • Slide door motor unit RH branch wire or connector

WIRING DIAGRAM

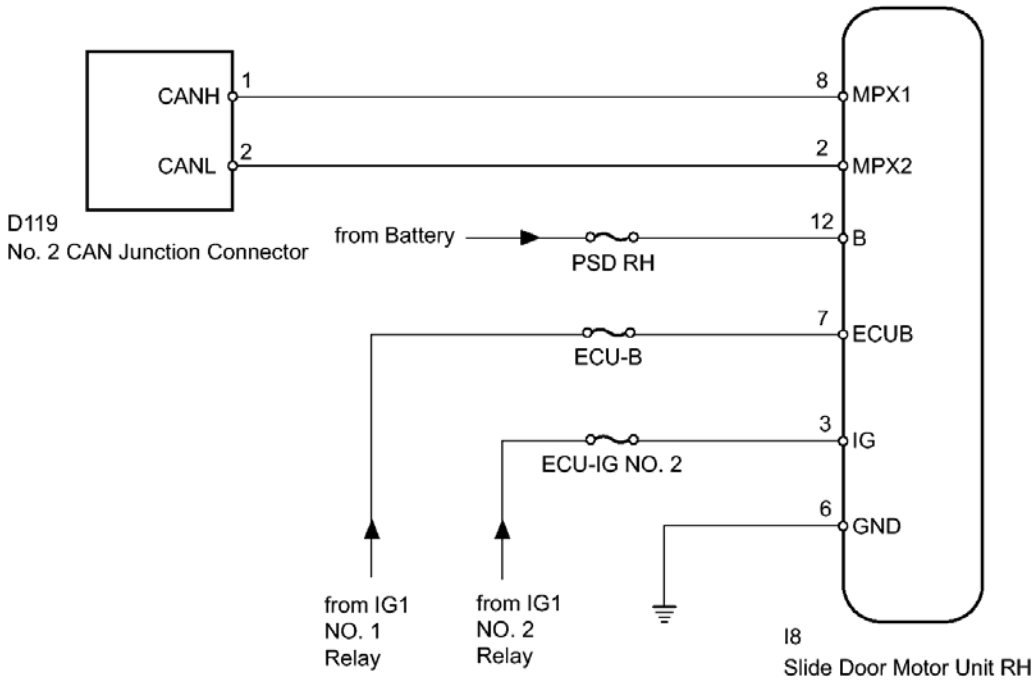


Fig. 19: Slide Door Motor Unit RH Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the**

following inspection procedure.

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (SLIDE DOOR MOTOR UNIT RH BRANCH WIRE)**
   a. Disconnect the I8 slide door motor unit RH connector.

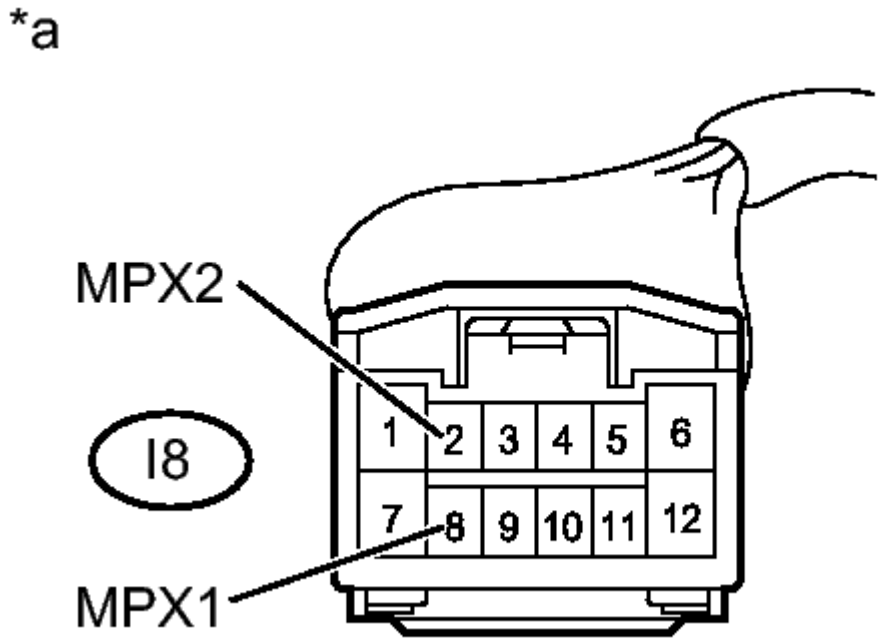


Fig. 20: Checking For Open In CAN BUS Wire (Slide Door Motor Unit RH Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
I8-8 (MPX1) - I8-2 (MPX2)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit RH)

NG --> REPAIR OR REPLACE SLIDE DOOR MOTOR UNIT RH BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (SLIDE DOOR MOTOR UNIT RH - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

   b. Disconnect the I8 slide door motor unit RH connector.

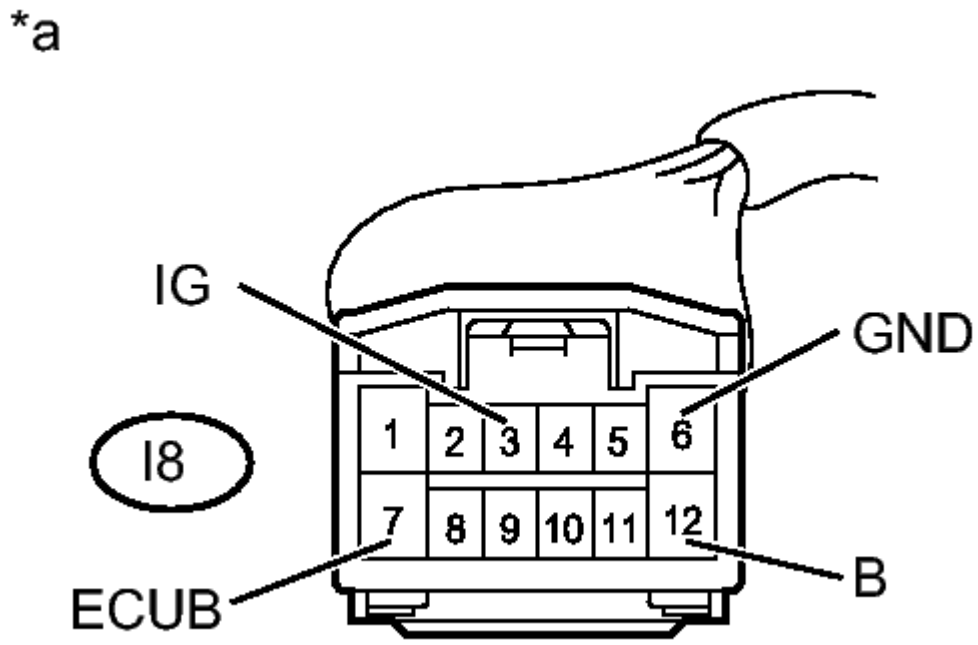


Fig. 21: Checking Harness And Connector (Slide Door Motor Unit RH - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

      Standard Resistance

Tester Connection	Condition	Specified Condition
I8-6 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit RH)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
I8-12 (B) - Body ground	Always	11 to 14 V
I8-7 (ECUB) - Body ground	Ignition switch ON	11 to 14 V
I8-3 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE SLIDE DOOR MOTOR UNIT RH. Refer to REMOVAL**

DTC U0202: LOST COMMUNICATION WITH "DOOR CONTROL MODULE D"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0202	No communication from rear multiplex network door ECU LH.	• Power source circuit of slide door motor unit LH • Slide door motor unit LH • Slide door motor unit LH branch wire or connector

WIRING DIAGRAM

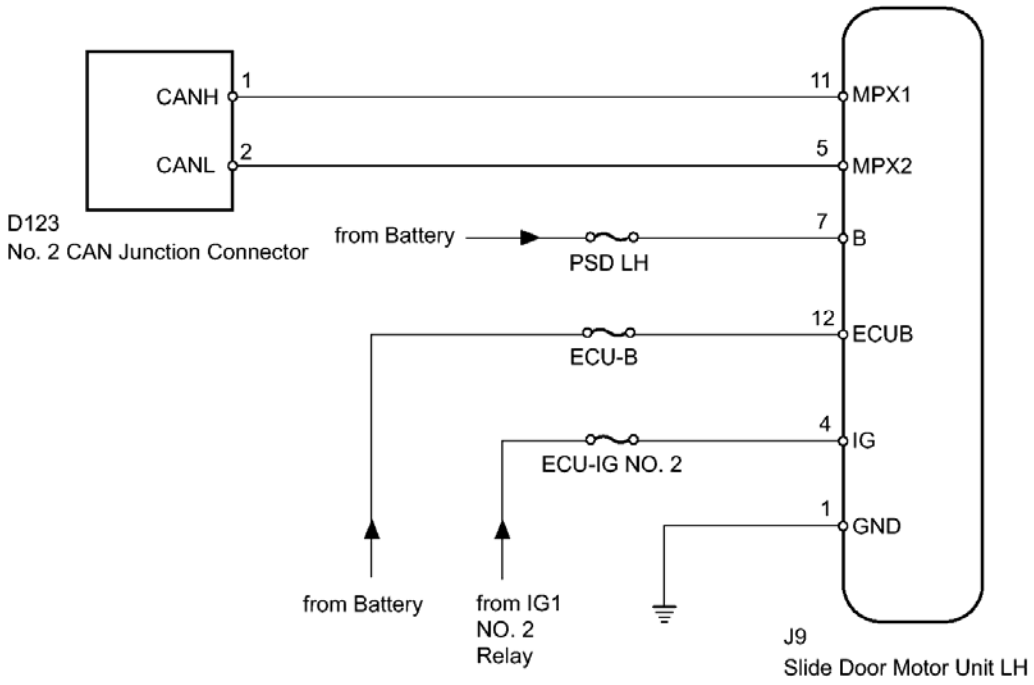


Fig. 22: Slide Door Motor Unit LH Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the**

following inspection procedure.

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (SLIDE DOOR MOTOR UNIT LH BRANCH WIRE)**
   a. Disconnect the J9 slide door motor unit LH connector.

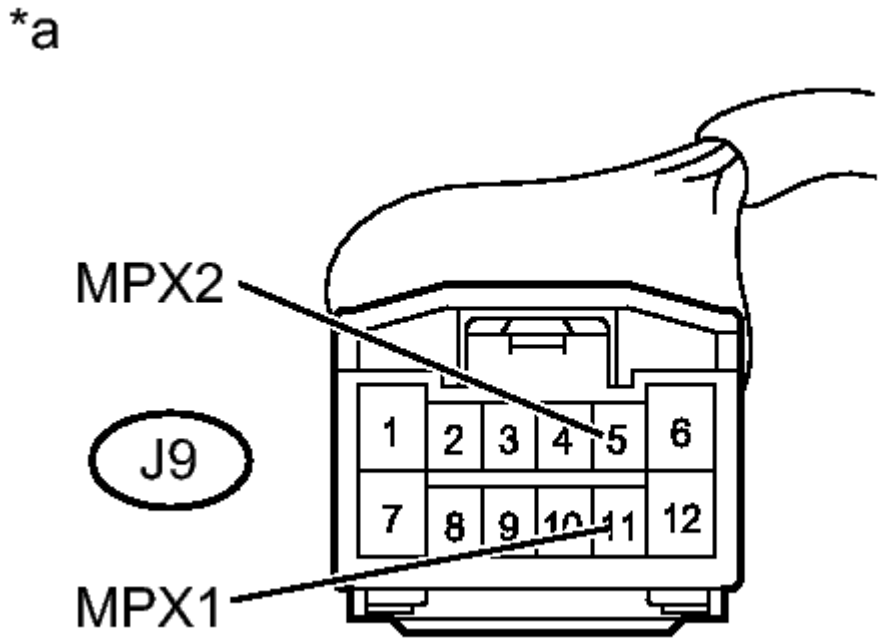


Fig. 23: Checking For Open In CAN BUS Wire (Slide Door Motor Unit LH Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
J9-11 (MPX1) - J9-5 (MPX2)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit LH)

NG --> REPAIR OR REPLACE SLIDE DOOR MOTOR UNIT LH BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (SLIDE DOOR MOTOR UNIT LH - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

   b. Disconnect the J9 slide door motor unit LH connector.

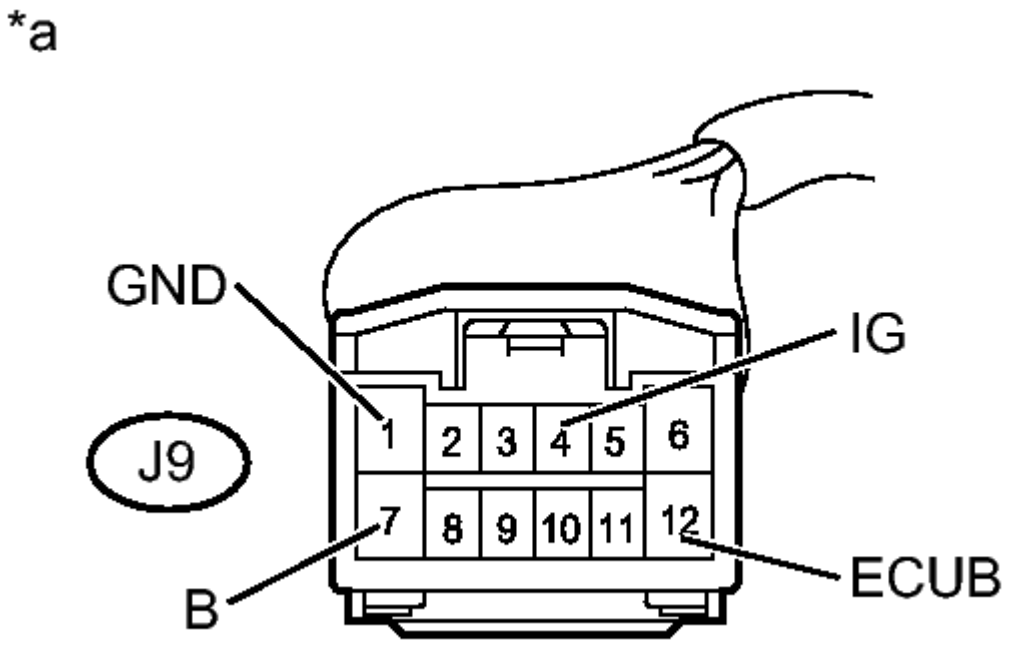


Fig. 24: Checking Harness And Connector (Slide Door Motor Unit LH - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

      Standard Resistance

Tester Connection	Condition	Specified Condition
J9-1 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit LH)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
J9-7 (B) - Body ground	Always	11 to 14 V
J9-12 (ECUB) - Body ground	Always	11 to 14 V
J9-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

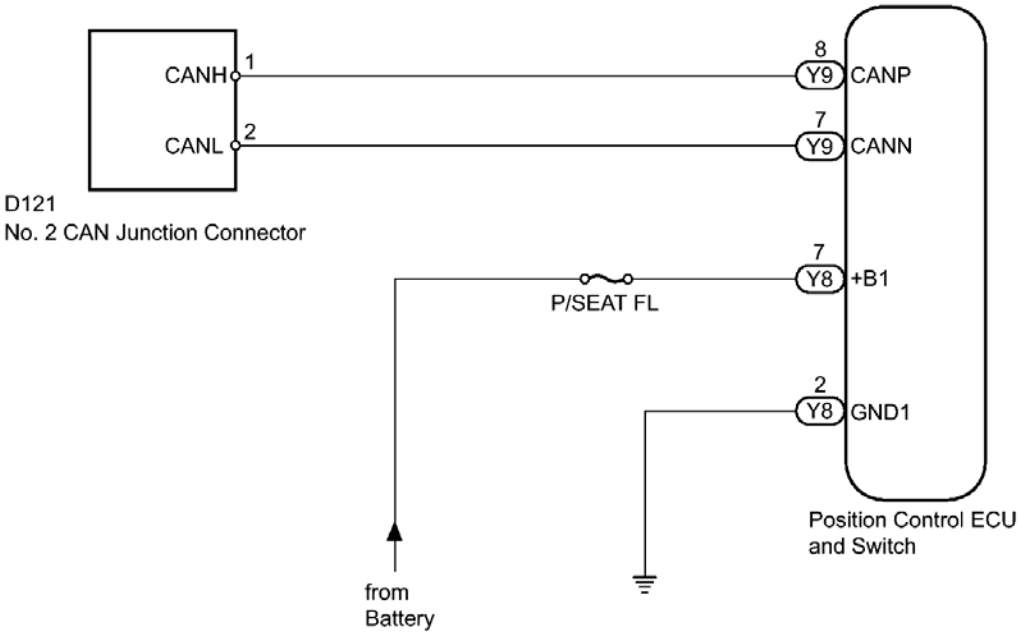
4. **REPLACE SLIDE DOOR MOTOR UNIT LH. Refer to REMOVAL**

DTC U0208: LOST COMMUNICATION WITH "SEAT CONTROL MODULE A"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U0208	There is no communication from the position control ECU and switch.	• Power source circuit of position control ECU and switch assembly • Position control ECU and switch assembly • Position control ECU and switch branch wire or connector

WIRING DIAGRAM



T

Fig. 25: Position Control ECU And Switch Assembly Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (POSITION CONTROL ECU AND SWITCH BRANCH WIRE)**
   a. Disconnect the Y9 position control ECU and switch connector.

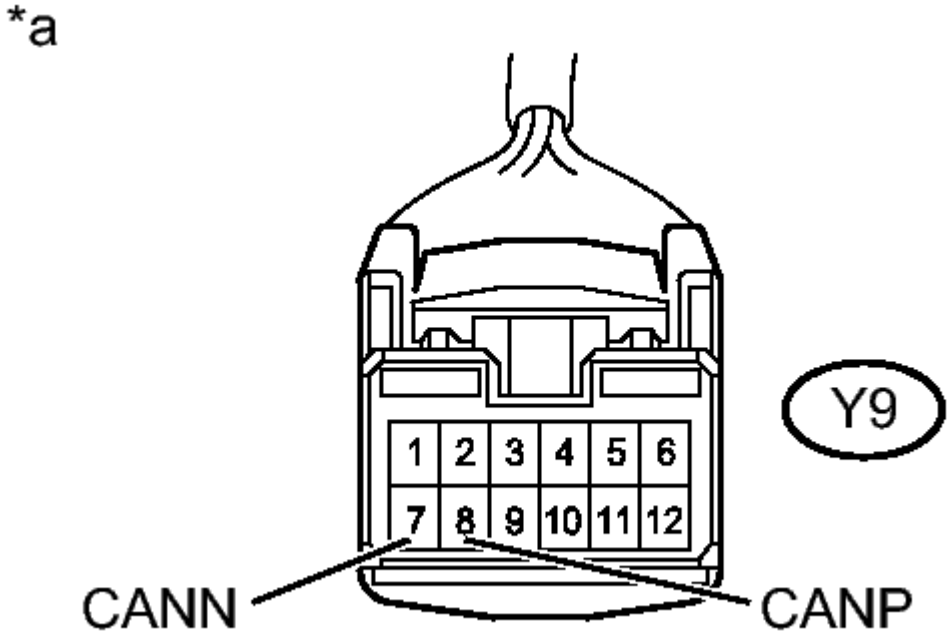


Fig. 26: Checking For Open In CAN BUS Wire (Position Control ECU And Switch Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
Y9-8 (CANP) - Y9-7 (CANN)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Position Control ECU and Switch)

NG --> REPAIR OR REPLACE POSITION CONTROL ECU AND SWITCH BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (POSITION CONTROL ECU AND SWITCH - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION**

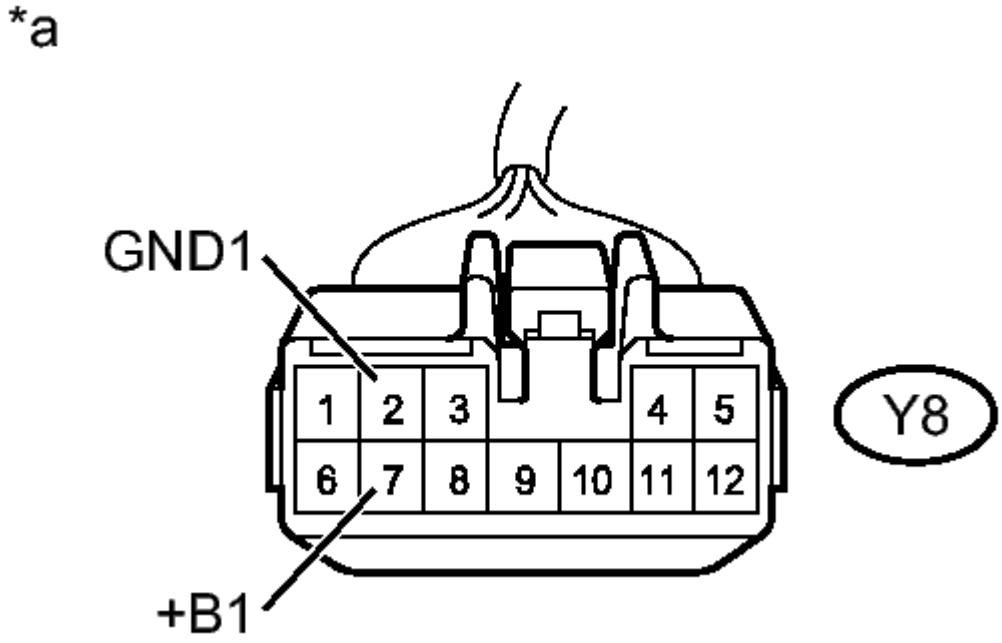


Fig. 27: Measuring Resistance Of Position Control ECU And Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the Y8 position control ECU and switch connector.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
Y8-2 (GND1) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Condition	Specified Condition
Y8-7 (+B1) - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Position Control ECU and Switch)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE POSITION CONTROL ECU AND SWITCH ASSEMBLY. Refer to DISASSEMBLY**

DTC U1002: LOST COMMUNICATION WITH GATEWAY MODULE (POWER MANAGEMENT2)

DESCRIPTION

DTC Code	Symptom	Trouble Area
U1002	Lost Communication with Gateway Module (Power Management2).	• Power management bus circuit • ECM main wire or connector • Power management control ECU main wire or connector • Air conditioning amplifier branch wire or connector • ECM • Power management control ECU • Air conditioning amplifier • No. 3 junction connector

WIRING DIAGRAM

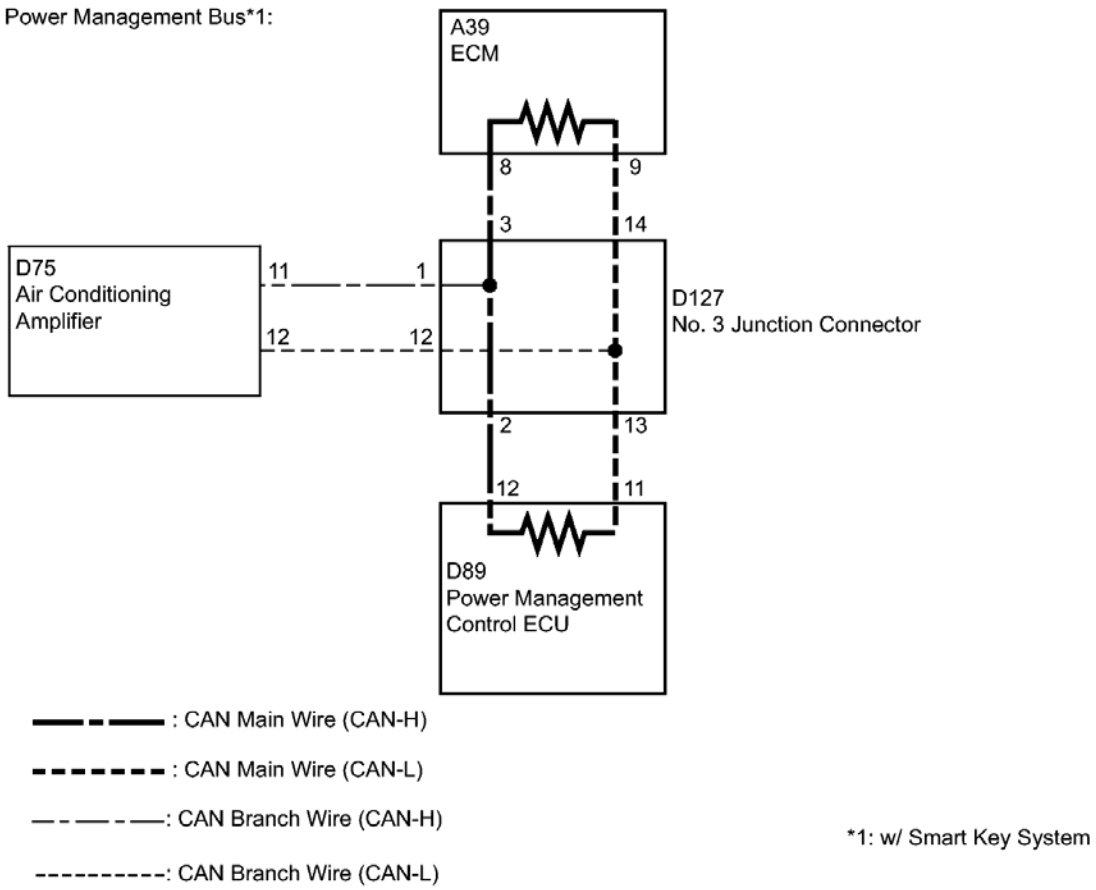


Fig. 28: Power Management Control ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK CAN BUS WIRE (MAIN WIRE FOR DISCONNECTION, BUS LINE FOR SHORT CIRCUIT)**
   a. Measure the resistance according to the value(s) in the table below.

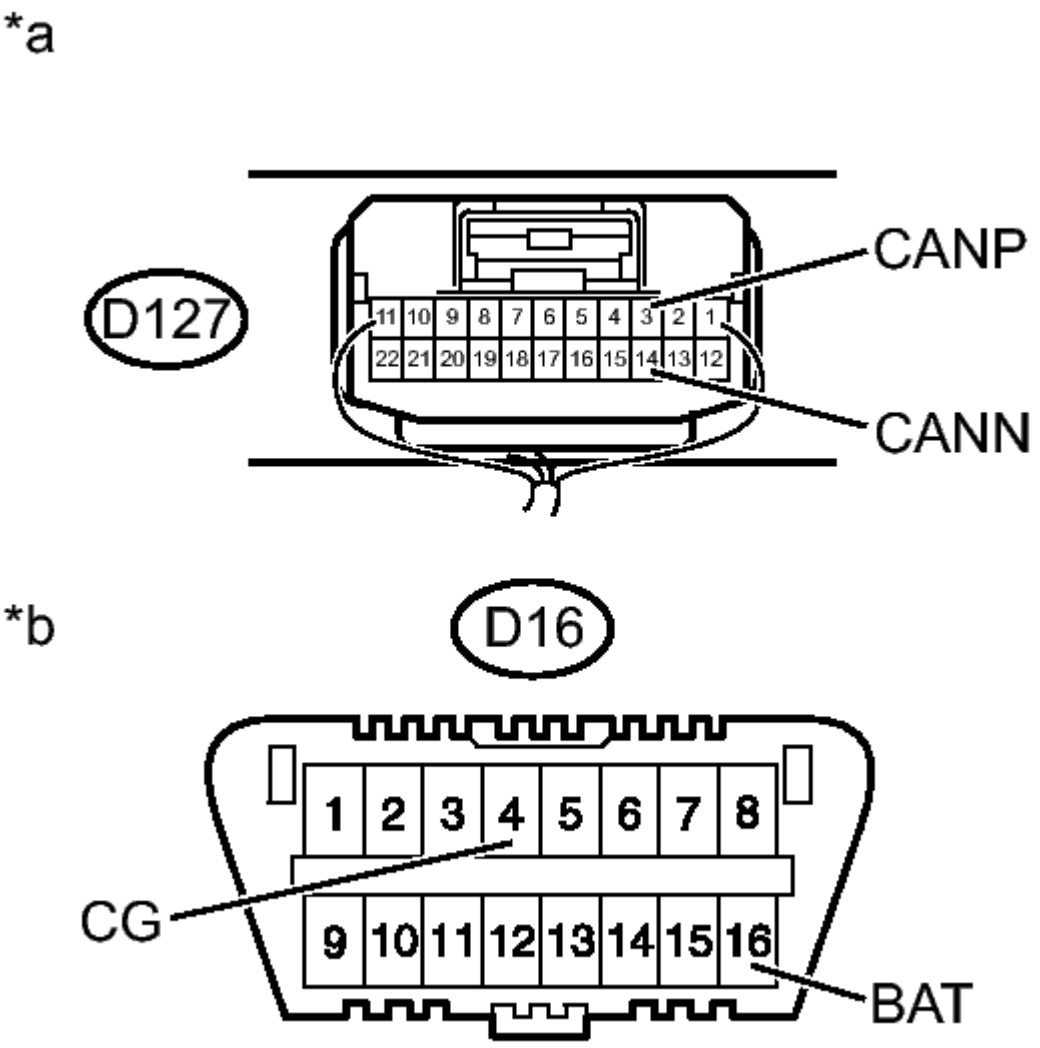


Fig. 29: Checking CAN BUS Wire (Main Wire For Disconnection, BUS Line For Short Circuit)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition	Resistance Malfunction
D127-3 (CANP) - D127-14 (CANN)	Ignition switch off	54 to 69 ohms	Below 53 ohms: Short in line
	Ignition switch off		70 ohms or higher: Open in CAN main bus line

D127-3 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D127-14 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D127-3 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short
D127-14 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short

TEXT IN ILLUSTRATION

*a	Junction connector with harness connected (No. 3 Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
NG - Open in CAN main wire	A
NG - Short in line - +B short - Ground short	B
OK	C

B --> See step 9

C --> See step 18

A: Go to next step

3. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 3 JUNCTION CONNECTOR - ECM)**
   a. Disconnect the D127 No. 3 junction connector connector.

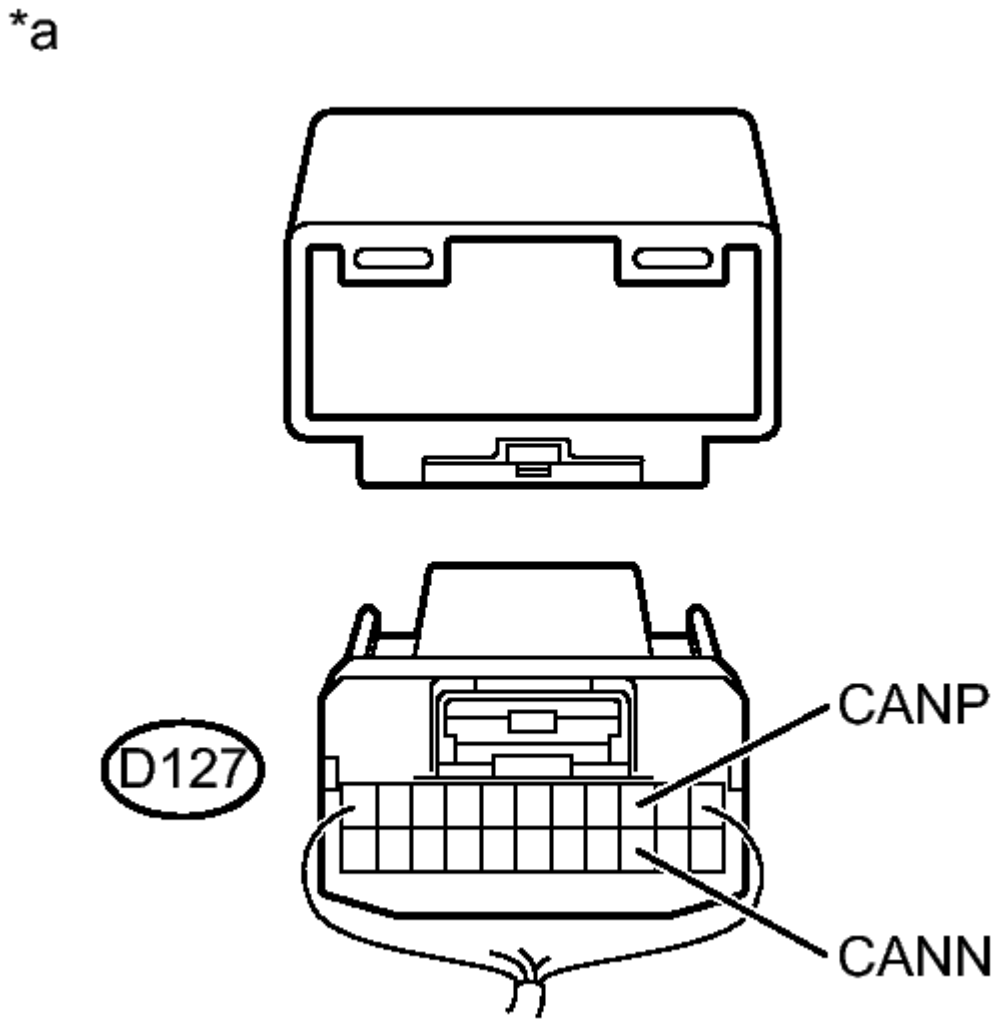


Fig. 30: Checking For Open In CAN BUS Main Wire (No. 3 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D127-3 (CANP) - D127-14 (CANN)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 3 Junction Connector)

NG --> See step 5

OK: Go to next step

4. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 3 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)**
   a. Disconnect the D127 No. 3 junction connector connector.

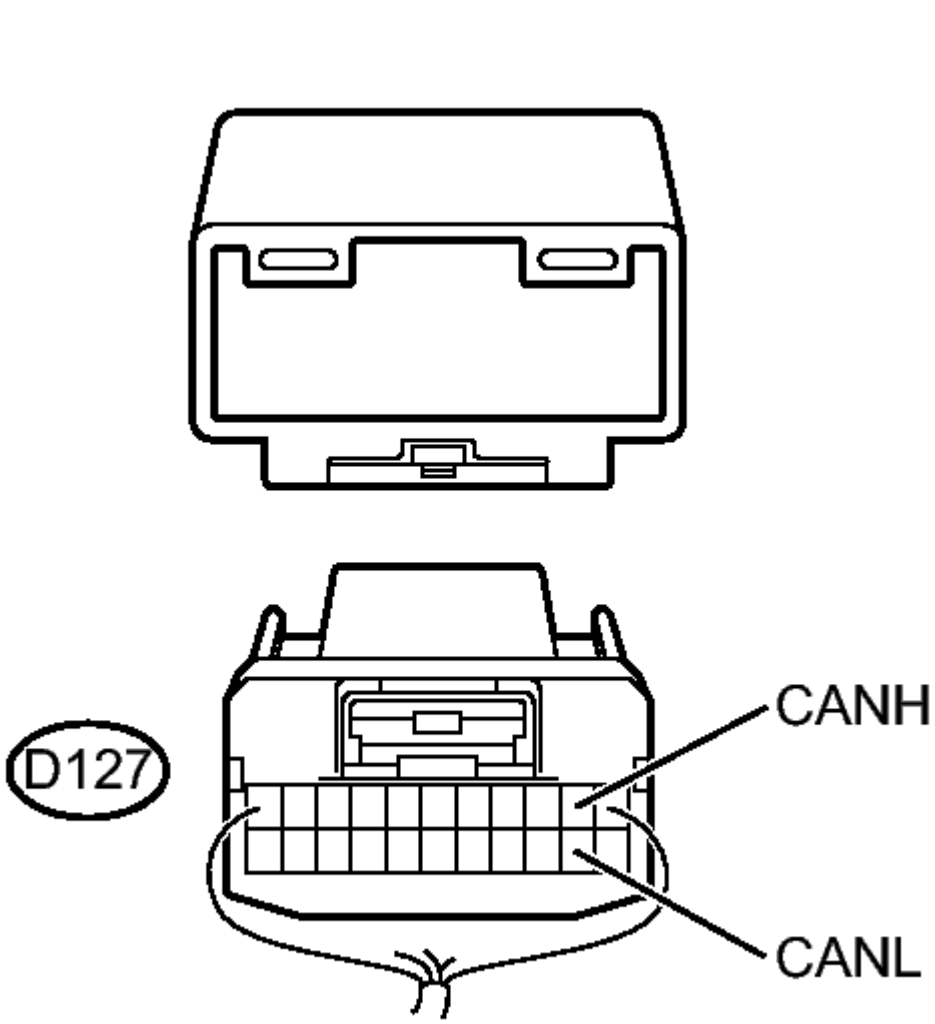


Fig. 31: Checking For Open In CAN BUS Main Wire (No. 3 Junction Connector - Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D127-2 (CANH) - D127-13 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 3 Junction Connector)

NG --> See step 7

OK --> REPAIR OR REPLACE NO. 3 JUNCTION CONNECTOR

5. **CONNECT CONNECTOR**
   a. Reconnect the D127 No. 3 junction connector.

   NEXT: Go to next step

6. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 3 JUNCTION CONNECTOR - ECM)**
   a. Disconnect the A39 ECM connector.

*a

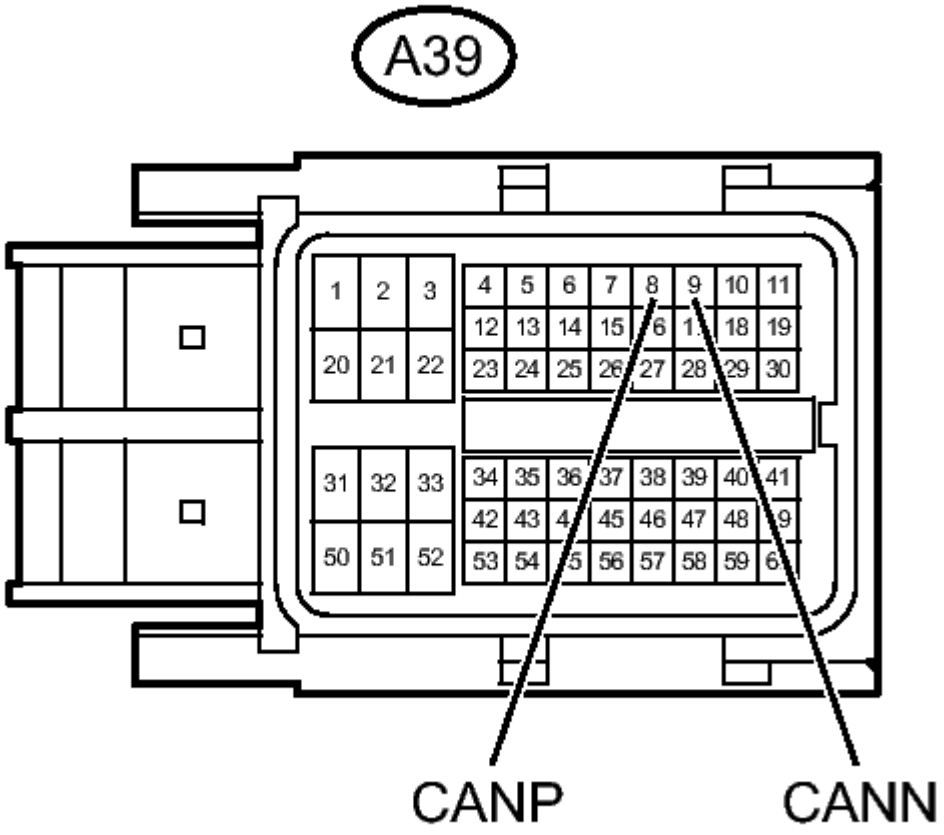


Fig. 32: Checking For Open In CAN BUS Main Wire (No. 3 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-8 (CANP) - A39-9 (CANN)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

NG --> REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 3 JUNCTION CONNECTOR - ECM)

OK --> See step 19

7. **CONNECT CONNECTOR**
   a. Reconnect the D127 No. 3 junction connector.

NEXT: Go to next step

8. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 3 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)**
   a. Disconnect the D89 power management control ECU connector.

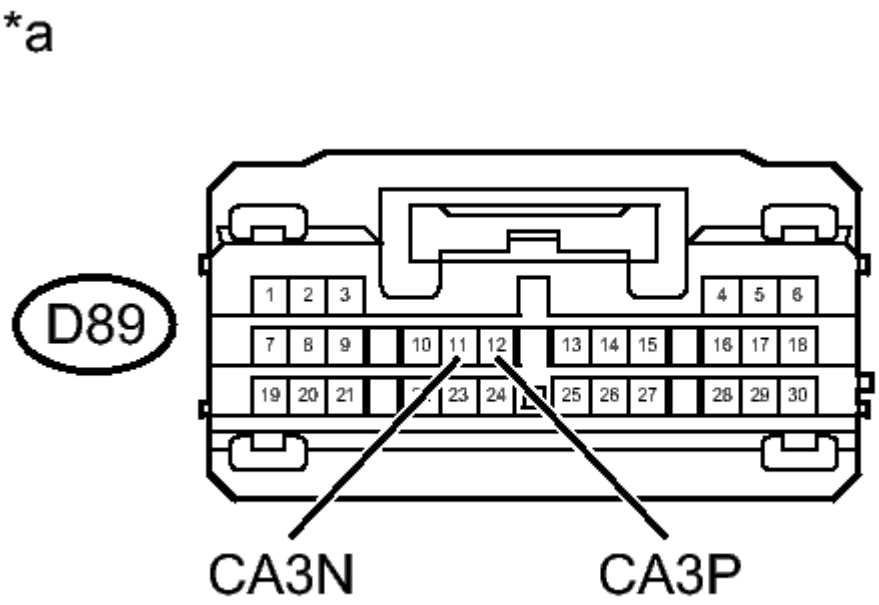


Fig. 33: Checking For Open In CAN BUS Main Wire (No. 3 Junction Connector - Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-12 (CA3P) - D89-11 (CA3N)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 3 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)

OK --> See step 20

9. **CHECK FOR SHORT IN CAN BUS MAIN WIRES (NO. 3 JUNCTION CONNECTOR - ECM)**
   a. Disconnect the D127 No. 3 junction connector connector.

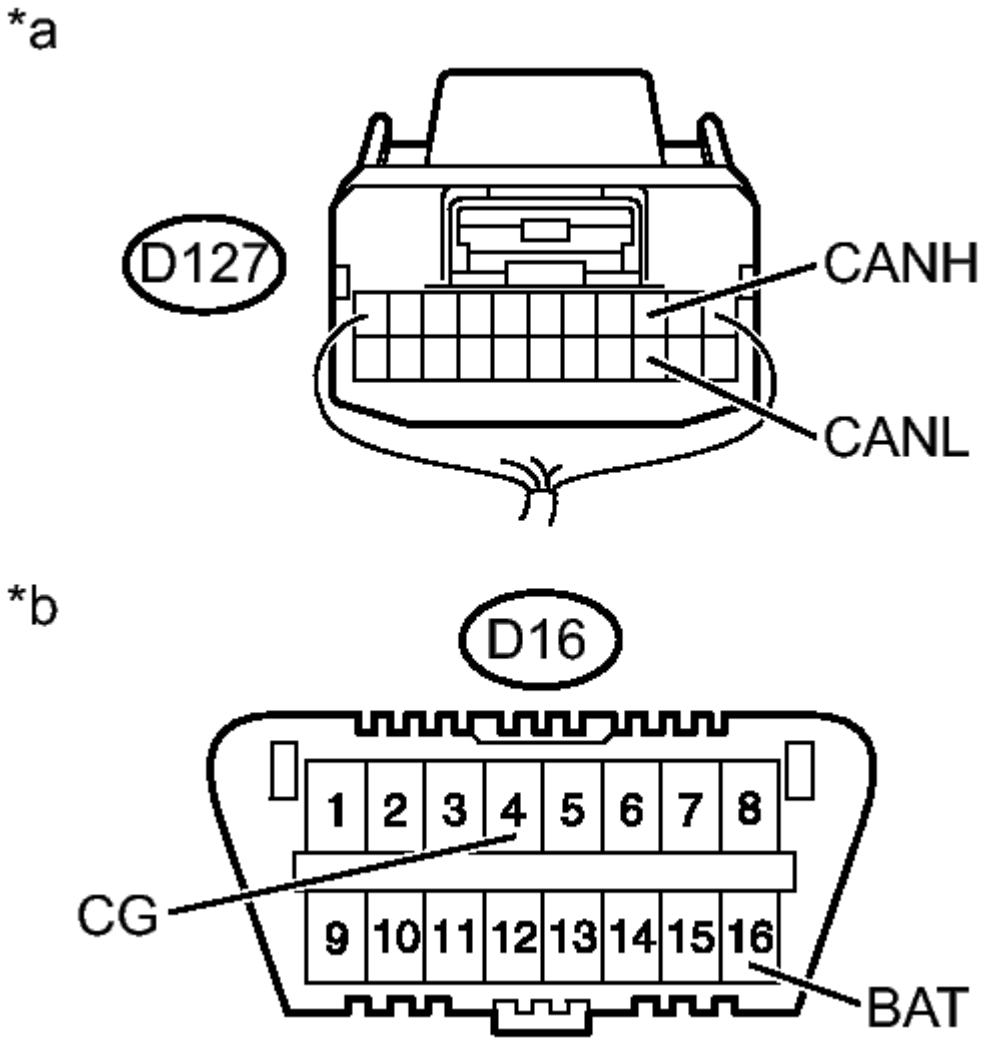


Fig. 34: Checking For Short In CAN BUS Main Wires (No. 3 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D127-3 (CANH) - D127-14 (CANL)	Ignition switch off	108 to 132 ohms
D127-3 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D127-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D127-3 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D127-14 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 3 Junction Connector)
*b	DLC3

NG --> See step 12

OK: Go to next step

10. **CHECK FOR SHORT IN CAN BUS MAIN WIRE (NO. 3 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D127 No. 3 junction connector connector.

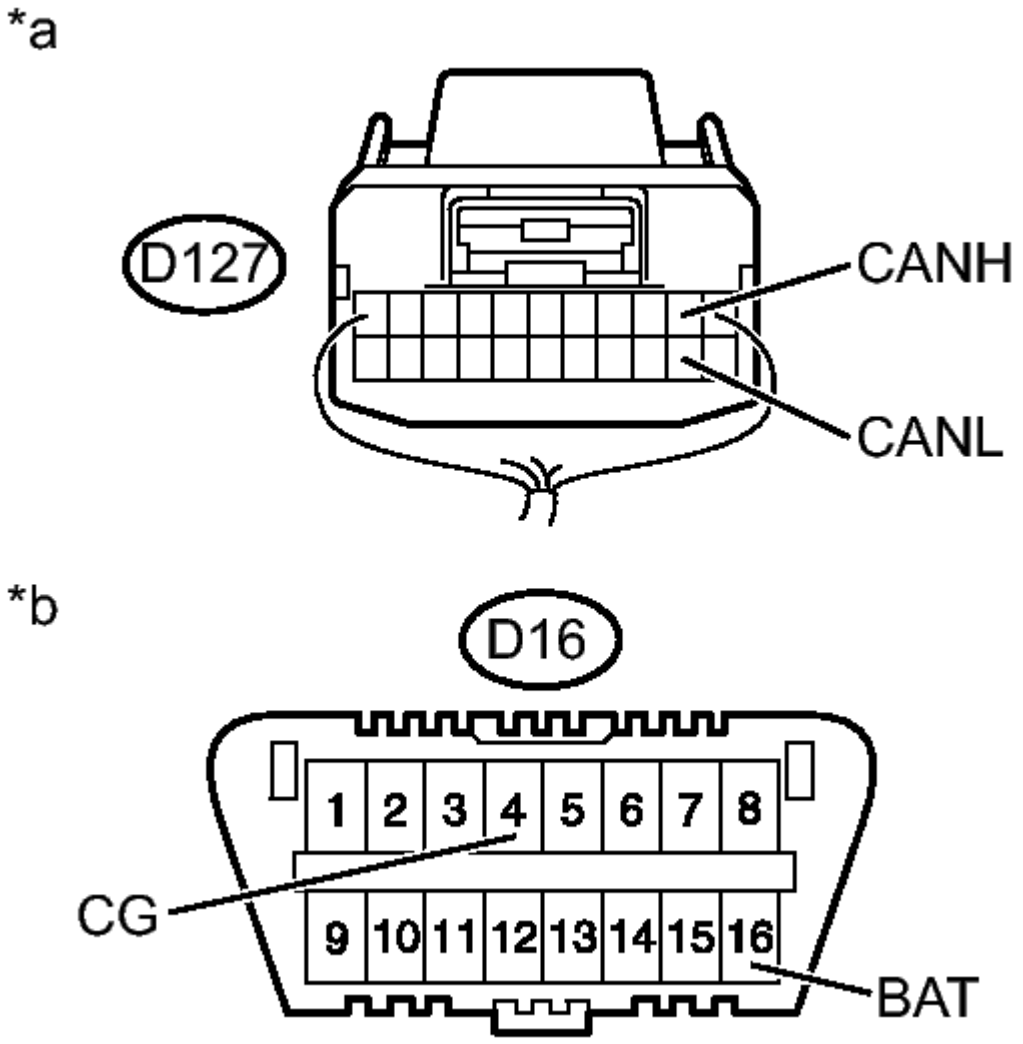


Fig. 35: Checking For Short In CAN BUS Main Wire (No. 3 Junction Connector - Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D127-2 (CANH) - D127-13 (CANL)	Ignition switch off	108 to 132 ohms
D127-2 (CANH) -	Ignition	200 ohms

D16-4 (CG)	switch off	or higher
D127-13 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D127-2 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D127-13 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 3 Junction Connector)
*b	DLC3

NG --> See step 14

OK: Go to next step

11. **CHECK FOR SHORT IN CAN BUS WIRE (NO. 3 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**
    a. Disconnect the D127 No. 3 junction connector connector.

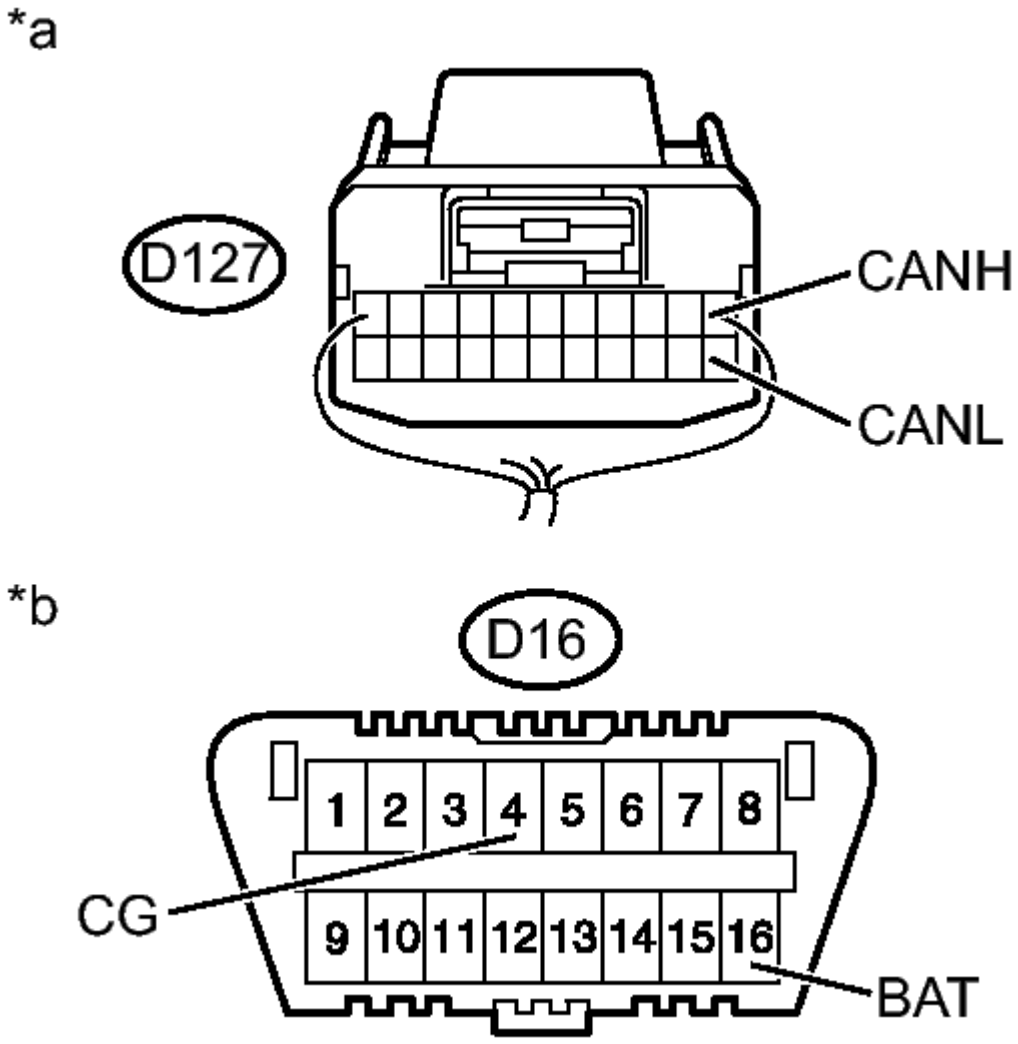


Fig. 36: Checking For Short In CAN BUS Wire (No. 3 Junction Connector - Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D127-1 (CANH) - D127-12 (CANL)	Ignition switch off	200 ohms or higher
D127-1 (CANH) -	Ignition	200 ohms

D16-4 (CG)	switch off	or higher
D127-12 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D127-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D127-12 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 3 Junction Connector)
*b	DLC3

NG --> See step 16

OK --> REPAIR OR REPLACE NO. 3 JUNCTION CONNECTOR

12. **CONNECT CONNECTOR**
    a. Reconnect the D127 No. 3 junction connector.

NEXT: Go to next step

13. **CHECK FOR SHORT IN CAN BUS MAIN WIRE (ECM)**
    a. Disconnect the A39 ECM connector.

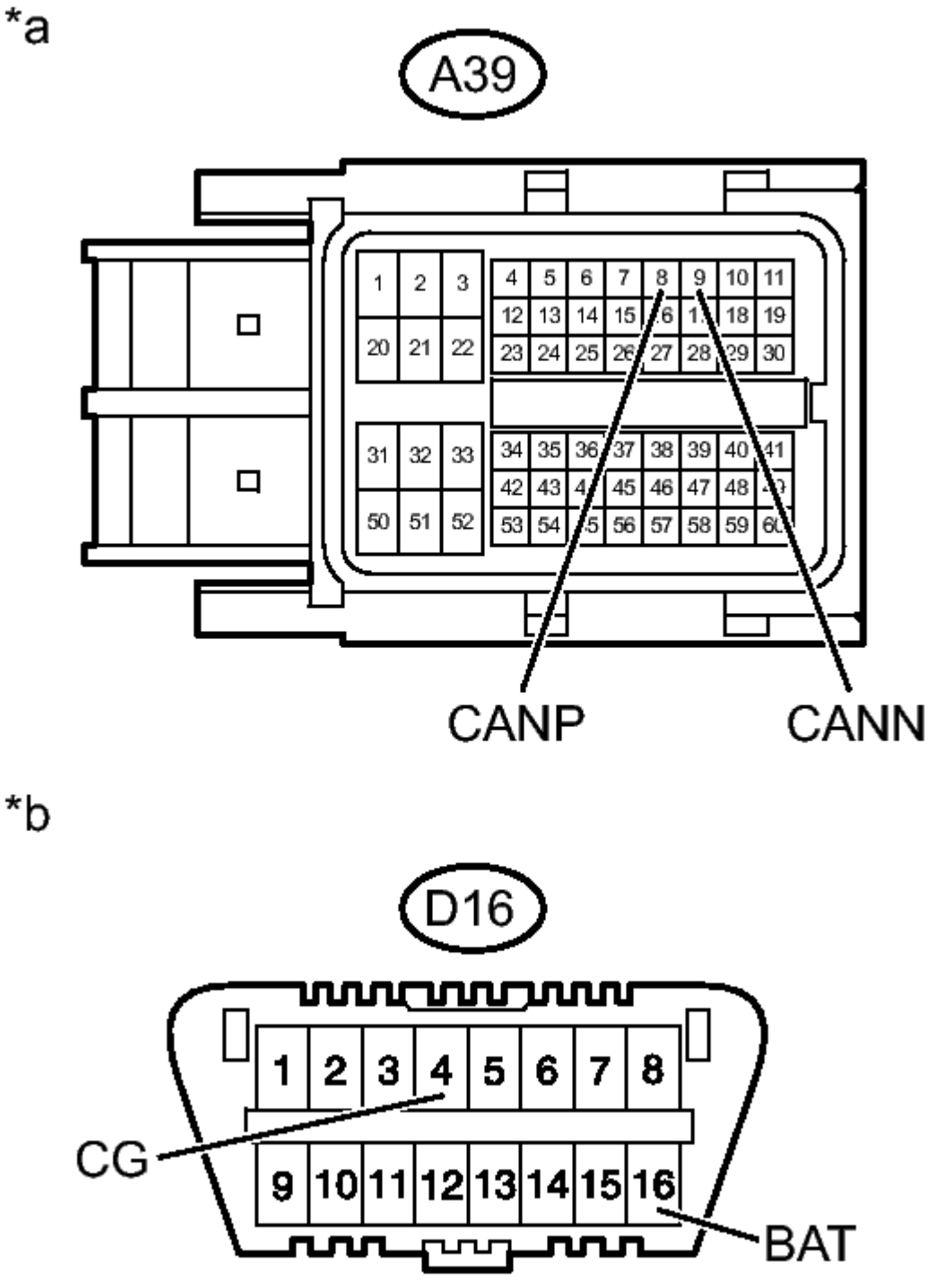


Fig. 37: Checking For Short In CAN BUS Main Wire (ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-8 (CANP) - A39-9 (CANN)	Ignition switch off	108 to 132 ohms
A39-8 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher
A39-9 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher
A39-8 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
A39-9 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 3 JUNCTION CONNECTOR - ECM)

OK --> See step 19

14. **CONNECT CONNECTOR**
    a. Reconnect the D127 No. 3 CAN junction connector.

NEXT: Go to next step

15. **CHECK FOR SHORT IN CAN BUS MAIN WIRE (POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D89 power management control ECU connector.

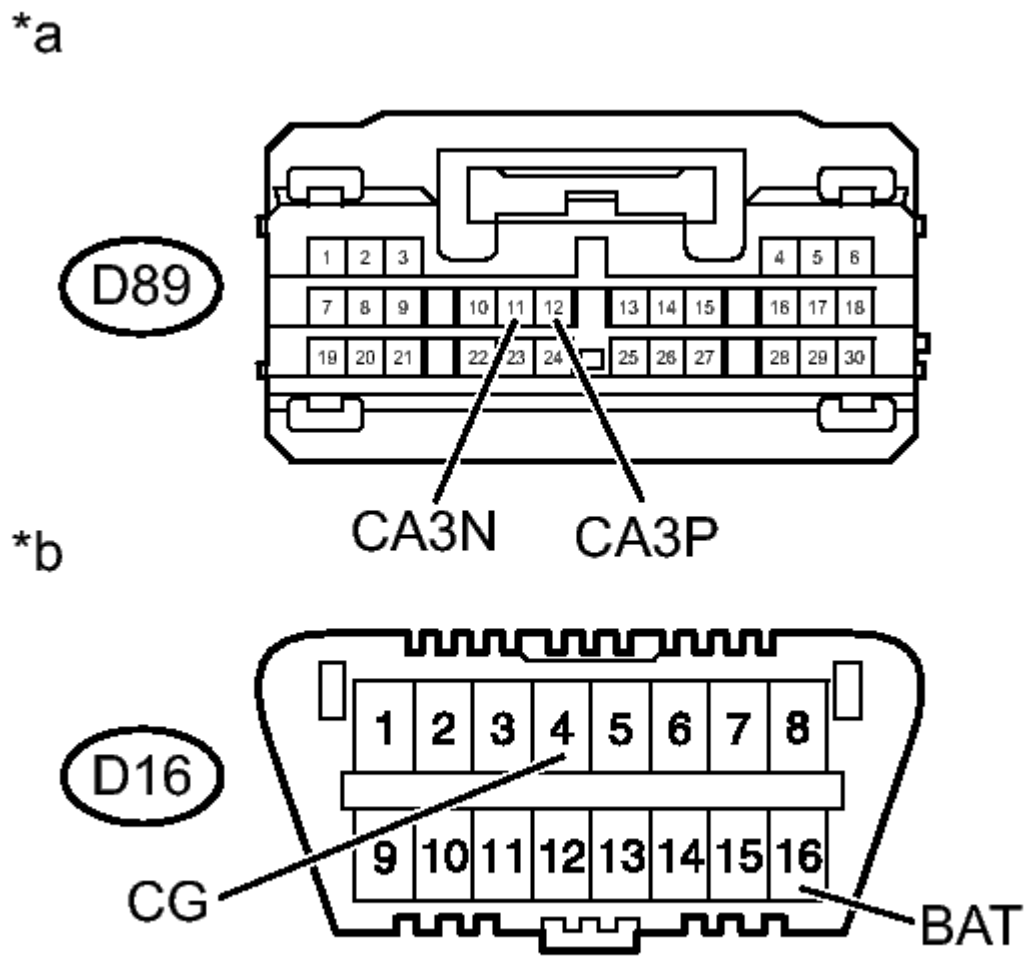


Fig. 38: Checking For Short In CAN BUS Main Wire (Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-12 (CA3P) - D89-11 (CA3N)	Ignition switch off	108 to 132 ohms
D89-12 (CA3P) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D89-11 (CA3N) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D89-12 (CA3P) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D89-11 (CA3N) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE OR CONNECTOR (NO. 3 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)

OK --> See step 20

16. **CONNECT CONNECTOR**
    a. Reconnect the D127 No. 3 junction connector.

NEXT: Go to next step

17. **CHECK FOR SHORT IN CAN BUS WIRE (AIR CONDITIONING AMPLIFIER)**
    a. Disconnect the D75 air conditioning amplifier.

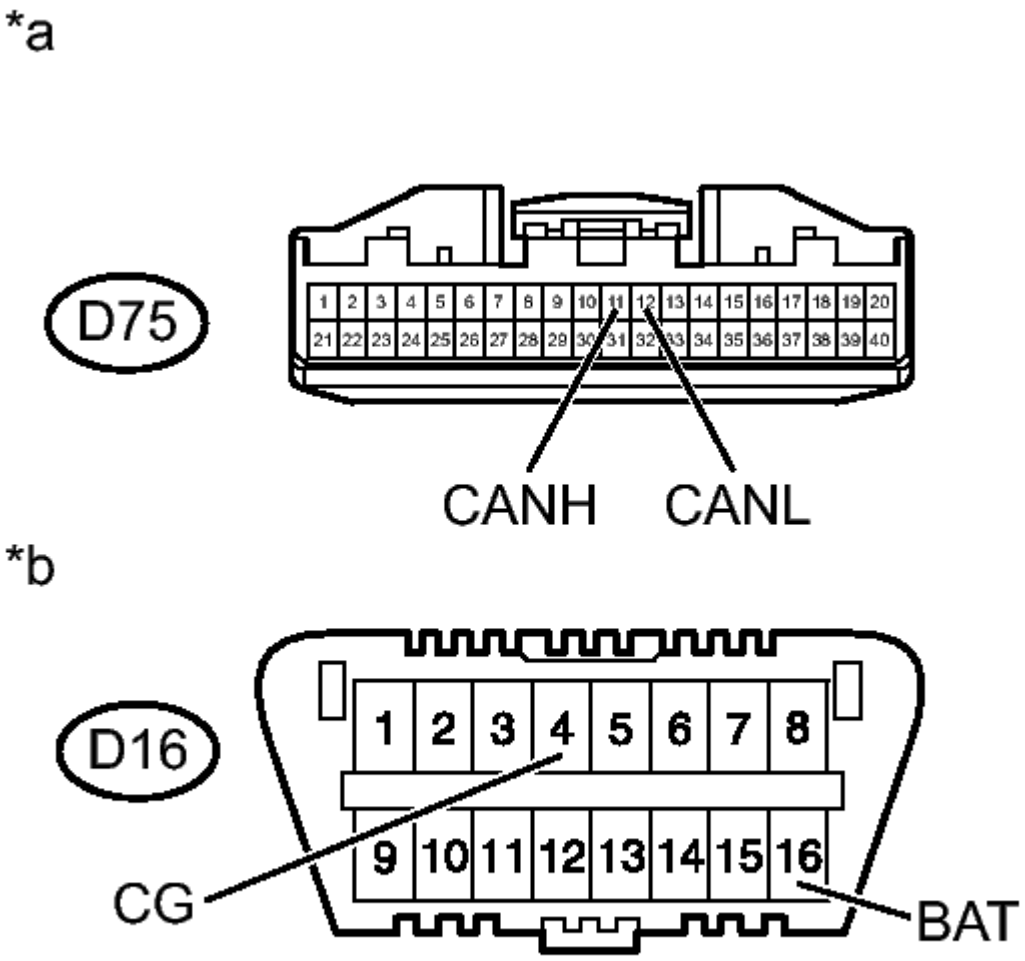


Fig. 39: Checking For Short In CAN BUS Wire (Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	Ignition switch off	108 to 132 ohms
D75-11 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D75-12 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D75-11 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D75-12 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Air Conditioning Amplifier)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (NO. 3 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)

OK --> REPLACE AIR CONDITIONING AMPLIFIER

18. **CHECK HARNESS AND CONNECTOR (POWER MANAGEMENT CONTROL ECU - BATTERY AND BODY GROUND)**
    a. Connect the cable to the negative (-) battery terminal.

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .**

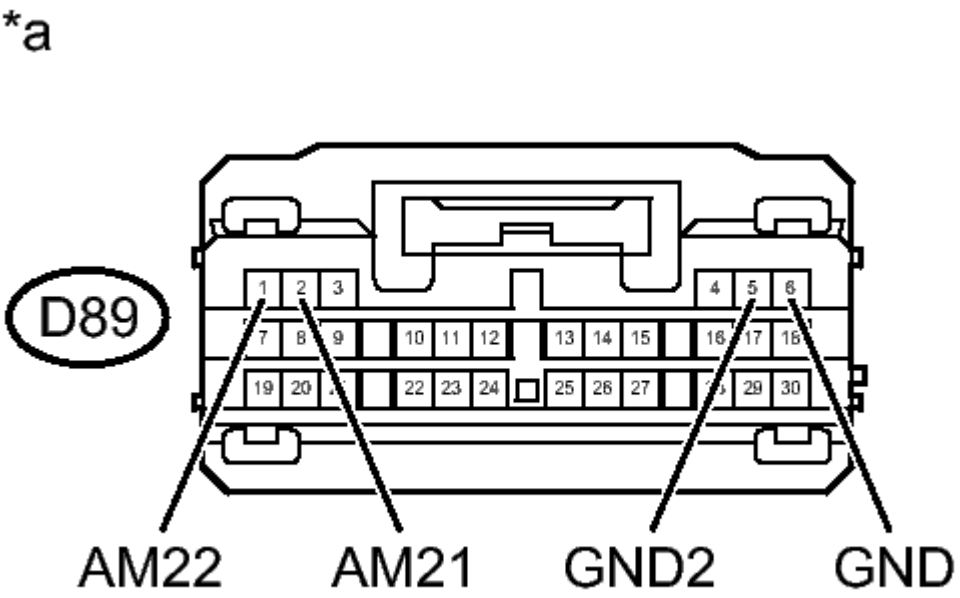


Fig. 40: Measuring Resistance Of Power Management Control ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the D89 power management control ECU.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D89-6 (GND) - Body ground	Always	Below 1 ohms
D89-5 (GND2) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Condition	Specified Condition
D89-2		

(AM21) - Body ground	Always	11 to 14 V
D89-1 (AM22) - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 20

19. **REPLACE ECM. Refer to REMOVAL**
20. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**

DTC U1002 (CAN MS BUS): LOST COMMUNICATION WITH GATEWAY MODULE (MAIN BODY ECU)

DESCRIPTION

If 2 or more DTCs are output during the DTC check, 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).

DTC Code	Symptom	Trouble Area
		• MS bus circuit • Main body ECU main wire or connector • Combination meter main wire or connector • Outer mirror control ECU Assembly LH branch wire or connector*1 • Outer mirror control ECU Assembly RH branch wire or connector*1 • Back door ECU branch wire or connector*2

U1002 (CAN MS BUS)	Lost communication with the gateway module (main body ECU).	• Position control ECU and switch branch wire or connector*3 • Slide door motor unit LH branch wire or connector*4 • Slide door motor unit RH branch wire or connector*4 • Main body ECU • Combination meter • Outer mirror control ECU Assembly LH*1 • Outer mirror control ECU Assembly RH*1 • Back door ECU*2 • Position control ECU and switch*3 • Slide door motor unit LH*4 • Slide door motor unit RH*4 • Instrument panel junction block • No. 2 CAN junction connector

*1: w/ Memory

*2: w/ Power Back Door

*3: for Power Seat with Memory

*4: w/ Power Slide Door

WIRING DIAGRAM

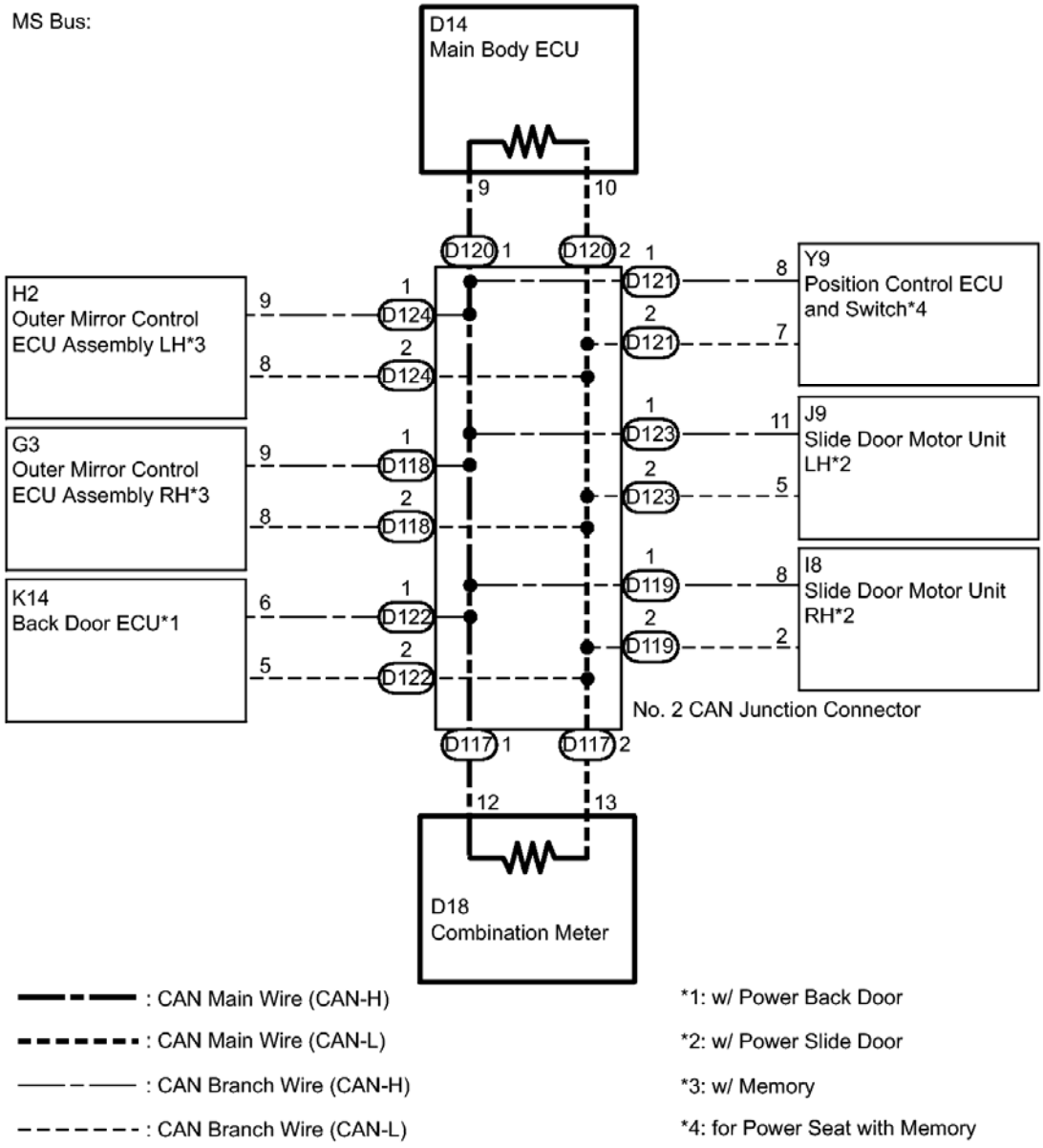


Fig. 41: Gateway Module (Main Body ECU) Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1**

minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK CAN BUS WIRE (MAIN WIRE FOR DISCONNECTION, BUS LINE FOR SHORT CIRCUIT)**
   a. Measure the resistance according to the value(s) in the table below.

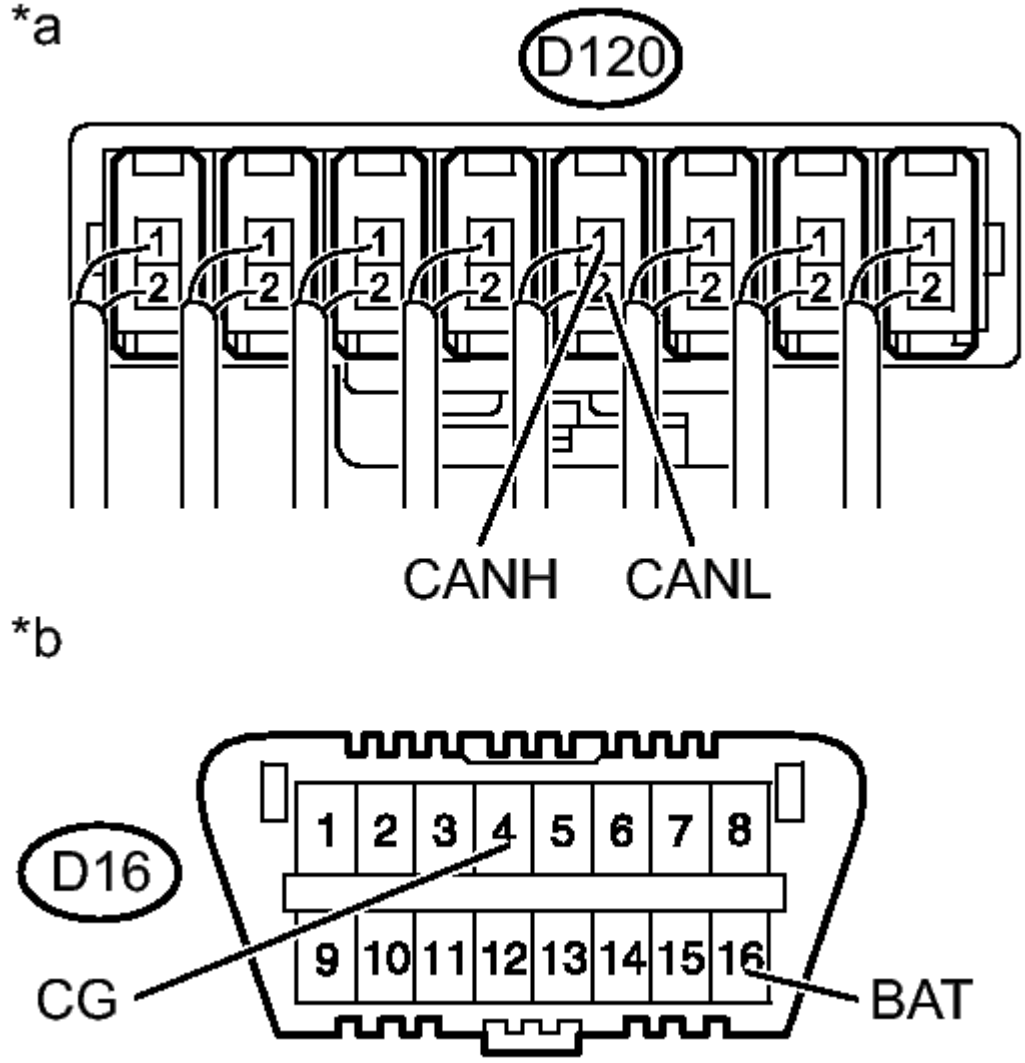


Fig. 42: Checking CAN BUS Wire (Main Wire For Disconnection, BUS Line For Short Circuit)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition	Resistance Malfunction
D120-1 (CANH) - D120-2 (CANL)	Ignition switch off	54 to 69 ohms	Below 53 ohms: Short in line
	Ignition switch off		70 ohms or higher: Open in CAN main bus line

D120-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D120-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D120-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short
D120-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short

TEXT IN ILLUSTRATION

*a	Junction connector with harness connected (No. 2 CAN Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
NG - Open in CAN main wire	A
NG - Short in line - +B short - Ground short	B

OK	C

B --> See step 9

C --> See step 40

A: Go to next step

3. **CHECK FOR OPEN IN MAIN BUS WIRE (NO. 2 CAN JUNCTION CONNECTOR - MAIN BODY ECU)**
   a. Disconnect the D120 No. 2 CAN junction connector connector.

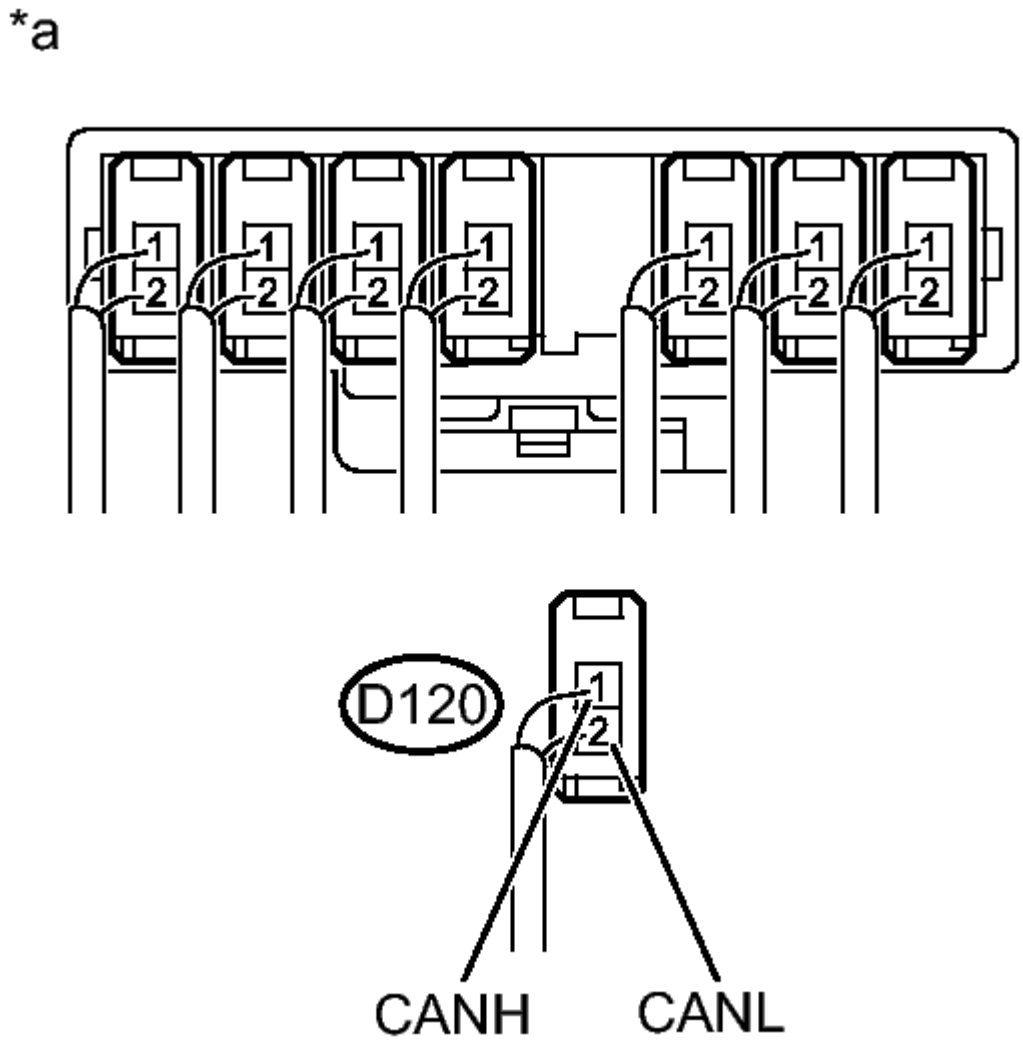


Fig. 43: Checking For Open In Main BUS Wire (No. 2 CAN Junction Connector - Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D120-1 (CANH) - D120-2 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)

NG --> See step 5

OK: Go to next step

4. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 2 CAN JUNCTION CONNECTOR - COMBINATION METER)**
   a. Disconnect the D117 No. 2 CAN junction connector connector.

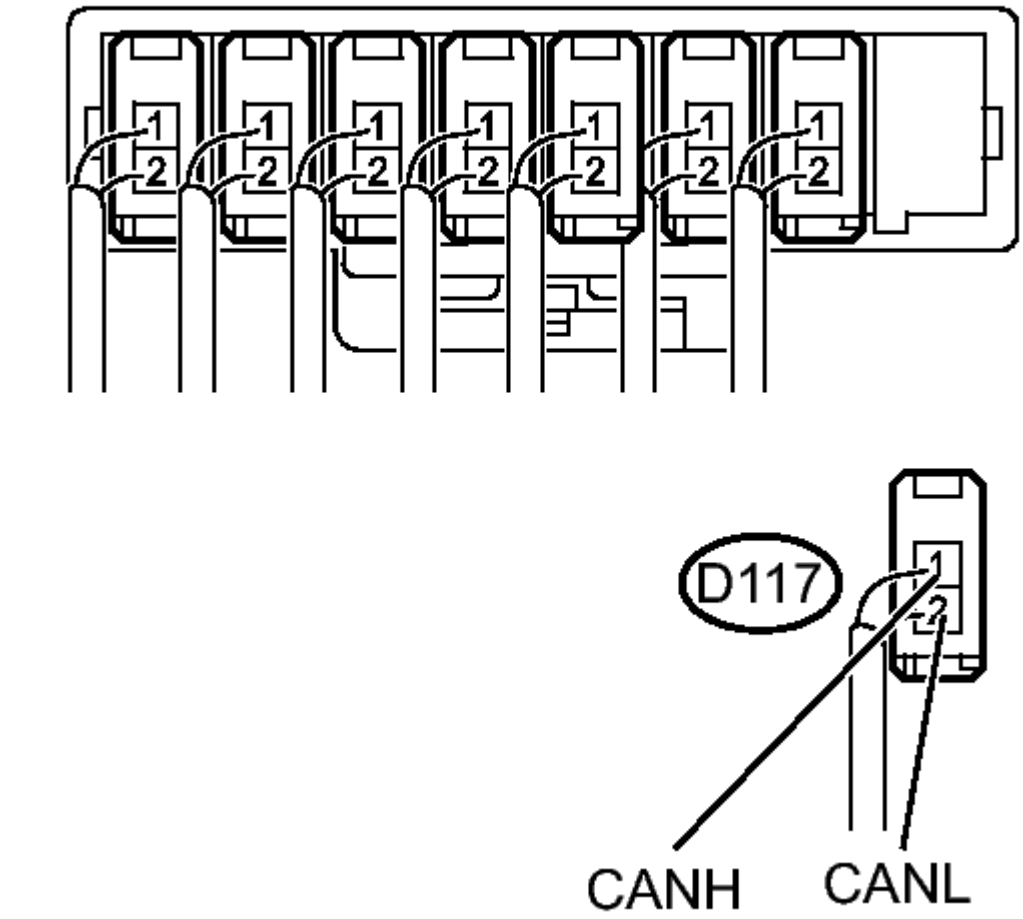


Fig. 44: Checking For Open In CAN BUS Main Wire (No. 2 CAN Junction Connector - Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D117-1 (CANH) - D117-2 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)

NG --> See step 7

OK --> REPAIR OR REPLACE NO. 2 CAN JUNCTION CONNECTOR

5. **CONNECT CONNECTOR**
   a. Reconnect the D120 No. 2 CAN junction connector connector.

NEXT: Go to next step

6. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (MAIN BODY ECU - NO. 2 CAN JUNCTION CONNECTOR)**
   a. Disconnect the D14 main body ECU connector.

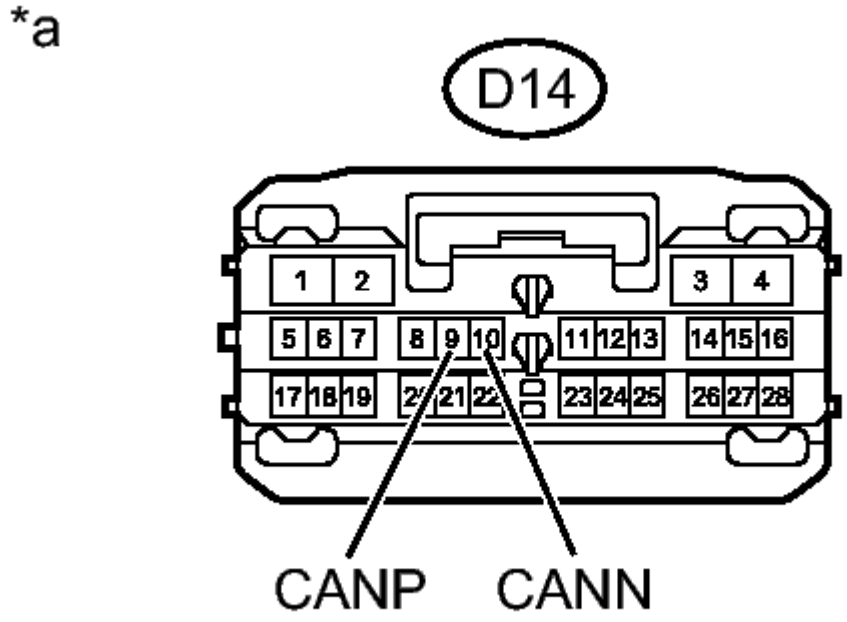


Fig. 45: Checking For Open In CAN BUS Main Wire (Main Body ECU - No. 2 CAN Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D14-9 (CANP) - D14-10 (CANN)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO MAIN BODY ECU (MAIN BODY ECU - NO. 2 CAN JUNCTION CONNECTOR)

OK --> See step 42

7. **CONNECT CONNECTOR**
   a. Reconnect the D117 and D120 No. 2 CAN junction connector connectors.

NEXT: Go to next step

8. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER - NO. 2 CAN JUNCTION CONNECTOR)**
   a. Disconnect the D18 combination meter connector.

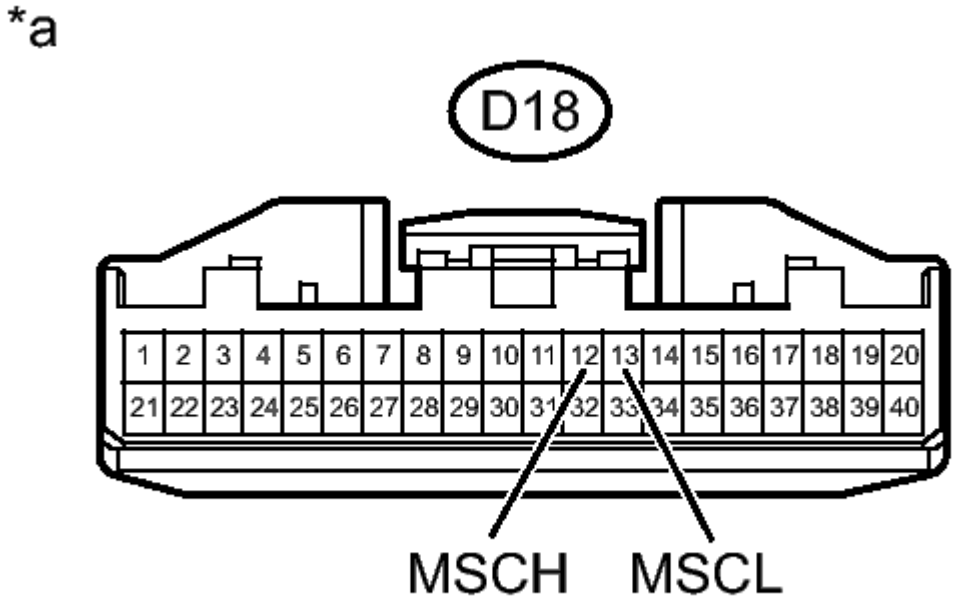


Fig. 46: Checking For Open In CAN BUS Main Wire (Combination Meter - No. 2 CAN Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D18-12 (MSCH) - D18-13 (MSCL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER (COMBINATION METER - NO. 2 CAN JUNCTION CONNECTOR)

OK --> See step 43

9. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - COMBINATION METER)**
   a. Disconnect the D117 No. 2 CAN junction connector connector.
   b. Measure the resistance according to the value(s) in the table below.

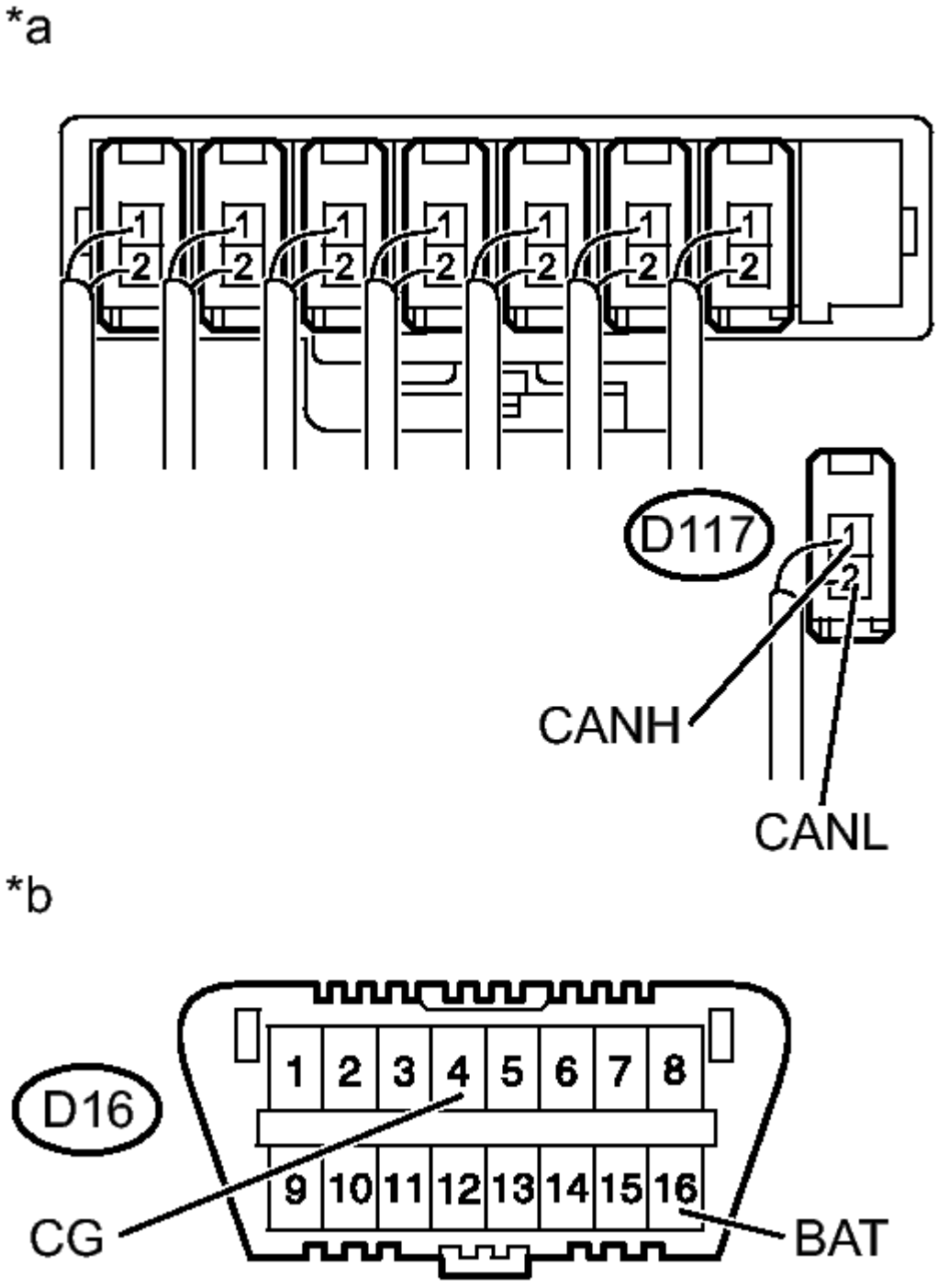


Fig. 47: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D117-1 (CANH) - D117-2 (CANL)	Ignition switch off	108 to 132 ohms
D117-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D117-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D117-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D117-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 24

OK: Go to next step

10. **CONNECT CONNECTOR**
    a. Reconnect the D117 No. 2 CAN junction connector connector.

NEXT: Go to next step

11. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - OUTER MIRROR CONTROL ECU ASSEMBLY RH)**
    a. Disconnect the D118 No. 2 CAN junction connector connector.
    b. Measure the resistance according to the value(s) in the table below.

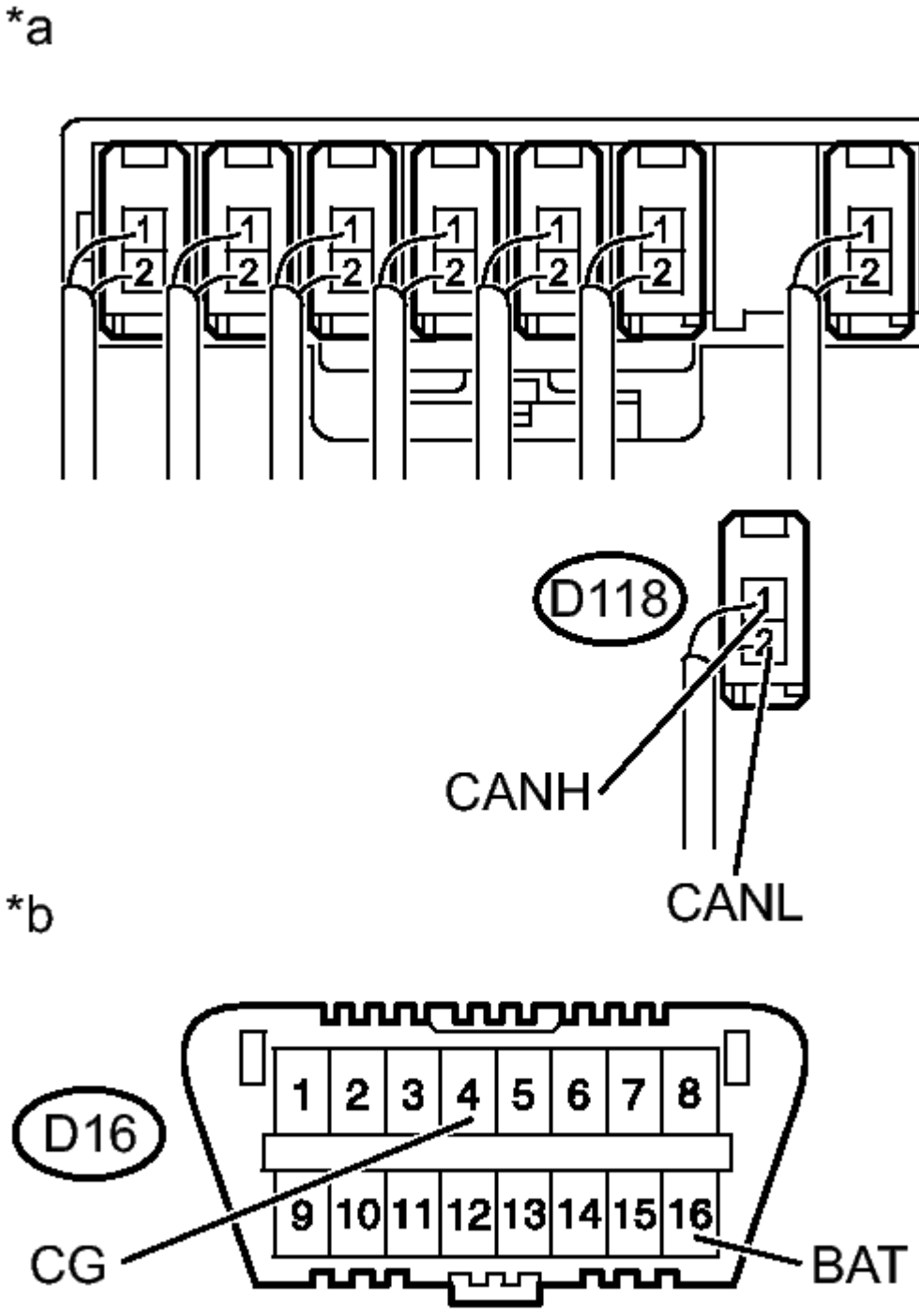


Fig. 48: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Outer Mirror Control ECU Assembly RH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D118-1 (CANH) - D118-2 (CANL)	Ignition switch off	200 ohms or higher
D118-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D118-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D118-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D118-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 26

OK: Go to next step

12. **CONNECT CONNECTOR**
    a. Reconnect the D118 No. 2 CAN junction connector connector.

NEXT: Go to next step

13. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - SLIDE DOOR MOTOR UNIT RH)**
    a. Disconnect the D119 No. 2 CAN junction connector connector.

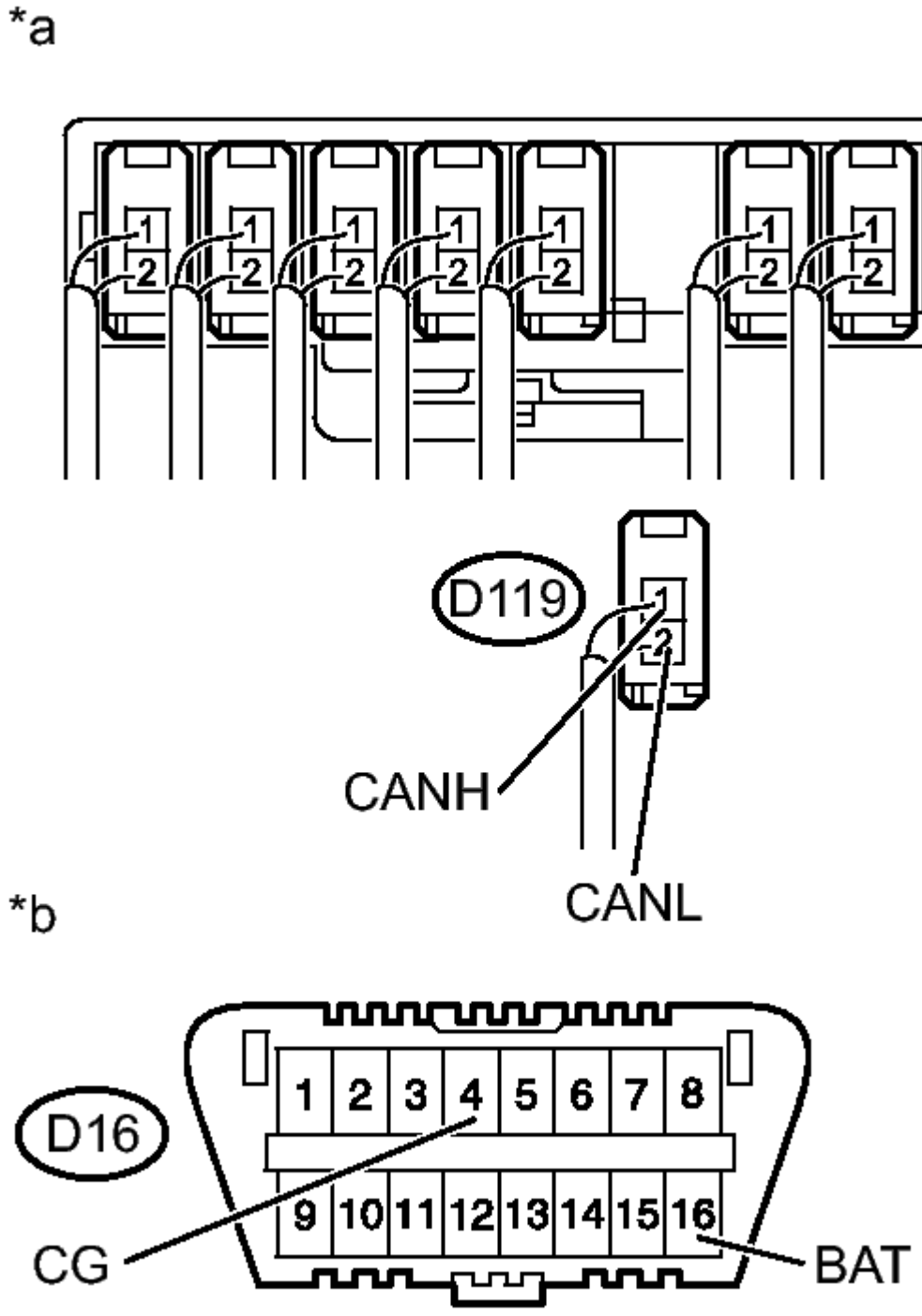


Fig. 49: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Slide Door Motor Unit RH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D119-1 (CANH) - D119-2 (CANL)	Ignition switch off	200 ohms or higher
D119-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D119-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D119-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D119-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 28

OK: Go to next step

14. **CONNECT CONNECTOR**
    a. Reconnect the D119 No. 2 CAN junction connector connector.

NEXT: Go to next step

15. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - POSITION CONTROL ECU AND SWITCH)**
    a. Disconnect the D121 No. 2 CAN junction connector connector.

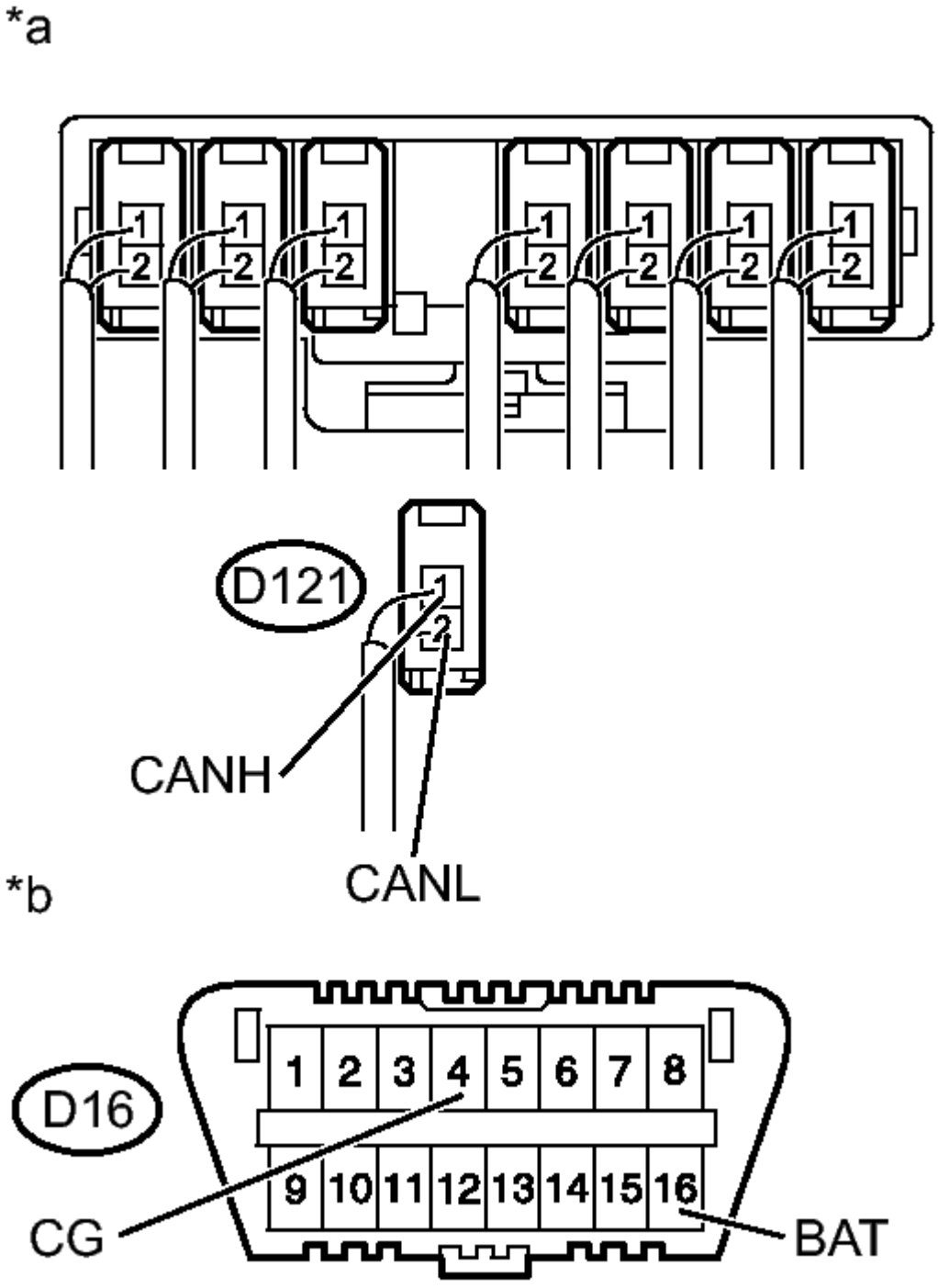


Fig. 50: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Position Control ECU And Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D121-1 (CANH) - D121-2 (CANL)	Ignition switch off	200 ohms or higher
D121-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D121-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D121-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D121-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 30

OK: Go to next step

16. **CONNECT CONNECTOR**
    a. Reconnect the D121 No. 2 CAN junction connector connector.

NEXT: Go to next step

17. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - BACK DOOR ECU)**
    a. Disconnect the D122 No. 2 CAN junction connector connector.

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

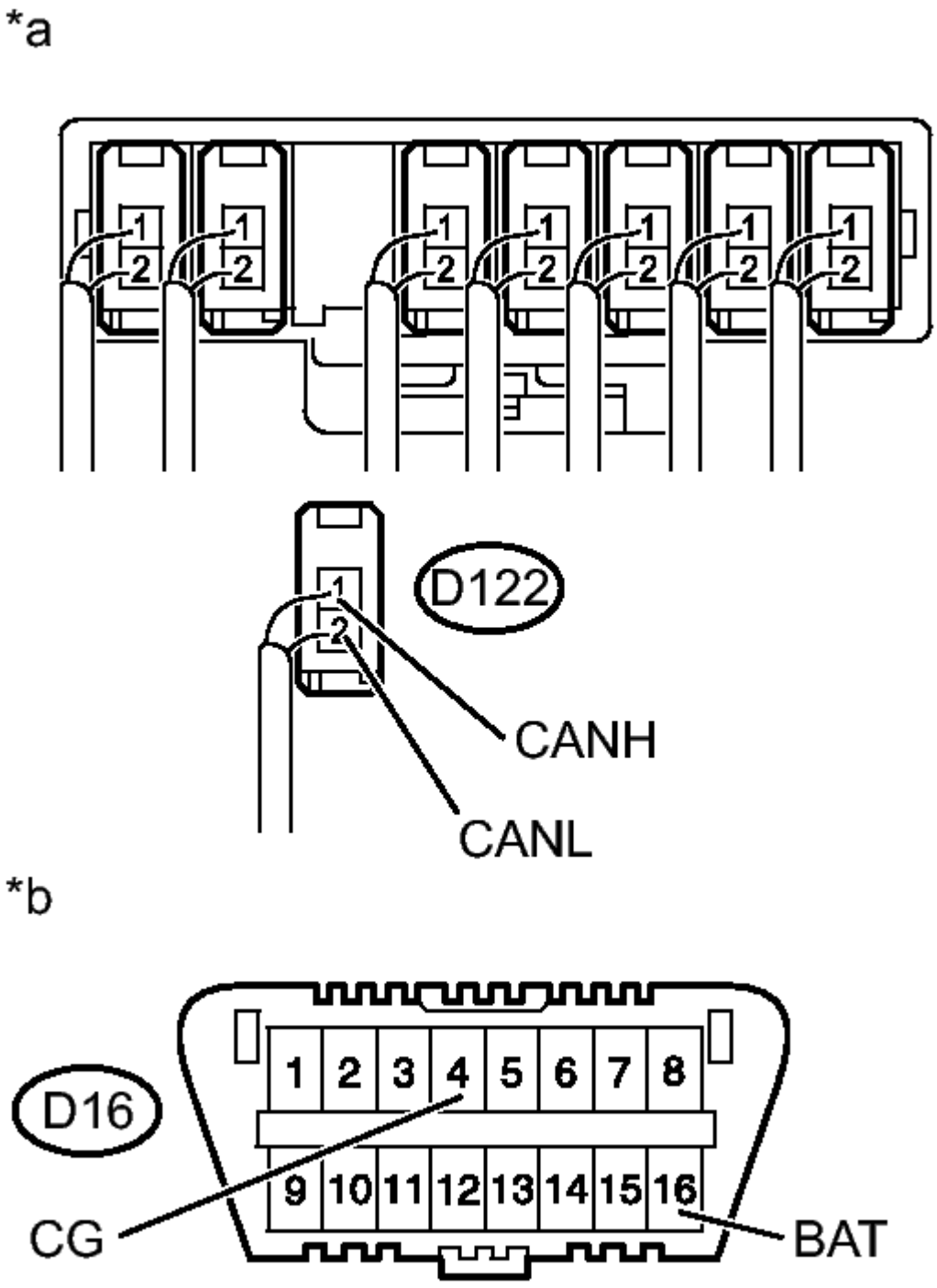


Fig. 51: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Back Door ECU)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D122-1 (CANH) - D122-2 (CANL)	Ignition switch off	200 ohms or higher
D122-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D122-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D122-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D122-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 32

OK: Go to next step

18. **CONNECT CONNECTOR**
    a. Reconnect the D122 No. 2 CAN junction connector connector.

NEXT: Go to next step

19. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - SLIDE DOOR MOTOR UNIT LH)**
    a. Disconnect the D123 No. 2 CAN junction connector connector.

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

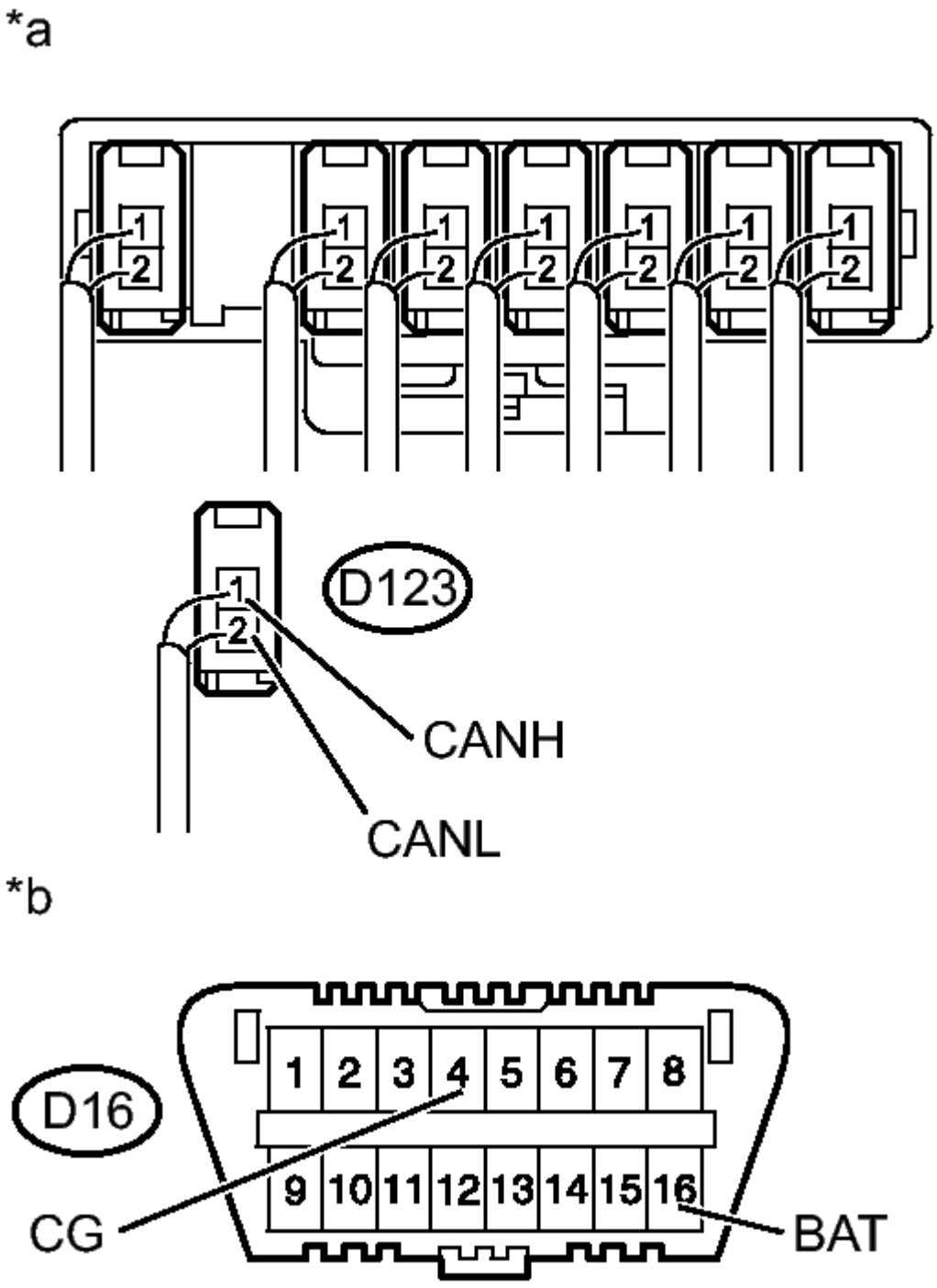


Fig. 52: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Slide Door Motor Unit LH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D123-1 (CANH) - D123-2 (CANL)	Ignition switch off	200 ohms or higher
D123-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D123-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D123-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D123-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 34

OK: Go to next step

20. **CONNECT CONNECTOR**
    a. Reconnect the D123 No. 2 CAN junction connector connector.

NEXT: Go to next step

21. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - OUTER MIRROR CONTROL ECU ASSEMBLY LH)**
    a. Disconnect the D124 No. 2 CAN junction connector connector.

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

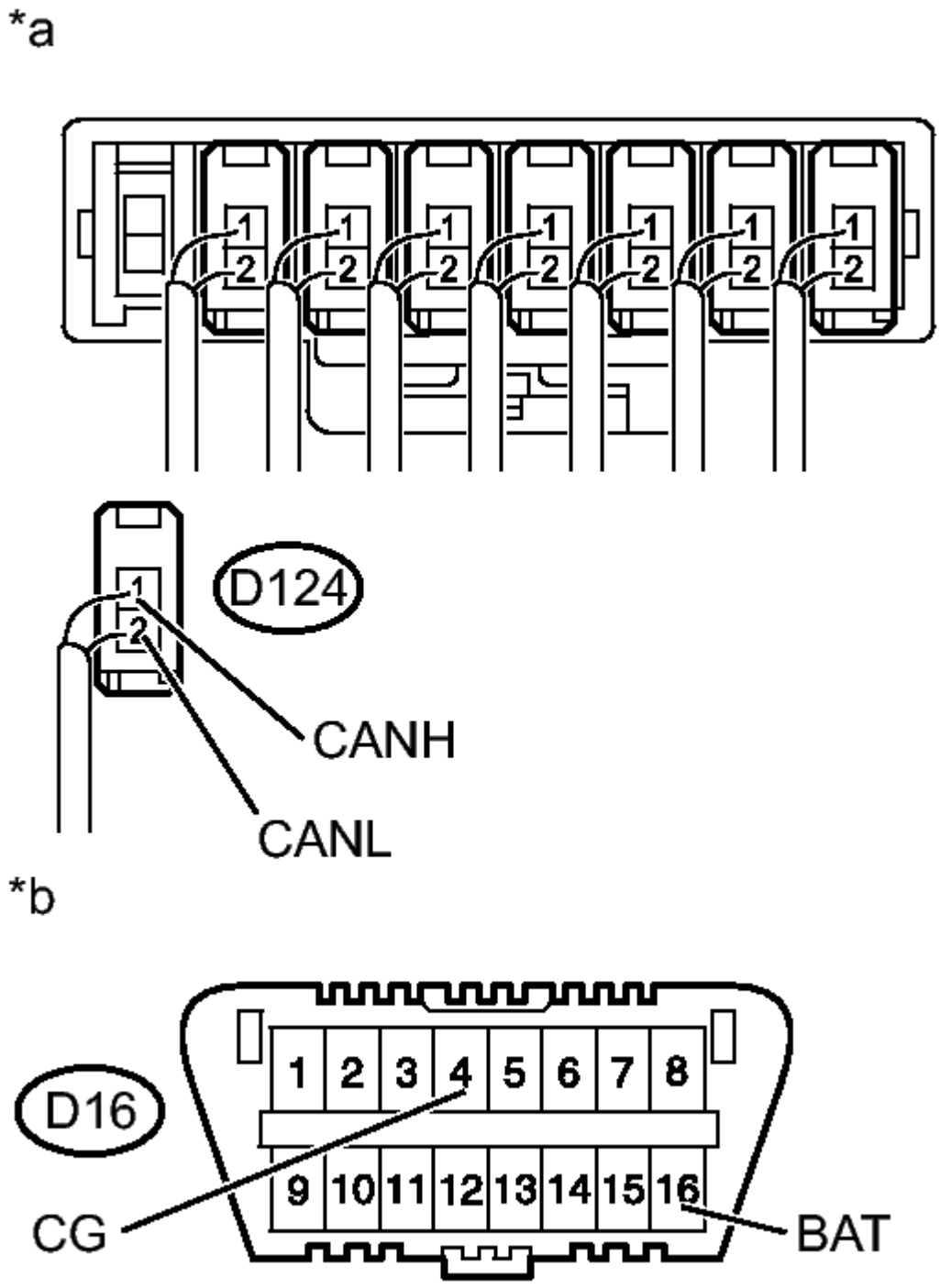


Fig. 53: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Outer Mirror Control ECU Assembly LH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D124-1 (CANH) - D124-2 (CANL)	Ignition switch off	200 ohms or higher
D124-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D124-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D124-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D124-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 36

OK: Go to next step

22. **CONNECT CONNECTOR**
    a. Reconnect the D124 No. 2 CAN junction connector connector.

NEXT: Go to next step

23. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 CAN JUNCTION CONNECTOR - MAIN BODY ECU)**
    a. Disconnect the D120 No. 2 CAN junction connector connector.

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

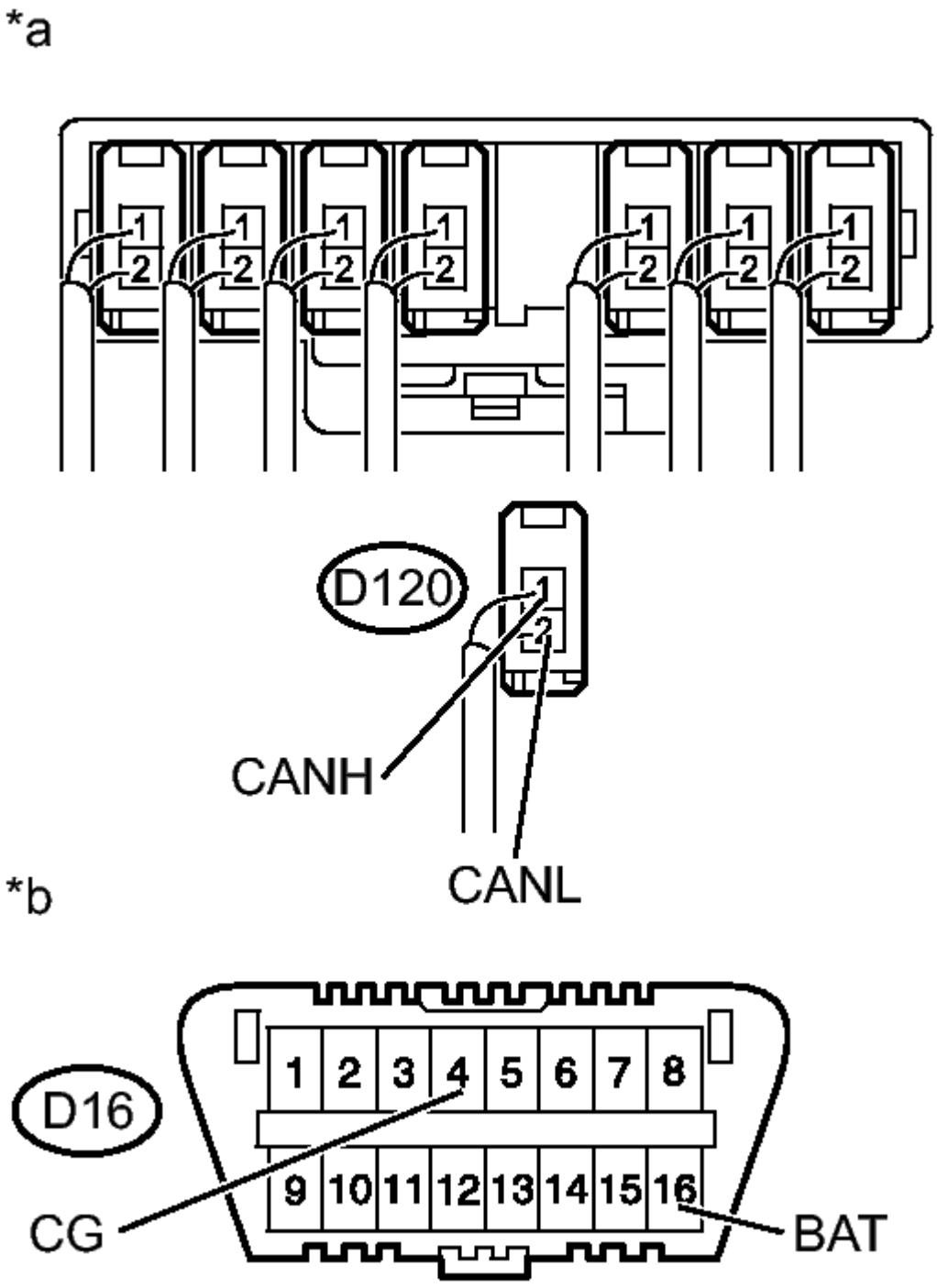


Fig. 54: Checking For Short In CAN BUS Wires (No. 2 CAN Junction Connector - Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D120-1 (CANH) - D120-2 (CANL)	Ignition switch off	108 to 132 ohms
D120-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D120-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D120-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D120-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 CAN Junction Connector)
*b	DLC3

NG --> See step 38

OK --> REPAIR OR REPLACE NO. 2 CAN JUNCTION CONNECTOR

24. **CONNECT CONNECTOR**
    a. Reconnect the D117 No. 2 CAN junction connector connector.

NEXT: Go to next step

25. **CHECK FOR SHORT IN CAN BUS WIRES (COMBINATION METER)**
    a. Disconnect the D18 combination meter connector.

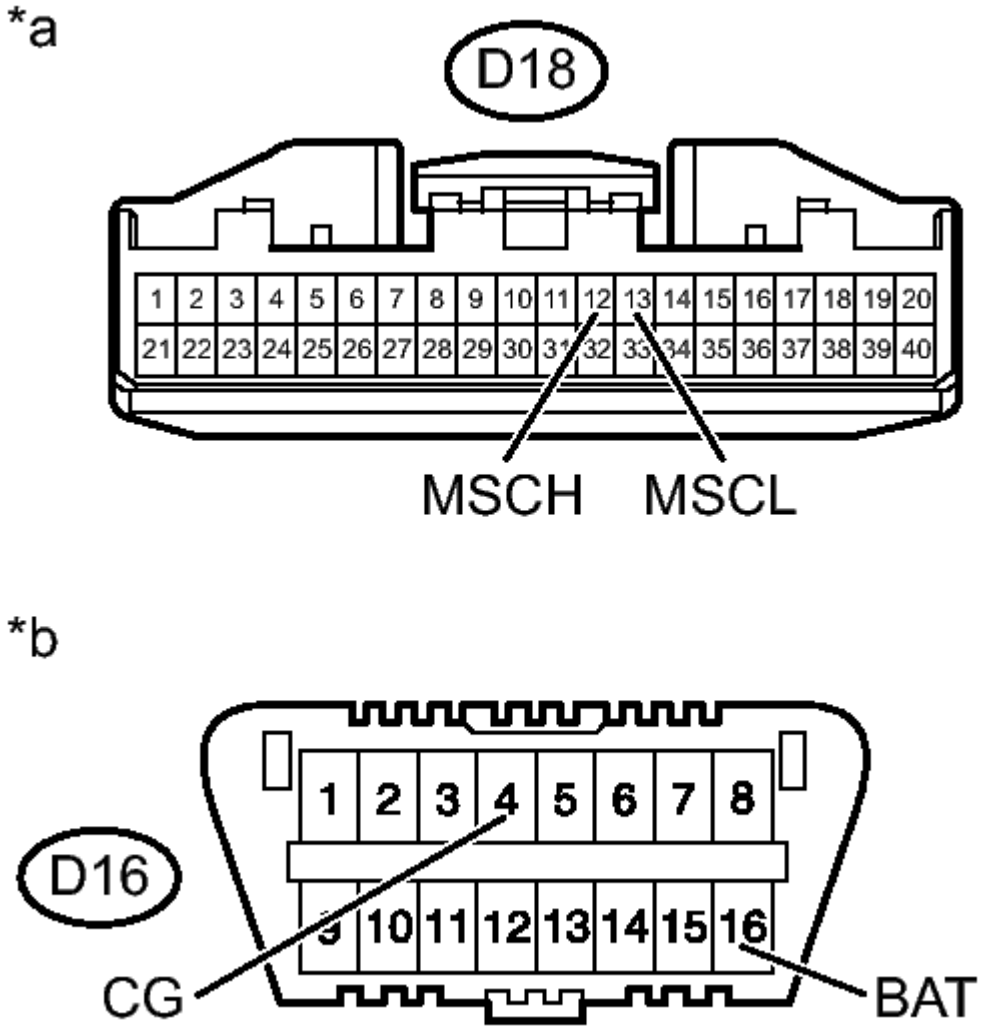


Fig. 55: Checking For Short In CAN BUS Wires (Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D18-12 (MSCH) - D18-13 (MSCL)	Ignition switch off	108 to 132 ohms
D18-12 (MSCH) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D18-13 (MSCL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D18-12 (MSCH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D18-13 (MSCL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER (CAN-H, CAN-L)

OK --> See step 44

26. **CONNECT CONNECTOR**
    a. Reconnect the D118 No. 2 CAN junction connector connector.

NEXT: Go to next step

27. **CHECK FOR SHORT IN CAN BUS WIRES (OUTER MIRROR CONTROL ECU ASSEMBLY RH)**
    a. Disconnect the G3 outer mirror control ECU assembly RH connector.

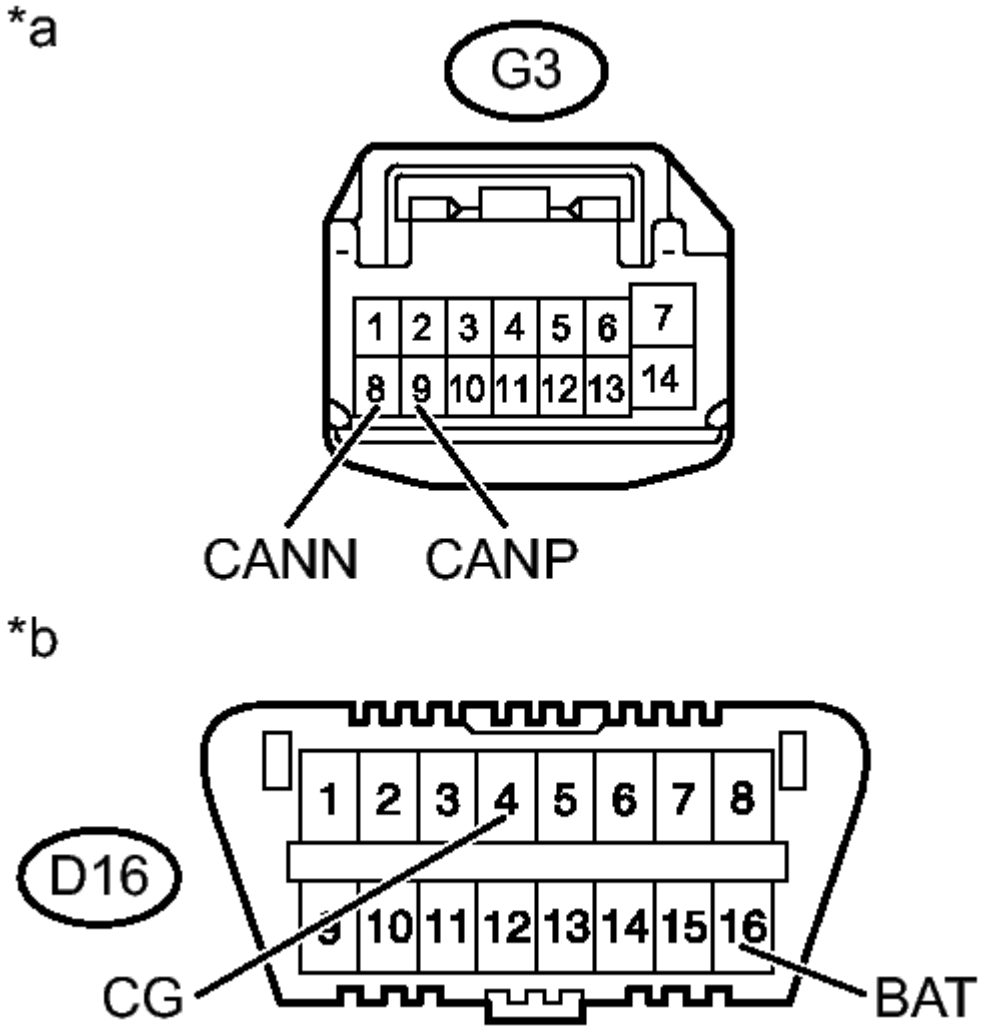


Fig. 56: Checking For Short In CAN BUS Wires (Outer Mirror Control ECU Assembly RH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
G3-9 (CANP) - G3-8 (CANN)	Ignition switch off	54 to 69 ohms
G3-9 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher

G3-8 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher
G3-9 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
G3-8 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU Assembly RH)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO OUTER MIRROR CONTROL ECU ASSEMBLY RH (CAN-H, CAN-L)

OK --> See step 45

28. **CONNECT CONNECTOR**
    a. Reconnect the D119 No. 2 CAN junction connector connector.

NEXT: Go to next step

29. **CHECK FOR SHORT IN CAN BUS WIRES (SLIDE DOOR MOTOR UNIT RH)**
    a. Disconnect the I8 slide door motor unit RH connector.

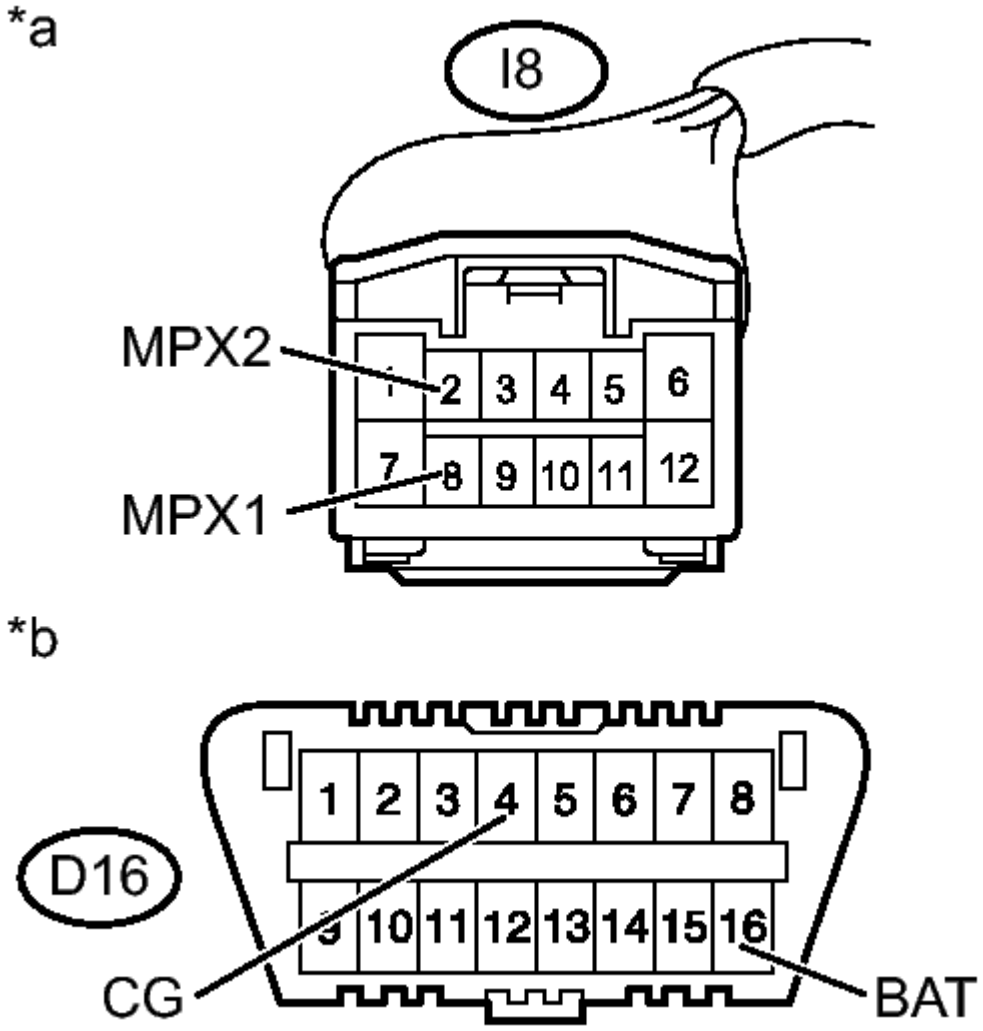


Fig. 57: Checking For Short In CAN BUS Wires (Slide Door Motor Unit RH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
I8-8 (MPX1) - I8-2 (MPX2)	Ignition switch off	54 to 69 ohms
I8-8 (MPX1) - D16-4 (CG)	Ignition switch off	200 ohms or higher

I8-2 (MPX2) - D16-4 (CG)	Ignition switch off	200 ohms or higher
I8-8 (MPX1) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
I8-2 (MPX2) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit RH)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SLIDE DOOR MOTOR UNIT RH (CAN-H, CAN-L)

OK --> See step 46

30. **CONNECT CONNECTOR**
    a. Reconnect the D121 No. 2 CAN junction connector connector.

NEXT: Go to next step

31. **CHECK FOR SHORT IN CAN BUS WIRES (POSITION CONTROL ECU AND SWITCH)**
    a. Disconnect the Y9 position control ECU and switch connector.

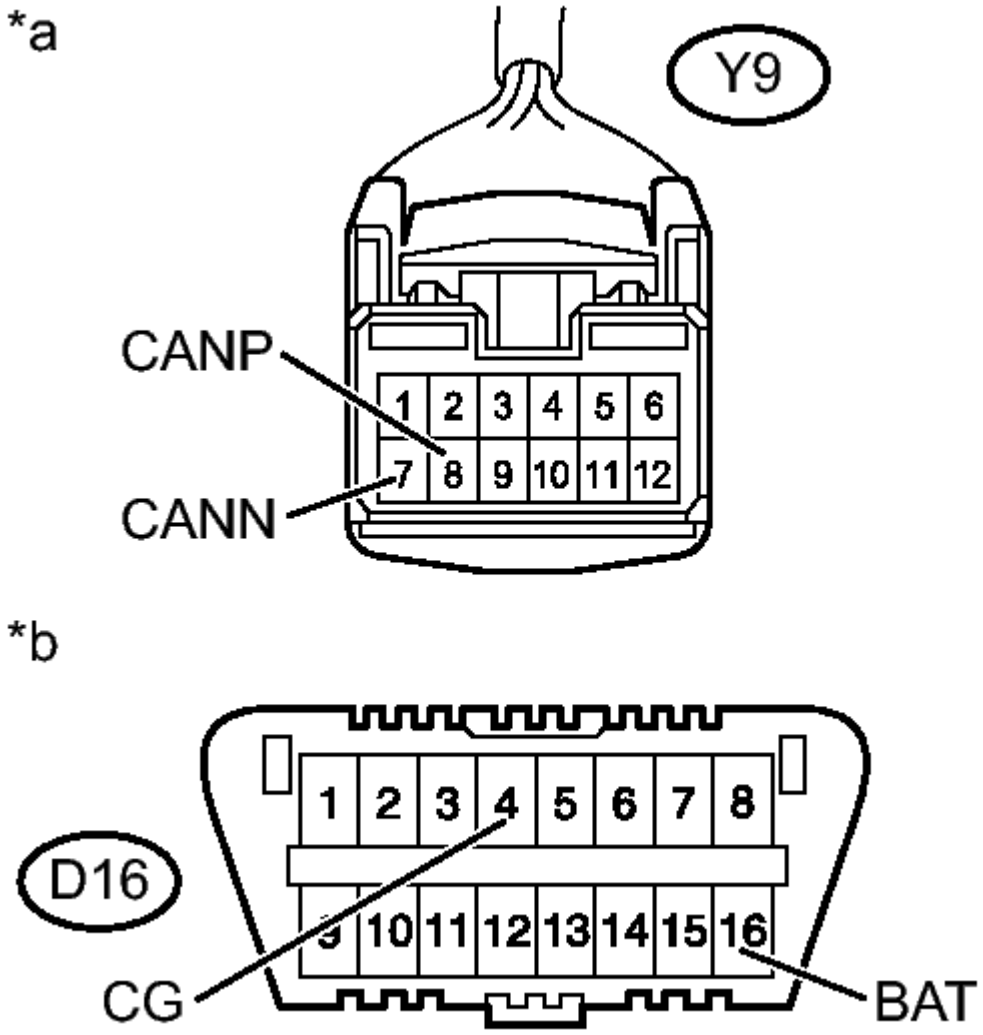


Fig. 58: Checking For Short In CAN BUS Wires (Position Control ECU And Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
Y9-8 (CANP) - Y9-7 (CANN)	Ignition switch off	54 to 69 ohms
Y9-8 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher

Y9-7 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher
Y9-8 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
Y9-7 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Position Control ECU and Switch)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POSITION CONTROL ECU AND SWITCH (CAN-H, CAN-L)

OK --> See step 47

32. **CONNECT CONNECTOR**
    a. Reconnect the D122 No. 2 CAN junction connector connector.

NEXT: Go to next step

33. **CHECK FOR SHORT IN CAN BUS WIRES (BACK DOOR ECU)**
    a. Disconnect the K14 back door ECU connector.

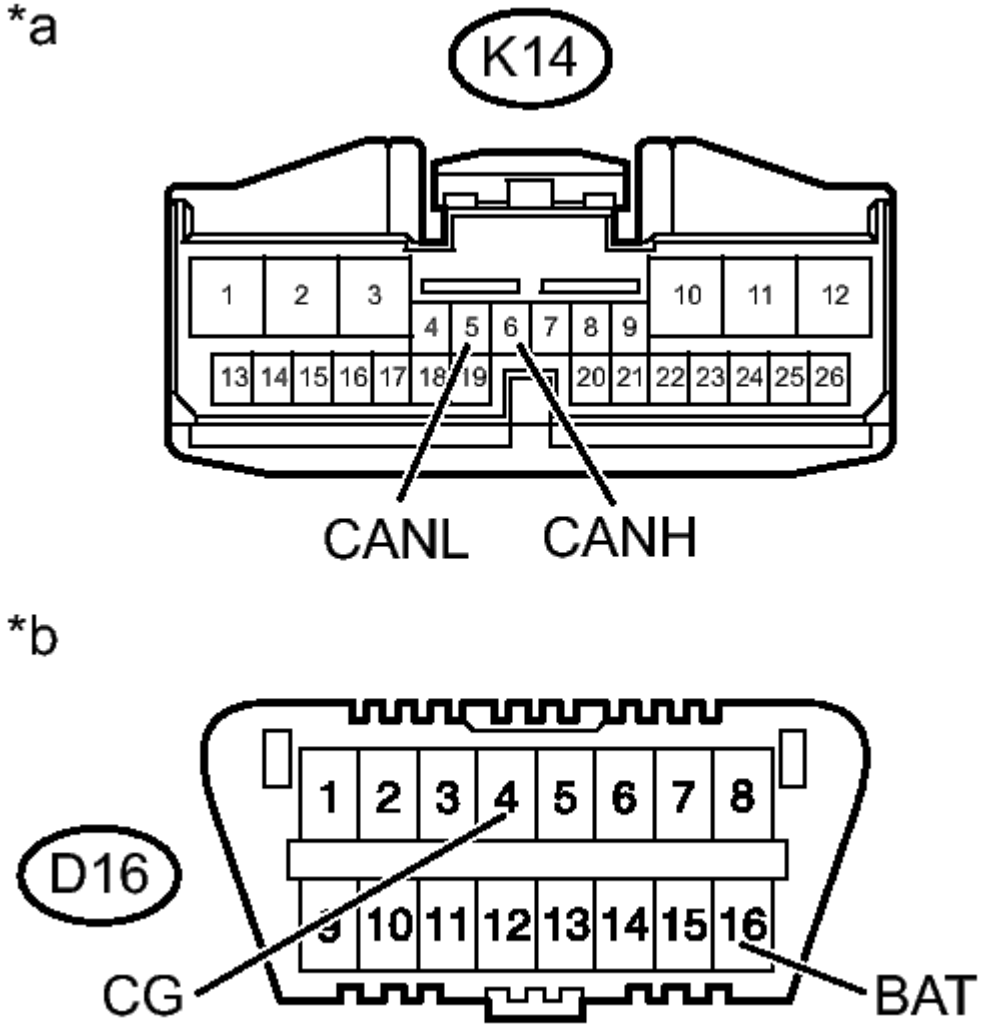


Fig. 59: Checking For Short In CAN BUS Wires (Back Door ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
K14-6 (CANH) - K14-5 (CANL)	Ignition switch off	54 to 69 ohms
K14-6 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher

K14-5 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
K14-6 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
K14-5 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Back Door ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO BACK DOOR ECU (CAN-H, CAN-L)

OK --> See step 48

34. **CONNECT CONNECTOR**
    a. Reconnect the D123 No. 2 CAN junction connector connector.

NEXT: Go to next step

35. **CHECK FOR SHORT IN CAN BUS WIRES (SLIDE DOOR MOTOR UNIT LH)**
    a. Disconnect the J9 slide door motor unit LH connector.

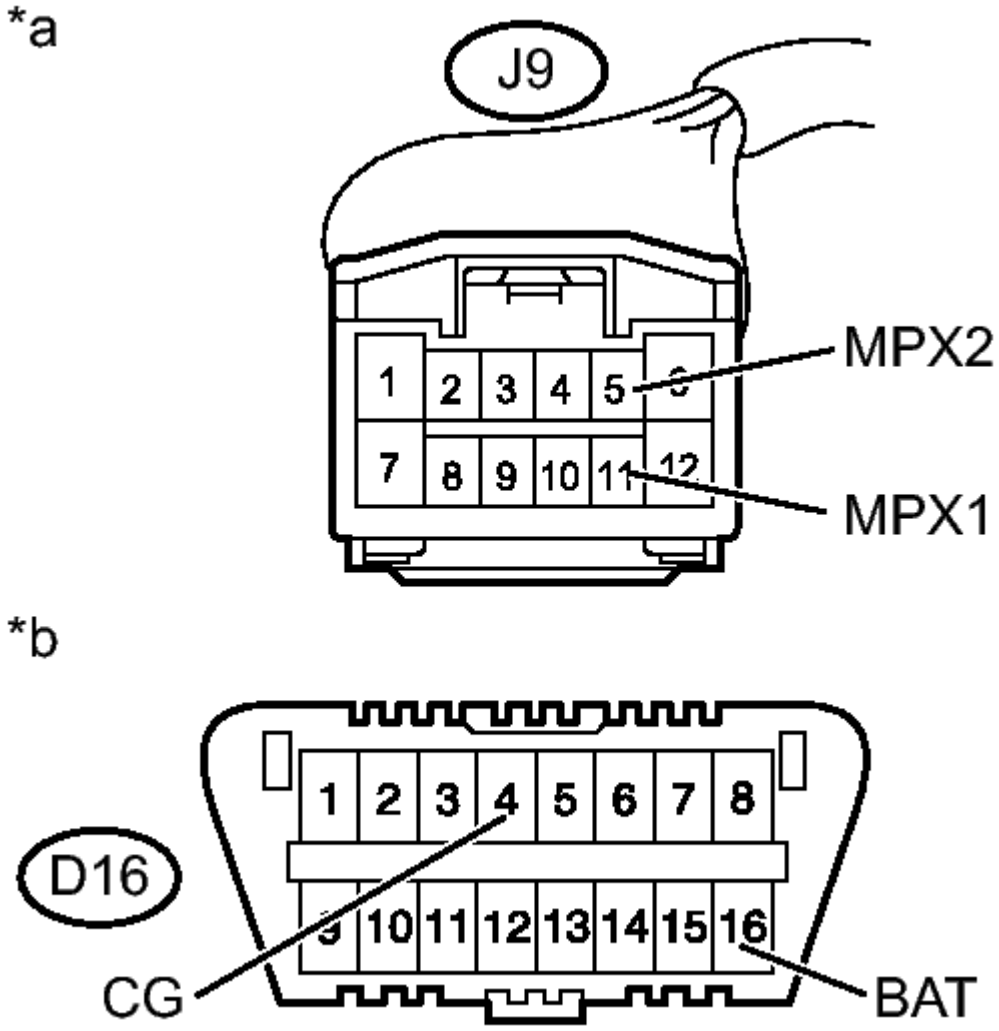


Fig. 60: Checking For Short In CAN BUS Wires (Slide Door Motor Unit LH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
J9-11 (MPX1) - J9-5 (MPX2)	Ignition switch off	54 to 69 ohms
J9-11 (MPX1) - D16-4 (CG)	Ignition switch off	200 ohms or higher

J9-5 (MPX2) - D16-4 (CG)	Ignition switch off	200 ohms or higher
J9-11 (MPX1) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
J9-5 (MPX2) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit LH)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SLIDE DOOR MOTOR UNIT LH (CAN-H, CAN-L)

OK --> See step 49

36. **CONNECT CONNECTOR**
    a. Reconnect the D124 No. 2 CAN junction connector connector.

NEXT: Go to next step

37. **CHECK FOR SHORT IN CAN BUS WIRES (OUTER MIRROR CONTROL ECU ASSEMBLY LH)**
    a. Disconnect the H2 outer mirror control ECU assembly LH connector.

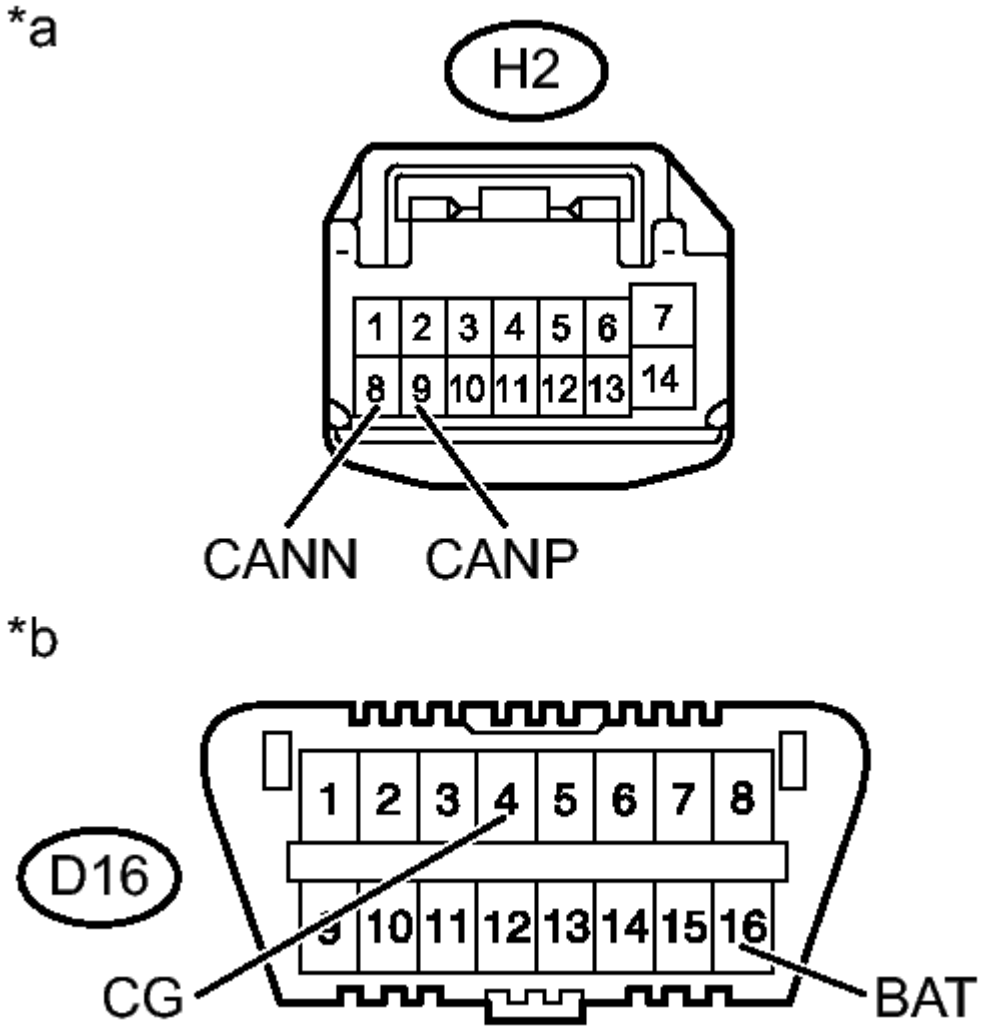


Fig. 61: Checking For Short In CAN BUS Wires (Outer Mirror Control ECU Assembly LH)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
H2-9 (CANP) - H2-8 (CANN)	Ignition switch off	54 to 69 ohms
H2-9 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher

H2-8 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher
H2-9 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
H2-8 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU Assembly LH)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO OUTER MIRROR CONTROL ECU ASSEMBLY LH (CAN-H, CAN-L)

OK --> See step 50

38. **CONNECT CONNECTOR**
    a. Reconnect the D120 No. 2 CAN junction connector connector.

NEXT: Go to next step

39. **CHECK FOR SHORT IN CAN BUS WIRES (MAIN BODY ECU)**
    a. Disconnect the D14 main body ECU connector.

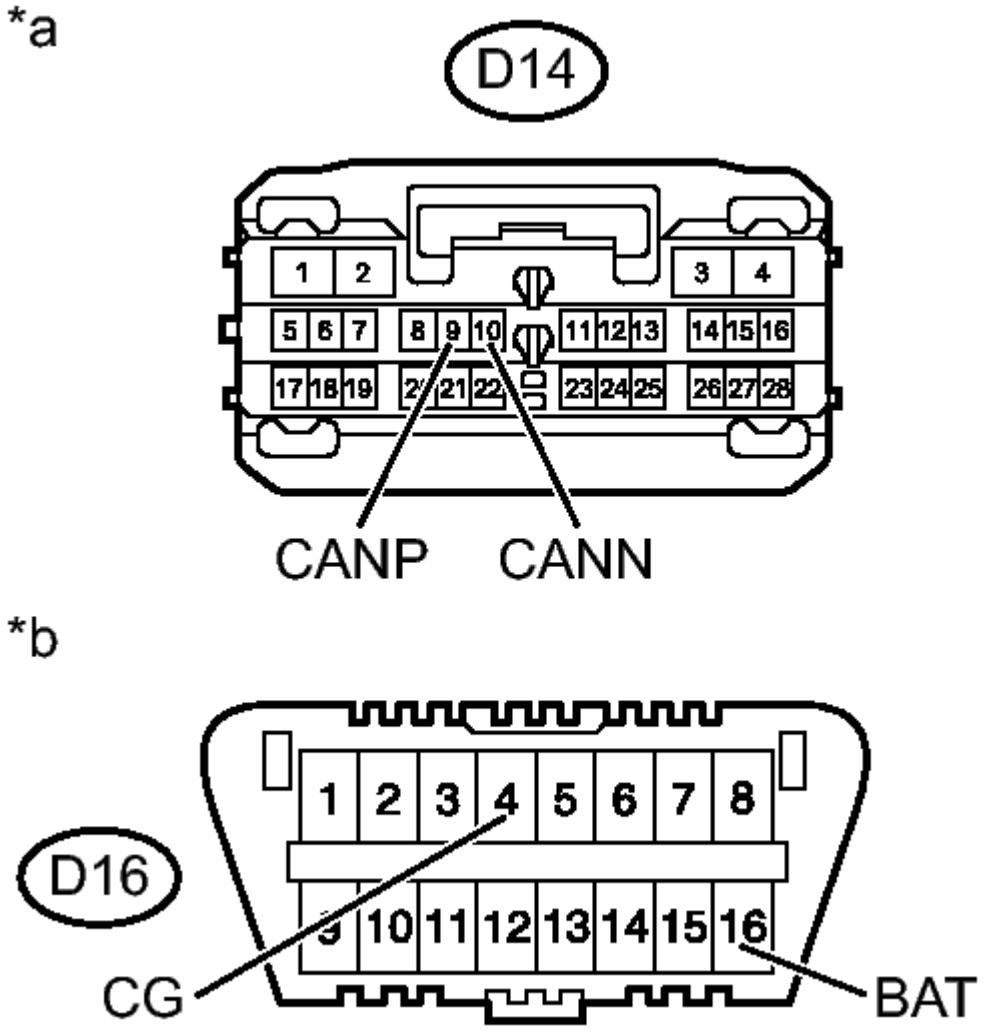


Fig. 62: Checking For Short In CAN BUS Wires (Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D14-9 (CANP) - D14-10 (CANN)	Ignition switch off	108 to 132 ohms
D14-9 (CANP) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D14-10 (CANN) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D14-9 (CANP) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D14-10 (CANN) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Main Body ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO MAIN BODY ECU (CAN-H, CAN-L)

OK --> See step 51

40. **CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK - BATTERY AND BODY GROUND)**

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

    NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

    b. Disconnect the 2D and 2K instrument panel junction block connectors.

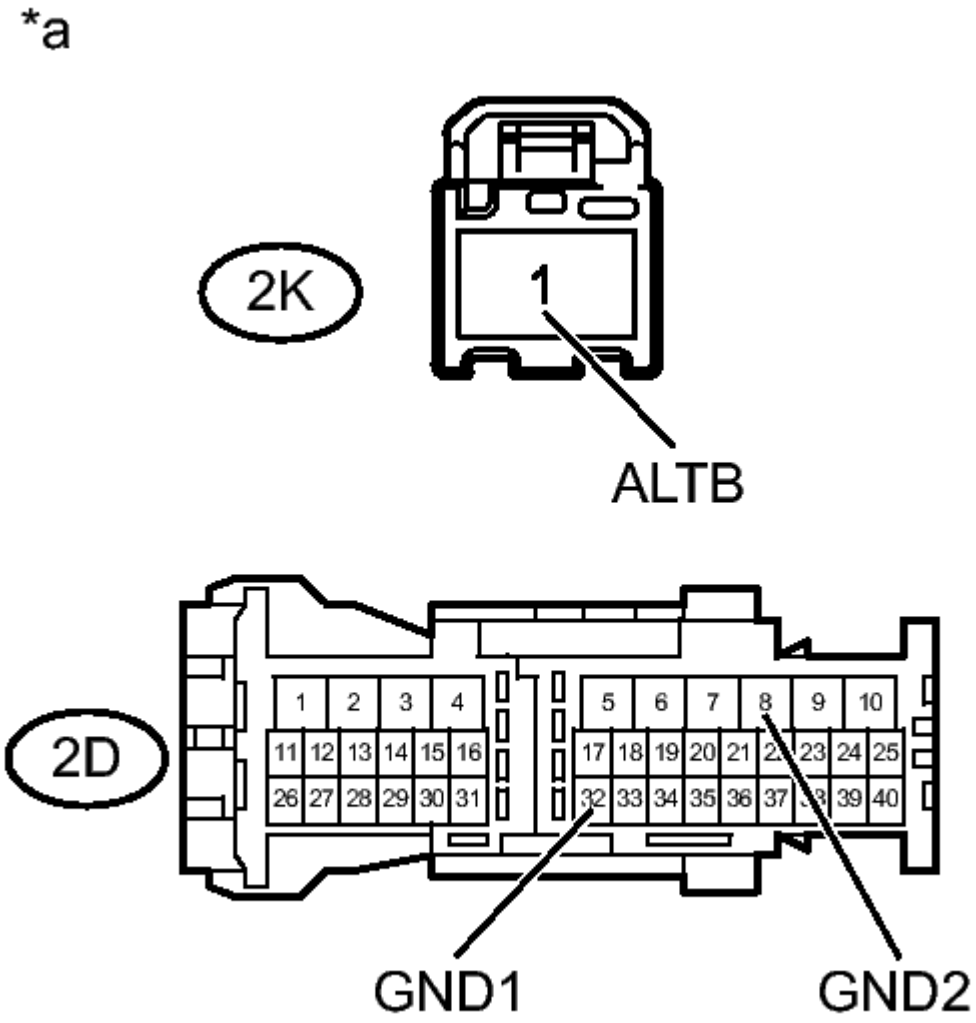


Fig. 63: Measuring Resistance Of Instrument Panel Junction Block
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2D-32 (GND1) - Body ground	Always	Below 1 ohms
2D-8 (GND2) - Body		

ground		

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)

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

Standard Voltage

Tester Connection	Condition	Specified Condition
2K-1 (ALTB) - Body ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

41. **REPLACE MAIN BODY ECU**
    a. Replace the main body ECU with a new or normal one. Refer to **REMOVAL** .

       OK

       The vehicle is returned to its normal condition and operates normally.

    NG --> REPLACE INSTRUMENT PANEL JUNCTION BLOCK

    OK --> END

42. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
43. **REPLACE COMBINATION METER. Refer to REMOVAL**
44. **REPLACE COMBINATION METER. Refer to REMOVAL**
45. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY RH. Refer to REMOVAL**

46. **REPLACE SLIDE DOOR MOTOR UNIT RH. Refer to REMOVAL**
47. **REPLACE POSITION CONTROL ECU AND SWITCH. Refer to DISASSEMBLY**
48. **REPLACE BACK DOOR ECU. Refer to REMOVAL**
49. **REPLACE SLIDE DOOR MOTOR UNIT LH. Refer to REMOVAL**
50. **REPLACE OUTER MIRROR CONTROL ECU ASSEMBLY LH. Refer to REMOVAL**
51. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

DTC U1002 (CAN NO. 2 BUS): LOST COMMUNICATION WITH GATEWAY MODULE (NETWORK GATEWAY ECU)

DESCRIPTION

If 2 or more DTCs are output during the DTC check, 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).

DTC Code	Symptoms	Trouble Area
U1002 (CAN No. 2 BUS)	Lost communication with the gateway module (network gateway ECU).	• V2 bus circuit • Power management control ECU*1 or network gateway ECU*2 main wire or connector • Seat belt control ECU branch wire or connector*3 • AFS ECU branch wire or connector*4 • Parking assist ECU branch wire or connector*5 • Driving support ECU branch wire or connector*6 • Clearance warning ECU branch wire or connector*7 • Seat belt control ECU*3 • AFS ECU*4 • Parking assist ECU*5 • Driving support ECU*6 • Clearance warning ECU*7 • No. 1 CAN junction connector

*1: w/ Smart Key System
*2: w/o Smart Key System
*3: w/ Pre-Collision System
*4: w/ HID Headlight System
*5: w/ Parking Assist Monitor System

*6: w/ Dynamic Radar Cruise Control System

*7: w/ Intuitive Parking Assist System

WIRING DIAGRAM

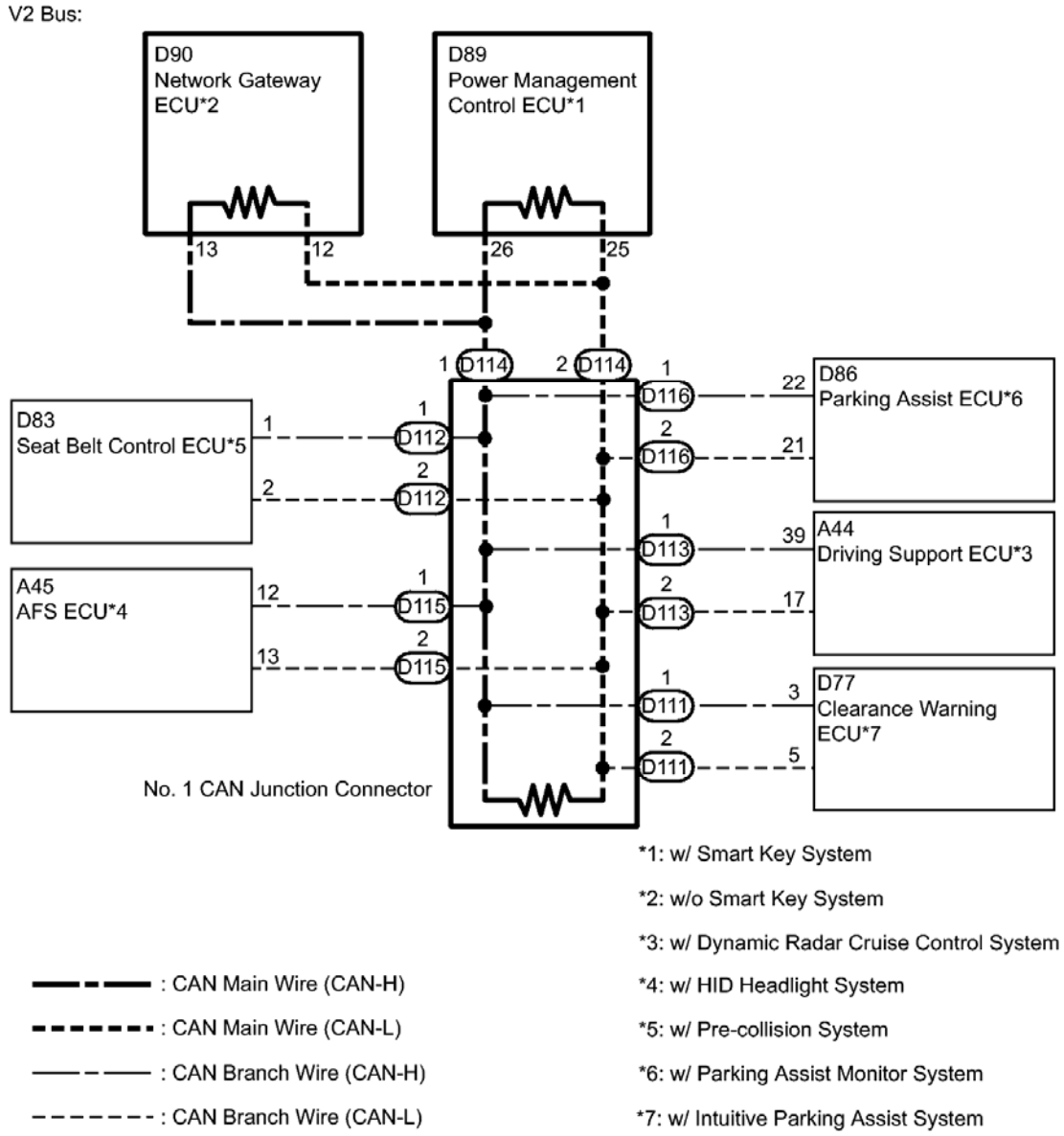


Fig. 64: Gateway Module (Network Gateway ECU) Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**

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

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

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

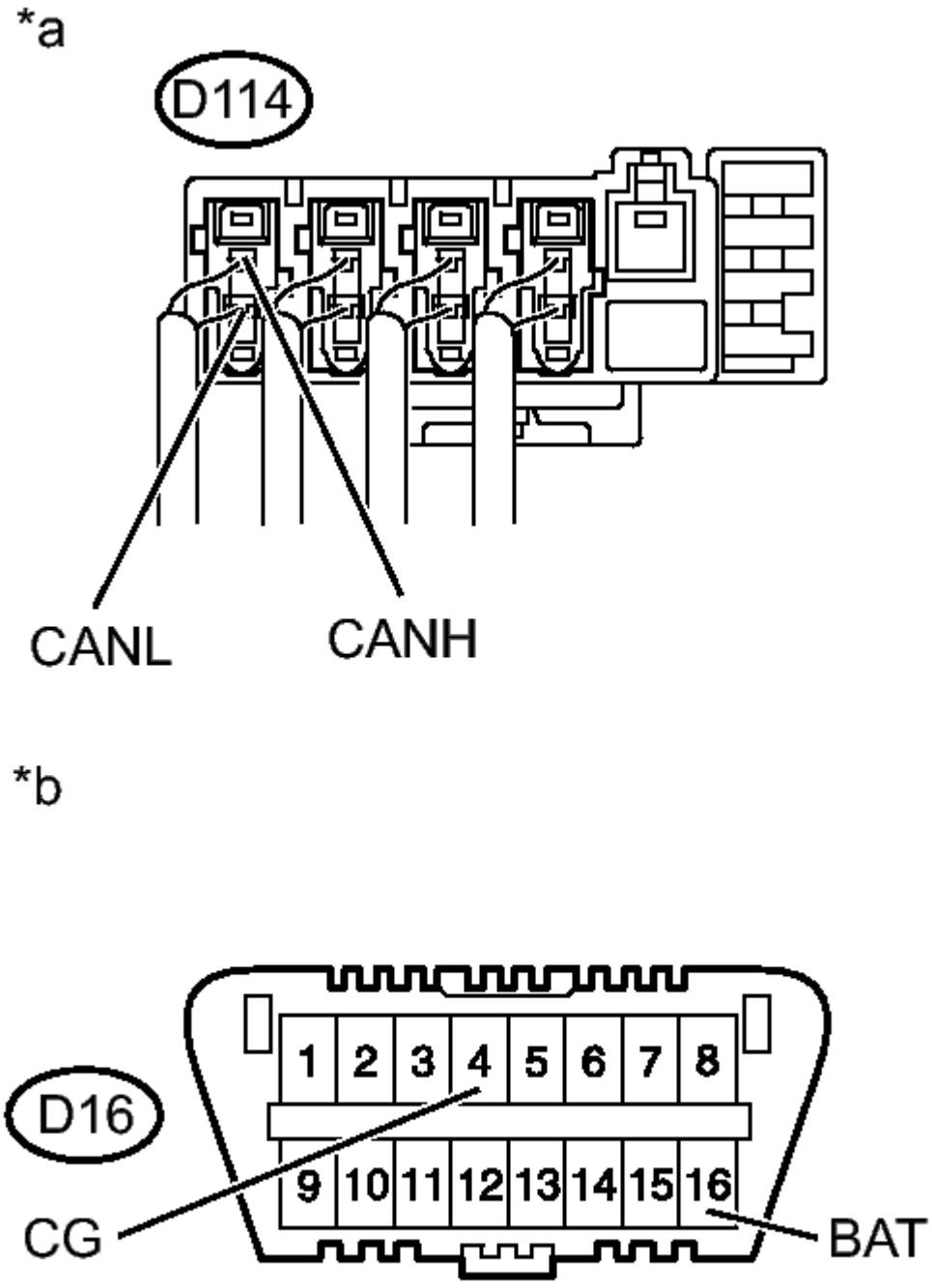


Fig. 65: Checking CAN BUS Wire (Main Wire For Disconnection, BUS Line For Short Circuit)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition	Resistance Malfunction
D114-1 (CANH) - D114-2 (CANL)	Ignition switch off	54 to 69 ohms	Below 53 ohms: Short in line
	Ignition switch off		70 ohms or higher: Open in CAN main bus line
D114-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D114-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher	Below 6 kohms: +B short
D114-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short
D114-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher	Below 200 ohms: Ground short

TEXT IN ILLUSTRATION

*a	Junction connector with harness connected (No. 1 CAN Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
NG - Open	

in CAN main wire	A
NG - Short in line - +B short - Ground short	B
OK (w/ Smart Key System)	C
OK (w/o Smart Key System)	D

B --> See step 8

C --> See step 33

D --> See step 34

A: Go to next step

3. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 1 CAN JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU*1 OR NETWORK GATEWAY ECU*2)**

*1: w/ Smart Key System

*2: w/o Smart Key System

a. Disconnect the D114 No. 1 CAN junction connector connector.

*a

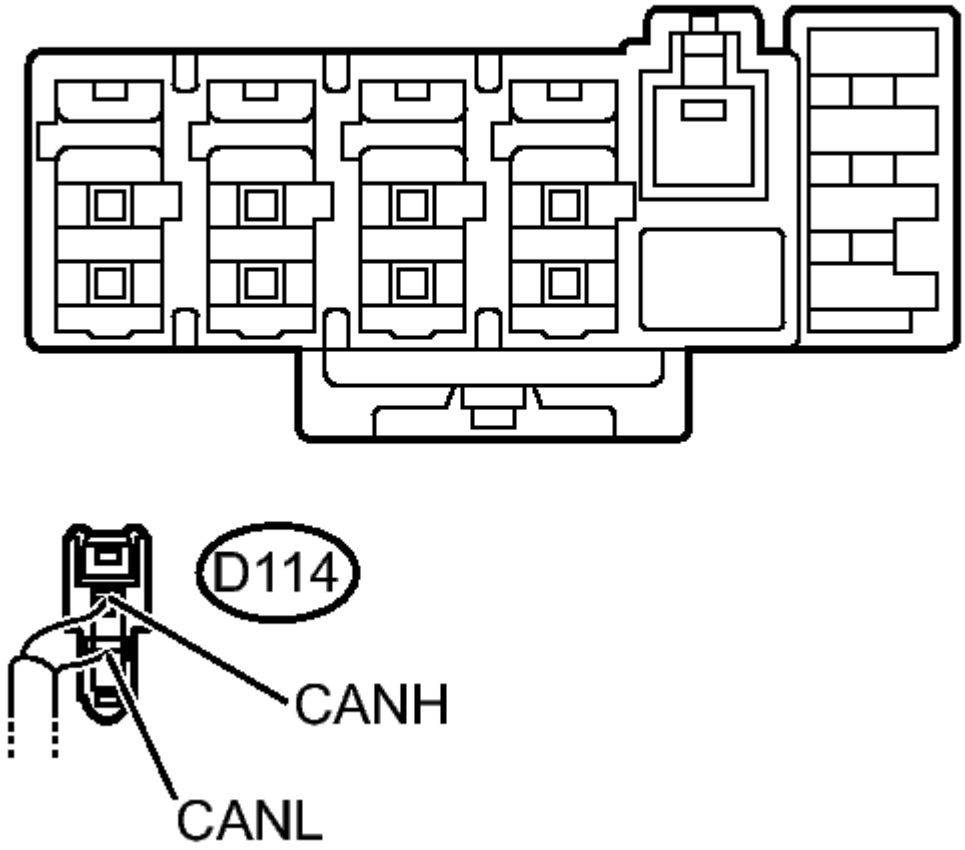


Fig. 66: Checking For Open In CAN BUS Main Wire (No. 1 CAN Junction Connector - Power Management Control ECU*1 Or Network Gateway ECU*2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D114-1 (CANH) - D114-2 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)

RESULT

Result	Proceed to
NG (w/ Smart Key System)	A
NG (w/o Smart Key System)	B
OK	C

B --> See step 6

C --> REPAIR OR REPLACE NO. 1 CAN JUNCTION CONNECTOR

A: Go to next step

4. **CONNECT CONNECTOR**
   a. Reconnect the D114 No. 1 CAN Junction Connector connector.

NEXT: Go to next step

5. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (POWER MANAGEMENT CONTROL ECU - NO. 1 CAN JUNCTION CONNECTOR)**

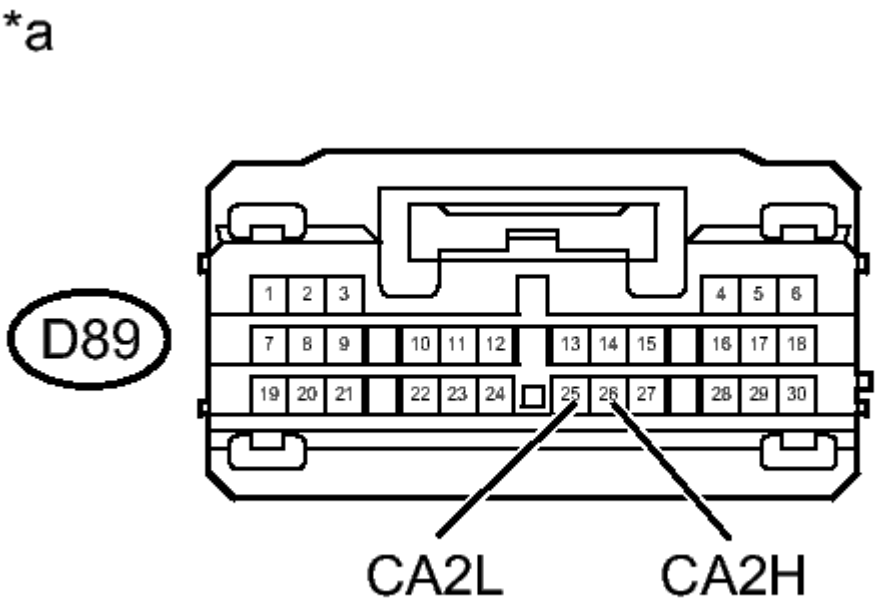


Fig. 67: Checking For Open In CAN BUS Main Wire (Power Management Control ECU - No. 1 CAN Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D89 power management control ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-26 (CA2H) - D89-25 (CA2L)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (POWER MANAGEMENT CONTROL ECU - NO. 1 CAN JUNCTION CONNECTOR)

OK --> See step 35

6. **CONNECT CONNECTOR**
   a. Reconnect the D114 No. 1 CAN junction connector connector.

NEXT: Go to next step

7. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NETWORK GATEWAY ECU - NO. 1 CAN JUNCTION CONNECTOR)**

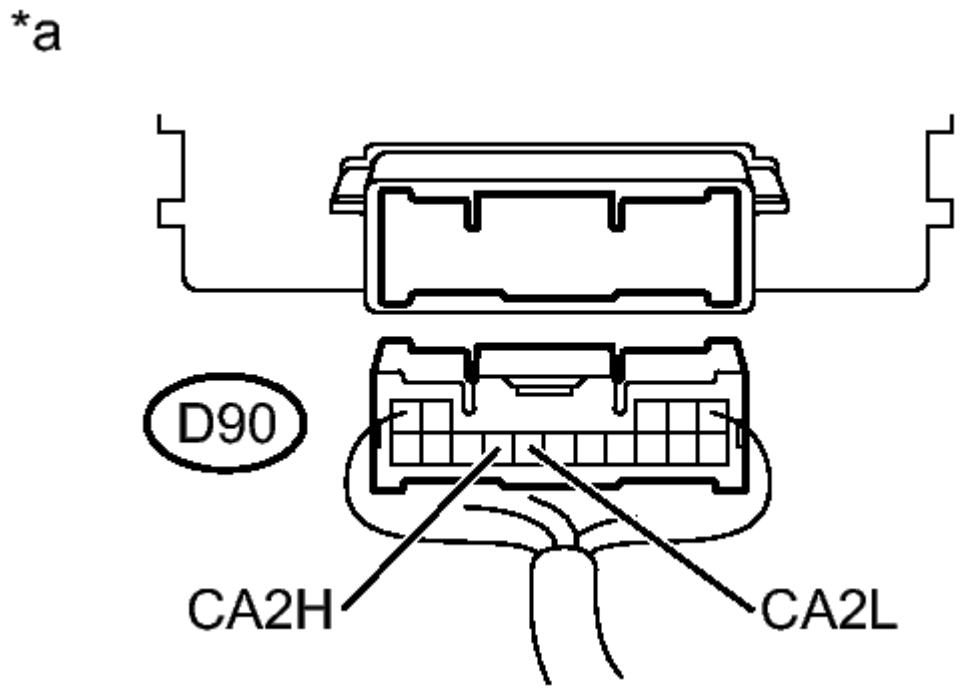


Fig. 68: Checking For Open In CAN BUS Main Wire (Network Gateway ECU - No. 1 CAN Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   a. Disconnect the D90 network gateway ECU connector.
   b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D90-13		

(CA2H) - D90-12 (CA2L)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO NETWORK GATEWAY ECU (NETWORK GATEWAY ECU - NO. 1 CAN JUNCTION CONNECTOR)

OK --> See step 36

8. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 CAN JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU*1 OR NETWORK GATEWAY ECU*2**

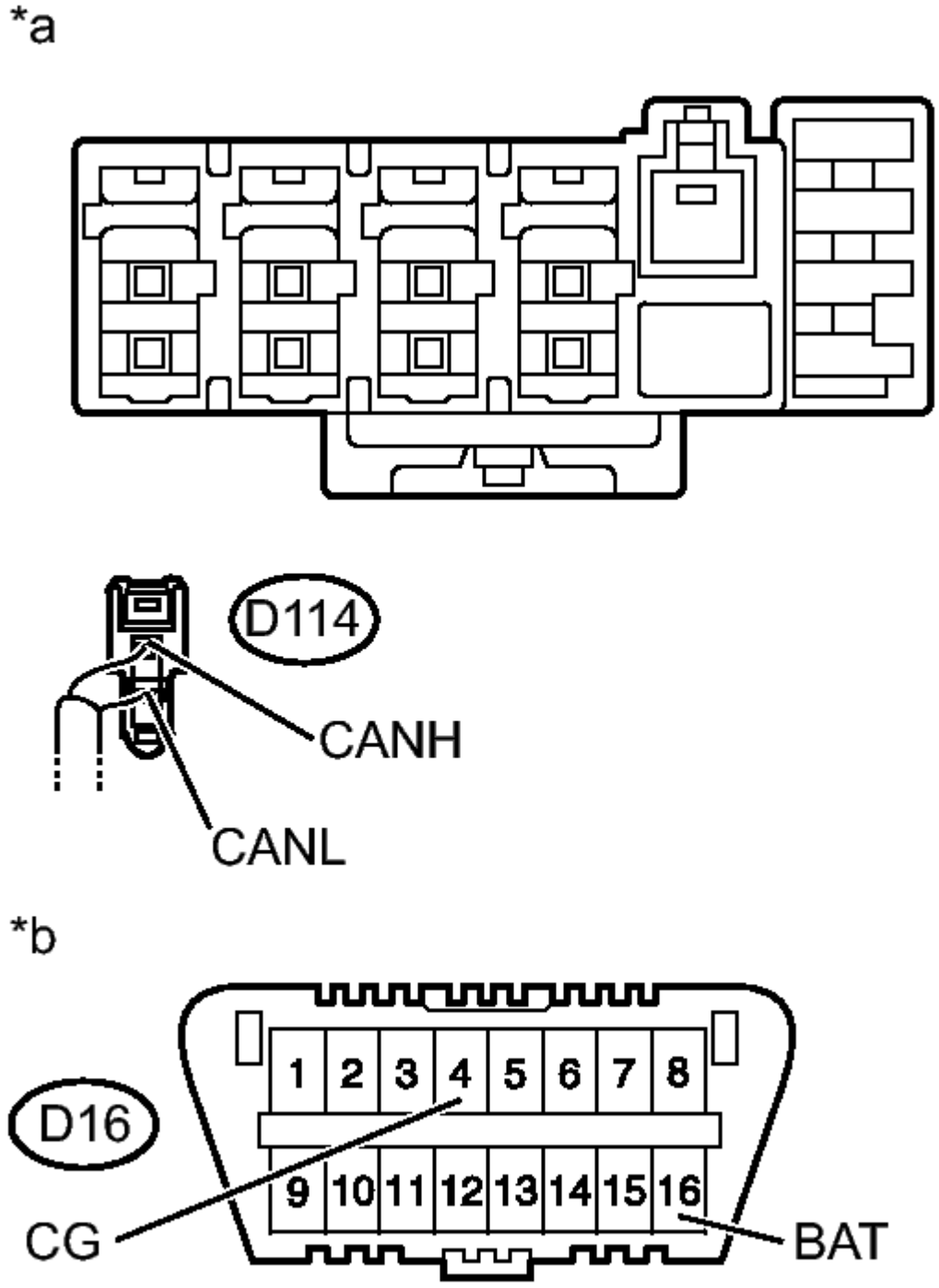


Fig. 69: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - Power Management Control ECU*1 Or Network Gateway ECU*2
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

*1: w/ Smart Key System

*2: w/o Smart Key System

a. Disconnect the D114 No. 1 CAN junction connector connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D114-1 (CANH) - D114-2 (CANL)	Ignition switch off	108 to 132 ohms
D114-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D114-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D114-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D114-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
OK	A
NG (w/ Smart	B

Key System)	
NG (w/o Smart Key System)	C

B --> See step 19

C --> See step 21

A: Go to next step

9. **CONNECT CONNECTOR**
   a. Reconnect the D114 No. 1 CAN junction connector connector.

   NEXT: Go to next step

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

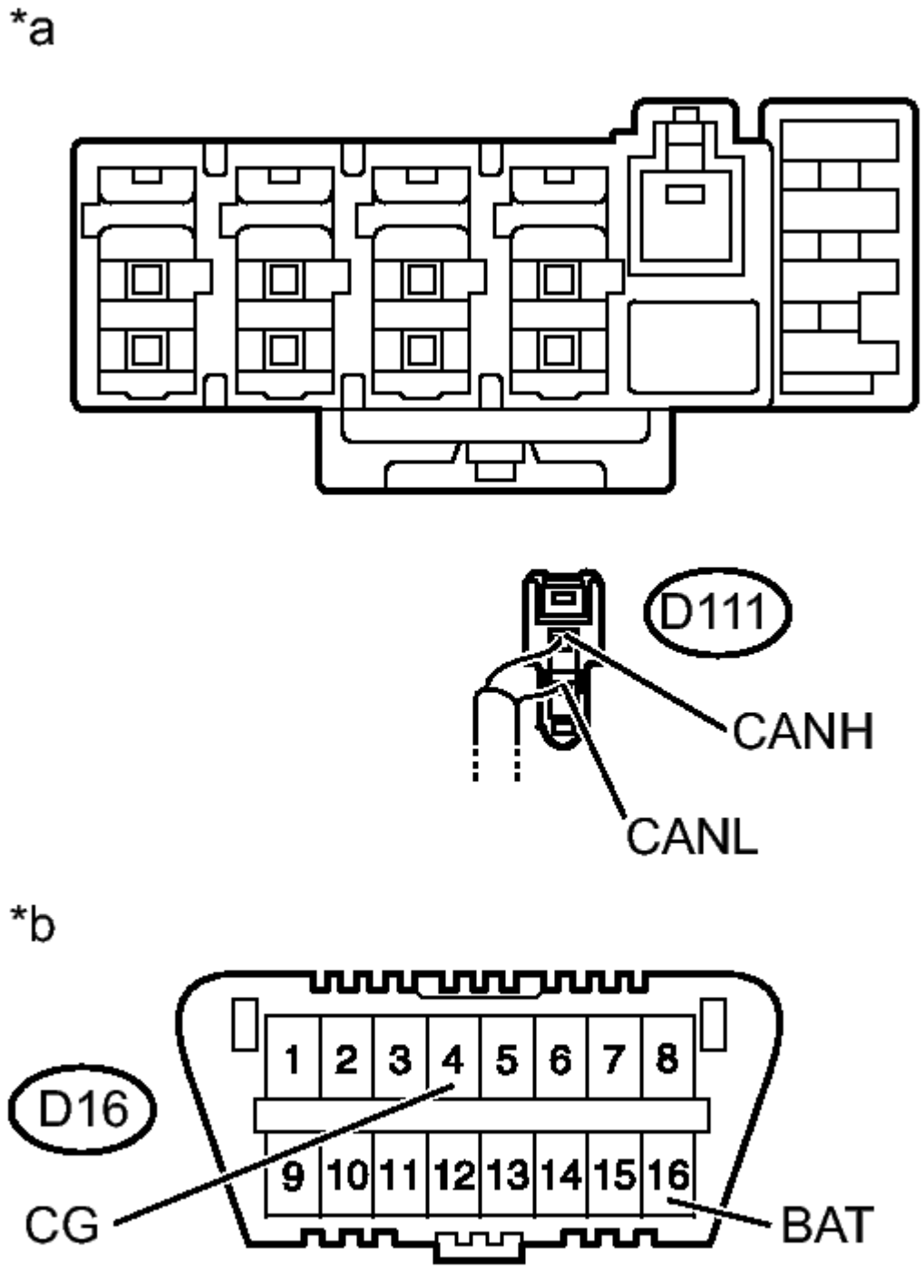


Fig. 70: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - Clearance Warning ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D111 No. 1 CAN junction connector connector.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D111-1 (CANH) - D111-2 (CANL)	Ignition switch off	200 ohms or higher
D111-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D111-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D111-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D111-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

NG --> See step 23

OK: Go to next step

11. **CONNECT CONNECTOR**
    a. Reconnect the D111 No. 1 CAN junction connector connector.

NEXT: Go to next step

12. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 CAN JUNCTION CONNECTOR - SEAT**

BELT CONTROL ECU)

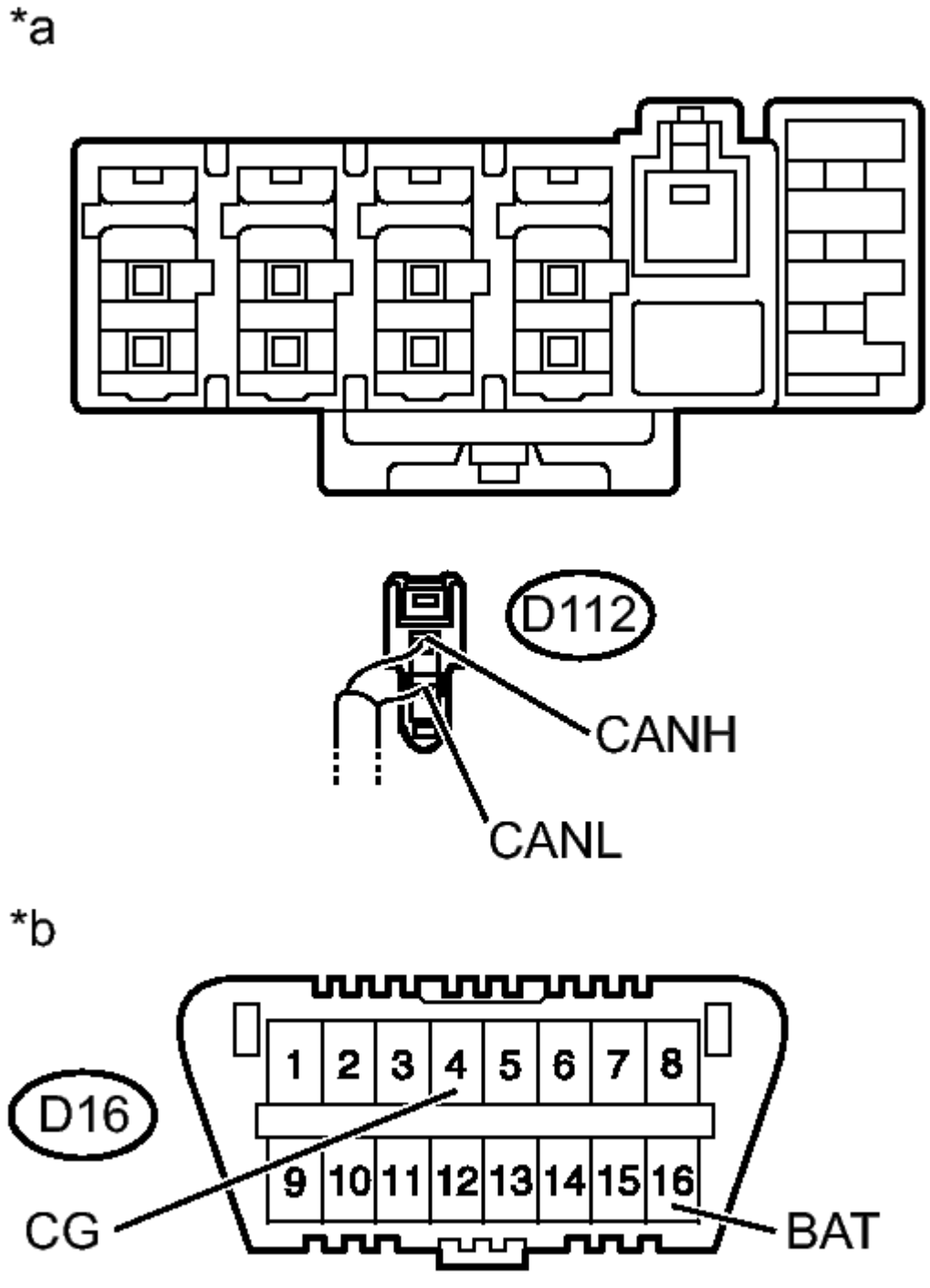


Fig. 71: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - Seat Belt Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

For vehicle without pre-collision system, go to step 14.

a. Disconnect the D112 No. 1 CAN junction connector connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D112-1 (CANH) - D112-2 (CANL)	Ignition switch off	200 ohms or higher
D112-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D112-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D112-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D112-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

NG --> See step 25

OK: Go to next step

13. **CONNECT CONNECTOR**

a. Reconnect the D112 No. 1 CAN junction connector connector.

NEXT: Go to next step

14. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 CAN JUNCTION CONNECTOR - DRIVING SUPPORT ECU)**

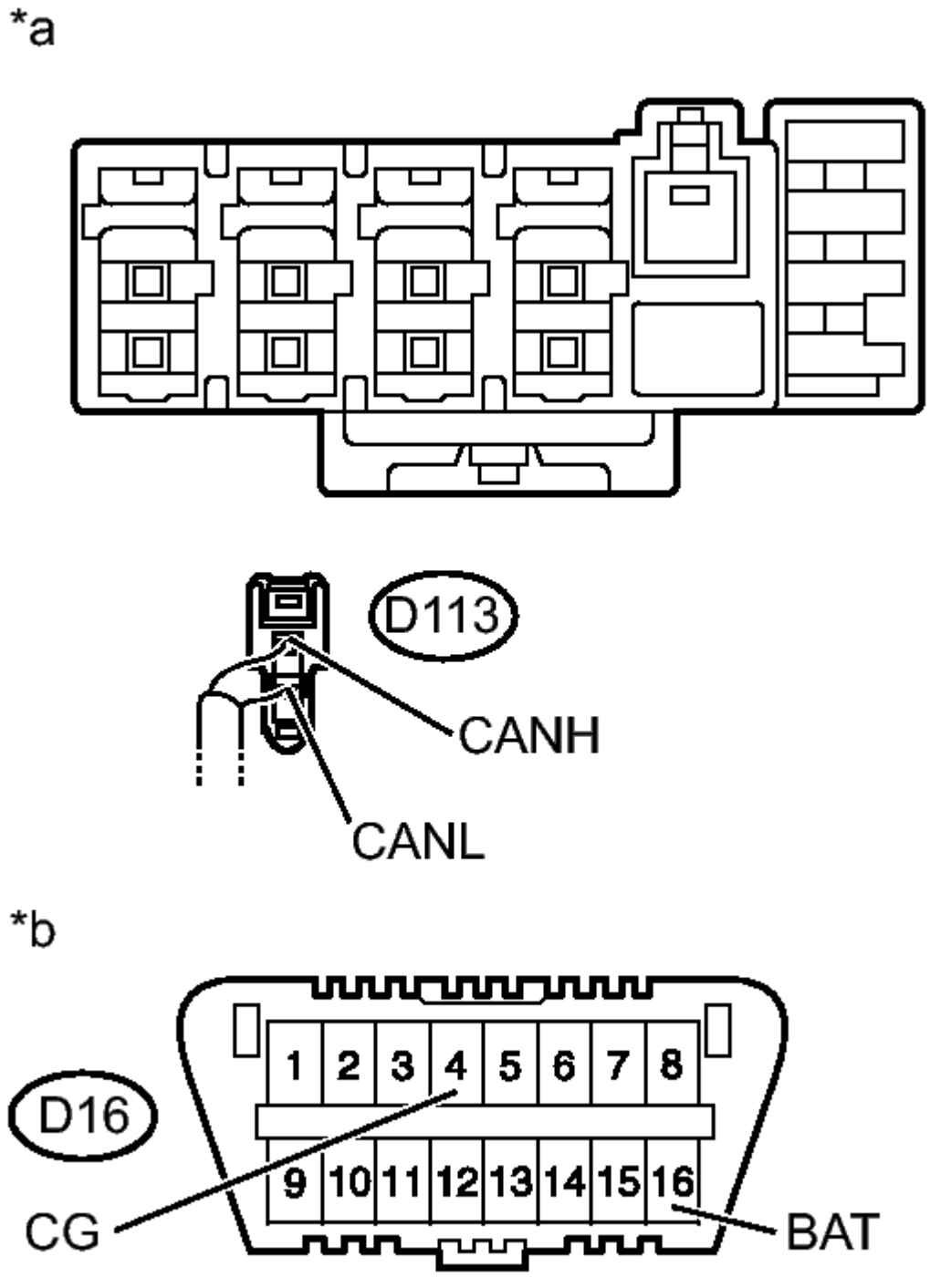


Fig. 72: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - Driving Support ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

For vehicle without dynamic radar cruise control system, go to step 16

a. Disconnect the D113 No. 1 CAN junction connector connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D113-1 (CANH) - D113-2 (CANL)	Ignition switch off	200 ohms or higher
D113-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D113-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D113-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D113-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

NG --> See step 27

OK: Go to next step

15. **CONNECT CONNECTOR**
    a. Reconnect the D113 No. 1 CAN junction connector connector.

NEXT: Go to next step

16. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 CAN JUNCTION CONNECTOR - AFS ECU)**

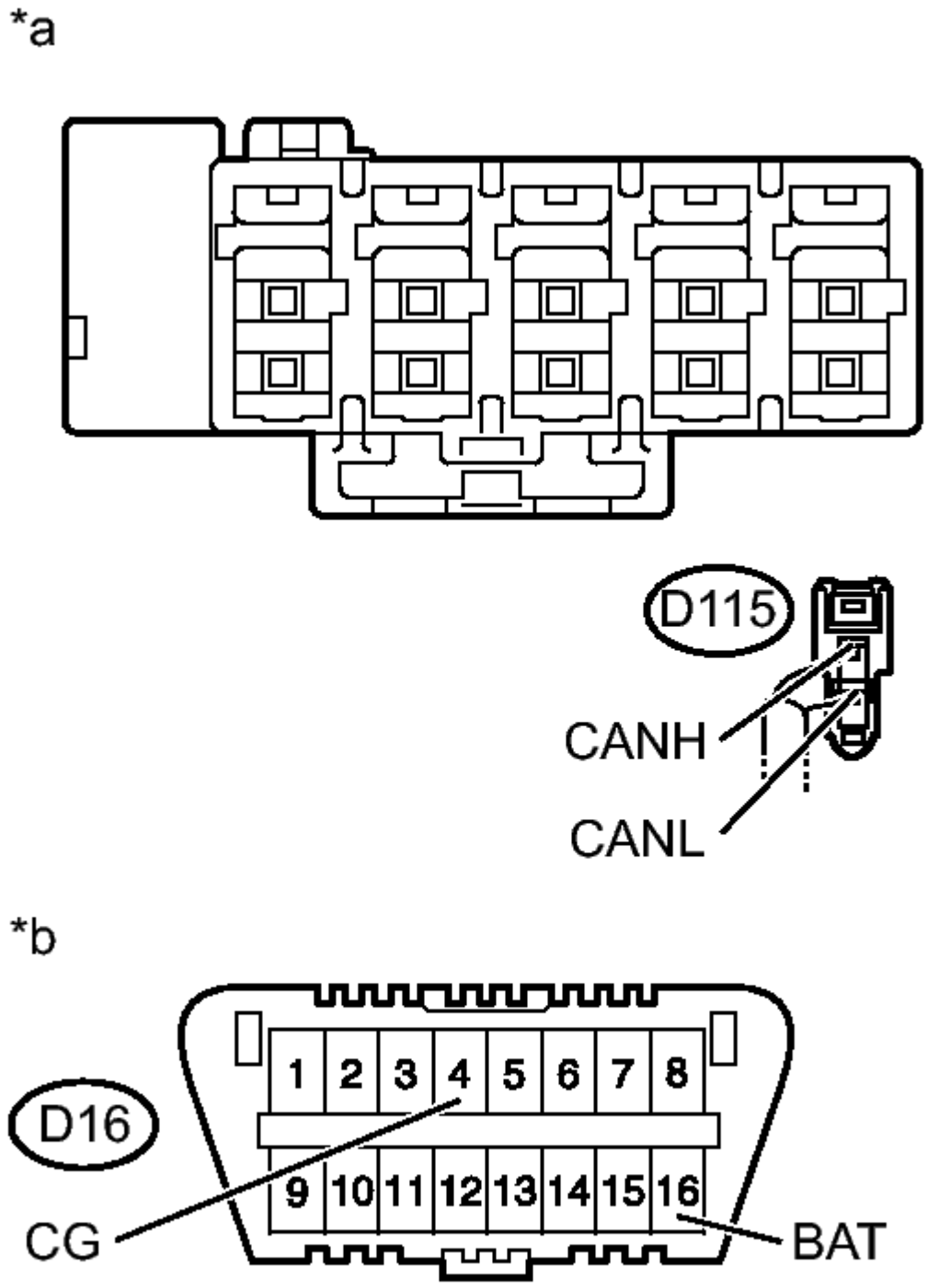


Fig. 73: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - AFS ECU)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

For vehicle without HID headlight system, go to step 18.

a. Disconnect the D115 No. 1 CAN junction connector connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D115-1 (CANH) - D115-2 (CANL)	Ignition switch off	200 ohms or higher
D115-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D115-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D115-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D115-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

NG --> See step 29

OK: Go to next step

17. **CONNECT CONNECTOR**

    a. Reconnect the D115 No. 1 CAN junction connector connector.

    NEXT: Go to next step

18. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 CAN JUNCTION CONNECTOR - PARKING ASSIST ECU)**

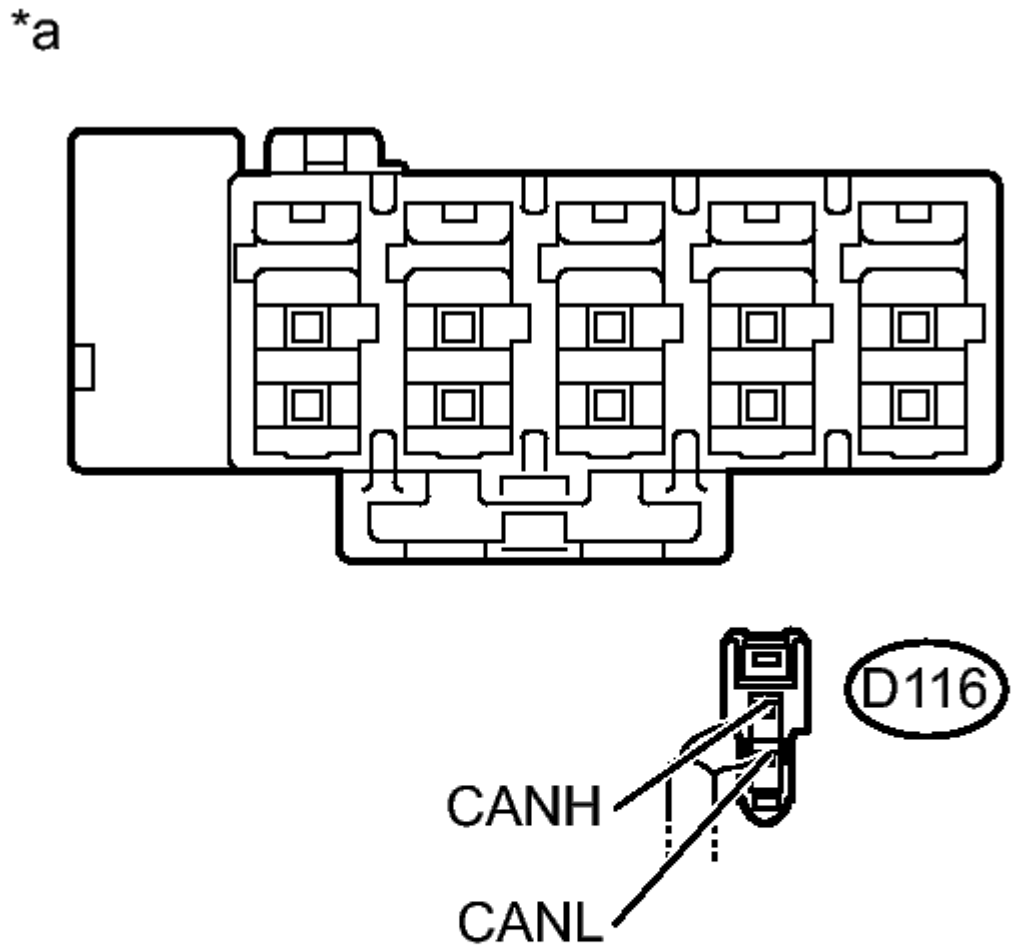


Fig. 74: Checking For Short In CAN BUS Wires (No. 1 CAN Junction Connector - Parking Assist ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

For vehicle without parking assist monitor system, go to OK.

a. Disconnect the D116 No. 1 CAN junction connector connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D116-1 (CANH) - D116-2 (CANL)	Ignition switch off	200 ohms or higher
D116-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D116-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D116-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D116-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)
*b	DLC3

NG --> See step 31

OK --> REPAIR OR REPLACE NO. 1 CAN JUNCTION CONNECTOR

19. **CONNECT CONNECTOR**
    a. Reconnect the D114 No. 1 CAN junction connector connector.

NEXT: Go to next step

20. **CHECK FOR SHORT IN CAN BUS WIRES (POWER MANAGEMENT CONTROL ECU)**

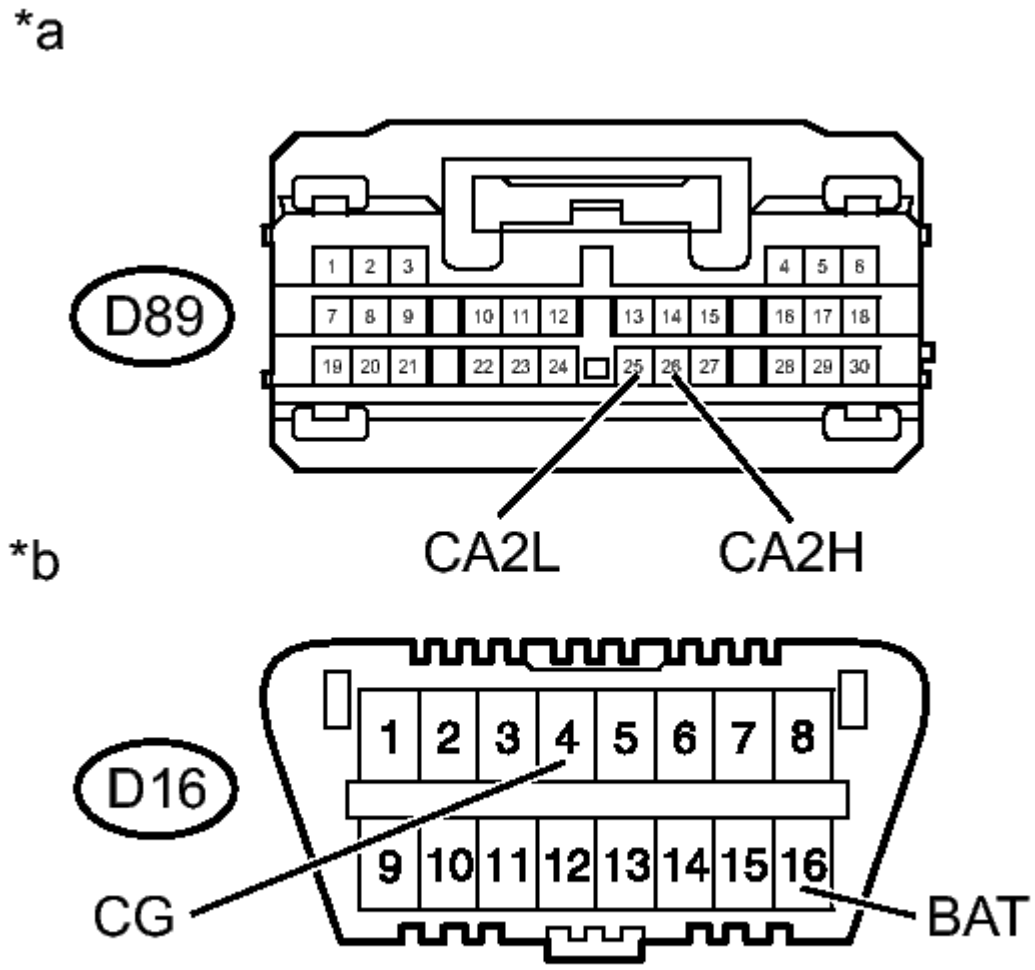


Fig. 75: Checking For Short In CAN BUS Wires (Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D89 power management control ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-26		

(CA2H) - D89-25 (CA2L)	Ignition switch off	108 to 132 ohms
D89-26 (CA2H) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D89-25 (CA2L) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D89-26 (CA2H) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D89-25 (CA2L) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (CAN-H, CAN-L)

OK --> See step 38

21. **CONNECT CONNECTOR**
    a. Reconnect the D114 No. 1 CAN junction connector connector.

NEXT: Go to next step

22. **CHECK FOR SHORT IN CAN BUS WIRES (NETWORK GATEWAY ECU)**

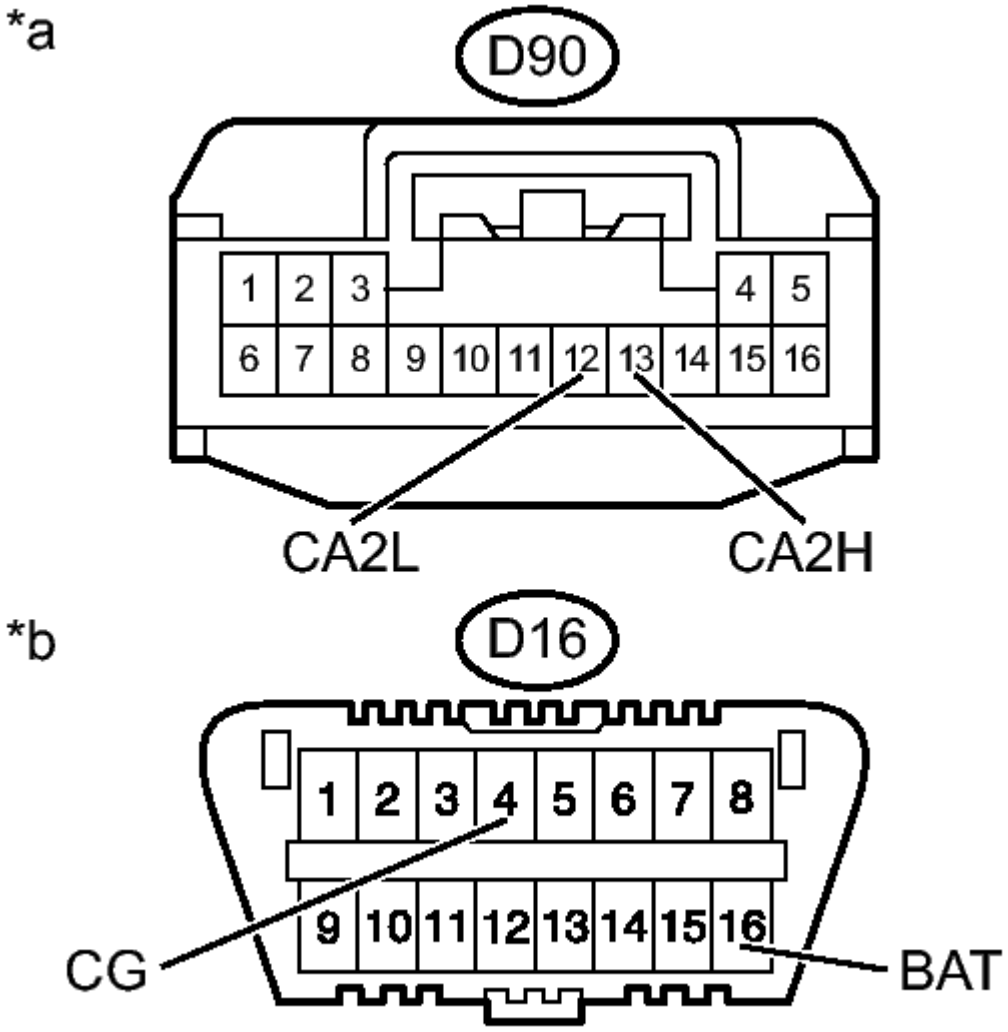


Fig. 76: Checking For Short In CAN BUS Wires (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D90 network gateway ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D90-13 (CA2H) - D90-12 (CA2L)	Ignition switch off	108 to 132 ohms
D90-13	Ignition	200 ohms

(CA2H) - D16-4 (CG)	switch off	or higher
D90-12 (CA2L) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D90-13 (CA2H) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D90-12 (CA2L) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO NETWORK GATEWAY ECU (CAN-H, CAN-L)

OK --> See step 39

23. **CONNECT CONNECTOR**
    a. Reconnect the D111 No. 1 CAN junction connector connector.

NEXT: Go to next step

24. **CHECK FOR SHORT IN CAN BUS WIRES (CLEARANCE WARNING ECU)**

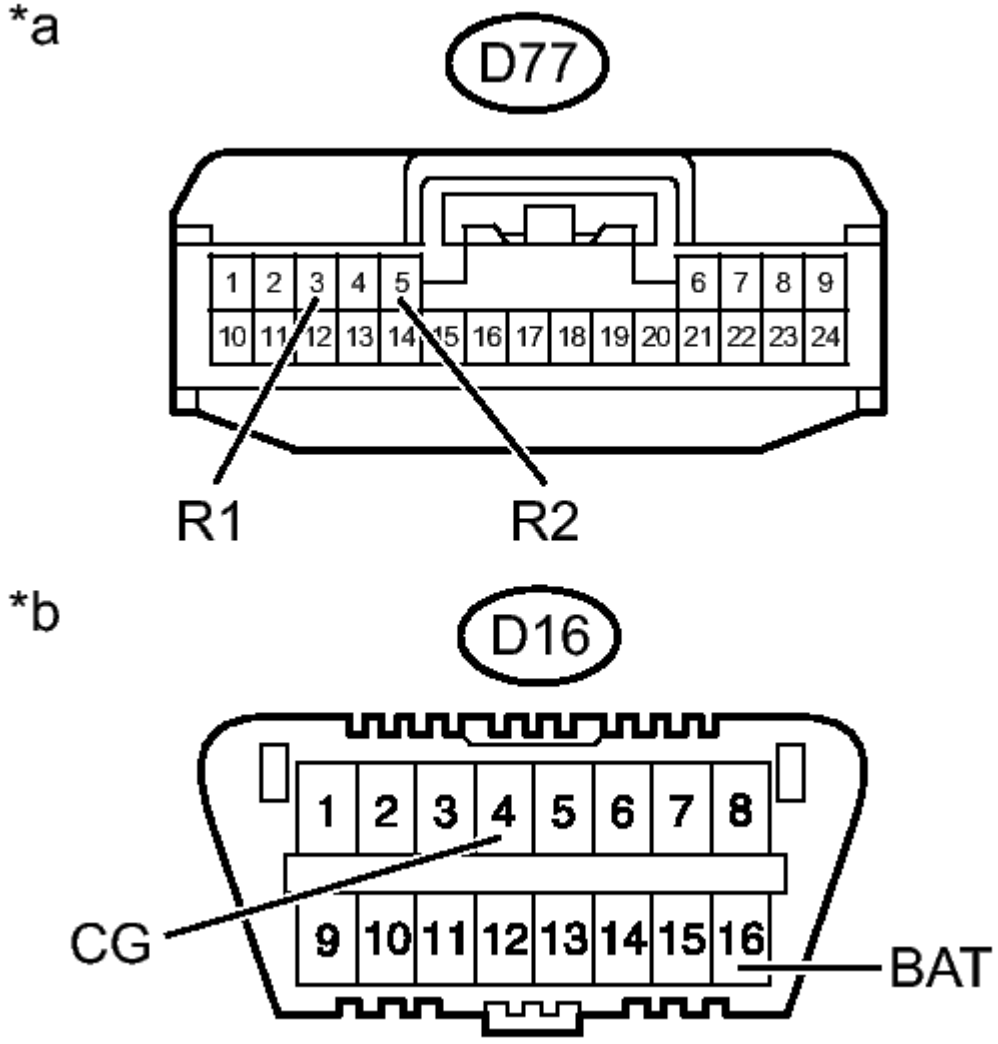


Fig. 77: Checking For Short In CAN BUS Wires (Clearance Warning ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D77 clearance warning ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D77-3 (R1) - D77-5 (R2)	Ignition switch off	54 to 69 ohms
D77-3 (R1) - D16-4	Ignition switch off	200 ohms or higher

(CG)		
D77-5 (R2) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D77-3 (R1) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D77-5 (R2) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Clearance Warning ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CLEARANCE WARNING ECU (CAN-H, CAN-L)

OK --> See step 40

25. **CONNECT CONNECTOR**
    a. Reconnect the D112 No. 1 CAN junction connector connector.

NEXT: Go to next step

26. **CHECK FOR SHORT IN CAN BUS WIRES (SEAT BELT CONTROL ECU)**

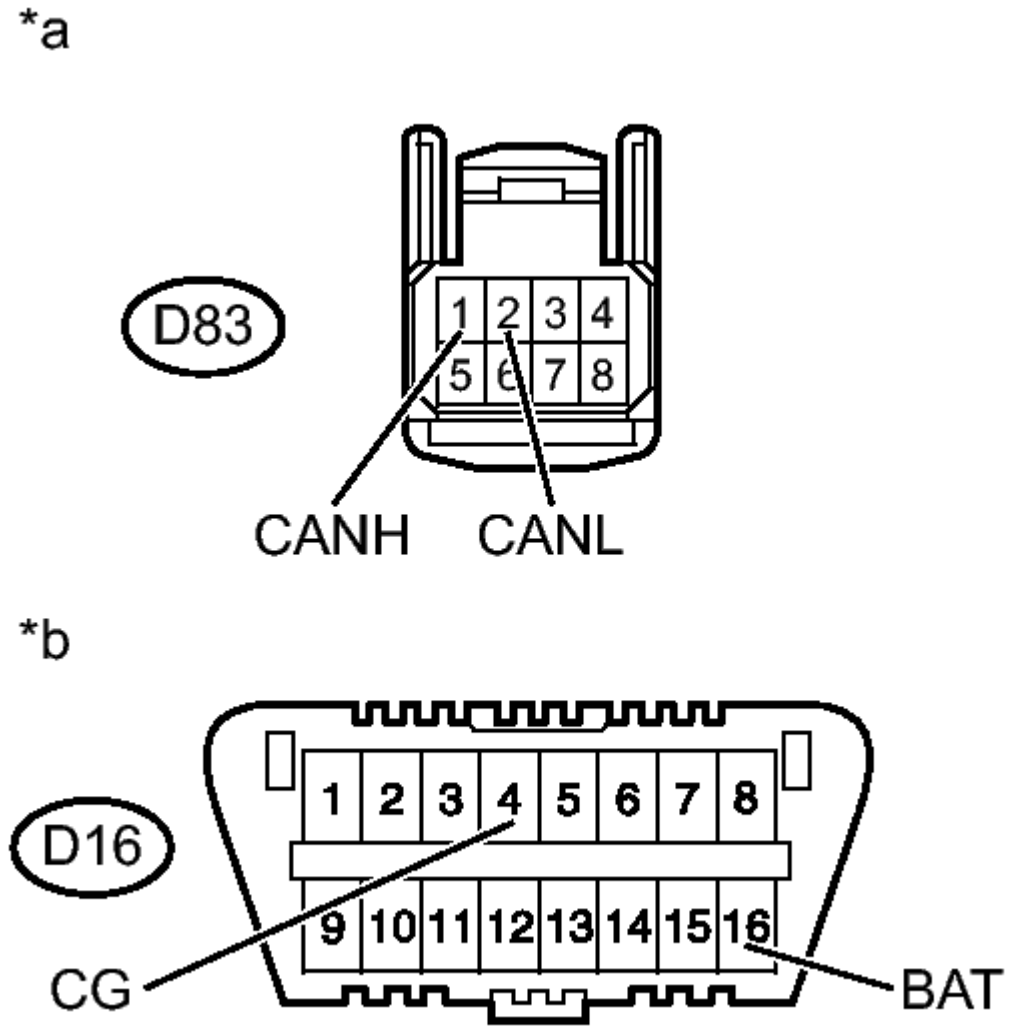


Fig. 78: Checking For Short In CAN BUS Wires (Seat Belt Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D83 seat belt control ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D83-1 (CANH) - D83-2 (CANL)	Ignition switch off	54 to 69 ohms
D83-1	Ignition	200 ohms

(CANH) - D16-4 (CG)	switch off	or higher
D83-2 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D83-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D83-2 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Seat Belt Control ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SEAT BELT CONTROL ECU (CAN-H, CAN-L)

OK --> See step 41

27. **CONNECT CONNECTOR**
    a. Reconnect the D113 No. 1 CAN junction connector connector.

NEXT: Go to next step

28. **CHECK FOR SHORT IN CAN BUS WIRES (DRIVING SUPPORT ECU)**

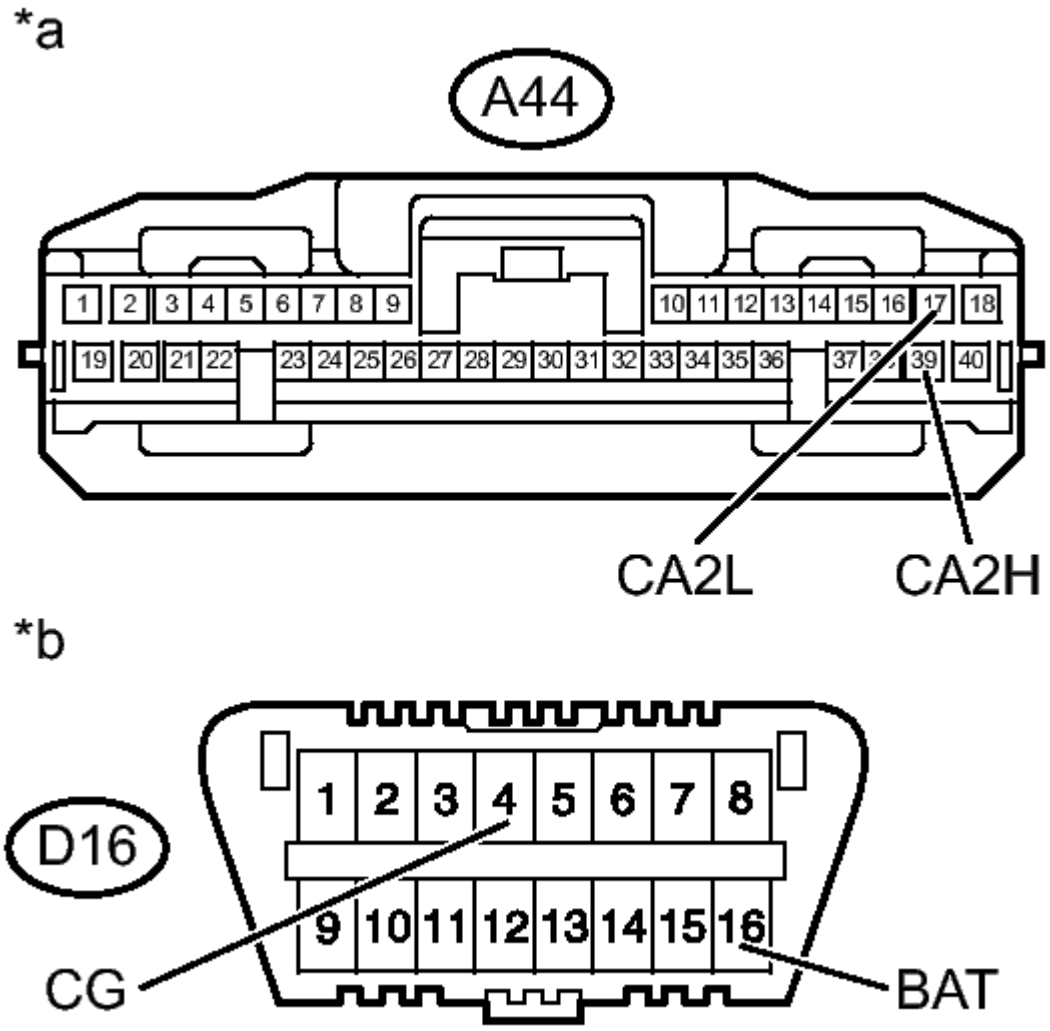


Fig. 79: Checking For Short In CAN BUS Wires (Driving Support ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A44 driving support ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A44-39 (CA2H) - A44-17 (CA2L)	Ignition switch off	54 to 69 ohms
A44-39	Ignition	200 ohms

(CA2H) - D16-4 (CG)	switch off	or higher
A44-17 (CA2L) - D16-4 (CG)	Ignition switch off	200 ohms or higher
A44-39 (CA2H) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
A44-17 (CA2L) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Driving Support ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DRIVING SUPPORT ECU (CAN-H, CAN-L)

OK --> See step 42

29. **CONNECT CONNECTOR**
    a. Reconnect the D115 No. 1 CAN junction connector connector.

NEXT: Go to next step

30. **CHECK FOR SHORT IN CAN BUS WIRES (AFS ECU)**

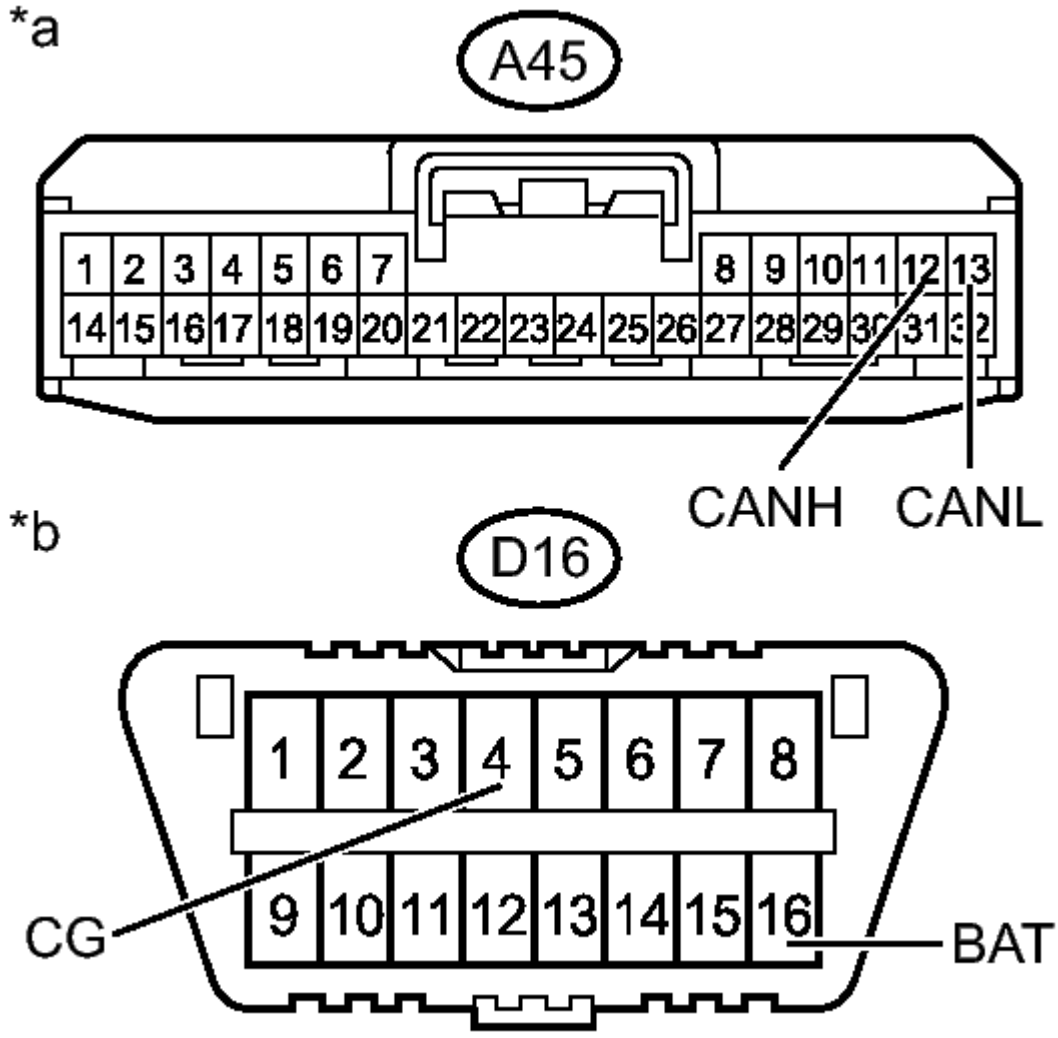


Fig. 80: Checking For Short In CAN BUS Wires (AFS ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A45 AFS ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A45-12 (CANH) - A45-13 (CANL)	Ignition switch off	54 to 69 ohms
A45-12	Ignition	200 ohms

(CANH) - D16-4 (CG)	switch off	or higher
A45-13 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
A45-12 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
A45-13 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to AFS ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AFS ECU (CAN-H, CAN-L)

OK --> See step 43

31. **CONNECT CONNECTOR**
    a. Reconnect the D116 No. 1 CAN junction connector connector.

NEXT: Go to next step

32. **CHECK FOR SHORT IN CAN BUS WIRES (PARKING ASSIST ECU)**

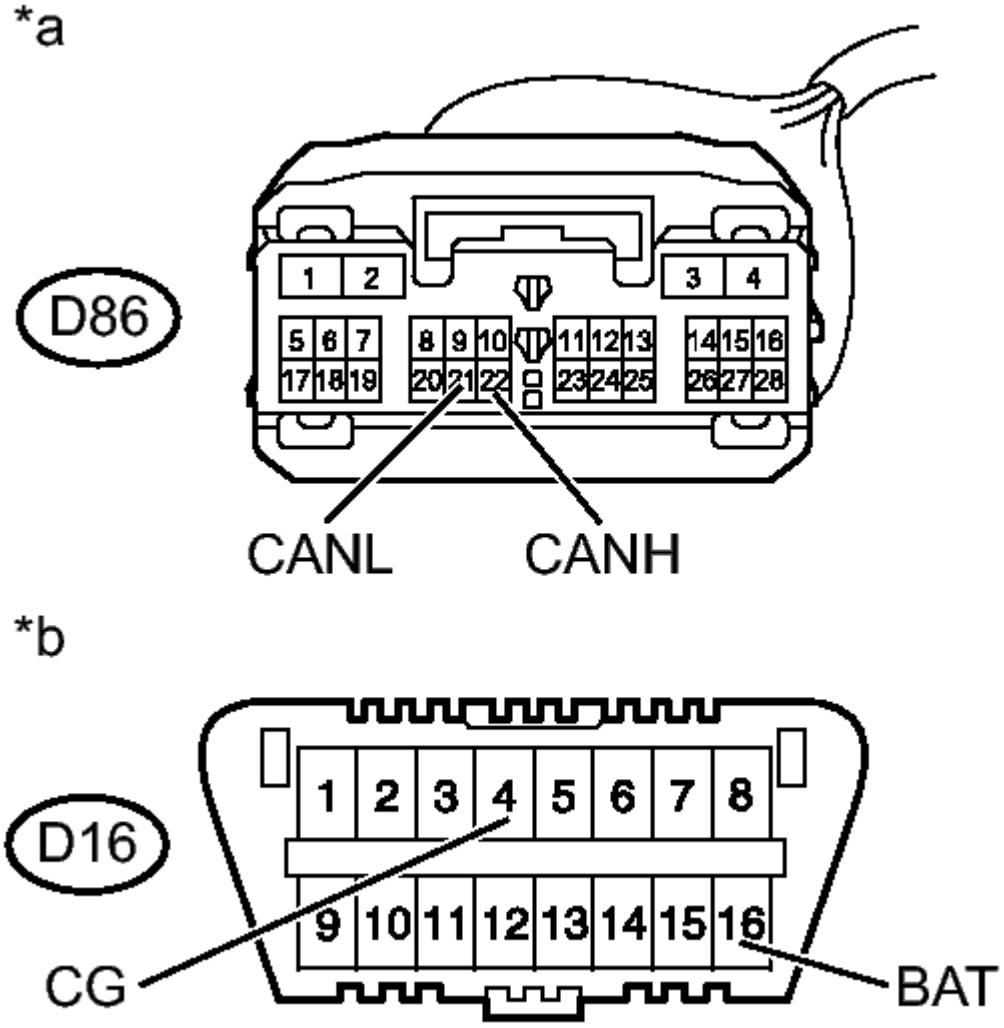


Fig. 81: Checking For Short In CAN BUS Wires (Parking Assist ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D86 parking assist ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D86-22 (CANH) - D86-21 (CANL)	Ignition switch off	54 to 69 ohms
D86-22	Ignition	200 ohms

(CANH) - D16-4 (CG)	switch off	or higher
D86-21 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D86-22 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D86-21 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Parking Assist ECU)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO PARKING ASSIST ECU (CAN-H, CAN-L)

OK --> See step 44

33. **CHECK HARNESS AND CONNECTOR (POWER MANAGEMENT CONTROL ECU - BATTERY AND BODY GROUND)**

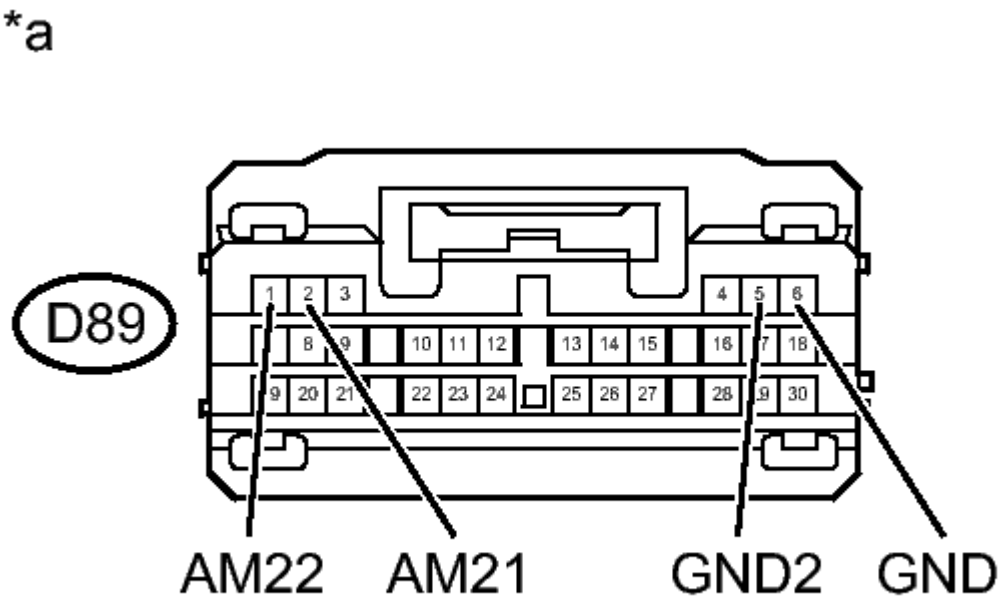


Fig. 82: Measuring Resistance Of Power Management Control ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

b. Disconnect the D89 power management control ECU.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-6 (GND) - Body ground	Always	Below 1 ohms
D89-5 (GND2) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D89-2 (AM21) - Body ground	Always	11 to 14 V
D89-1 (AM22) - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 37

34. **CHECK HARNESS AND CONNECTOR (NETWORK GATEWAY ECU - BATTERY AND BODY GROUND)**
    a. Connect the cable to the negative (-) battery terminal.

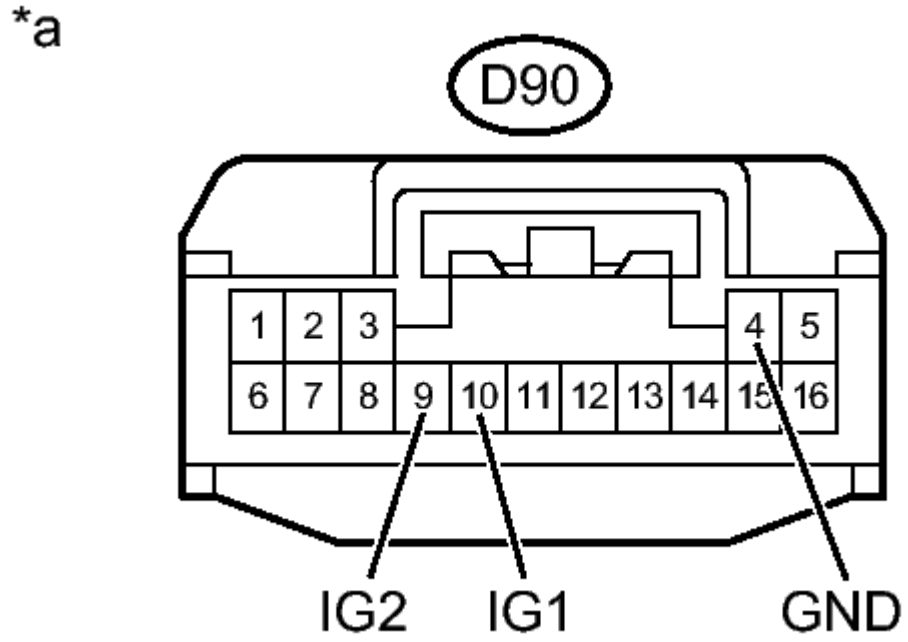


Fig. 83: Measuring Resistance Of Network Gateway ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the D90 network gateway ECU connector.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D90-4 (GND) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D90-9 (IG2) - Body ground	Ignition switch ON	11 to 14 V
D90-10	Ignition	

(IG1) - Body ground	switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 45

35. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
36. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**
37. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
38. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
39. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**
40. **REPLACE CLEARANCE WARNING ECU ASSEMBLY. Refer to REMOVAL**
41. **REPLACE SEAT BELT CONTROL ECU. Refer to REMOVAL**
42. **REPLACE DRIVING SUPPORT ECU. Refer to REMOVAL**
43. **REPLACE AFS ECU. Refer to REMOVAL**
44. **REPLACE PARKING ASSIST ECU. Refer to REMOVAL**
45. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**

DTC U1100: LOST COMMUNICATION WITH SEAT BELT CONTROL ECU

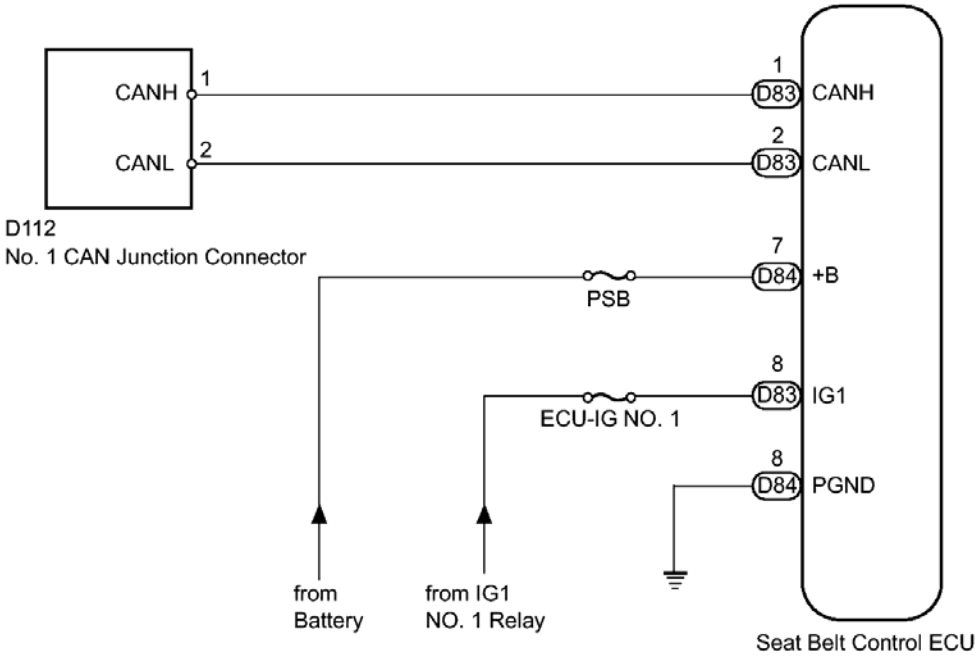
DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U1100	There is no communication from the seat belt control ECU.	• Power source circuit of seat belt control ECU • Seat belt control ECU • Seat belt control ECU branch wire or connector

HINT:

For vehicles with the pre-collision system only.

WIRING DIAGRAM



T

Fig. 84: Seat Belt Control ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1**

minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.

- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (SEAT BELT CONTROL ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D83 seat belt control ECU connector.

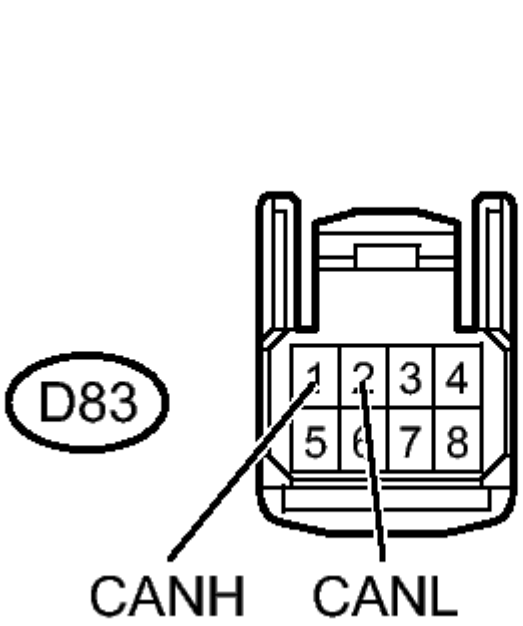


Fig. 85: Checking For Open In CAN BUS Wire (Seat Belt Control ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D83-1 (CANH) - D83-2 (CANL)	ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Seat Belt Control ECU)

NG --> REPAIR OR REPLACE SEAT BELT CONTROL ECU BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (SEAT BELT CONTROL ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.
   c. Disconnect the D83 and D84 seat belt control ECU connectors.

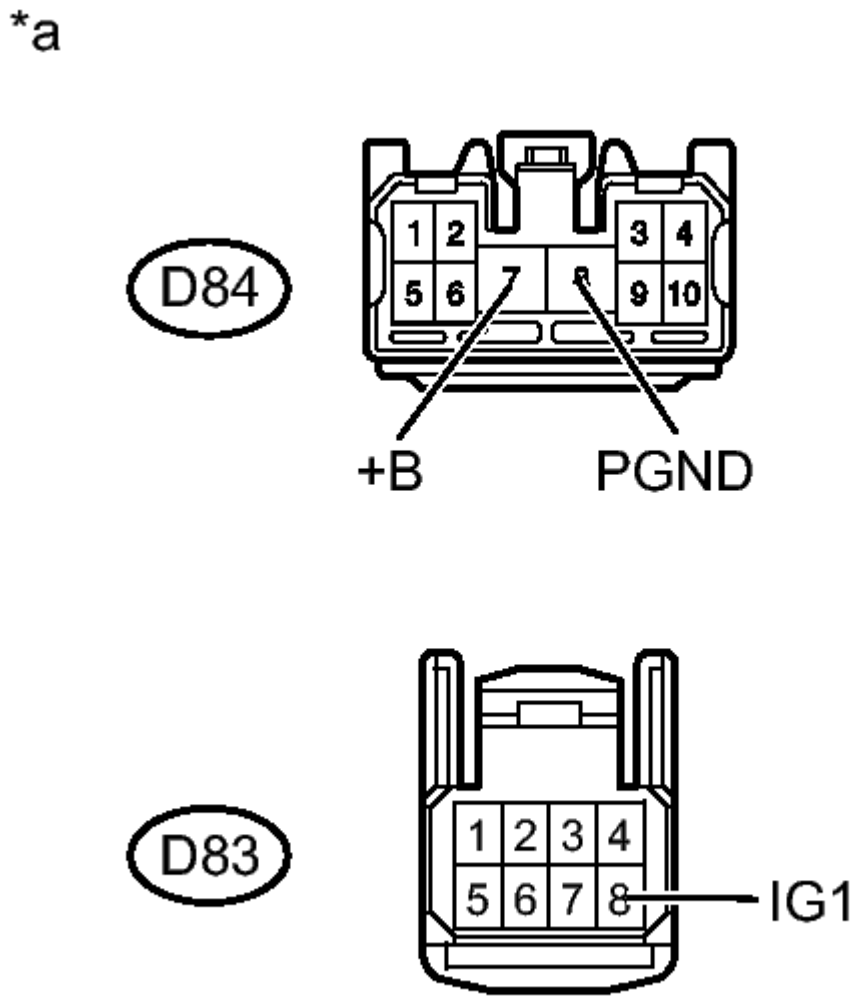


Fig. 86: Measuring Resistance Of Seat Belt Control ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D84-8 (PGND) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D84-7 (+B) - Body ground	Always	11 to 14 V
D83-8 (IG1) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Seat Belt Control ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE SEAT BELT CONTROL ECU. Refer to REMOVAL**

DTC U110B: LOST COMMUNICATION WITH PARKING ASSIST CONTROL MODULE "B"

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U110B	No communication from the parking assist ECU.	• Parking assist ECU branch wire or connector • Power source circuit of parking assist ECU • Parking assist ECU

HINT:

For vehicle with the parking assist monitor system only.

WIRING DIAGRAM

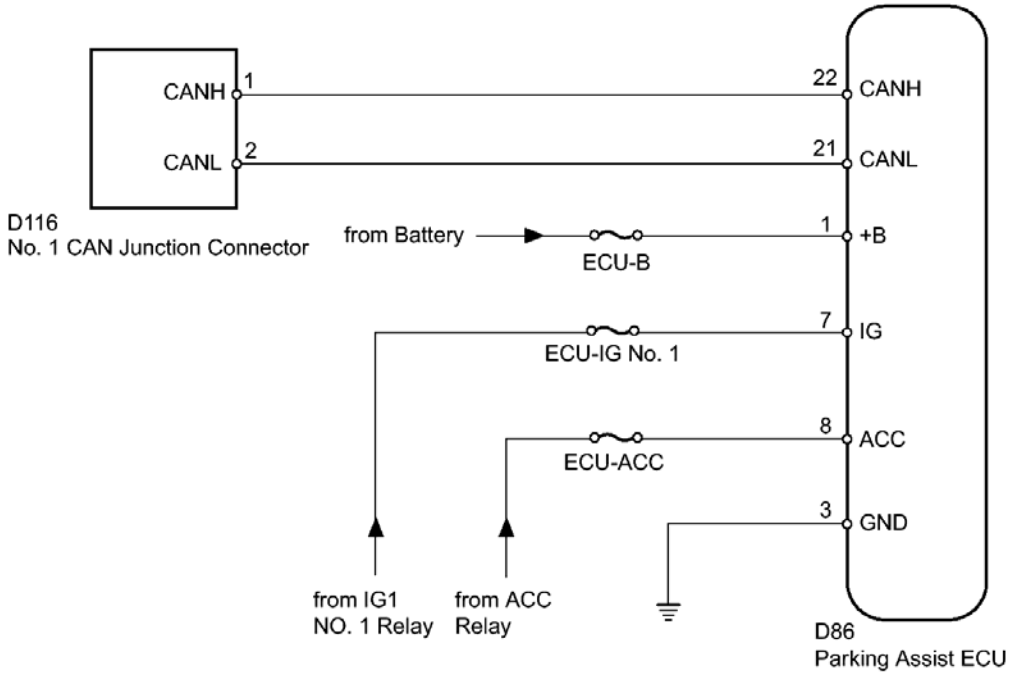


Fig. 87: Parking Assist ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS WIRE FOR DISCONNECTION (PARKING ASSIST ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D86 parking assist ECU connector.

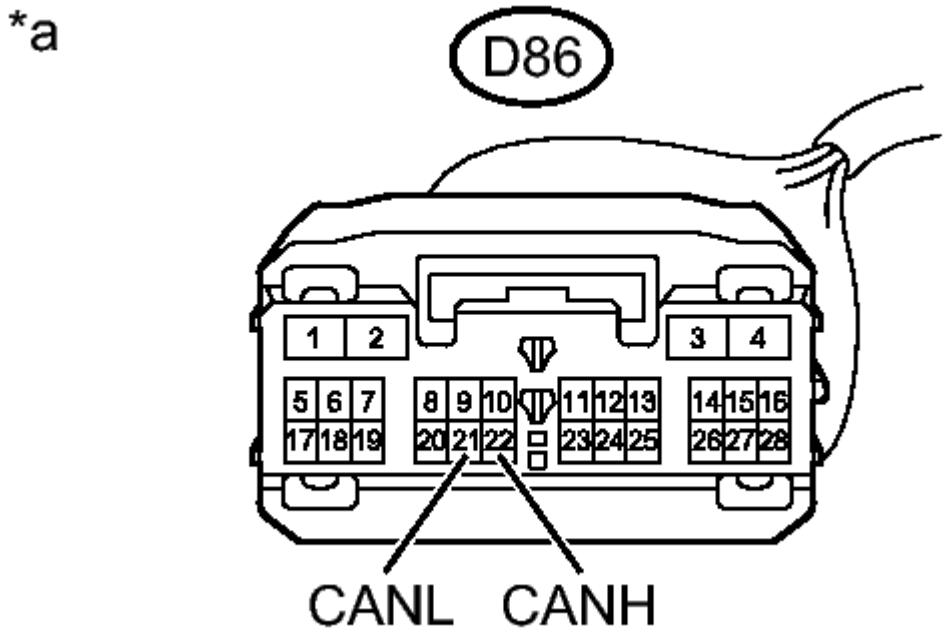


Fig. 88: Checking CAN BUS Wire For Disconnection (Parking Assist ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D86-22 (CANH) - D86-21 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Parking Assist ECU)

NG --> REPAIR OR REPLACE PARKING ASSIST ECU BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (PARKING ASSIST ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.
   c. Disconnect the D86 parking assist ECU connector.
   d. Measure the resistance according to the value(s) in the table below.

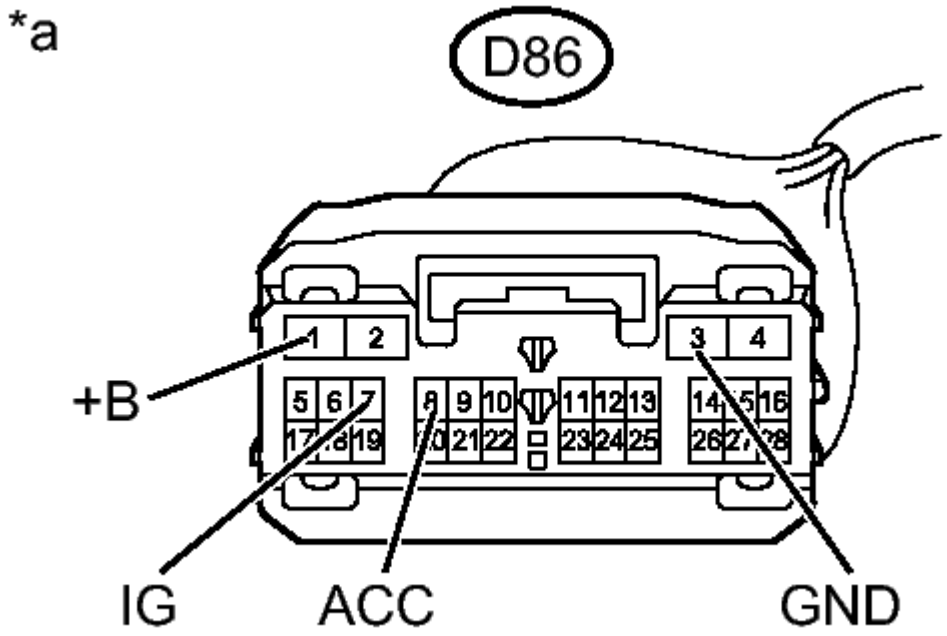


Fig. 89: Measuring Resistance Of Parking Assist ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
D86-3 (GND) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D86-1 (+B) - Body ground	Always	11 to 14 V
D86-8 (ACC) - Body ground	Ignition switch ACC	11 to 14 V
D86-7 (IG) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Parking Assist ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE PARKING ASSIST ECU. Refer to REMOVAL**

DTC U1110: LOST COMMUNICATION WITH CLEARANCE SONAR MODULE

DESCRIPTION

DTC Code	DTC Detection Condition	Trouble Area
U1110	There is no communication from the clearance warning ECU.	• Power source circuit of clearance warning ECU assembly • Clearance warning ECU assembly • Clearance warning ECU branch wire or connector

HINT:

For vehicles with the intuitive parking assist system only.

WIRING DIAGRAM

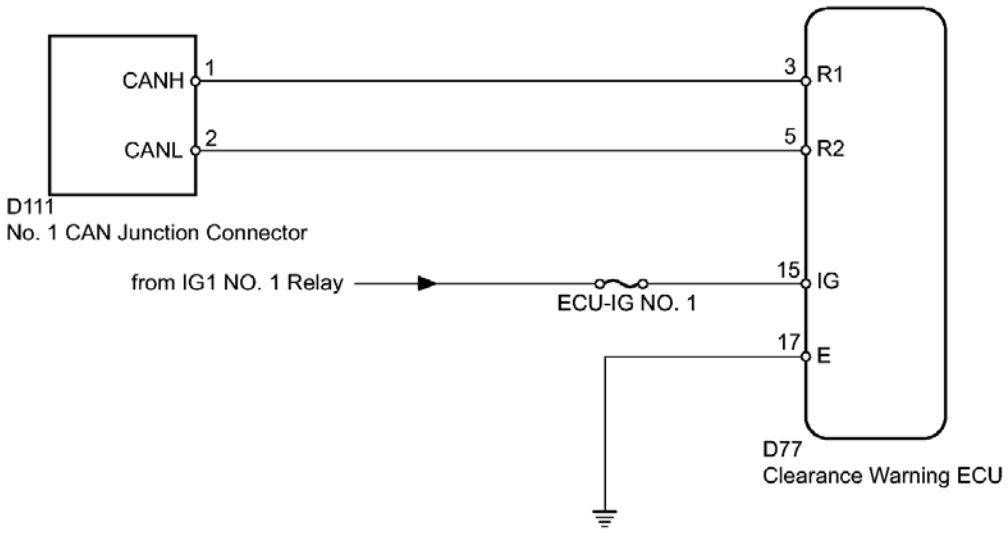


Fig. 90: Clearance Warning ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor

communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (CLEARANCE WARNING ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D77 clearance warning ECU connector.

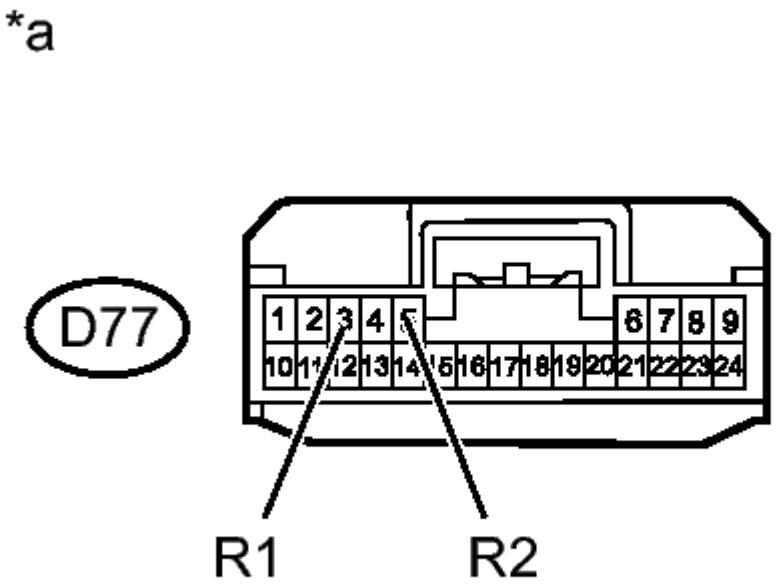


Fig. 91: Checking For Open In CAN BUS Wire (Clearance Warning ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D77-3 (R1) - D77-5 (R2)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Clearance Warning ECU)

NG --> REPAIR OR REPLACE CLEARANCE WARNING ECU BRANCH WIRE OR CONNECTOR (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (CLEARANCE WARNING ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Disconnect the D77 clearance warning ECU connector.
   c. Turn the ignition switch to ON.

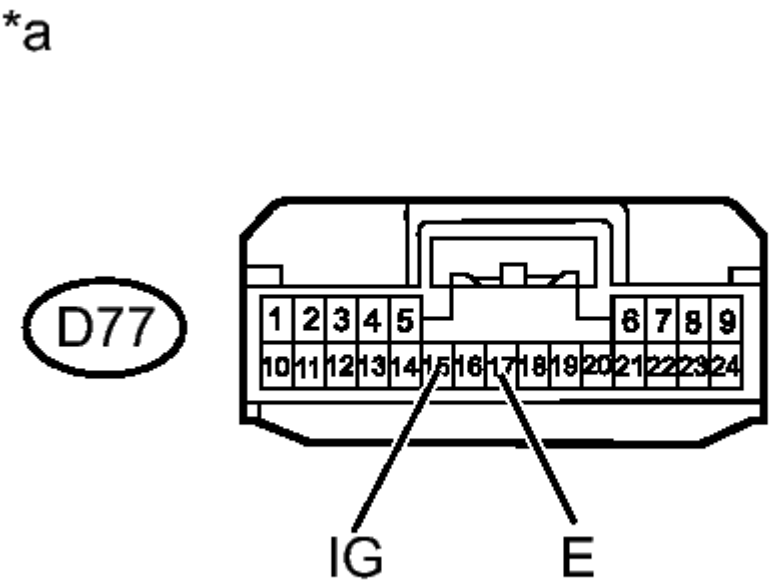


Fig. 92: Measuring Resistance Of Clearance Warning ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D77-17 (E) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D77-15 (IG) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

	Front view of

*a	wire harness connector (to Clearance Warning ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL**

SYMPTOM TESTS

Skid Control ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Skid Control ECU Communication Stop Mode	• "ABS/VSC/TRC" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Skid Control ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of skid control ECU • Skid control ECU branch wire or connector • Skid control ECU

WIRING DIAGRAM

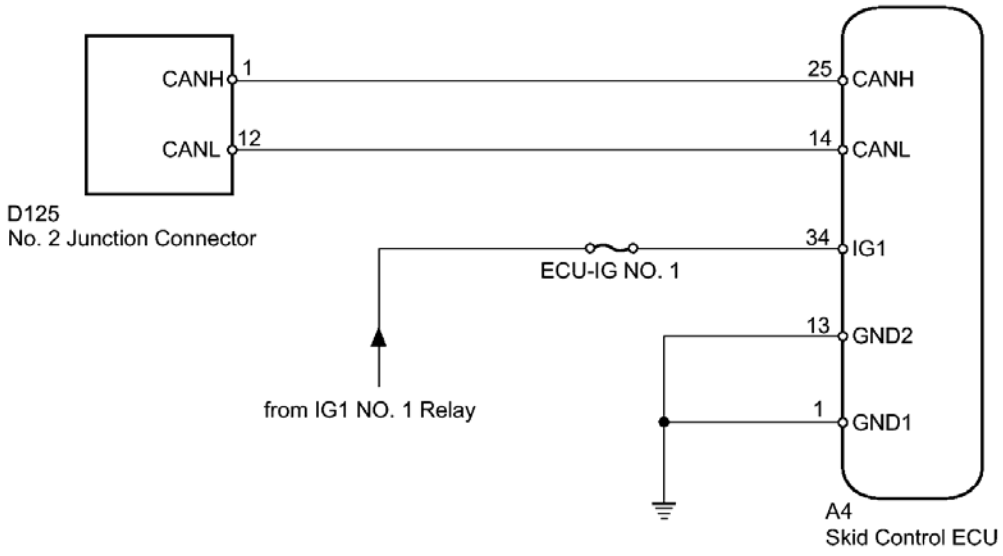


Fig. 93: Skid Control ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (BRAKE ACTUATOR (SKID CONTROL ECU) BRANCH WIRE)**
   a. Turn the ignition switch off.

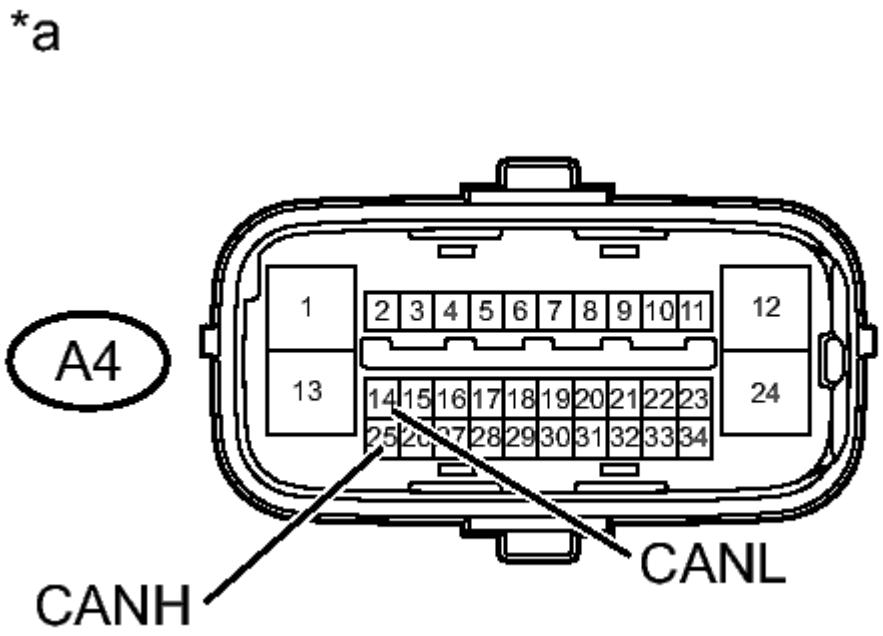


Fig. 94: Checking CAN BUS Line For Disconnection (Brake Actuator (Skid Control ECU) Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the A4 skid control ECU connector.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A4-25 (CANH) - A4-14 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Brake Actuator (Skid Control ECU))

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO BRAKE ACTUATOR (SKID CONTROL ECU) (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION**

   b. Turn the ignition switch to ON.
   c. Disconnect the A4 skid control ECU connector.
   d. Measure the resistance according to the value(s) in the table below.

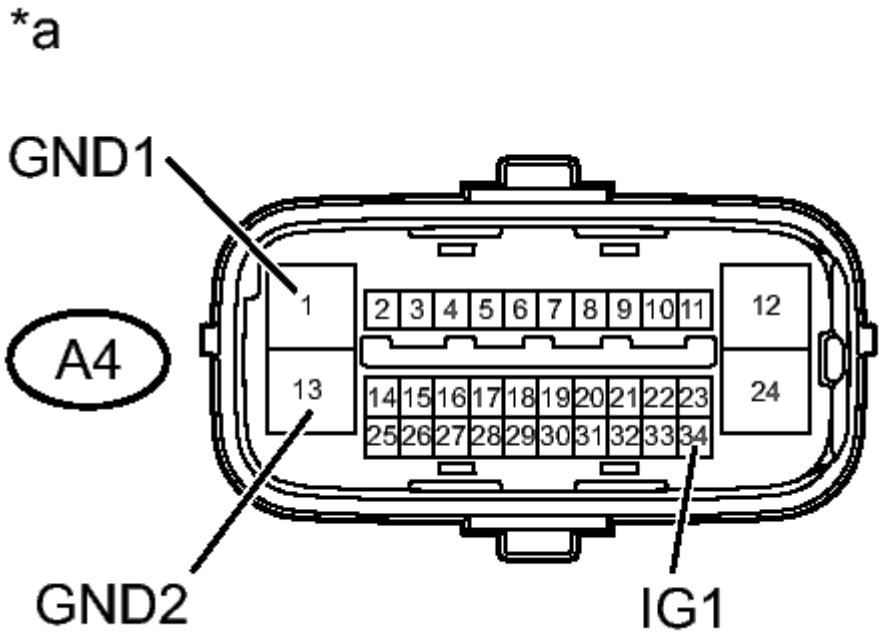


Fig. 95: Measuring Resistance Of Skid Control ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
A4-1 (GND1) - Body	Always	Below 1 ohms

ground		
A4-13 (GND2) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Skid Control ECU)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
A4-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE SKID CONTROL ECU. Refer to REMOVAL**

Air Conditioning Amplifier Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Air Conditioning Amplifier Communication Stop Mode	• "Air Conditioner" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Air Conditioning Amplifier Communication Stop Mode" in "DTC combination table"	• Power source circuit of air conditioning amplifier • Air conditioning amplifier branch wire or connector • Air conditioning amplifier

HINT:

For vehicle without smart key system only.

WIRING DIAGRAM

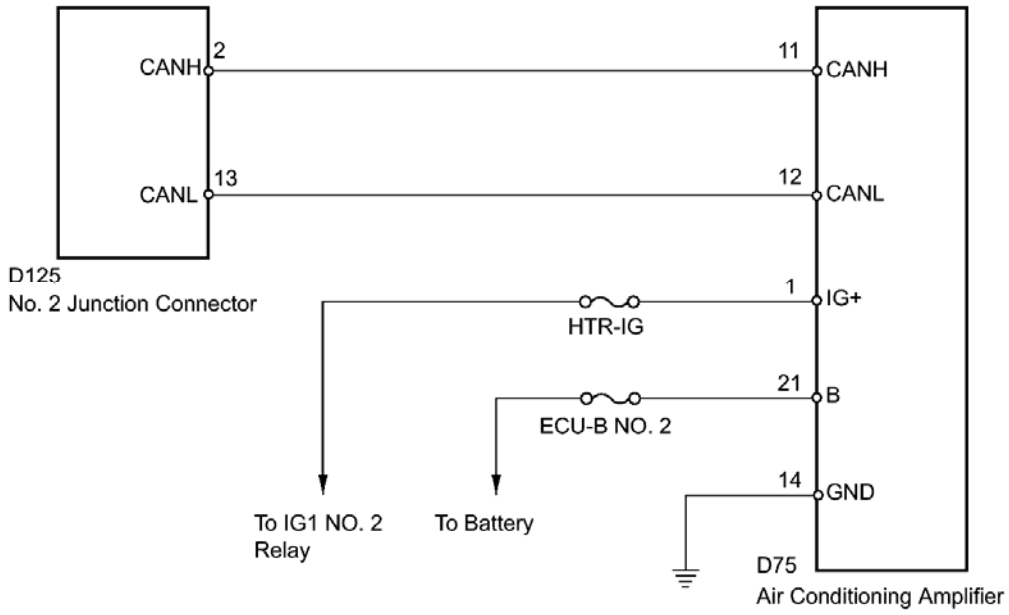


Fig. 96: Air Conditioning Amplifier Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor

communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (AIR CONDITIONING AMPLIFIER BRANCH WIRE)**
   a. Turn the ignition switch off.

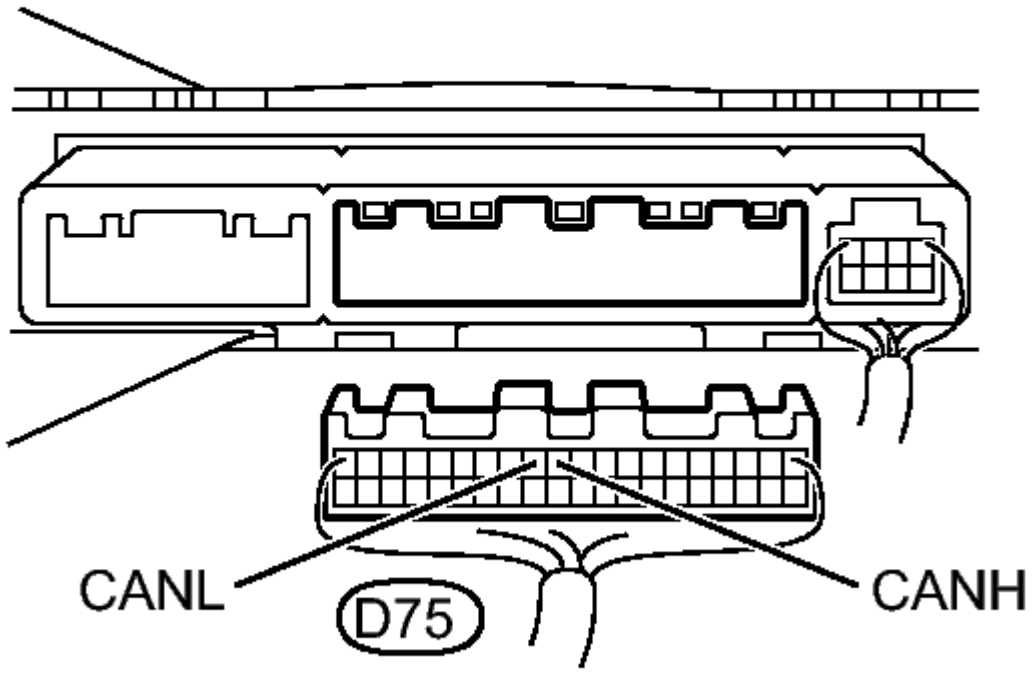


Fig. 97: Checking CAN BUS Line For Disconnection (Air Conditioning Amplifier Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the D75 air conditioning amplifier connector.
c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Air Conditioning Amplifier)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AIR CONDITIONING AMPLIFIER (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

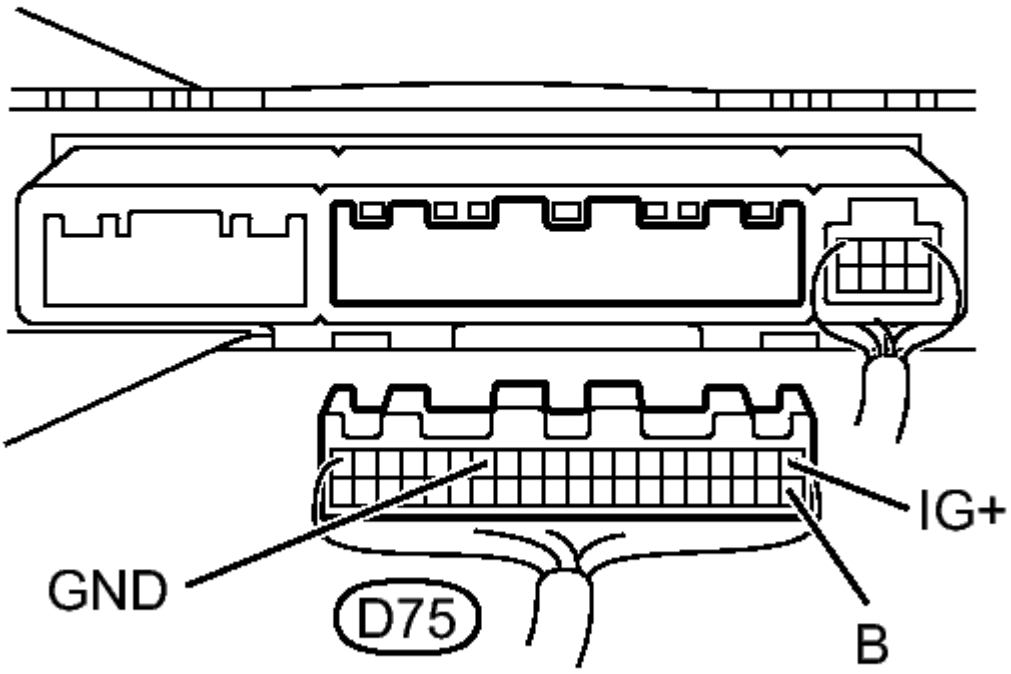


Fig. 98: Measuring Resistance Of Air Conditioning Amplifier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D75 air conditioning amplifier connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D75-14 (GND) - Body Ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Air Conditioning Amplifier)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D75-1 (IG+) - Body Ground	Ignition switch ON	11 to 14 V
D75- 21 (B)- Body Ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**

Power Steering ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Power Steering ECU Communication Stop Mode	• "EPS" not displayed on "Communication BUS Check" of Techstream • Applies to "Power Steering ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of power steering ECU • Power steering ECU branch wire or connector • Power steering ECU

WIRING DIAGRAM

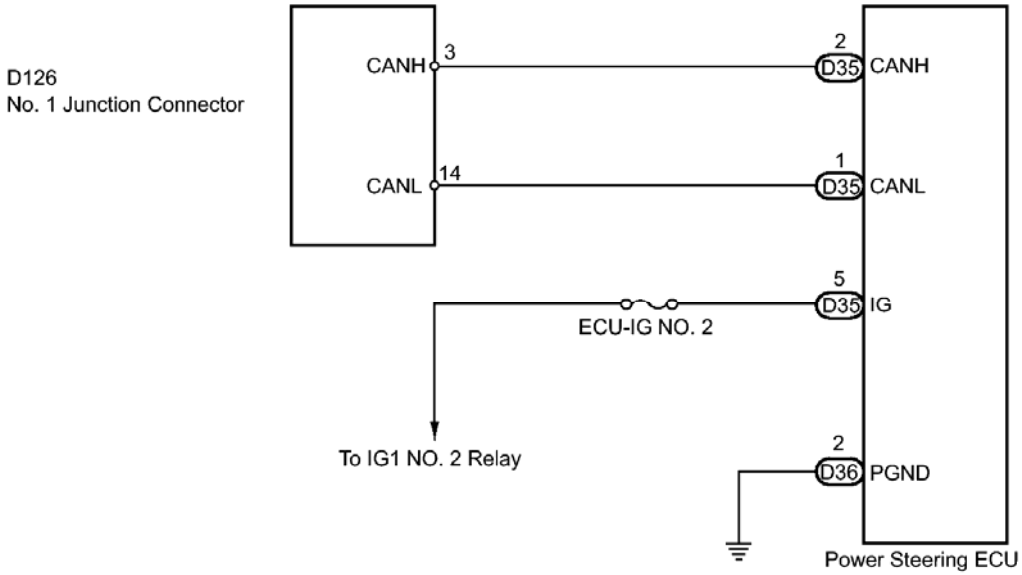


Fig. 99: Power Steering ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (POWER STEERING ECU BRANCH WIRE)**
   a. Turn the ignition switch off.

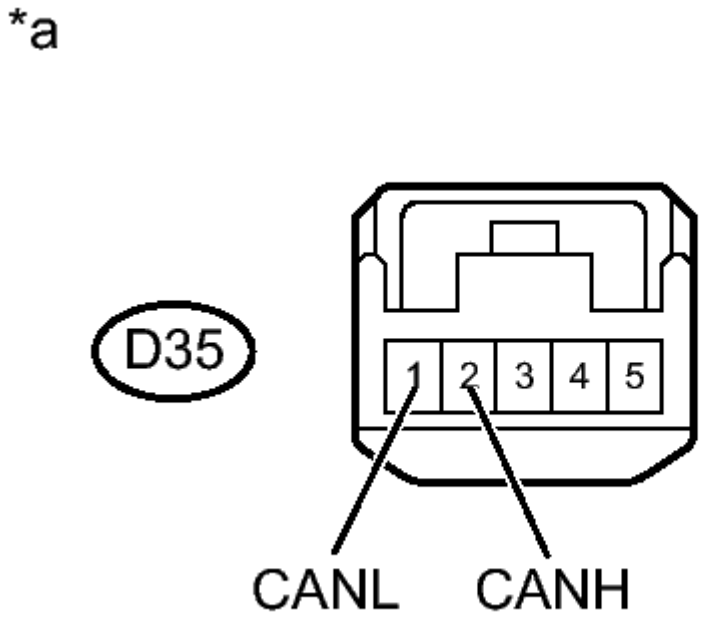


Fig. 100: Checking CAN BUS Line For Disconnection (Power Steering ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the D35 power steering ECU connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D35-2 (CANH) - D35-1 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (POWER STEERING ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

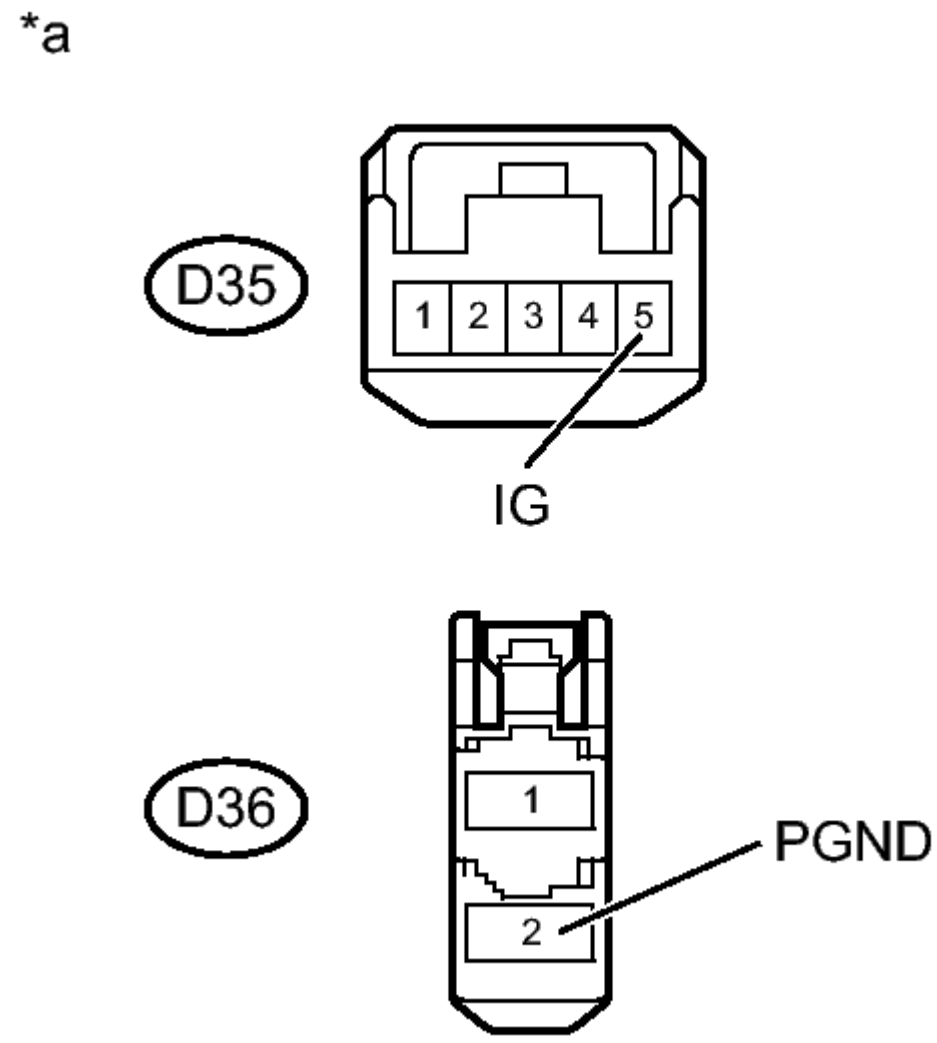


Fig. 101: Measuring Resistance Of Power Steering ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D35 and D36 power steering ECU connectors.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D36-2 (PGND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

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

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D35-5 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE STEERING COLUMN ASSEMBLY (POWER STEERING ECU). Refer to REMOVAL**

Gateway ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Gateway ECU Communication Stop Mode	• "CAN Gateway" is not displayed on "CAN BUS Check". • "Gateway Communication Stop Mode" in "DTC Combination Table" applies.	• Power source circuit of network gateway ECU • Network gateway ECU branch wire or connector • Network gateway ECU

HINT:

For vehicle without smart key system only.

WIRING DIAGRAM

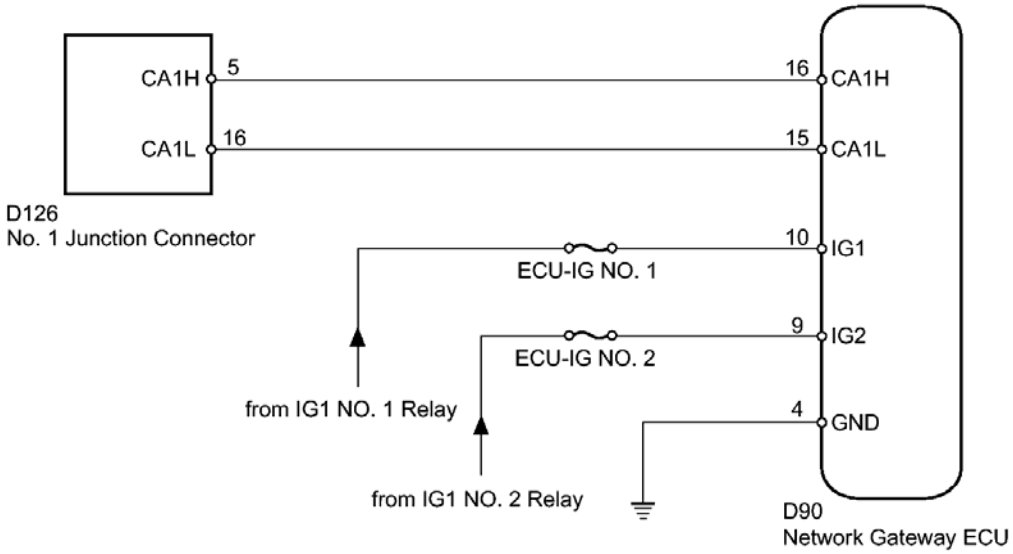


Fig. 102: Network Gateway ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

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

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

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (NETWORK GATEWAY ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D90 network gateway ECU connector.

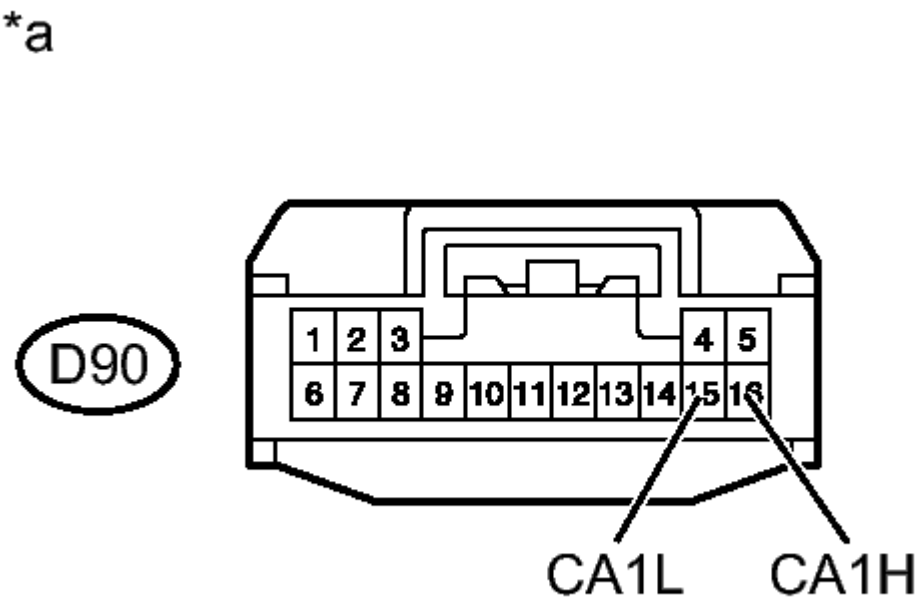


Fig. 103: Checking For Open In CAN BUS Wire (Network Gateway ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D90-16		

(CA1H) - D90-15 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE NETWORK GATEWAY ECU BRANCH WIRE OR CONNECTOR (CA1H, CA1L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (NETWORK GATEWAY ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.
   c. Disconnect the D90 network gateway ECU connector.

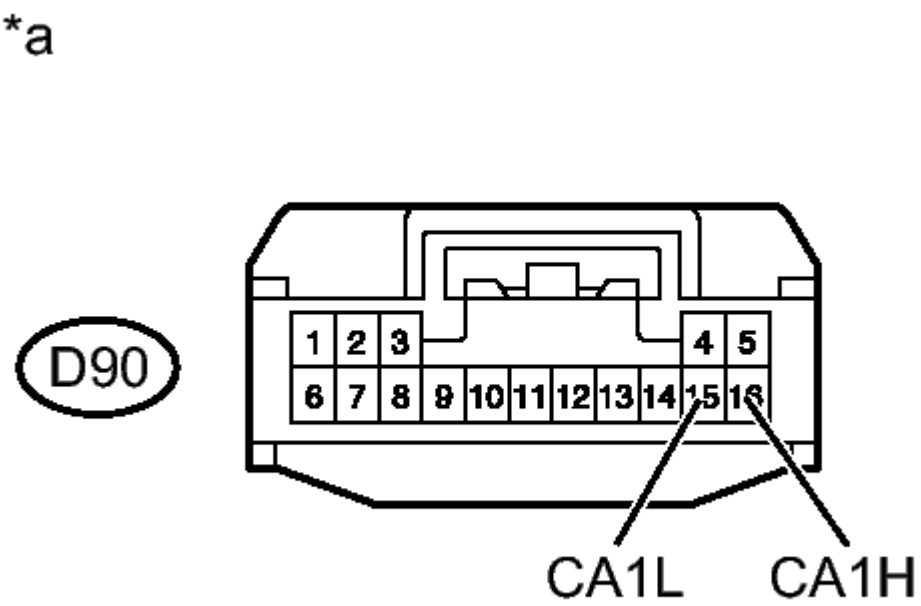


Fig. 104: Checking For Open In CAN BUS Wire (Network Gateway ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D90-4 (GND) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D90-10 (IG1) - Body ground	Ignition switch ON	11 to 14 V
D90-9 (IG2) -		

Body ground		

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**

Steering Angle Sensor Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Steering Angle Sensor Communication Stop Mode	• "Steering Angle Sensor" not displayed on "Communication BUS Check" screen of Techstream. • Applies to "Steering Angle Sensor Communication Stop Mode" in "DTC combination table"	• Power source circuit of steering angle sensor • Steering angle sensor branch wire or connector • Steering angle sensor

WIRING DIAGRAM

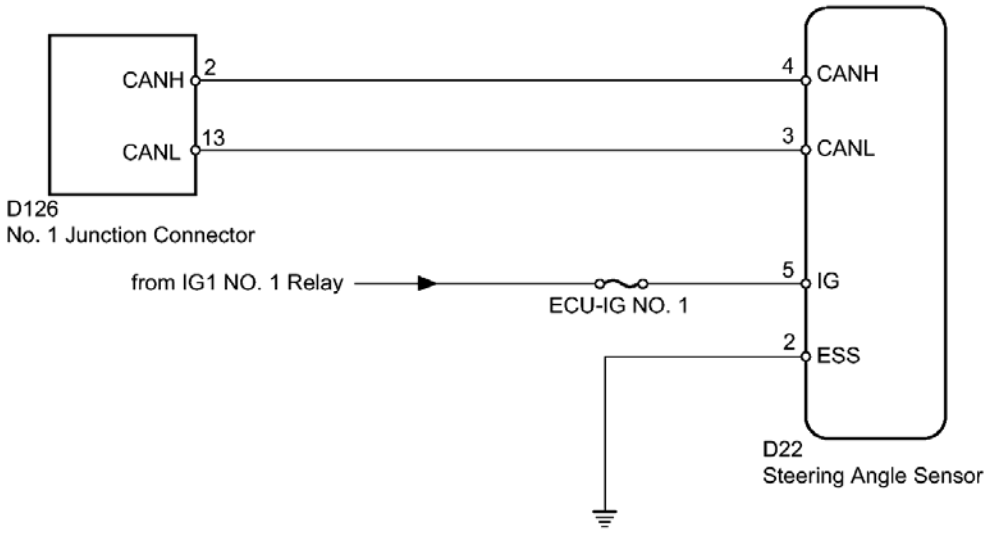


Fig. 105: Steering Angle Sensor Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (STEERING ANGLE SENSOR BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D22 steering angle sensor connector.

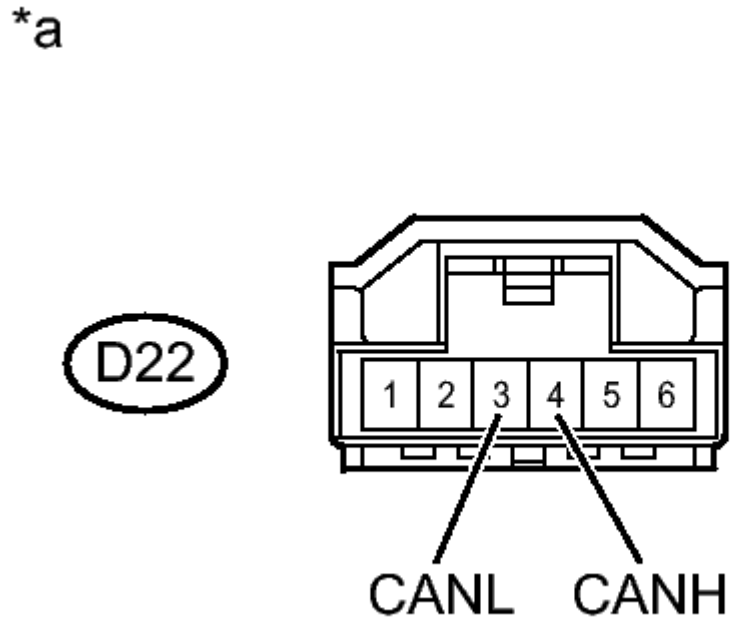


Fig. 106: Checking CAN BUS Line For Disconnection (Steering Angle Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D22-4 (CANH) - D22-3 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Steering Angle Sensor)

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

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (STEERING ANGLE SENSOR - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

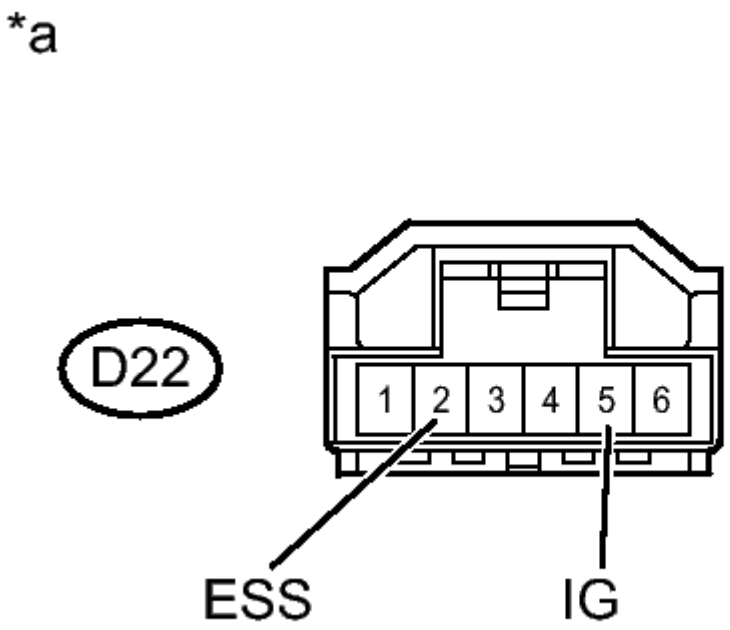


Fig. 107: Measuring Resistance Of Steering Angle Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D22 steering angle sensor connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D22-2 (ESS) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Steering Angle Sensor)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D22-5 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE STEERING ANGLE SENSOR. Refer to REMOVAL**

Yaw Rate Sensor Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Yaw Rate Sensor Communication Stop Mode	• "Yaw Rate/Deceleration Sensor" not displayed on "CAN BUS Check" screen of Techstream • Applies to "Yaw Rate Sensor Communication Stop Mode" in "DTC combination table"	• Power source circuit of yaw rate sensor • Yaw rate sensor branch wire or connector • Yaw rate sensor

HINT:

For vehicles with VDIM only.

WIRING DIAGRAM

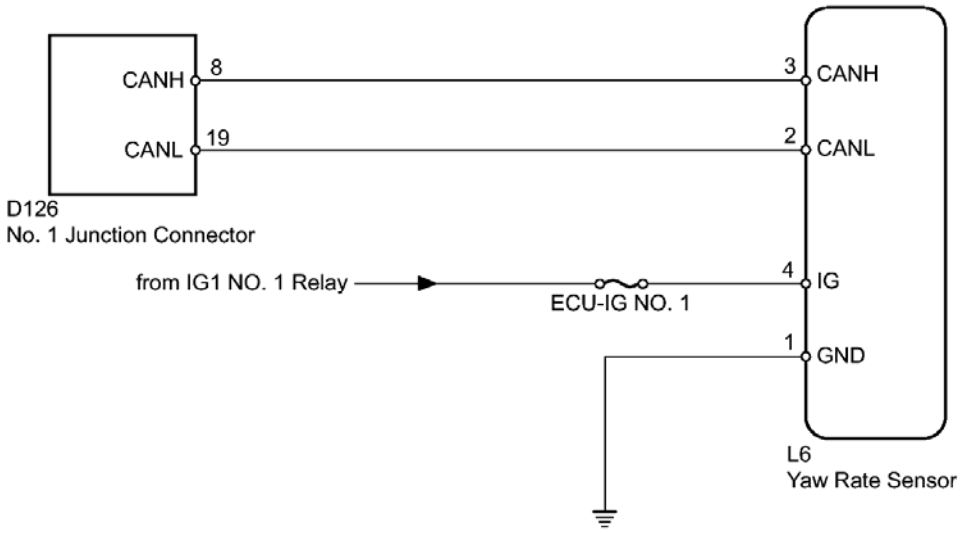


Fig. 108: Yaw Rate Sensor Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (YAW RATE SENSOR BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the L6 yaw rate sensor connector.

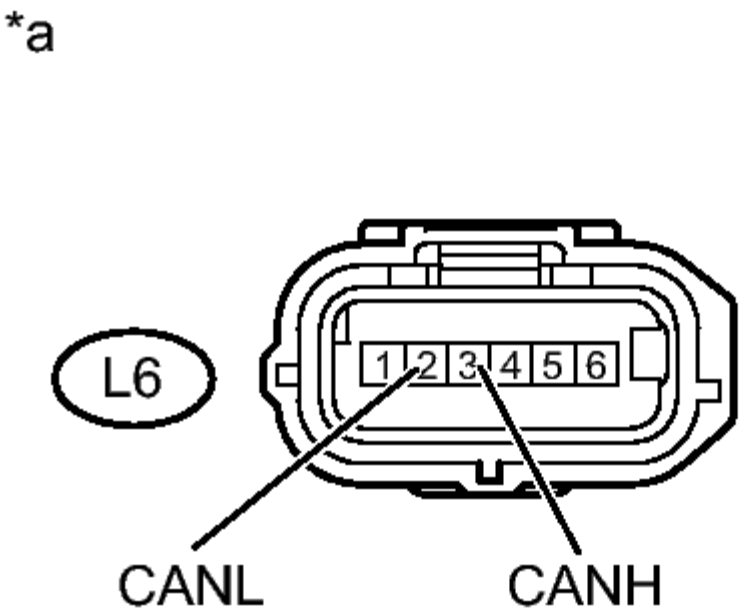


Fig. 109: Checking CAN BUS Line For Disconnection (Yaw Rate Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
L6-3 (CANH) - L6-2 (CANL)	Ignition Switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Yaw Rate Sensor)

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

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (YAW RATE SENSOR - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

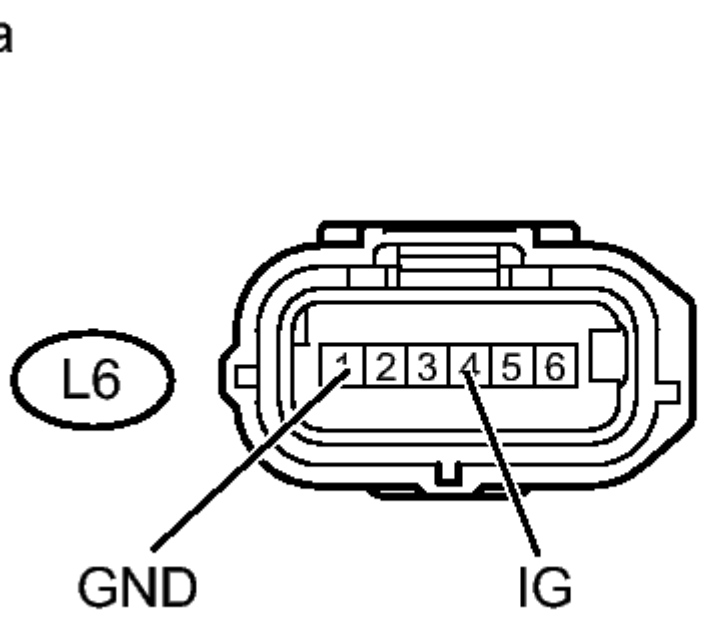


Fig. 110: Measuring Resistance Of Yaw Rate Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the L6 yaw rate sensor connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
L6-1 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Yaw Rate Sensor)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
L6-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE YAW RATE SENSOR. Refer to REMOVAL**

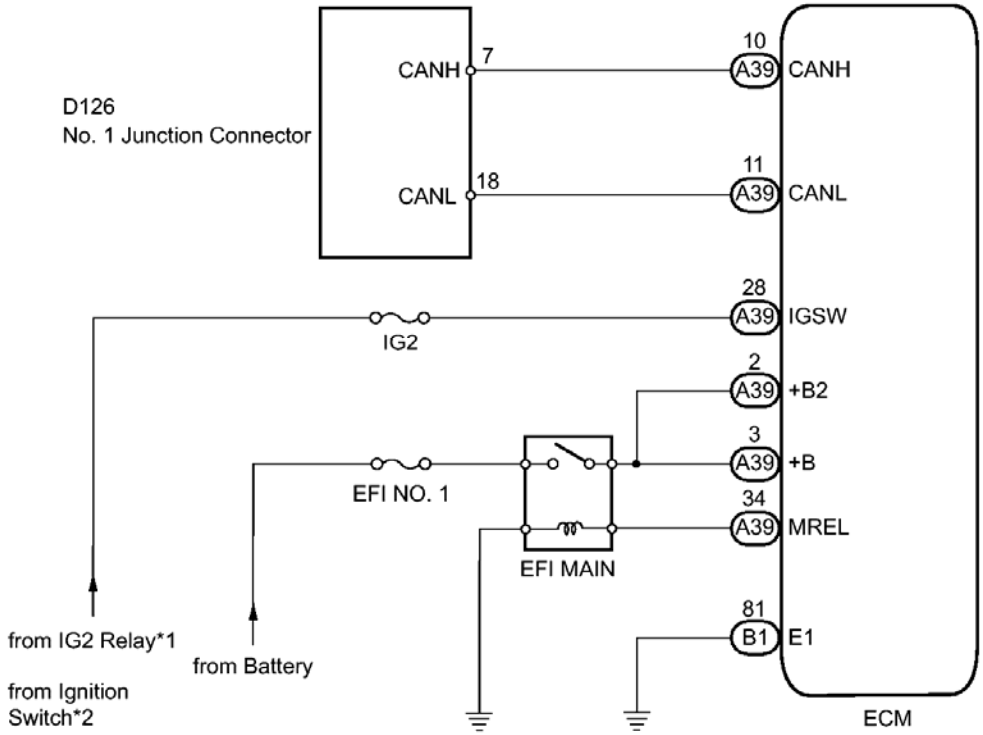
ECM Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
ECM Communication Stop Mode	• "Engine " not displayed on "Communication BUS Check" of Techstream • Applies to "ECM Communication Stop Mode" in "DTC combination table"	• Power source circuit of ECM • ECM main wire or connector • ECM

WIRING DIAGRAM

for 2GR-FE:



*1: w/ Smart Key System *2: w/o Smart Key System

Fig. 111: ECM (2GR-FE) Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

for 1AR-FE:

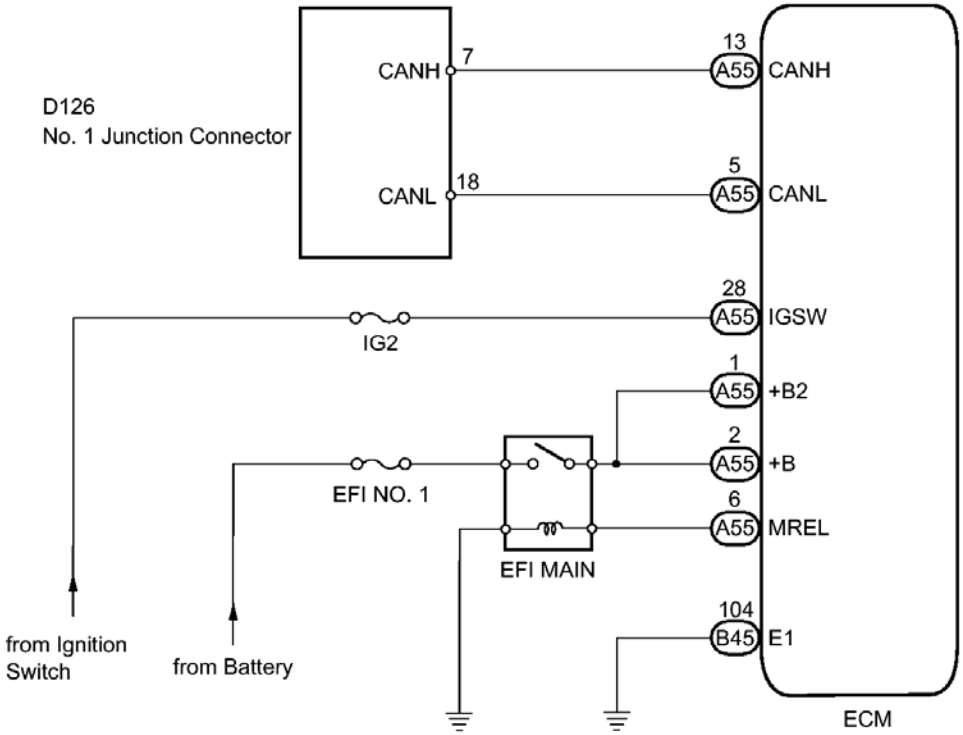


Fig. 112: ECM (1AR-FE) Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the**

following inspection procedure.

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **SYSTEM CHECK**
   a. Check the vehicle specifications.

RESULT

Result	Proceed to
for 2GR-FE engine	A
for 1AR-FE engine	B

B --> See step 5

A: Go to next step

3. **CHECK CAN BUS LINE FOR DISCONNECTION (ECM MAIN WIRE)**
   a. Turn the ignition switch off.

b. Disconnect the A39 ECM connector.

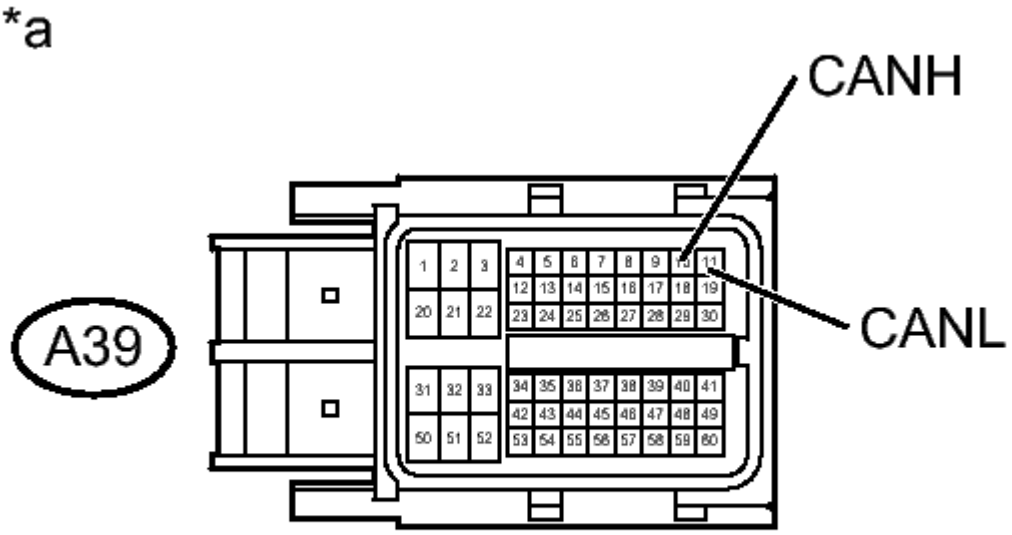


Fig. 113: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-10 (CANH) - A39-11 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

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

OK: Go to next step

4. **CHECK ECM POWER SOURCE CIRCUIT**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

   b. Turn the ignition switch to ON.

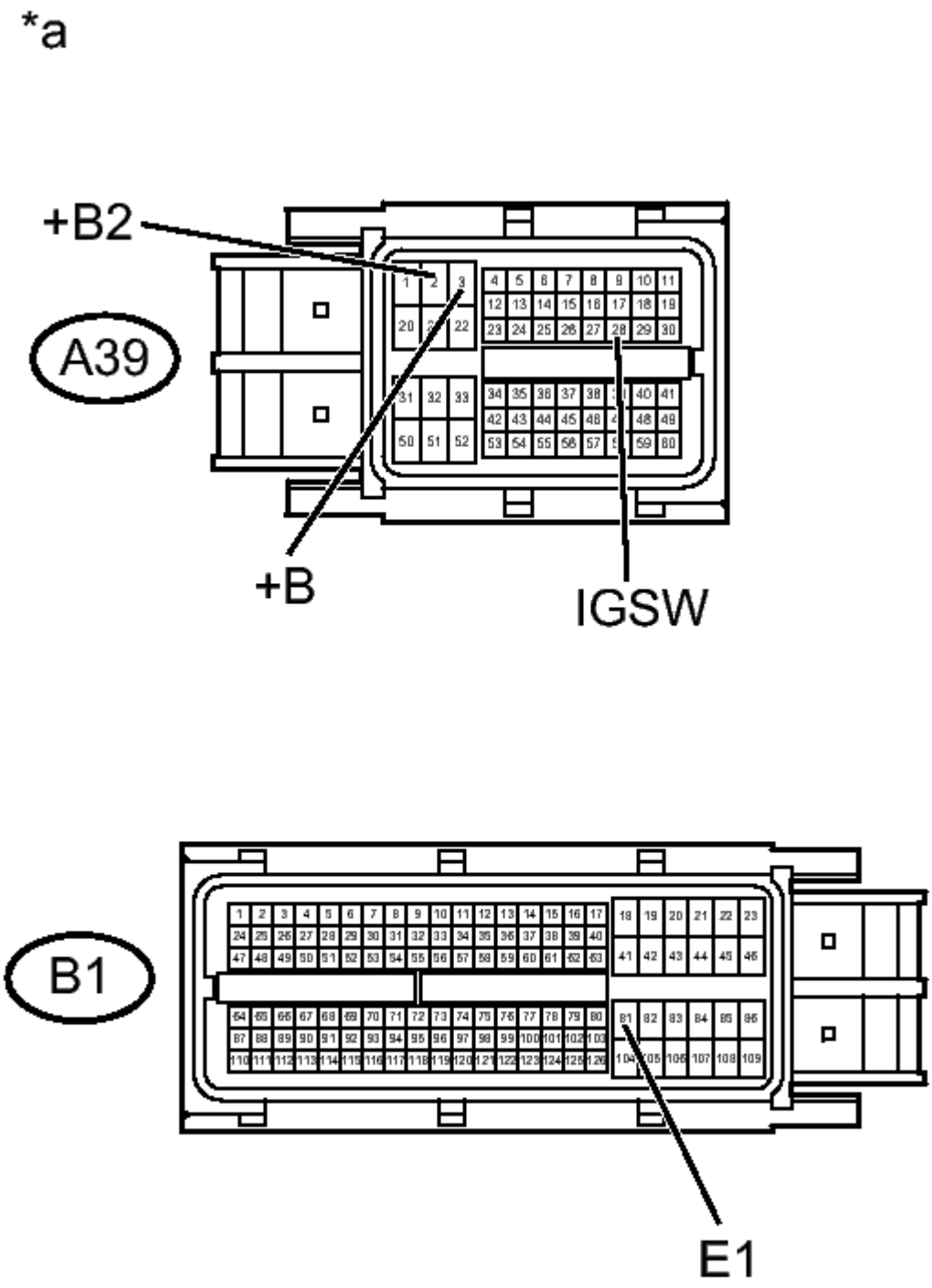


Fig. 114: Checking ECM Power Source Circuit For High Resistance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the A39 and B1 ECM connectors.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
B1-81 (E1) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
A39-28 (IGSW) - Body ground	Ignition switch ON	11 to 14 V
A39-3 (+B) - Body ground	Ignition switch ON	11 to 14 V
A39-2 (+B2) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 7

5. **CHECK CAN BUS LINE FOR DISCONNECTION (ECM MAIN WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the A55 ECM connector.

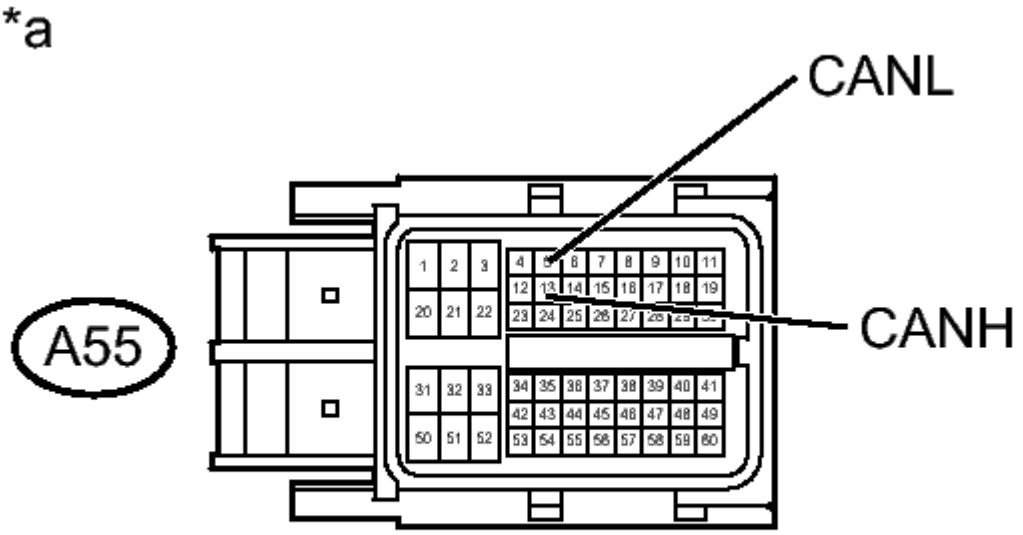


Fig. 115: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A55-13 (CANH) - A55-5 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

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

OK: Go to next step

6. **CHECK ECM POWER SOURCE CIRCUIT**

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

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .**

b. Turn the ignition switch to ON.

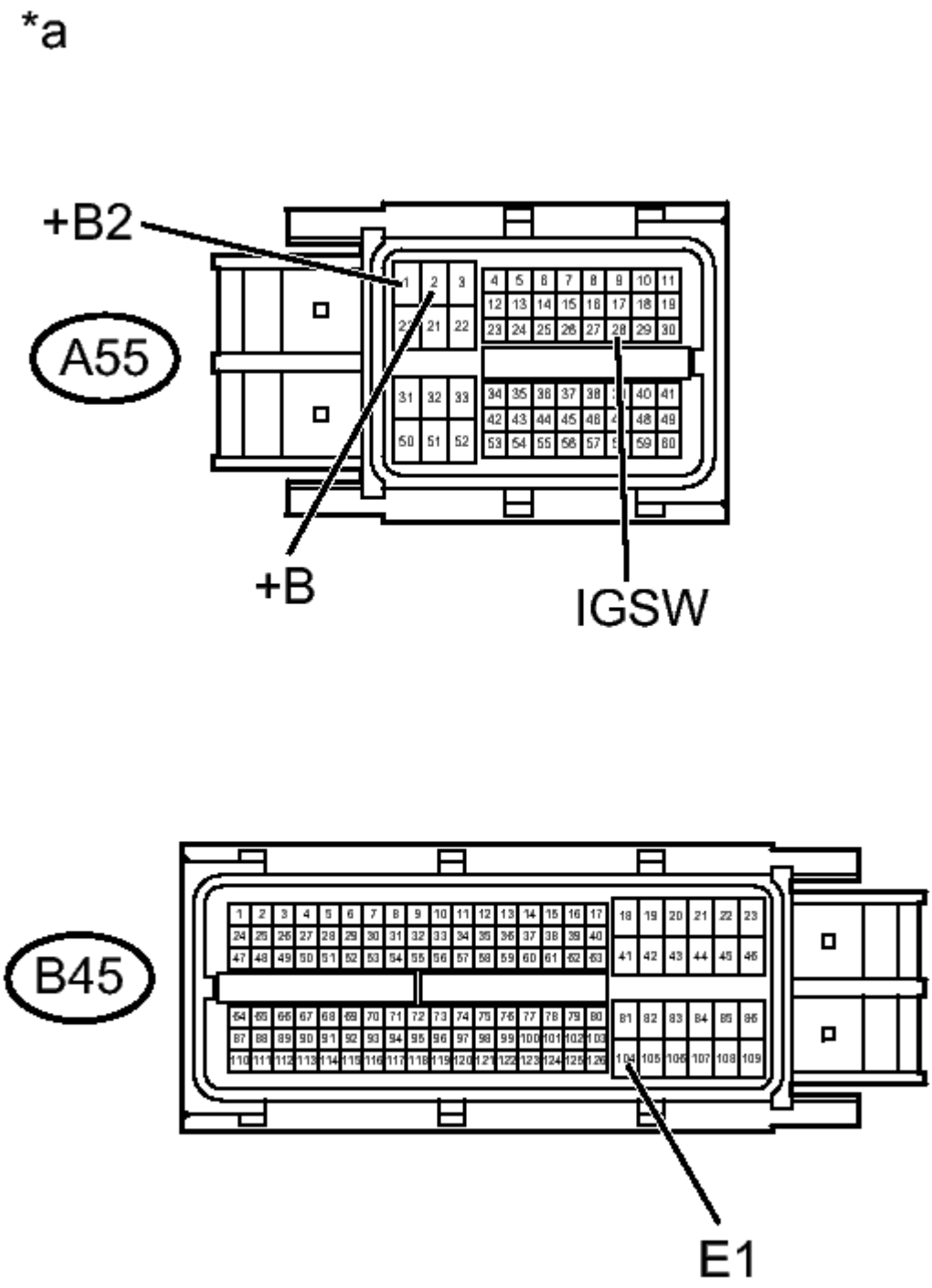


Fig. 116: Measuring Resistance Of ECM Power Source Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the A55 and B45 ECM connectors.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
B45-104 (E1) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
A55-28 (IGSW) - Body ground	Ignition switch ON	11 to 14 V
A55-2 (+B) - Body ground	Ignition switch ON	11 to 14 V
A55-1 (+B2) - Body ground	Ignition switch ON	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 8

7. **REPLACE ECM. Refer to REMOVAL**
8. **REPLACE ECM. Refer to REMOVAL**

Main Body ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area

Main Body ECU Communication Stop Mode	• "Main Body" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Main Body ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of main body ECU • Main body ECU branch wire or connector • Main body ECU • Instrument panel junction block

WIRING DIAGRAM

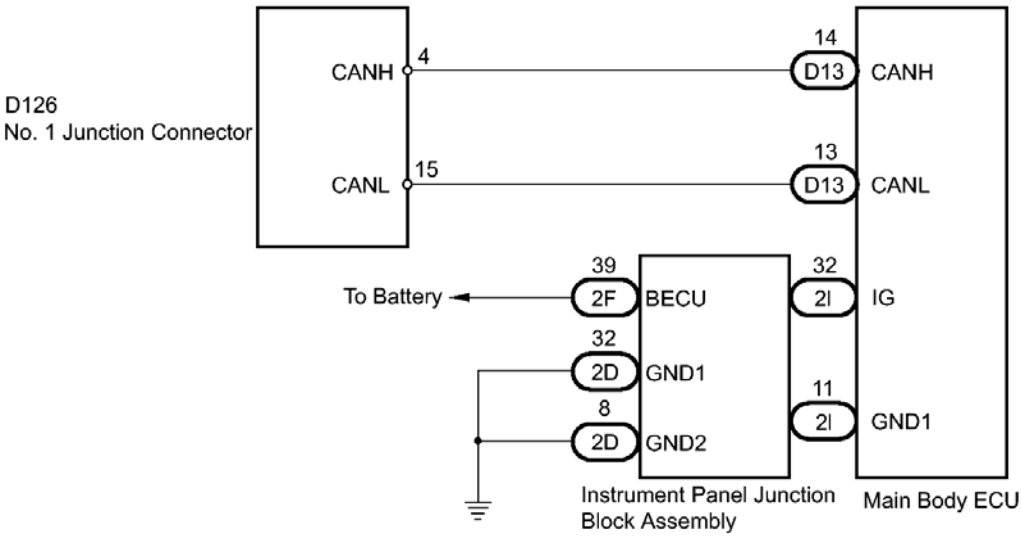


Fig. 117: Main Body ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (MAIN BODY ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D13 main body ECU connector.

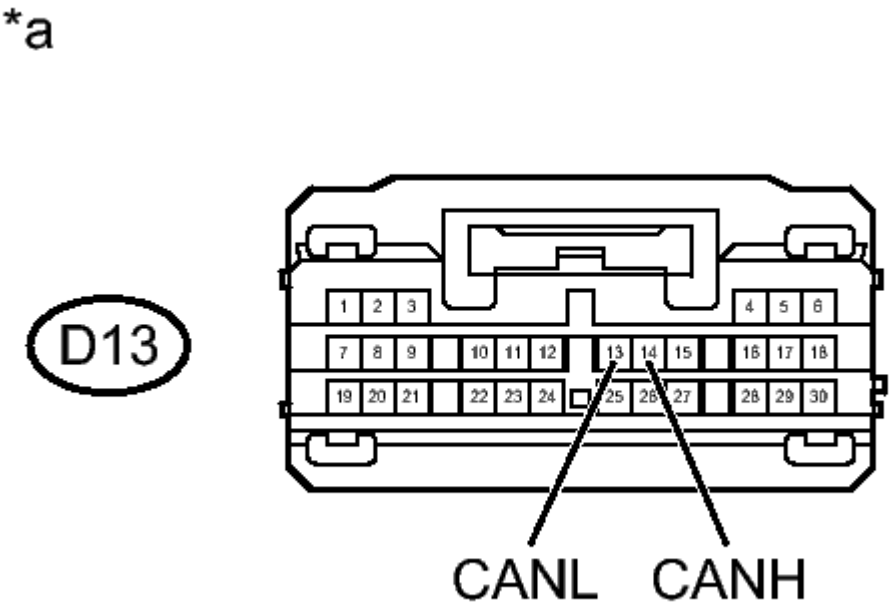


Fig. 118: Checking For Open In CAN BUS Wire (Main Body ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D13-14 (CANH) - D13-13 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

d. Reconnect the main body ECU connector.

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO MAIN BODY ECU (CAN-H, CAN-L)

OK: Go to next step

3. **READ VALUE USING TECHSTREAM (IG SW)**
   a. Connect the cable to the negative (-) battery terminal.

   NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION**

   b. Connect the Techstream to the DLC3.
   c. Turn the ignition switch to ON and turn the Techstream on.
   d. Enter the following menus: Body / Main Body / Data List / IG SW. Refer to **DATA LIST / ACTIVE TEST** .
   e. Read the value displayed on the Techstream.

BODY / MAIN BODY / DATA LIST

	Measurement	Normal	Diagnostic

Item	Item/Range (Display)	Condition	Note
IG SW	Ignition switch / ON or OFF	ON: Ignition switch is ON OFF: Ignition switch is off	-

OK

Ignition switch condition is displayed correctly.

NG --> See step 4

OK --> See step 6

4. **CHECK HARNESS AND CONNECTOR (JUNCTION BLOCK POWER SOURCE)**
   a. Disconnect the 2D and 2F instrument panel block connectors.

*a

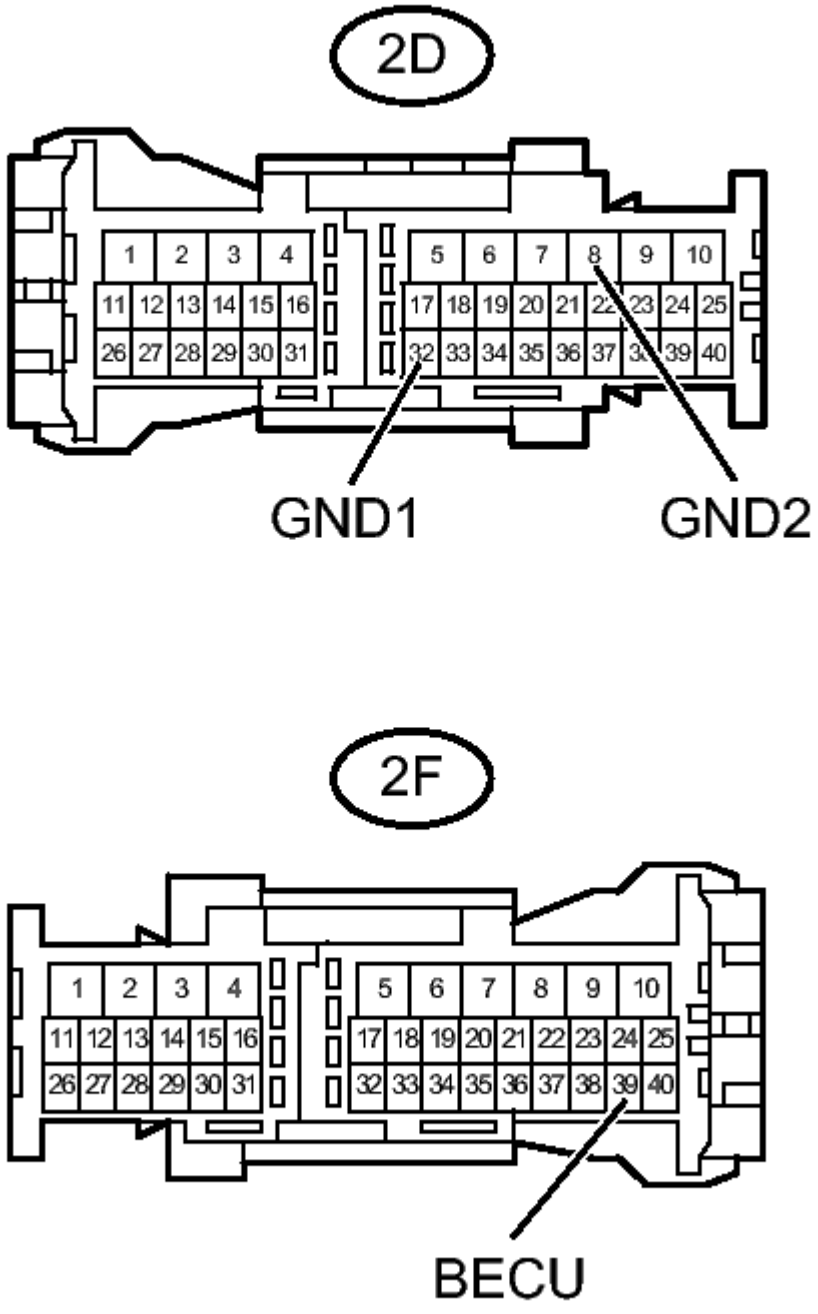


Fig. 119: Measuring Resistance Of Junction Block Power Source
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
2D-32 (GND1) - Body ground	Always	Below 1 ohms
2D-8 (GND2) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)

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

Standard Voltage

Tester Connection	Condition	Specified Condition
2F-39 (BECU) - Body ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. **REPLACE MAIN BODY ECU**
   a. Replace the main body ECU with a new or normal one. Refer to **REMOVAL** .

      OK

The vehicle is returned to its normal condition and operates normally.

NG --> See step 7

OK --> END

6. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
7. **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY. Refer to REMOVAL**

Power Management Control ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Power Management Control ECU Communication Stop Mode	• "Power Management" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Power Management Control ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of power management control ECU • Power management control ECU branch wire or connector • Power management control ECU

HINT:

For vehicle with smart key system only.

WIRING DIAGRAM

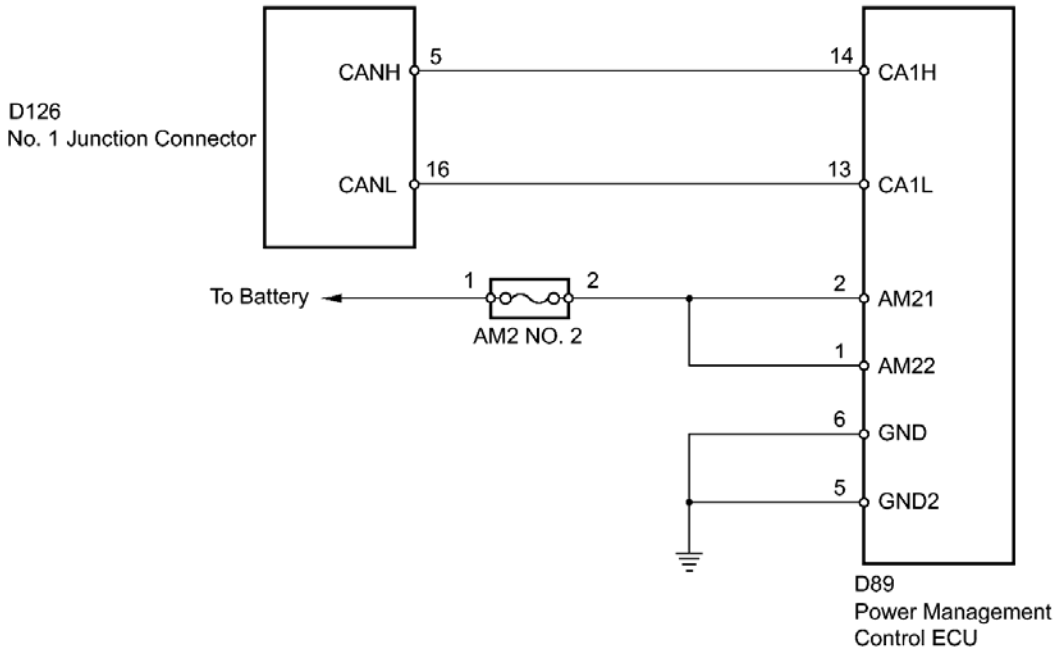


Fig. 120: Power Management Control ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK FOR OPEN IN CAN BUS WIRE (POWER MANAGEMENT CONTROL ECU BRANCH WIRE)**
   a. Turn the ignition switch off.
   b. Disconnect the D89 power management control ECU connector.

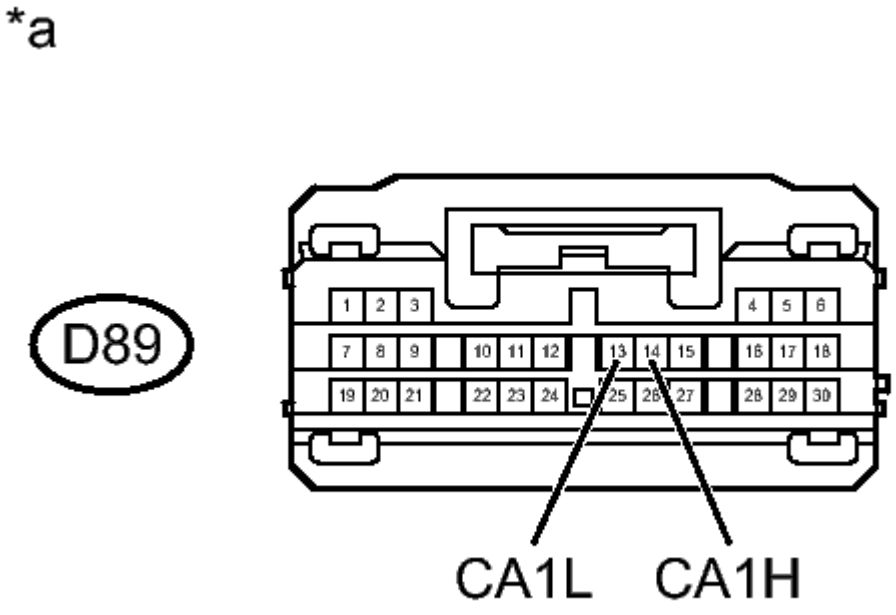


Fig. 121: Checking For Open In CAN BUS Wire (Power Management Control ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-14 (CA1H) - D89-13 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (POWER MANAGEMENT CONTROL ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.
   c. Disconnect the D89 power management control ECU connector.

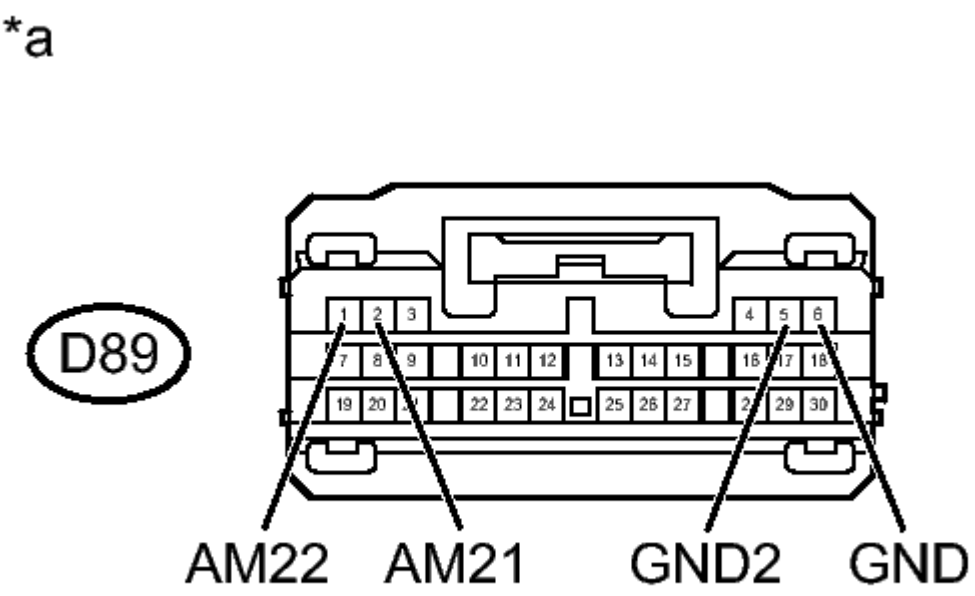


Fig. 122: Measuring Resistance Of Power Management Control ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D89-6 (GND) - Body ground	Always	Below 1 ohms
D89-5 (GND2) - Body ground	Always	Below 1 ohms

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

Standard Voltage

Tester Connection	Condition	Specified Condition
D89-1 (AM22) -	Always	11 to 14 V

Body ground		
D89-2 (AM21) - Body ground	Always	11 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**

Combination Meter ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Combination Meter ECU Communication Stop Mode	• "Combination Meter" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Combination Meter ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of combination meter ECU • Combination meter ECU main wire or connector • Combination meter ECU

WIRING DIAGRAM

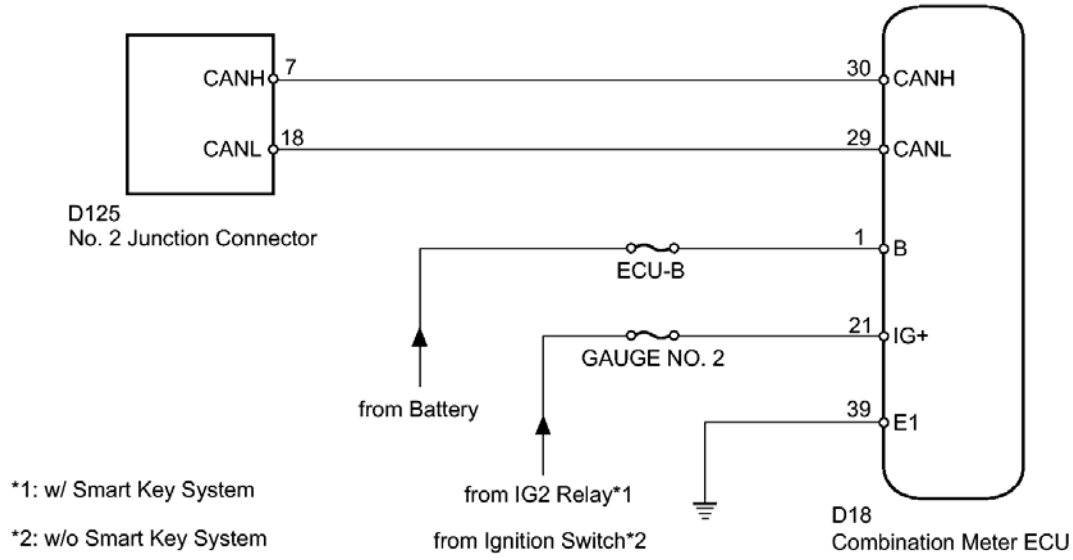


Fig. 123: Combination Meter ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

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

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

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (COMBINATION METER ECU MAIN WIRE)**
   a. Turn the ignition switch off.

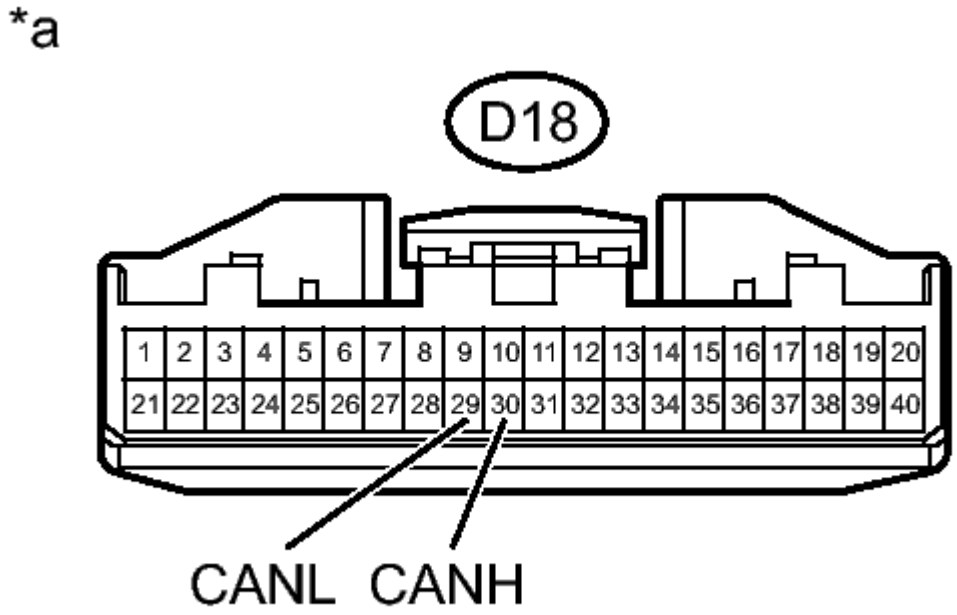


Fig. 124: Checking CAN BUS Line For Disconnection (Combination Meter ECU Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the D18 combination meter ECU connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition

D18-30 (CANH) - D18-29 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter ECU)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ECU (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

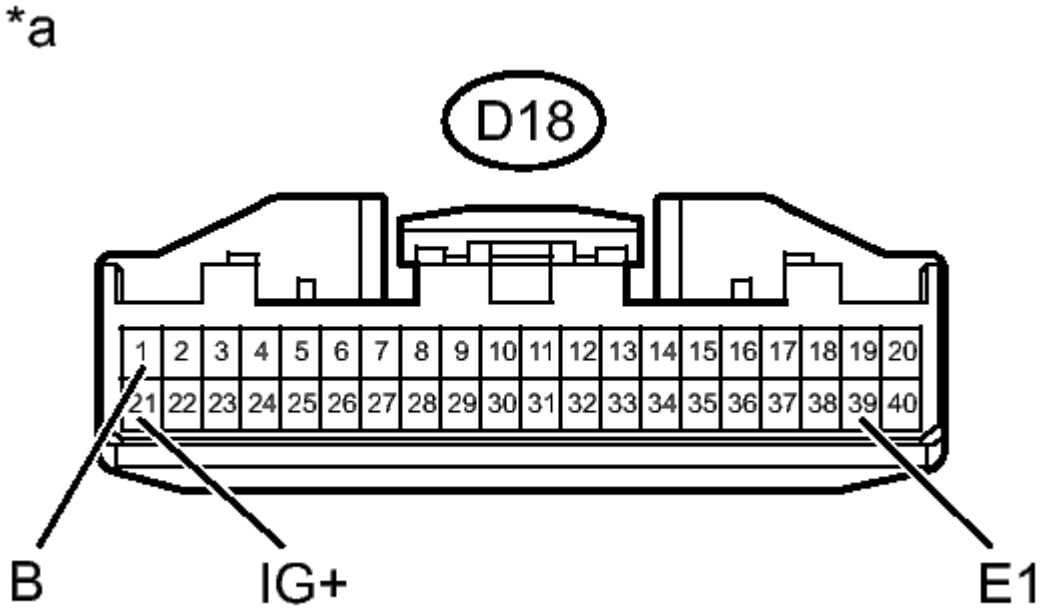


Fig. 125: Measuring Resistance Of Combination Meter ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D18 combination meter ECU connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-39 (E1) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter ECU)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D18-21 (IG+) - Body ground	Ignition switch ON	11 to 14 V
D18-1 (B) - Body ground	Always	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**

Certification ECU Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Certification ECU Communication Stop Mode	• "Entry and Start" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Certification ECU Communication Stop Mode" in "DTC combination table"	• Power source circuit of certification ECU • Certification ECU branch wire or connector • Certification ECU

HINT:

For vehicle with smart key system only.

WIRING DIAGRAM

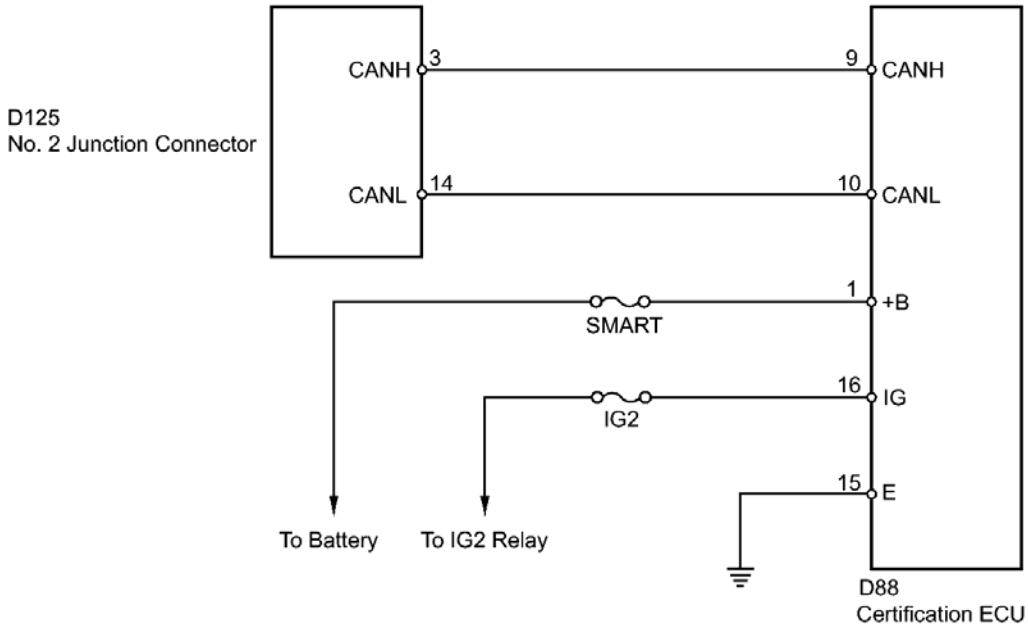


Fig. 126: Certification ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (CERTIFICATION ECU BRANCH WIRE LINE)**
   a. Turn the ignition switch off.

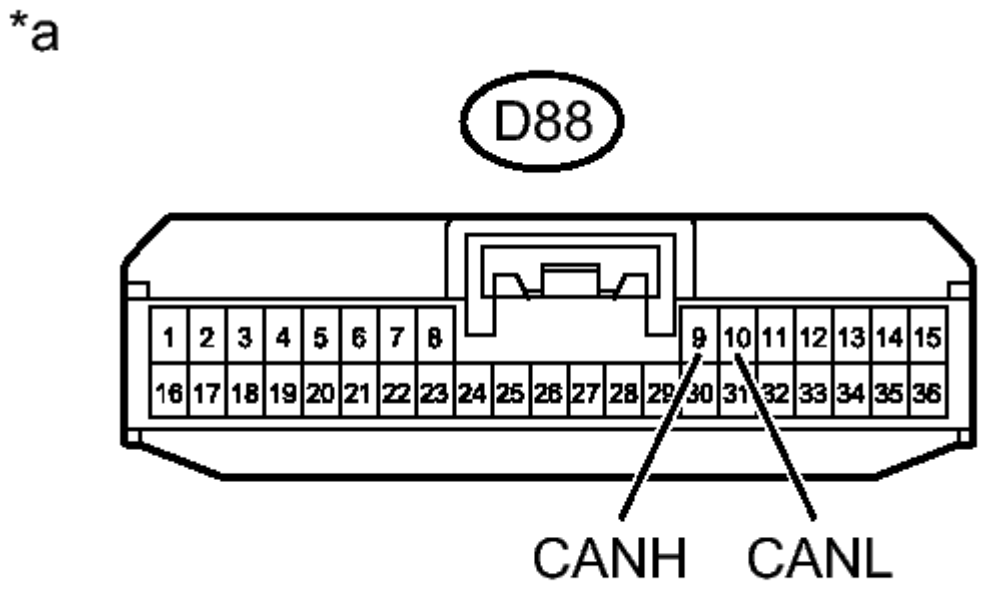


Fig. 127: Checking CAN BUS Line For Disconnection (Certification ECU Branch Wire Line)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the D88 certification ECU connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D88-9 (CANH) - D88-10 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Certification ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CERTIFICATION ECU (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

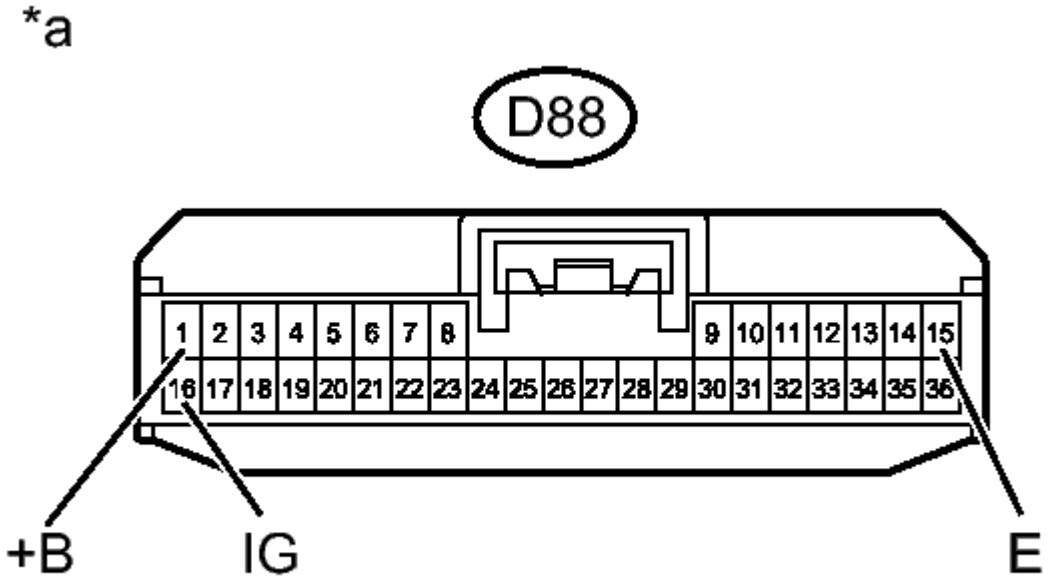


Fig. 128: Measuring Resistance Of Certification ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D88 certification ECU connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Certification ECU)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D88-1 (+B) - Body ground	Always	11 to 14 V
D88-16 (IG) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE CERTIFICATION ECU. Refer to REMOVAL**

Center Airbag Sensor Communication Stop Mode

DESCRIPTION

Detection Item	Symptom	Trouble Area
Center Airbag Sensor Communication Stop Mode	• "SRS Airbag" not displayed on "Communication BUS Check" screen of Techstream • Applies to "Center Airbag Sensor Communication Stop Mode" in "DTC combination table"	• Power source circuit of center airbag sensor assembly • Center airbag sensor assembly branch wire or connector • Center airbag sensor assembly

WIRING DIAGRAM

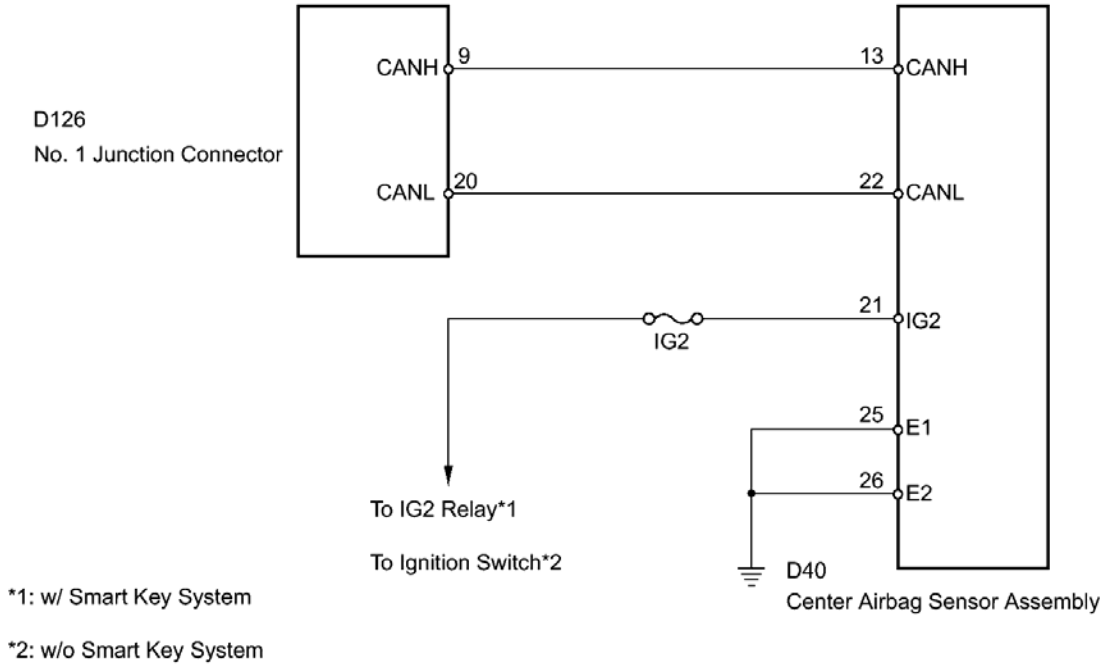


Fig. 129: Center Airbag Sensor Assembly Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (CENTER AIRBAG SENSOR ASSEMBLY BRANCH WIRE)**
   a. Turn the ignition switch off.

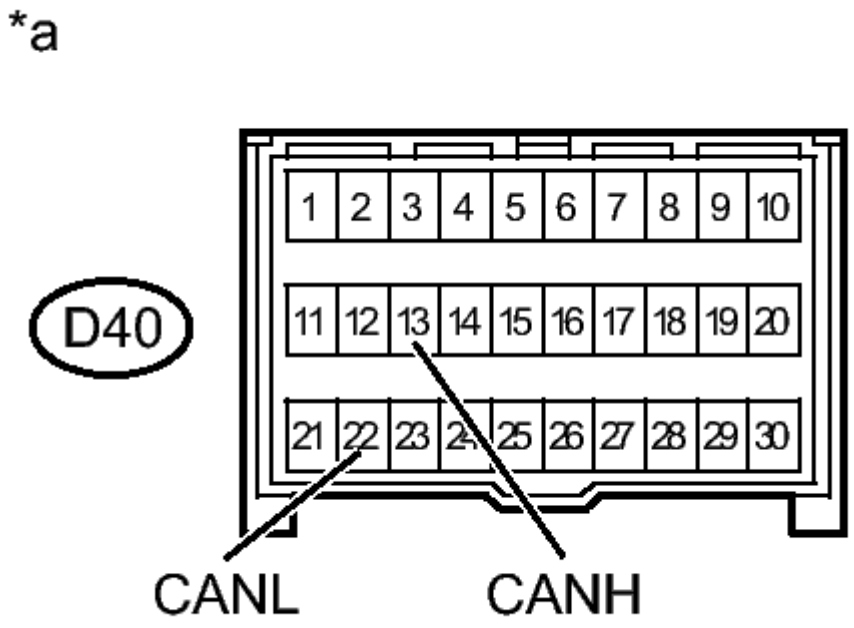


Fig. 130: Checking CAN BUS Line For Disconnection (Center Airbag Sensor Assembly Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the D40 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
D40-13 (CANH) - D40-22 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Center Airbag Sensor Assembly)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CENTER AIRBAG SENSOR ASSEMBLY (CAN-H, CAN-L)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (CENTER AIRBAG SENSOR ASSEMBLY - BATTERY AND BODY GROUND)**
   a. Connect the cable to the negative (-) battery terminal.

      NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

   b. Turn the ignition switch to ON.

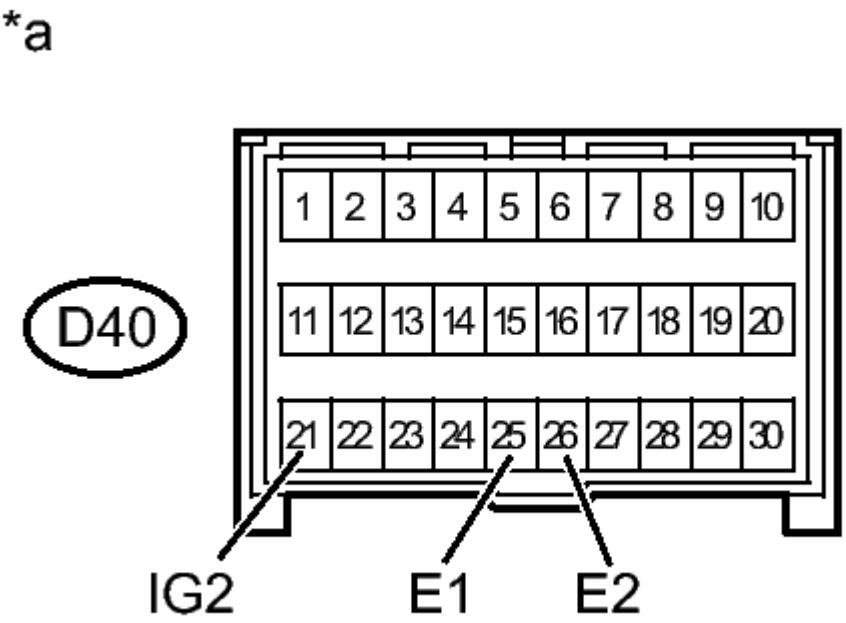


Fig. 131: Checking Center Airbag Sensor Assembly (Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the D40 center airbag sensor assembly connector.
d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D40-25 (E1) - Body ground	Always	Below 1 ohms
D40-26 (E2) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Center Airbag Sensor

Assembly)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D40-21 (IG2) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE CENTER AIRBAG SENSOR ASSEMBLY. Refer to REMOVAL**

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" screen of Techstream • Applies to "4WD Control ECU Communication Stop Mode" in "DTC combination table"	• Power source or inside 4WD control ECU • 4WD control ECU branch wire and connector • 4WD control ECU

HINT:

For vehicle with 4WD only.

WIRING DIAGRAM

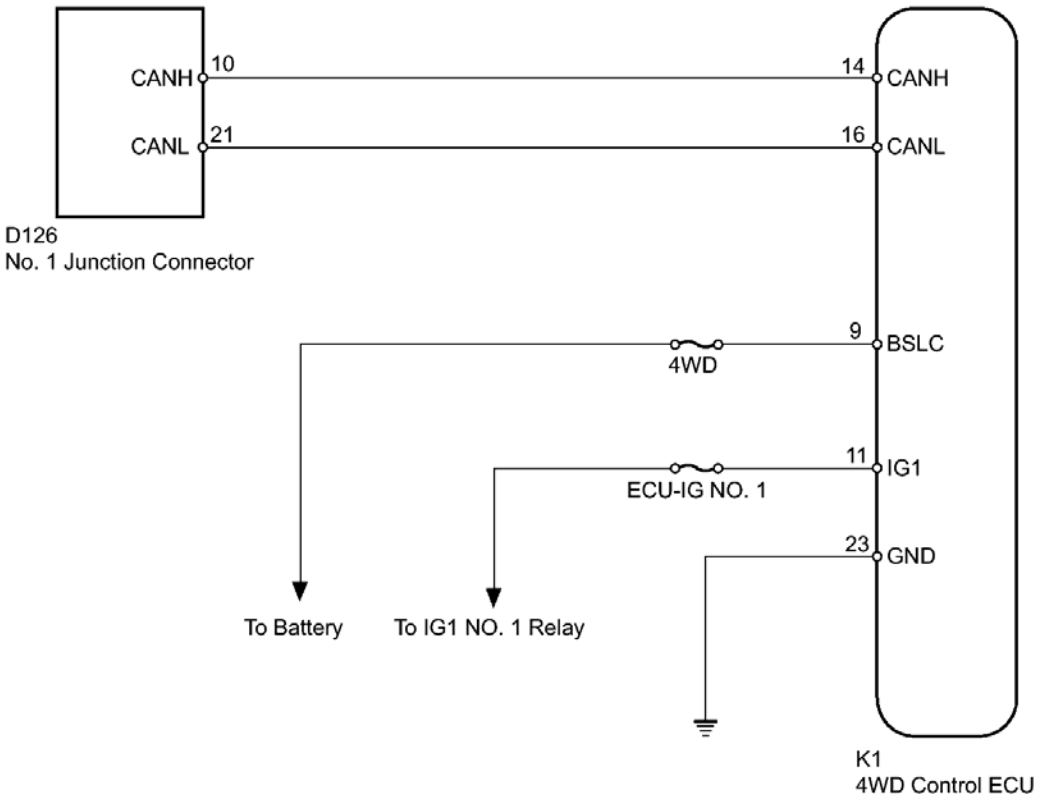


Fig. 132: 4WD Control ECU Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**
- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

NEXT: Go to next step

2. **CHECK CAN BUS LINE FOR DISCONNECTION (4WD CONTROL ECU BRANCH WIRE)**
   a. Turn the ignition switch off.

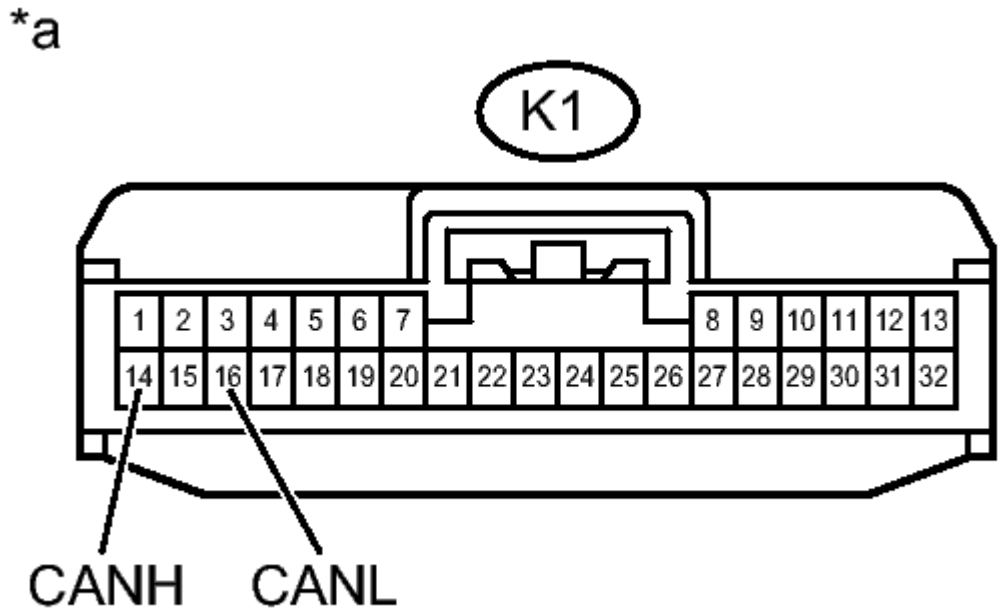


Fig. 133: Measuring Resistance Of 4WD Control ECU Branch Wire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the K1 4WD control ECU connector.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
K1-14 (CANH) - K1-16 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to 4WD Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO 4WD CONTROL ECU (CAN-H, CAN-L)

OK: Go to next step

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

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION

b. Turn the ignition switch to ON.

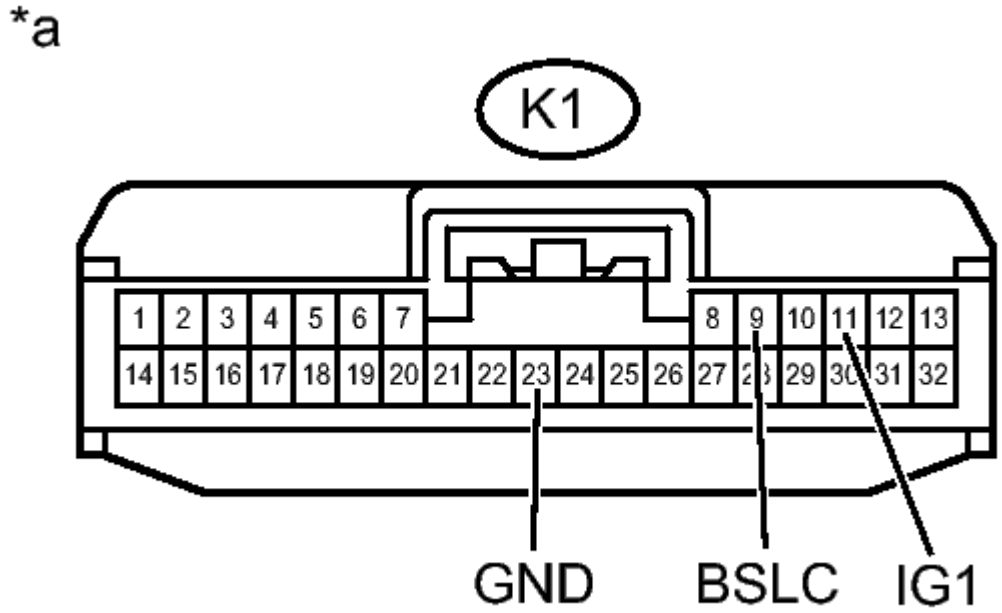


Fig. 134: Checking 4WD Control ECU (Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Disconnect the K1 4WD control ECU connector.
d. Measure the resistance according to the value(s) in the table below

Standard Resistance

Tester Connection	Condition	Specified Condition
K1-23 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to 4WD Control ECU)

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
K1-9 (BSLC) - Body ground	Always	11 to 14 V
K1-11 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE 4WD CONTROL ECU. Refer to REMOVAL**

CIRCUIT TESTS

Open in CAN Main BUS Line

DESCRIPTION

There may be an open circuit in the CAN main wire and/or DLC3 branch wire when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is 70 ohms or higher.

Symptom	Trouble Area
Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is 70 ohms or higher.	• CAN main wire and connector • No. 1 junction connector • No. 2 junction connector • ECM • Combination meter assembly • DLC3 branch wire or connector

WIRING DIAGRAM

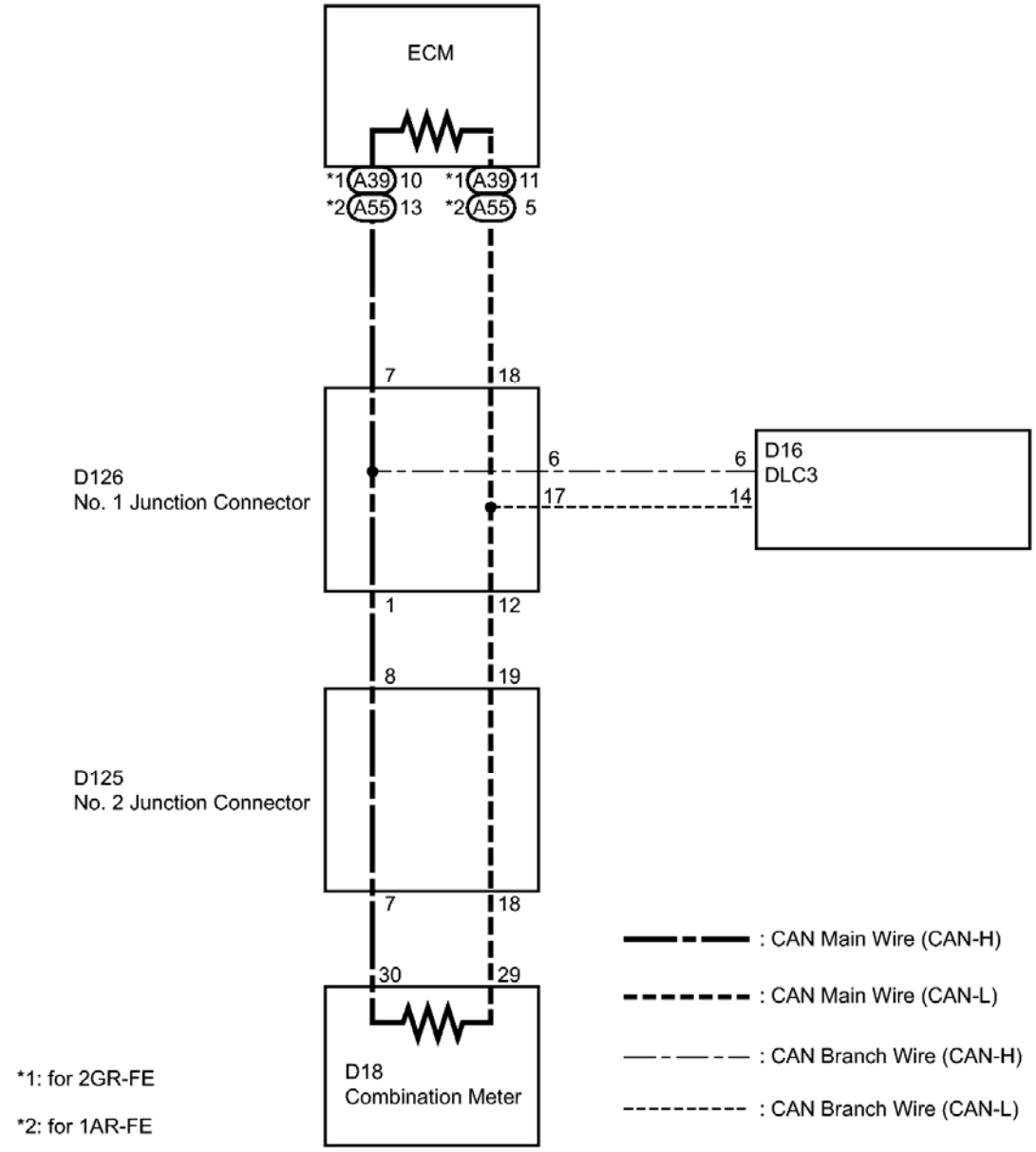


Fig. 135: CAN Main BUS Line Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, leave the vehicle as is for at least 1**

minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

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

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK DLC3**
   a. Disconnect the D126 No. 1 junction connector connector.
   b. Measure the resistance according to the value(s) in the table below.

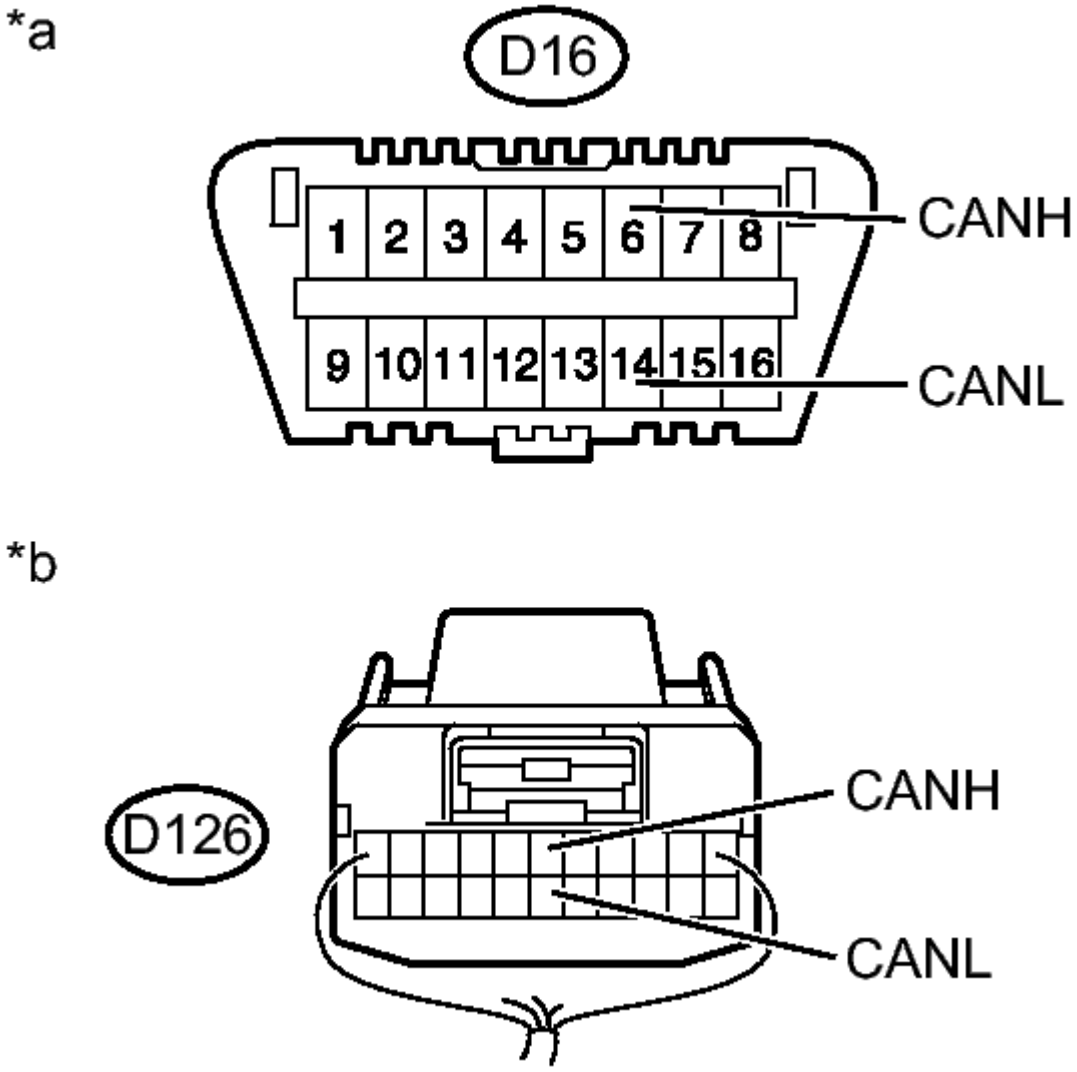


Fig. 136: Measuring Resistance Of DLC3
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D126-6 (CANH)	Ignition switch off	Below 1 ohms
D16-14 (CANL) - D126-17 (CANL)	Ignition switch off	Below 1 ohms

TEXT IN ILLUSTRATION

*a	DLC3
*b	Rear view of wire harness connector (to No. 1 Junction Connector)

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

OK: Go to next step

3. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 1 JUNCTION CONNECTOR - ECM)**

*a

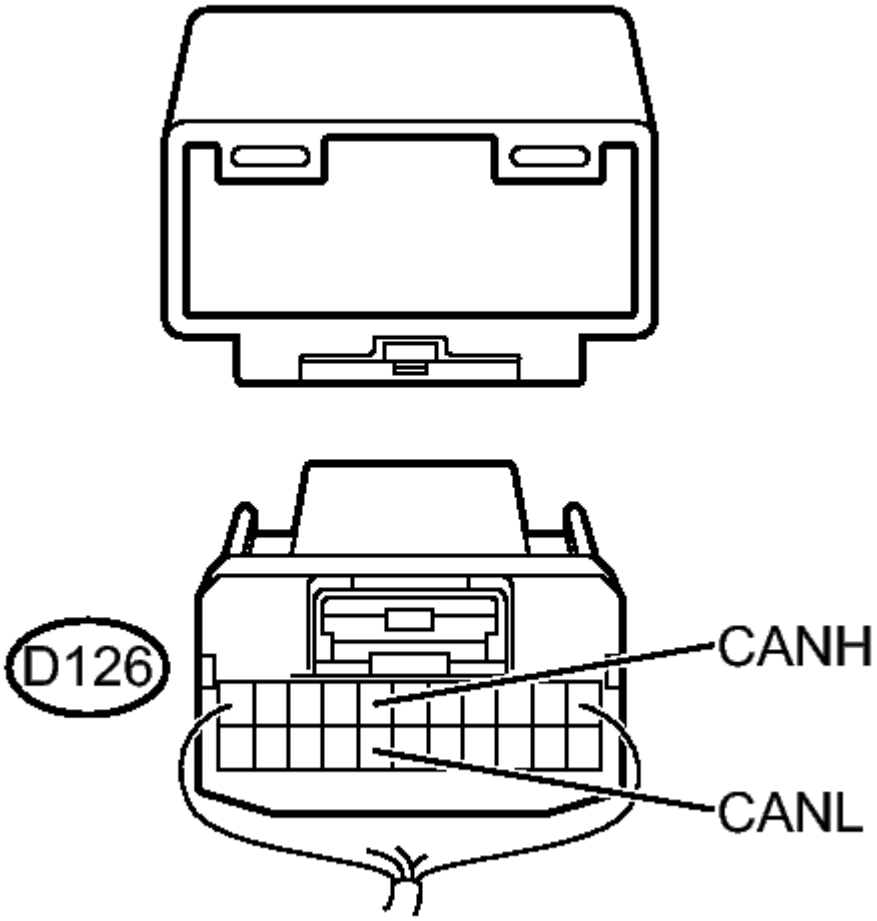


Fig. 137: Checking For Open In CAN BUS Main Wire (No. 1 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D126-18 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)

NG --> See step 5

OK: Go to next step

4. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 1 JUNCTION CONNECTOR - COMBINATION METER)**
   a. Measure the resistance according to the value(s) in the table below.

*a

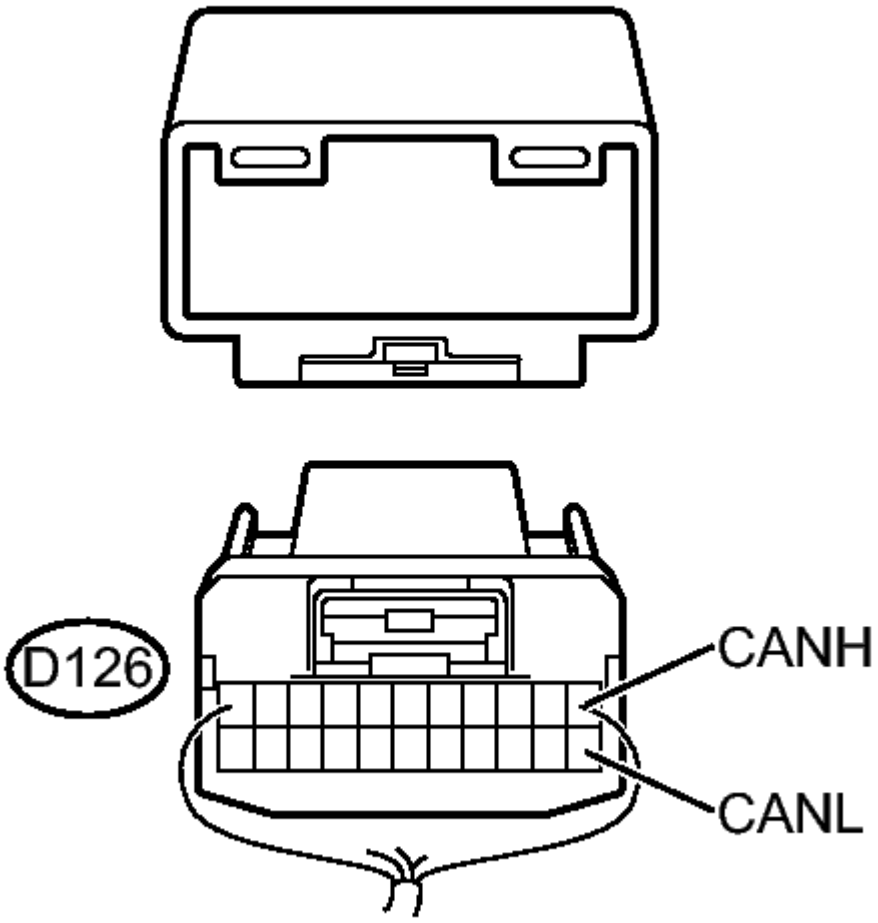


Fig. 138: Checking For Open In CAN BUS Main Wire (No. 1 Junction Connector - Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-1 (CANH) - D126-12 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)

NG --> See step 9

OK --> REPLACE NO. 1 JUNCTION CONNECTOR

5. **CONNECT CONNECTOR**
   a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

6. **SYSTEM CHECK**
   a. Check the vehicle specifications.

RESULT

Result	Proceed to
2GR-FE engine	A
1AR-FE engine	B

B --> See step 8

A: Go to next step

7. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (ECM - NO. 1 JUNCTION CONNECTOR)**
   a. Disconnect the A39 ECM connector.

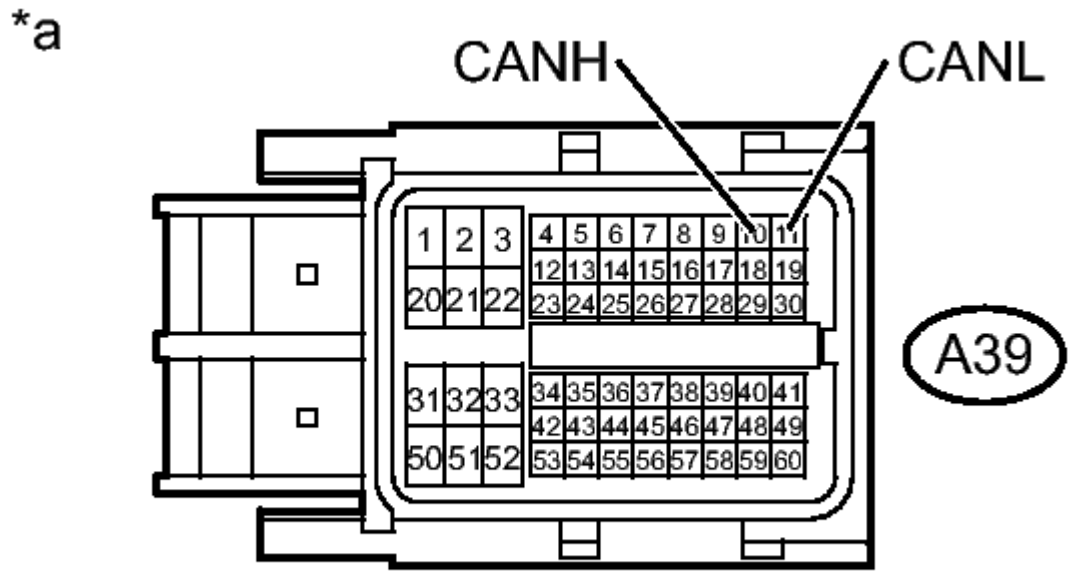


Fig. 139: Checking For Open In CAN BUS Main Wire (ECM - No. 1 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-10 (CANH) - A39-11 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO ECM (ECM - NO. 1 JUNCTION CONNECTOR)

OK --> See step 15

8. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (ECM - NO. 1 JUNCTION CONNECTOR)**
   a. Disconnect the A55 ECM connector.

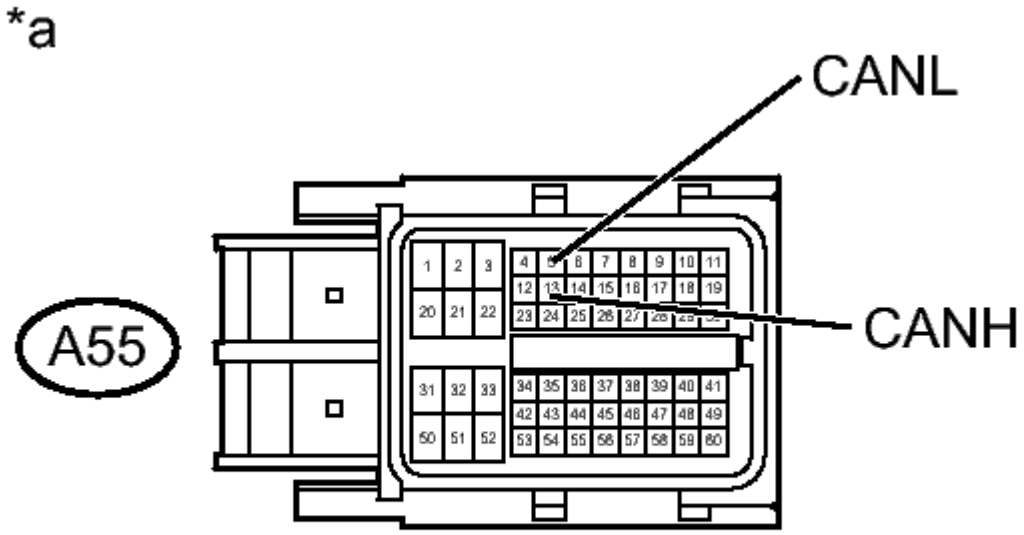


Fig. 140: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A55-13 (CANH) - A55-5 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire

	harness connector (to ECM)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO ECM (ECM - NO. 1 JUNCTION CONNECTOR)

OK --> See step 16

9. **CONNECT CONNECTOR**
   a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

10. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 2 JUNCTION CONNECTOR - COMBINATION METER)**
    a. Disconnect the D125 No. 2 junction connector connector.

*a

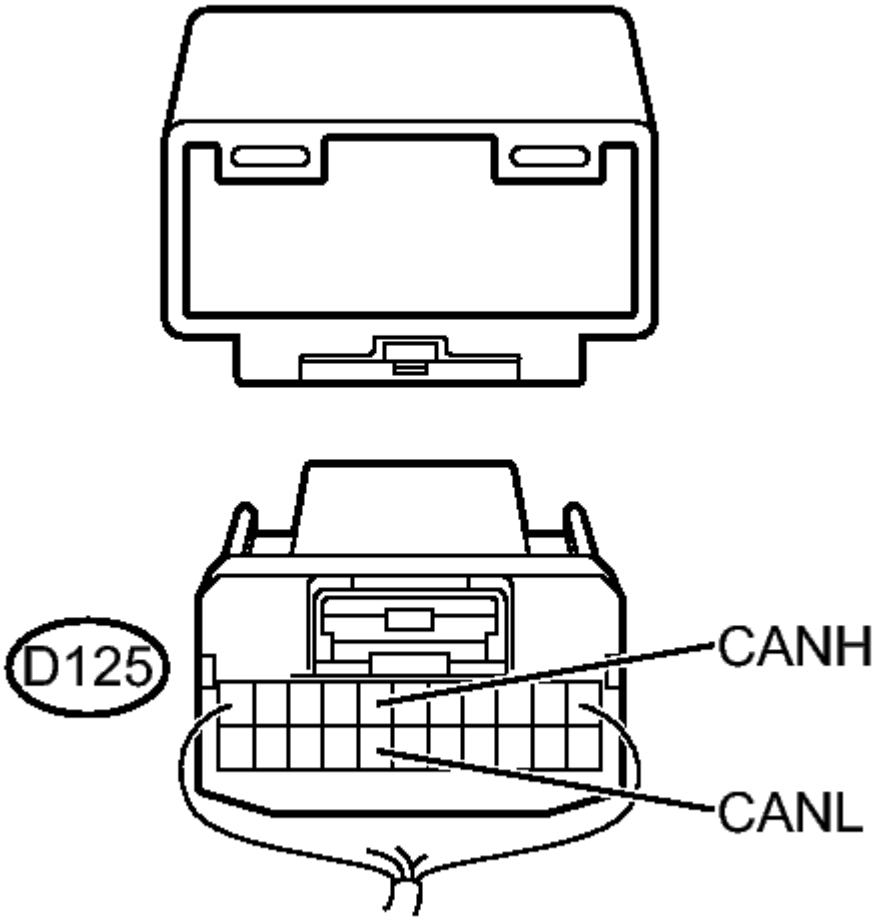


Fig. 141: Checking For Open In CAN BUS Main Wire (No. 2 Junction Connector - Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D125-18 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)

NG --> See step 12

OK: Go to next step

11. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)**
    a. Measure the resistance according to the value(s) in the table below.

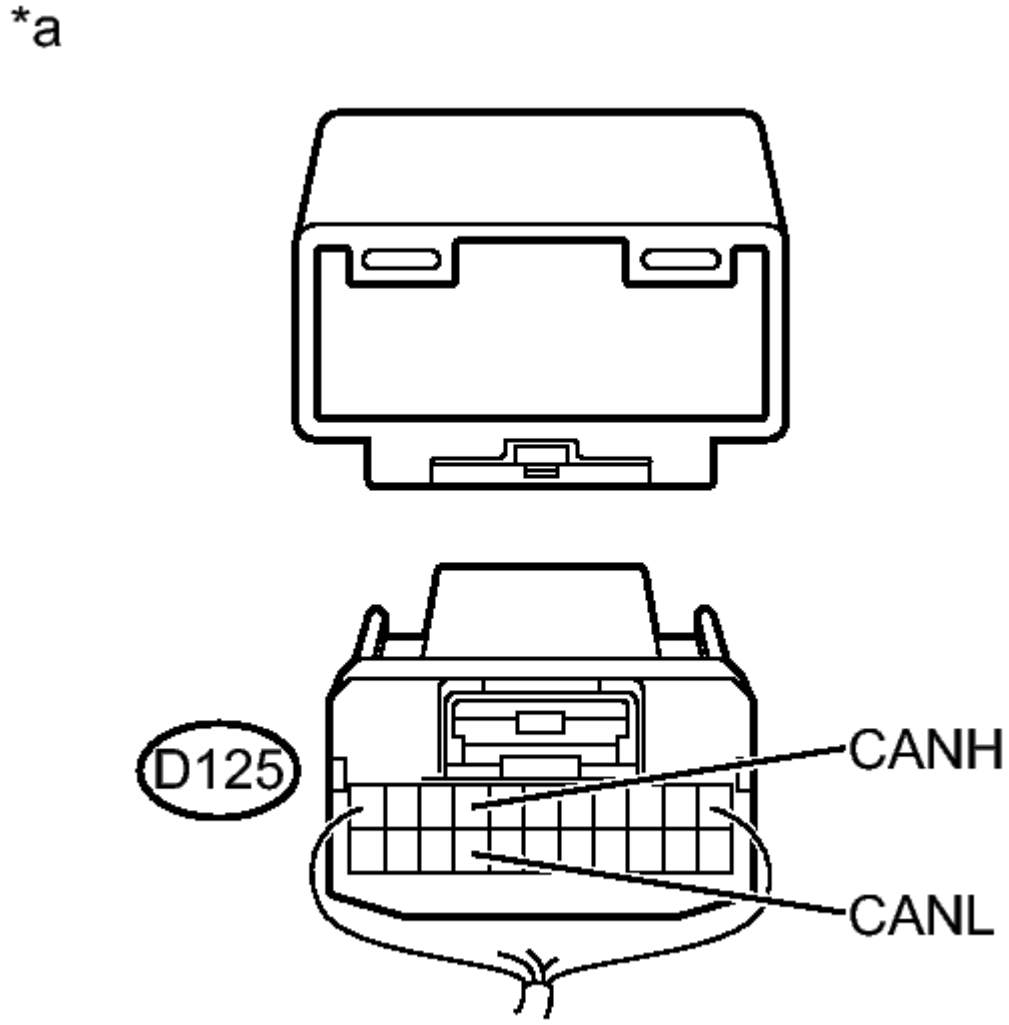


Fig. 142: Checking For Open In CAN BUS Main Wire (No. 1 Junction Connector - No. 2 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-8 (CANH) - D125-19 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)

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

OK --> REPLACE NO. 2 JUNCTION CONNECTOR

12. **CONNECT CONNECTOR**
    a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

13. **CHECK FOR OPEN IN CAN BUS MAIN WIRE (COMBINATION METER - NO. 2 JUNCTION CONNECTOR)**
    a. Disconnect the D18 combination meter connector.

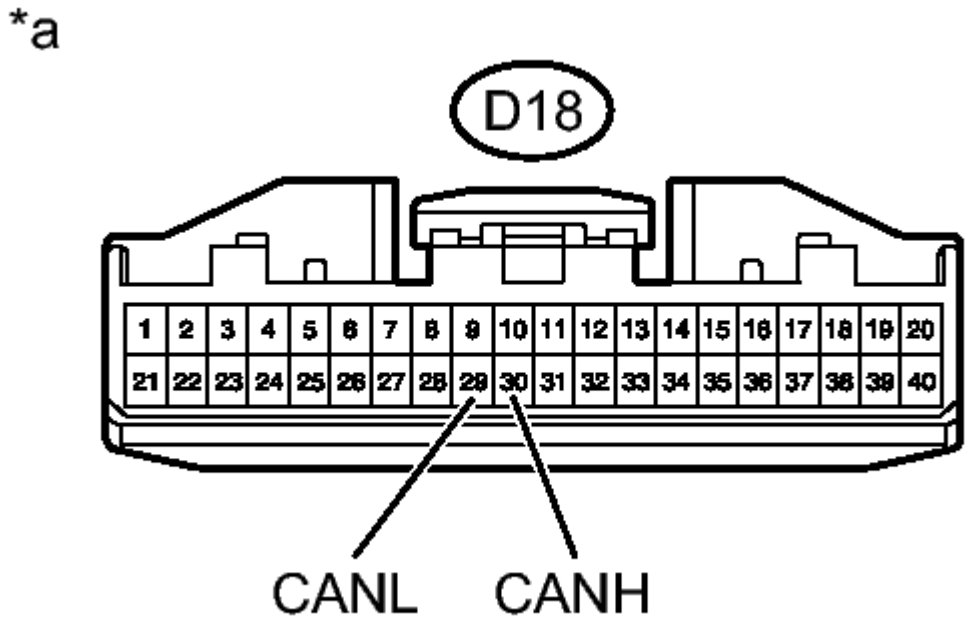


Fig. 143: Checking For Open In CAN BUS Main Wire (Combination Meter - No. 2 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D18-30 (CANH) - D18-29 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER (COMBINATION METER - NO. 2 JUNCTION CONNECTOR)

OK --> See step 14

14. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
15. **REPLACE ECM. Refer to REMOVAL**
16. **REPLACE ECM. Refer to REMOVAL**

Check CAN BUS Lines for Short Circuit

DESCRIPTION

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

Symptom	Trouble Area
Resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is below 54 ohms.	• Short between CAN bus lines • ECM • Center airbag sensor assembly • Power management control ECU*1 • Certification ECU*1 • Air conditioning amplifier assembly*2 • Network gateway ECU*2 • Main body ECU • Combination meter assembly • 4WD control ECU*3 • Yaw rate sensor*4 • Skid control ECU*4, *5 • Steering angle sensor • Power steering ECU • No. 1 junction connector • No. 2 junction connector

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: for AWD

*4: w/ VDIM

*5: w/ VSC

WIRING DIAGRAM

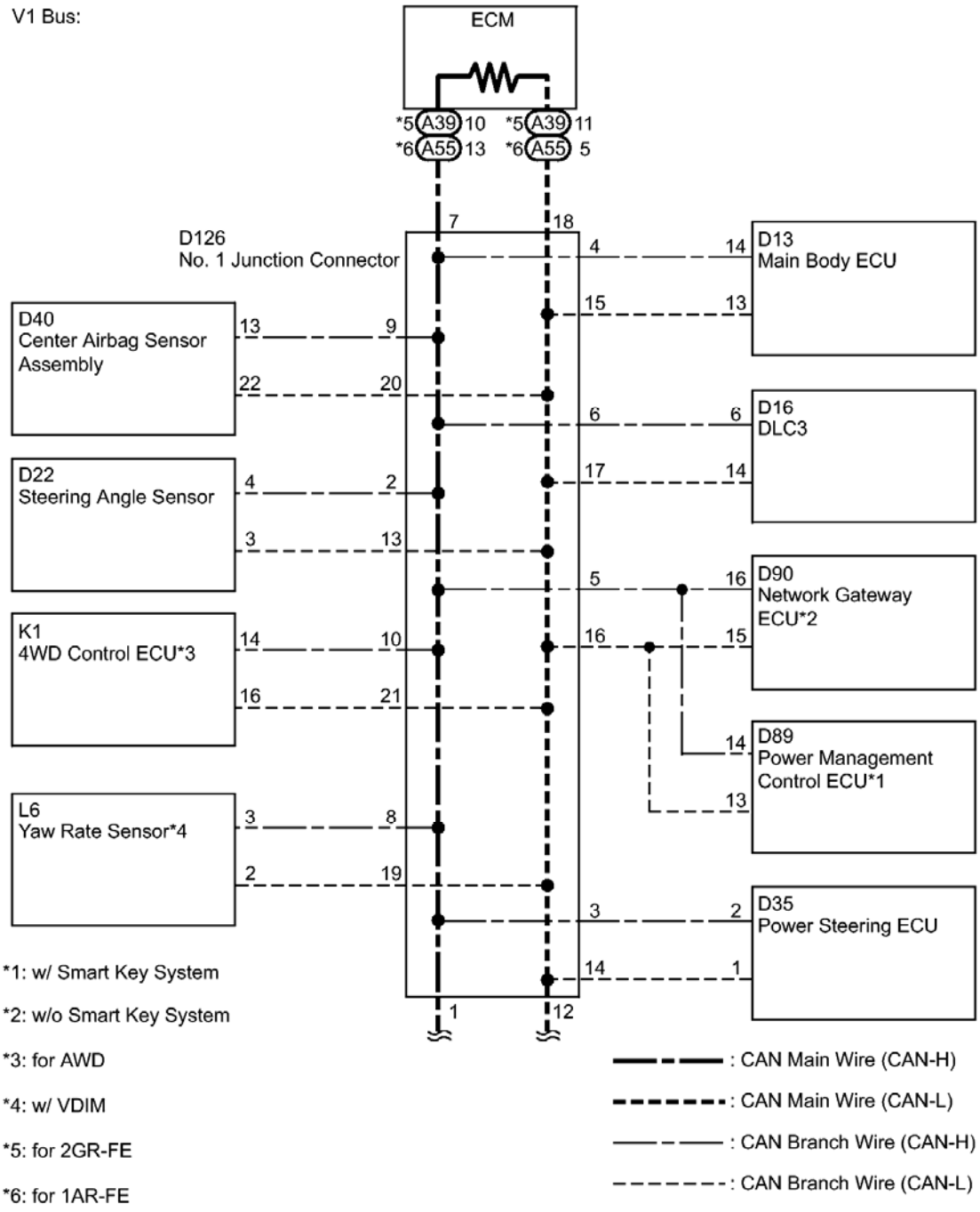


Fig. 144: CAN BUS Lines Wiring Diagram (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

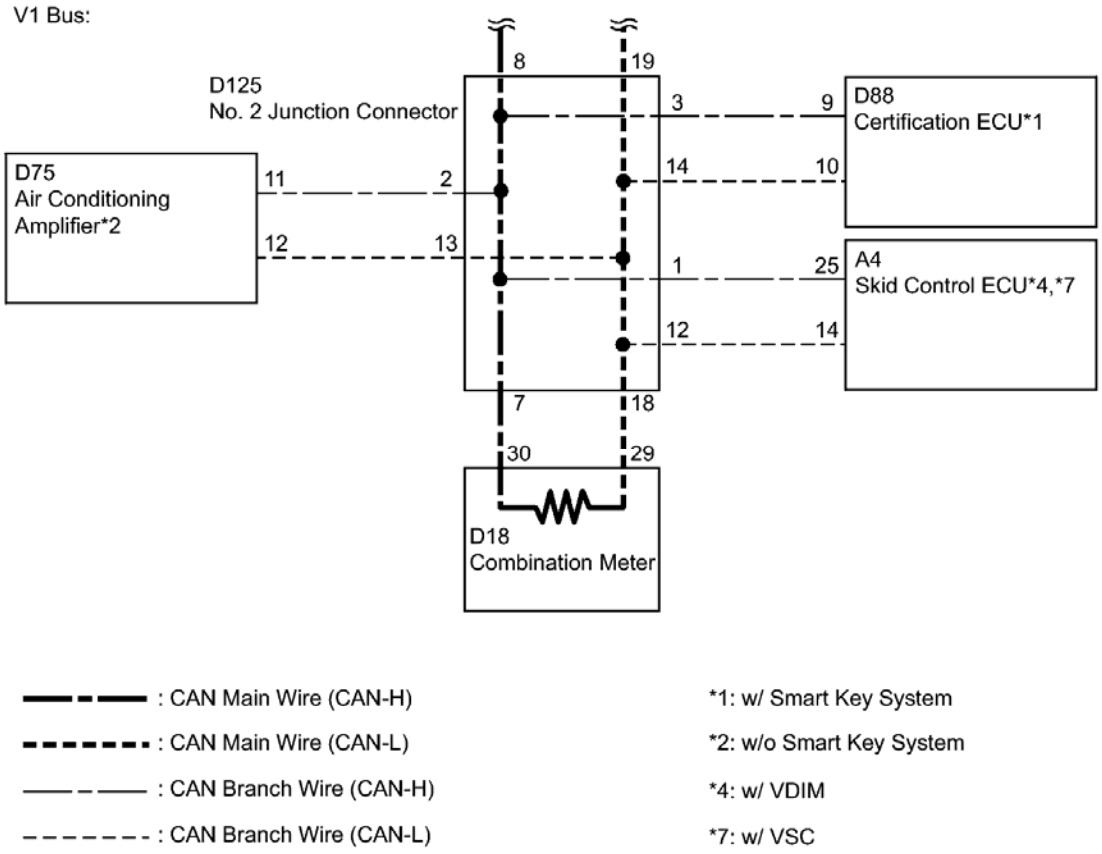


Fig. 145: CAN BUS Lines Wiring Diagram (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR SHORT IN CAN BUS WIRES (DLC3 BRANCH WIRE)**
   a. Disconnect the D126 No. 1 junction connector connector.

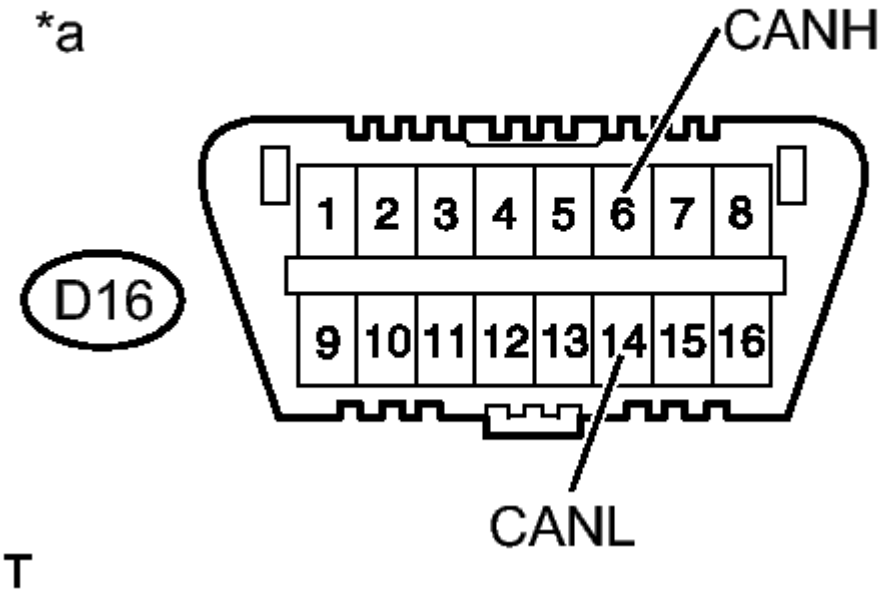


Fig. 146: Checking For Short In CAN BUS Wires (DLC3 Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-14 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

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

OK: Go to next step

3. **CONNECT CONNECTOR**
   a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

4. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 JUNCTION CONNECTOR SIDE)**
   a. Disconnect the D125 No. 2 junction connector connector.

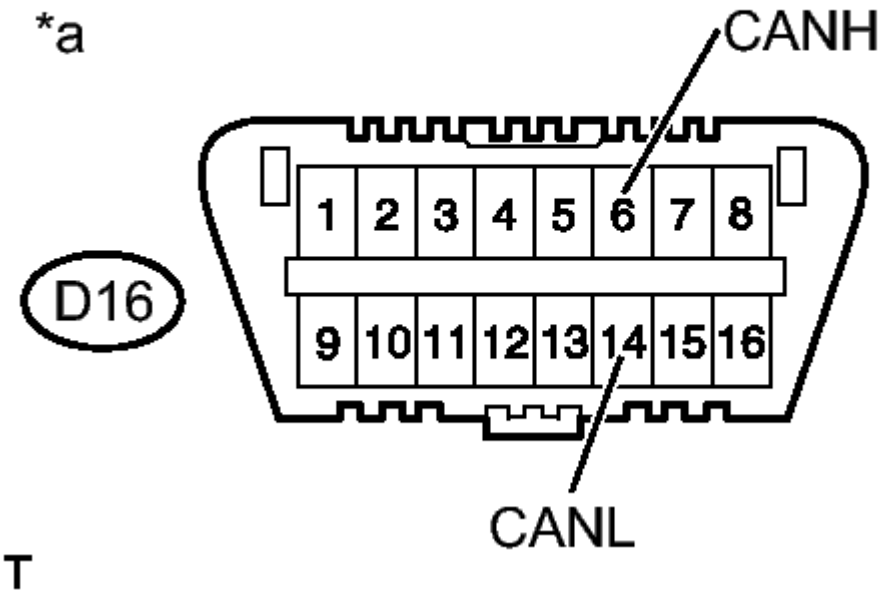


Fig. 147: Checking For Short In CAN BUS Wires (DLC3 Branch Wire)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-14 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	DLC3

NG --> See step 9

OK: Go to next step

5. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 JUNCTION CONNECTOR - CERTIFICATION ECU)**

HINT:

For vehicle without smart key system, go to step 6.

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

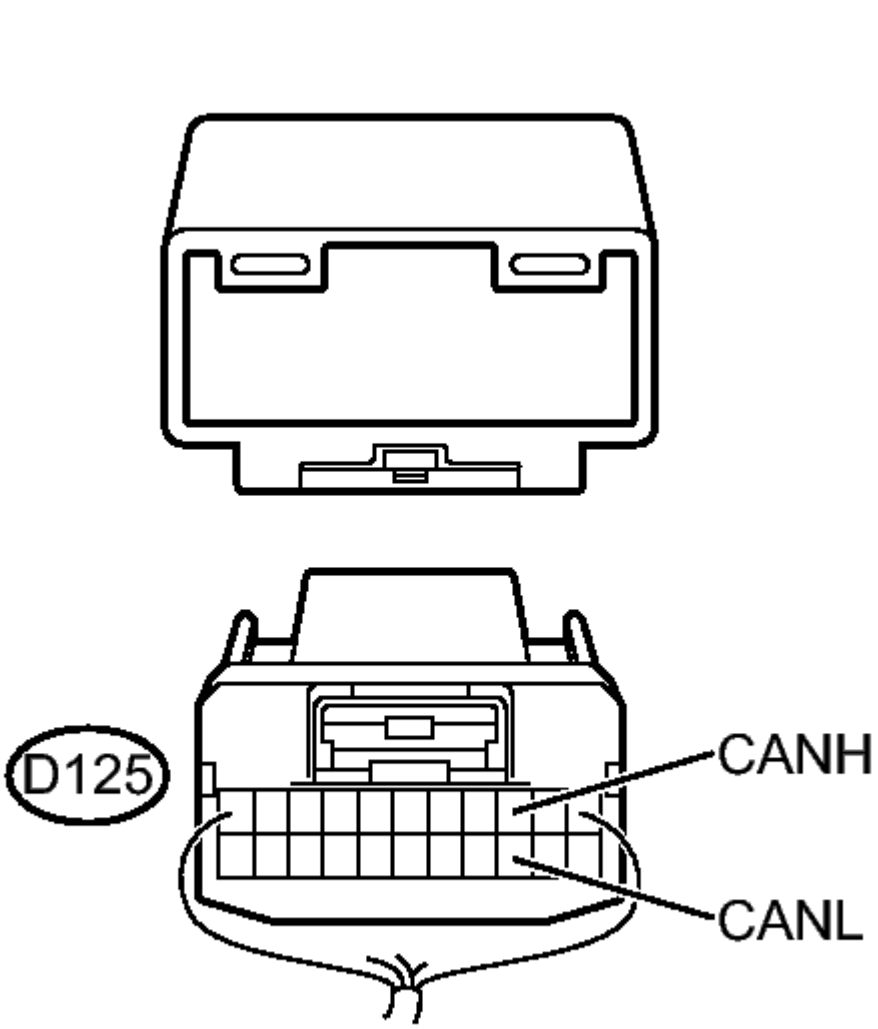


Fig. 148: Checking For Short In CAN BUS Wires (No. 2 Junction Connector - Certification ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-3 (CANH) - D125-14 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 2 Junction Connector)

NG --> See step 20

OK: Go to next step

6. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

HINT:

For vehicle with smart key system, go to step 7.

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

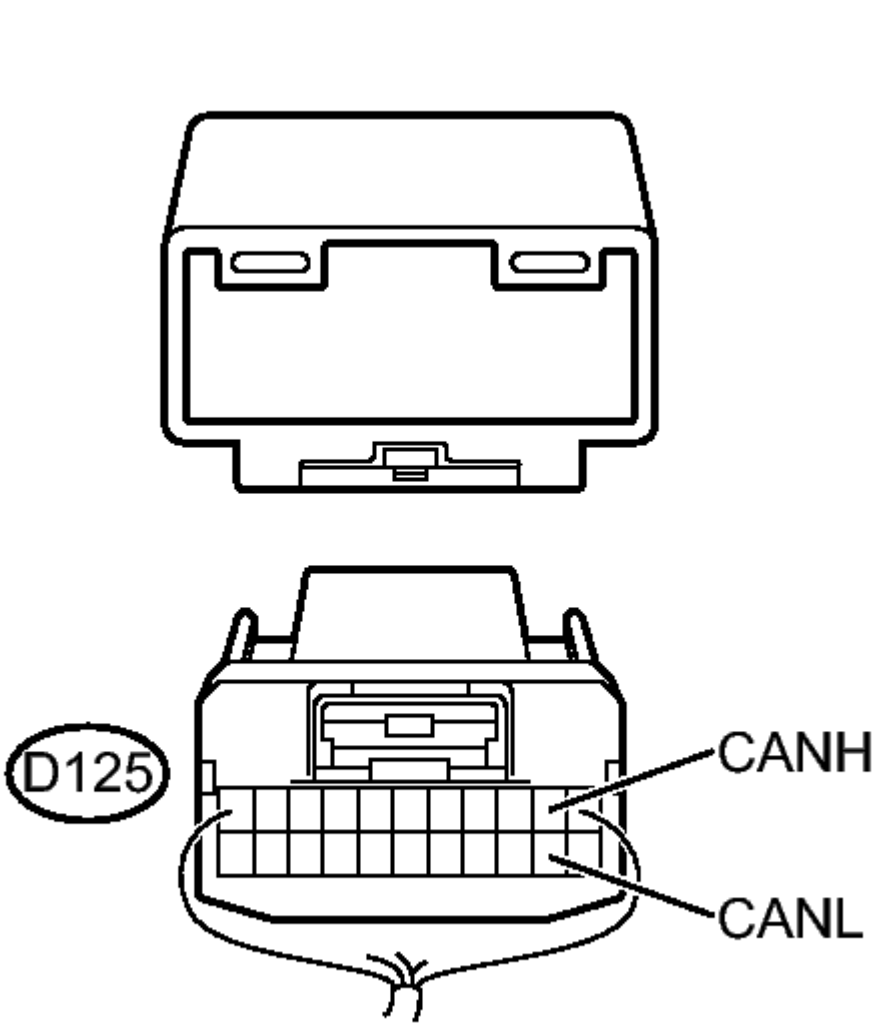


Fig. 149: Checking For Short In CAN BUS Wires (No. 2 Junction Connector - Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-2 (CANH) - D125-13 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire

*a	harness connector (to No. 2 Junction Connector)

NG --> See step 22

OK: Go to next step

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

HINT:

For vehicle without VSC or VDIM, go to step 8.

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

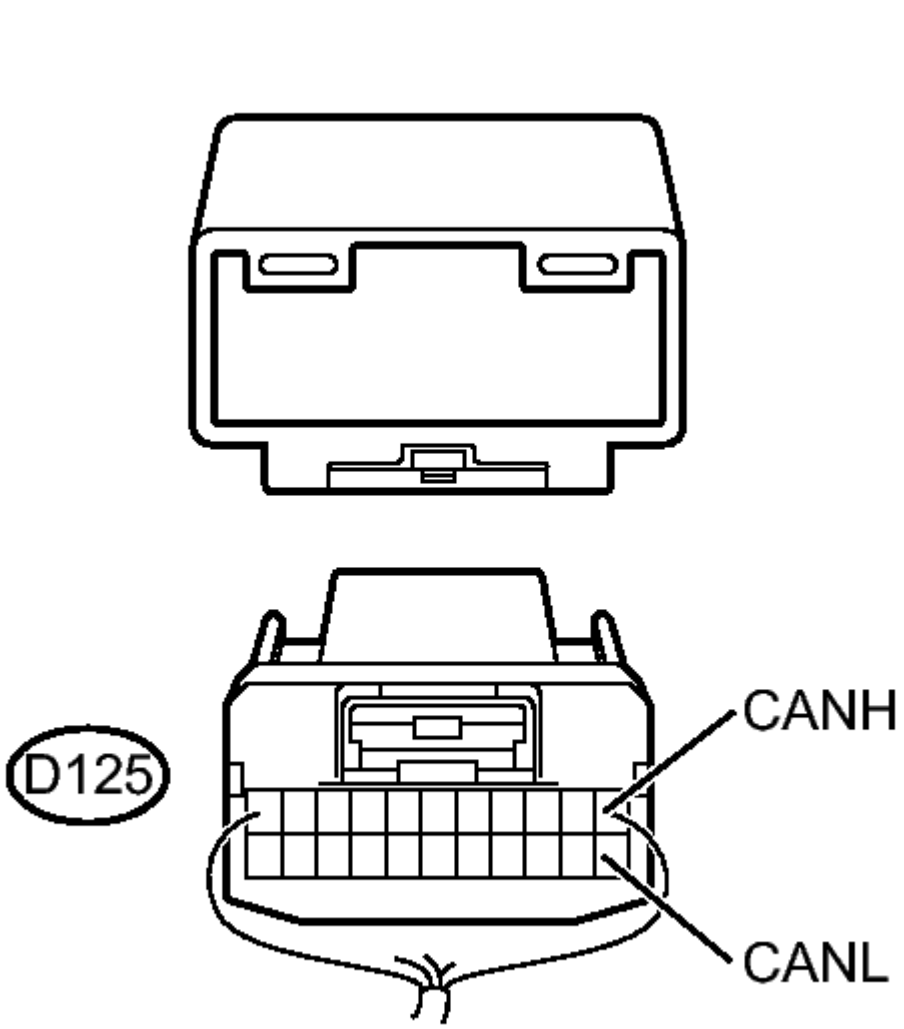


Fig. 150: Checking For Short In CAN BUS Wires (No. 2 Junction Connector - Skid Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-1 (CANH) - D125-12 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 2 CAN Junction Connector)

NG --> See step 24

OK: Go to next step

8. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 2 JUNCTION CONNECTOR - COMBINATION METER ECU)**
   a. Measure the resistance according to the value(s) in the table below.

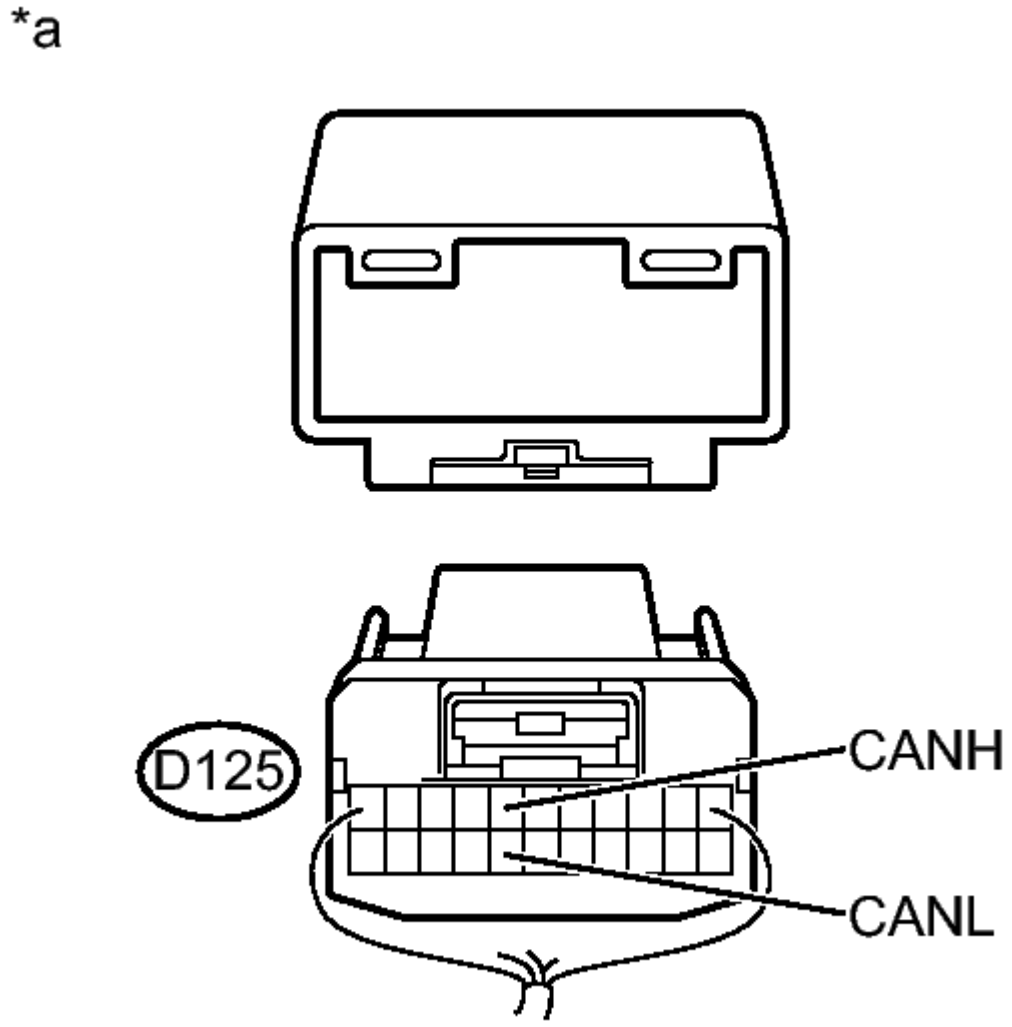


Fig. 151: Checking For Short In CAN BUS Wires (No. 2 Junction Connector - Combination

Meter ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D125-18 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)

NG --> See step 26

OK --> REPAIR OR REPLACE NO. 2 JUNCTION CONNECTOR

9. **CONNECT CONNECTOR**
   a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

10. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)**
    a. Disconnect the D126 No. 1 junction connector connector.

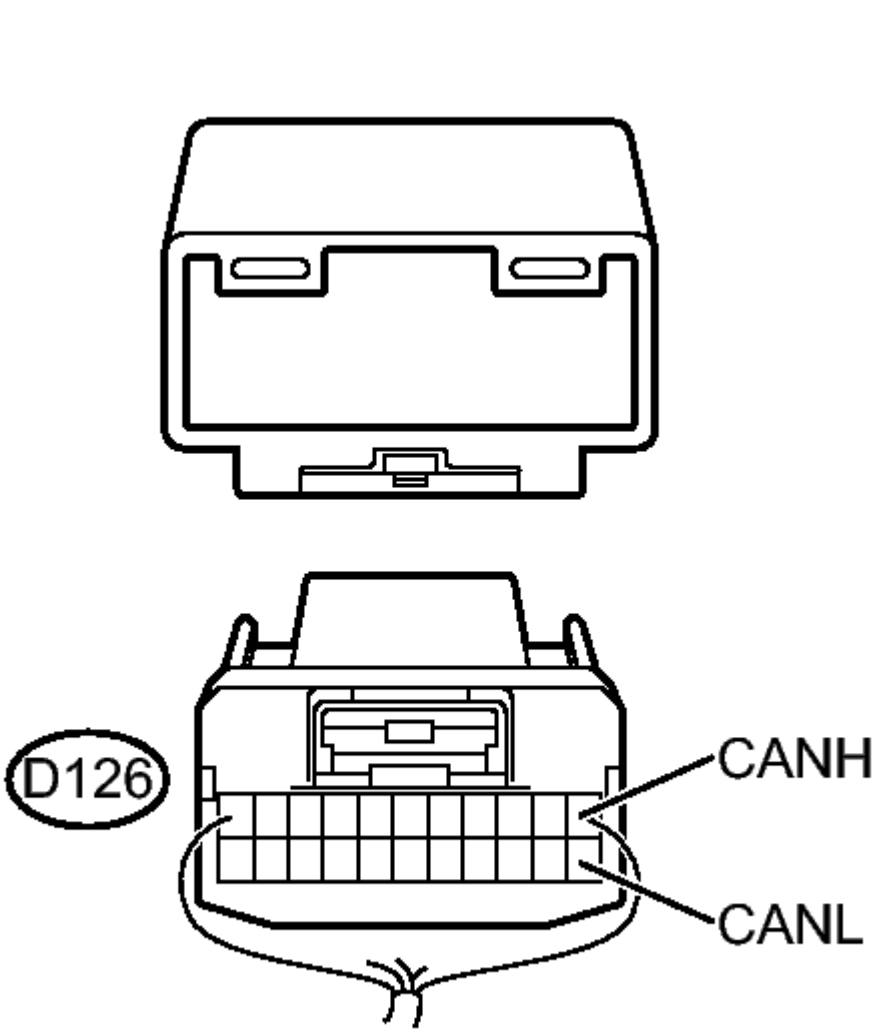


Fig. 152: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - No. 2 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-1 (CANH) - D126-12 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)

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

OK: Go to next step

11. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**
    a. Measure the resistance according to the value(s) in the table below.

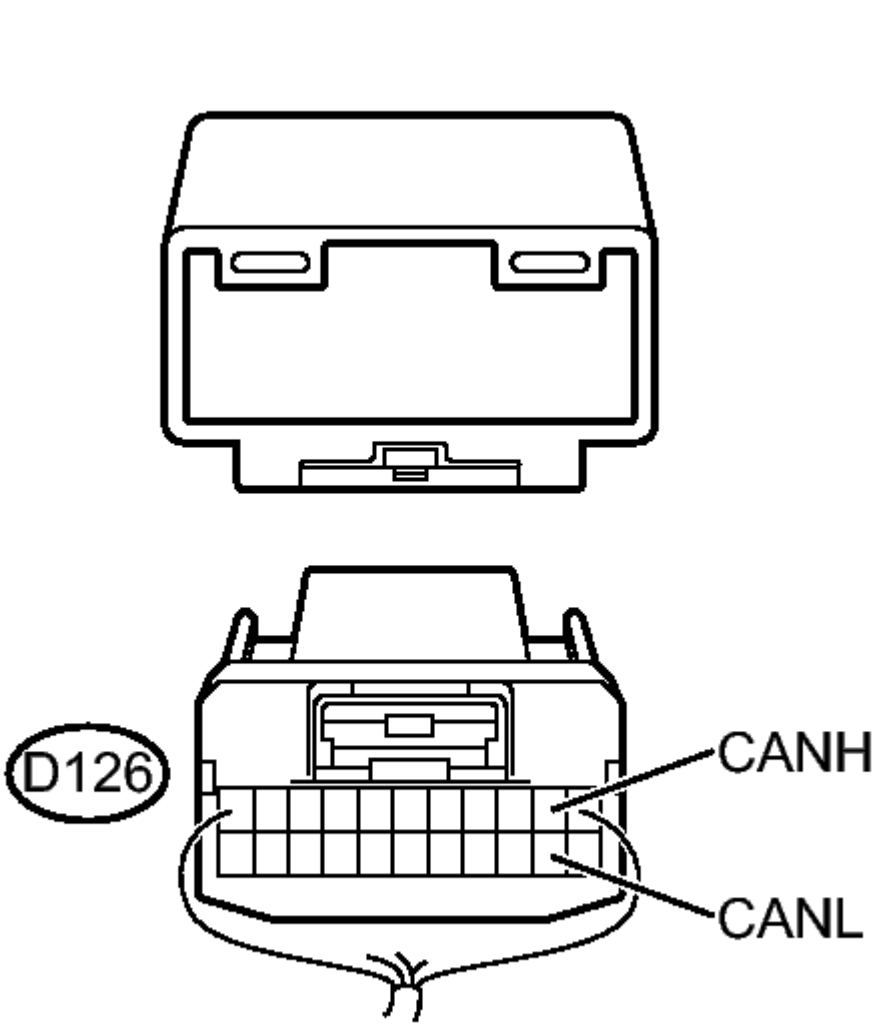


Fig. 153: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Steering Angle Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-2 (CANH) - D126-13 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 1 Junction Connector)

NG --> See step 28

OK: Go to next step

12. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**
    a. Measure the resistance according to the value(s) in the table below.

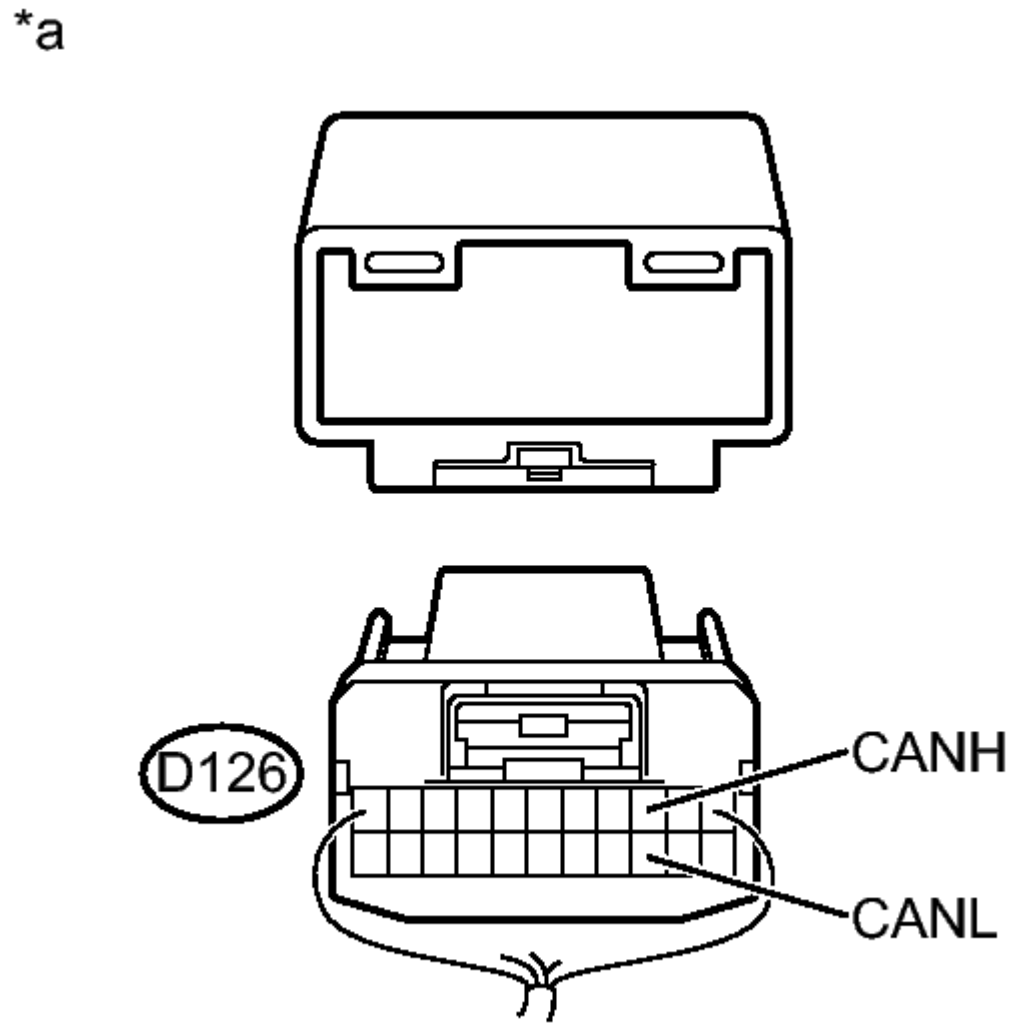


Fig. 154: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Power Steering ECU)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-3 (CANH) - D126-14 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)

NG --> See step 30

OK: Go to next step

13. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**
    a. Measure the resistance according to the value(s) in the table below.

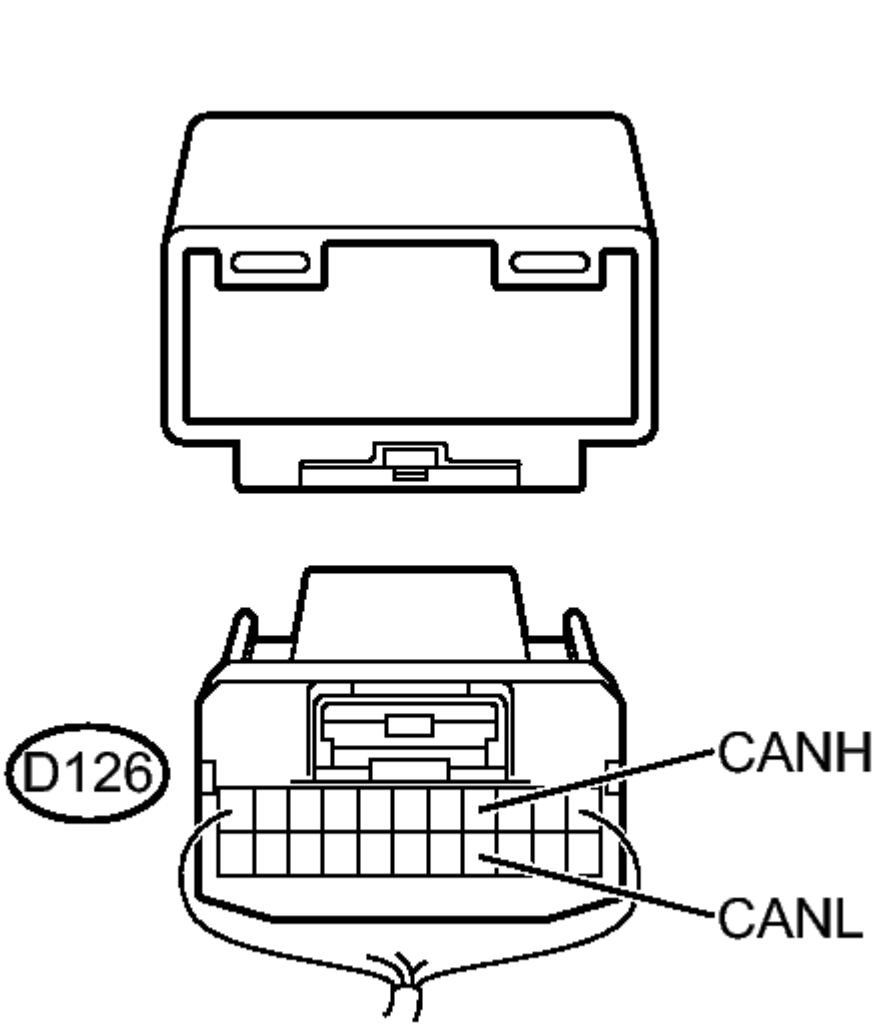


Fig. 155: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-4 (CANH) - D126-15 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire

*a	harness connector (to No. 1 Junction Connector)

NG --> See step 32

OK: Go to next step

14. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)**

HINT:

For vehicle without smart key system, go to step 15.

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

*a

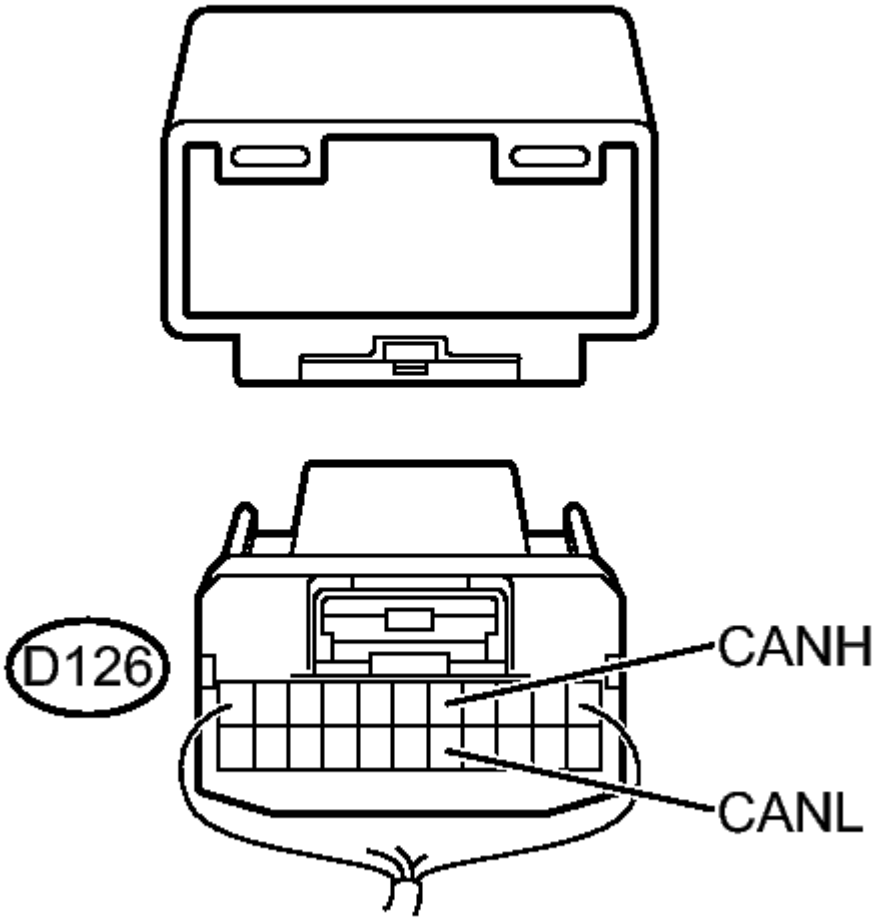


Fig. 156: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D126-16 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 1 Junction Connector)

NG --> See step 34

OK: Go to next step

15. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - NETWORK GATEWAY ECU)**

HINT:

For vehicle with smart key system, go to step 16.

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

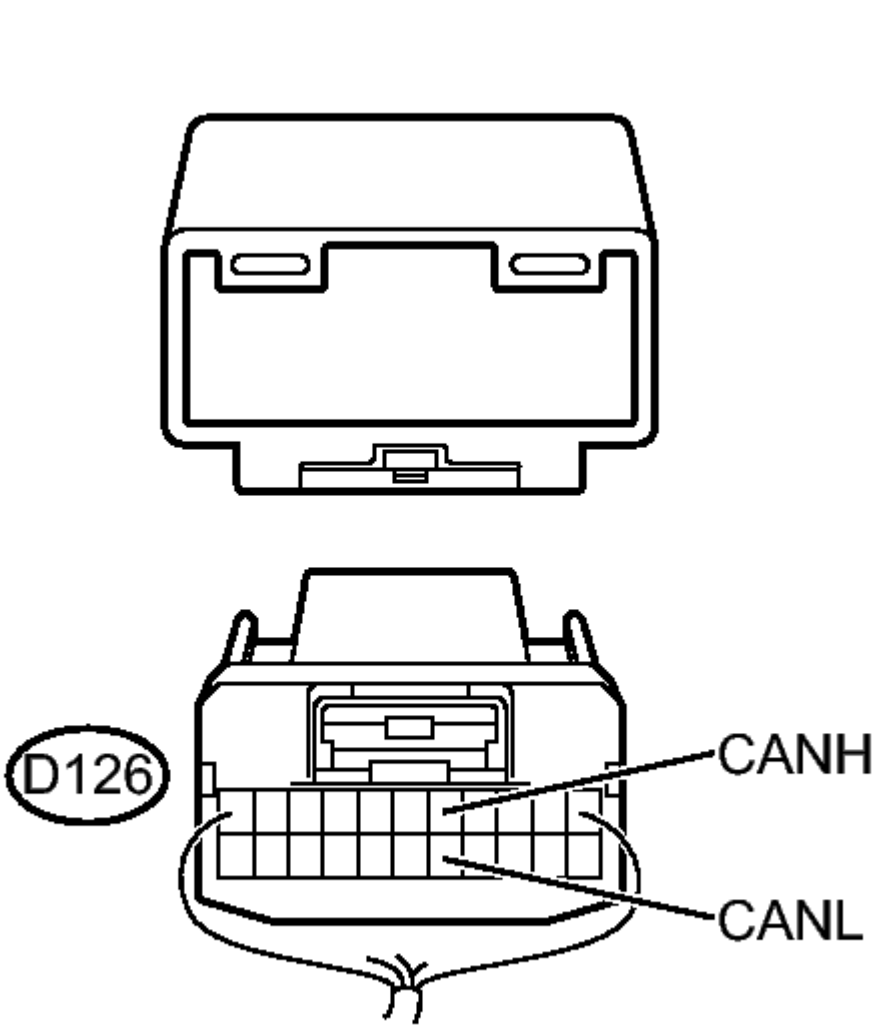


Fig. 157: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D126-16 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 1 Junction Connector)

NG --> See step 36

OK: Go to next step

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

HINT:

For vehicle without VDIM, go to step 17.

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

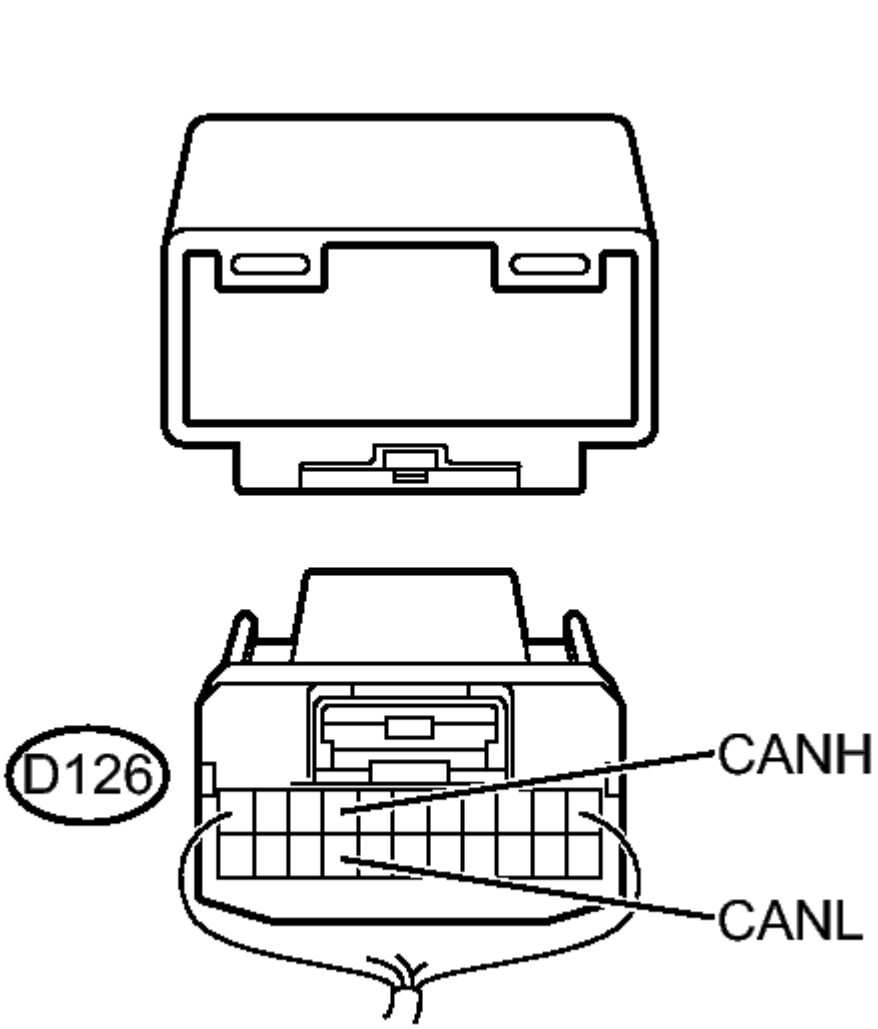


Fig. 158: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Yaw Rate Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-8 (CANH) - D126-19 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire

*a	harness connector (to No. 1 CAN Junction Connector)

NG --> See step 38

OK: Go to next step

17. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Measure the resistance according to the value(s) in the table below.

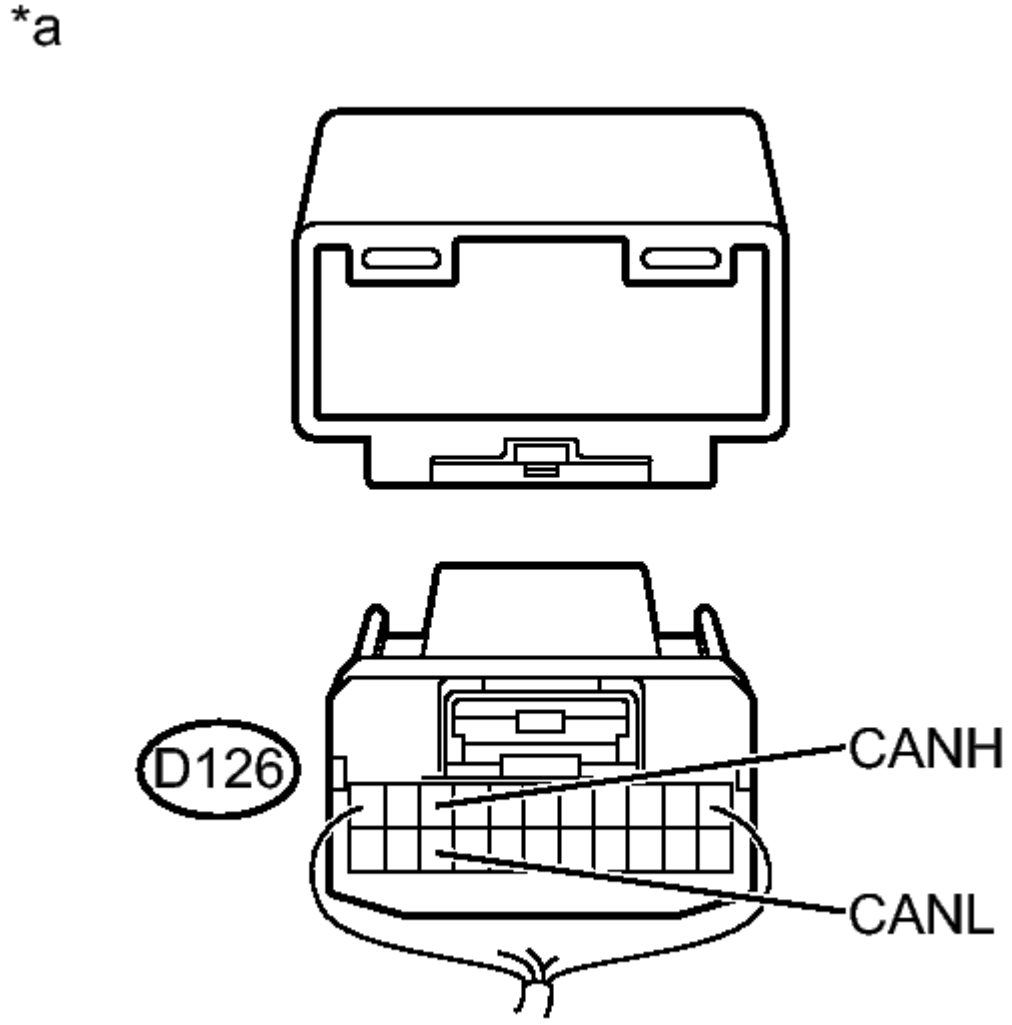


Fig. 159: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - Center Airbag

Sensor Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-9 (CANH) - D126-20 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)

NG --> See step 40

OK: Go to next step

18. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - 4WD CONTROL ECU)**

HINT:

For vehicle without 4WD, go to step 19.

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

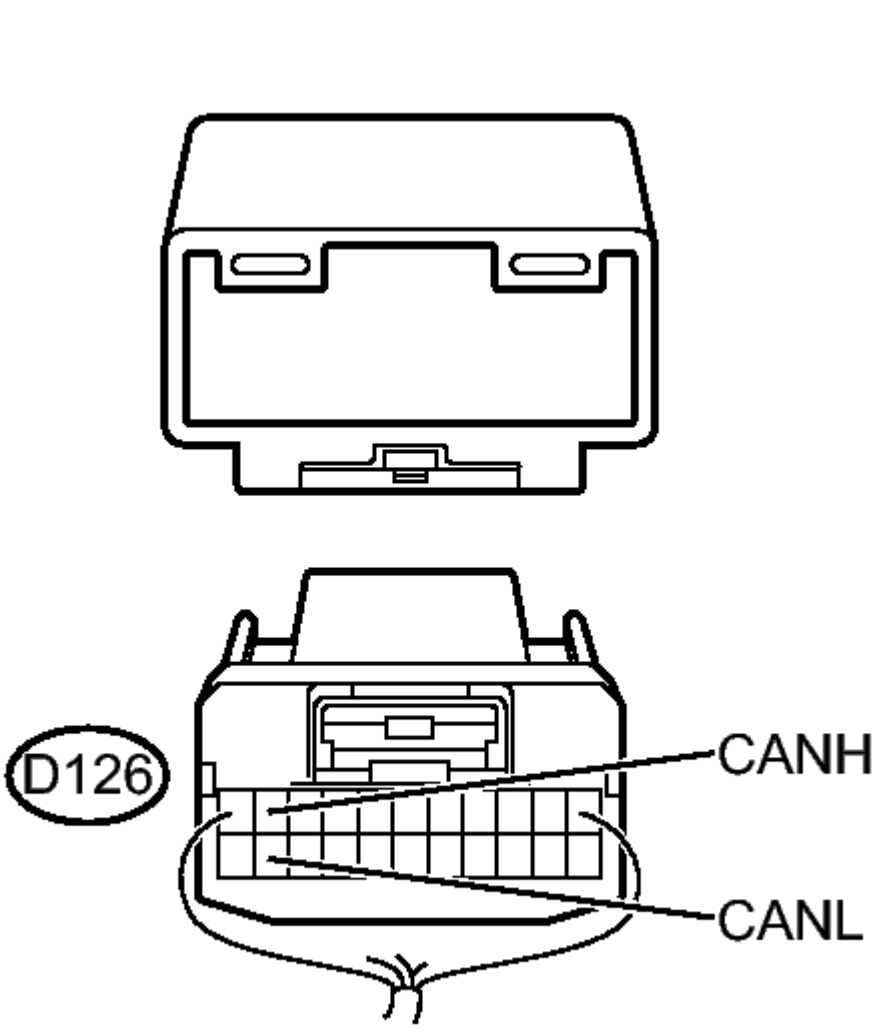


Fig. 160: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - 4WD Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-10 (CANH) - D126-21 (CANL)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

	Rear view of wire

*a	harness connector (to No. 1 CAN Junction Connector)

NG --> See step 42

OK: Go to next step

19. **CHECK FOR SHORT IN CAN BUS WIRES (NO. 1 JUNCTION CONNECTOR - ECM)**
    a. Measure the resistance according to the value(s) in the table below.

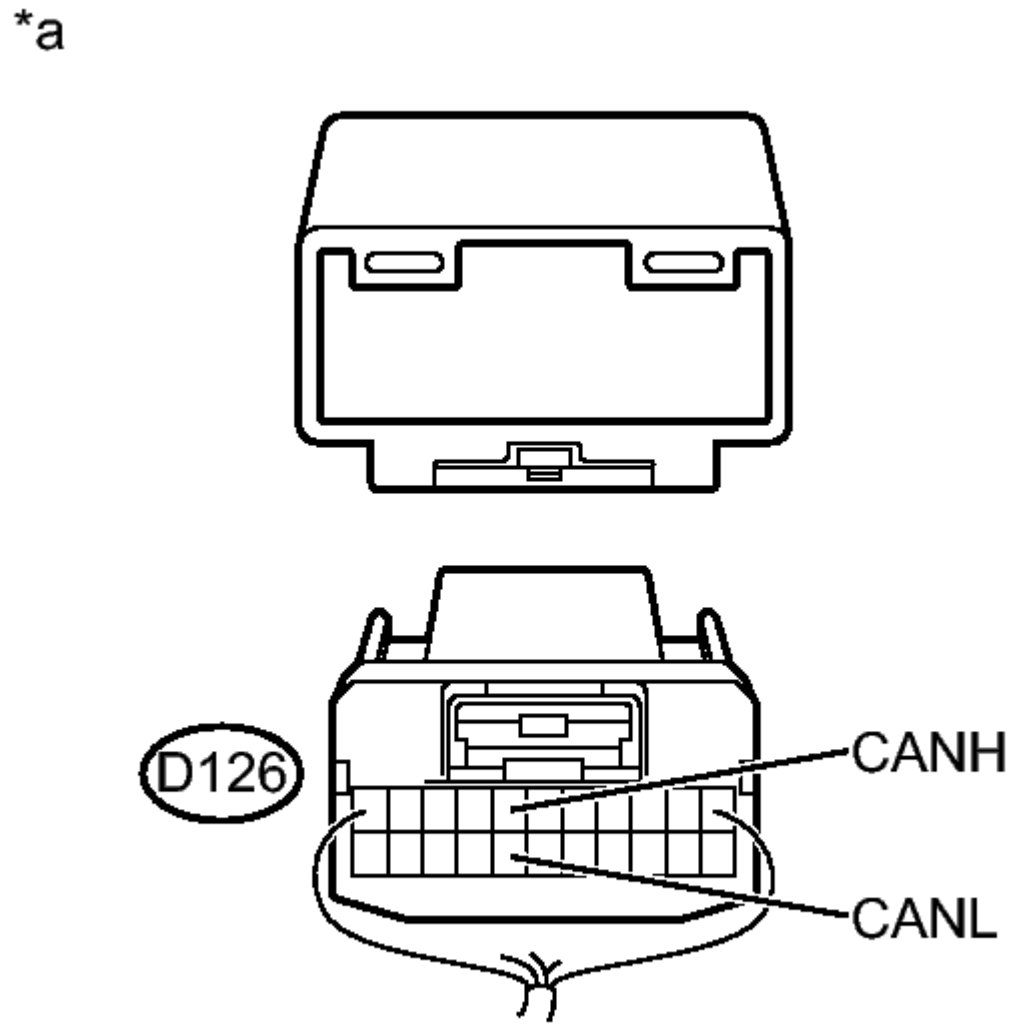


Fig. 161: Checking For Short In CAN BUS Wires (No. 1 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D126-18 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 CAN Junction Connector)

NG --> See step 44

OK --> REPAIR OR REPLACE NO. 1 JUNCTION CONNECTOR

20. **CONNECT CONNECTOR**
    a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

21. **CHECK FOR SHORT IN CAN BUS WIRES (CERTIFICATION ECU)**
    a. Disconnect the D88 certification ECU connector.

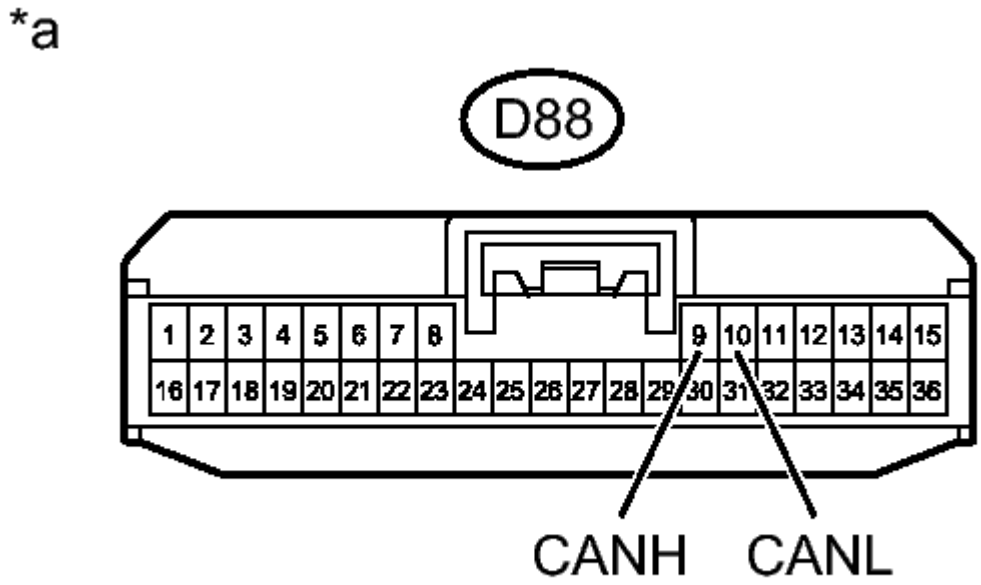


Fig. 162: Checking CAN BUS Line For Disconnection (Certification ECU Branch Wire Line)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D88-9 (CANH) - D88-10 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Certification ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CERTIFICATION ECU (CAN-H, CAN-L)

OK --> See step 48

22. **CONNECT CONNECTOR**
    a. Reconnect the D125 No. 2 junction connector connector.

    NEXT: Go to next step

23. **CHECK FOR SHORT IN CAN BUS WIRES (AIR CONDITIONING AMPLIFIER)**

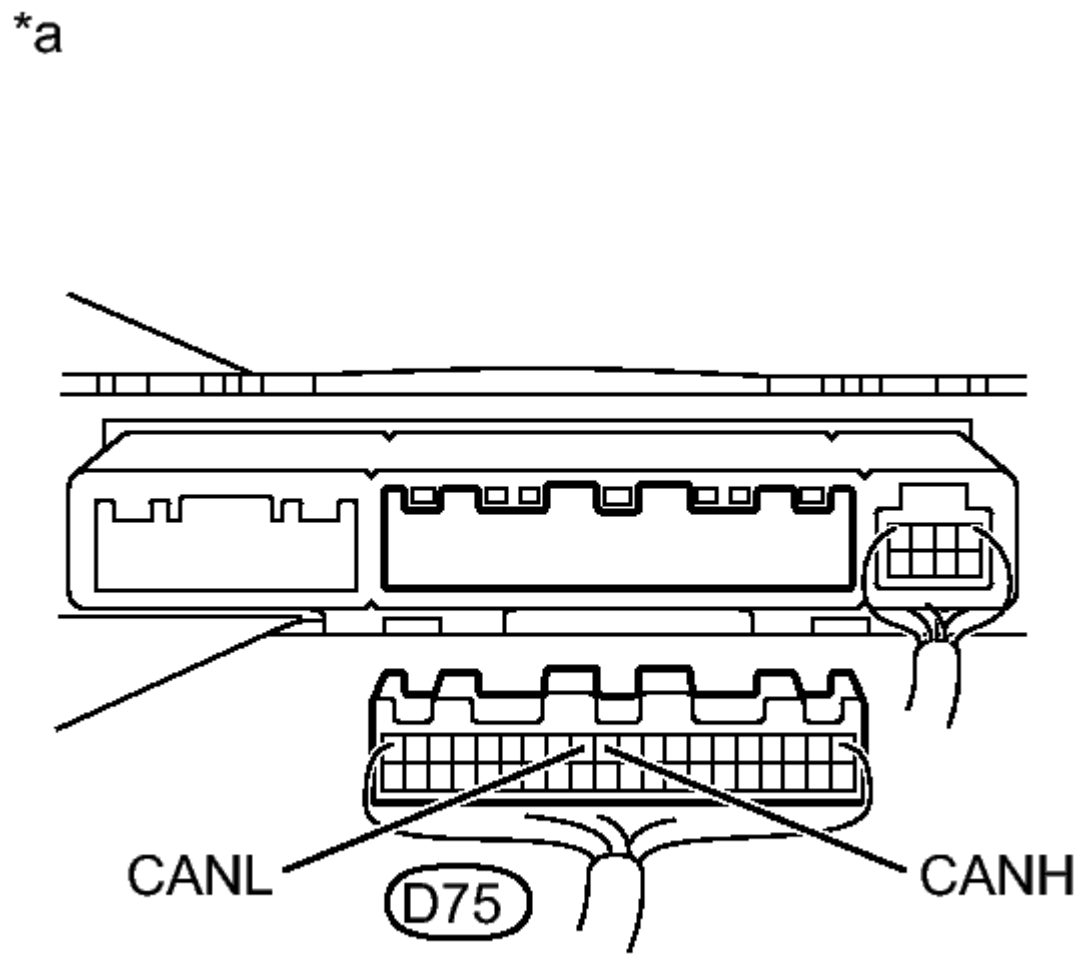


Fig. 163: Checking CAN BUS Line For Disconnection (Air Conditioning Amplifier Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D75 air conditioning amplifier connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Air Conditioning Amplifier)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AIR CONDITIONING AMPLIFIER (CAN-H, CAN-L)

OK --> See step 49

24. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

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

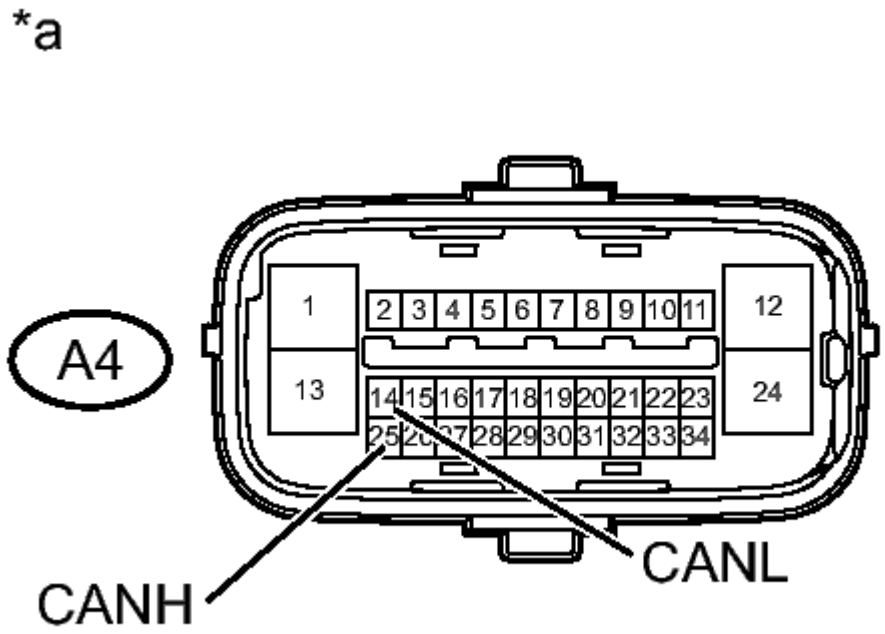


Fig. 164: Checking CAN BUS Line For Disconnection (Brake Actuator (Skid Control ECU) Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A4 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
A4-25 (CANH) - A4-14 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Skid Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SKID CONTROL ECU (CAN-H, CAN-L)

OK --> See step 50

26. **CONNECT CONNECTOR**
    a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

27. **CHECK FOR SHORT IN CAN BUS WIRES (COMBINATION METER ECU)**
    a. Disconnect the D18 combination meter ECU connector.

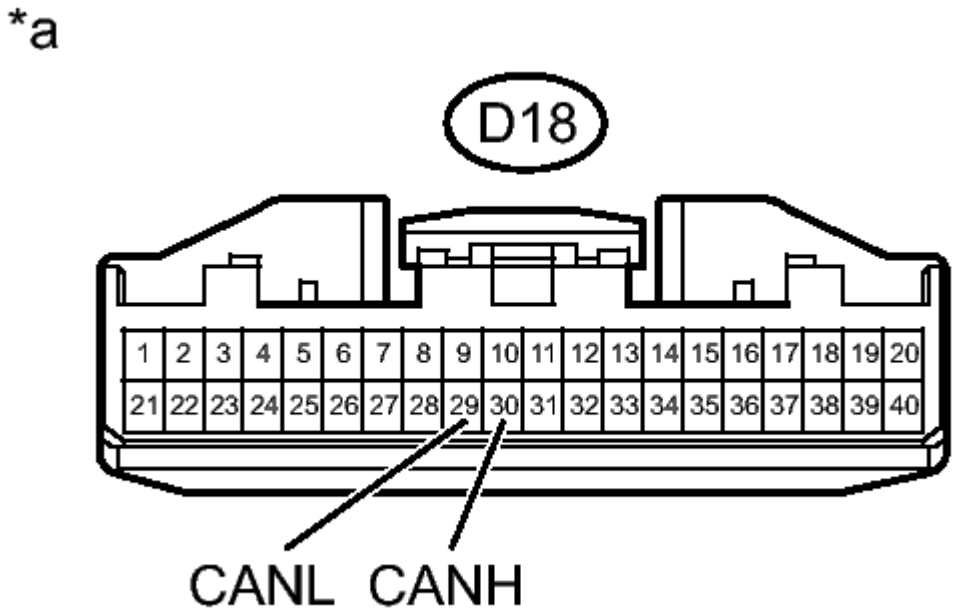


Fig. 165: Checking CAN BUS Line For Disconnection (Combination Meter ECU Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D18-30 (CANH) - D18-29 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter ECU)

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ECU (CAN-H, CAN-L)

OK --> See step 51

28. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

    NEXT: Go to next step

29. **CHECK FOR SHORT IN CAN BUS WIRES (STEERING ANGLE SENSOR)**
    a. Disconnect the D22 steering angle sensor connector.

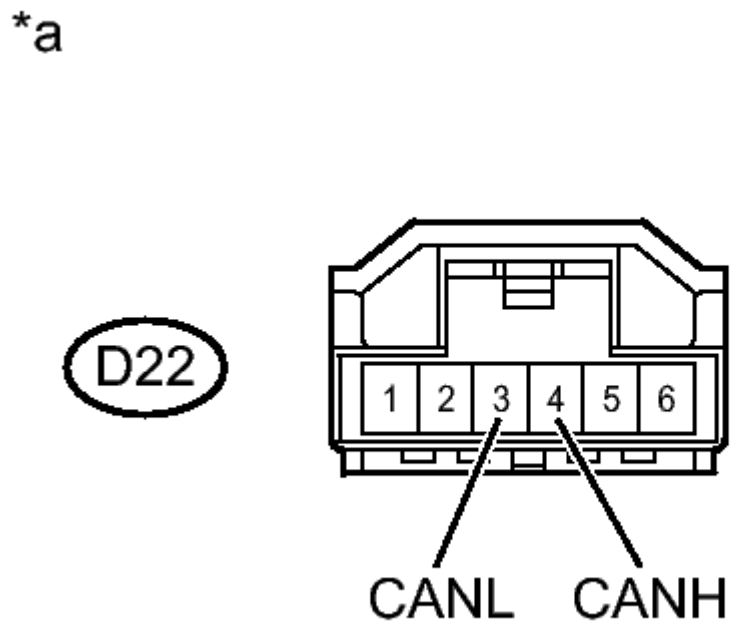


Fig. 166: Checking CAN BUS Line For Disconnection (Steering Angle Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

    Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D22-4 (CANH) - D22-3 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

	Front view of wire

*a	harness connector (to Steering Angle Sensor)

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

OK --> See step 52

30. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

31. **CHECK FOR SHORT IN CAN BUS WIRES (POWER STEERING ECU)**
    a. Disconnect the D35 power steering ECU connector.

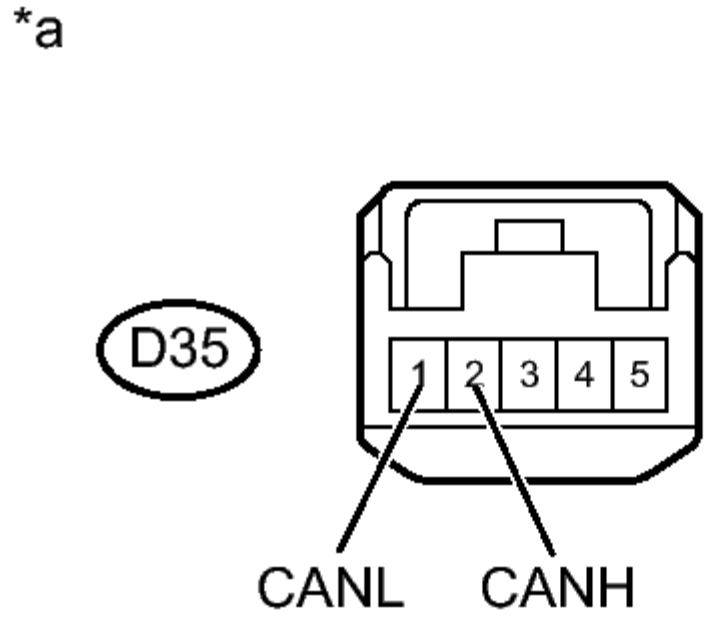


Fig. 167: Checking CAN BUS Line For Disconnection (Power Steering ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D35-2 (CANH) - D35-1 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CAN-H, CAN-L)

OK --> See step 53

32. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

33. **CHECK FOR SHORT IN CAN BUS WIRES (MAIN BODY ECU)**
    a. Disconnect the D13 main body ECU connector.

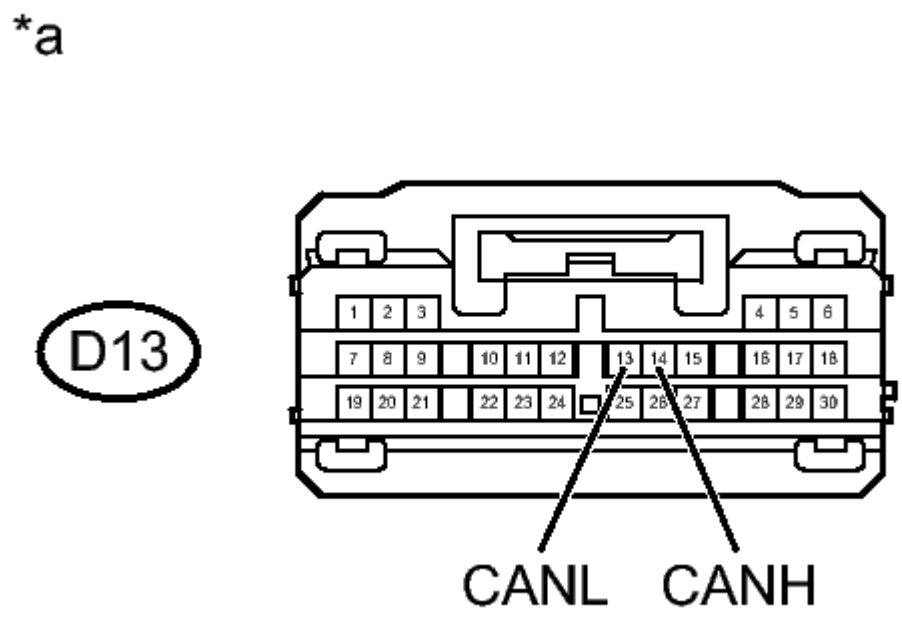


Fig. 168: Checking For Open In CAN BUS Wire (Main Body ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D13-14 (CANH) - D13-13 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO MAIN BODY ECU (CAN-H, CAN-L)

OK --> See step 54

34. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

35. **CHECK FOR SHORT IN CAN BUS WIRES (POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D89 power management control ECU connector.

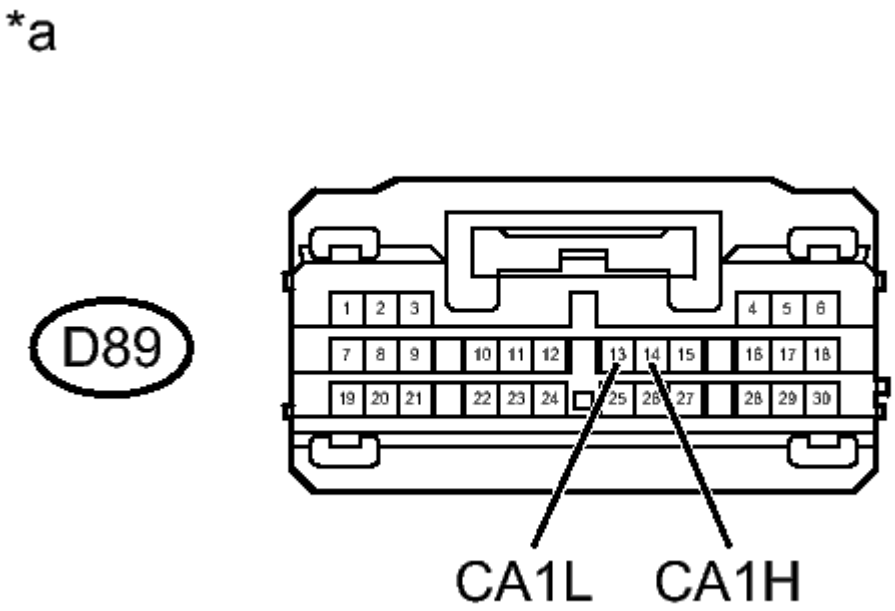


Fig. 169: Checking For Open In CAN BUS Wire (Power Management Control ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-14 (CA1H) - D89-13 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (CAN-H, CAN-L)

OK --> See step 55

36. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

37. **CHECK FOR SHORT IN CAN BUS WIRES (NETWORK GATEWAY ECU)**
    a. Disconnect the D90 network gateway ECU connector.

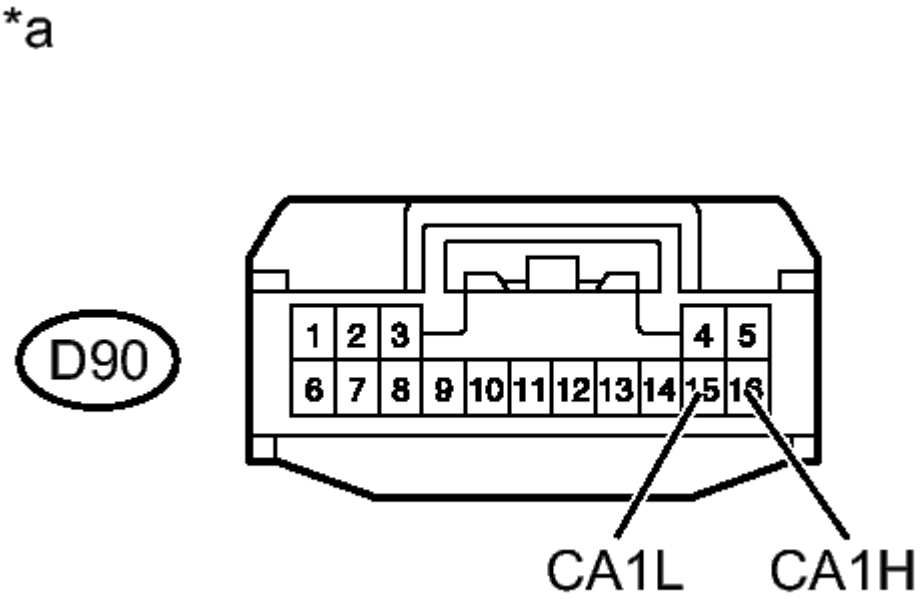


Fig. 170: Checking For Open In CAN BUS Wire (Network Gateway ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D90-16 (CA1H) - D90-15 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO NETWORK GATEWAY ECU (CAN-H, CAN-L)

OK --> See step 56

38. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

39. **CHECK FOR SHORT IN CAN BUS WIRES (YAW RATE SENSOR)**
    a. Disconnect the L6 yaw rate sensor connector.

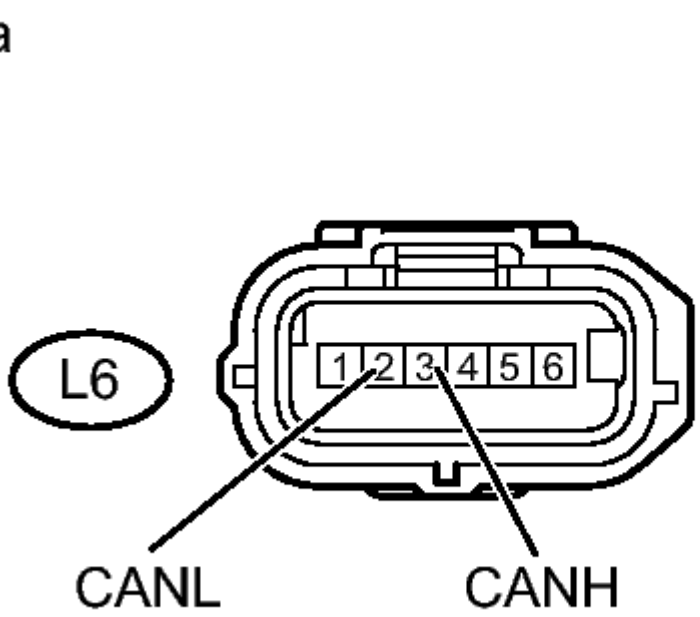


Fig. 171: Checking CAN BUS Line For Disconnection (Yaw Rate Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
L6-3 (CANH) - L6-2 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Yaw Rate Sensor)

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

OK --> See step 57

40. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

    NEXT: Go to next step

41. **CHECK SHORT IN CAN BUS WIRES (CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Disconnect the D40 center airbag sensor assembly connector.

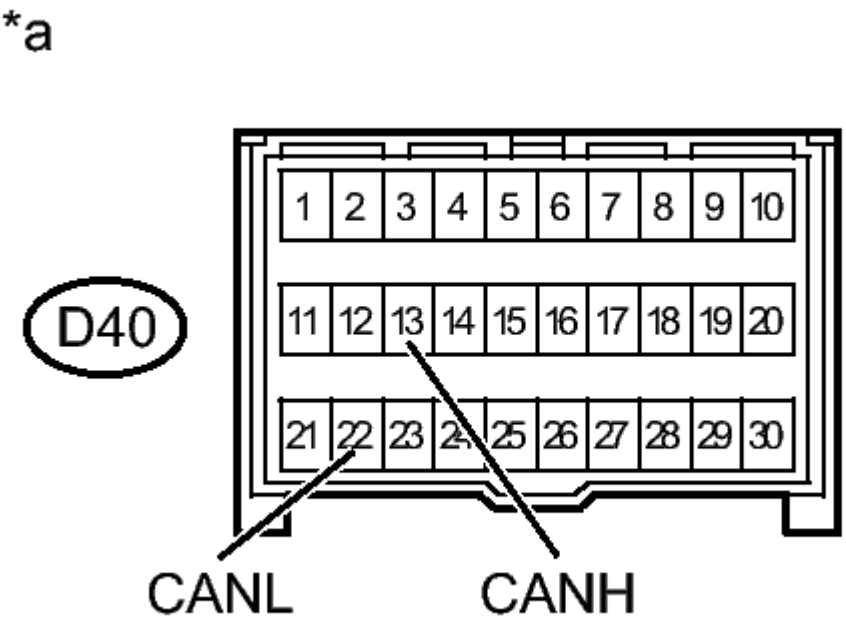


Fig. 172: Checking CAN BUS Line For Disconnection (Center Airbag Sensor Assembly Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

    Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D40-13 (CANH) - D40-22 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Center Airbag Sensor Assembly)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CENTER AIRBAG SENSOR ASSEMBLY (CAN-H, CAN-L)

OK --> See step 58

42. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

43. **CHECK SHORT IN CAN BUS WIRES (4WD CONTROL ECU)**
    a. Disconnect the K1 4WD control ECU connector.

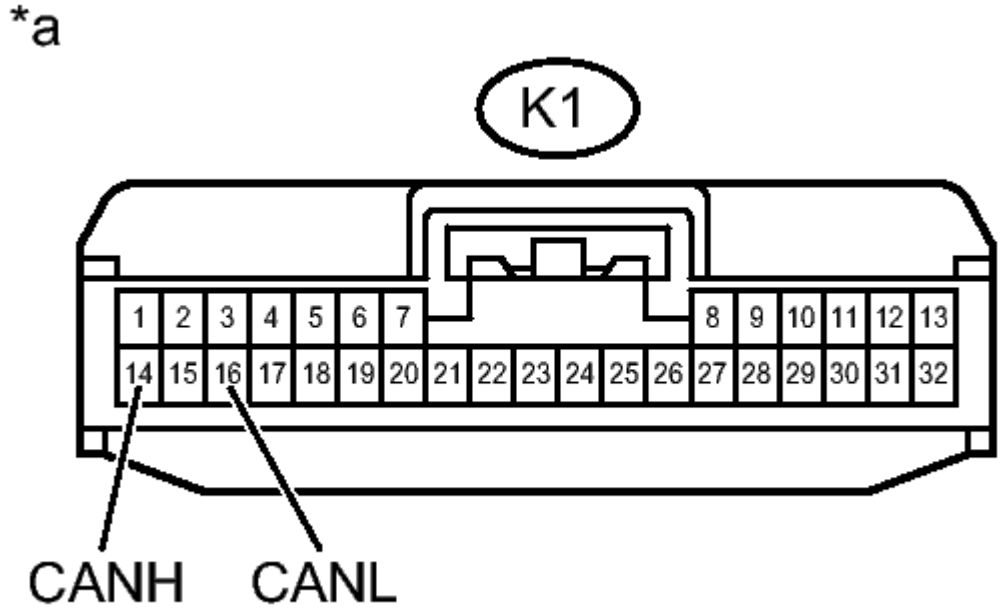


Fig. 173: Measuring Resistance Of 4WD Control ECU Branch Wire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
K1-14 (CANH) - K1-16 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to 4WD Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO 4WD CONTROL ECU (CAN-H, CAN-L)

OK --> See step 59

44. **CONNECT CONNECTOR**
    a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

45. **SYSTEM CHECK**
    a. Check the vehicle specifications.

RESULT

Result	Proceed to
for 2GR-FE engine	A
for 1AR-FE engine	B

B --> See step 47

A: Go to next step

46. **CHECK FOR SHORT IN CAN BUS WIRES (ECM)**

a. Disconnect the A39 ECM connector.

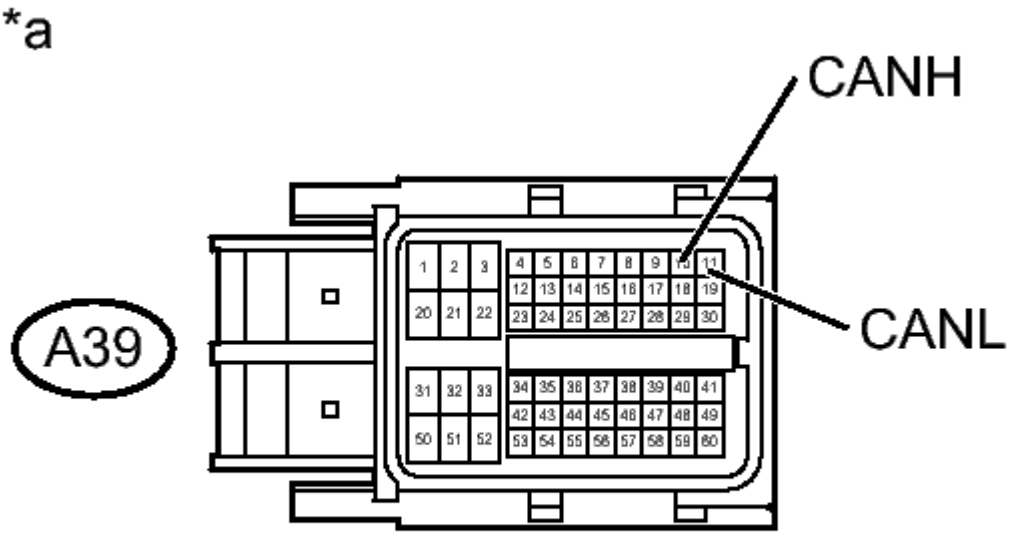


Fig. 174: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A39-10 (CANH) - A39-11 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

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

OK --> See step 60

47. **CHECK FOR SHORT IN CAN BUS WIRES (ECM)**
    a. Disconnect the A55 ECM connector.

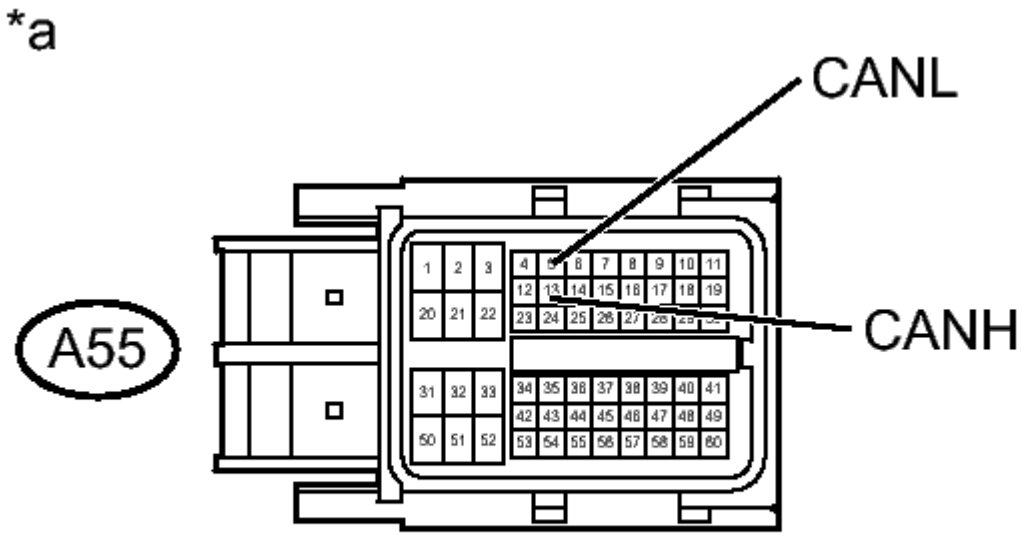


Fig. 175: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A55-13 (CANH) - A55-5 (CANL)	Ignition switch off	108 to 132 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness

	connector (to ECM)

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

OK --> See step 61

48. **REPLACE CERTIFICATION ECU. Refer to REMOVAL**
49. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**
50. **REPLACE SKID CONTROL ECU. Refer to REMOVAL**
51. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
52. **REPLACE STEERING ANGLE SENSOR. Refer to REMOVAL**
53. **REPLACE STEERING COLUMN ASSEMBLY (POWER STEERING ECU). Refer to REMOVAL**
54. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
55. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
56. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**
57. **REPLACE YAW RATE SENSOR. Refer to REMOVAL**
58. **REPLACE CENTER AIRBAG SENSOR ASSEMBLY. Refer to REMOVAL**
59. **REPLACE 4WD CONTROL ECU. Refer to REMOVAL**
60. **REPLACE ECM. Refer to REMOVAL**
61. **REPLACE ECM. Refer to REMOVAL**

Check CAN BUS Line for Short to +B

DESCRIPTION

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

Symptom	Trouble Area
There is resistance between terminals 6 (CANH) and 16 (BAT) or terminals 14 (CANL) and 16 (BAT) of the DLC3.	• Short to +B • ECM • Center airbag sensor assembly • Power management control ECU*1 • Certification ECU*1 • Air conditioning amplifier assembly*2 • Network gateway ECU*2 • Main body ECU • Combination meter assembly • 4WD control ECU*3

	• Yaw rate sensor*4 • Skid control ECU*4, *5 • Steering angle sensor • Power steering ECU • No. 1 junction connector • No. 2 junction connector

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: for AWD

*4: w/ VDIM

*5: w/ VSC

WIRING DIAGRAM

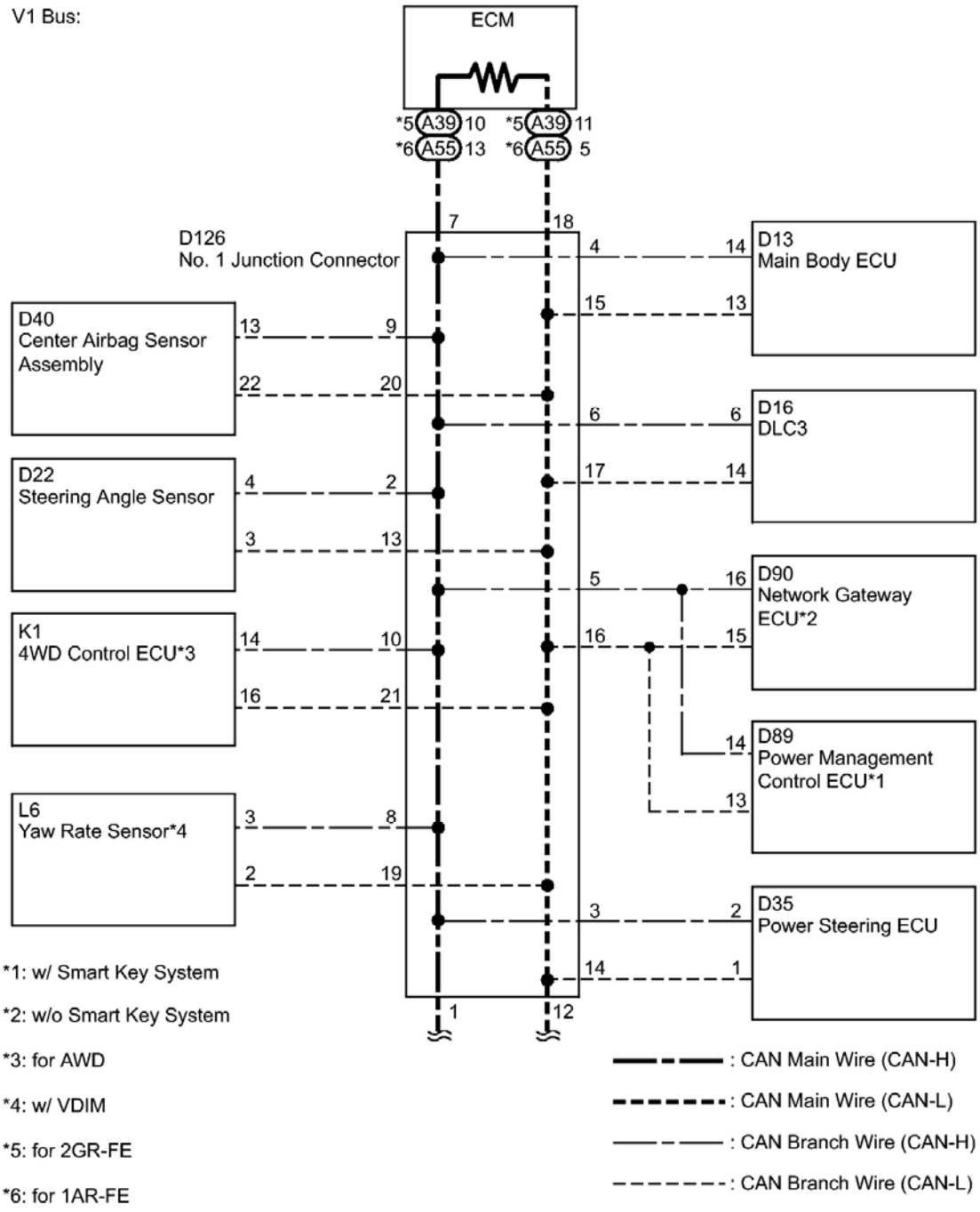


Fig. 176: CAN BUS Lines Wiring Diagram (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

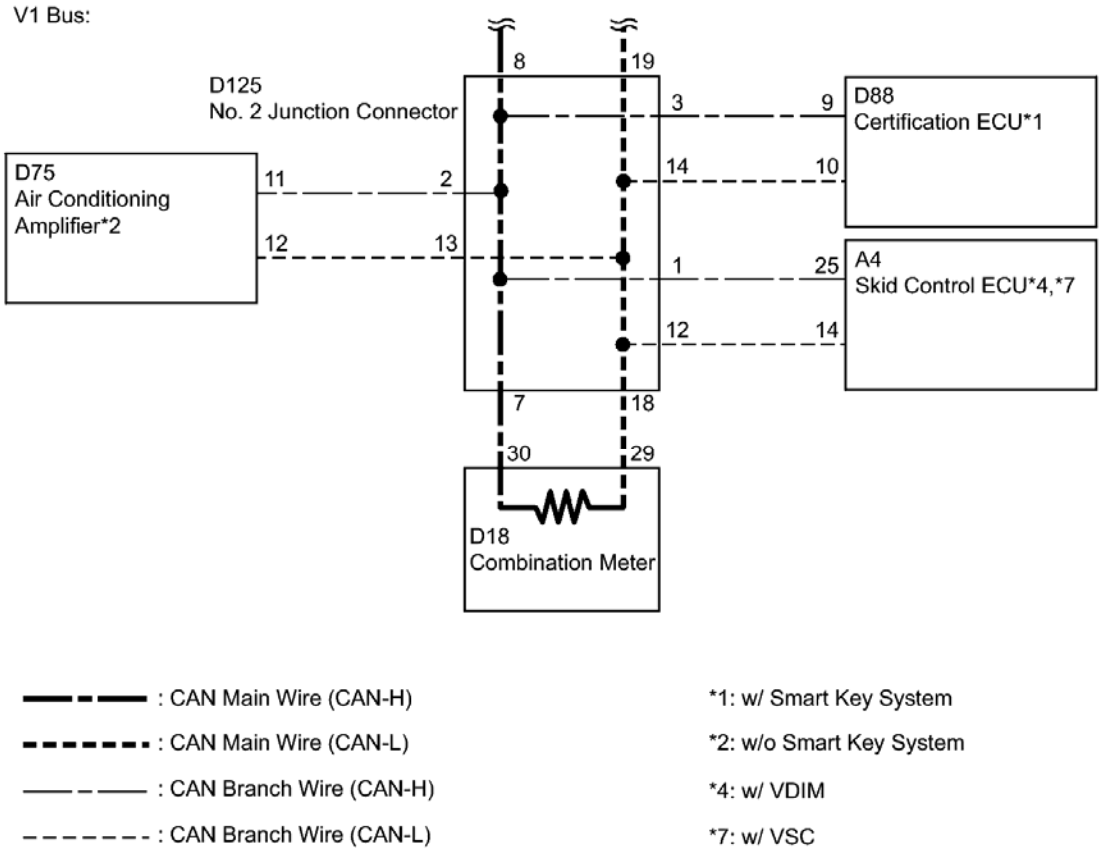


Fig. 177: CAN BUS Lines Wiring Diagram (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (DLC3 BRANCH WIRE)**
   a. Disconnect the D126 No. 1 junction connector connector.

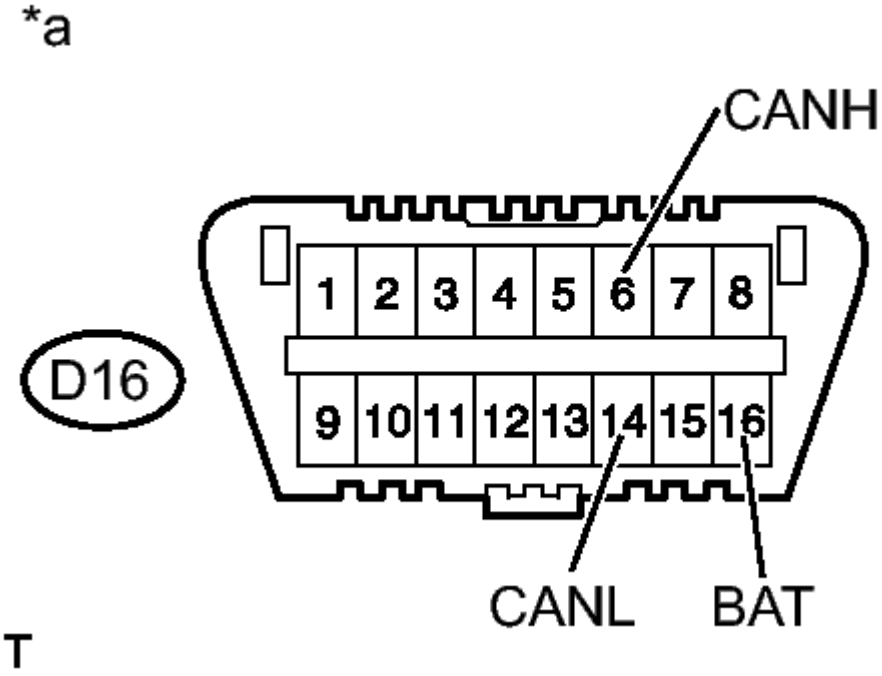


Fig. 178: Checking For Short To B+ In CAN BUS Wire (DLC3 Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D16-14 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

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

OK: Go to next step

3. **CONNECT CONNECTOR**
   a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

4. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR SIDE)**
   a. Disconnect the D125 No. 2 junction connector connector.

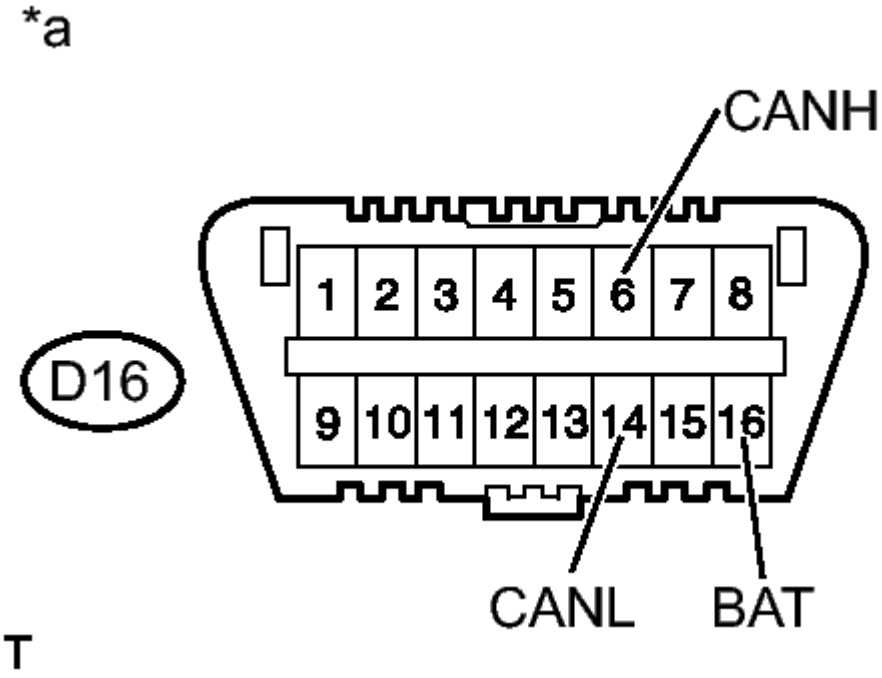


Fig. 179: Checking For Short To B+ In CAN BUS Wire (DLC3 Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D16-14 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

NG --> See step 9

OK: Go to next step

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

HINT:

For vehicle without smart key system, go to step 6.

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

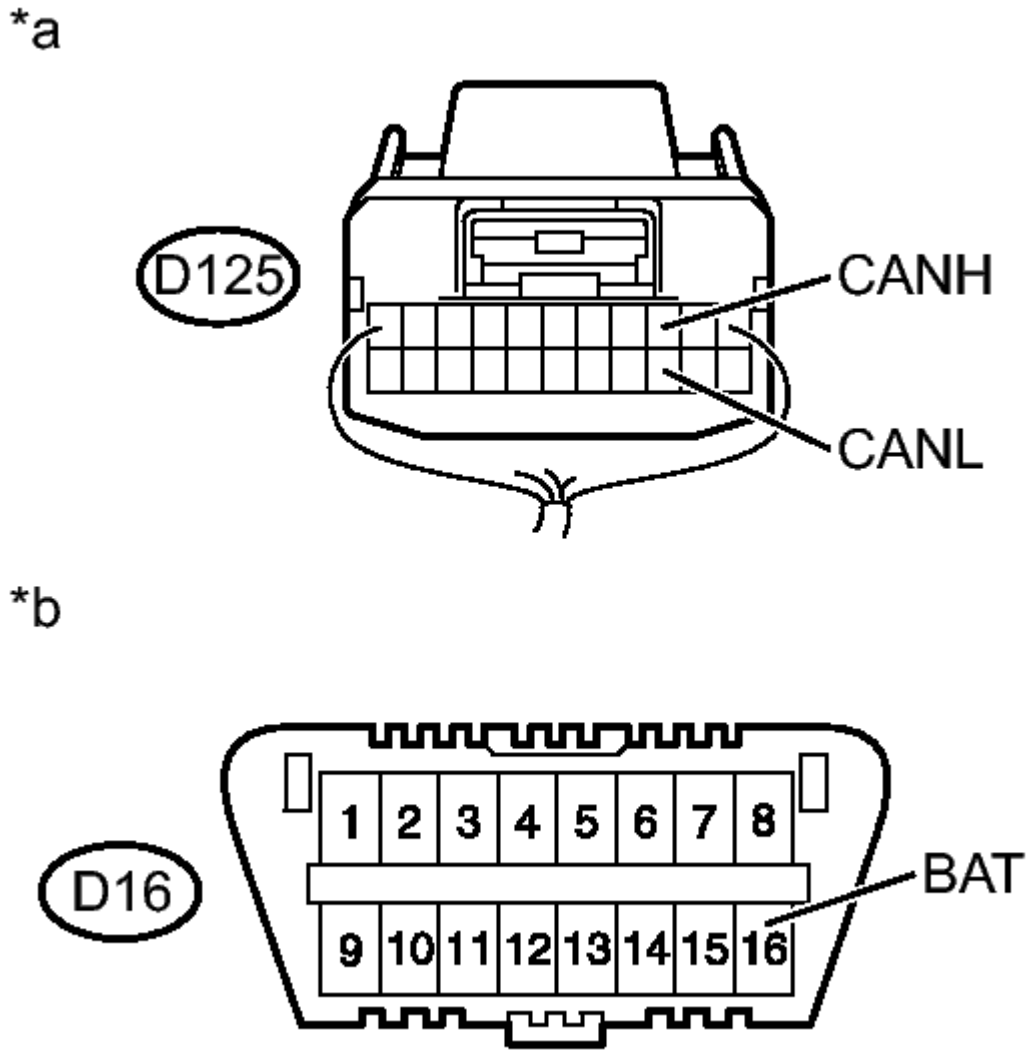


Fig. 180: Checking For Short To B+ In CAN BUS Wire (Certification ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-3 (CANH) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		
D125-14 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 20

OK: Go to next step

6. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)**

HINT:

For vehicle with smart key system, go to step 7.

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

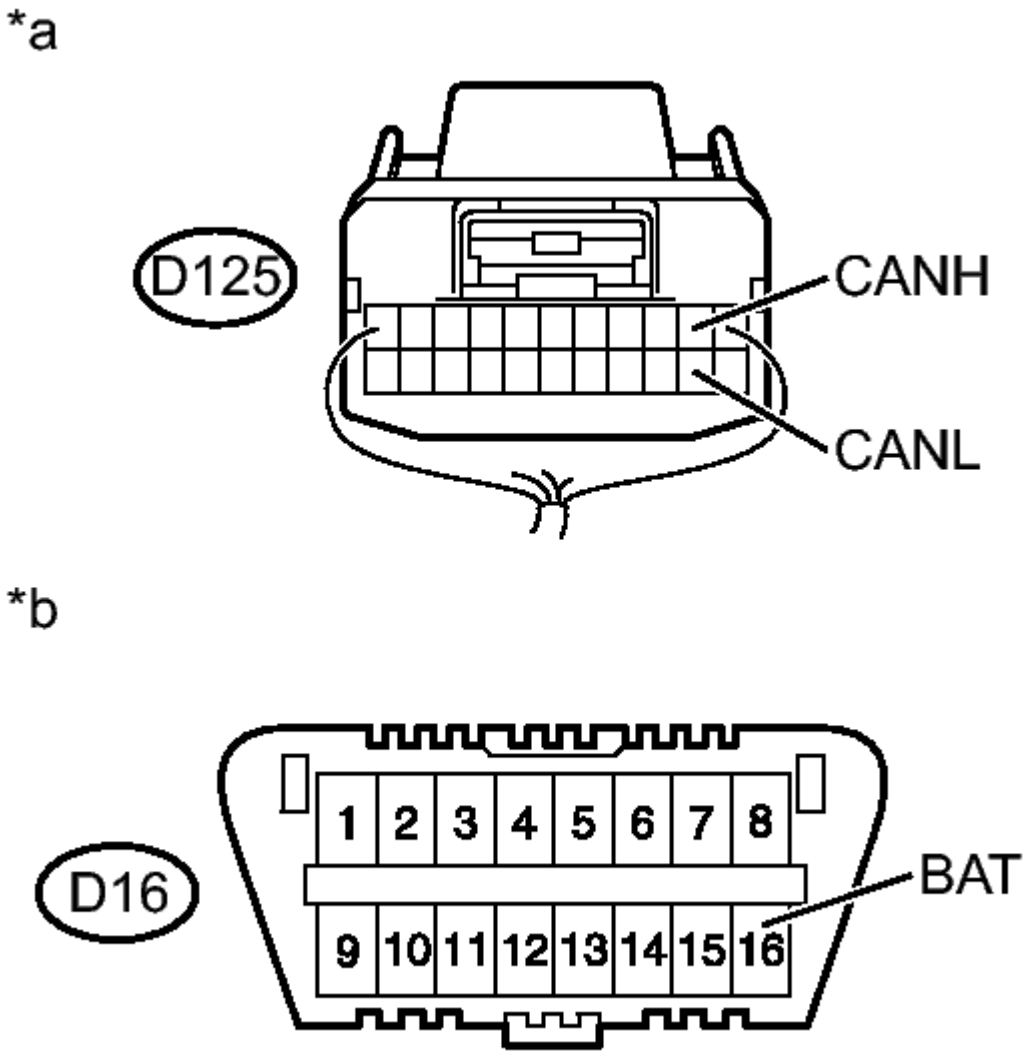


Fig. 181: Checking For Short To B+ In CAN BUS Wire (Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-2 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-13 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 21

OK: Go to next step

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

HINT:

For vehicle without VSC or VDIM, go to step 8.

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

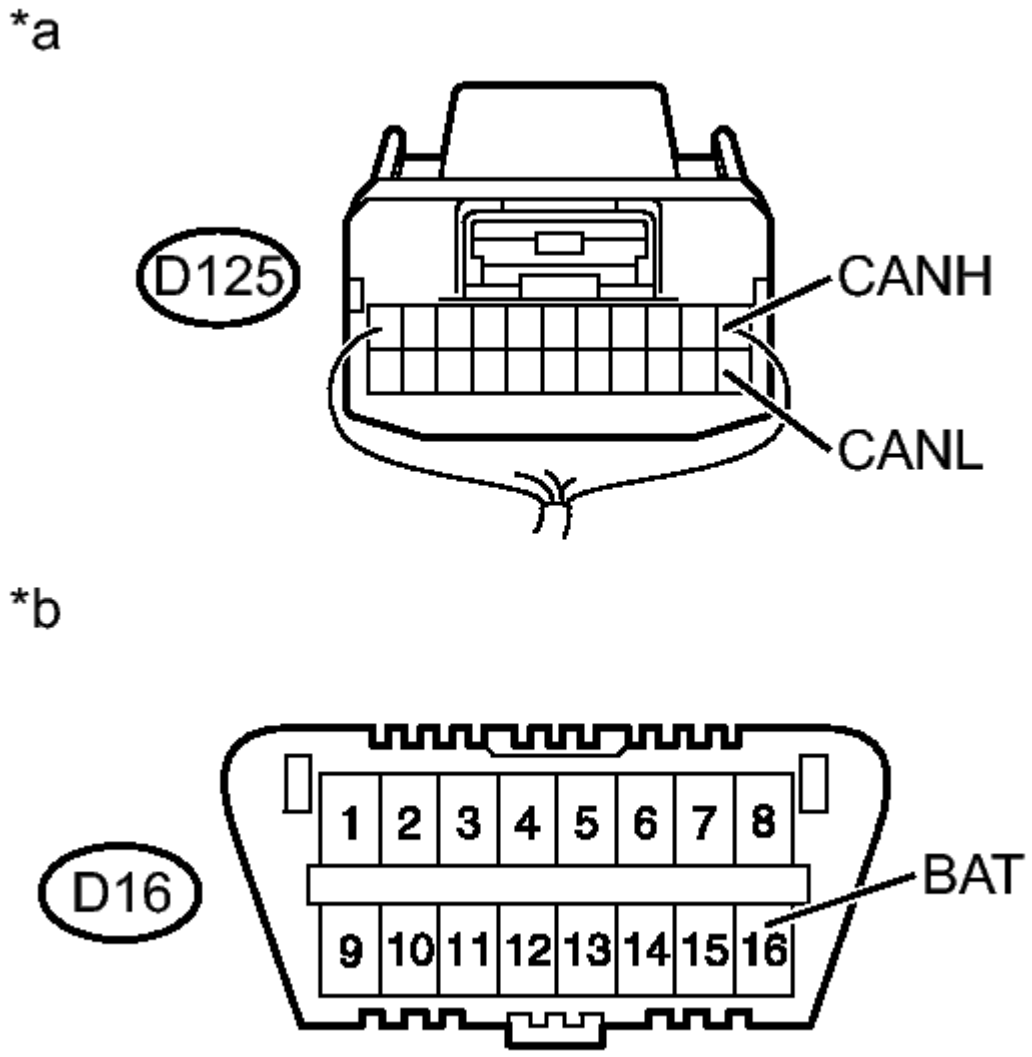


Fig. 182: Checking For Short To B+ In CAN BUS Wire (No. 2 Junction Connector - Skid Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-12 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 22

OK: Go to next step

8. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR - COMBINATION METER ECU)**
   a. Measure the resistance according to the value(s) in the table below.

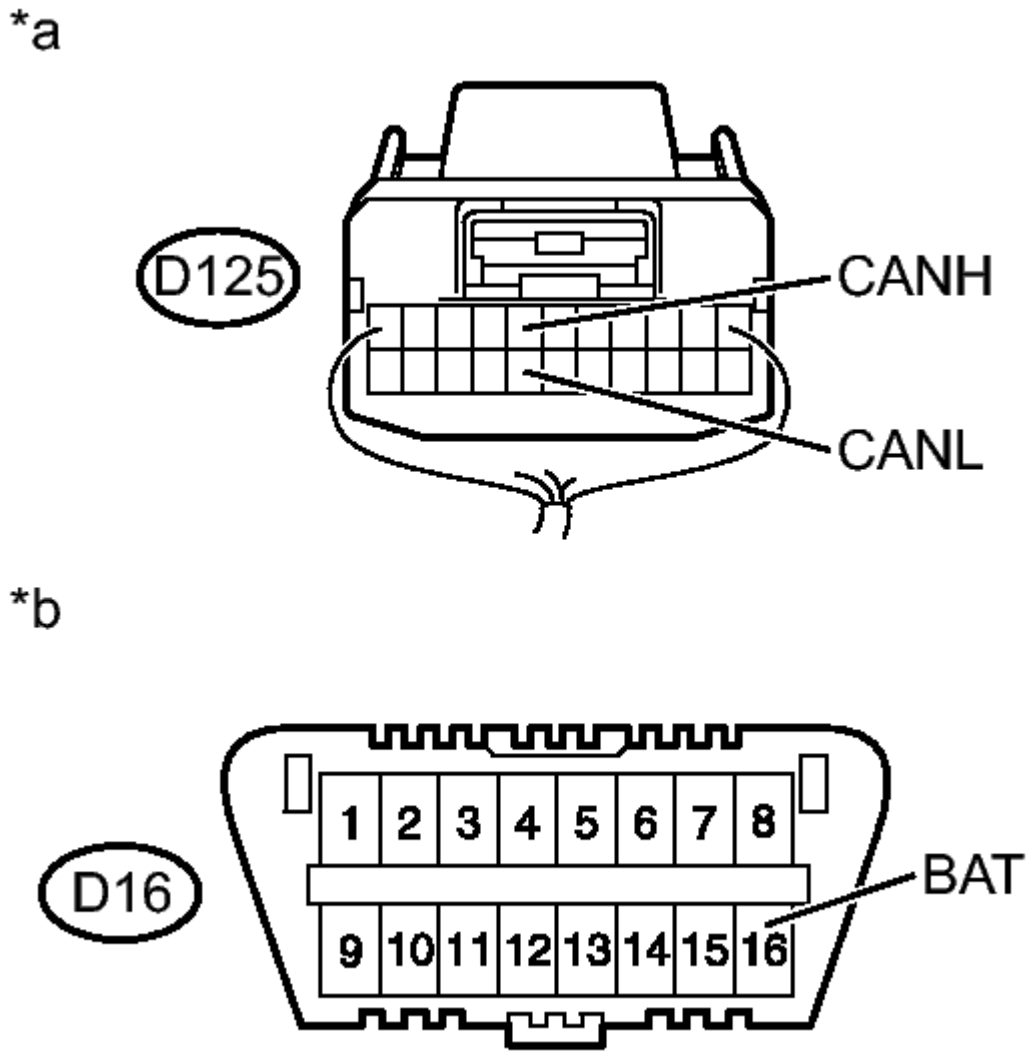


Fig. 183: Checking For Short To B+ In CAN BUS Wire (No. 2 Junction Connector - Combination Meter ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-18 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 23

OK --> REPAIR OR REPLACE NO. 2 JUNCTION CONNECTOR

9. **CONNECT CONNECTOR**
   a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

10. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)**
    a. Disconnect the D126 No. 1 junction connector connector.

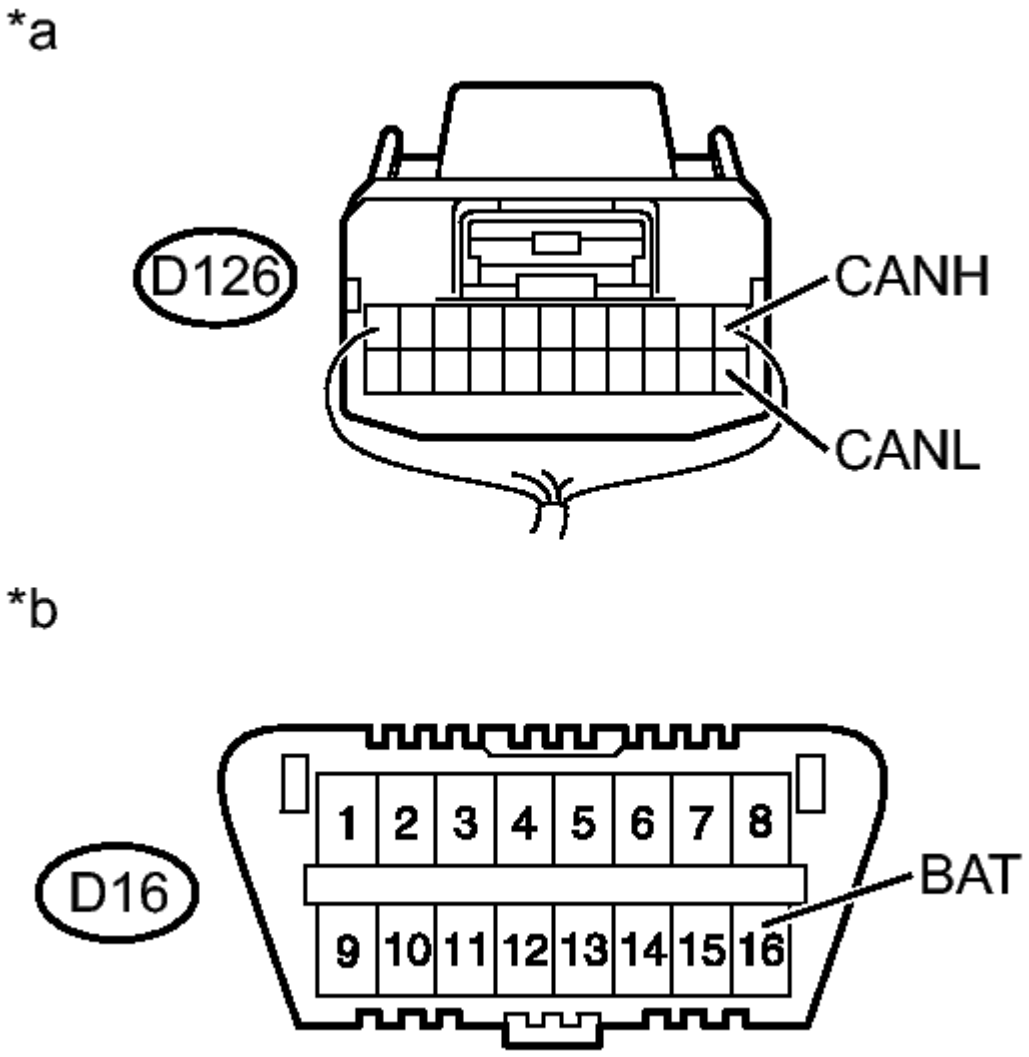


Fig. 184: Checking For Short To B+ In CAN BUS Wire (No. 1 Junction Connector - No. 2 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-12 (CANL) -	Ignition	6 kohms

D16-16 (BAT)	switch off	or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK: Go to next step

11. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**
    a. Measure the resistance according to the value(s) in the table below.

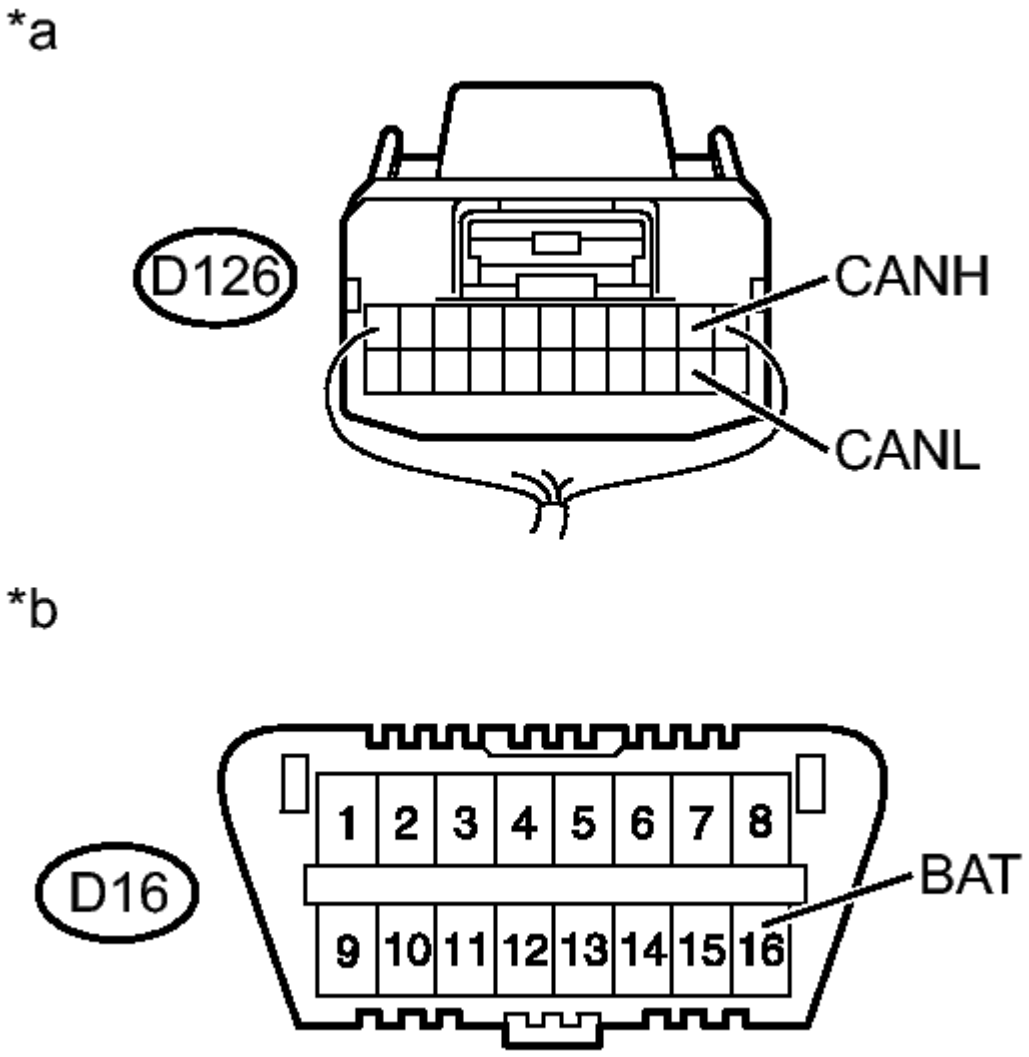


Fig. 185: Checking For Short To B+ In CAN BUS Wire (Steering Angle Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-2 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-13 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 24

OK: Go to next step

12. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**
    a. Measure the resistance according to the value(s) in the table below.

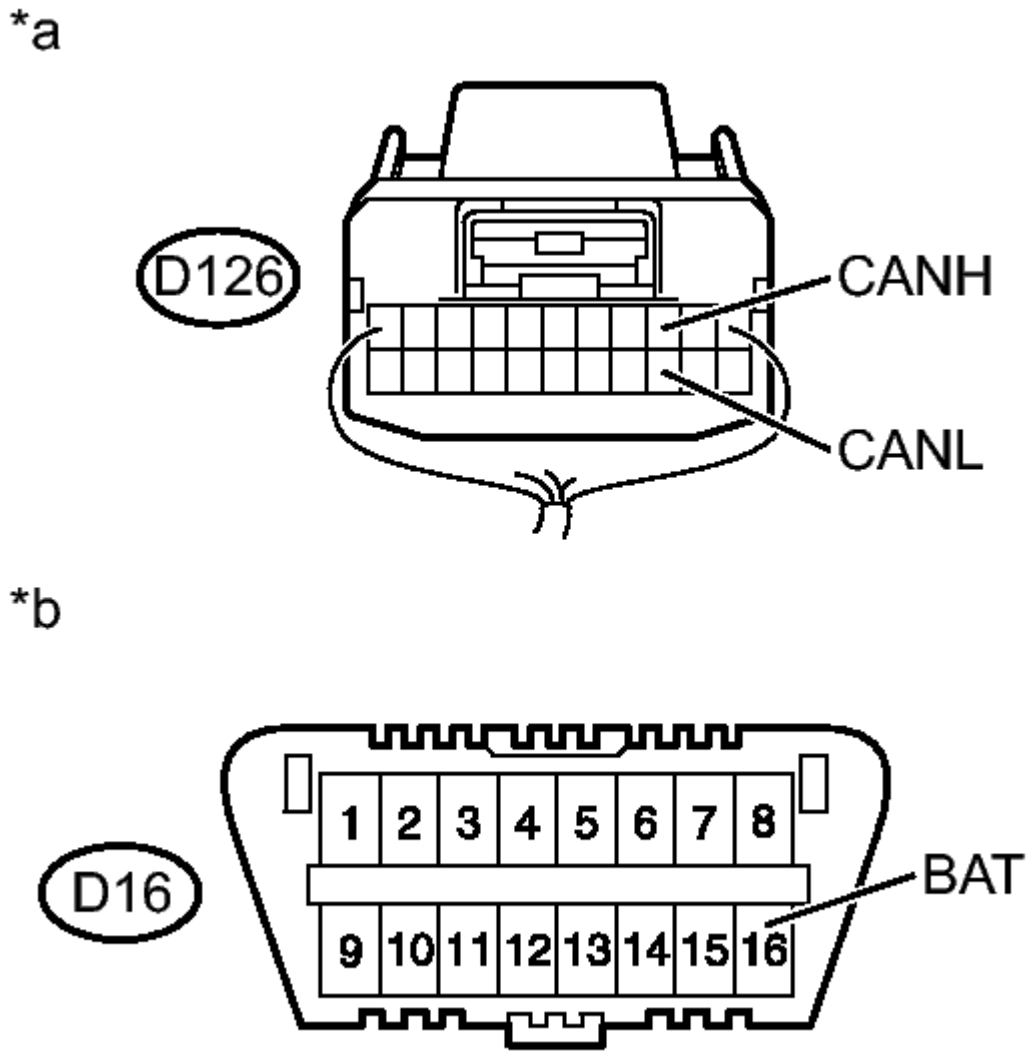


Fig. 186: Checking For Short To B+ In CAN BUS Wire (Power Steering ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-3 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-14 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 25

OK: Go to next step

13. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**
    a. Measure the resistance according to the value(s) in the table below.

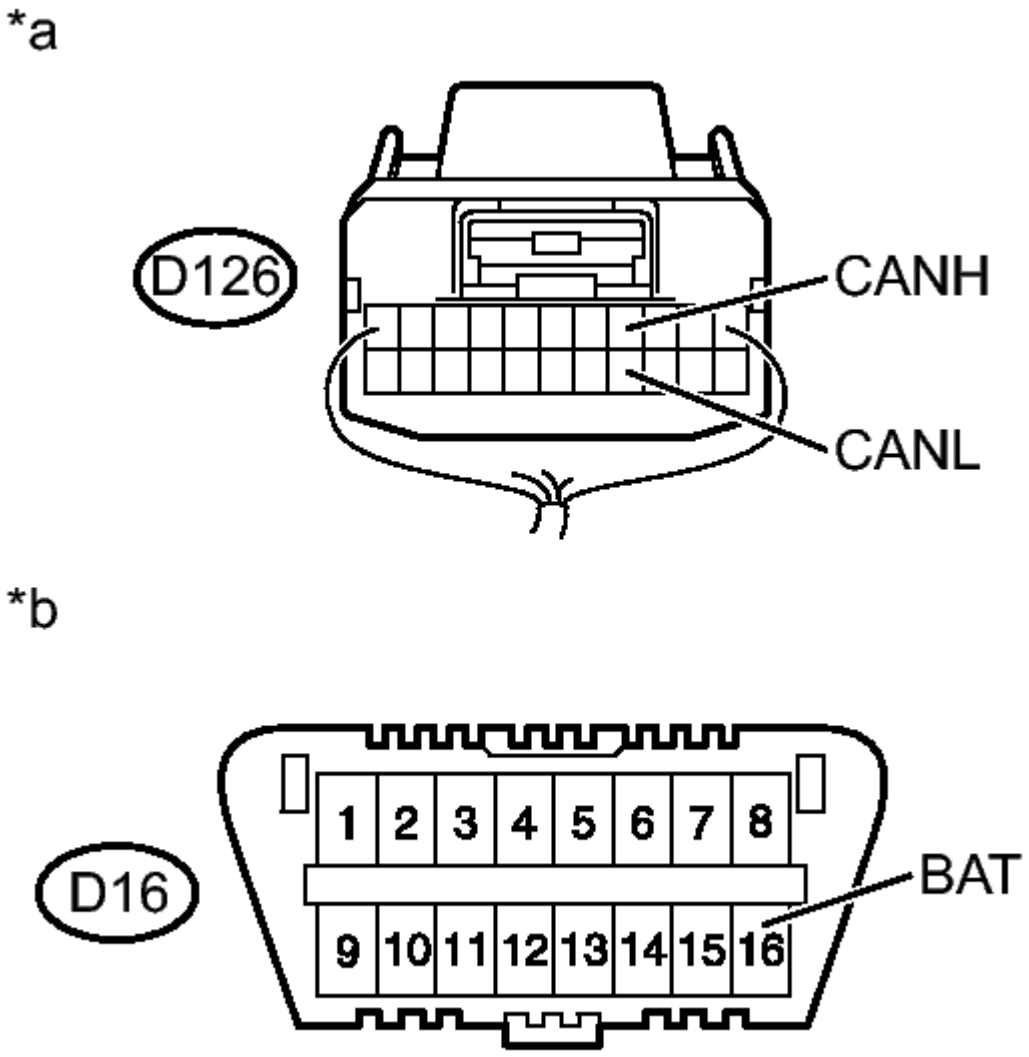


Fig. 187: Checking For Short To B+ In CAN BUS Wire (Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-4 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-15 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 26

OK: Go to next step

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

HINT:

For vehicle without smart key system, go to step 15.

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

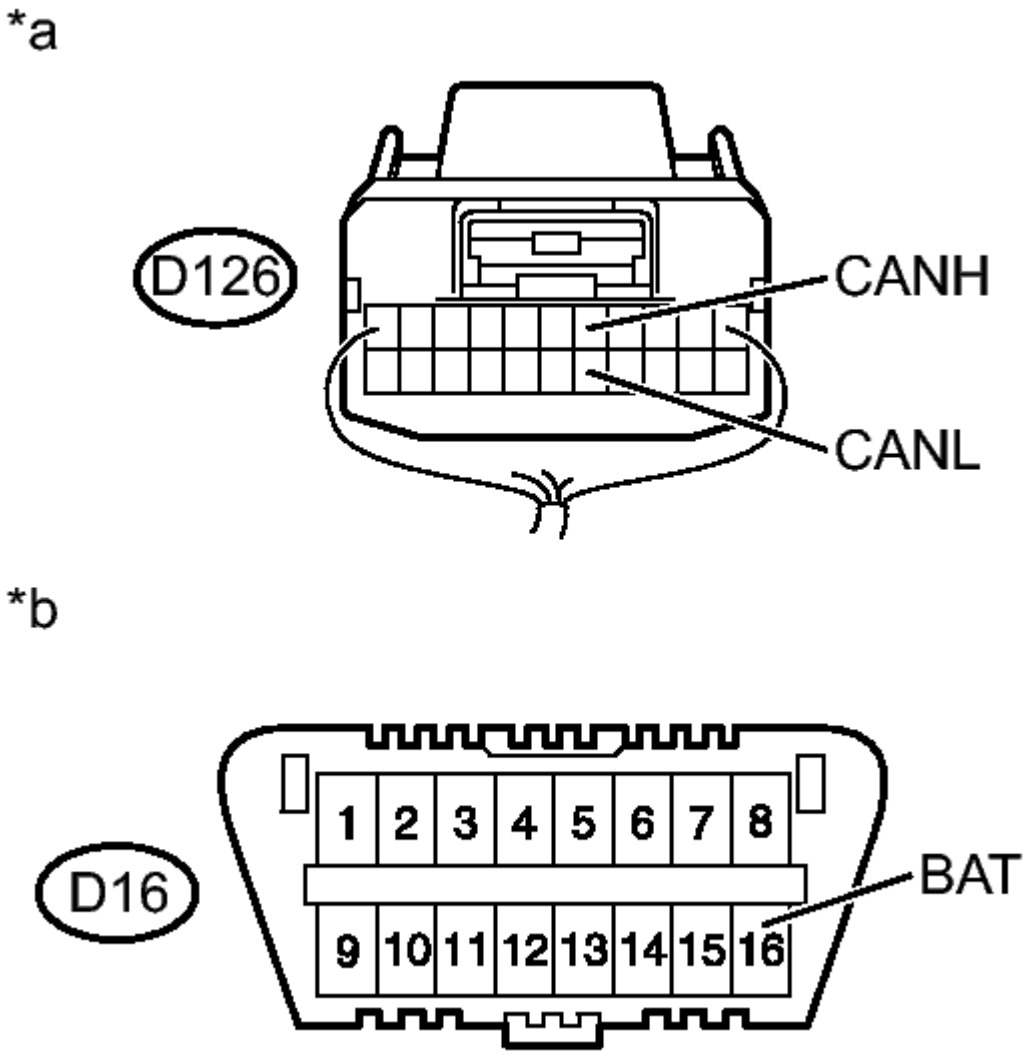


Fig. 188: Checking For Short To B+ In CAN BUS Wire (Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-16 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 27

OK: Go to next step

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

HINT:

For vehicle with smart key system, go to step 16.

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

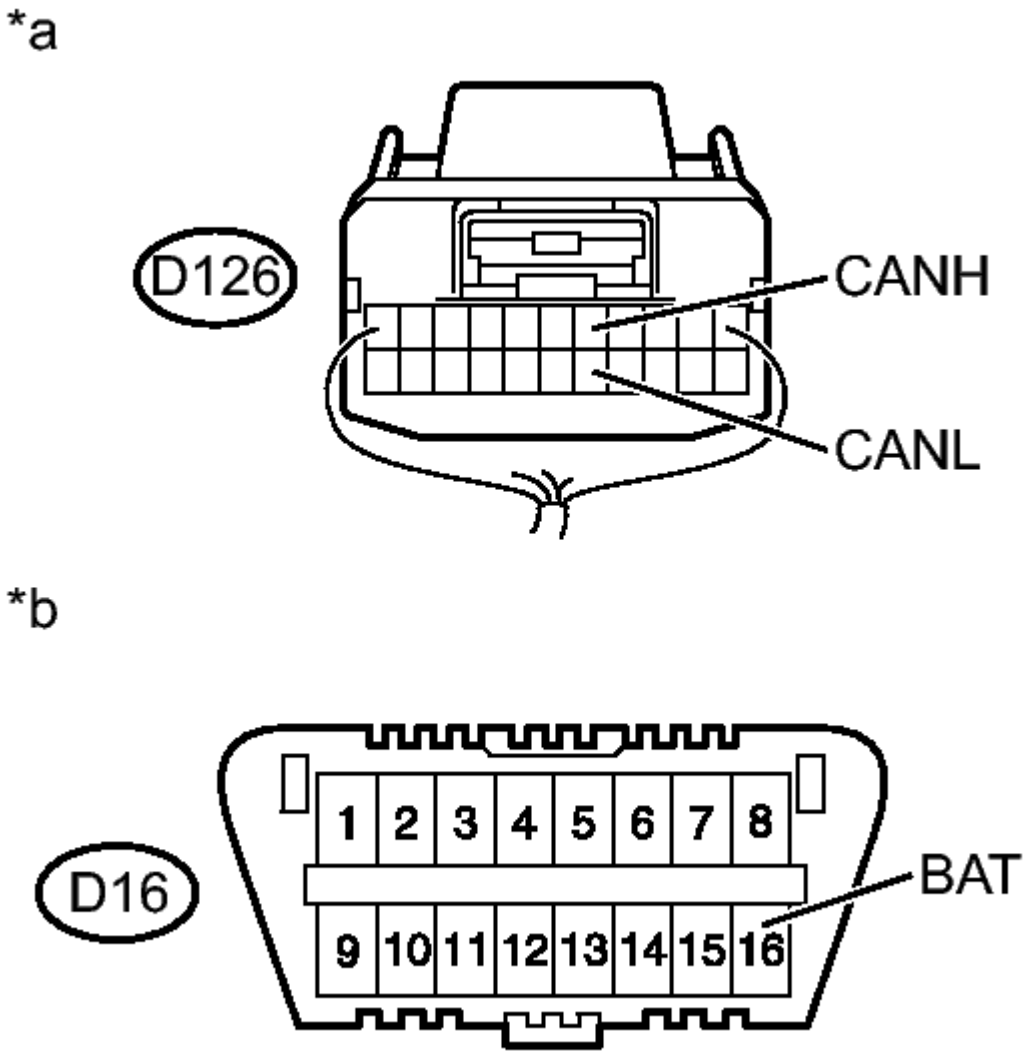


Fig. 189: Checking For Short To B+ In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-16 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 28

OK: Go to next step

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

HINT:

For vehicle without VDIM, go to step 17.

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

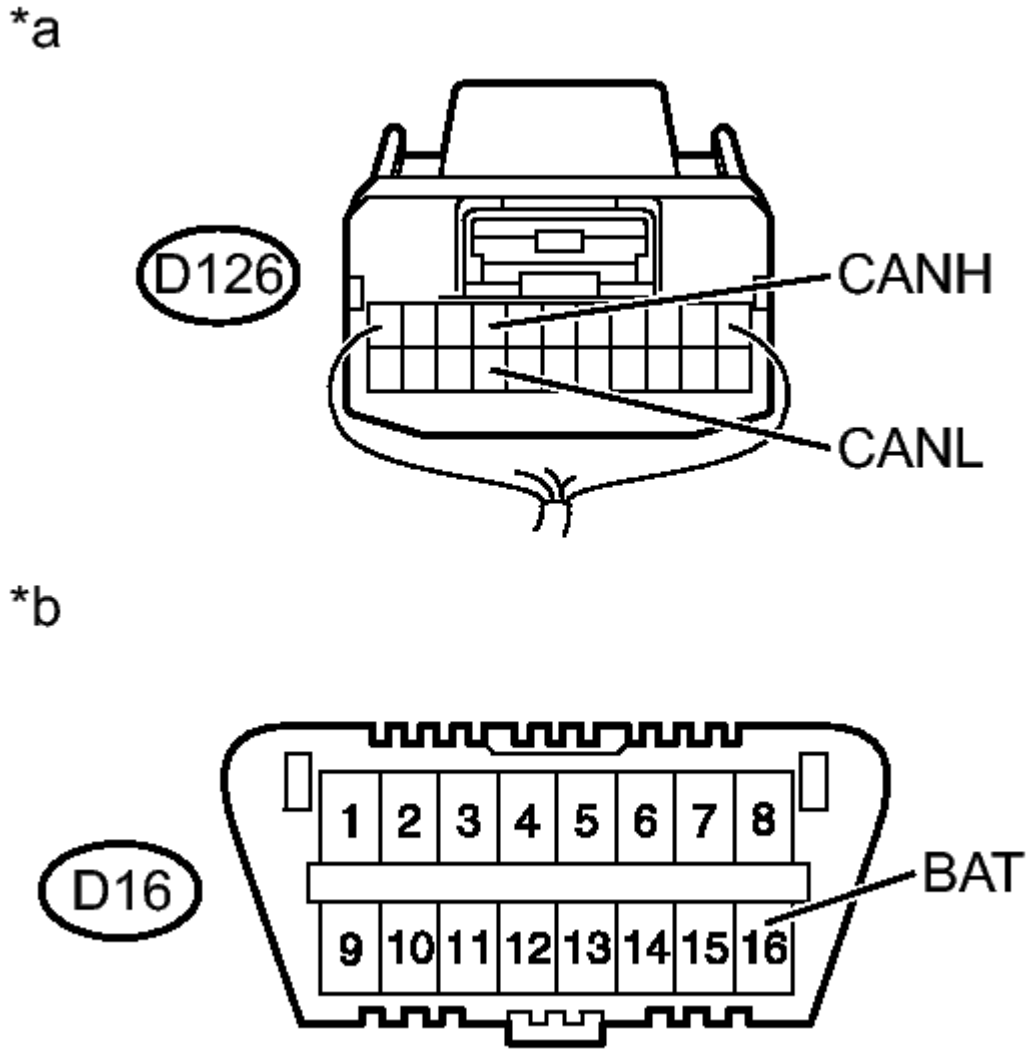


Fig. 190: Checking For Short To B+ In CAN BUS Wire (No. 1 Junction Connector - Yaw Rate Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-8 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-19 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 29

OK: Go to next step

17. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Measure the resistance according to the value(s) in the table below.

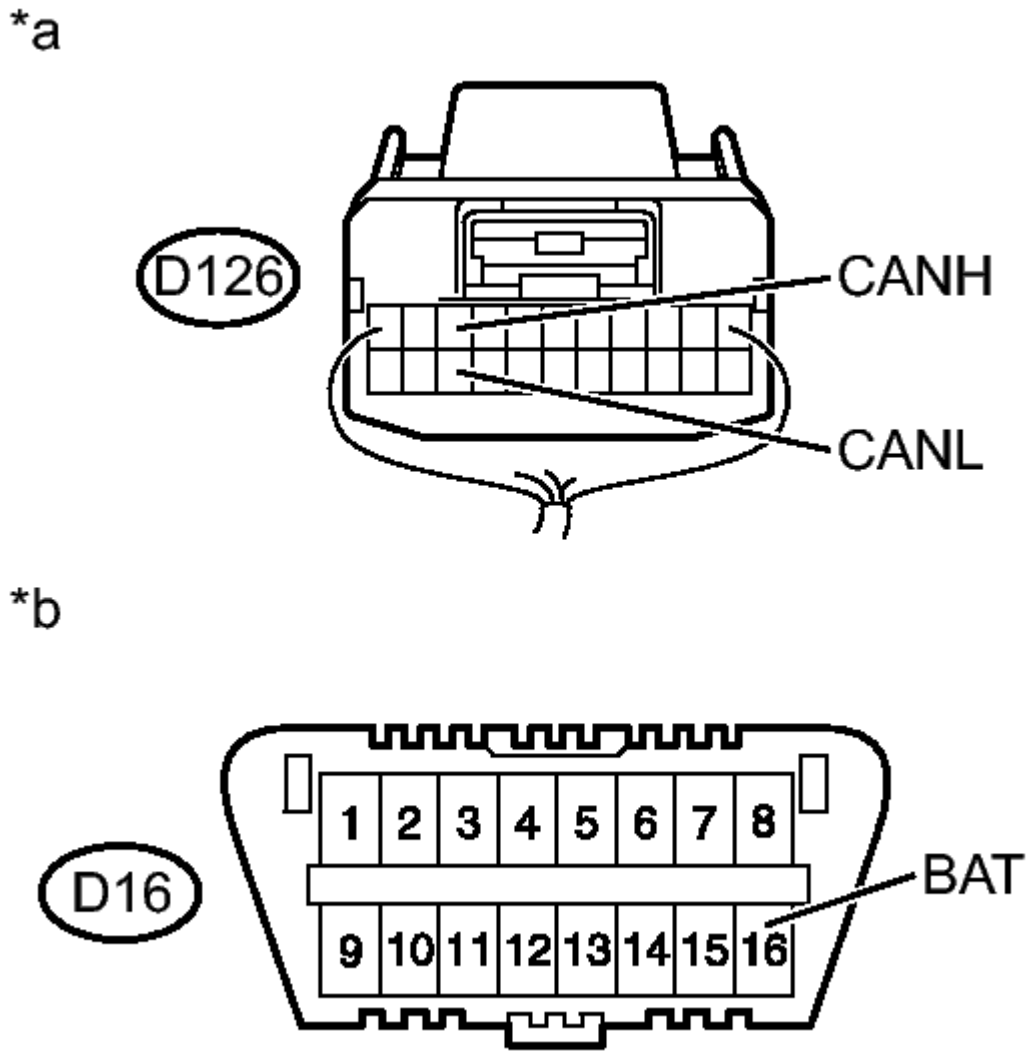


Fig. 191: Checking For Short To B+ In CAN BUS Wire (Center Airbag Sensor Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-9 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-20 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 30

OK: Go to next step

18. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - 4WD CONTROL ECU)**

HINT:

For vehicle without 4WD, go to step 19.

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

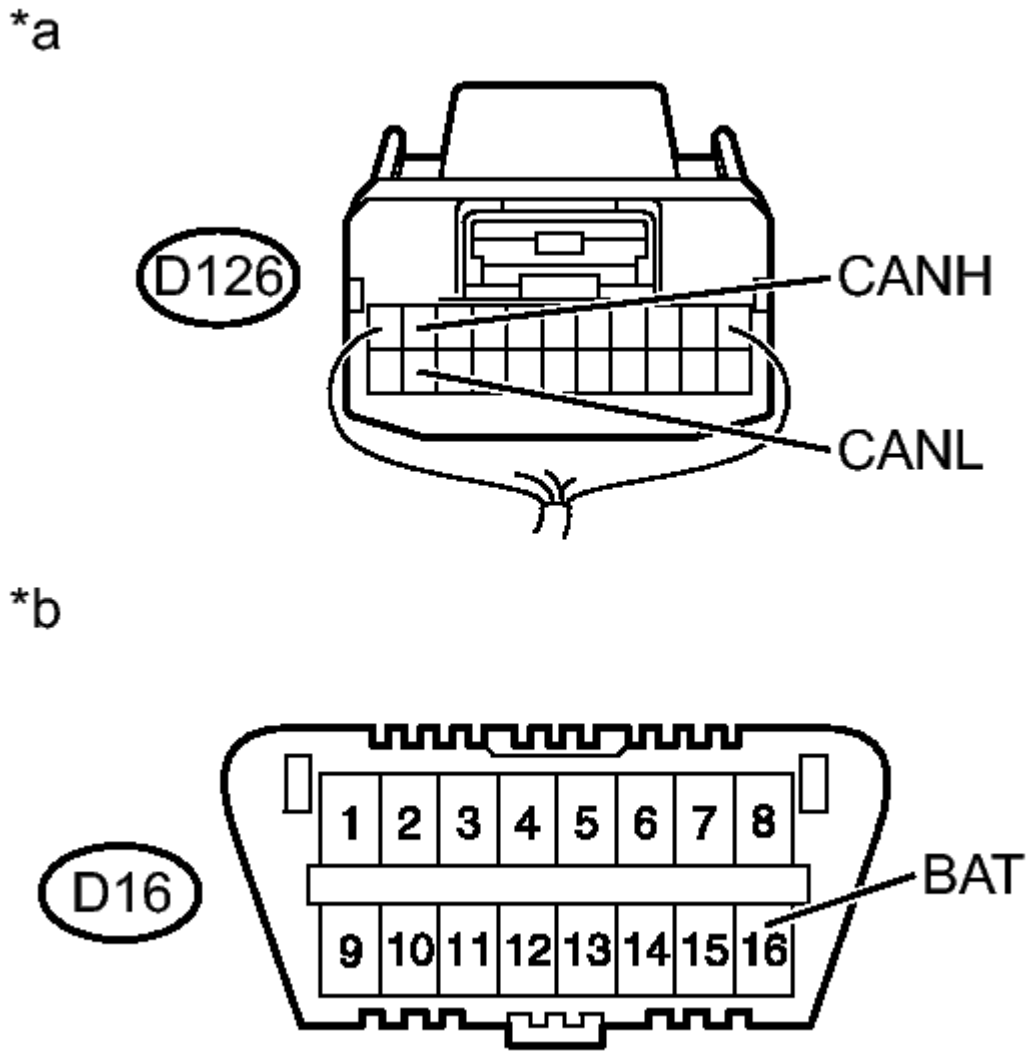


Fig. 192: Checking For Short To B+ In CAN BUS Wire (No. 1 Junction Connector - 4WD Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-10 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-21 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 31

OK: Go to next step

19. **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.

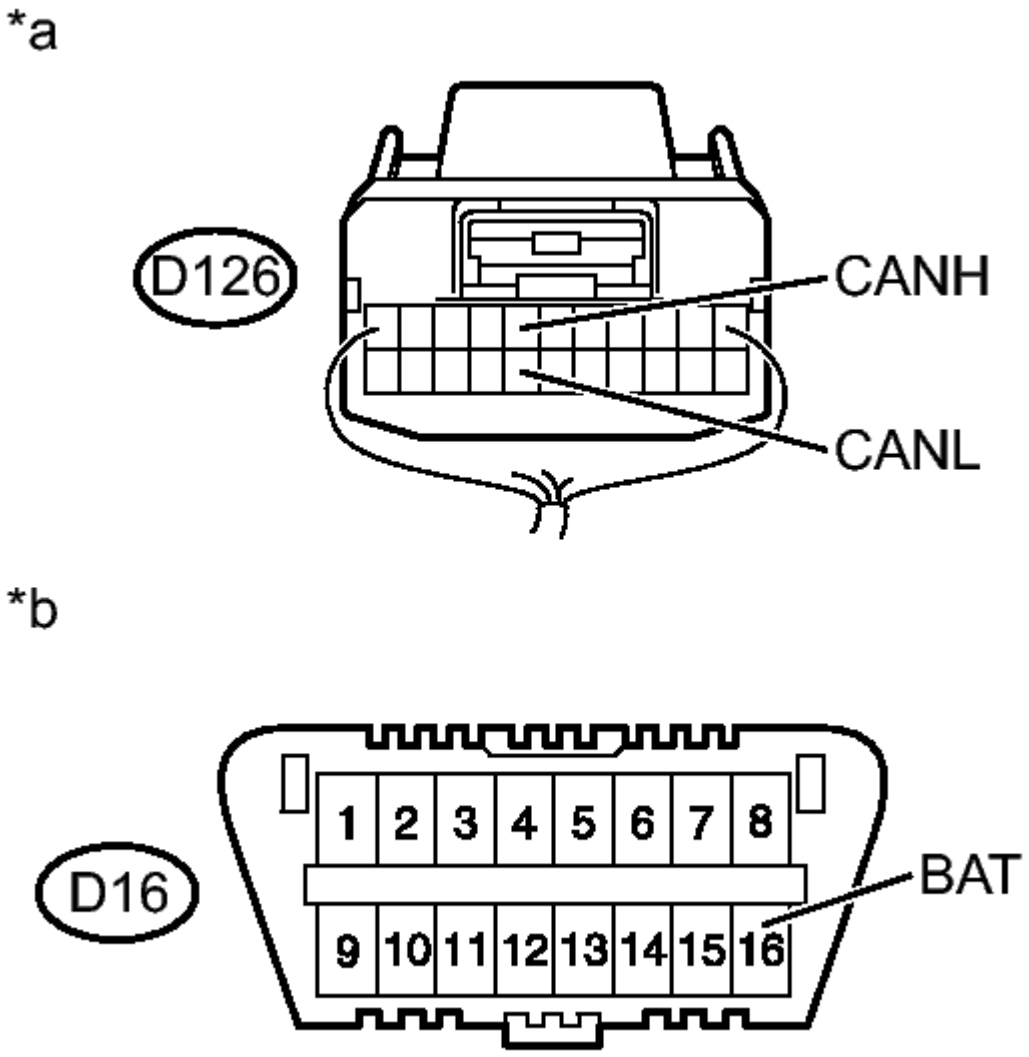


Fig. 193: Checking For Short To B+ In CAN BUS Wire (No. 1 Junction Connector - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-18 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 32

OK --> REPAIR OR REPLACE NO. 1 JUNCTION CONNECTOR

20. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CERTIFICATION ECU)**
    a. Disconnect the D88 certification ECU connector.

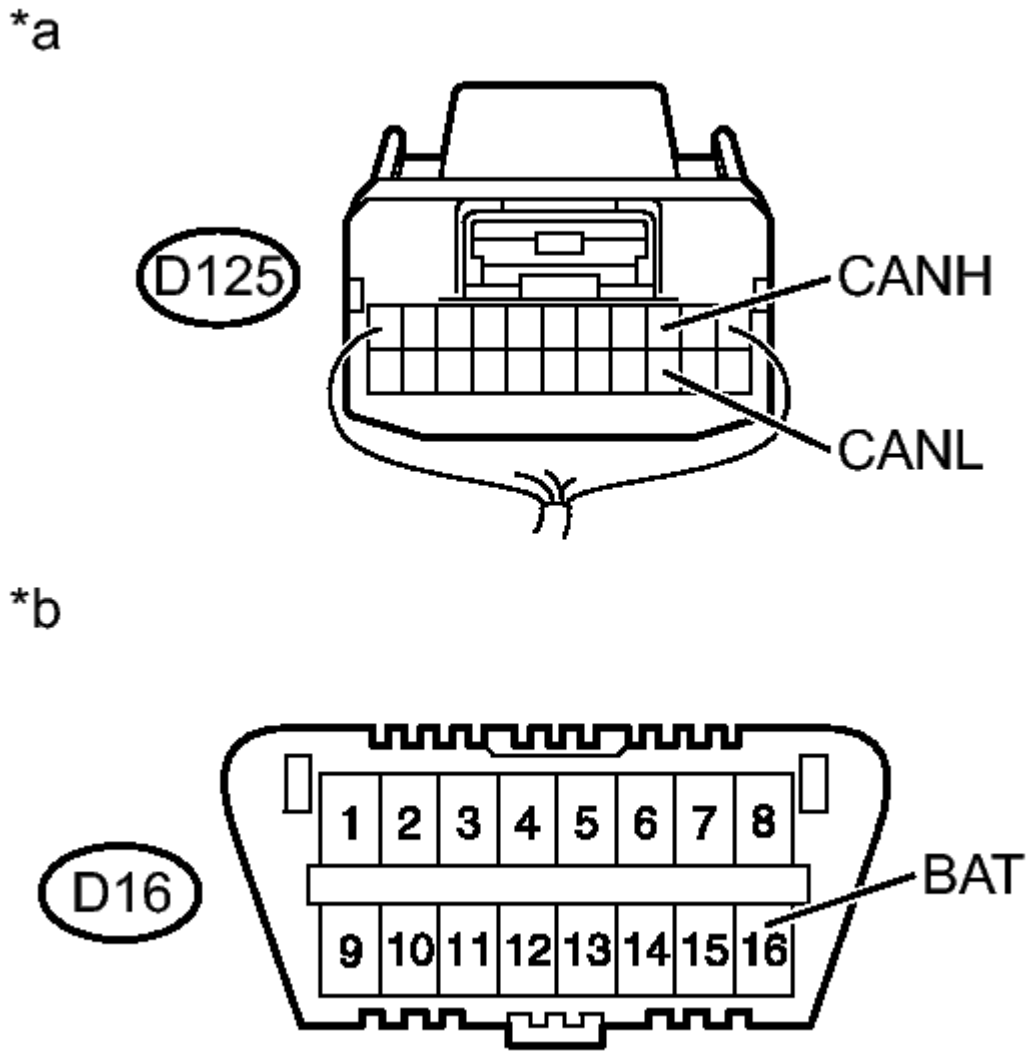


Fig. 194: Checking For Short To B+ In CAN BUS Wire (Certification ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-3 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-14 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CERTIFICATION ECU (CAN-H, CAN-L)

OK --> See step 33

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

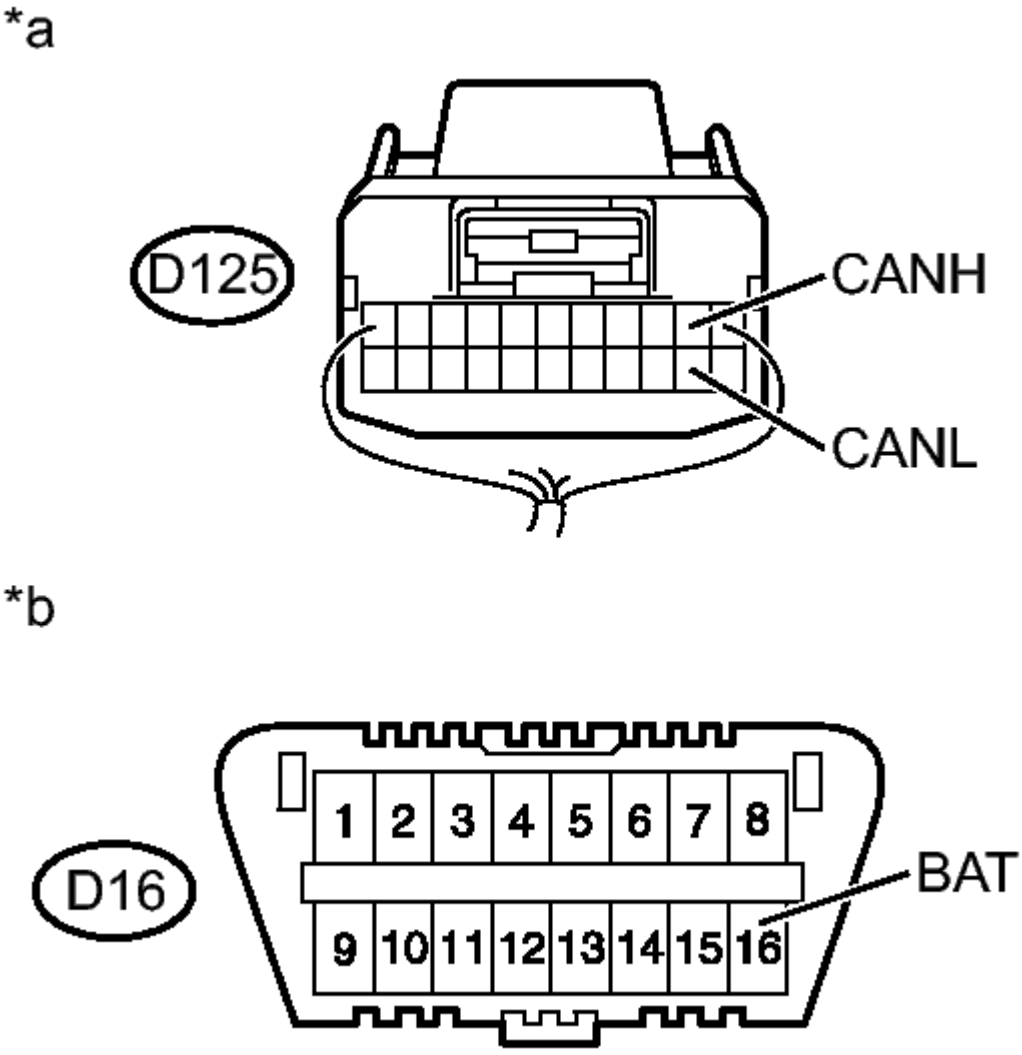


Fig. 195: Checking For Short To B+ In CAN BUS Wire (Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D75 air conditioning amplifier connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-2 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-13		

(CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AIR CONDITIONING AMPLIFIER (CAN-H, CAN-L)

OK --> See step 34

22. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (SKID CONTROL ECU)**

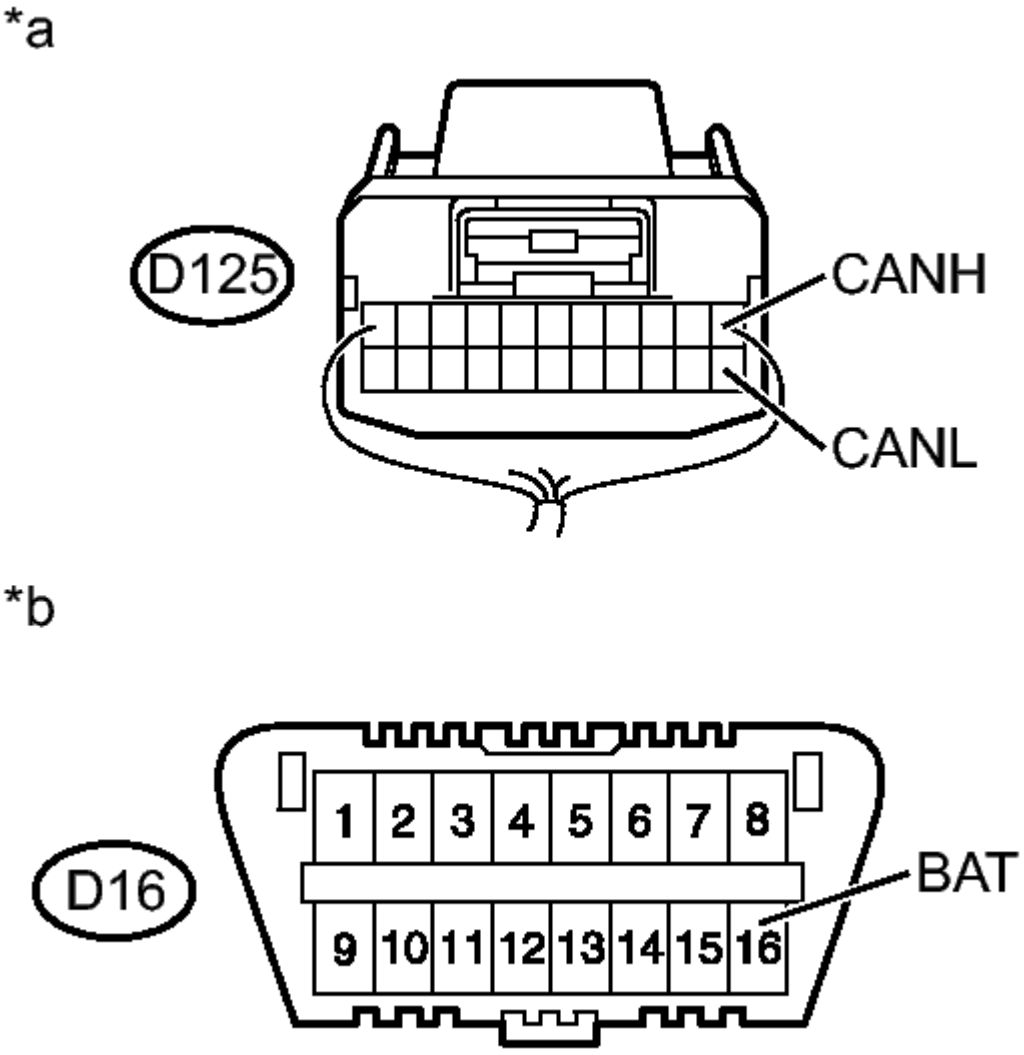


Fig. 196: Checking For Short To B+ In CAN BUS Wire (Skid Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A4 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
D125-1 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-12		

(CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SKID CONTROL ECU (CAN-H, CAN-L)

OK --> See step 35

23. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (COMBINATION METER ECU)**
    a. Disconnect the D18 combination meter ECU connector.

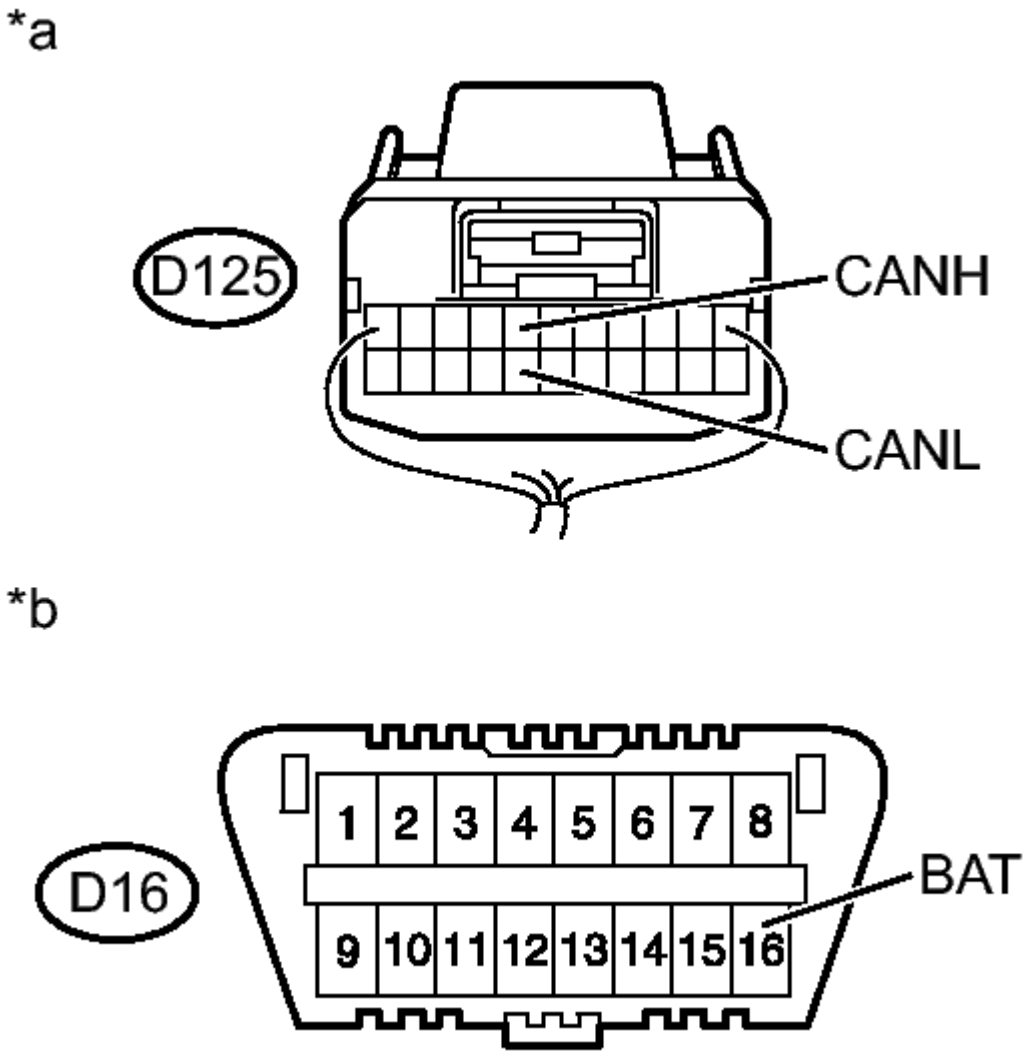


Fig. 197: Checking For Short To B+ In CAN BUS Wire (No. 2 Junction Connector - Combination Meter ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D125-18 (CANL) -	Ignition	6 kohms

D16-16 (BAT)	switch off	or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ECU (CAN-H, CAN-L)

OK --> See step 36

24. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (STEERING ANGLE SENSOR)**
    a. Disconnect the D22 steering angle sensor connector.

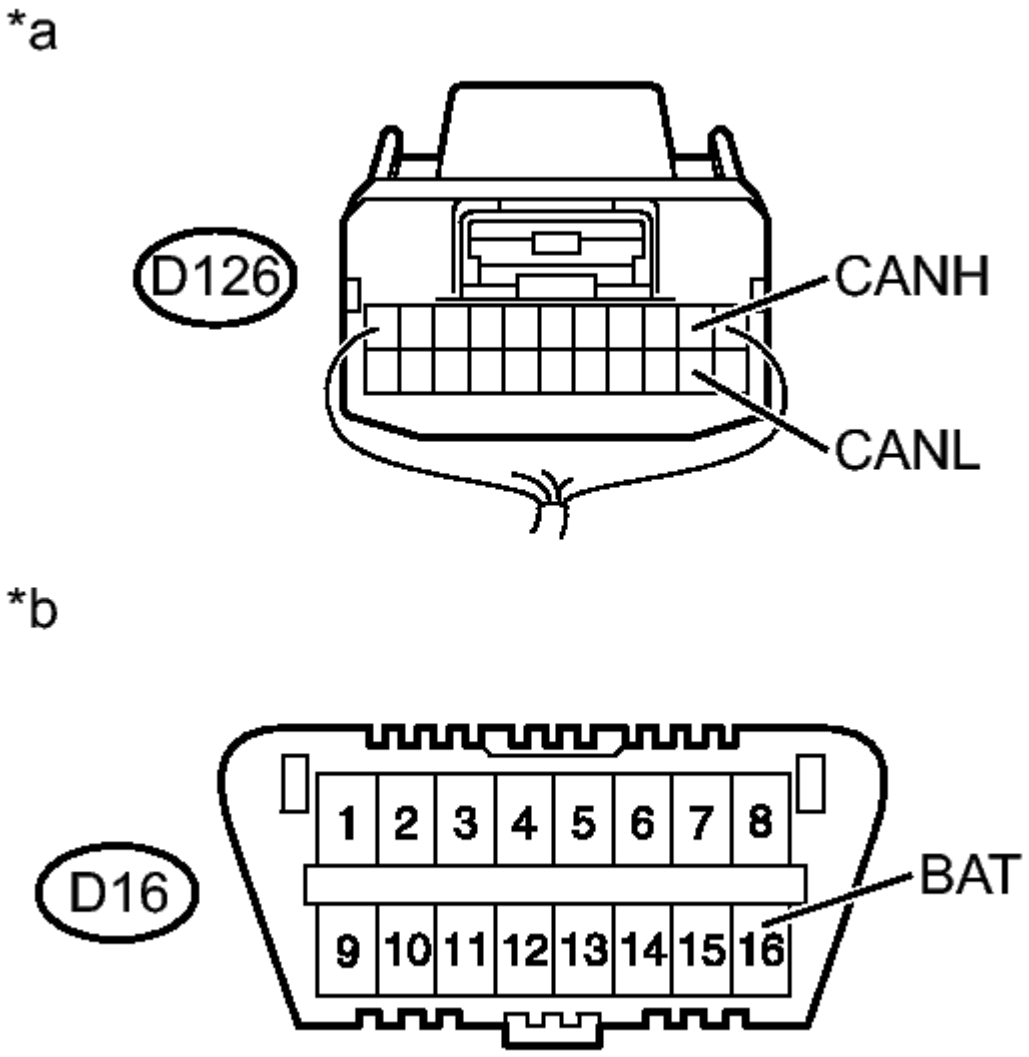


Fig. 198: Checking For Short To B+ In CAN BUS Wire (Steering Angle Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-2 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-13 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK --> See step 37

25. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (POWER STEERING ECU)**
    a. Disconnect the D35 power steering ECU connector.

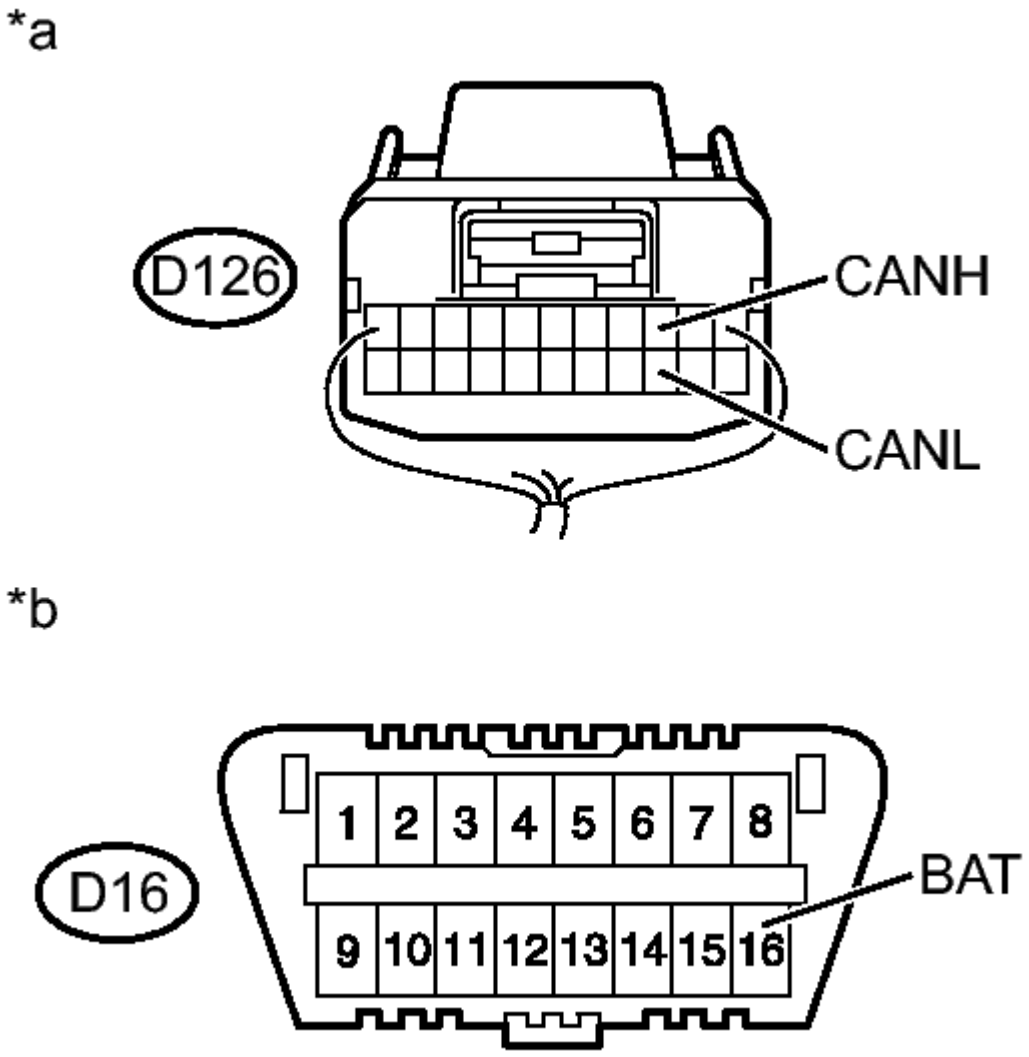


Fig. 199: Checking For Short To B+ In CAN BUS Wire (Power Steering ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-3 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-14 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CAN-H, CAN-L)

OK --> See step 38

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

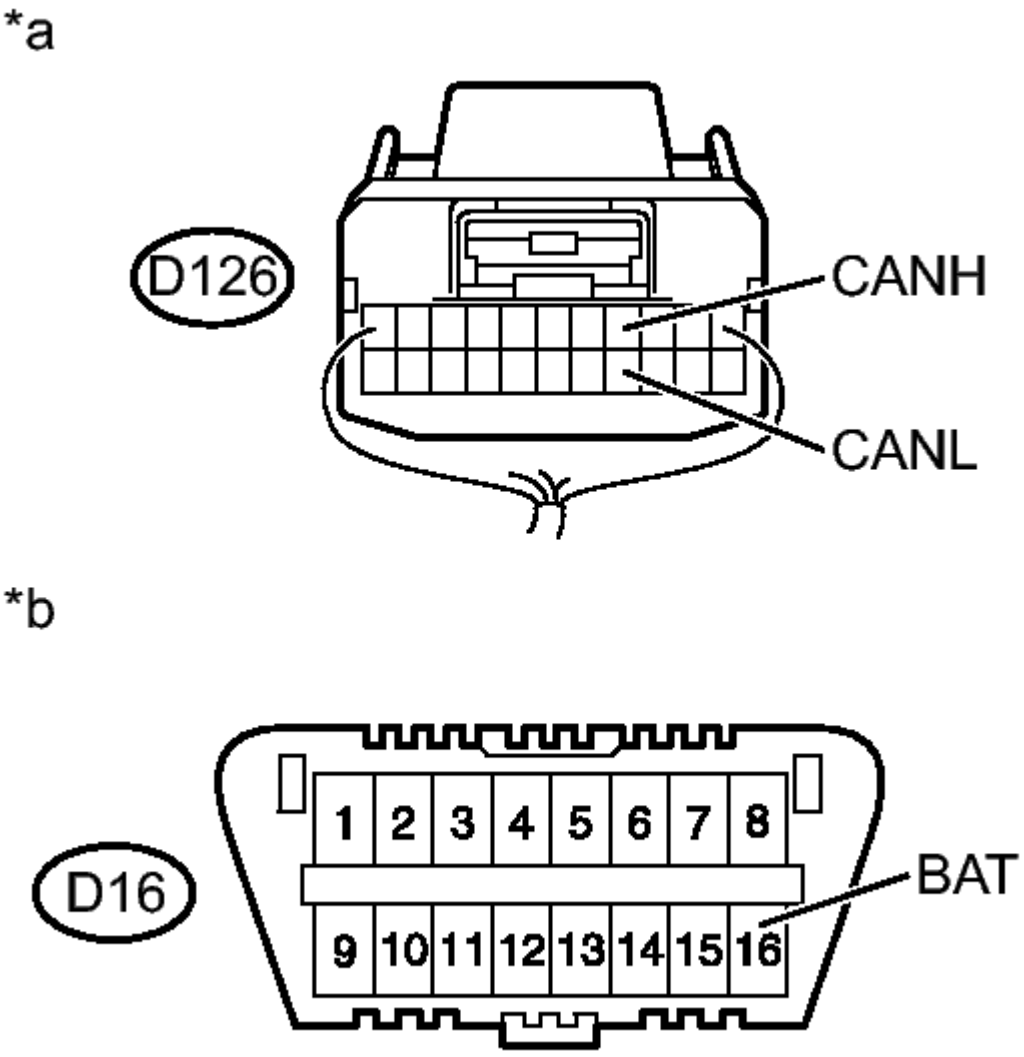


Fig. 200: Checking For Short To B+ In CAN BUS Wire (Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D13 main body ECU connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-4 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-15		

(CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO MAIN BODY ECU (CAN-H, CAN-L)

OK --> See step 39

27. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D89 power management control ECU connector.

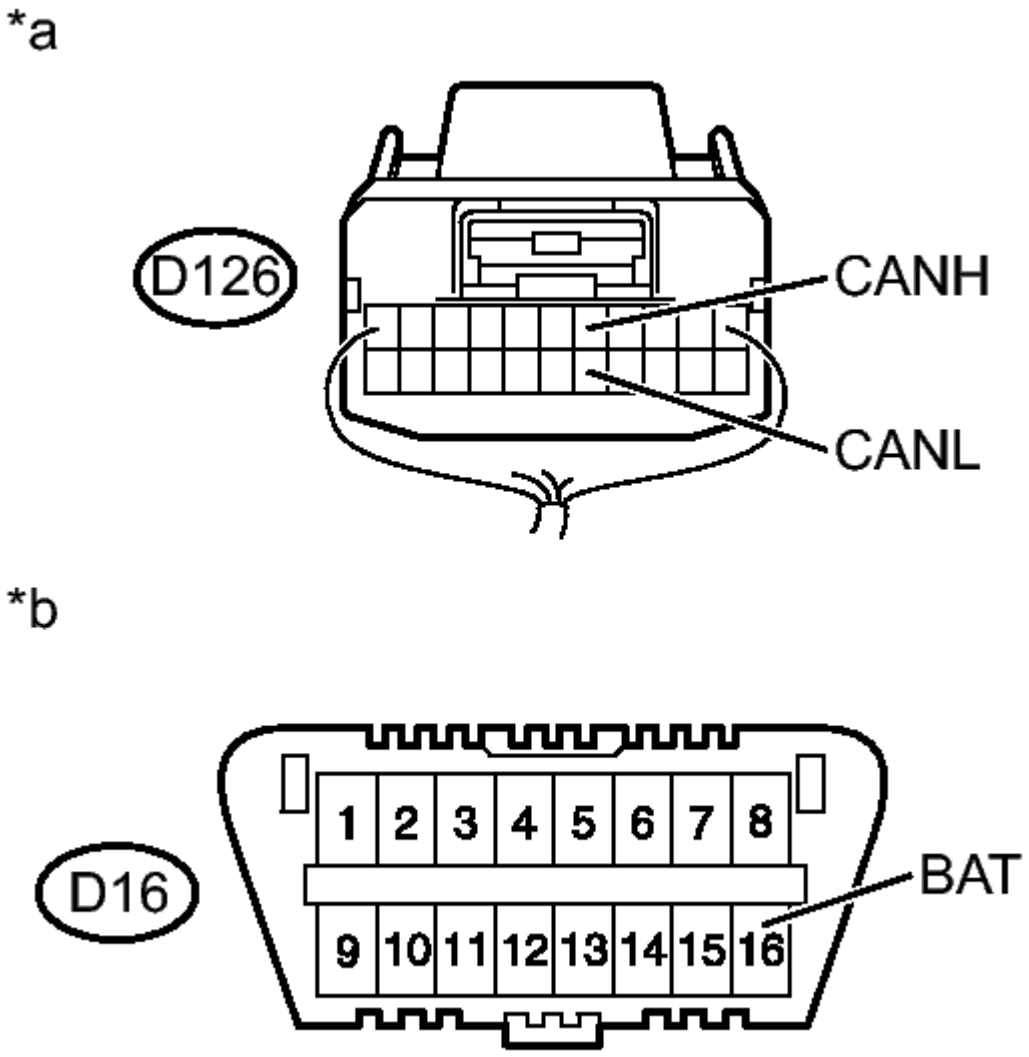


Fig. 201: Checking For Short To B+ In CAN BUS Wire (Power Management Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-16 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (CAN-H, CAN-L)

OK --> See step 40

28. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (NETWORK GATEWAY ECU)**
    a. Disconnect the D90 network gateway ECU connector.

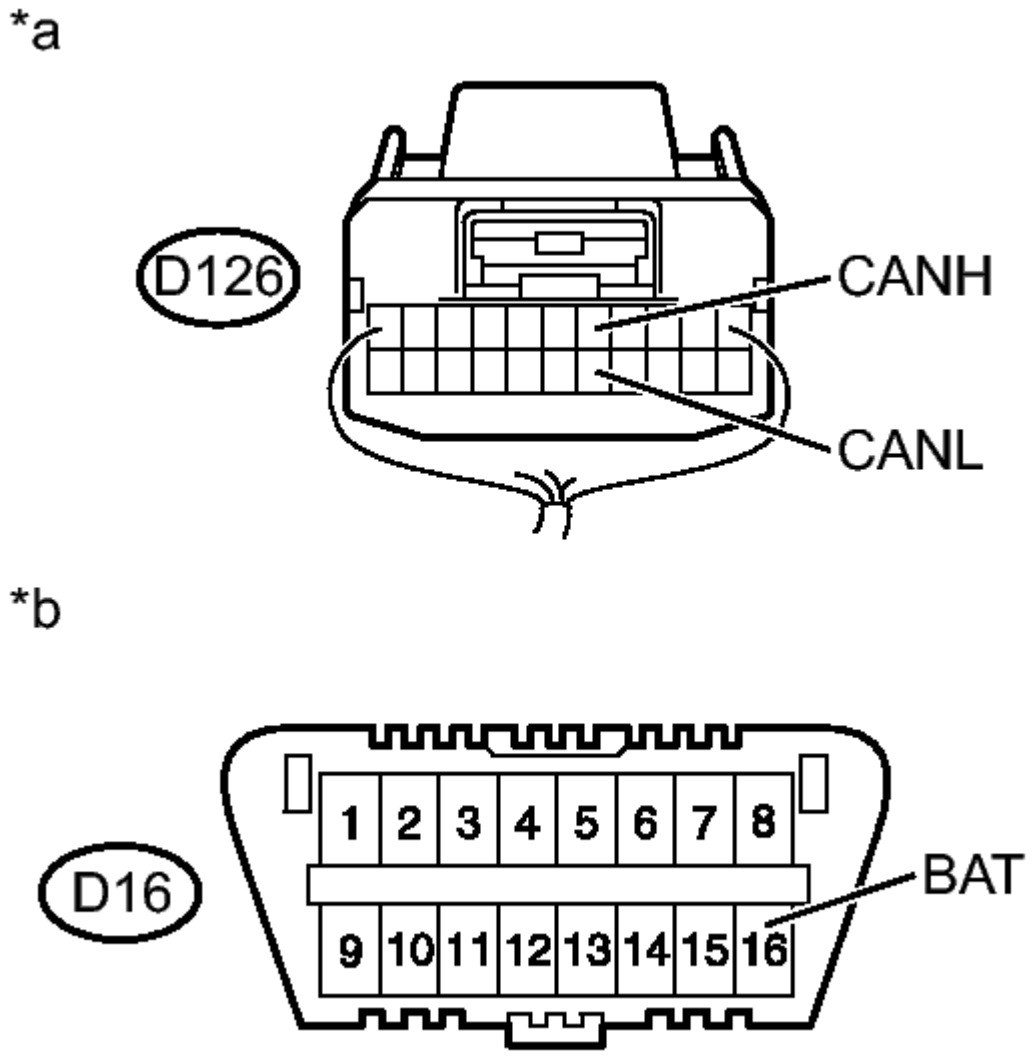


Fig. 202: Checking For Short To B+ In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-16 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO NETWORK GATEWAY ECU (CAN-H, CAN-L)

OK --> See step 41

29. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (YAW RATE SENSOR)**
    a. Disconnect the L6 yaw rate sensor connector.

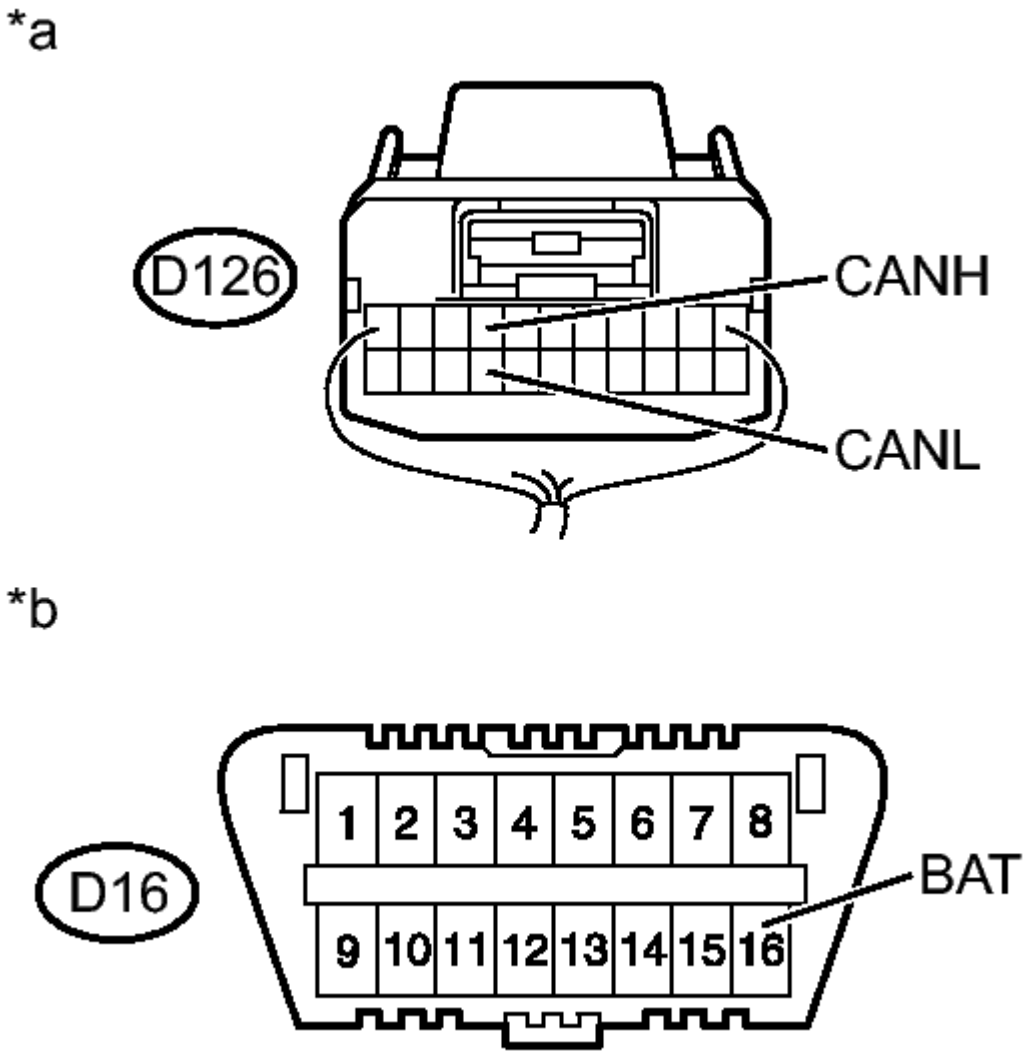


Fig. 203: Checking For Short To B+ In CAN BUS Wire (Yaw Rate Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-8 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-19 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK --> See step 42

30. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Disconnect the D40 center airbag sensor assembly connector.

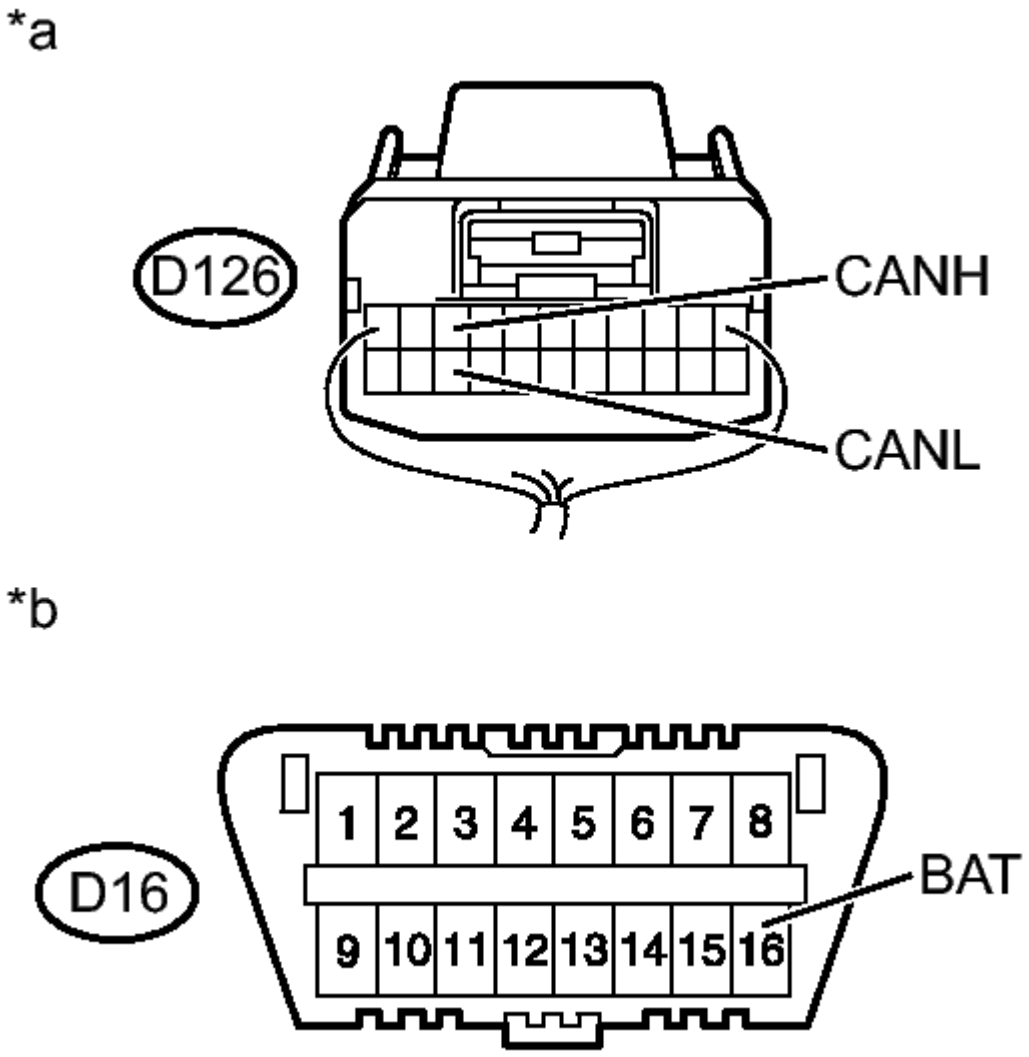


Fig. 204: Checking For Short To B+ In CAN BUS Wire (Center Airbag Sensor Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-9 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-20 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CENTER AIRBAG SENSOR ASSEMBLY (CAN-H, CAN-L)

OK --> See step 43

31. **CHECK FOR SHORT TO B+ IN CAN BUS WIRE (4WD CONTROL ECU)**
    a. Disconnect the K1 4WD control ECU connector.

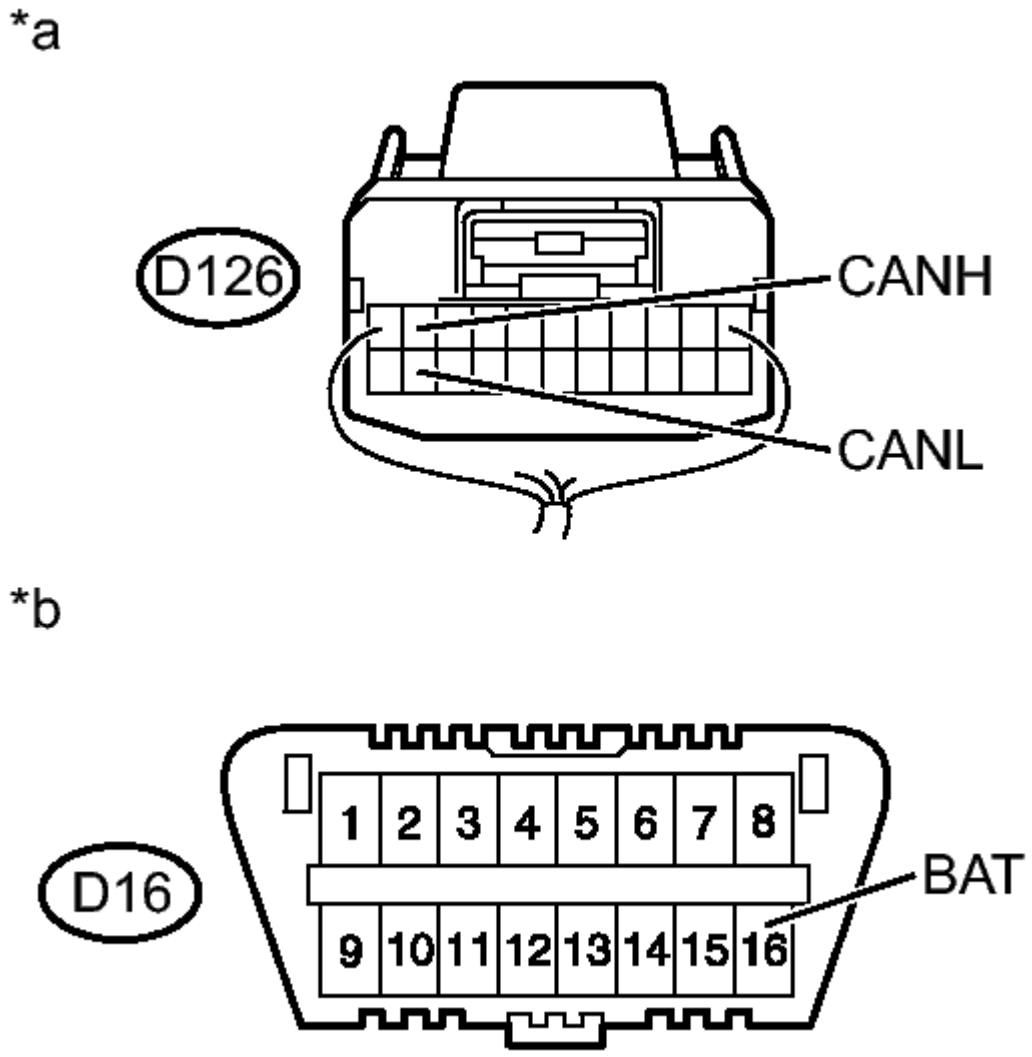


Fig. 205: Checking For Short To B+ In CAN BUS Wire (4WD Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-10 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher
D126-21 (CANL) - D16-16	Ignition switch off	6 kohms or higher

(BAT)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO 4WD CONTROL ECU (CAN-H, CAN-L)

OK --> See step 44

32. **CHECK CAN BUS LINE FOR DISCONNECTION (ECM MAIN WIRE)**
    a. Disconnect the A39*1 or A55*2 ECM connector.

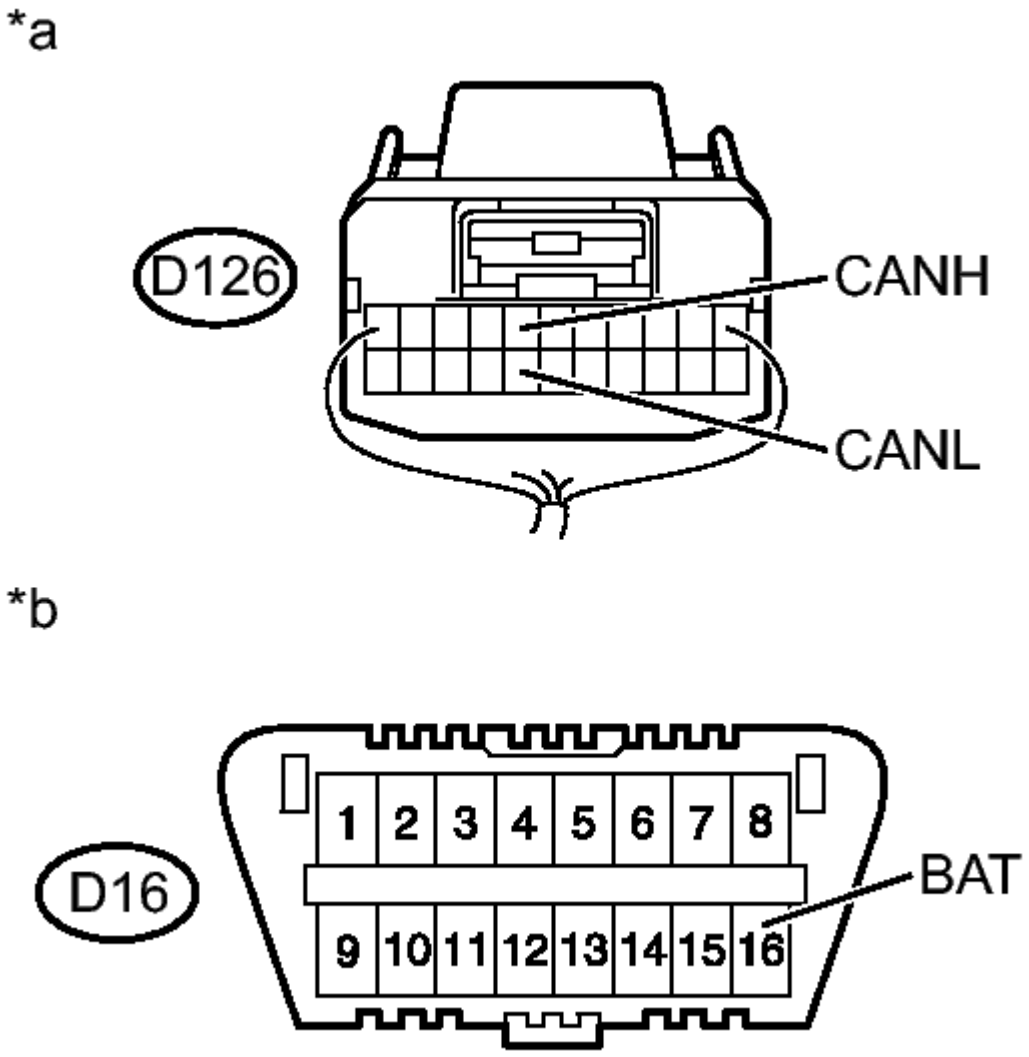


Fig. 206: Checking CAN BUS Line For Disconnection (ECM Main Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

*1: for 2GR-FE

*2: for 1AR-FE

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

D126-18 (CANL) - D16-16 (BAT)	Ignition switch off	6 kohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
NG	A
OK (for 2GR-FE engine)	B
OK (for 1AR-FE engine)	C

B --> See step 45

C --> See step 46

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

33. **REPLACE CERTIFICATION ECU. Refer to REMOVAL**
34. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**
35. **REPLACE SKID CONTROL ECU. Refer to REMOVAL**
36. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
37. **REPLACE STEERING ANGLE SENSOR. Refer to REMOVAL**
38. **REPLACE STEERING COLUMN ASSEMBLY (POWER STEERING ECU). Refer to REMOVAL**
39. **REPLACE MAIN BODY ECU. Refer to REMOVAL**

40. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
41. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**
42. **REPLACE YAW RATE SENSOR. Refer to REMOVAL**
43. **REPLACE CENTER AIRBAG SENSOR ASSEMBLY. Refer to REMOVAL**
44. **REPLACE 4WD CONTROL ECU. Refer to REMOVAL**
45. **REPLACE ECM. Refer to REMOVAL**
46. **REPLACE ECM. Refer to REMOVAL**

Check CAN BUS Line for Short to GND

DESCRIPTION

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

Symptom	Trouble Area
There is resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of the DLC3.	• Short to GND • ECM • Center airbag sensor assembly • Power management control ECU*1 • Certification ECU*1 • Air conditioning amplifier assembly*2 • Network gateway ECU*2 • Main body ECU • Combination meter assembly • 4WD control ECU*3 • Yaw rate sensor*4 • Skid control ECU*4, *5 • Steering angle sensor • Power steering ECU • No. 1 junction connector • No. 2 junction connector

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: for AWD

*4: w/ VDIM

*5: w/ VSC

WIRING DIAGRAM

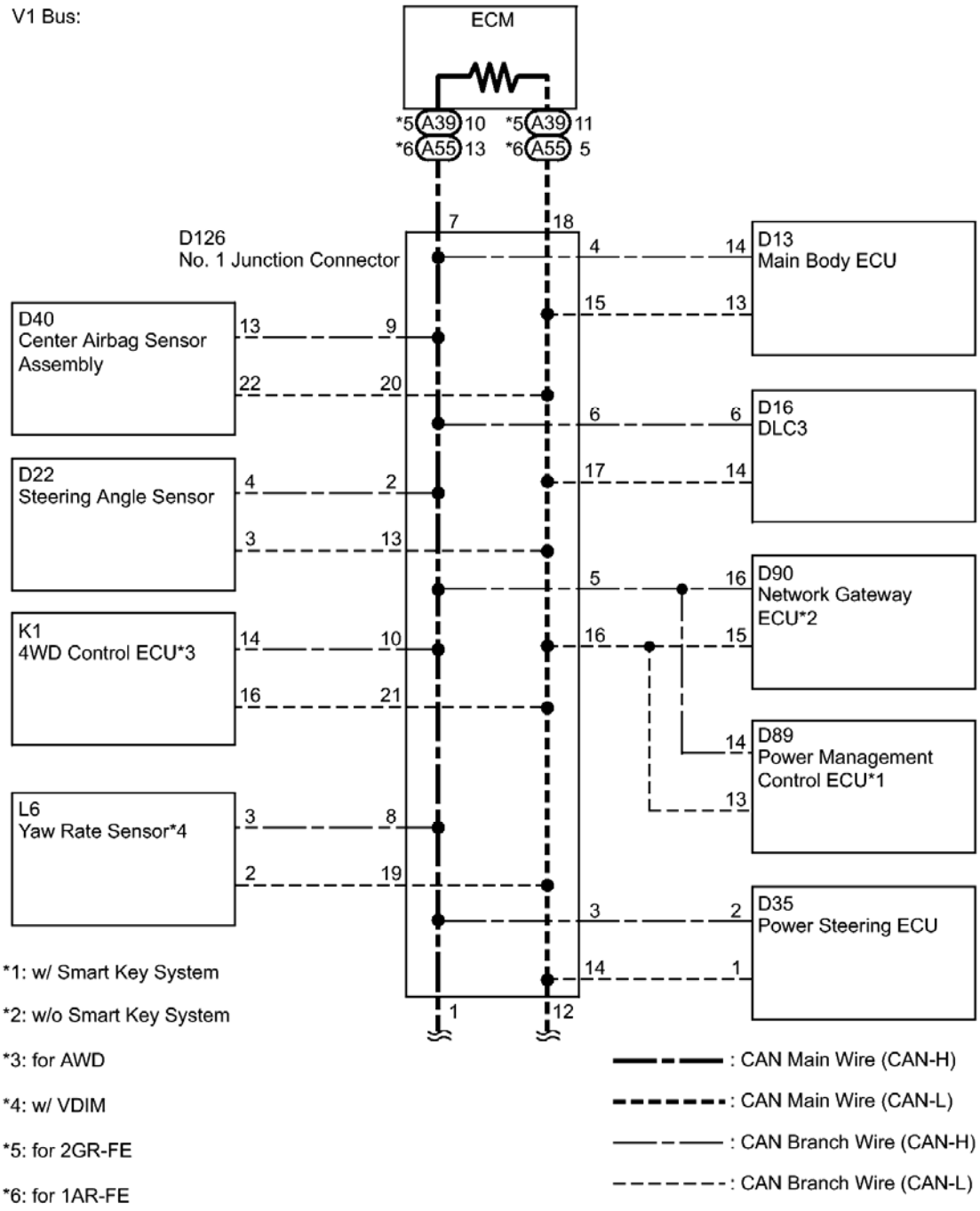


Fig. 207: CAN BUS Lines Wiring Diagram (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

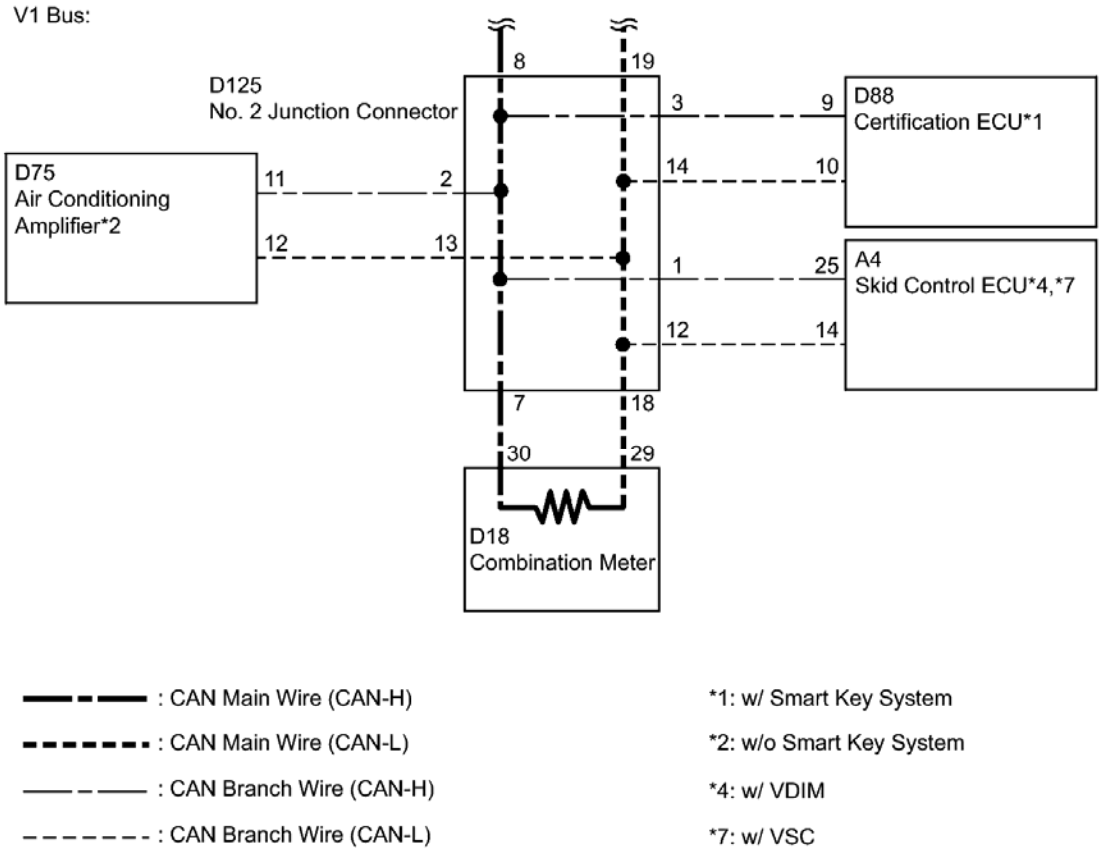


Fig. 208: CAN BUS Lines Wiring Diagram (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

HINT:

- Operating the ignition switch, any other switches or a door triggers related ECU and sensor communication on the CAN. This communication will cause the resistance value to change.

- Even after DTCs are cleared, if a DTC is stored again after driving the vehicle for a while, the malfunction may be occurring due to vibration of the vehicle. In such a case, wiggling the ECUs or wire harness while performing the inspection below may help determine the cause of the malfunction.

PROCEDURE

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

NEXT: Go to next step

2. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (DLC3 BRANCH WIRE)**
   a. Disconnect the D126 No. 1 junction connector connector.

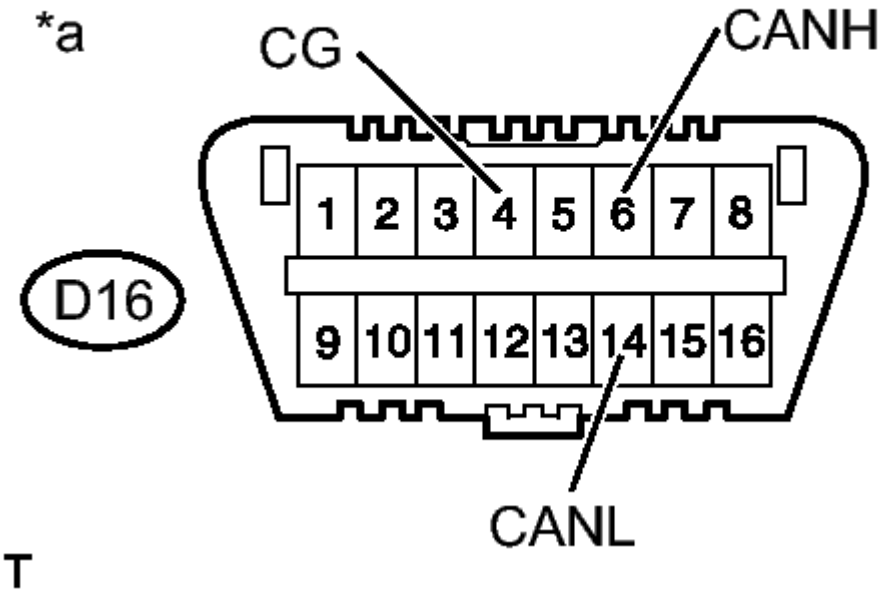


Fig. 209: Checking For Short To Gnd In CAN BUS Wire (DLC3 Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D16-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

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

OK: Go to next step

3. **CONNECT CONNECTOR**
   a. Reconnect the D126 No. 1 junction connector connector.

NEXT: Go to next step

4. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR SIDE)**
   a. Disconnect the D125 No. 2 junction connector connector.

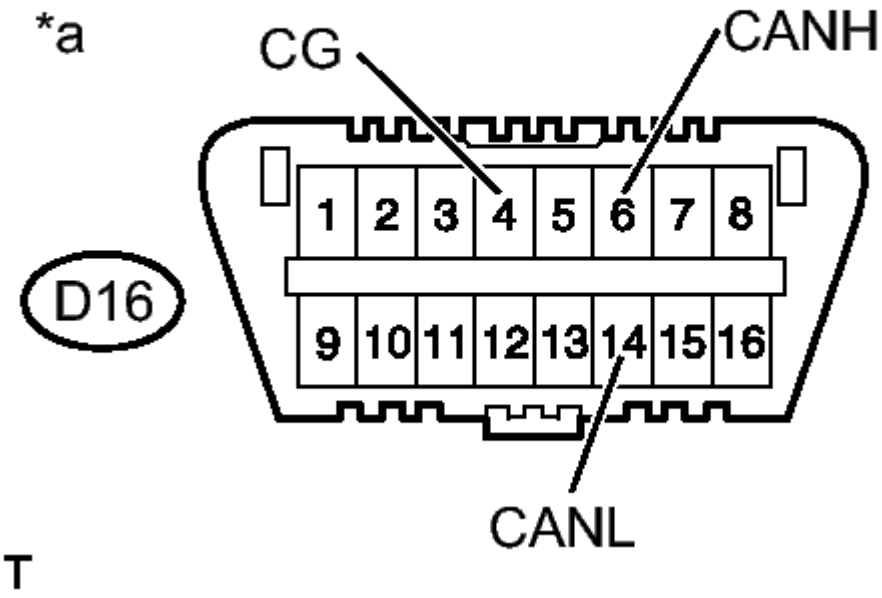


Fig. 210: Checking For Short To Gnd In CAN BUS Wire (DLC3 Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D16-6 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D16-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

NG --> See step 9

OK: Go to next step

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

HINT:

For vehicle without smart key system, go to step 6.

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

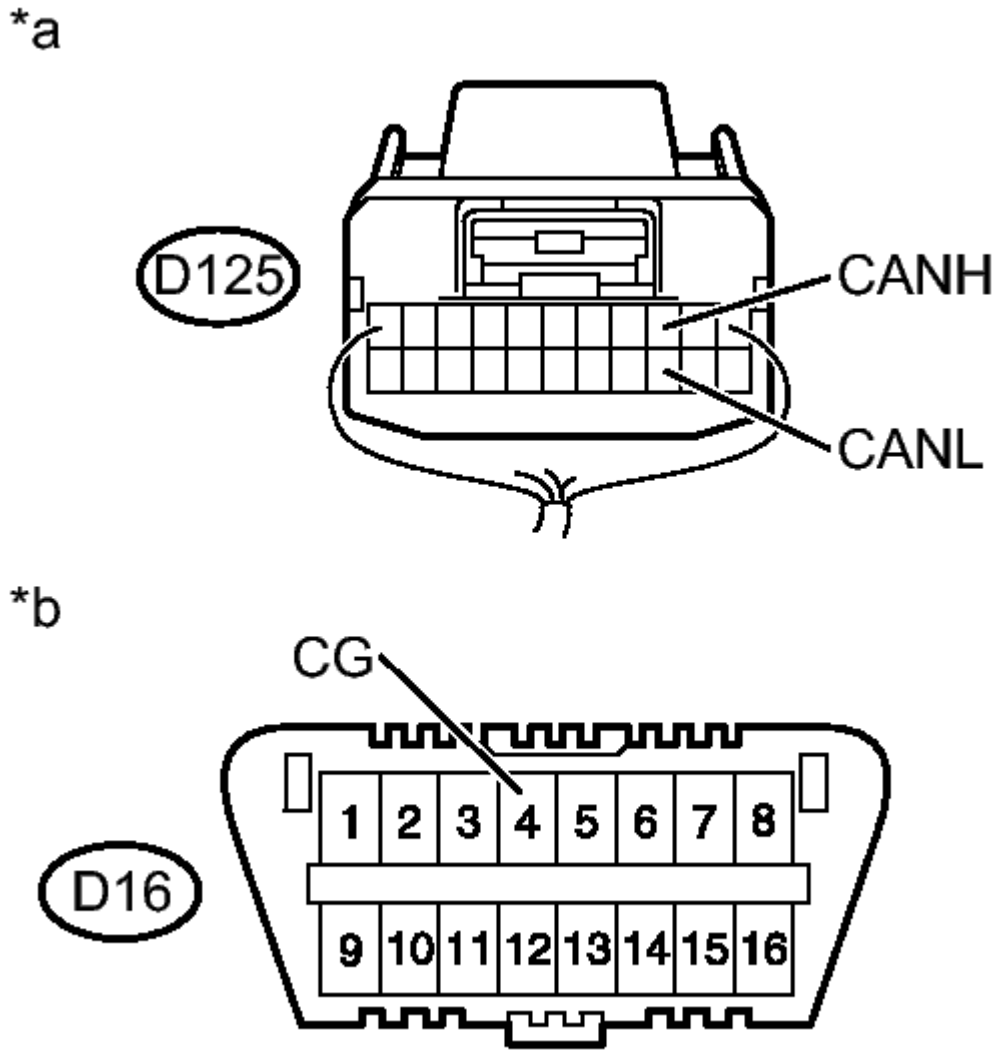


Fig. 211: Checking For Short To GND In CAN BUS Wire (Certification ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-3 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher

D125-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 20

OK: Go to next step

6. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 2 JUNCTION BLOCK - AIR CONDITIONING AMPLIFIER)**

HINT:

For vehicle with smart key system, go to step 7.

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

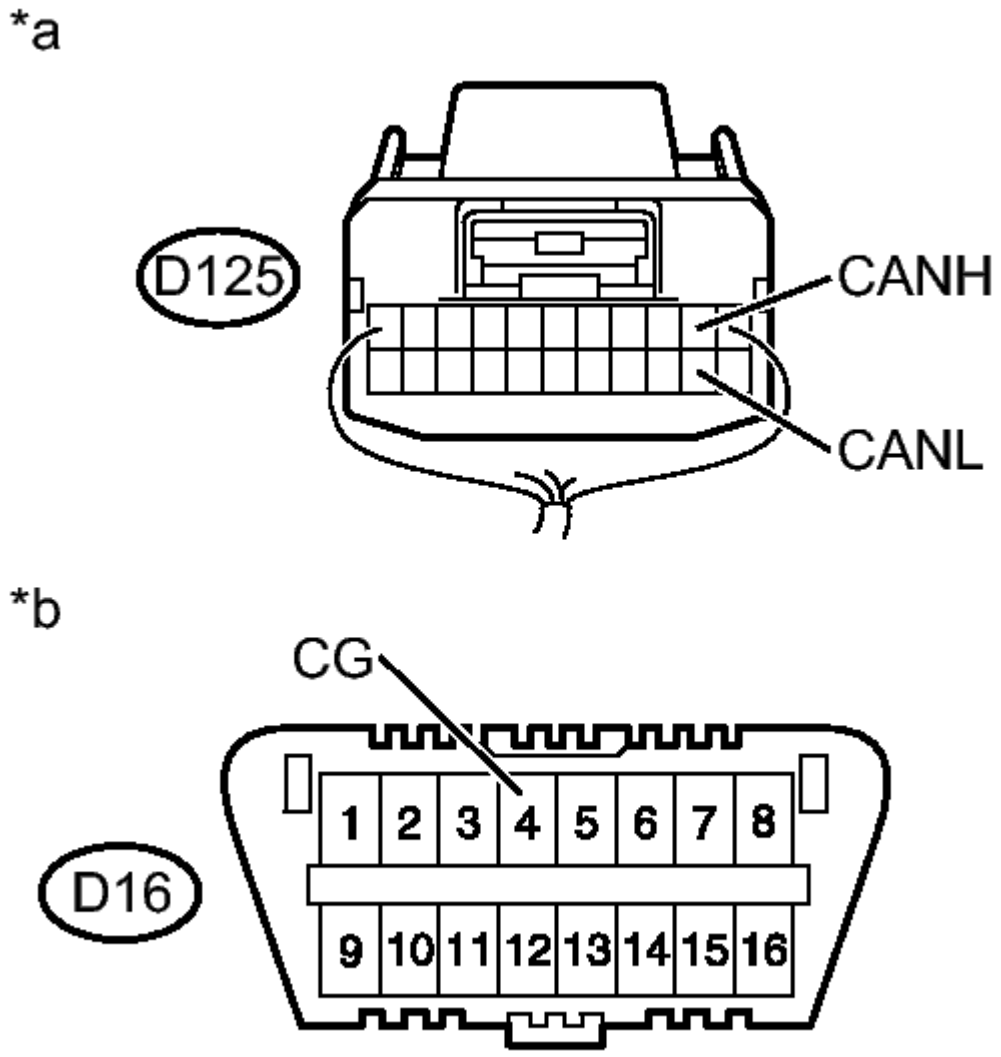


Fig. 212: Checking For Short To GND In CAN BUS Wire (Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-2 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-13 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 21

OK: Go to next step

7. **CHECK SHORT TO GND IN CAN BUS WIRE (NO. 2 JUNCTION BLOCK - SKID CONTROL ECU)**

HINT:

For vehicle without VSC or VDIM, go to step 8.

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

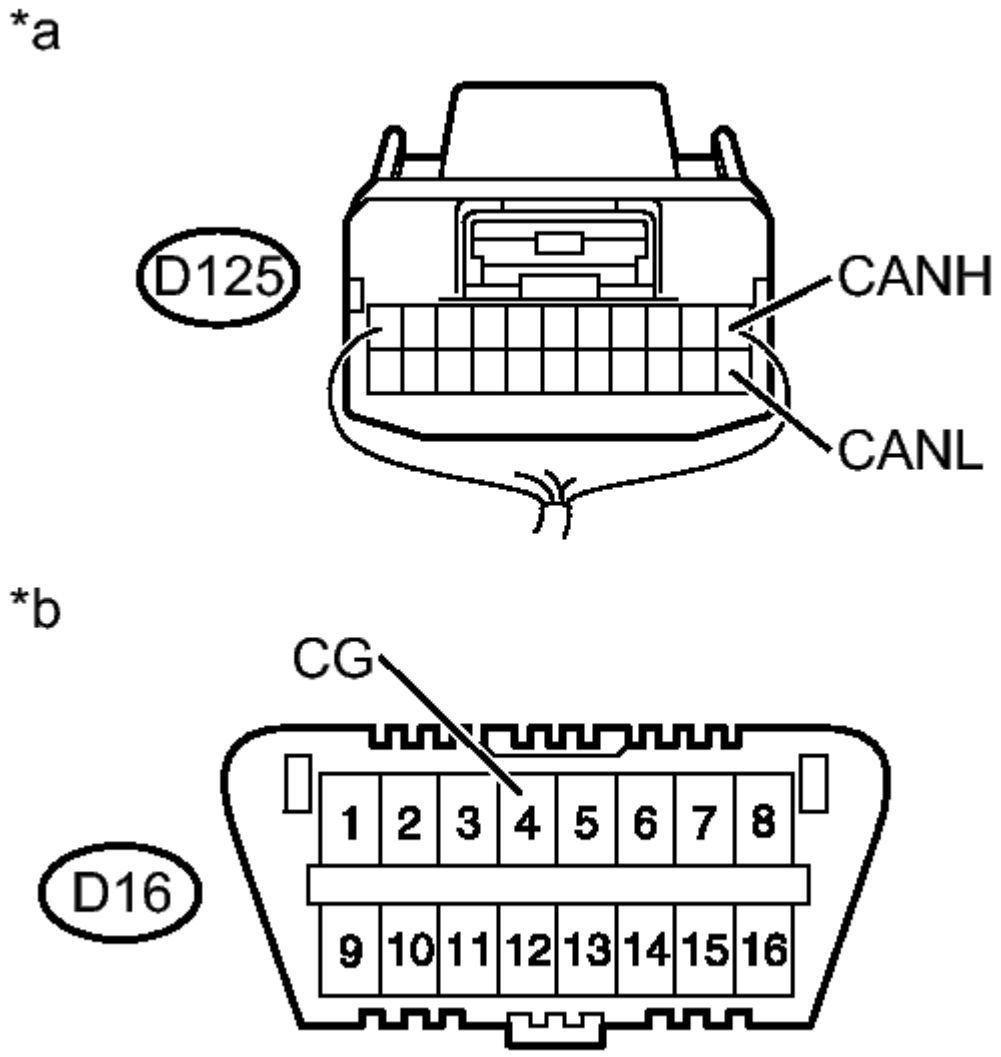


Fig. 213: Checking Short To GND In CAN BUS Wire (No. 2 Junction Block - Skid Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-12 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 22

OK: Go to next step

8. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 2 JUNCTION CONNECTOR - COMBINATION METER ECU)**
   a. Measure the resistance according to the value(s) in the table below.

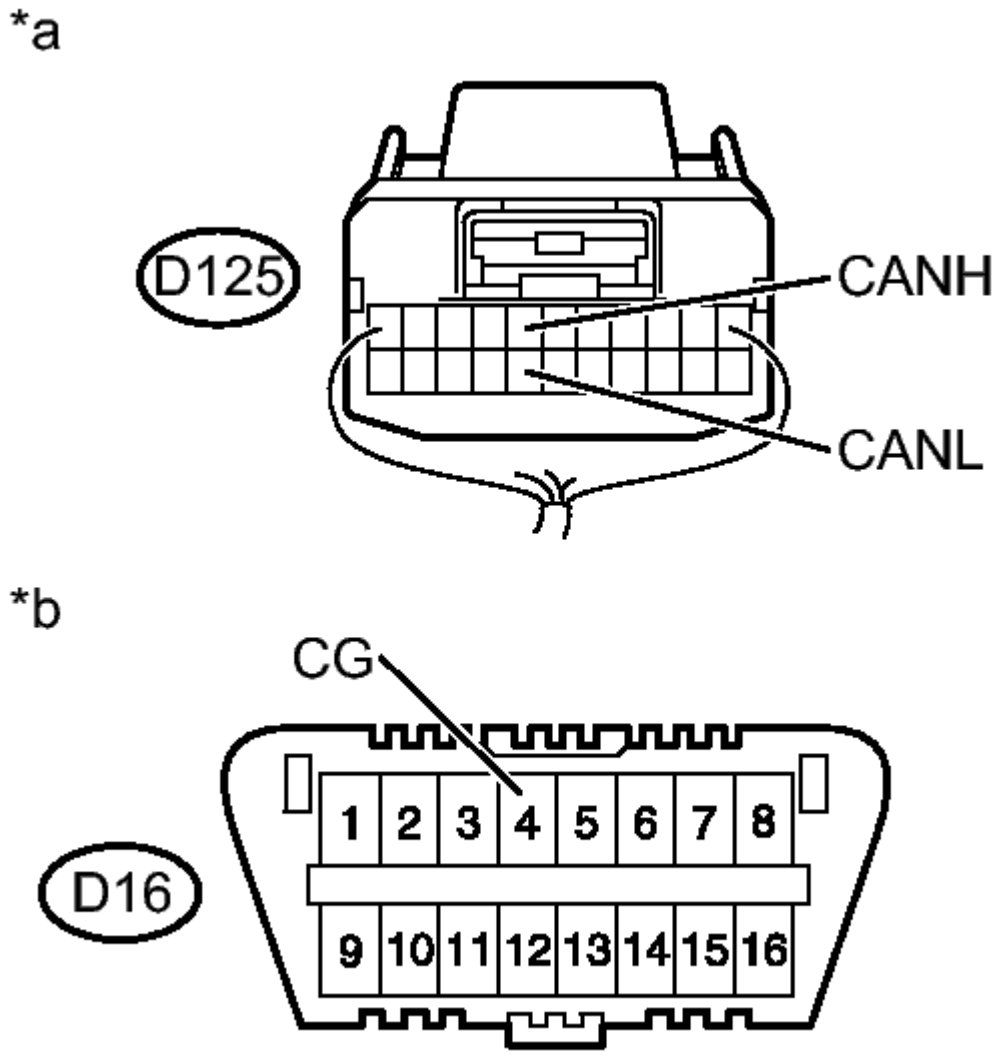


Fig. 214: Checking For Short To GND In CAN BUS Wire (Combination Meter ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-18 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> See step 23

OK --> REPAIR OR REPLACE NO. 2 JUNCTION CONNECTOR

9. **CONNECT CONNECTOR**
   a. Reconnect the D125 No. 2 junction connector connector.

NEXT: Go to next step

10. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)**
    a. Disconnect the D126 No. 1 junction connector connector.

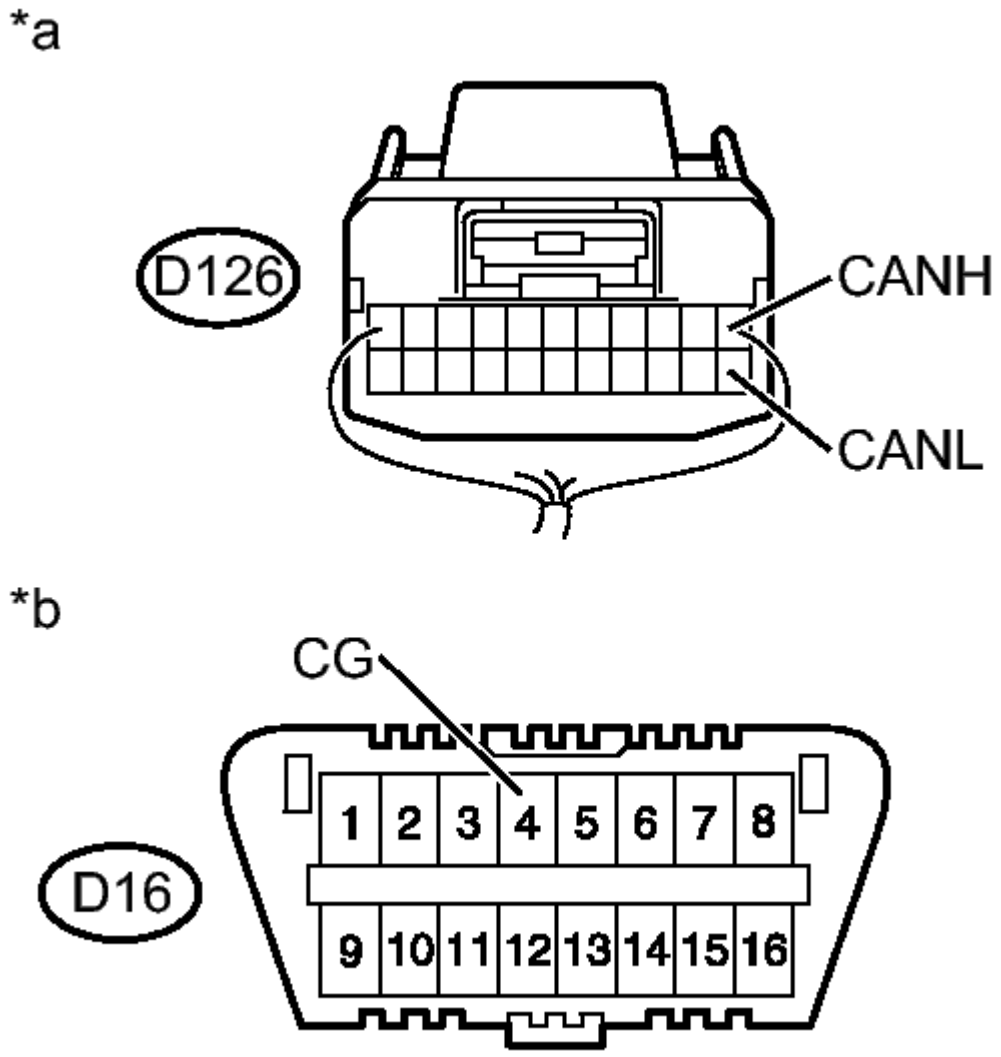


Fig. 215: Checking For Short To GND In CAN BUS Wire (No. 1 Junction Connector - No. 2 Junction Connector)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-12 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK: Go to next step

11. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)**
    a. Measure the resistance according to the value(s) in the table below.

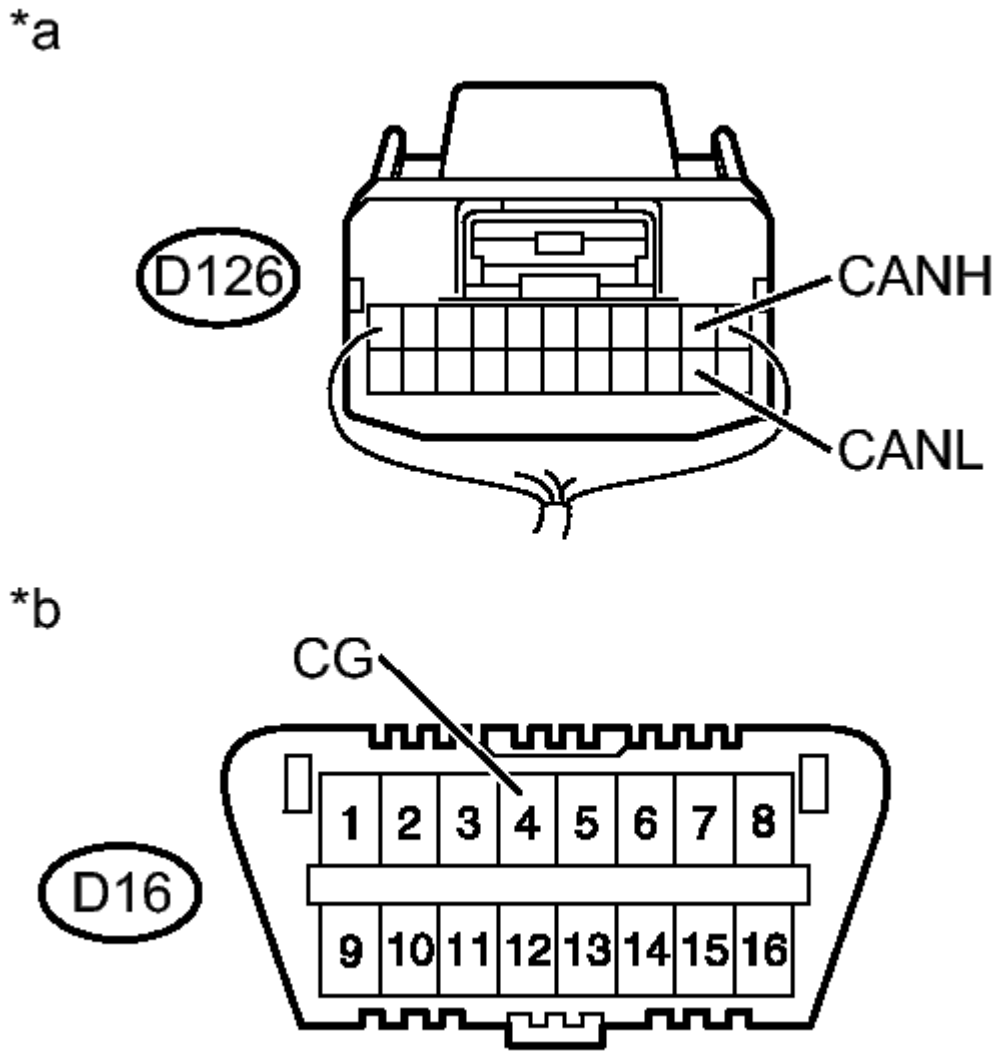


Fig. 216: Checking For Short To GND In CAN BUS Wire (Steering Angle Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-2 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-13 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 24

OK: Go to next step

12. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - POWER STEERING ECU)**
    a. Measure the resistance according to the value(s) in the table below.

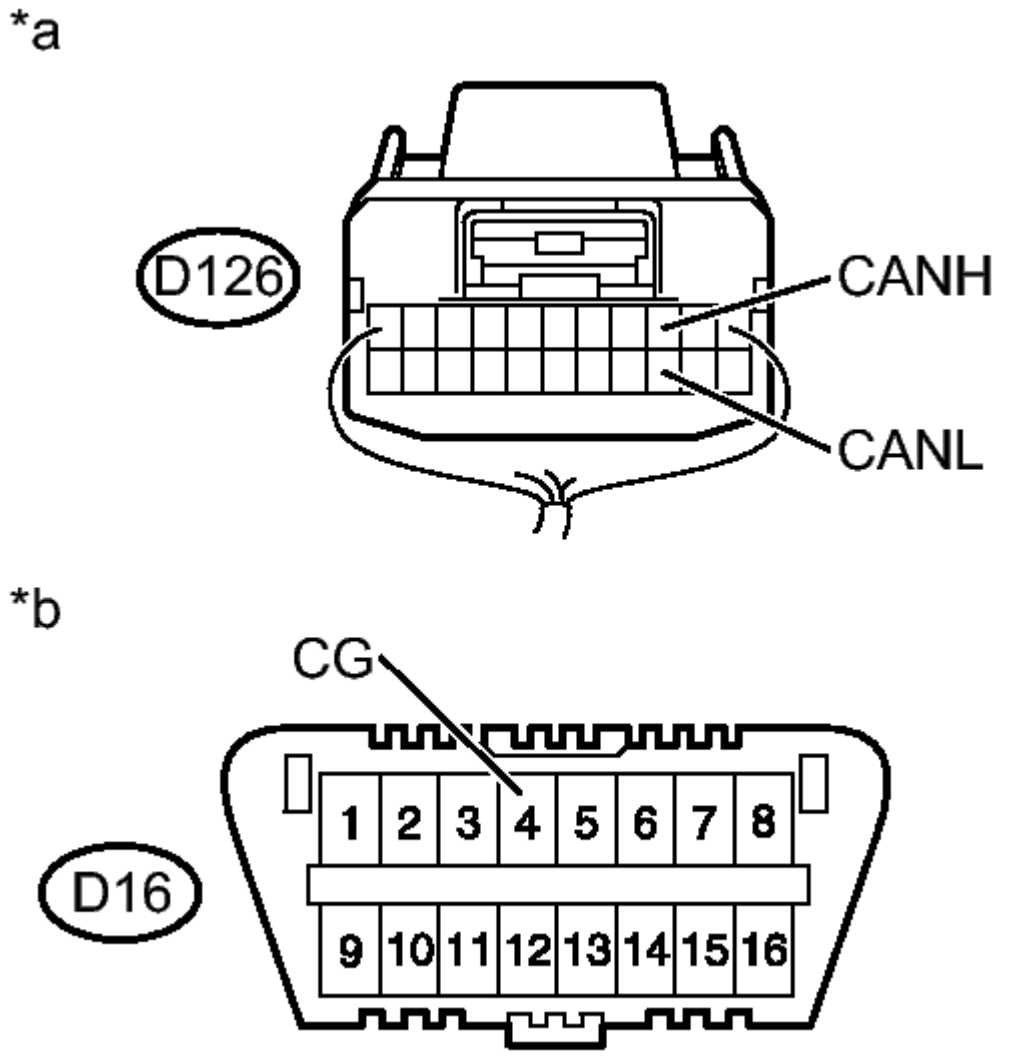


Fig. 217: Checking For Short To GND In CAN BUS Wire (Power Steering ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-3 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 25

OK: Go to next step

13. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - MAIN BODY ECU)**
    a. Measure the resistance according to the value(s) in the table below.

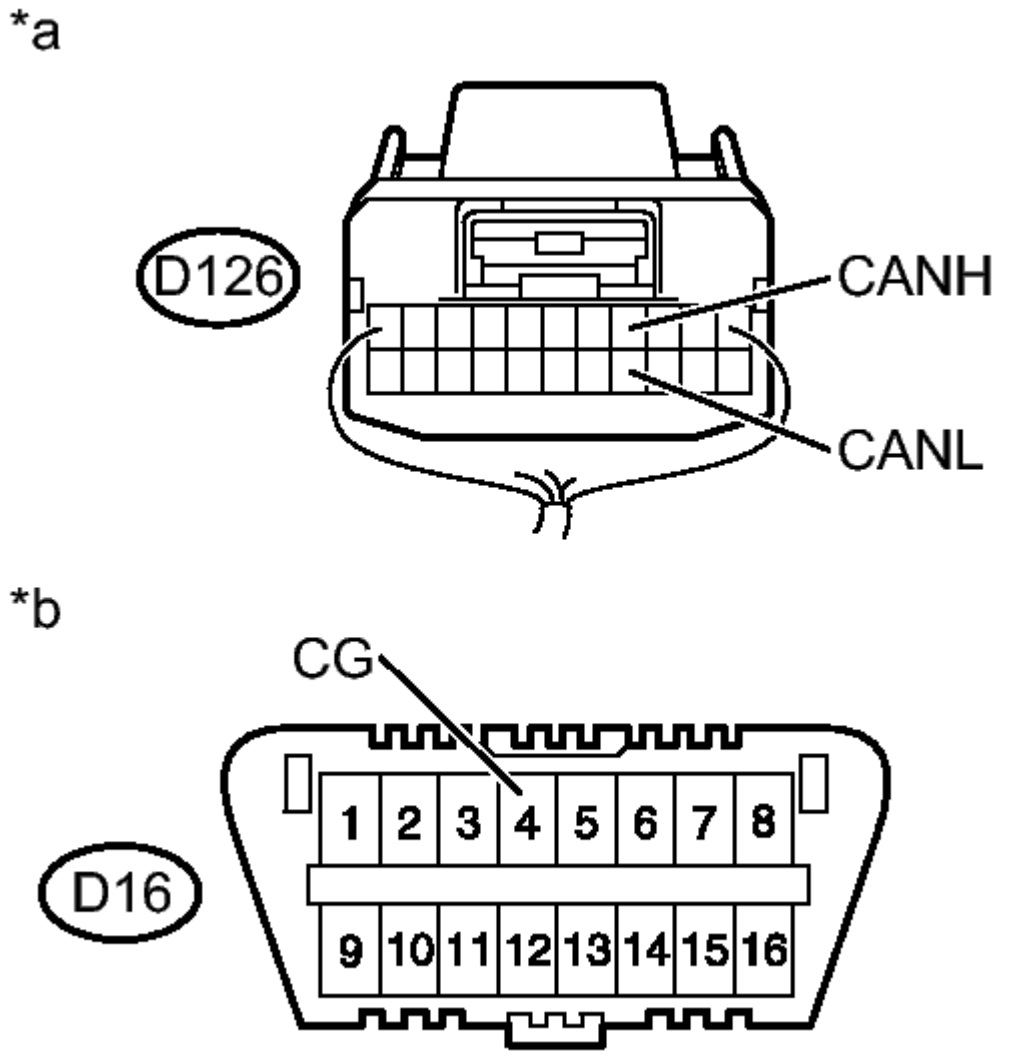


Fig. 218: Checking For Short To GND In CAN BUS Wire (Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-4 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-15 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 26

OK: Go to next step

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

HINT:

For vehicle without smart key system, go to step 15.

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

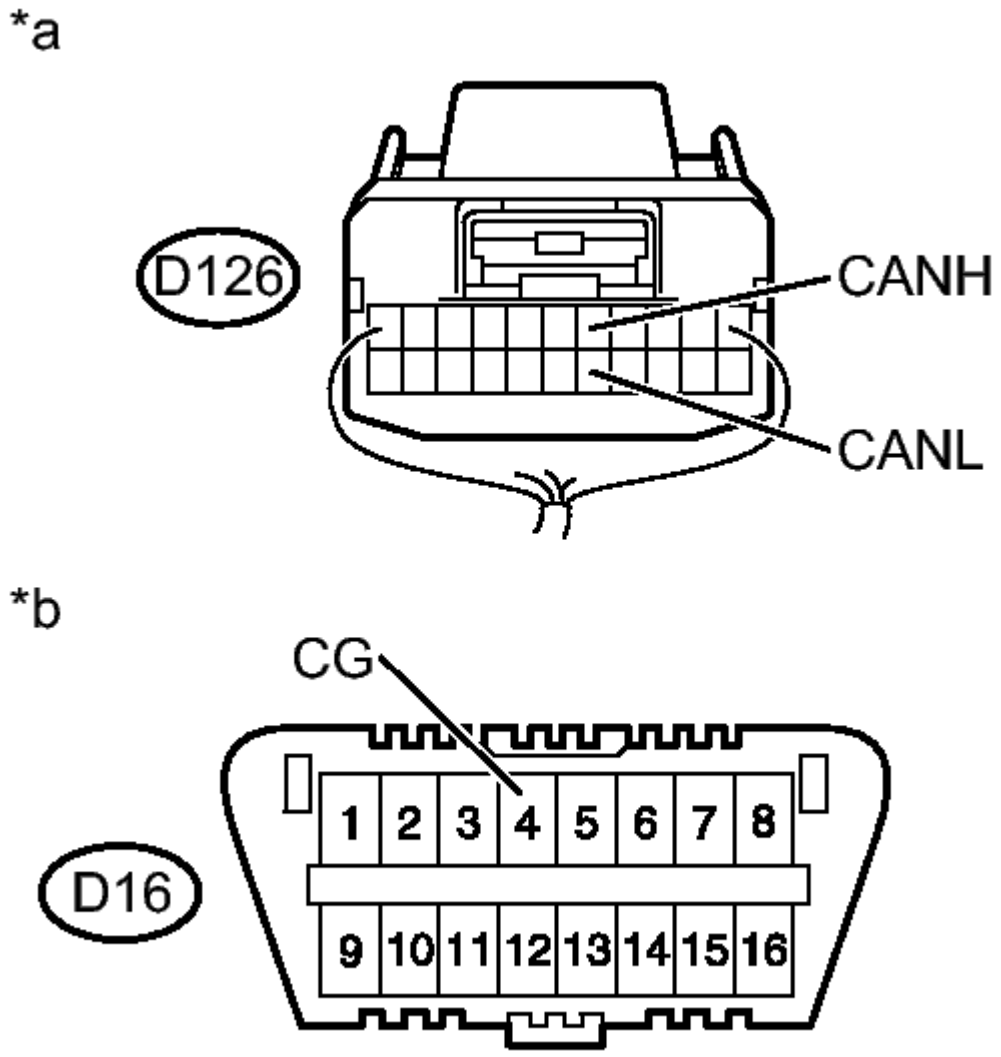


Fig. 219: Checking For Short To GND In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-16 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 27

OK: Go to next step

15. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - NETWORK GATEWAY ECU)**

HINT:

For vehicle with smart key system, go to step 16.

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

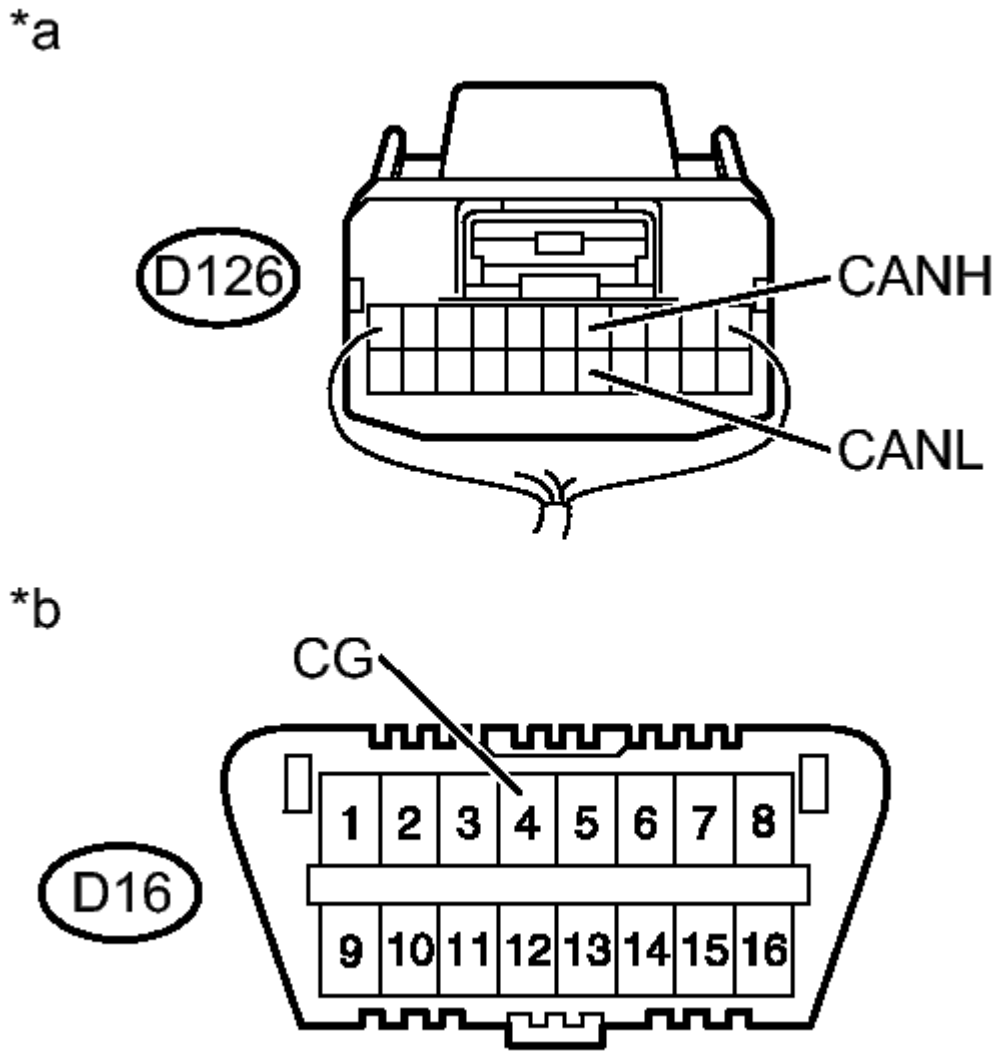


Fig. 220: Checking For Short To GND In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-16 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 28

OK: Go to next step

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

HINT:

For vehicle without VDIM, go to step 17.

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

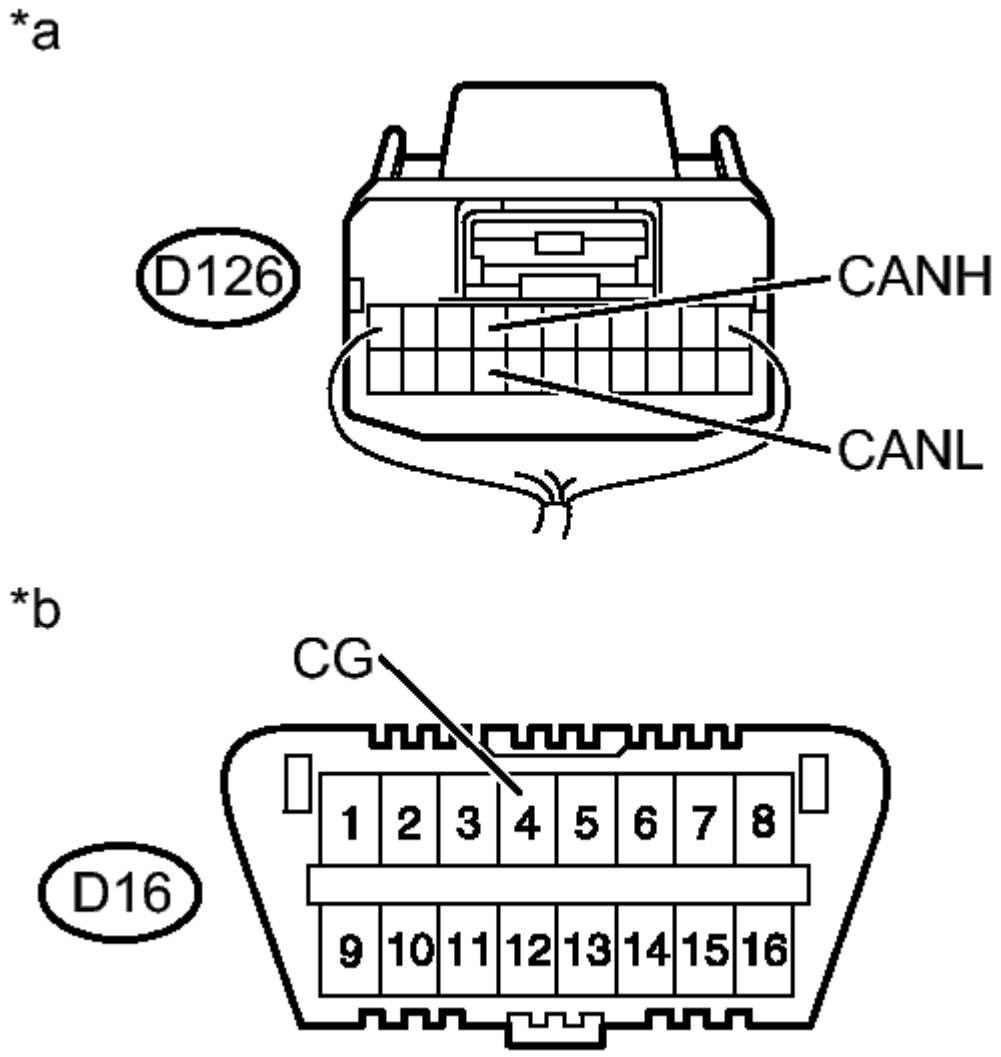


Fig. 221: Checking For Short To GND In CAN BUS Wire (Yaw Rate Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-8 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-19 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 29

OK: Go to next step

17. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Measure the resistance according to the value(s) in the table below.

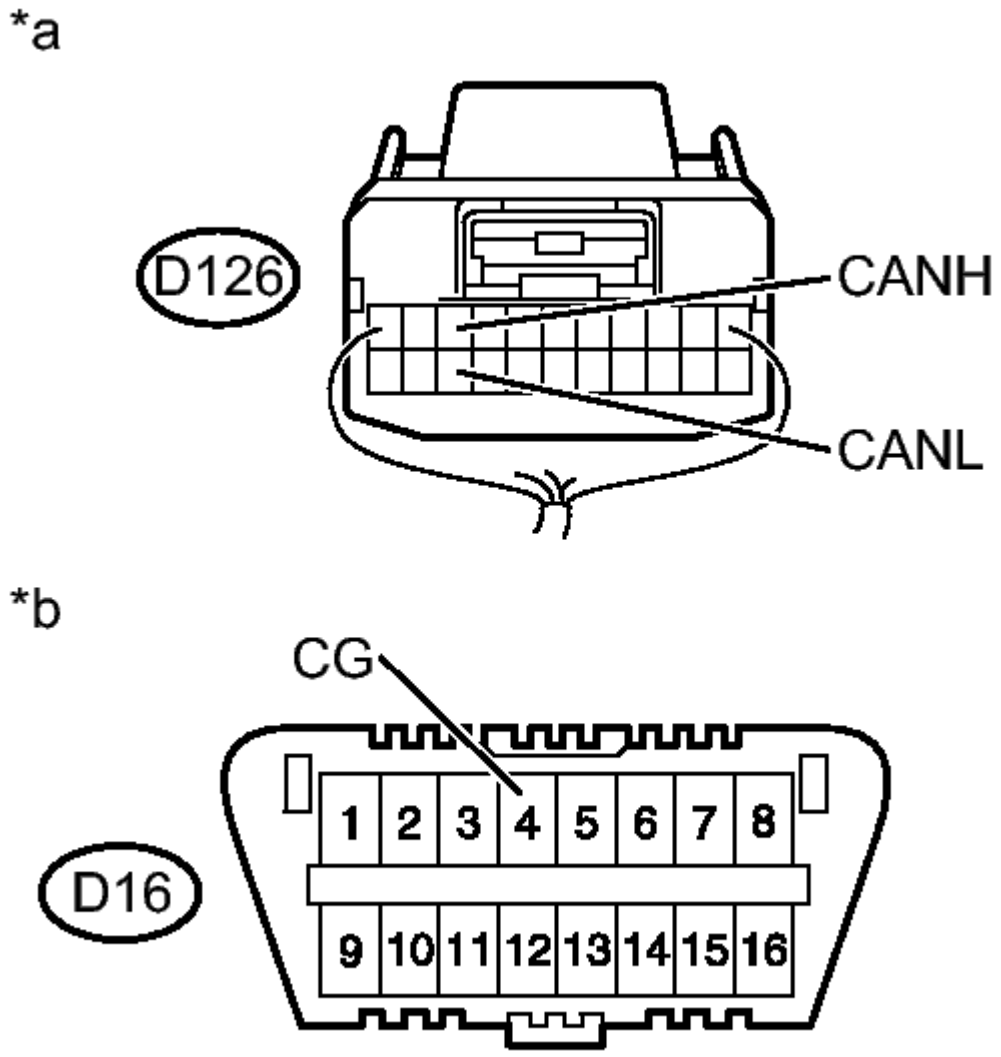


Fig. 222: Checking For Short To GND In CAN BUS Wire (Center Airbag Sensor Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-9 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-20 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 30

OK: Go to next step

18. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NO. 1 JUNCTION CONNECTOR - 4WD CONTROL ECU)**

HINT:

For vehicle without 4WD, go to step 19.

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

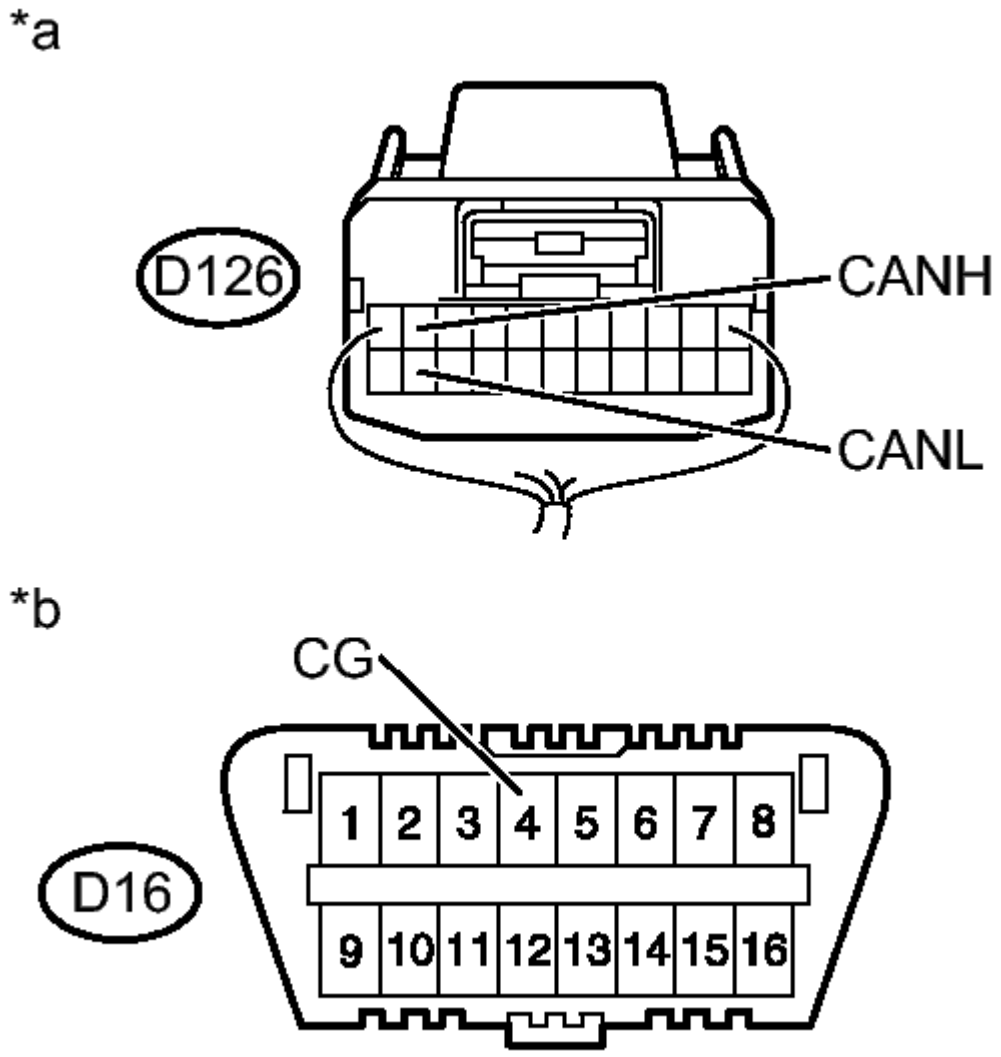


Fig. 223: Checking For Short To GND In CAN BUS Wire (4WD Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-10 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-21 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 31

OK: Go to next step

19. **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.

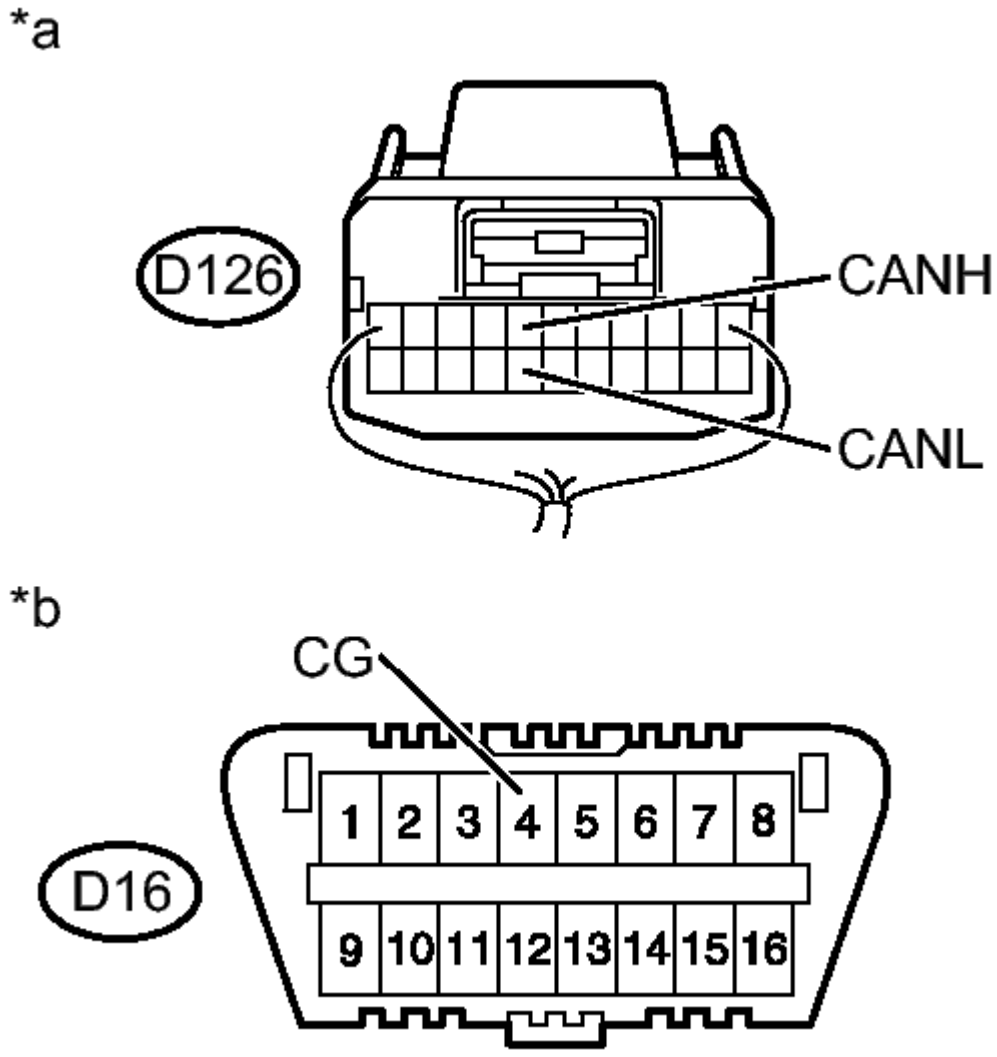


Fig. 224: Checking For Short To GND In CAN BUS Wire (ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-18 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> See step 32

OK --> REPAIR OR REPLACE NO. 1 JUNCTION CONNECTOR

20. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CERTIFICATION ECU)**
    a. Disconnect the D88 certification ECU connector.

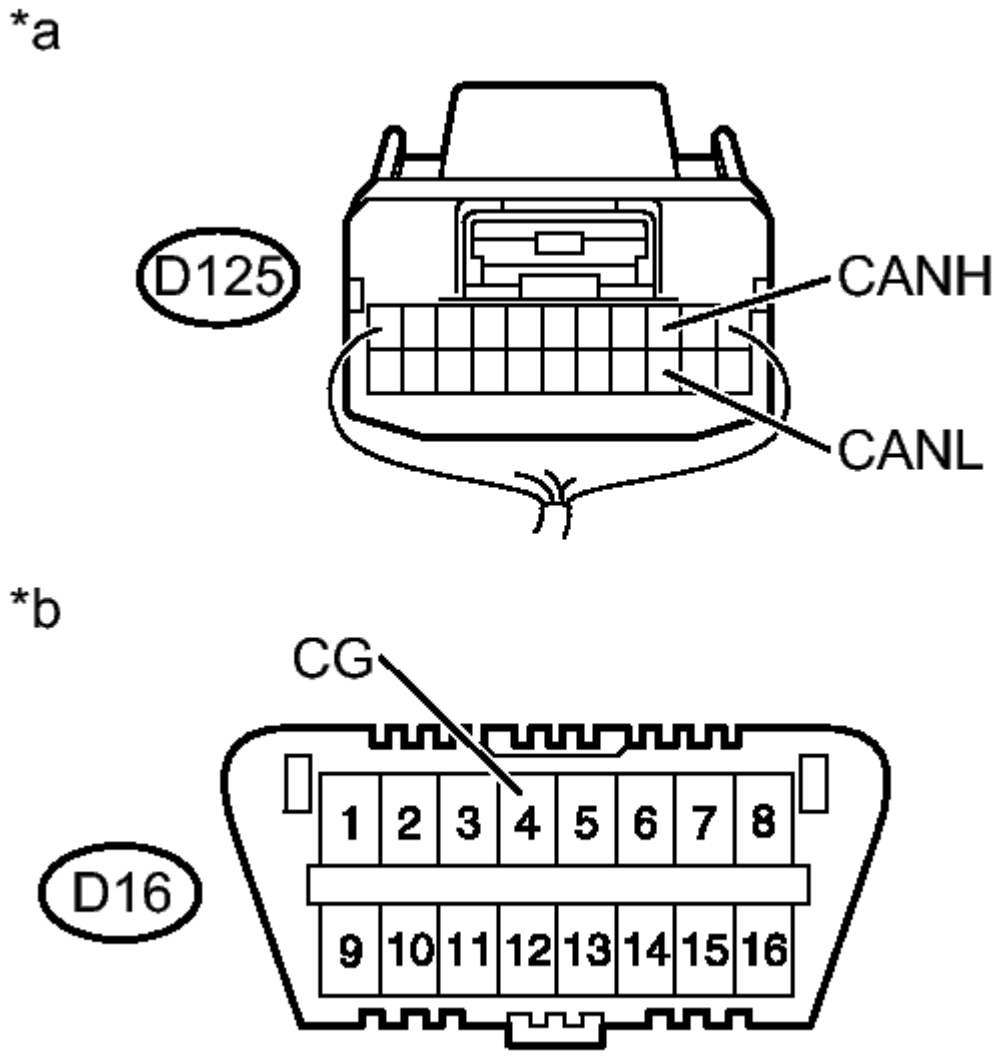


Fig. 225: Checking For Short To GND In CAN BUS Wire (Certification ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-3 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CERTIFICATION ECU (CAN-H, CAN-L)

OK --> See step 33

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

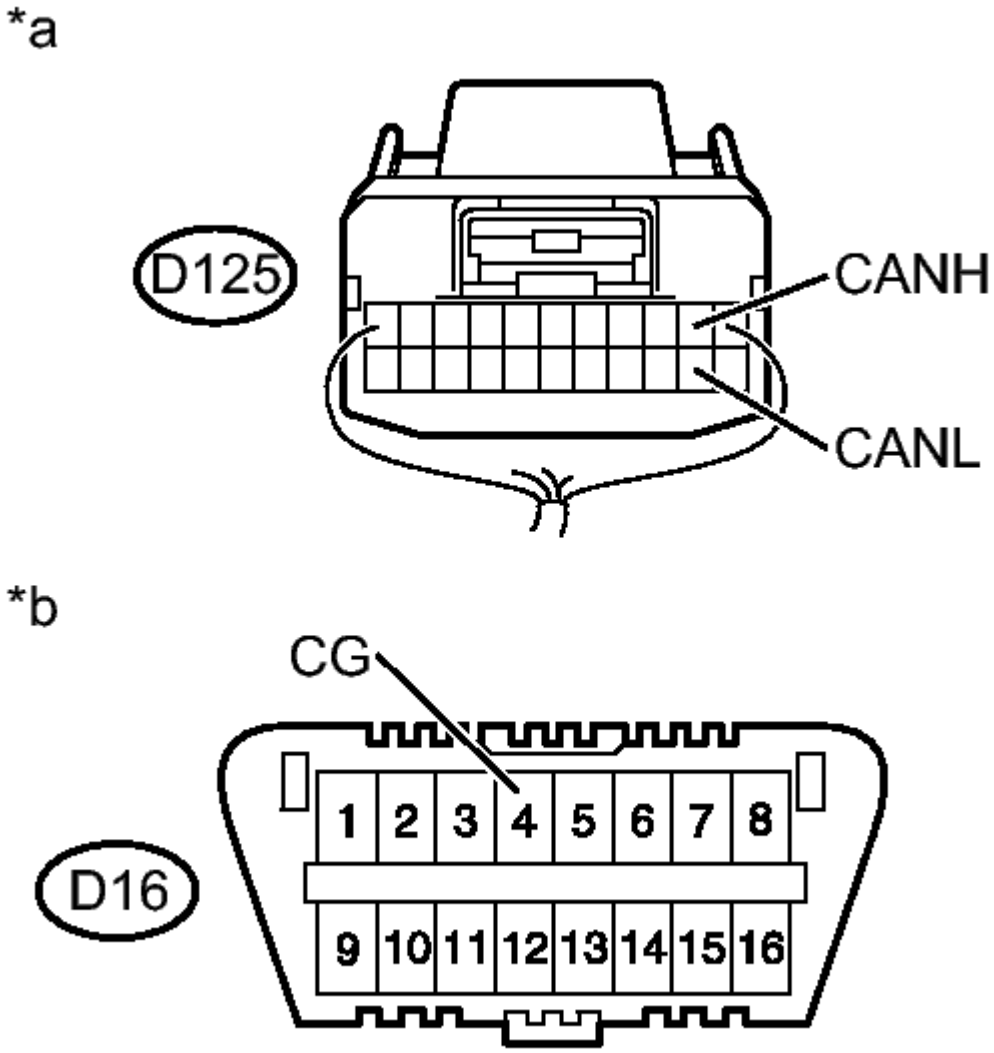


Fig. 226: Checking For Short To GND In CAN BUS Wire (Air Conditioning Amplifier)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D75 air conditioning amplifier connector.
b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-2 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-13 (CANL) -	Ignition switch off	200 ohms or higher

D16-4 (CG)		

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AIR CONDITIONING AMPLIFIER (CAN-H, CAN-L)

OK --> See step 34

22. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (SKID CONTROL ECU)**
    a. Disconnect the A4 skid control ECU connector.
    b. Measure the resistance according to the value(s) in the table below.

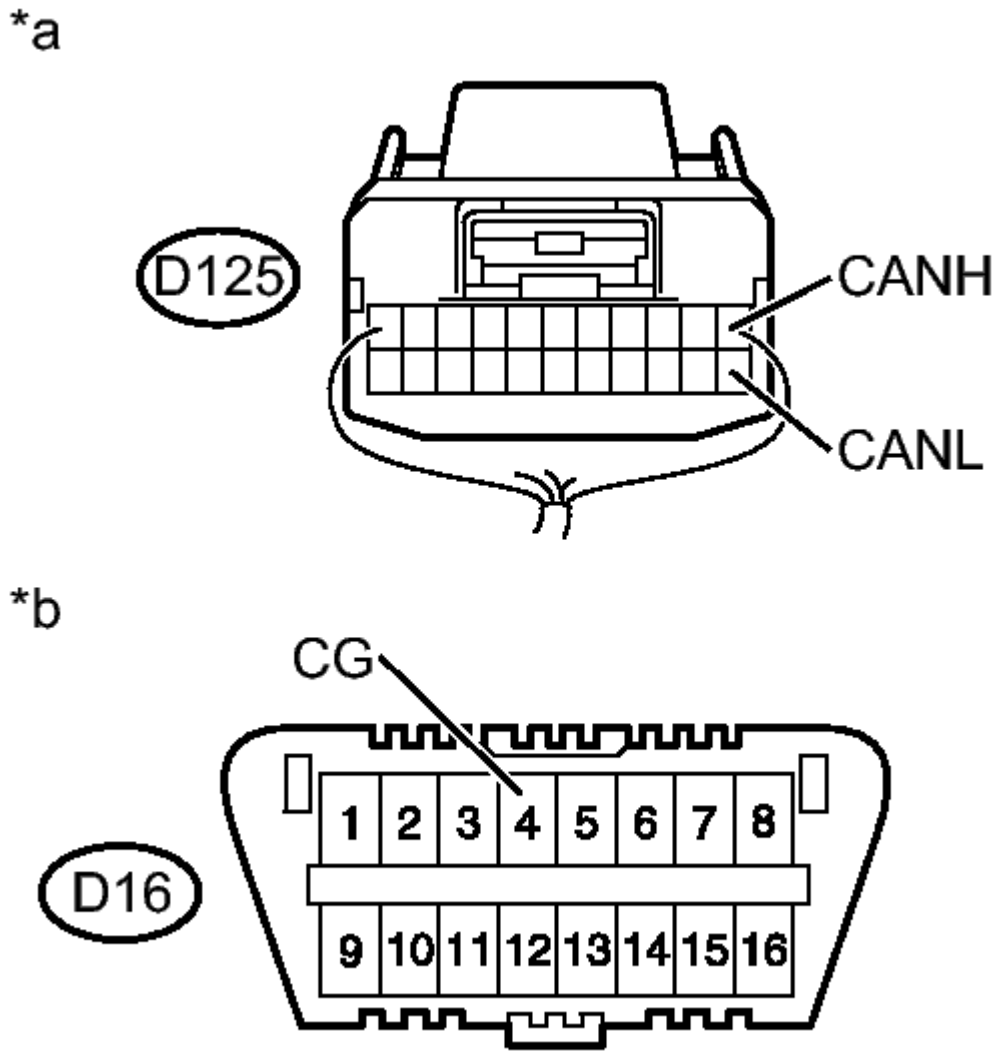


Fig. 227: Checking For Short To GND In CAN BUS Wire (Skid Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-1 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-12 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO SKID CONTROL ECU (CAN-H, CAN-L)

OK --> See step 35

23. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (COMBINATION METER ECU)**
    a. Disconnect the D18 combination meter ECU connector.

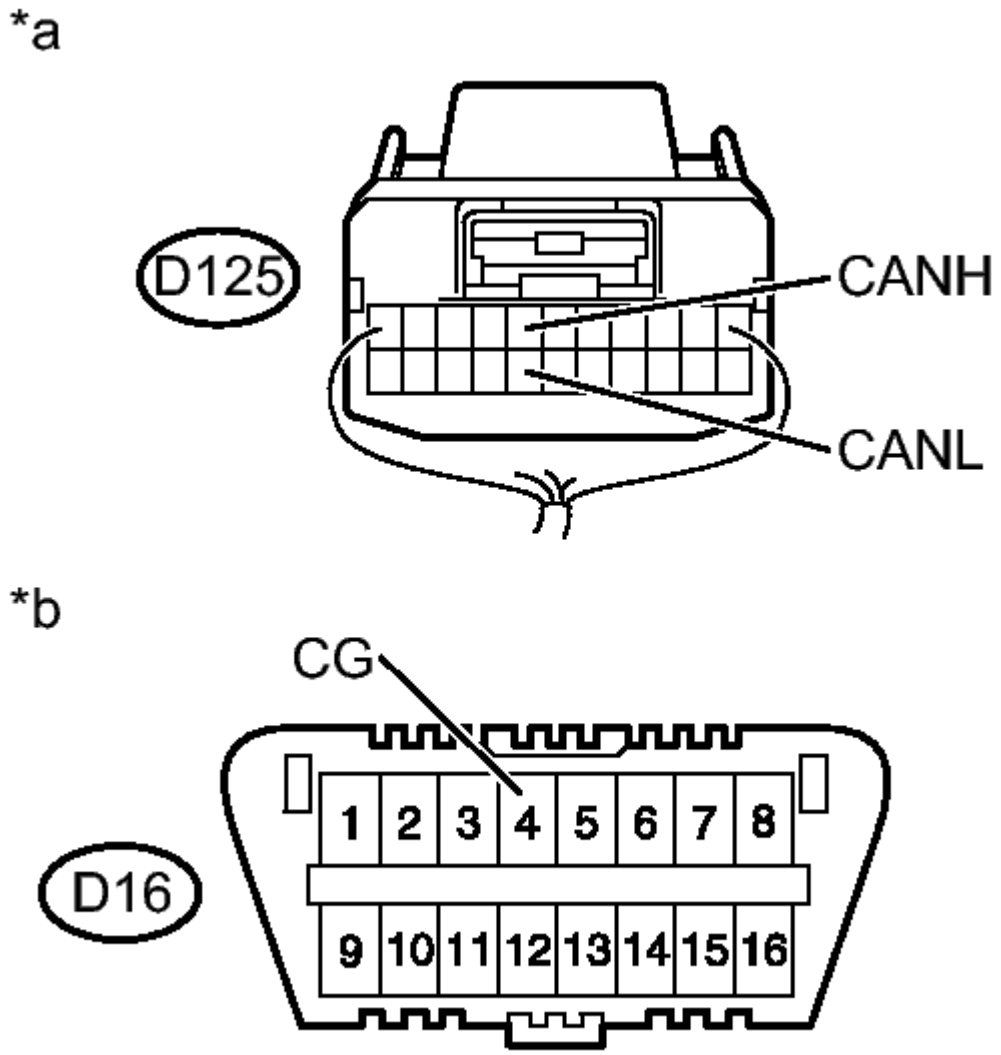


Fig. 228: Checking For Short To GND In CAN BUS Wire (Combination Meter ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D125-7 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D125-18 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 2 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ECU (CAN-H, CAN-L)

OK --> See step 36

24. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (STEERING ANGLE SENSOR)**
    a. Disconnect the D22 steering angle sensor connector.
    b. Measure the resistance according to the value(s) in the table below.

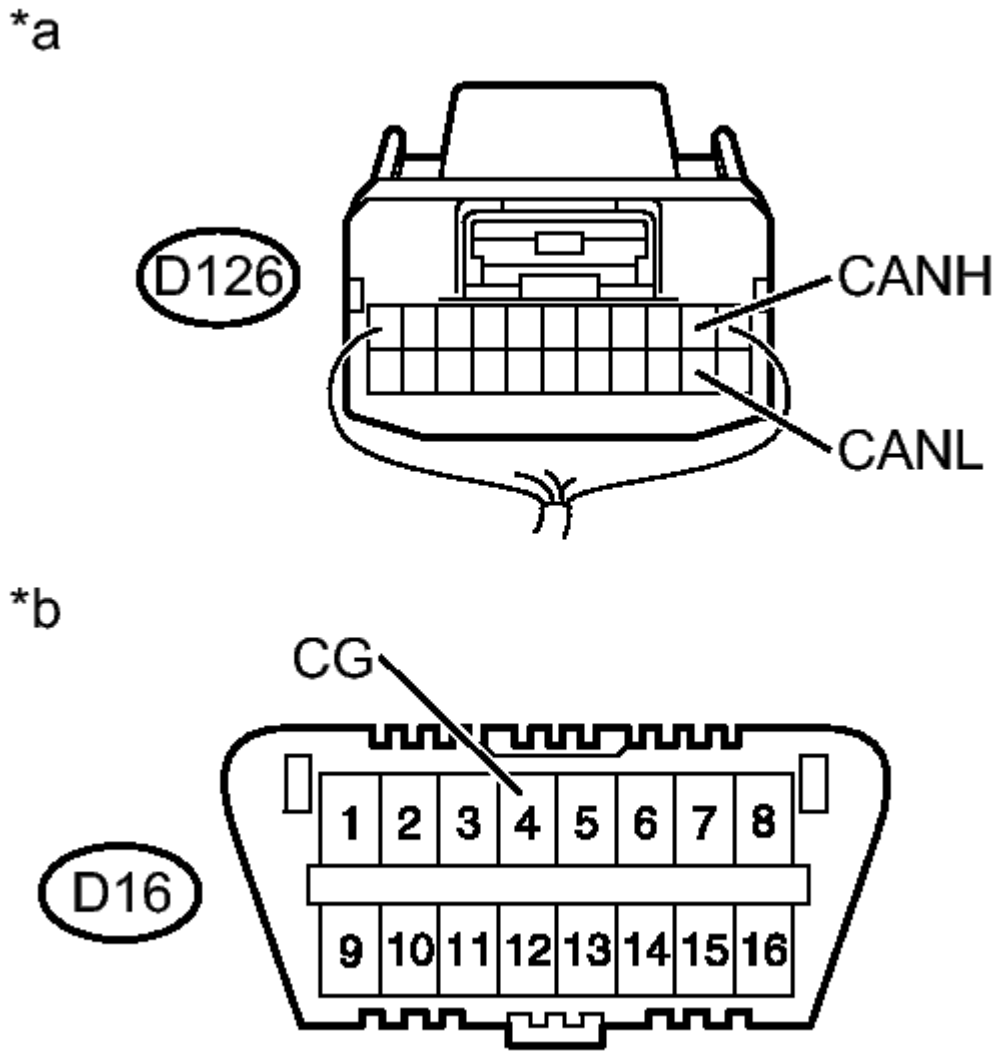


Fig. 229: Checking For Short To GND In CAN BUS Wire (Steering Angle Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-2 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-13 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK --> See step 37

25. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (POWER STEERING ECU)**
    a. Disconnect the D35 power steering ECU connector.

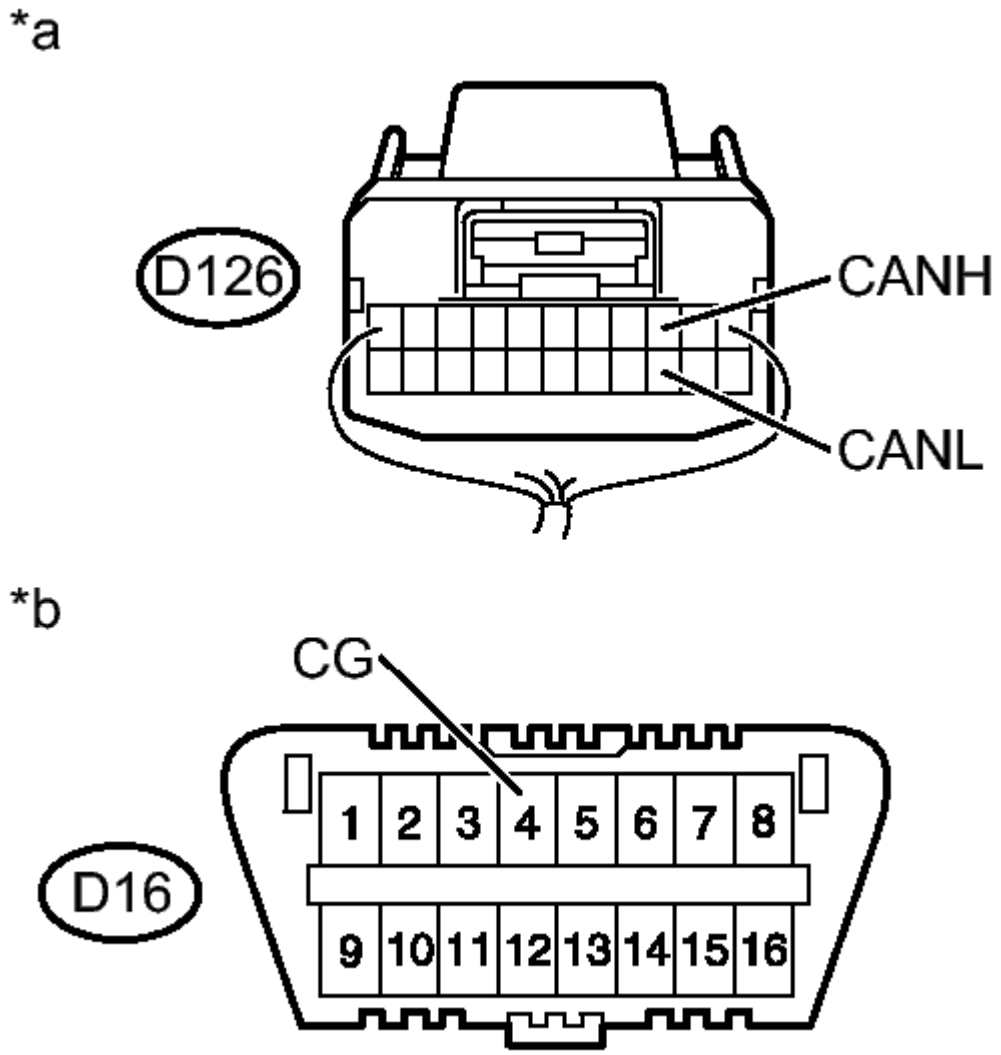


Fig. 230: Checking For Short To GND In CAN BUS Wire (Power Steering ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-3 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-14 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CAN-H, CAN-L)

OK --> See step 38

26. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (MAIN BODY ECU)**
    a. Disconnect the D13 main body ECU connector.

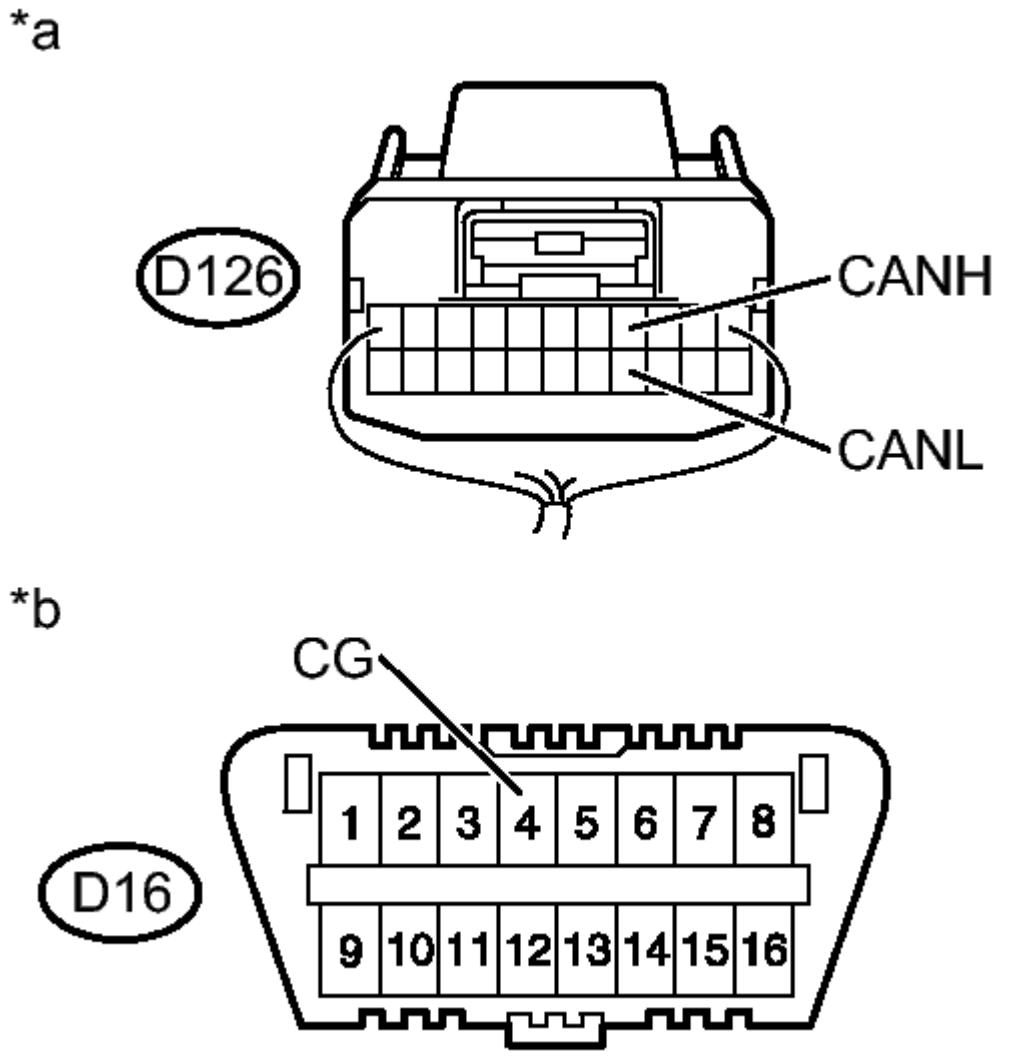


Fig. 231: Checking For Short To GND In CAN BUS Wire (Main Body ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-4 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-15 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO MAIN BODY ECU (CAN-H, CAN-L)

OK --> See step 39

27. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D89 power management control ECU connector.

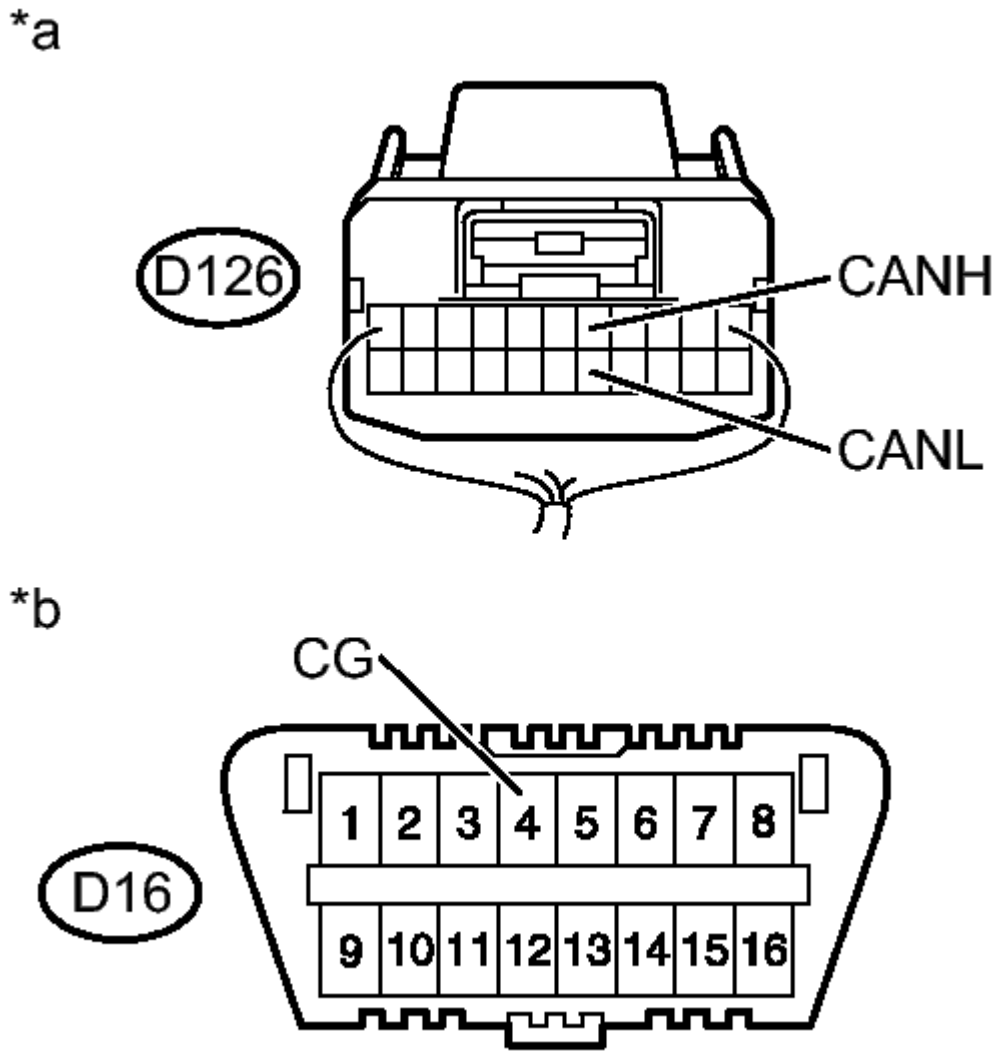


Fig. 232: Checking For Short To GND In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-16 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER MANAGEMENT CONTROL ECU (CAN-H, CAN-L)

OK --> See step 40

28. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (NETWORK GATEWAY ECU)**
    a. Disconnect the D90 network gateway ECU connector.

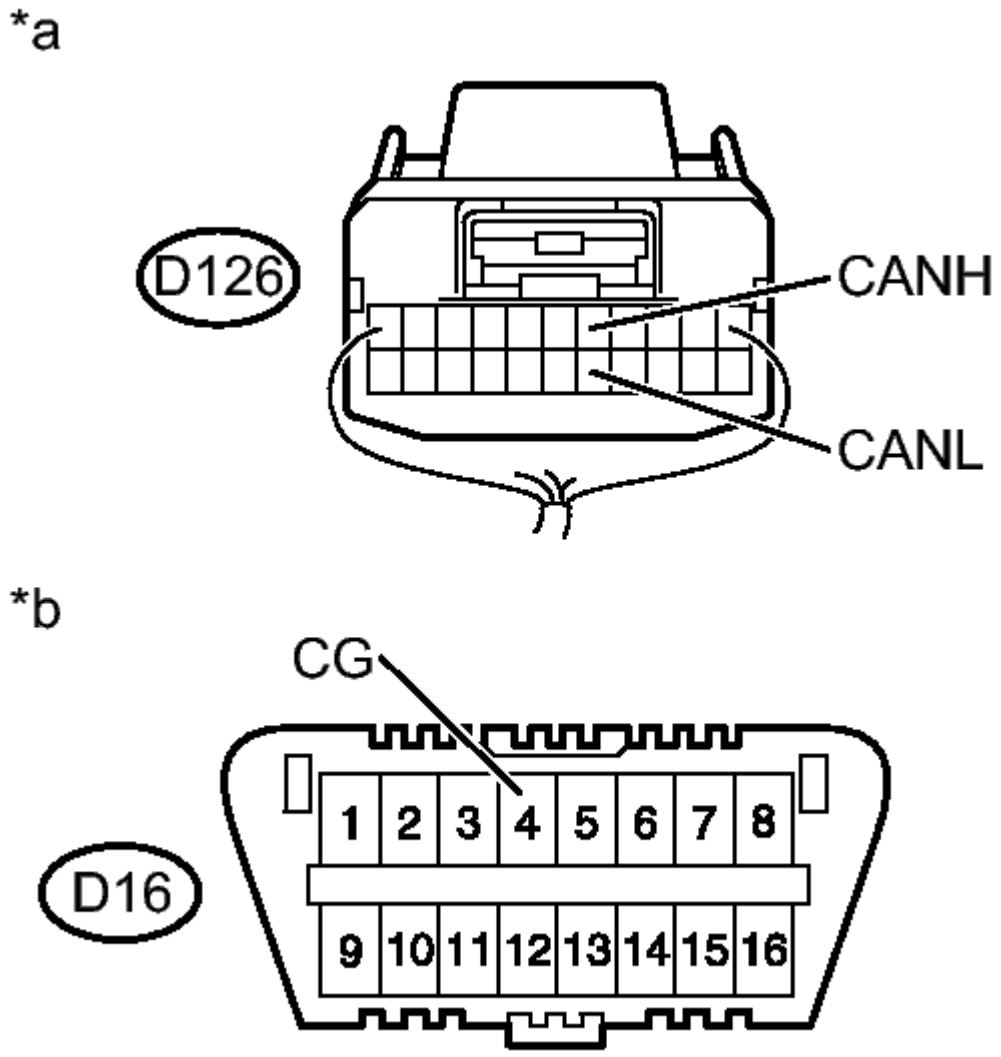


Fig. 233: Checking For Short To GND In CAN BUS Wire (Network Gateway ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-5 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-16 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO NETWORK GATEWAY ECU (CAN-H, CAN-L)

OK --> See step 41

29. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (YAW RATE SENSOR)**
    a. Disconnect the L6 yaw rate sensor connector.

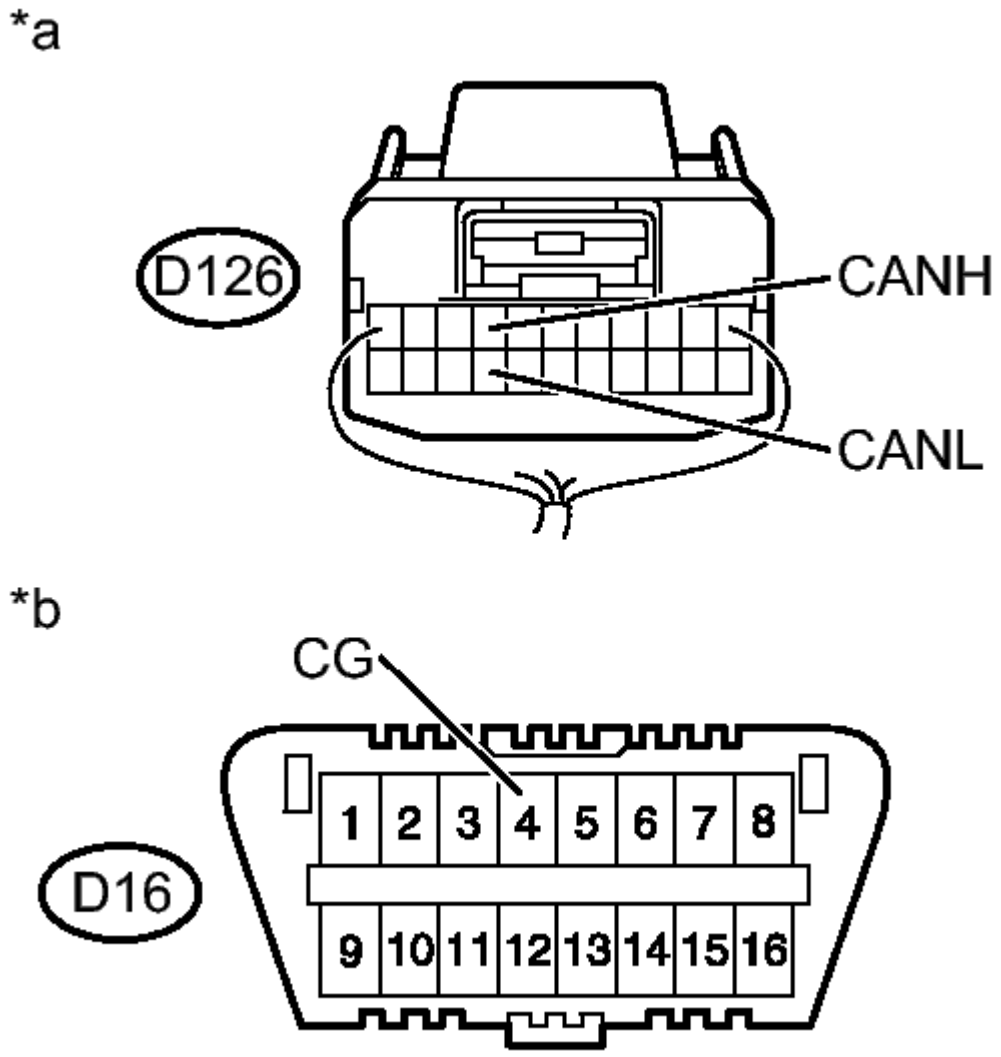


Fig. 234: Checking For Short To GND In CAN BUS Wire (Yaw Rate Sensor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-8 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-19 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

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

OK --> See step 42

30. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (CENTER AIRBAG SENSOR ASSEMBLY)**
    a. Disconnect the D40 center airbag sensor assembly connector.

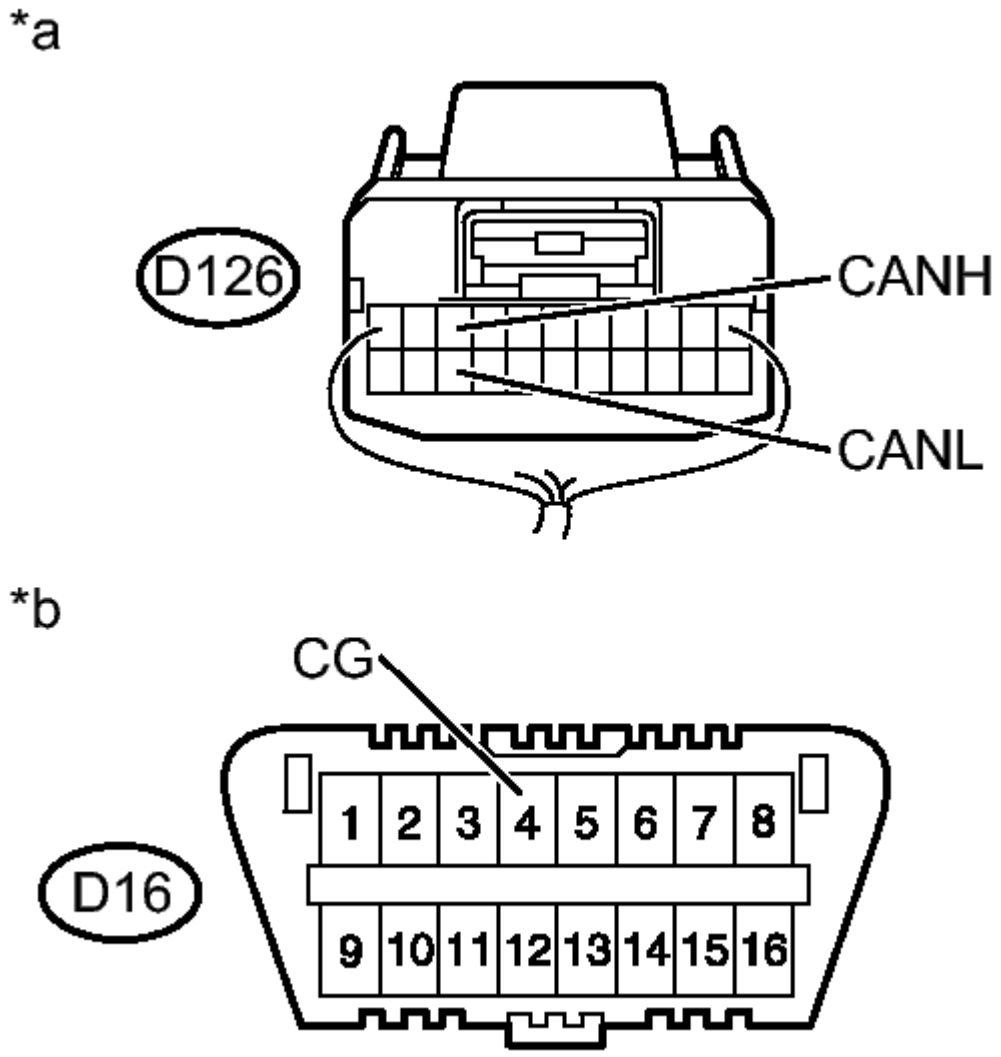


Fig. 235: Checking For Short To GND In CAN BUS Wire (Center Airbag Sensor Assembly)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-9 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-20 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CENTER AIRBAG SENSOR ASSEMBLY (CAN-H, CAN-L)

OK --> See step 43

31. **CHECK FOR SHORT TO GND IN CAN BUS WIRE (4WD CONTROL ECU)**
    a. Disconnect the K1 4WD control ECU connector.

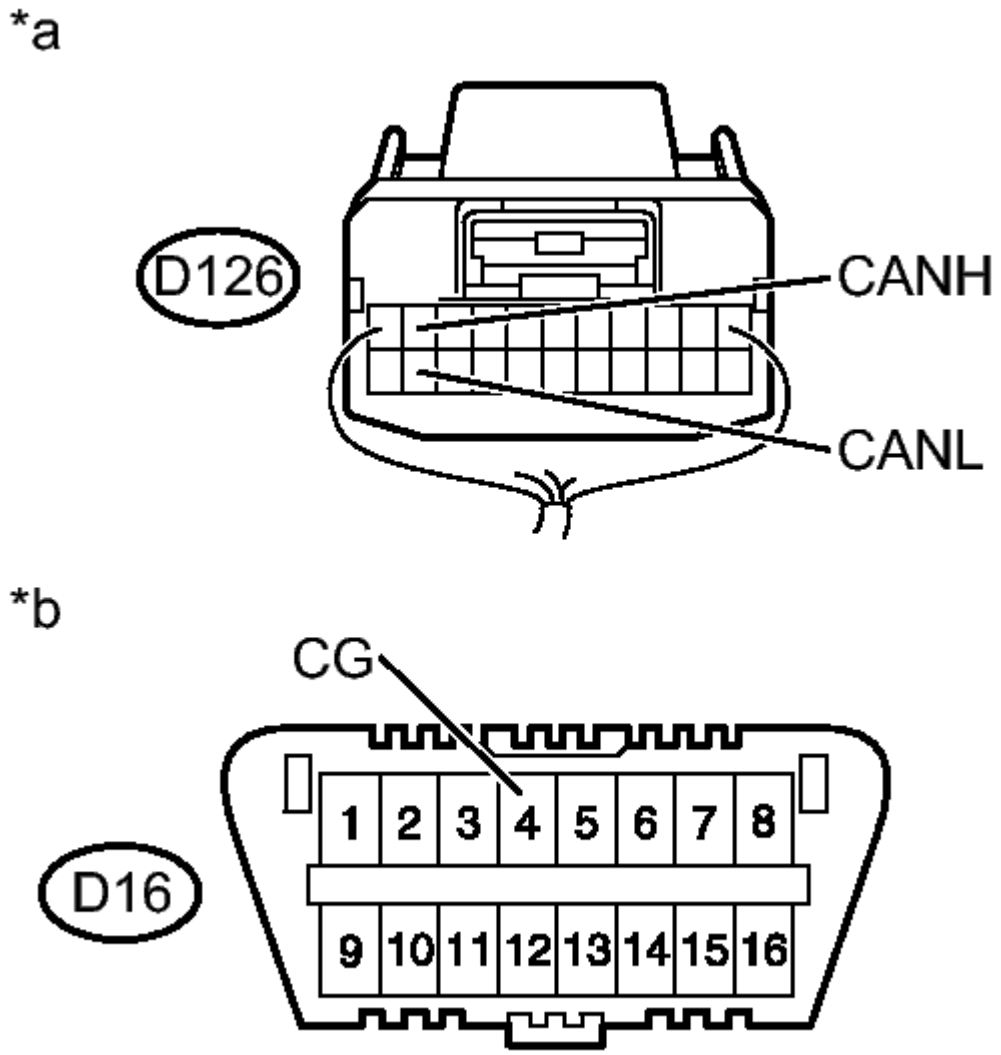


Fig. 236: Checking For Short To GND In CAN BUS Wire (4WD Control ECU)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-10 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-21 (CANL) - D16-4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

NG --> REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO 4WD CONTROL ECU (CAN-H, CAN-L)

OK --> See step 44

32. **CHECK CAN BUS LINE FOR DISCONNECTION (ECM MAIN WIRE)**
    a. Disconnect the A39*1 or A55*2 ECM connector.

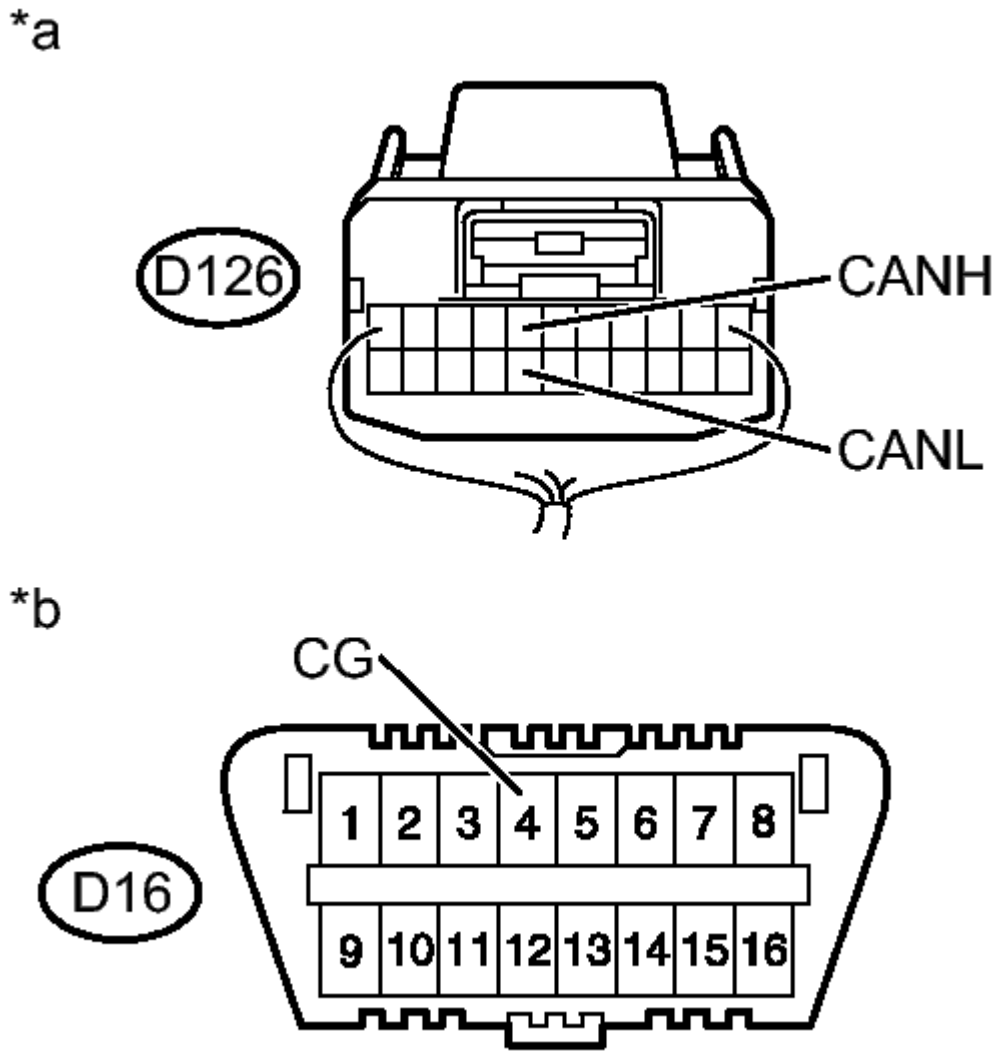


Fig. 237: Checking For Short To GND In CAN BUS Wire (ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

*1: for 2GR-FE

*2: for 1AR-FE

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D126-7 (CANH) - D16-4 (CG)	Ignition switch off	200 ohms or higher
D126-18	Ignition	200 ohms

(CANL) - D16-4 (CG)	switch off	or higher

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to No. 1 Junction Connector)
*b	DLC3

RESULT

Result	Proceed to
NG	A
OK (for 2GR-FE engine)	B
OK (for 1AR-FE engine)	C

B --> See step 45

C --> See step 46

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

33. **REPLACE CERTIFICATION ECU. Refer to REMOVAL**
34. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**
35. **REPLACE SKID CONTROL ECU. Refer to REMOVAL**
36. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
37. **REPLACE STEERING ANGLE SENSOR. Refer to REMOVAL**
38. **REPLACE STEERING COLUMN ASSEMBLY (POWER STEERING ECU). Refer to REMOVAL**
39. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
40. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
41. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**

42. **REPLACE YAW RATE SENSOR. Refer to REMOVAL**
43. **REPLACE CENTER AIRBAG SENSOR ASSEMBLY. Refer to REMOVAL**
44. **REPLACE 4WD CONTROL ECU. Refer to REMOVAL**
45. **REPLACE ECM. Refer to REMOVAL**
46. **REPLACE ECM. Refer to REMOVAL**

Open in One Side of CAN Branch Line

DESCRIPTION

If 2 or more ECUs and/or sensors do not appear on the Techstream "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 • ECM • Center airbag sensor assembly • Power management control ECU*1 • Certification ECU*1 • Air conditioning amplifier assembly*2 • Network gateway ECU*2 • Main body ECU • Combination meter assembly • 4WD control ECU*3 • Yaw rate sensor*4 • Skid control ECU*4, *5 • Steering angle sensor • Power steering ECU

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: for AWD

*4: w/ VDIM

*5: w/ VSC

WIRING DIAGRAM

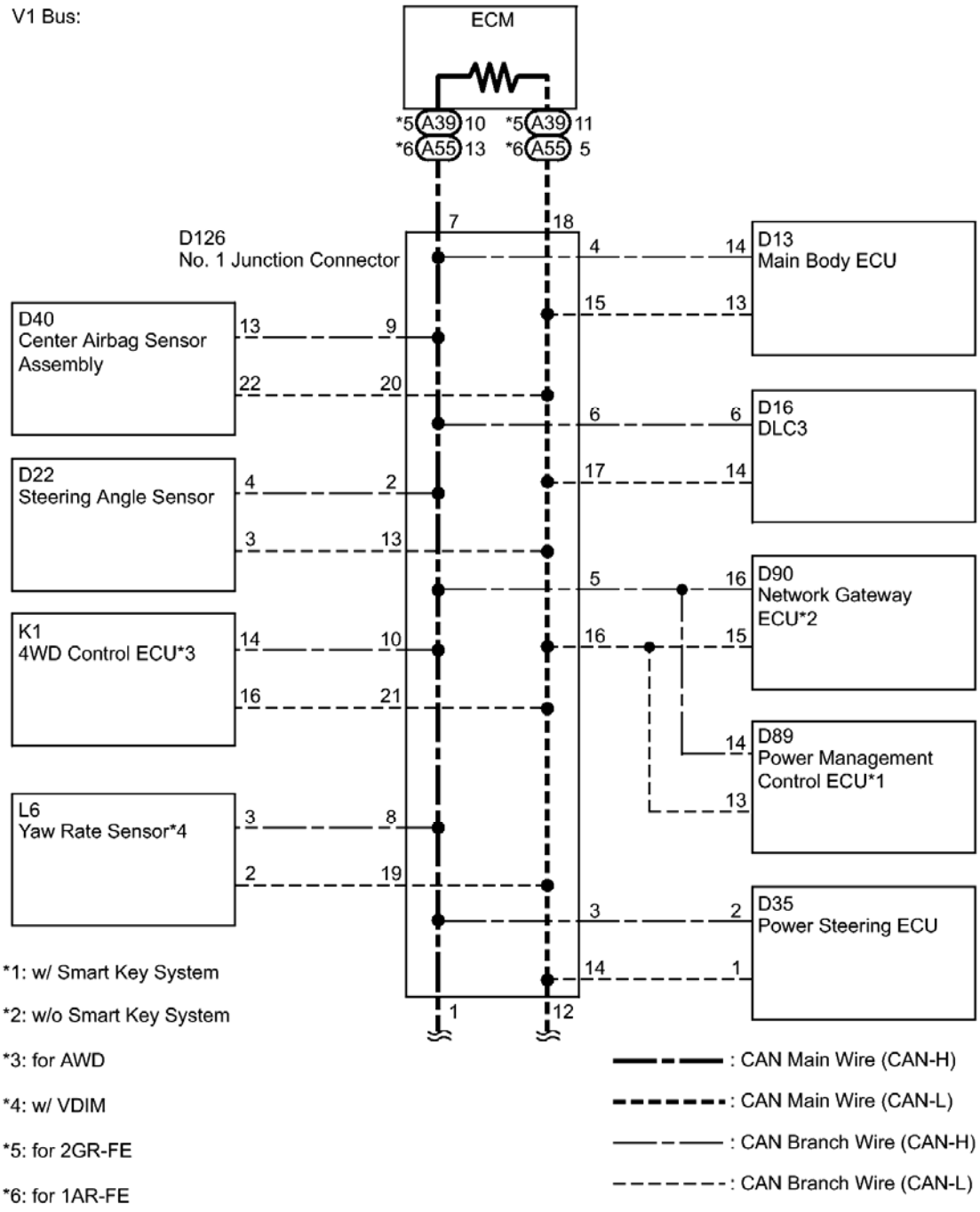


Fig. 238: CAN BUS Lines Wiring Diagram (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

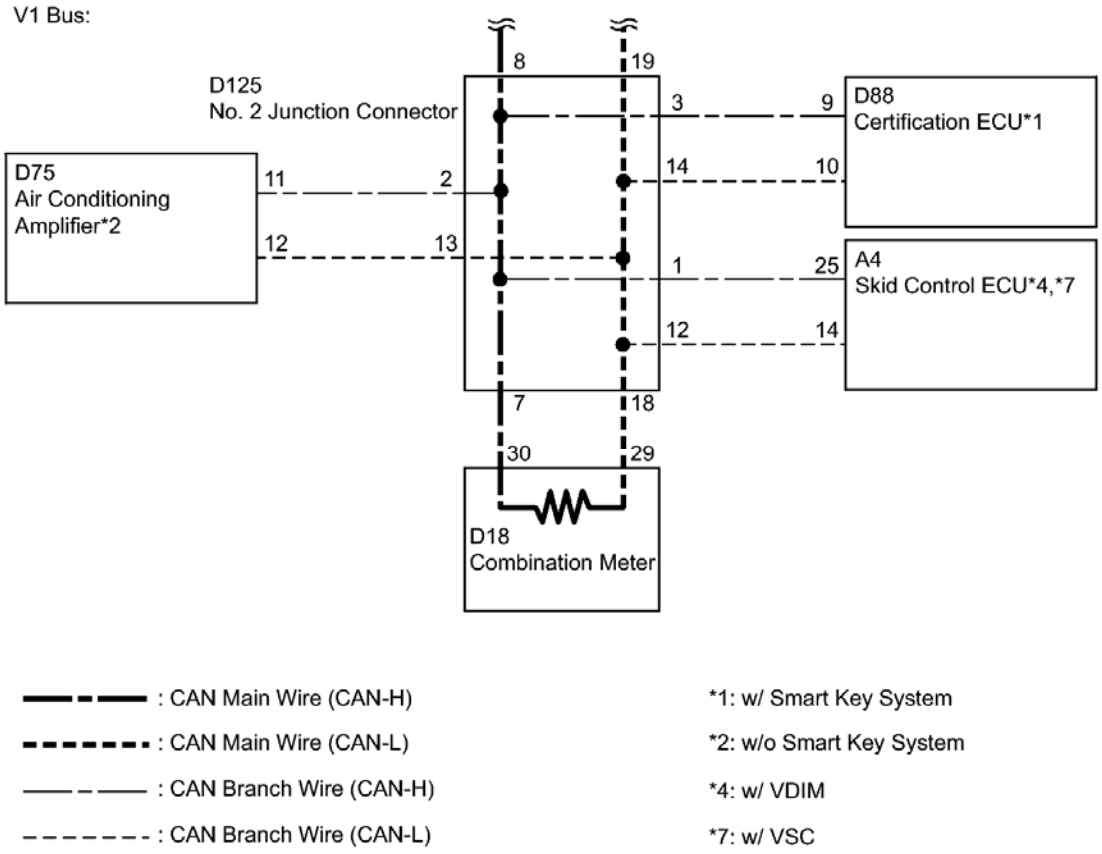


Fig. 239: CAN BUS Lines Wiring Diagram (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

WARNING: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE:

- **Turn the ignition switch off before measuring the resistances between CAN bus main wires and between CAN bus branch wires.**
- **Turn the ignition switch off before inspecting CAN bus wires for a ground short.**
- **After the ignition switch is turned off, check that the key reminder warning system and light reminder warning system are not operating.**
- **Before measuring the resistance, first disconnect the cable from the negative battery terminal and confirm that the alarm function is no longer operating. Then, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors. If any doors need to be opened in order to check connectors, open the doors and leave them open.**

- **When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .**

HINT:

- Perform the following inspection for the ECUs (sensors) which are not displayed on the Techstream. If a malfunction cannot be identified, perform the following inspections for the ECUs (sensors) connected to the CAN communication system.
- Do not remove the center airbag sensor assembly and ECM, as they are the end parts of the circuit. If removed, CAN communication will not be possible.
- The open circuit confirmation of the center airbag sensor assembly, ECM and main wire is performed in the Check CAN BUS Line procedure of How to Proceed with Troubleshooting. This inspection only has procedures for checking for an open circuit on one side of the CAN branch wire.

PROCEDURE

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

   HINT:

   For vehicle without AWD, go to step 3.

   a. Disconnect the K1 4WD control ECU connector.
   b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

   RESULT

Result	Proceed to
"Four Wheel Drive Control" not displayed on the Techstream.	A
Several ECUs and sensors other than "Four Wheel Drive Control"	B

not displayed on the Techstream.	

B --> See step 3

A: Go to next step

2. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (4WD CONTROL ECU BRANCH WIRE)**
   a. Measure the resistance according to the value(s) in the table below.

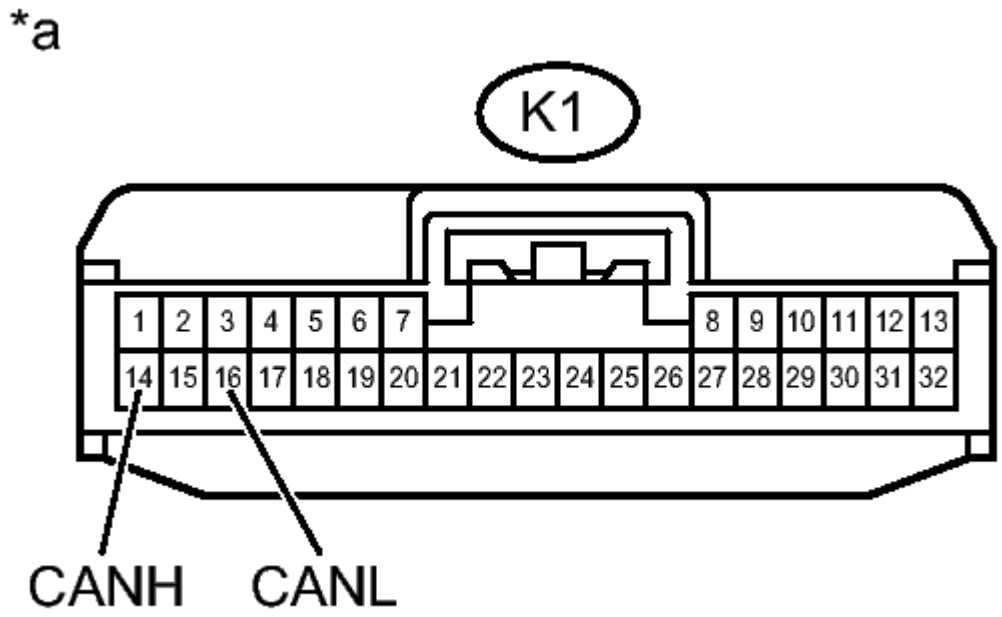


Fig. 240: Measuring Resistance Of 4WD Control ECU Branch Wire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
K1-14 (CANH) - K1-16 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to 4WD Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (4WD CONTROL ECU)

OK --> See step 23

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

HINT:

For vehicle without VDIM, go to step 5.

a. Disconnect the L6 yaw rate sensor connector.
b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"Yaw Rate / Deceleration Sensor" not displayed on the Techstream.	A
Several ECUs and sensors other than "Yaw Rate / Deceleration Sensor" not displayed on the Techstream.	B

B --> See step 5

A: Go to next step

4. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (YAW RATE SENSOR BRANCH WIRE)**
   a. Measure the resistance according to the value(s) in the table below.

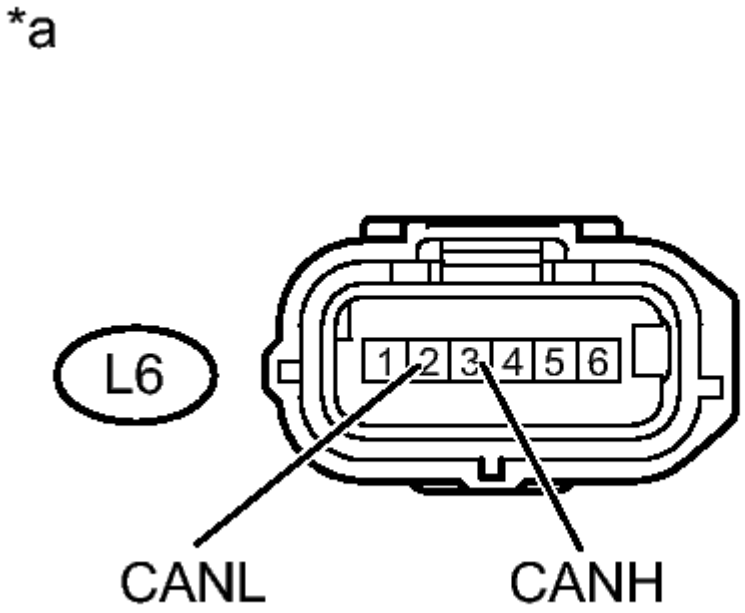


Fig. 241: Checking CAN BUS Line For Disconnection (Yaw Rate Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
L6-3 (CANH) - L6-2 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Yaw Rate Sensor)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (YAW RATE SENSOR)

OK --> See step 24

5. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (SKID CONTROL ECU)**

   HINT:

   For vehicle without VDIM or VSC, go to step 7.

   a. Disconnect the A4 skid control ECU connector.
   b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

   RESULT

Result	Proceed to
"ABS/VSC/TRAC" not displayed on the Techstream.	A
Several ECUs and sensors other than "ABS/VSC/TRAC" not displayed on the Techstream.	B

   B --> See step 7

   A: Go to next step

6. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (SKID CONTROL ECU BRANCH WIRE)**
   a. Measure the resistance according to the value(s) in the table below.

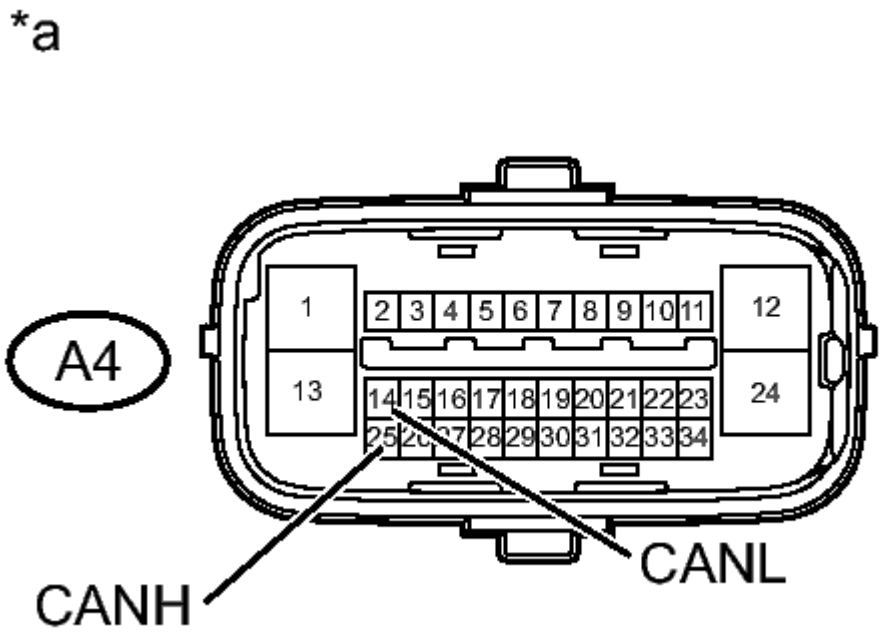


Fig. 242: Checking CAN BUS Line For Disconnection (Brake Actuator (Skid Control ECU) Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
A4-25 (CANH) - A4-14 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Skid Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (SKID CONTROL ECU)

OK --> See step 25

7. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (MAIN BODY ECU)**
   a. Disconnect the D13 main body ECU connector.
   b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"Main Body" not displayed on the Techstream.	A
Several ECUs and sensors other than "Main Body" not displayed on the Techstream.	B

B --> See step 9

A: Go to next step

8. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (MAIN BODY ECU BRANCH WIRE)**
   a. Measure the resistance according to the value(s) in the table below.

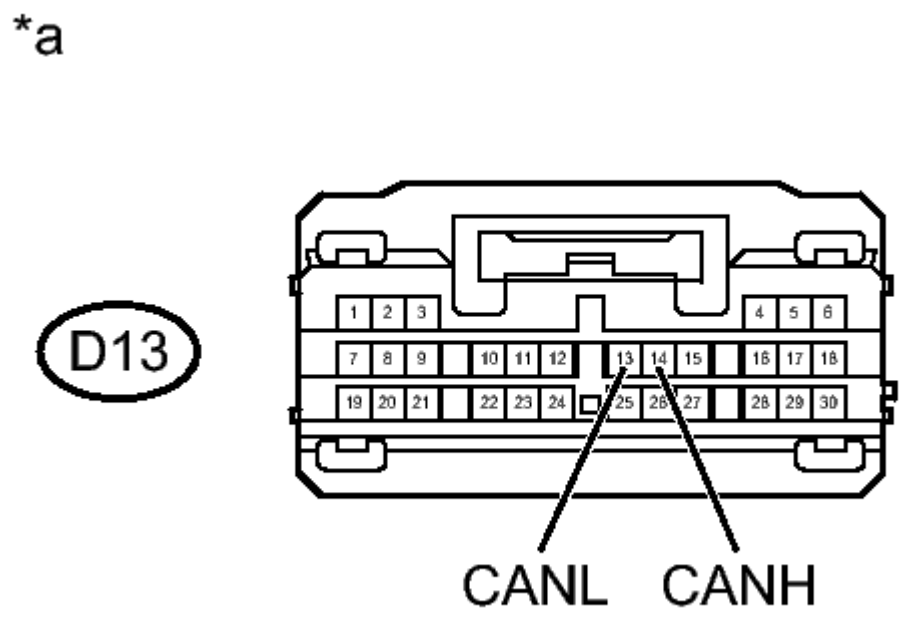


Fig. 243: Checking For Open In CAN BUS Wire (Main Body ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D13-14 (CANH) - D13-13 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (MAIN BODY ECU)

OK --> See step 26

9. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (CENTER AIRBAG SENSOR**

ASSEMBLY)

a. Disconnect the D40 center airbag sensor assembly connector.

b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"SRS Airbag" not displayed on the Techstream.	A
Several ECUs and sensors other than "SRS Airbag" not displayed on the Techstream.	B

B --> See step 11

A: Go to next step

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

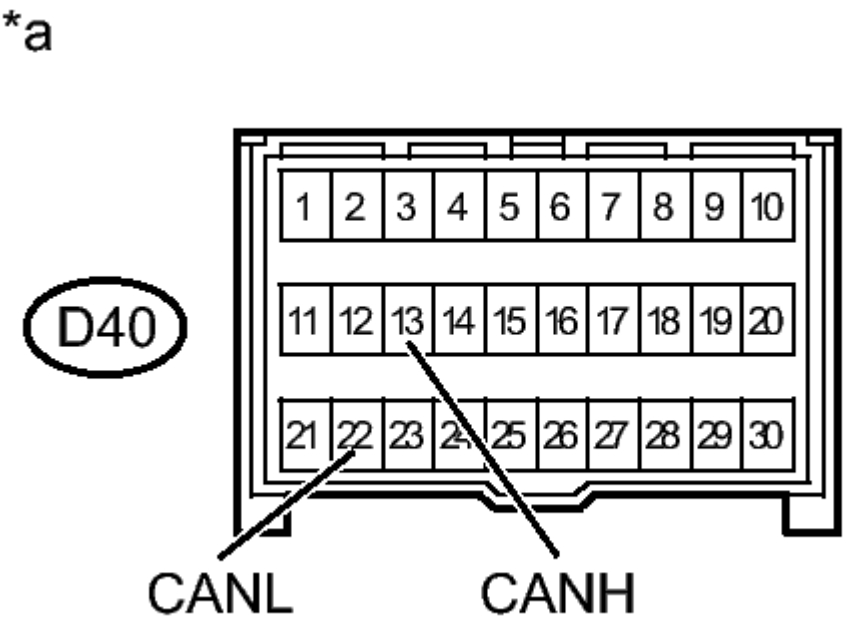


Fig. 244: Checking CAN BUS Line For Disconnection (Center Airbag Sensor Assembly Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D40-13 (CANH) - D40-22 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Center Airbag Sensor Assembly)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (CENTER AIRBAG

SENSOR ASSEMBLY)

OK --> See step 27

11. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (STEERING ANGLE SENSOR)**
    a. Disconnect the D22 steering angle sensor connector.
    b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"Steering Angle Sensor" not displayed on the Techstream.	A
Several ECUs and sensors other than "Steering Angle Sensor" not displayed on the Techstream.	B

B --> See step 13

A: Go to next step

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

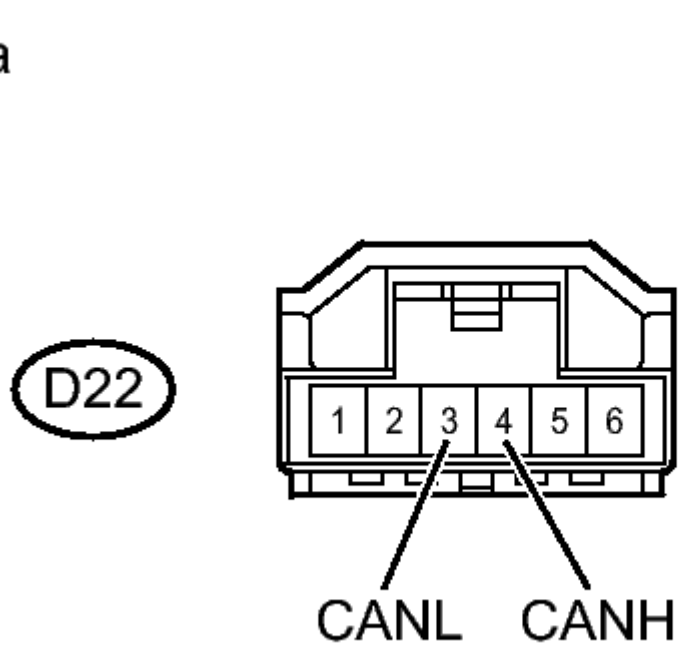


Fig. 245: Checking CAN BUS Line For Disconnection (Steering Angle Sensor Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D22-4 (CANH) - D22-3 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Steering Angle Sensor)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (STEERING ANGLE SENSOR)

OK --> See step 28

13. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (CERTIFICATION ECU)**

HINT:

For vehicle without smart key system, go to step 17.

a. Disconnect the D88 certification ECU connector.
b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"Smart Access / Smart Key / Wireless Tuner" not displayed on the Techstream.	A
Several ECUs and sensors other than "Smart Access / Smart Key / Wireless Tuner" not displayed on the Techstream.	B

B --> See step 15

A: Go to next step

14. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (CERTIFICATION ECU BRANCH WIRE)**

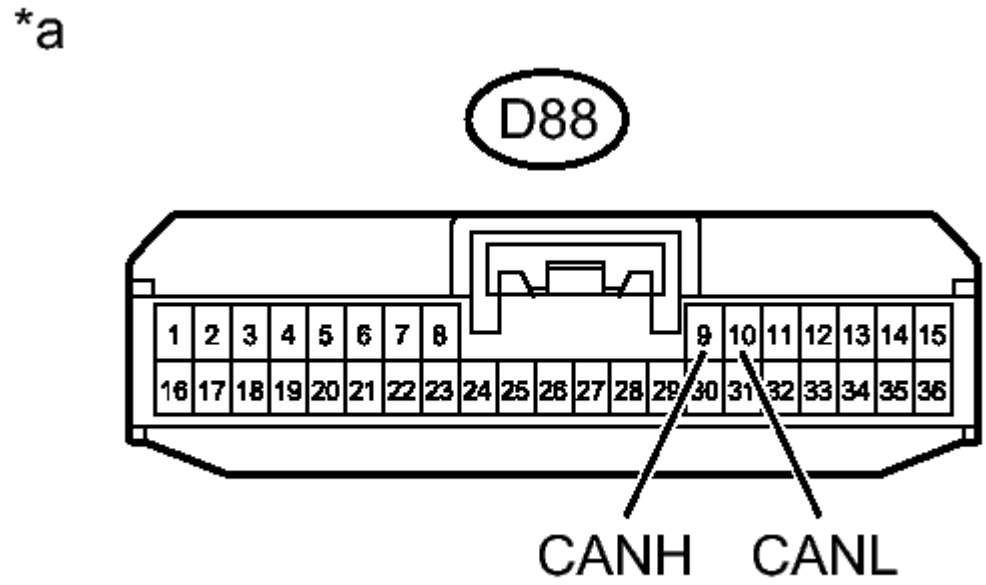


Fig. 246: Checking CAN BUS Line For Disconnection (Certification ECU Branch Wire Line)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D88-9 (CANH) - D88-10 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Certification ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (CERTIFICATION ECU)

OK --> See step 29

15. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER MANAGEMENT CONTROL ECU)**
    a. Disconnect the D89 power management control ECU connector.
    b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

    RESULT

Result	Proceed to
"Power Management" not displayed on the Techstream.	A
Several ECUs and sensors other than "Power Management" not displayed on the Techstream.	B

    B --> See step 17

    A: Go to next step

16. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER MANAGEMENT CONTROL ECU BRANCH WIRE)**

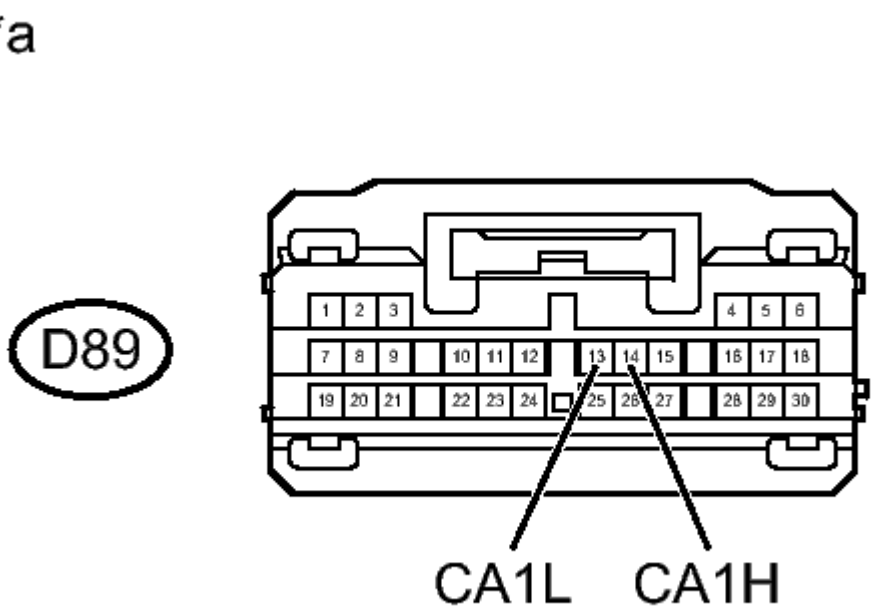


Fig. 247: Checking For Open In CAN BUS Wire (Power Management Control ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D89-14 (CA1H) - D89-13 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (POWER MANAGEMENT CONTROL ECU)

OK --> See step 30

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

HINT:

For vehicle with smart key system, go to step 21.

a. Disconnect the D75 air conditioning amplifier connector.
b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"Air Conditioner" not displayed on the Techstream.	A
Several ECUs and sensors other than "Air Conditioner" not displayed on the Techstream.	B

B --> See step 19

A: Go to next step

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

*a

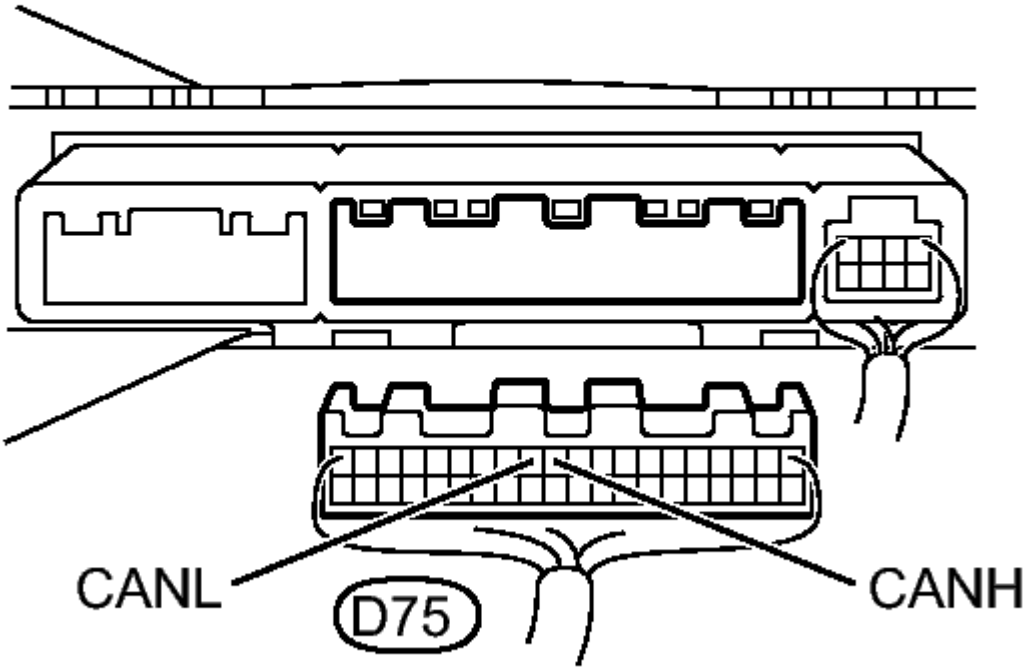


Fig. 248: Checking CAN BUS Line For Disconnection (Air Conditioning Amplifier Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Rear view of wire harness connector (to Air Conditioning Amplifier)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (AIR CONDITIONING AMPLIFIER)

OK --> See step 31

19. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (NETWORK GATEWAY ECU)**
    a. Disconnect the D90 network gateway ECU connector.
    b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"CAN Gateway" not displayed on the Techstream.	A
Several ECUs and sensors other than "CAN Gateway" not displayed on the Techstream.	B

B --> See step 21

A: Go to next step

20. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (NETWORK GATEWAY ECU BRANCH WIRE)**

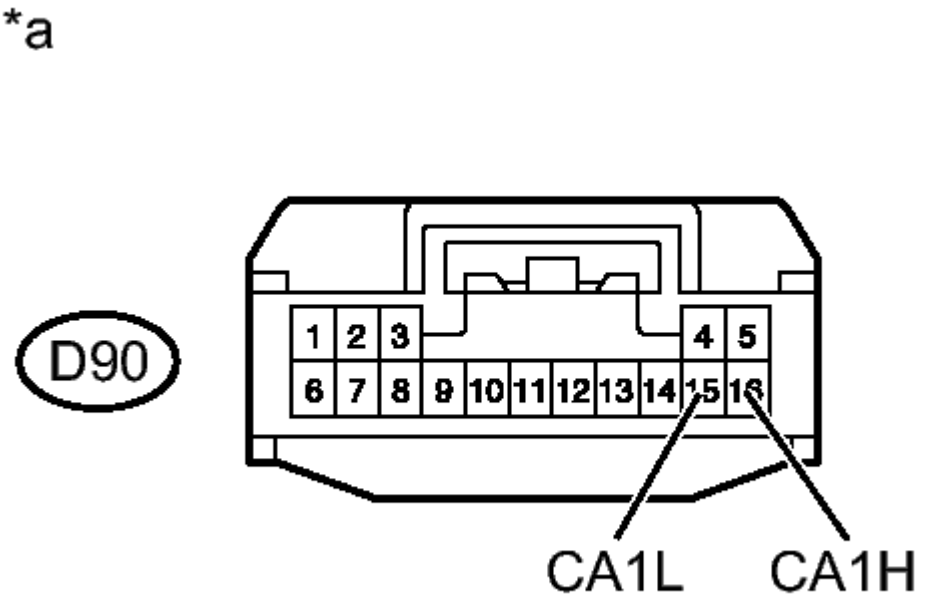


Fig. 249: Checking For Open In CAN BUS Wire (Network Gateway ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D90-16 (CA1H) - D90-15 (CA1L)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (NETWORK GATEWAY ECU)

OK --> See step 32

21. **CHECK FOR OPEN IN ONE SIDE OF BRANCH WIRE (POWER STEERING ECU)**
    a. Disconnect the D35 power steering ECU connector.
    b. Select "CAN BUS Check" on the Techstream. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
"EPS" not displayed on the Techstream.	A
Several ECUs and sensors other than "EPS" not displayed on the Techstream.	B

B --> See step 15

A: Go to next step

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

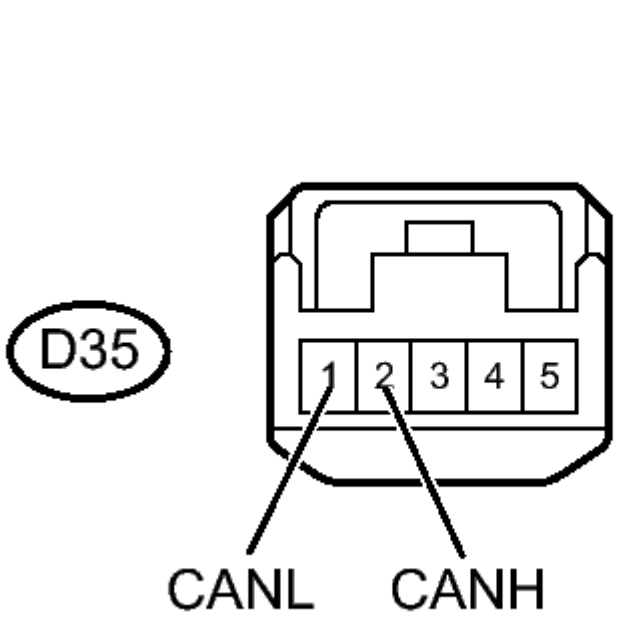


Fig. 250: Checking CAN BUS Line For Disconnection (Power Steering ECU Branch Wire)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D35-2 (CANH) - D35-1 (CANL)	Ignition switch off	54 to 69 ohms

TEXT IN ILLUSTRATION

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

NG --> REPAIR OR REPLACE CAN BRANCH WIRE OR CONNECTOR (POWER STEERING ECU)

OK --> See step 33

23. **REPLACE 4WD CONTROL ECU. Refer to REMOVAL**
24. **REPLACE YAW RATE SENSOR. Refer to REMOVAL**
25. **REPLACE SKID CONTROL ECU. Refer to REMOVAL**
26. **REPLACE MAIN BODY ECU. Refer to REMOVAL**
27. **REPLACE CENTER AIRBAG SENSOR ASSEMBLY. Refer to REMOVAL**
28. **REPLACE STEERING ANGLE SENSOR. Refer to REMOVAL**
29. **REPLACE CERTIFICATION ECU. Refer to REMOVAL**
30. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
31. **REPLACE AIR CONDITIONING AMPLIFIER. Refer to REMOVAL**
32. **REPLACE NETWORK GATEWAY ECU. Refer to REMOVAL**
33. **REPLACE STEERING COLUMN ASSEMBLY (POWER STEERING ECU). Refer to REMOVAL**

CAN COMMUNICATION SYSTEM

PRECAUTION

PRECAUTION

1. **IGNITION SWITCH EXPRESSION**
   a. The type of ignition switch used on this model differs according to the specification of the vehicle. The expressions listed in the table below are used in this information.

Expression	Ignition Switch (Position)	Engine Switch (Condition)
Ignition Switch off	LOCK	Off
Ignition Switch ACC	ACC	On (ACC)
Ignition Switch ON	ON	On (IG)
Engine Start	START	Start

2. **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.
3. **SRS AIRBAG SYSTEM HANDLING PRECAUTIONS**
   a. This vehicle is equipped with an SRS (Supplemental Restraint System), 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. Refer to **PRECAUTION** .
4. **BUS LINE REPAIR**
   a. After repairing the bus line with solder, wrap the repaired part with vinyl tape. Refer to **ELECTRONIC CIRCUIT INSPECTION PROCEDURE** .



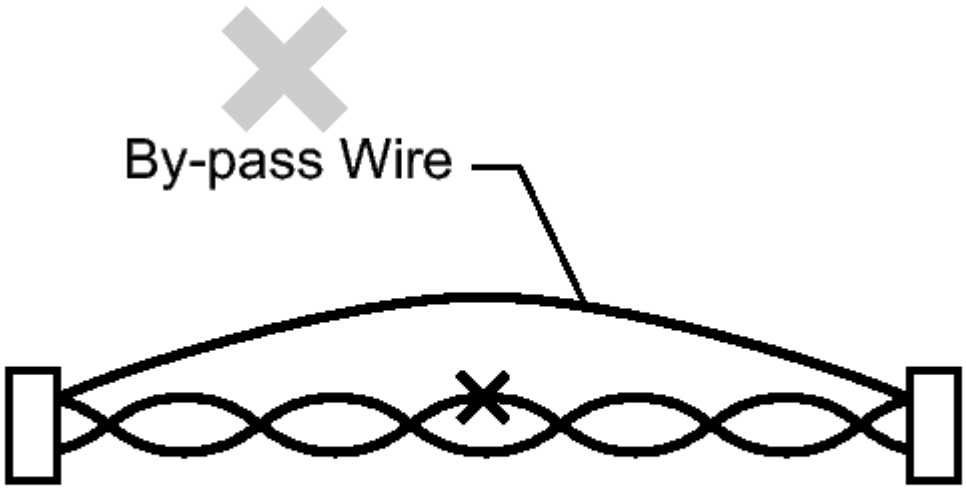
T

Fig. 1: Identifying Bus Line Repair Area
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- **The CANL bus line and CANH bus line must be installed together.**
- **When installing the CAN bus lines, make sure to twist them.**
- **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 (3.94 in.).**
- **Leave approximately 80 mm (3.15 in.) loose in the twisted wires around the connectors.**

b. Do not use by-pass wiring between the connectors.

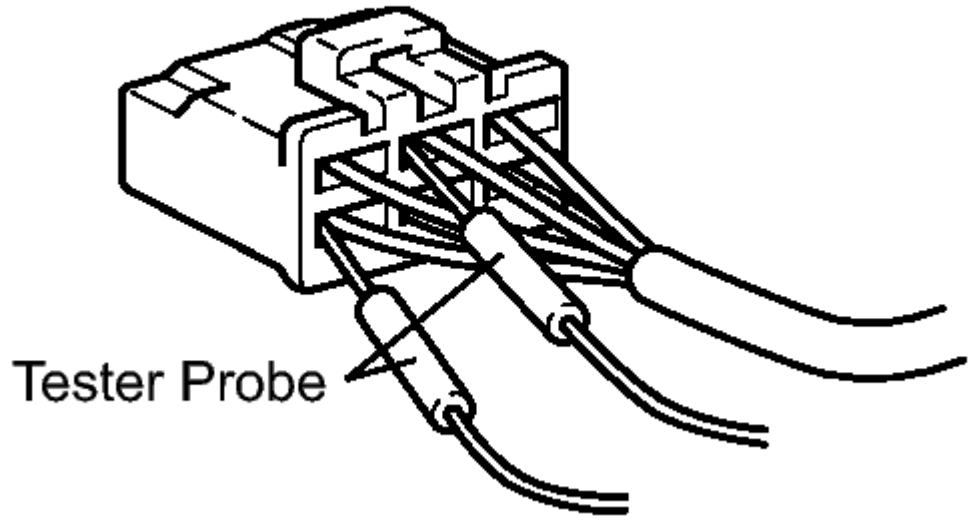


T

Fig. 2: Identifying By-Pass Wire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

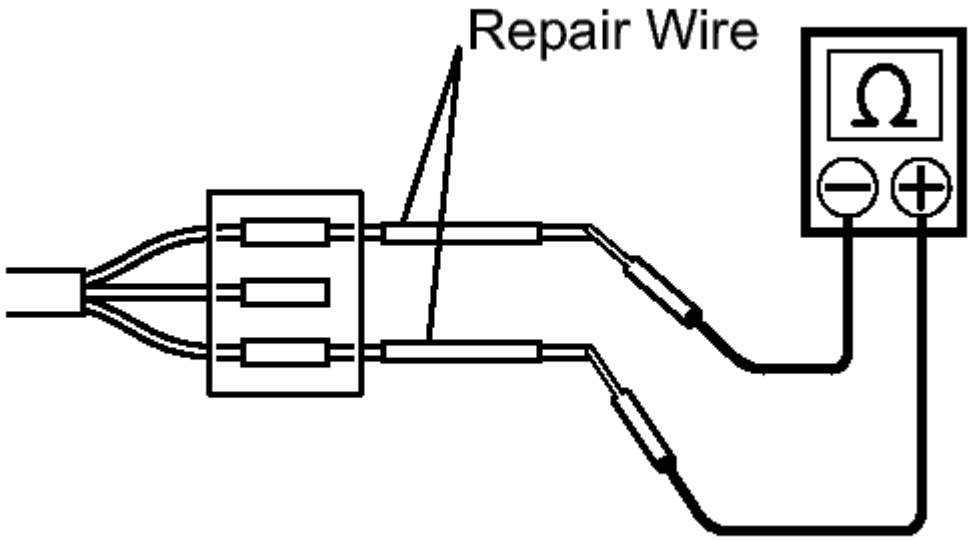
NOTE: The feature of the twisted wire harness will be lost if bypass wiring is used.

5. **CONNECTOR HANDLING**
   a. When inserting probes into a connector, insert them from the rear of the connector.



T

Fig. 3: Identifying Tester Probes Insertion Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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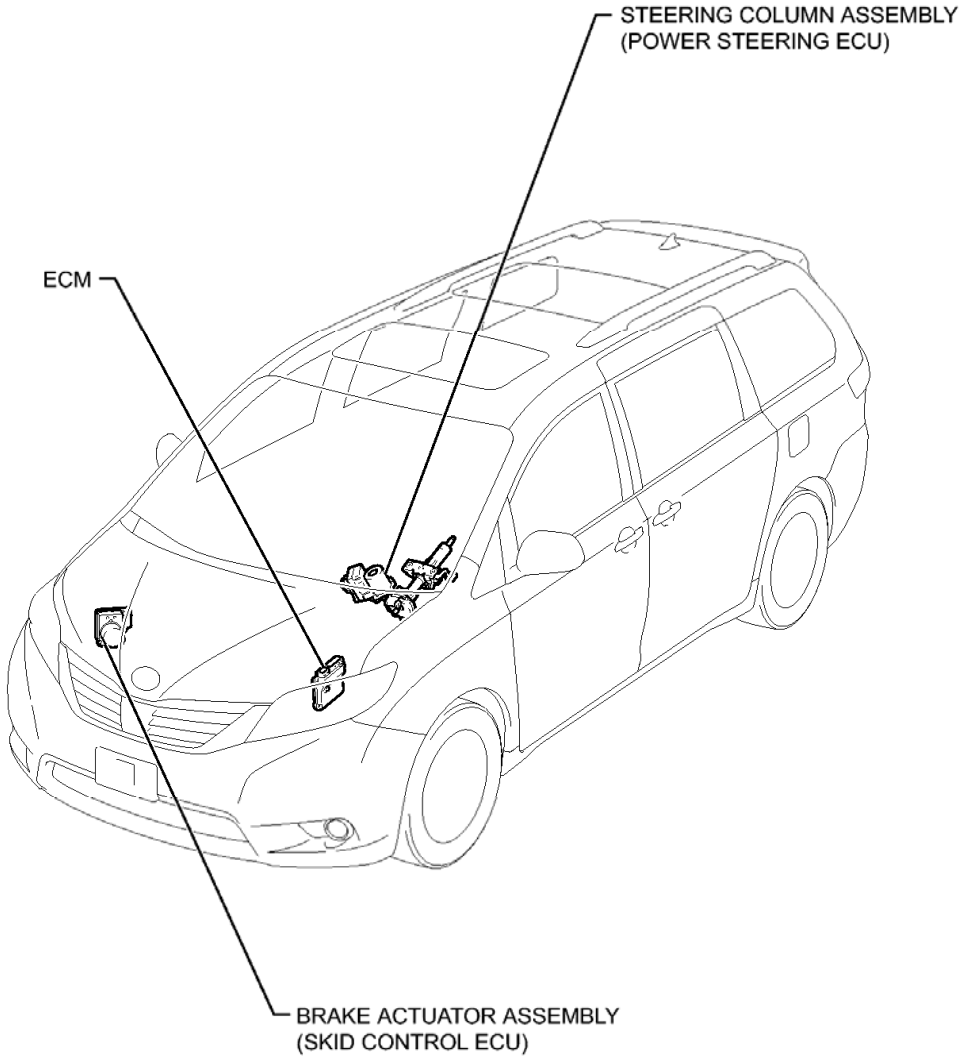
Fig. 4: Checking Repair Wire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

connector.

PARTS LOCATION

ILLUSTRATION



P

Fig. 5: CAN Communication System Components Location (1 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

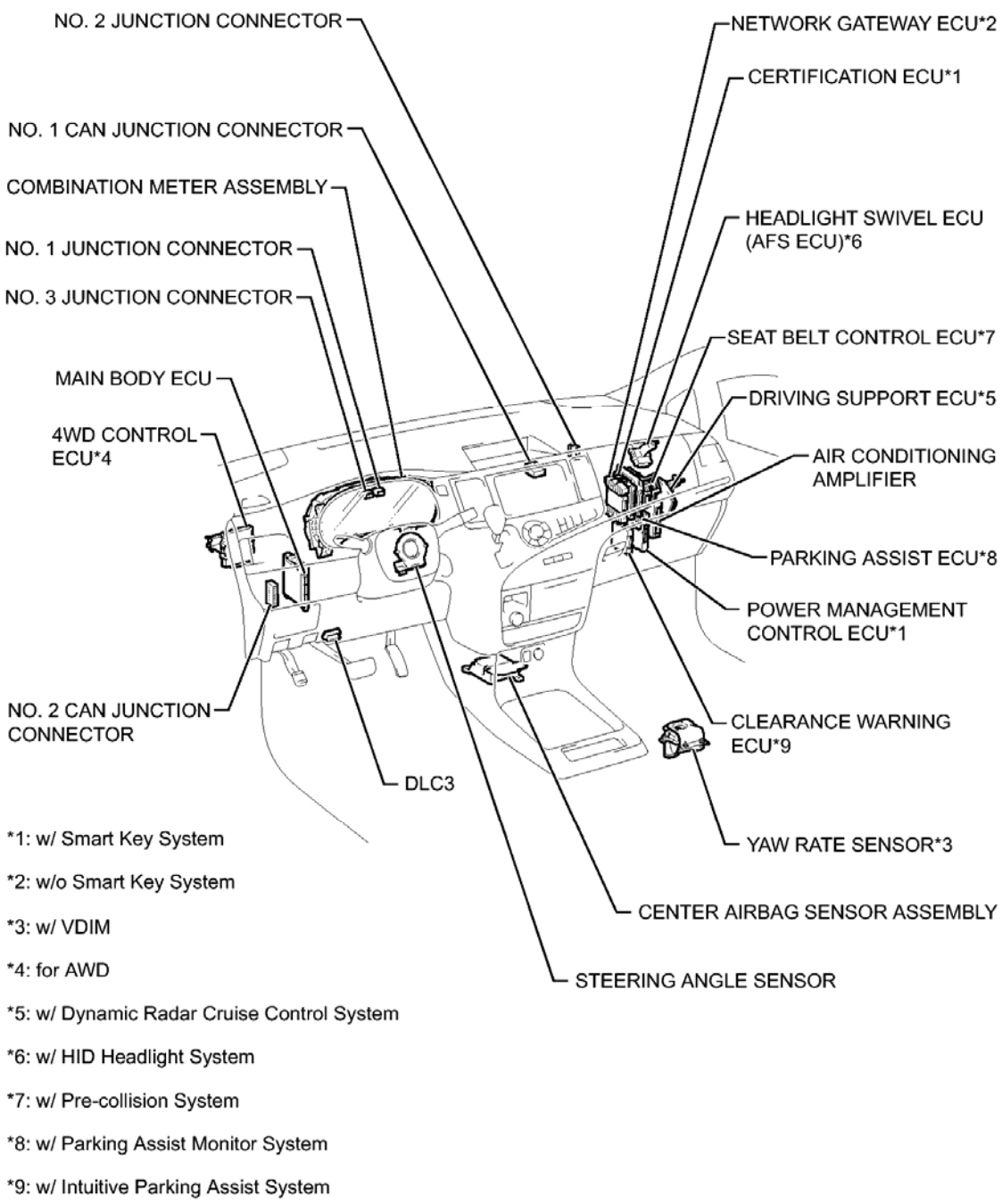
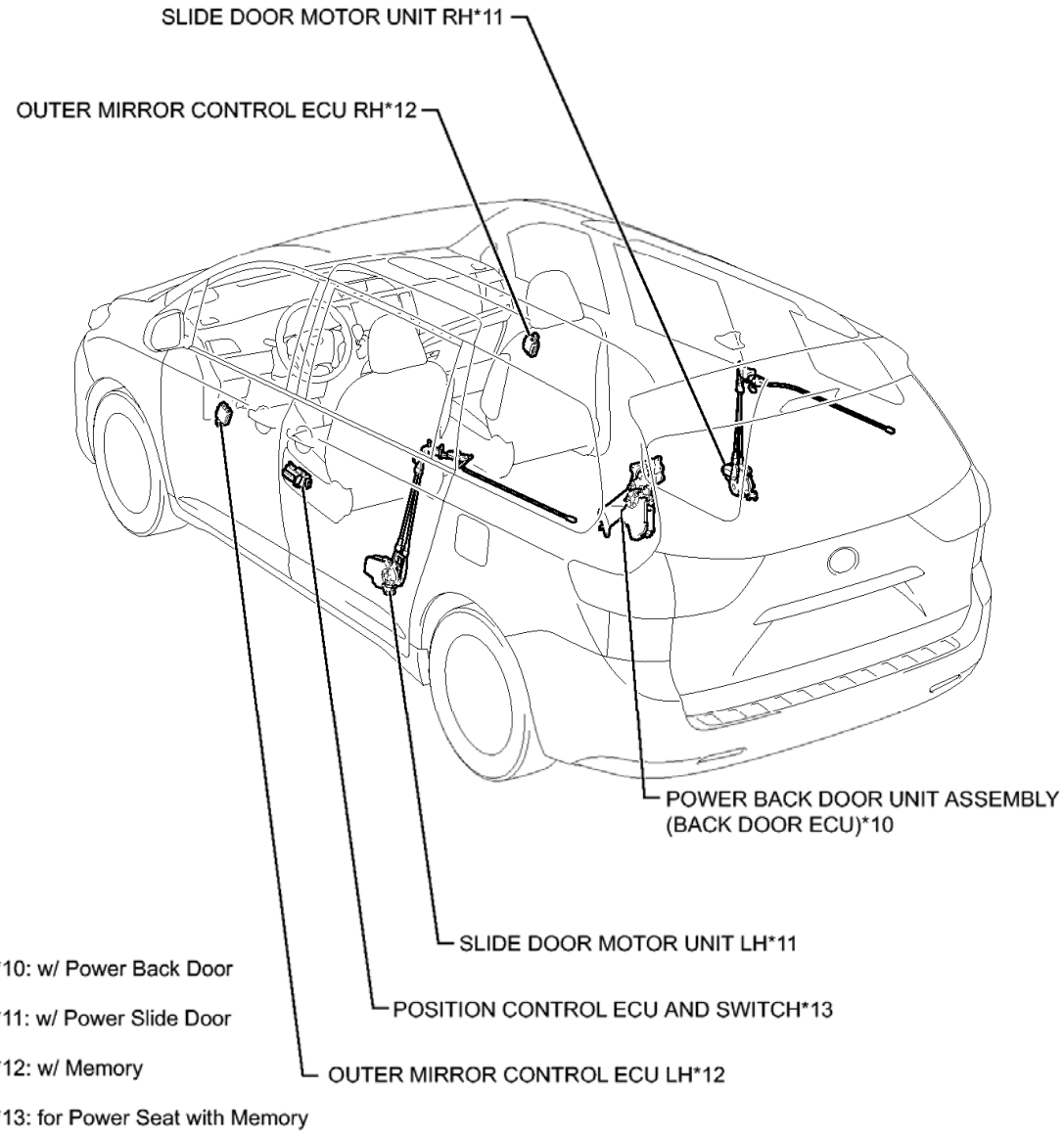


Fig. 6: CAN Communication System Components Location (2 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



P

Fig. 7: CAN Communication System Components Location (3 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

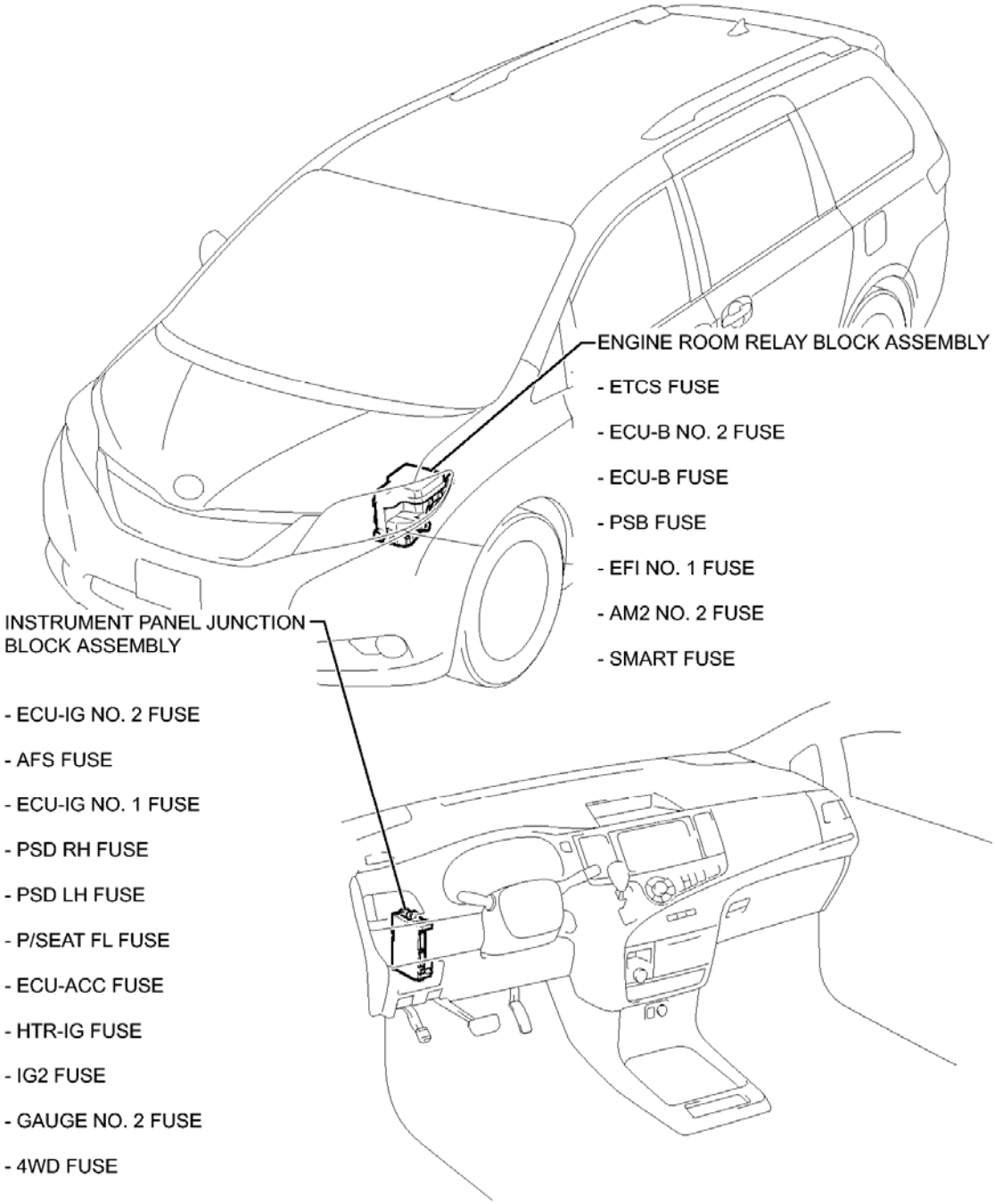


Fig. 8: CAN Communication System Components Location (4 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

Communication Diagram:

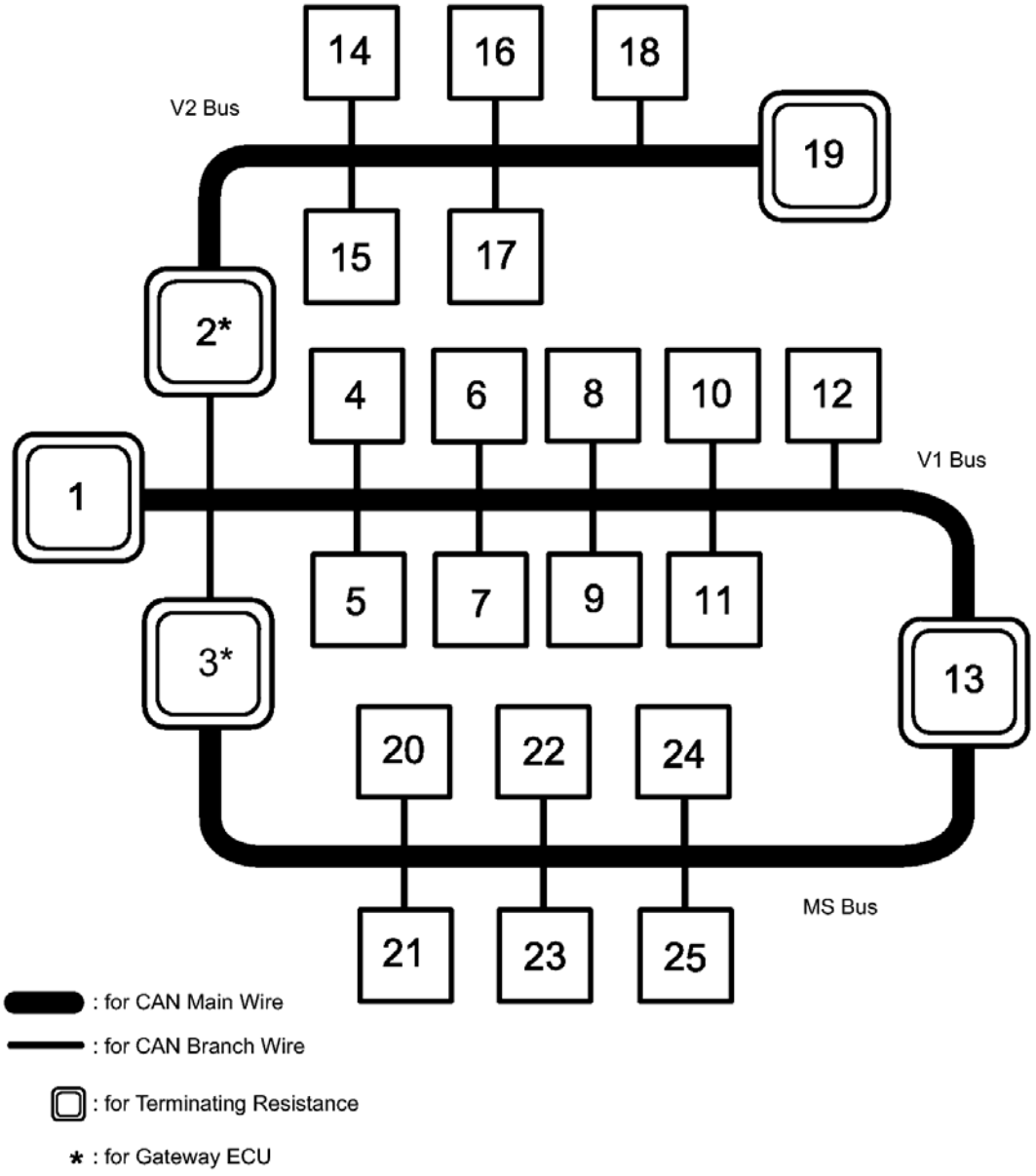


Fig. 9: CAN Communication System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

No.	ECU/Sensor name
1	ECM
2	Power Management Control ECU*1 or Network Gateway ECU*2
3	Main Body ECU
4	DLC3

5	Certification ECU (Smart Key System)*1
6	Brake Actuator Assembly (Skid Control ECU)
7	Steering Angle Sensor
8	Yaw Rate Sensor*3
9	Air Conditioning Amplifier*2
10	Center Airbag Sensor Assembly
11	Steering Column Assembly (Power Steering ECU)
12	4WD Control ECU*4
13	Combination Meter Assembly
14	Driving Support ECU*5
15	AFS ECU (Headlight Swivel ECU)*6
16	Seat Belt Control ECU*7
17	Parking Assist ECU*8
18	Clearance Warning ECU*9
19	No. 1 CAN Junction Connector
20	Power Back Door Unit (Back Door ECU)*10
21	Slide Door Motor Unit LH*11
22	Slide Door Motor Unit RH*11
23	Outer Mirror Control ECU LH*12
24	Outer Mirror Control ECU RH*12
25	Position Control ECU and Switch*13

*1: w/ Smart Key System
*2: w/o Smart Key System
*3: w/ VDIM
*4: for AWD
*5: w/ Dynamic Radar Cruise Control System
*6: w/ HID Headlight System
*7: w/ Pre-collision System
*8: w/ Parking Assist Monitor System
*9: w/ Intuitive Parking Assist System
*10: w/ Power Back Door
*11: w/ Power Slide Door
*12: w/ Memory
*13: for Power Seat with Memory

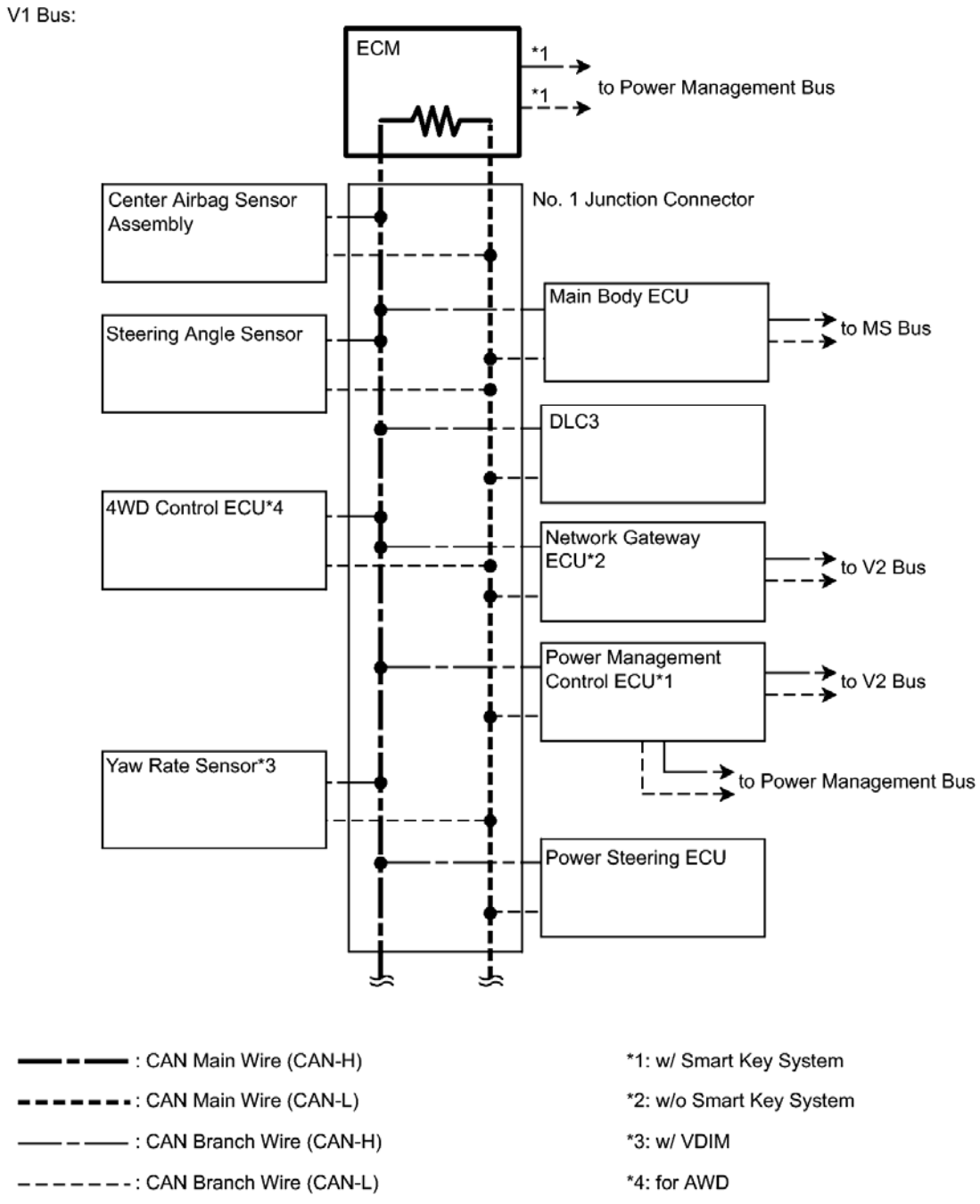


Fig. 10: CAN Communication System Diagram - V1 Bus (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

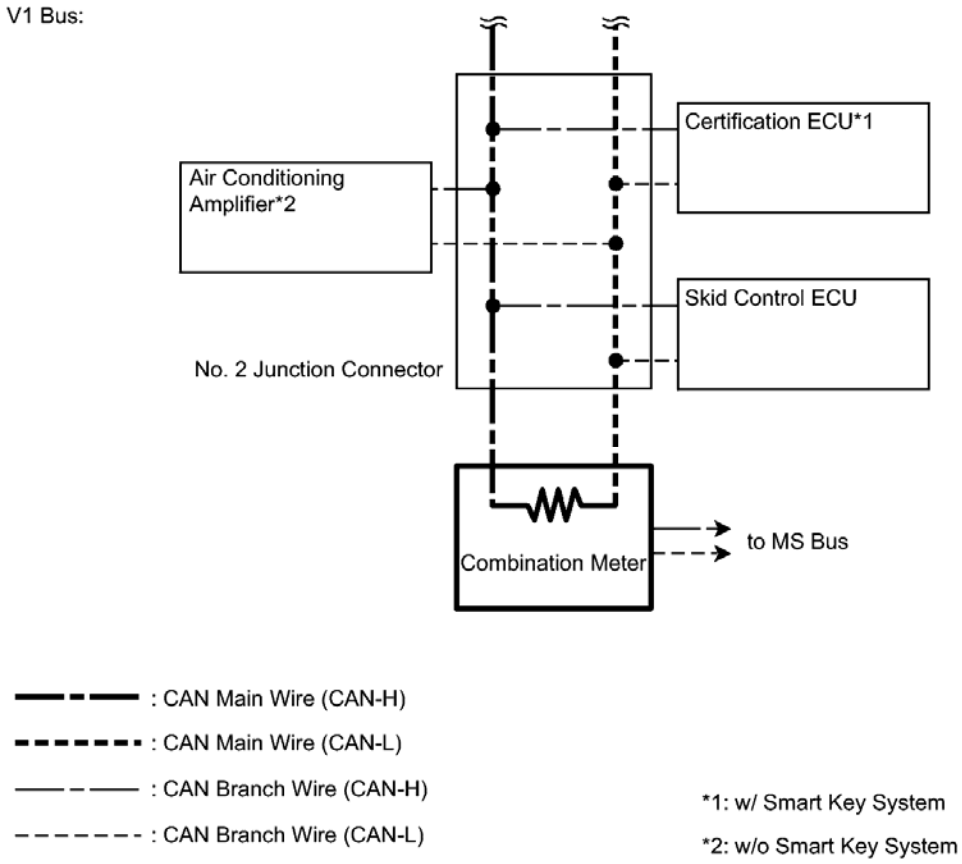


Fig. 11: CAN Communication System Diagram - V1 Bus (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

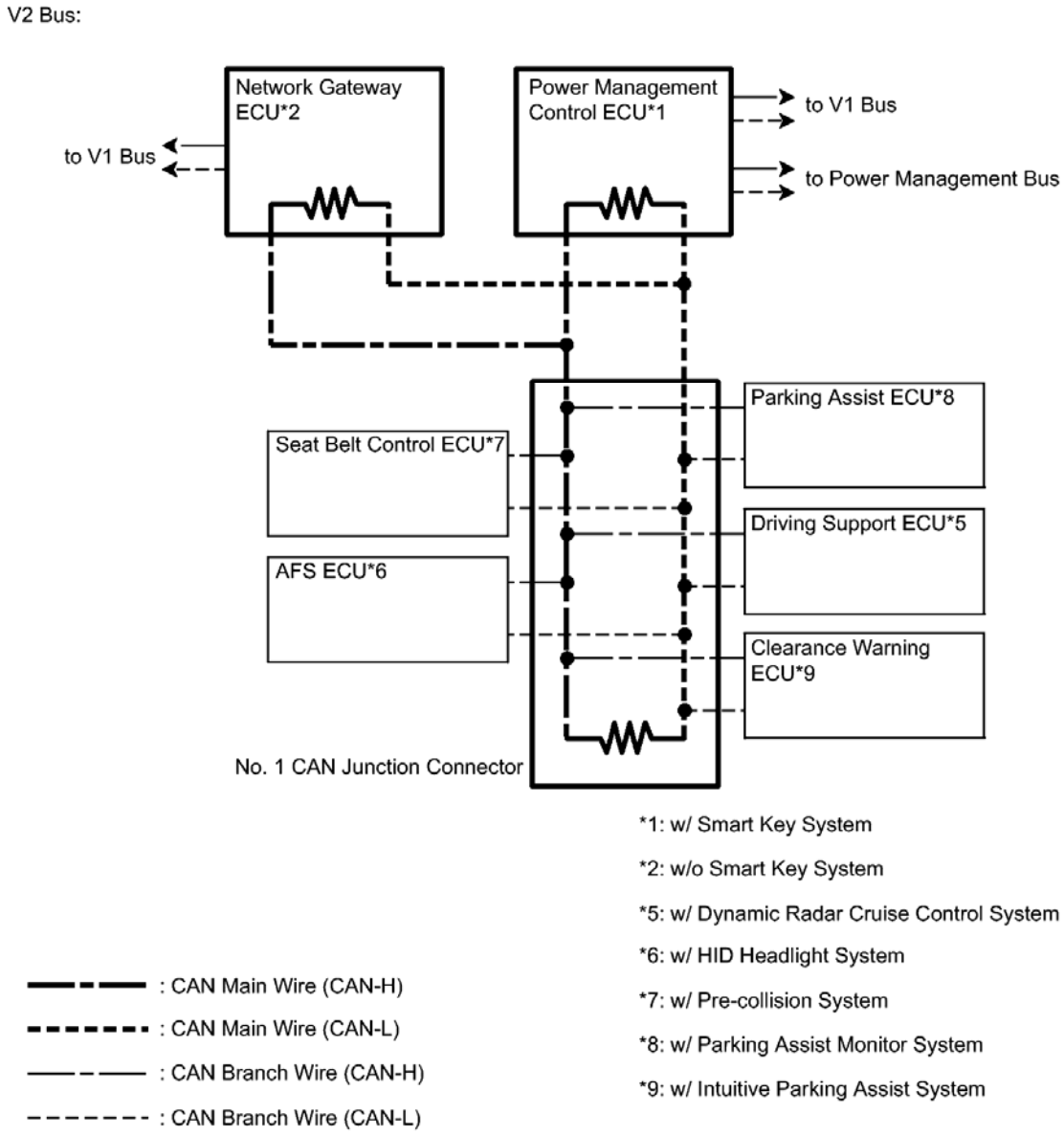


Fig. 12: CAN Communication System Diagram - V2 Bus
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

MS Bus:

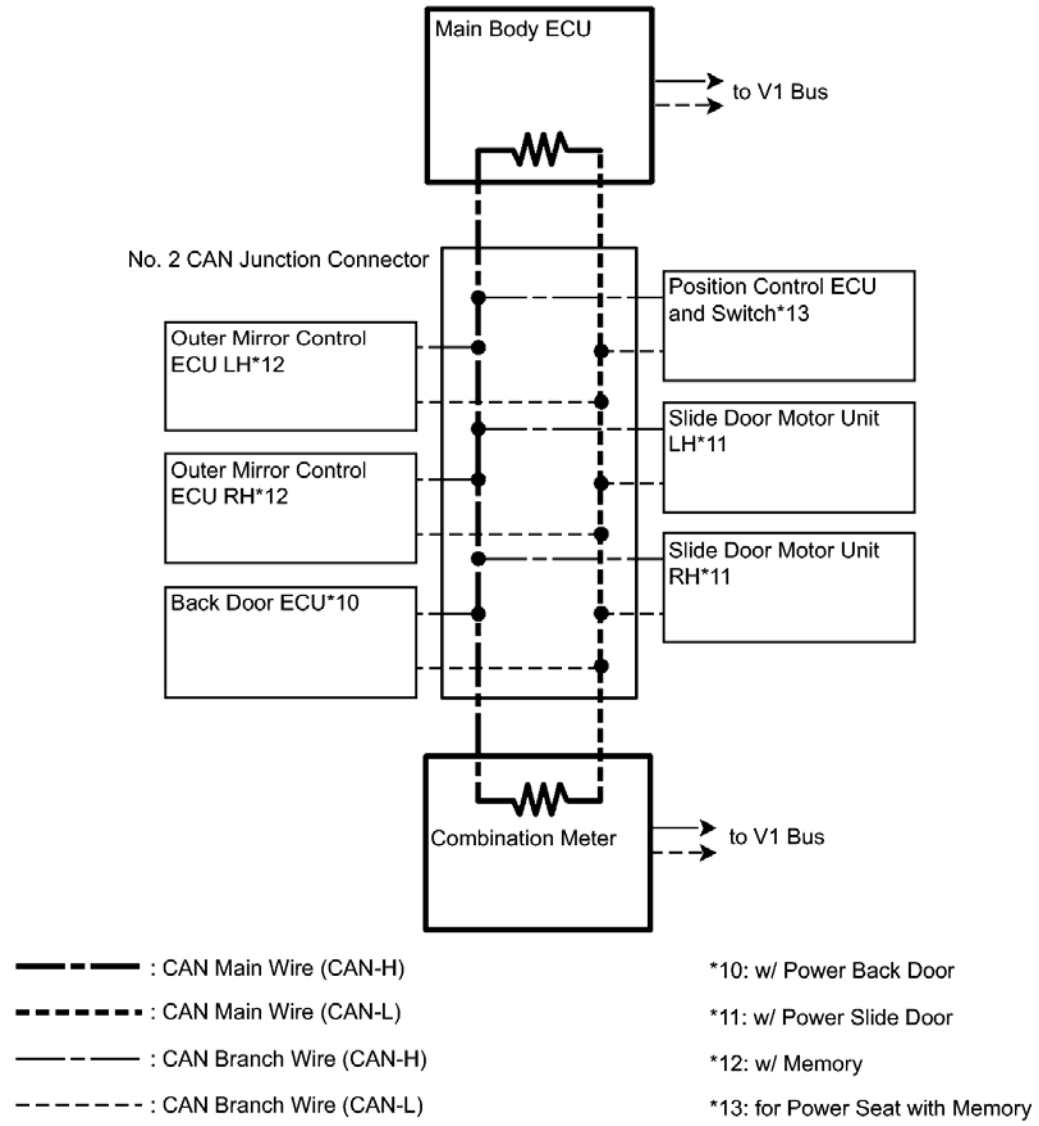


Fig. 13: CAN Communication System Diagram - MS Bus
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

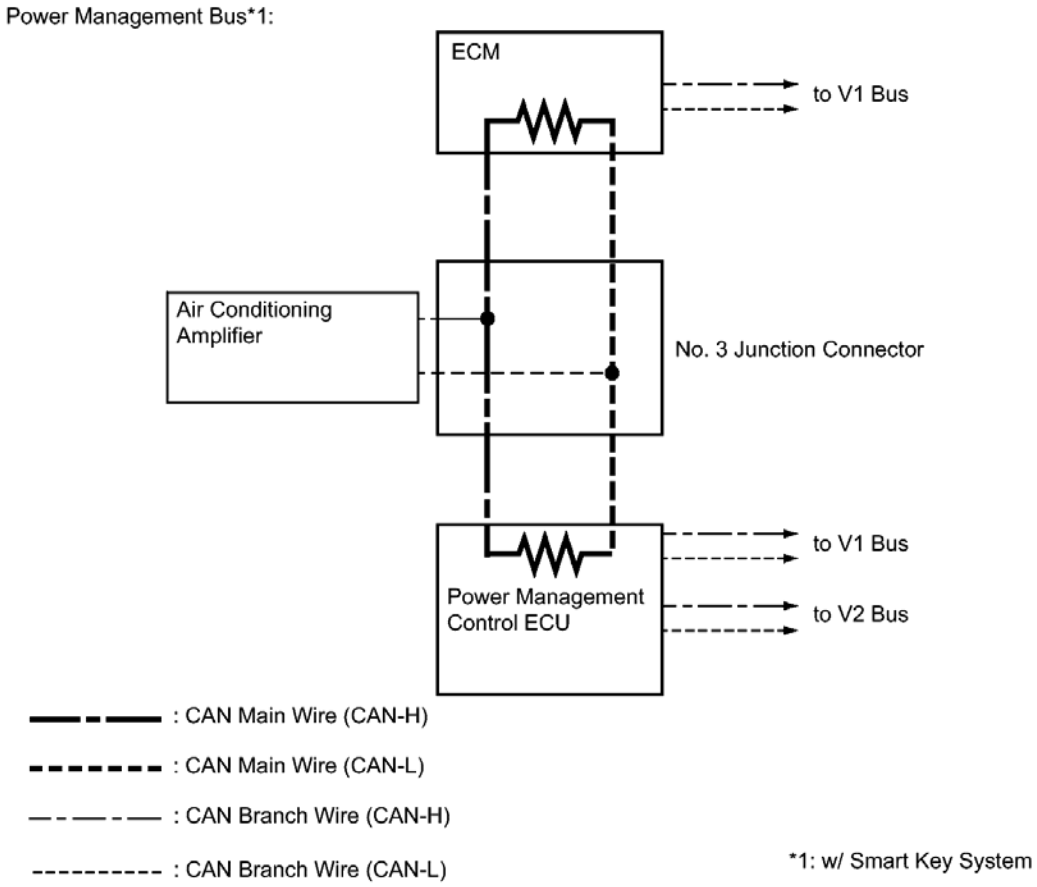


Fig. 14: CAN Communication System Diagram - Power Management Bus
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The skid control ECU detects and stores steering sensor and yaw rate sensor DTCs and performs DTC communication by receiving information from the steering sensor and yaw rate sensor.

SYSTEM DESCRIPTION

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, 250 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 ohms 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 circuits
        1. The termination circuit is a circuit which converts the communication current of the CAN communication into the bus voltage. It consists of a resistor and condenser. 2 termination circuits are necessary on a bus.
    d. CAN junction connector
        1. The CAN junction connector is designed so that it can be used with CAN communication which has a termination circuit and CAN communication which does not have a termination circuit.
3. **CIRCUIT DESCRIPTION**
    a. The V bus, movement control bus and MS bus each have termination circuits with resistance of 120 ohms x 2. High speed communication at 500 kbps and 250 kbps is possible.
4. **ECUS OR SENSORS WHICH COMMUNICATE VIA CAN COMMUNICATION SYSTEM**
    a. ECM
    b. Power management control ECU*1
    c. Network gateway ECU*2
    d. Main body ECU
    e. Certification ECU (smart key ECU)*1
    f. Master cylinder solenoid (skid control ECU)
    g. Steering angle sensor
    h. Yaw rate sensor*3
    i. Air conditioning amplifier
    j. Center airbag sensor assembly
    k. Steering column assembly (Power steering ECU)
    l. 4WD control ECU*4
    m. Combination meter
    n. Driving support ECU*5
    o. AFS ECU (headlight swivel ECU)*6
    p. Seat belt control ECU*7
    q. Parking assist ECU*8
    r. Clearance warning ECU*9
    s. Power back door unit (back door ECU)*10
    t. Slide door motor unit (slide door ECU)*11
    u. Outer mirror control ECU*12

v. Position control ECU and switch*13

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: w/ VDIM

*4: for AWD

*5: w/ Dynamic Radar Cruise Control System

*6: w/ HID Headlight System

*7: w/ Pre-collision System

*8: w/ Parking Assist Monitor System

*9: w/ Intuitive Parking Assist System

*10: w/ Power Back Door

*11: w/ Power Slide Door

*12: w/ Memory

*13: for Power Seat with Memory

5. **DIAGNOSTIC CODES FOR CAN COMMUNICATION SYSTEM**
   a. DTCs for the CAN communication system are as follows: U0100, U0101, U0104, U0122, U0123, U0124, U0126, U0128, U0129, U0140, U0142, U0151, U0155, U0182, U0199, U0200, U0201, U0202, U0208, U0327, U1002, U1104, U1100, U1104, U1110, U1133, U110B, B1499, B2799, C1203 and C1437.
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).
   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.
7. **HOW TO DISTINGUISH CAN JUNCTION CONNECTOR**
   a. In the CAN communication system, the shape of all connectors connected to the CAN junction connector is the same.

      The connectors connected to the CAN junction connector can be distinguished by the colors of the bus line and the connecting side of the connector.

      HINT:

      See "Terminals of ECU". Refer to **TERMINALS OF ECU** for bus line color or the type of connecting surface.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire

and the branch wire.

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

NOTE:

- **DTCs for the CAN communication system are as follows: U0100, U0101, U0104, U0122, U0123, U0124, U0126, U0128, U0129, U0140, U0142, U0151, U0155, U0182, U0199, U0200, U0201, U0202, U0208, U0327, U1002, U1104, U1100, U1104, U1110, U1133, U110B, B1499, B2799, C1203 and C1437.**
- **Refer to the troubleshooting procedures of each system if DTCs regarding the CAN communication system are not output.**
- **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.
- *: Use the Techstream.

1. **VEHICLE BROUGHT TO WORKSHOP**

   NEXT: Go to next step

2. **INSPECT BATTERY VOLTAGE**

   Standard Voltage

   11 to 14 V

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

   NEXT: Go to next step

3. **CHECK AND CLEAR DTC***
   a. Using the Techstream, perform the Health Check (all DTCs check).

NOTE:

- **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: Go to next step

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. Refer to **DIAGNOSIS SYSTEM**.

   NEXT: Go to next step

5. **CHECK DLC3 BRANCH WIRE AND V BUS CIRCUIT MAIN WIRE (CANH - CANL)**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.
   b. Measure the resistance according to the value(s) in the table below.

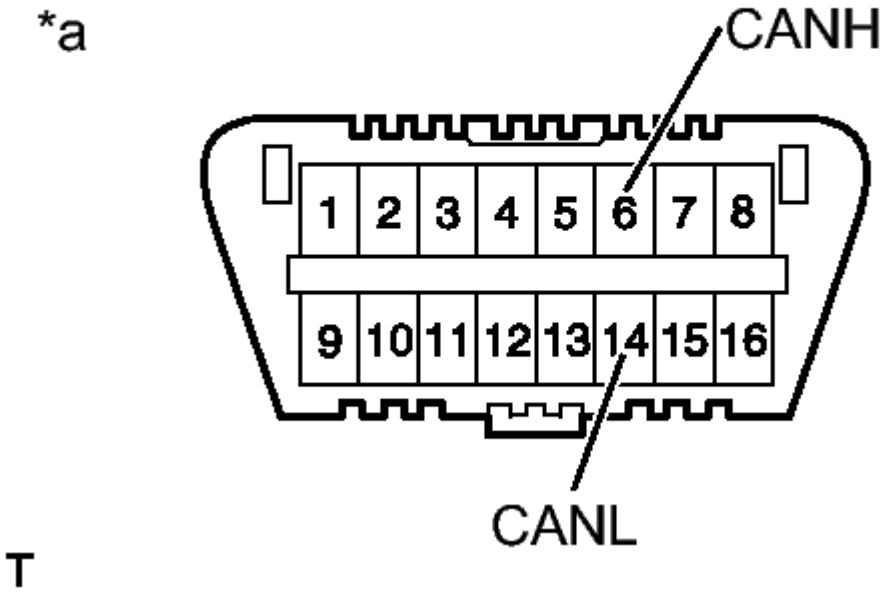


Fig. 15: DLC3 Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition	Proceed to
6 (CANH) - 14 (CANL)	Ignition switch off	OK (54 to 69 ohms)	A

6 (CANH) - 14 (CANL)	Ignition switch off	NG (70 ohms or higher)	B
6 (CANH) - 14 (CANL)	Ignition switch off	NG (Below 54 ohms)	C

TEXT IN ILLUSTRATION

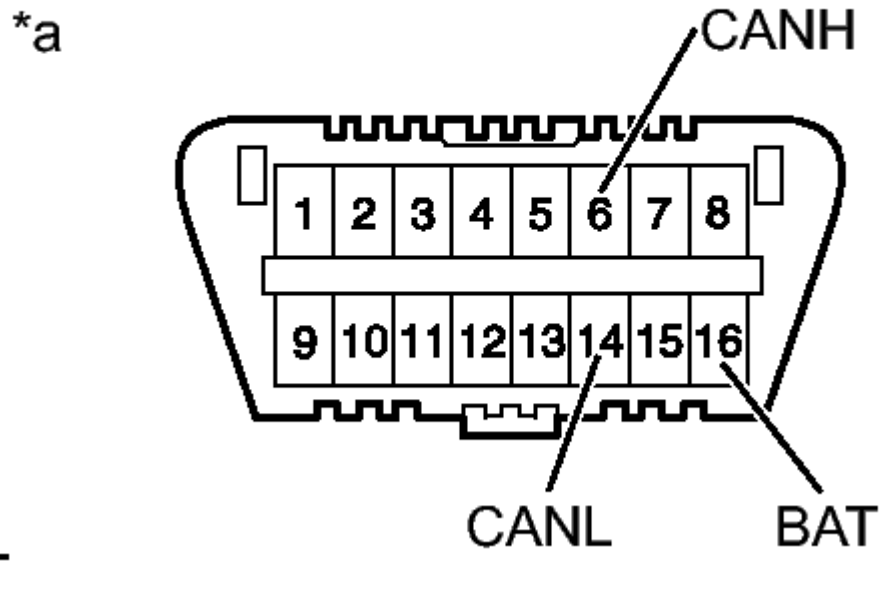
*a	DLC3

B --> Go to OPEN IN CAN MAIN BUS LINE. Refer to Open in CAN Main Bus Line

C --> Go to CHECK CAN BUS LINES FOR SHORT CIRCUIT. Refer to Check CAN Bus Lines for Short Circuit

A: Go to next step

6. **CHECK V BUS CIRCUIT +B (CANH, CANL - BAT)**
   a. Measure the resistance according to the value(s) in the table below.



T

Fig. 16: DLC3 Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester	Switch	Specified

Connection	Condition	Condition
6 (CANH) - 16 (BAT)	Ignition switch off	6 kohms or higher
14 (CANL) - 16 (BAT)	Ignition switch off	6 kohms or higher

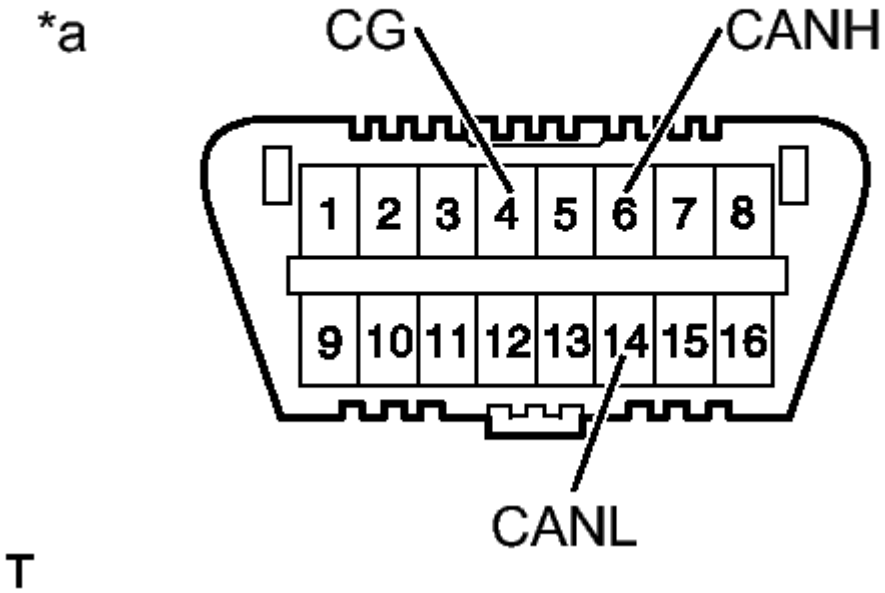
TEXT IN ILLUSTRATION

*a	DLC3

NG --> Go to CHECK CAN BUS LINE FOR SHORT TO +B. Refer to Check CAN Bus Line for Short to +B

OK: Go to next step

7. **CHECK V BUS CIRCUIT GND (CANH, CANL - CG)**
   a. Measure the resistance according to the value(s) in the table below.



T

Fig. 17: DLC3 Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (CANH) - 4 (CG)	Ignition switch off	200 ohms or higher

14 (CANL) - 4 (CG)	Ignition switch off	200 ohms or higher

TEXT IN ILLUSTRATION

*a	DLC3

NG --> Go to CHECK CAN BUS LINE FOR SHORT TO GND. Refer to Check CAN Bus Line for Short to GND

OK: Go to next step

8. **CHECK ECUS CONNECTED TO CAN BUS***

*1: w/ Smart Key System

*2: w/o Smart Key System

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

b. Select "CAN Bus Check" from "System Select".

c. Wait 1 minute and then check the display of the connected ECUs and sensors.

RESULT

Inspection Result	Proceed to
All ECUs and sensors connected to the CAN communication system are displayed on the screen.	A
Except for the power management control ECU*1 or network gateway ECU*2, no ECUs connected to the V2 bus are displayed. The power management control ECU*1 or network gateway	B

ECU*2 outputs the V2 bus trouble code (U1002) (the V2 bus main wire open or short malfunction).	
Except for the power management control ECU*1, no ECUs connected to the power management bus are displayed. The power management control ECU*1 outputs the power management bus trouble code (U1002) (the power management bus main wire open or short malfunction).	C
Except for the main body ECU, no ECUs connected to the MS bus are displayed. The main body ECU outputs the MS bus trouble code (U1002) (the MS bus main wire open or short malfunction).	D

An ECU or sensor that should be connected to the CAN communication system is not displayed (the ECU or sensor branch wire is open).	E
An ECU or sensor that should be connected to the CAN communication system is not displayed or display is intermittent during check (the ECU or sensor branch wire is open on one side).	F

NOTE: **The ECUs and sensors that are not present will not be displayed. Be careful not to mistake them for communication stop malfunctions.**

HINT:

- If the display of an ECU is intermittent during the check, one side of an ECU or sensor branch wire is open (The signal of the ECU is treated as noise, which affects the response and display of the Techstream).
- The power management control ECU*1 or network gateway ECU*2 checks for proper ECU communication for ECUs that are connected to the CAN V2 bus circuit, and the results are displayed on the Techstream.
- The gateway ECU built into the power management control ECU*1 or network gateway ECU*2 may be malfunctioning if both of the following occur: 1) all ECUs connected to the V2 bus are not displayed on the Techstream; and 2) DTC U1002 is not output.
- The power management control ECU checks for proper ECU communication for ECUs that are connected to the power management bus circuit, and the results are displayed on the Techstream.
- The gateway ECU built into the power management control ECU may be malfunctioning if both of the following occur: 1) all ECUs connected to the power management bus are not

displayed on the Techstream; and 2) DTC U1002 is not output.

- The main body ECU checks for proper ECU communication for ECUs that are connected to the CAN MS bus circuit, and the results are displayed on the Techstream.
- The gateway ECU built into the main body ECU may be malfunctioning if both of the following occur: 1) all ECUs connected to the MS bus are not displayed on the Techstream; and 2) DTC U1002 is not output.
- If communication stops between an ECU and the main body ECU or network gateway ECU for 10 seconds or more, the ECU disappears from the Techstream display.
- For communication stop mode of ECUs connected to the CAN V2 bus circuit, power management bus circuit or CAN MS bus circuit, refer to the DTC flowchart of the respective communication stop.

B --> Go to DTC U1002 (V2 Bus) FLOWCHART. Refer to DTC U1002 (CAN No. 2 BUS): Lost Communication with Gateway Module (Network Gateway ECU)

C --> Go to DTC U1002 (Power Management Bus) FLOWCHART. Refer to DTC U1002: Lost Communication with Gateway Module (Power Management2)

D --> Go to DTC U1002 (MS Bus) FLOWCHART. Refer to DTC U1002 (CAN MS BUS): Lost Communication with Gateway Module (Main body ECU)

E --> Go to PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE

F --> Go to OPEN IN ONE SIDE OF CAN BRANCH LINE FLOWCHART. Refer to Open in One Side of CAN Branch Line

A: Go to next step

9. **CHECK COMMUNICATION MALFUNCTION DTC (PAST DTC CHECK)***

*1: w/ Smart Key System

*2: w/o Smart Key System

a. Select "CAN Bus Check" from "System Select".

b. Write down all of the DTCs stored in each ECU.

HINT:

- If there are communication malfunction DTCs stored but the Techstream "CAN Bus Check - Communication Bus Check" screen displays all of the ECUs and sensors connected to the CAN system, the communication malfunction DTCs may be past malfunctions that are no longer present.
- For V1 bus main wire malfunctions, related ECUs are also detected. Therefore, determine the malfunctioning area based on all of the DTCs that are output.
- For V2 bus malfunctions, DTCs are stored based on the detection of communication stop malfunctions and network malfunctions of ECUs that are connected by the power management control ECU*1 or network gateway ECU*2.

- For power management bus malfunctions, DTCs are stored based on the detection of communication stop malfunctions and network malfunctions of ECUs that are connected by the power management control ECU*1.
- For MS bus malfunctions, DTCs are stored based on the detection of communication stop malfunctions and network malfunctions of ECUs that are connected by the main body ECU.

RESULT

Inspection Result	Proceed to
An ECU connected to the V bus main wire has stored a communication trouble code (V bus main wire past malfunction).	A
The power management control ECU*1 or network gateway ECU*2 (power management1) outputs the V2 bus trouble code (U1002) (V2 bus past malfunction).	B
The power management control ECU*1 (power management2) outputs the power management bus trouble code (U1002) (power management bus past malfunction).	C
The main body ECU outputs	

the MS bus trouble code (U1002) (MS bus past malfunction).	D
The power management control ECU*1 or network gateway ECU*2 (power management1) outputs a trouble code other than V2 bus trouble code (U1002) (past malfunction of branch wire connected to V2 bus).	E
The power management control ECU*1 (power management2) outputs a trouble code other than power management bus trouble code (U1002) (past malfunction of branch wire connected to power management bus).	E
The main body ECU (cowl side junction block LH) outputs a trouble code	

other than MS bus trouble code (U1002) (past malfunction of ECU branch wire connected to MS bus).	E

B --> Go to DTC U1002 (V2 Bus) FLOWCHART. Refer to DTC U1002 (CAN No. 2 BUS): Lost Communication with Gateway Module (Network Gateway ECU)

C --> Go to DTC U1002 (Power Management Bus) FLOWCHART. Refer to DTC U1002: Lost Communication with Gateway Module (Power Management2)

D --> Go to DTC U1002 (MS Bus) FLOWCHART. Refer to DTC U1002 (CAN MS BUS): Lost Communication with Gateway Module (Main body ECU) .

E --> Go to DIAGNOSTIC TROUBLE CODE CHART. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

10. **CHECK DTC COMBINATION TABLE (V BUS CIRCUIT BRANCH WIRE OPEN PAST MALFUNCTION)**
    a. Based on the combination of stored CAN communication system DTCs, determine which ECUs and sensors have a communication stop malfunction. Refer to **DIAGNOSIS SYSTEM**.

    NEXT: Go to next step

11. **PERFORM MALFUNCTION SIMULATION TEST (V BUS CIRCUIT MAIN WIRE PAST MALFUNCTION)***
    a. Using the Techstream, clear all DTCs.
    b. Perform a malfunction simulation test on all harnesses and connectors related to the V bus circuit main wire.
    c. Check the DTCs that were stored as a result of the malfunction simulation test. Then determine the malfunctioning area.

    NEXT: Go to next step

12. **ADJUST, REPAIR AND REPLACE**

    NEXT: Go to next step

13. **CONFIRMATION TEST**

NEXT --> END

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

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

RESULT LIST OF CHECK CAN BUS LINE

Symptom	Suspected Area	See
Open in CAN Main Wire.	Open in CAN Main Bus Line	Refer to **Open in CAN Main Bus Line**
Short in CAN Bus Line.	Check CAN Bus Lines for Short Circuit	Refer to **Check CAN Bus Lines for Short Circuit**
Short to +B in CAN Bus Line.	Check CAN Bus Line for Short to +B	Refer to **Check CAN Bus Line for Short to +B**
Short to GND in CAN Bus Line.	Check CAN Bus Line for Short to GND	Refer to **Check CAN Bus Line for Short to GND**
Open in One Side of CAN Branch Wire.	Open in One Side of CAN Branch Line	Refer to **Open in One Side of CAN Branch Line**

COMMUNICATION STOP MODE TABLE

Symptom	Suspected Area	See
"ABS/VSC/TRAC" not displayed on the Techstream.	Skid Control ECU Communication Stop Mode	Refer to **Skid Control ECU Communication Stop Mode**
"Air Conditioner" not displayed on the Techstream.	Air Conditioning Amplifier Communication Stop Mode	Refer to **Air Conditioning Amplifier Communication Stop Mode**
"EPS" not displayed on the Techstream.	Power Steering ECU Communication Stop Mode	Refer to **Power Steering ECU Communication Stop Mode**
"CAN Gateway" not displayed on the Techstream.	Gateway ECU Communication Stop Mode	Refer to **Gateway ECU Communication Stop Mode**
"Steering Angle Sensor" not displayed on the Techstream.	Steering Angle Sensor Communication Stop Mode	Refer to **Steering Angle Sensor Communication Stop Mode**
"Yaw Rate / Deceleration Sensor" not displayed on the Techstream.	Yaw Rate Sensor Communication Stop Mode	Refer to **Yaw Rate Sensor Communication Stop Mode**
"Engine" not displayed on the Techstream.	ECM Communication Stop Mode	Refer to **ECM Communication Stop Mode**
"Main Body" not displayed on the	Main Body ECU	Refer to **Main Body ECU**

Techstream.	Communication Stop Mode	**Communication Stop Mode**
"Power Management" not displayed on the Techstream.	Power Management Control ECU Communication Stop Mode	Refer to **Power Management Control ECU Communication Stop Mode**
"Combination Meter" not displayed on the Techstream.	Combination Meter ECU Communication Stop Mode	Refer to **Combination Meter ECU Communication Stop Mode**
"Smart Access / Smart Key / Wireless Tuner" not displayed on the Techstream.	Certification ECU Communication Stop Mode	Refer to **Certification ECU Communication Stop Mode**
"SRS Airbag" not displayed on the Techstream.	Center Airbag Sensor Communication Stop Mode	Refer to **Center Airbag Sensor Communication Stop Mode**
"Four Wheel Drive Control" not displayed on the Techstream.	4WD Control ECU Communication Stop Mode	Refer to **4WD Control ECU Communication Stop Mode**

TERMINALS OF ECU

TERMINALS OF ECU

HINT:

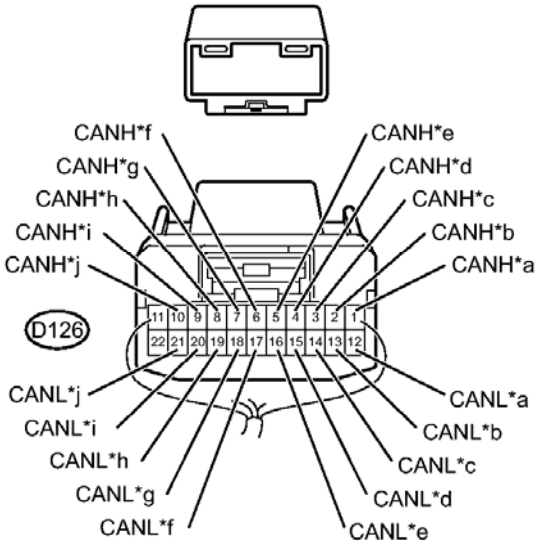
Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.

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

NOTE: 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.

2. **JUNCTION CONNECTOR**
   a. NO. 1 JUNCTION CONNECTOR



H

Fig. 18: No. 1 Junction Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	to No. 2 Junction Connector	*b	to Steering Angle Sensor
*c	to Power Steering ECU	*d	to Main Body ECU
*e	to Power Management Control ECU (w/ Smart Key System) or Network Gateway ECU (w/o Smart Key System)	*f	to DLC3
*g	to ECM	*h	to Yaw Rate Sensor (w/ VDIM)
*i	to Center Airbag Sensor	*j	to 4WD Control ECU

	Assembly		(for AWD)

No. 1 Junction Connector	Wiring Color	Connect to
D126-1 (CANH)	V	No. 2 junction connector
D126-12 (CANL)	W	
D126-2 (CANH)	L	Steering angle sensor
D126-13 (CANL)	Y	
D126-3 (CANH)	BR	Power steering ECU
D126-14 (CANL)	W	
D126-4 (CANH)	GR	Main body ECU
D126-15 (CANL)	W	
D126-5 (CANH)	LG	Power management control ECU*1 or network gateway ECU*2
D126-16 (CANL)	W	
D126-6 (CANH)	R	DLC3
D126-17 (CANL)	W	
D126-7 (CANH)	G	ECM
D126-18 (CANL)	W	
D126-8 (CANH)	P	Yaw rate sensor*3
D126-19 (CANL)	W	
D126-9 (CANH)	B	Center airbag sensor assembly
D126-20 (CANL)	W	

D126-10 (CANH)	L	4WD control ECU*4
D126-21 (CANL)	W	

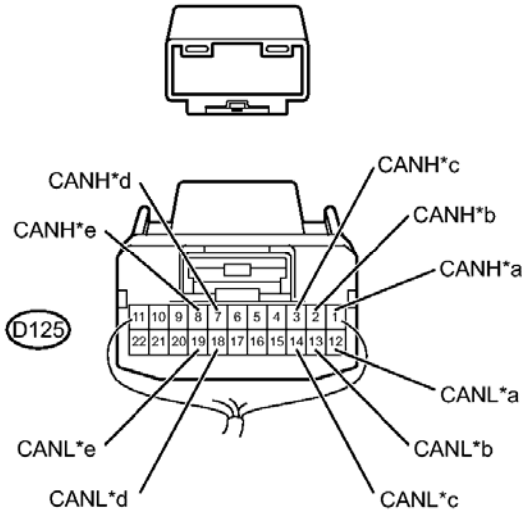
*1: w/Smart Key System

*2: w/o Smart Key System

*3: w/ VDIM

*4: for AWD

b. NO. 2 JUNCTION CONNECTOR



H

Fig. 19: No. 2 Junction Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	to Skid Control ECU	*b	to Air Conditioning Amplifier (w/o Smart Key System)
*c	to Certification ECU (Smart Key ECU)	*d	to Combination Meter ECU
*e	to No. 1 Junction	-	-

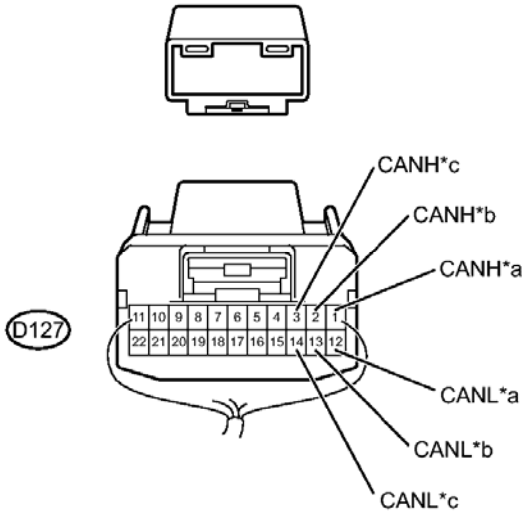
	Connector		

No. 2 Junction Connector	Wiring Color	Connect to
D125-1 (CANH)	R	Skid control ECU
D125-12 (CANL)	W	
D125-2 (CANH)	G	Air conditioning amplifier*2
D125-13 (CANL)	W	
D125-3 (CANH)	BR	Certification ECU (smart key ECU)*1
D125-14 (CANL)	W	
D125-7 (CANH)	P	Combination meter ECU
D125-18 (CANL)	W	
D125-8 (CANH)	V	No. 1 junction connector
D125-19 (CANL)	W	

*1: w/ Smart Key System

*2: w/o Smart Key System

c. NO. 3 JUNCTION CONNECTOR (w/ Smart Key System)



H

Fig. 20: No. 3 Junction Connector Terminal Identification (w/ Smart Key System)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	to Air Conditioning Amplifier	*b	to Power Management Control ECU
*c	to ECM	-	-

No. 3 Junction Connector	Wiring Color	Connect to
D127-1 (CANH)	V	Air conditioning amplifier
D127-12 (CANL)	W	
D127-2 (CANH)	G	Power management control ECU
D127-13 (CANL)	W	
D127-3 (CANH)	R	ECM
D127-14 (CANL)	W	

d. NO. 1 CAN JUNCTION CONNECTOR

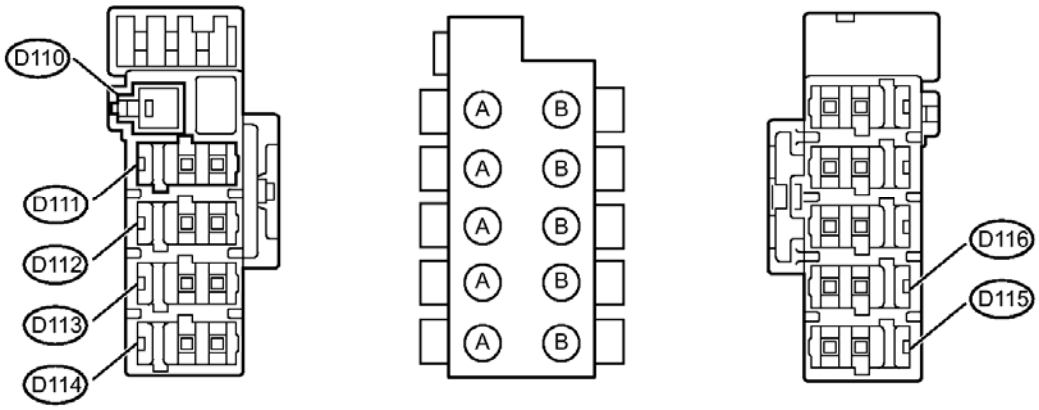


Fig. 21: No. 1 CAN Junction Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Junction Connector A Side	Wiring Color (CANH Side)	Wiring Color (CANL Side)
Ground Terminal (D110)	-	W-B
Clearance warning ECU*3 (D111)	BR	W
Seat belt control ECU*4 (D112)	B	W
Driving support ECU*5 (D113)	R	W
Power management control ECU*1 or network gateway ECU*2 (D114)	V	W

Junction Connector B Side	Wiring Color (CANH Side)	Wiring Color (CANL Side)
AFS ECU*6 (D115)	G	W
Parking assist ECU*7 (D116)	L	W

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: w/ Intuitive Parking Assist System

*4: w/ Pre-collision System

*5: w/ Dynamic Radar Cruise Control System

*6: w/ HID Headlight System

*7: w/ Parking Assist Monitor System

e. NO. 2 CAN JUNCTION CONNECTOR

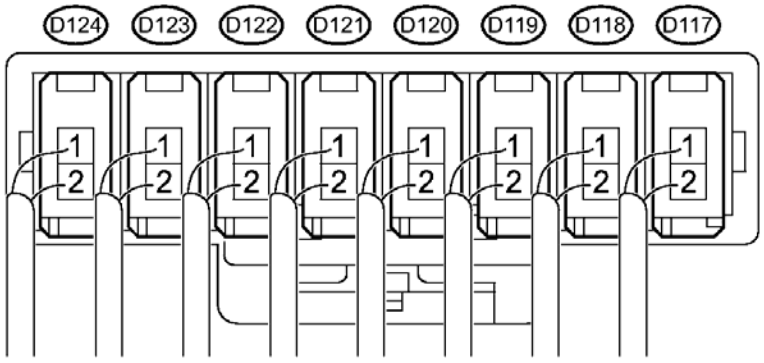


Fig. 22: No. 2 CAN Junction Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

No. 2 CAN Junction Connector	Wiring Color (CANH	Wiring Color (CANL

	Side)	Side)
Combination meter (D117)	GR	W
Outer mirror control ECU assembly RH*1 (D118)	V	W
Slide door motor unit RH*2 (D119)	L	W
Main body ECU (D120)	LG	W
Position control ECU and switch*3 (D121)	G	W
Back door ECU*4 (D122)	BR	W
Slide door motor unit LH*2 (D123)	R	W
Outer mirror control assembly LH*1 (D124)	P	W

*1: w/ Memory

*2: w/ Power Slide Door

*3: for Power Seat with Memory

*4: w/ Power Back Door

3. **TERMINALS OF CONNECTORS FOR JUNCTION CONNECTOR (NO. 1 CAN JUNCTION CONNECTOR)**

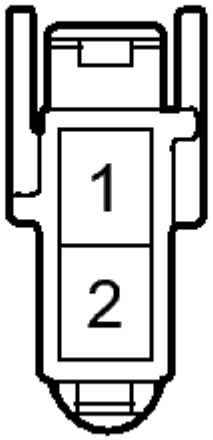


Fig. 23: Identifying CAN Junction Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Terminal No.	Symbol
1	CANH
2	CANL

4. **TERMINALS OF CONNECTORS FOR JUNCTION CONNECTOR (NO. 2 CAN JUNCTION CONNECTOR)**

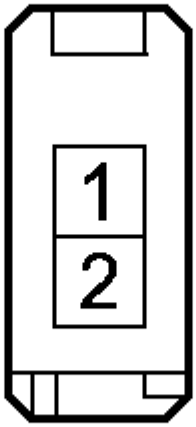
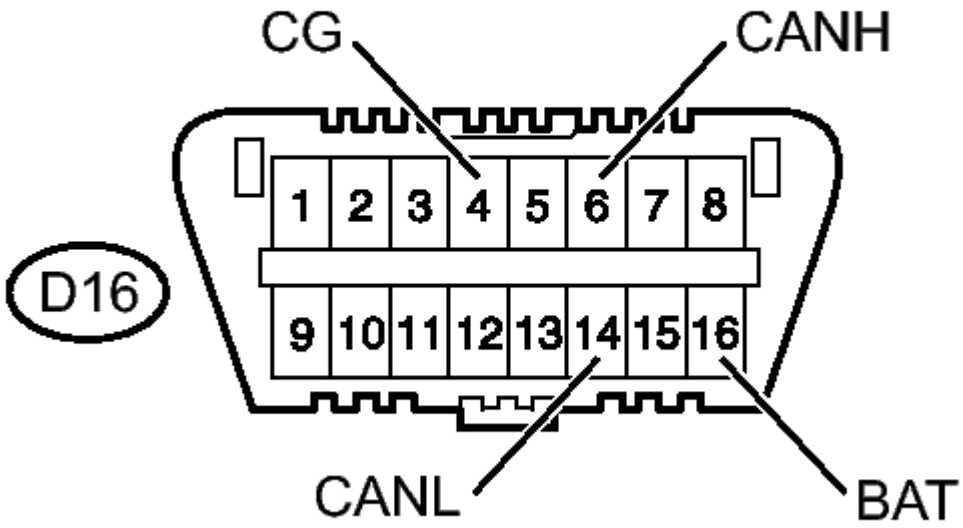


Fig. 24: No. 2 CAN Junction Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Terminal No.	Symbol
1	CANH
2	CANL

5. **CHECK DLC3**
   a. Disconnect the cable from the negative (-) battery terminal before measuring the resistances of the main wire and the branch wire.
   b. Measure the resistance according to the value(s) in the table below.



T

Fig. 25: DLC3 Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D16-6 (CANH) - D16-14 (CANL)	R - W	Ignition switch off	54 to 69 ohms
D16-6 (CANH) - D16-4 (CG)	R - W-B	Ignition switch off	200 ohms or higher
D16-14 (CANL) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D16-6 (CANH) - D16-16 (BAT)	R - B	Ignition switch off	6 kohms or higher
D16-14 (CANL) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

6. **CHECK ECM (for 2GR-FE)**

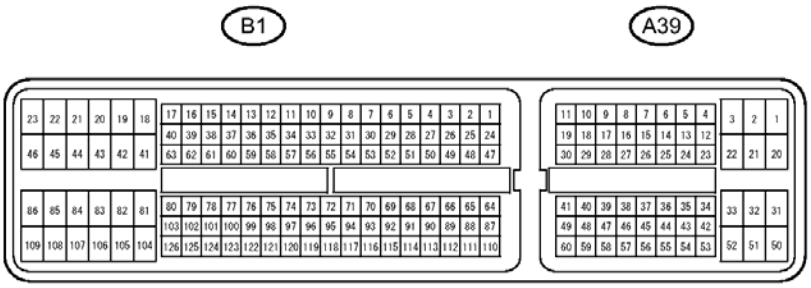


Fig. 26: ECM Connector Terminal Identification - For 2GR-FE (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the B1 and A39 ECM connectors.

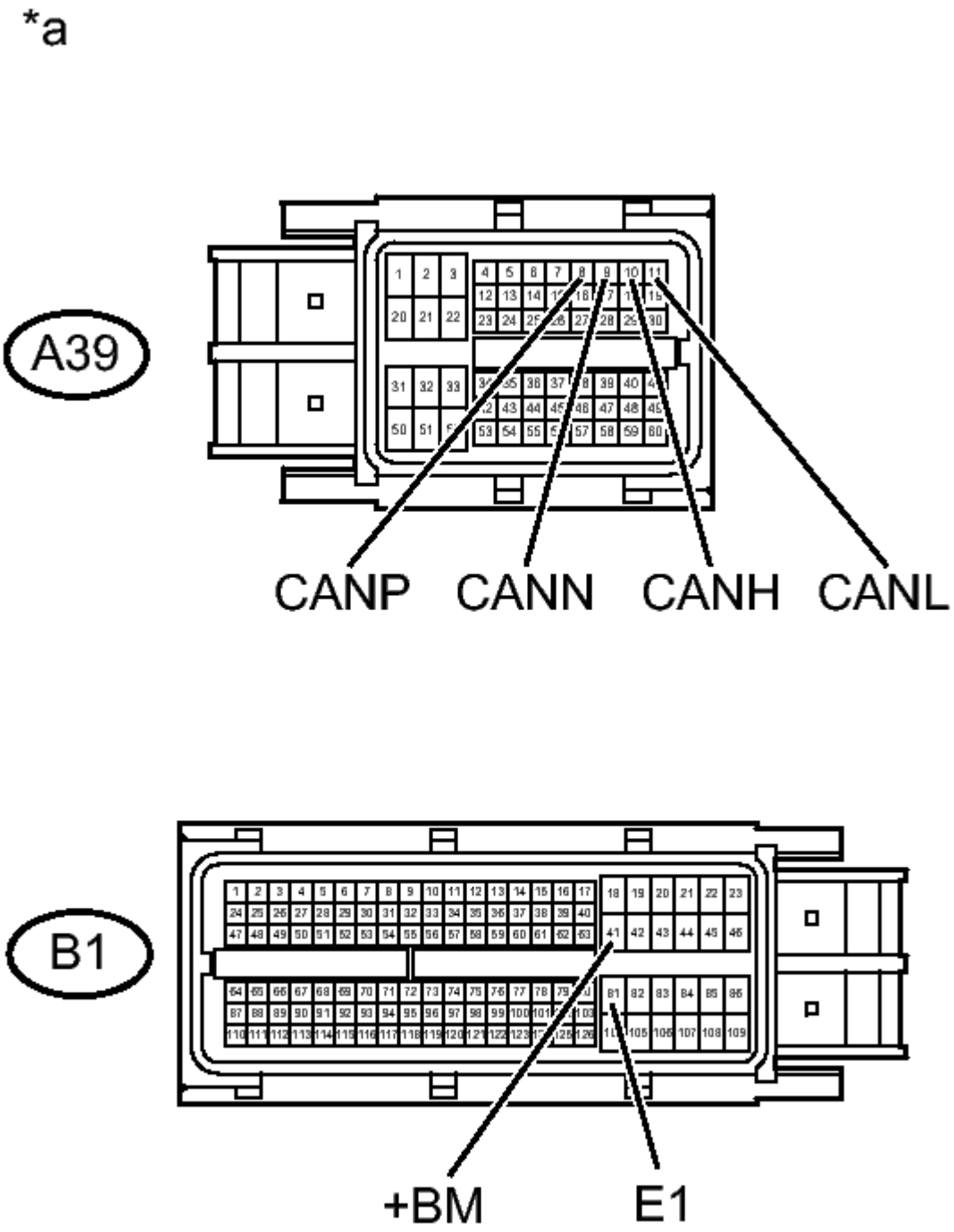


Fig. 27: ECM Connector Terminal Identification - For 2GR-FE (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

STANDARD RESISTANCE: V1 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A39-10 (CANH) - A39-11 (CANL)	B - W	Ignition switch off	108 to 132 ohms
A39-10 (CANH) - B1-81 (E1)	B - BR	Ignition switch off	200 ohms or higher
A39-11 (CANL) - B1-81 (E1)	W - BR	Ignition switch off	200 ohms or higher
A39-10 (CANH) - B1-41 (+BM)	B - L	Ignition switch off	6 kohms or higher
A39-11 (CANL) - B1-41 (+BM)	W - L	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: POWER MANAGEMENT BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A39-8 (CANP) - A39-9 (CANN)	R - W	Ignition switch off	108 to 132 ohms
A39-8 (CANP) - B1-81 (E1)	R - BR	Ignition switch off	200 ohms or higher
A39-9			

(CANN) - B1-81 (E1)	W - BR	Ignition switch off	200 ohms or higher
A39-8 (CANP) - B1-41 (+BM)	R - L	Ignition switch off	6 kohms or higher
A39-9 (CANN) - B1-41 (+BM)	W - L	Ignition switch off	6 kohms or higher

7. **CHECK ECM (for 1AR-FE)**

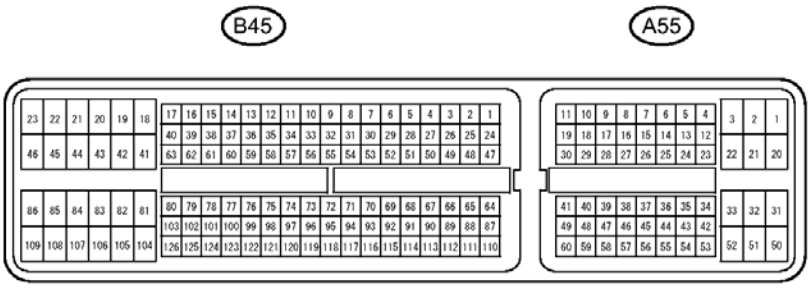


Fig. 28: ECM Connector Terminal Identification - For 1AR-FE (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A55 and B45 ECM connectors.

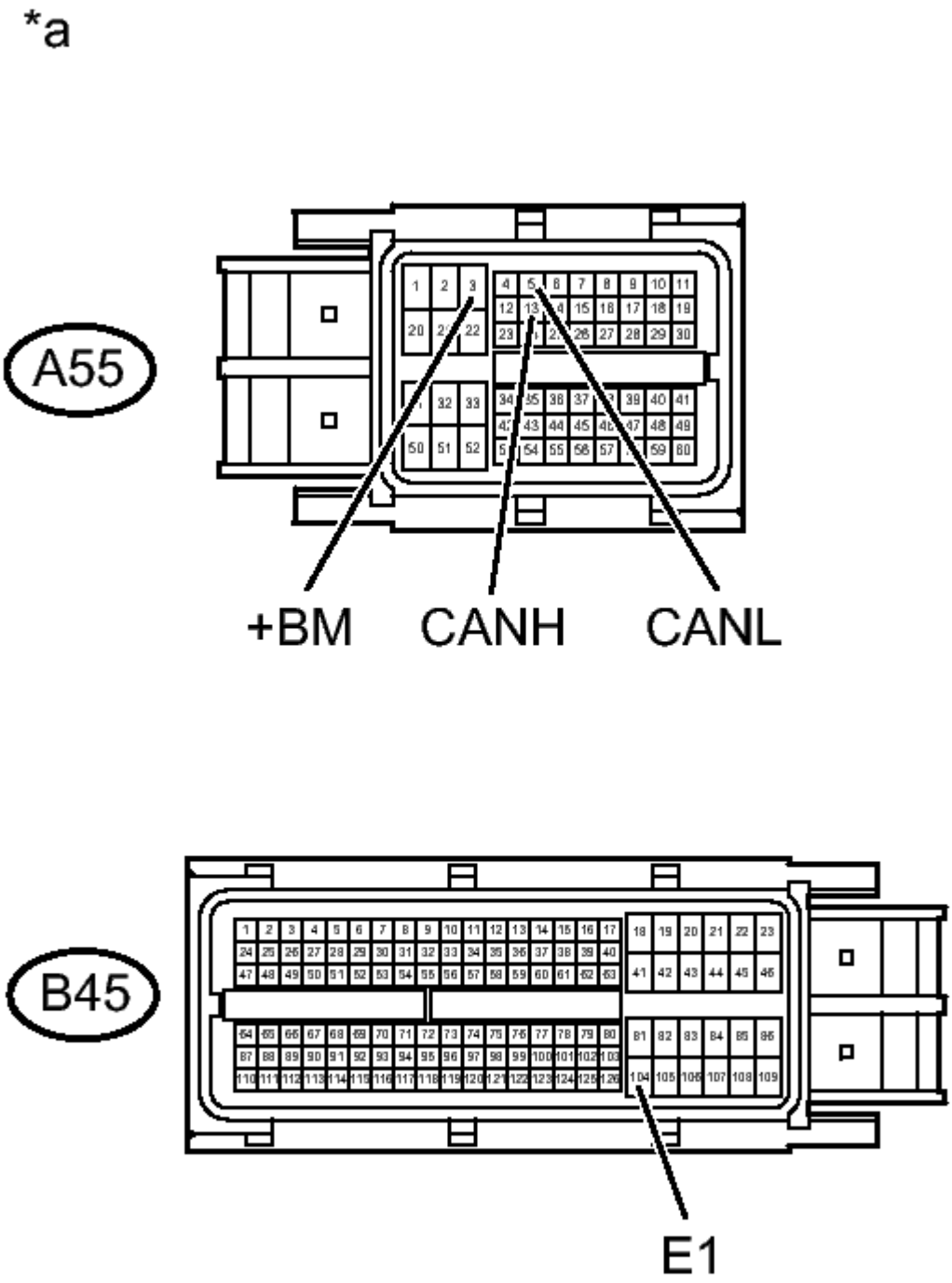


Fig. 29: ECM Connector Terminal Identification - For 1AR-FE (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to ECM)

STANDARD RESISTANCE: V1 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A55-13 (CANH) - A55-5 (CANL)	B - W	Ignition switch off	108 to 132 ohms
A55-13 (CANH) - B45-104 (E1)	B - BR	Ignition switch off	200 ohms or higher
A55-5 (CANL) - B45-104 (E1)	W - BR	Ignition switch off	200 ohms or higher
A55-13 (CANH) - A55-3 (+BM)	B - R	Ignition switch off	6 kohms or higher
A55-5 (CANL) - A55-3 (+BM)	W - R	Ignition switch off	6 kohms or higher

8. **CHECK POWER MANAGEMENT CONTROL ECU (w/ Smart Key System)**

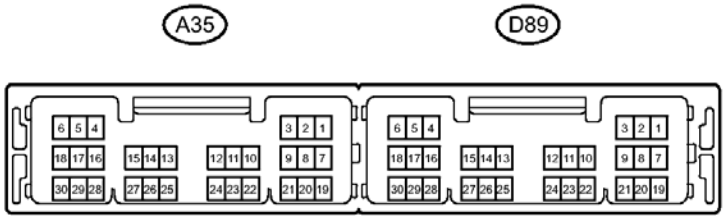


Fig. 30: Power Management Control ECU Connector Terminal Identification - w/ Smart Key System (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D89 power management control ECU connector.

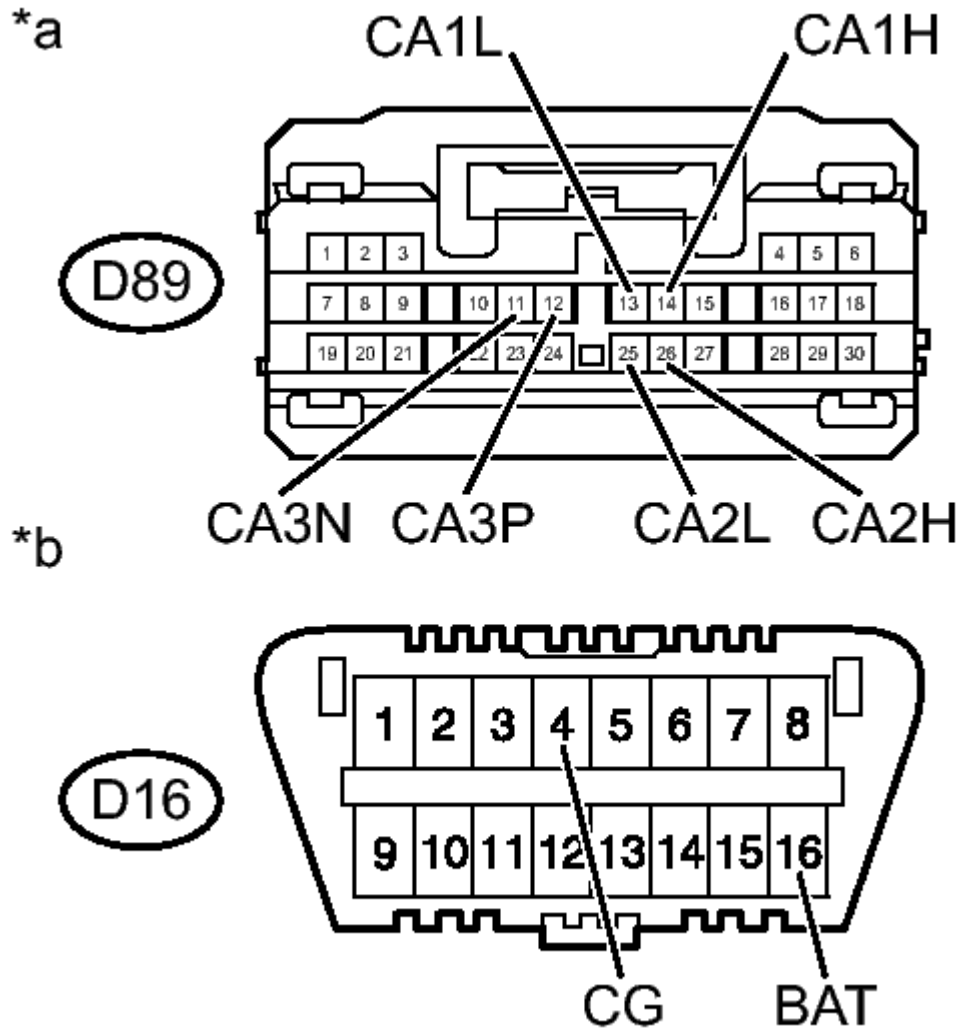


Fig. 31: Power Management Control ECU Connector Terminal Identification - w/ Smart Key System (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Power Management Control ECU)
*b	DLC3

STANDARD RESISTANCE: V1 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D89-14 (CA1H) - D89-13 (CA1L)	LG - W	Ignition switch off	108 to 132 ohms
D89-14 (CA1H) - D16-4 (CG)	LG - W-B	Ignition switch off	200 ohms or higher
D89-13 (CA1L) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D89-14 (CA1H) - D16-16 (BAT)	LG - B	Ignition switch off	6 kohms or higher
D89-13 (CA1L) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: V2 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D89-26 (CA2H) - D89-25 (CA2L)	V - W	Ignition switch off	54 to 69 ohms
D89-26 (CA2H) - D16-4 (CG)	V - W-B	Ignition switch off	200 ohms or higher
D89-25 (CA2L) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D89-26 (CA2H) - D16-16 (BAT)	V - B	Ignition switch off	6 kohms or higher
D89-25			

(CA2L) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: POWER MANAGEMENT BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D89-12 (CA3P) - D89-11 (CA3N)	G - W	Ignition switch off	54 to 69 ohms
D89-12 (CA3P) - D16-4 (CG)	G - W-B	Ignition switch off	200 ohms or higher
D89-11 (CA3N) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D89-12 (CA3P) - D16-16 (BAT)	G - B	Ignition switch off	6 kohms or higher
D89-11 (CA3N) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

9. **CHECK NETWORK GATEWAY ECU (w/o Smart Key System)**

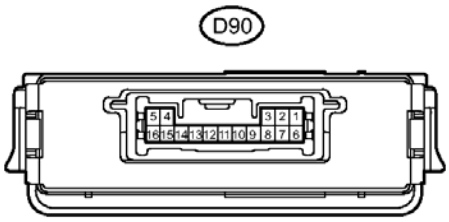


Fig. 32: Network Gateway ECU Connector Terminal Identification - w/o Smart Key System (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D90 network gateway ECU connector.

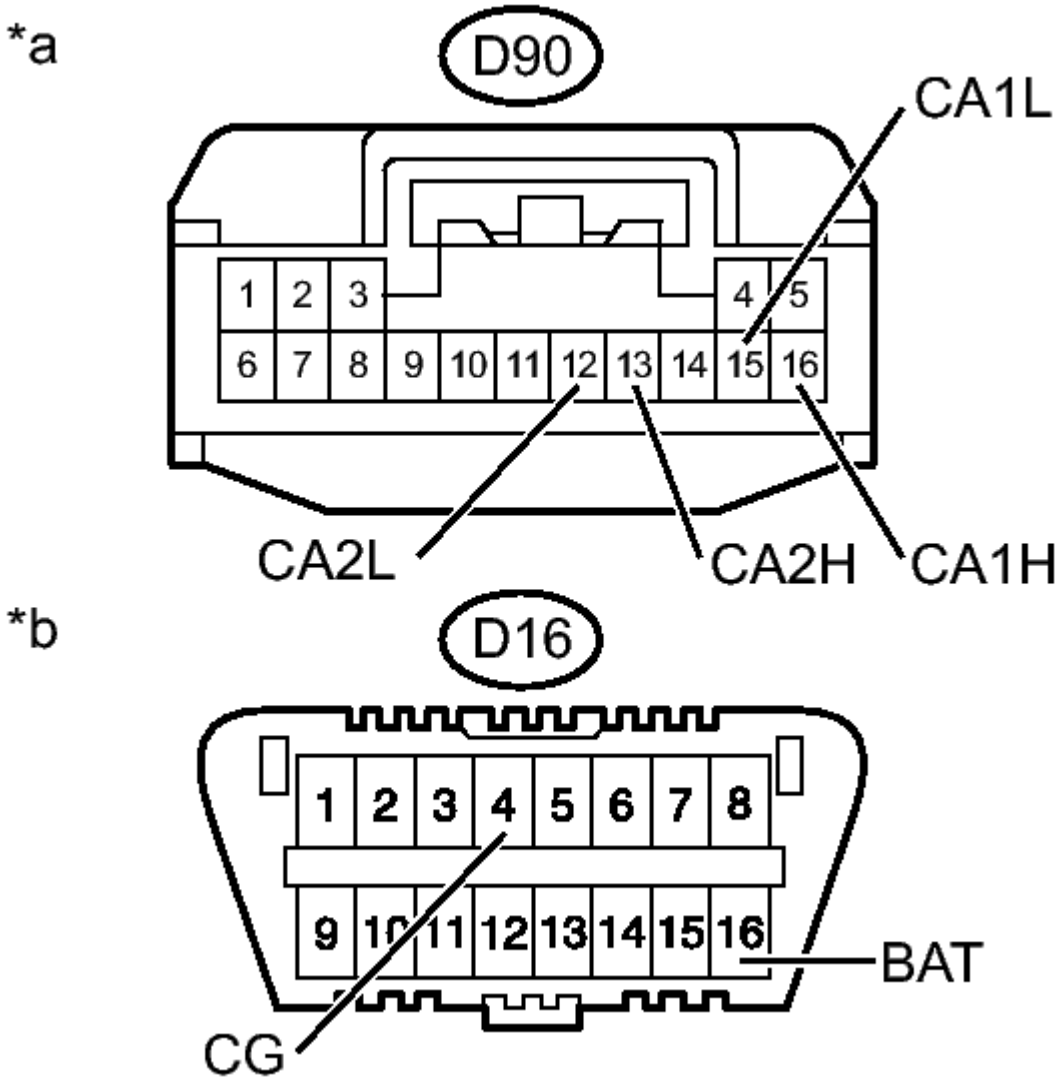


Fig. 33: Network Gateway ECU Connector Terminal Identification - w/o Smart Key System (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Network Gateway ECU)

*b DLC3

STANDARD RESISTANCE: V1 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D90-16 (CA1H) - D90-15 (CA1L)	LG - W	Ignition switch off	54 to 69 ohms
D90-16 (CA1H) - D16-4 (CG)	LG - W-B	Ignition switch off	200 ohms or higher
D90-15 (CA1L) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D90-16 (CA1H) - D16-16 (BAT)	LG - B	Ignition switch off	6 kohms or higher
D90-15 (CA1L) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: V2 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D90-13 (CA2H) - D90-12 (CA2L)	V - W	Ignition switch off	108 to 132 ohms
D90-13 (CA2H) - D16-4 (CG)	V - W-B	Ignition switch off	200 ohms or higher
D90-12 (CA2L) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D90-13 (CA2H) - D16-16	V - B	Ignition switch off	6 kohms or higher

(BAT)			
D90-12 (CA2L) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

10. **CHECK MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)**

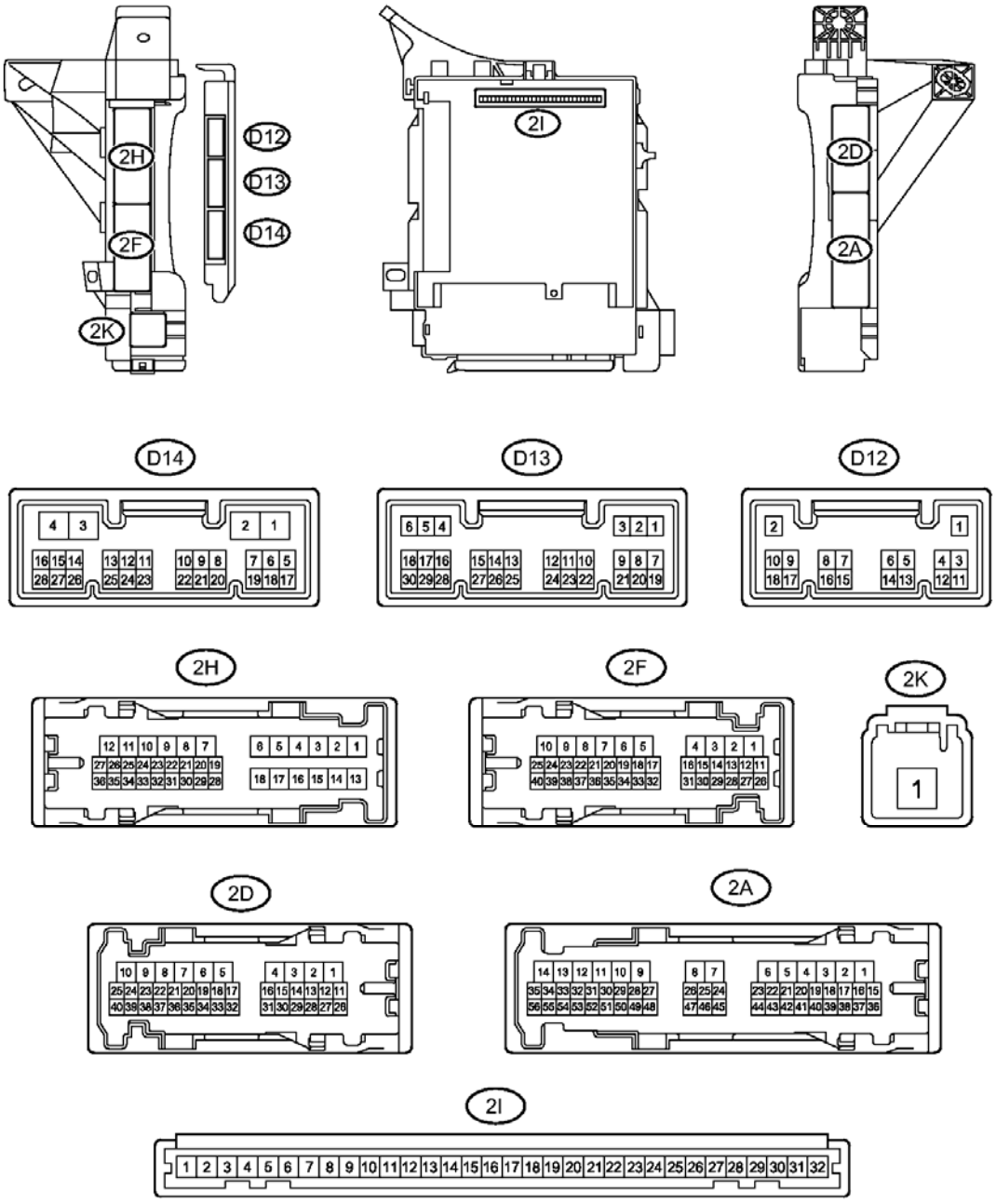


Fig. 34: Main Body ECU Connector Terminal Identification - Instrument Panel Junction Block (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D13 and D14 main body ECU connectors.

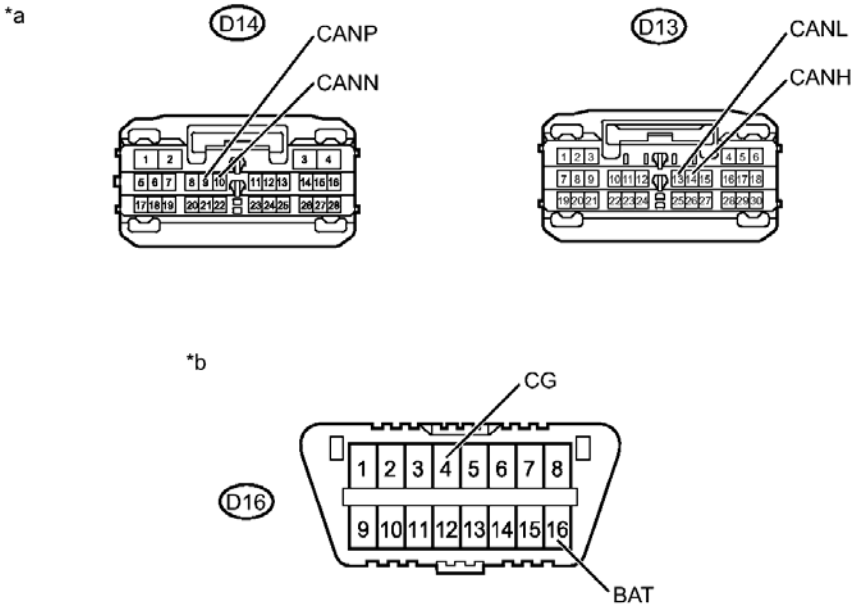


Fig. 35: Main Body ECU Connector Terminal Identification - Instrument Panel Junction Block (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Main Body ECU)	*b	DLC3

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

STANDARD RESISTANCE: V1 BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition

D13-14 (CANH) - D13-13 (CANL)	GR - W	Ignition switch off	54 to 69 ohms
D13-14 (CANH) - D16-4 (CG)	GR - W-B	Ignition switch off	200 ohms or higher
D13-13 (CANL) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D13-14 (CANH) - D16-16 (BAT)	GR - B	Ignition switch off	6 kohms or higher
D13-13 (CANL) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: MS BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D14-9 (CANP) - D14-10 (CANN)	LG - W	Ignition switch off	108 to 132 ohms
D14-9 (CANP) - D16-4 (CG)	LG - W-B	Ignition switch off	200 ohms or higher
D14-10 (CANN) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D14-9 (CANP) - D16-16 (BAT)	LG - B	Ignition switch off	6 kohms or higher
D14-10 (CANN) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

11. **CHECK CERTIFICATION ECU (SMART KEY ECU) (w/Smart Key System)**



Fig. 36: Certification ECU (Smart Key ECU) Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D88 certification ECU (smart key ECU) connector.

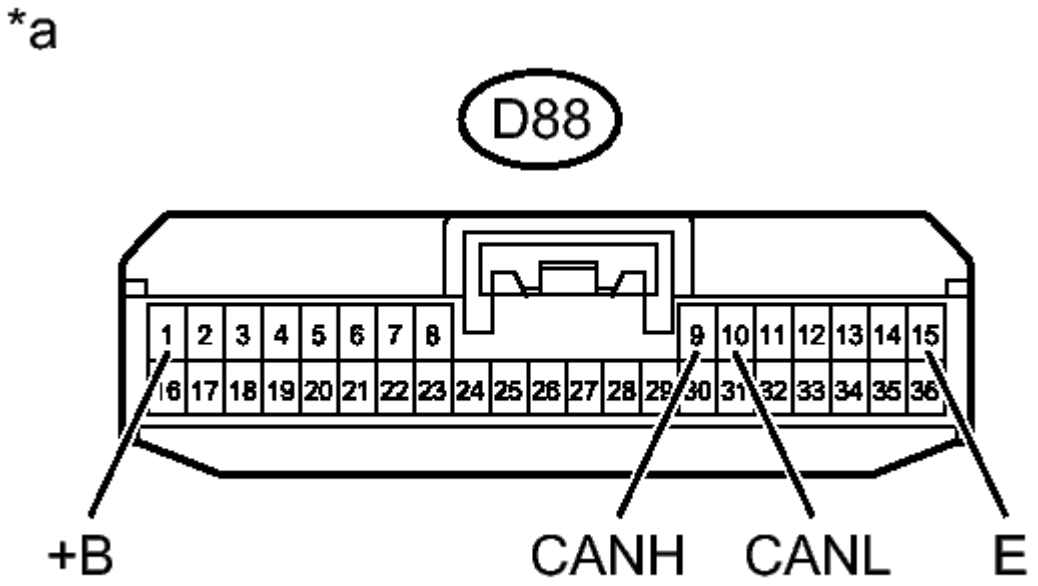


Fig. 37: Certification ECU (Smart Key ECU) Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Certification

	ECU (Smart Key ECU))

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D88-9 (CANH) - D88-10 (CANL)	BR - W	Ignition switch off	54 to 69 ohms
D88-9 (CANH) - D88-15 (E)	BR - W-B	Ignition switch off	200 ohms or higher
D88-10 (CANL) - D88-15 (E)	W - W-B	Ignition switch off	200 ohms or higher
D88-9 (CANH) - D88-1 (+B)	BR - G	Ignition switch off	6 kohms or higher
D88-10 (CANL) - D88-1 (+B)	W - G	Ignition switch off	6 kohms or higher

12. **CHECK SKID CONTROL ECU**

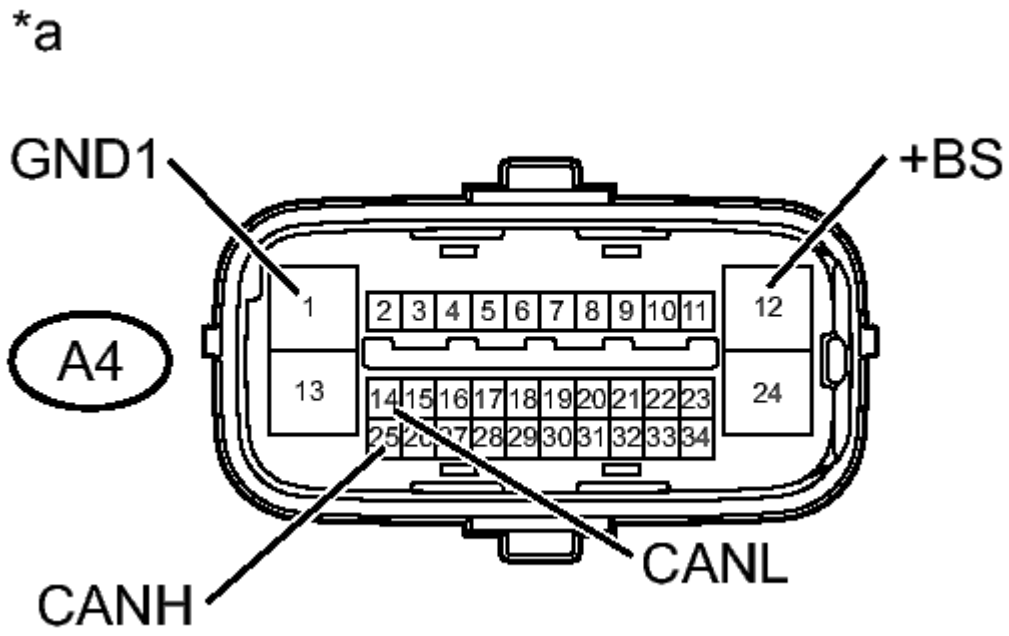


Fig. 38: Skid Control ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A4 skid control ECU connector.
b. Measure the resistance according to the value(s) in the table below.

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Skid Control ECU)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A4-25 (CANH) - A4-14 (CANL)	R - W	Ignition switch off	54 to 69 ohms
A4-25 (CANH)	R - W-	Ignition	200 ohms

- A4-1 (GND1)	B	switch off	or higher
A4-14 (CANL) - A4-1 (GND1)	W - W-B	Ignition switch off	200 ohms or higher
A4-25 (CANH) - A4-12 (+BS)	R - W	Ignition switch off	6 kohms or higher
A4-14 (CANL) - A4-12 (+BS)	W - W	Ignition switch off	6 kohms or higher

13. **CHECK STEERING ANGLE SENSOR**

*a

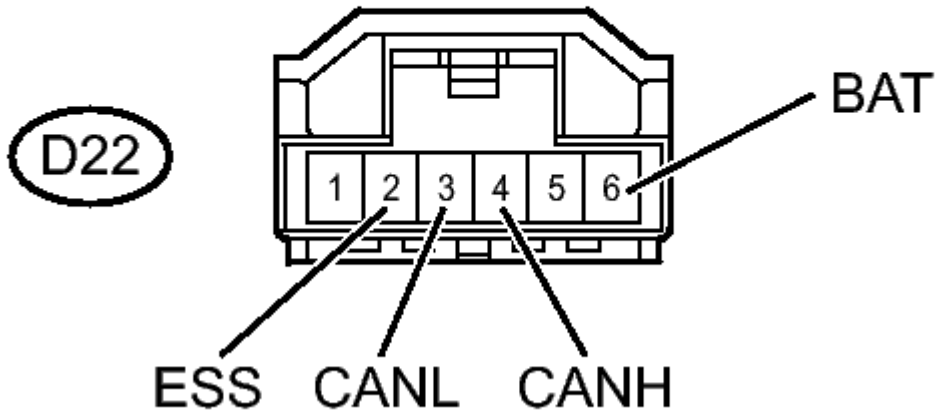


Fig. 39: Steering Angle Sensor Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D22 steering angle sensor connector.
b. Measure the resistance according to the value(s) in the table below.

TEXT IN ILLUSTRATION

	Front view of

*a	wire harness connector (to Steering Angle Sensor)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D22-4 (CANH) - D22-3 (CANL)	L - Y	Ignition switch off	54 to 69 ohms
D22-4 (CANH) - D22-2 (ESS)	L - W-B	Ignition switch off	200 ohms or higher
D22-3 (CANL) - D22-2 (ESS)	Y - W-B	Ignition switch off	200 ohms or higher
D22-4 (CANH) - D22-6 (BAT)	L - W	Ignition switch off	6 kohms or higher
D22-3 (CANL) - D22-6 (BAT)	Y - W	Ignition switch off	6 kohms or higher

14. **CHECK YAW RATE SENSOR (w/ VDIM)**

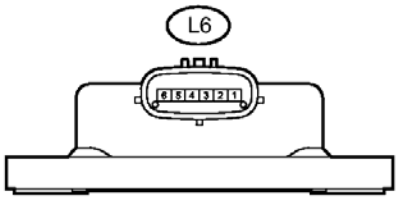


Fig. 40: Yaw Rate Sensor Connector Terminal Identification - w/ VDIM (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the L6 yaw rate sensor connector.

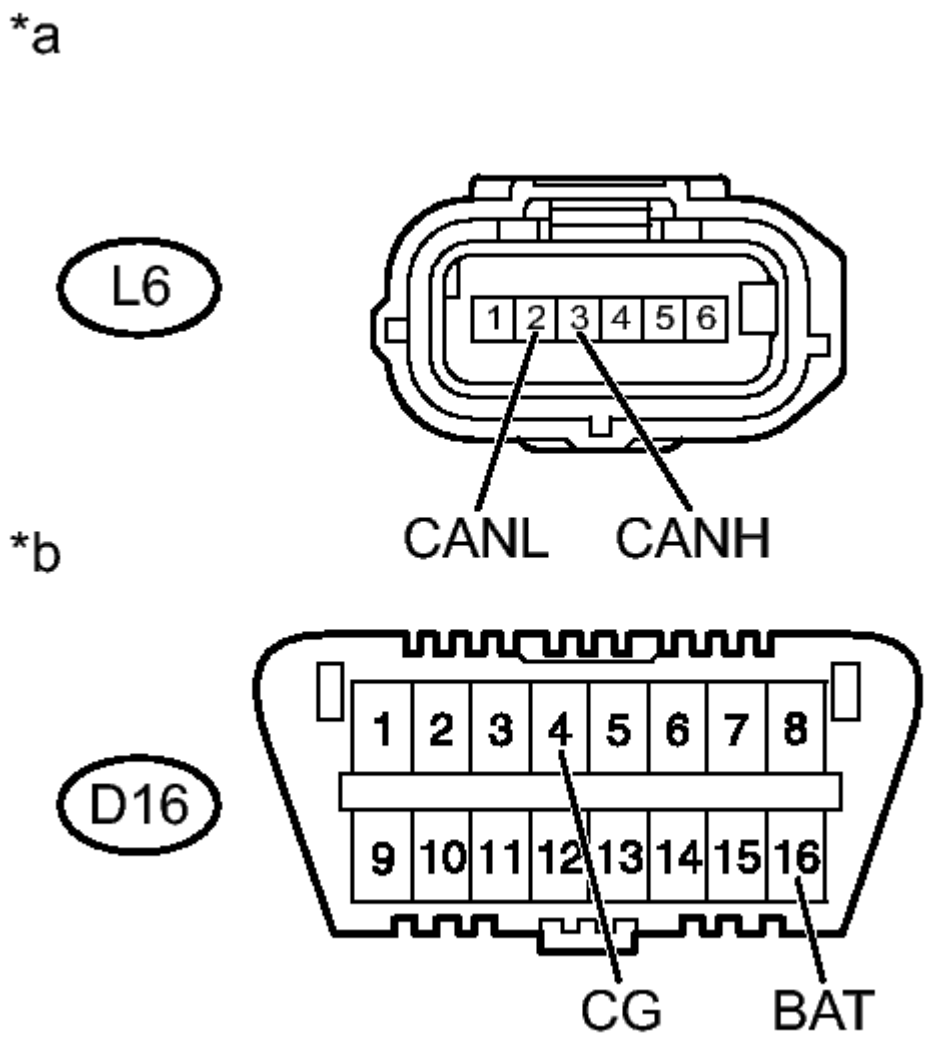


Fig. 41: Yaw Rate Sensor Connector Terminal Identification - w/ VDIM (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

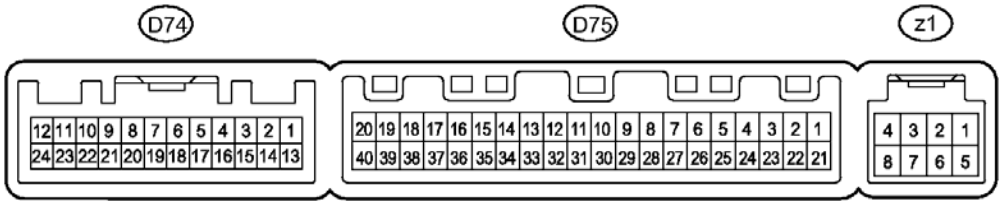
*a	Front view of wire harness connector (to Yaw Rate Sensor)

*b	DLC3

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
L6-3 (CANH) - L6-2 (CANL)	P - W	Ignition switch off	54 to 69 ohms
L6-3 (CANH) - D16-4 (CG)	P - W-B	Ignition switch off	200 ohms or higher
L6-2 (CANL) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
L6-3 (CANH) - D16-16 (BAT)	P - B	Ignition switch off	6 kohms or higher
L6-2 (CANL) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

15. **CHECK AIR CONDITIONING AMPLIFIER**



H

Fig. 42: Air Conditioning Amplifier Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D75 air conditioning amplifier connector.

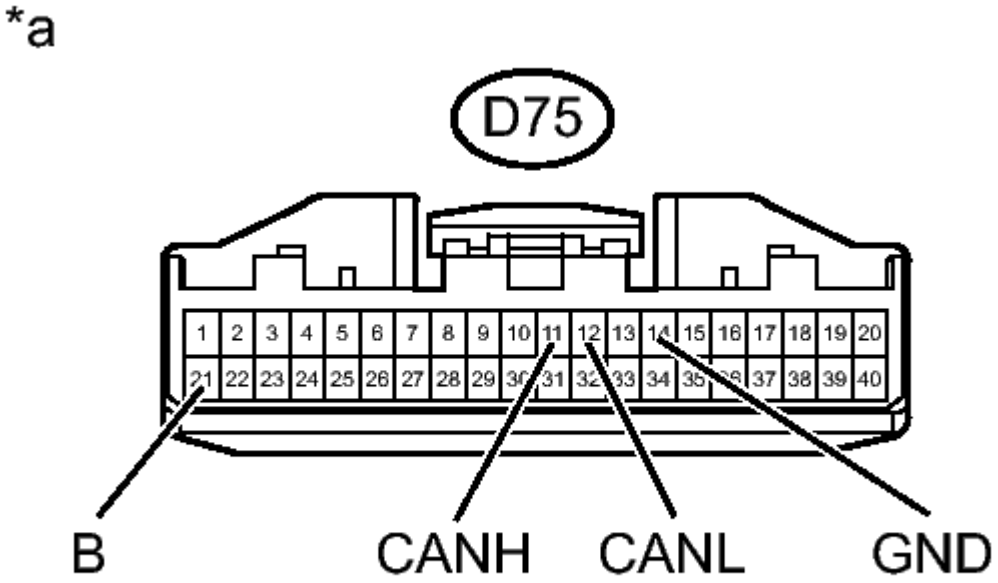


Fig. 43: Air Conditioning Amplifier Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Air Conditioning Amplifier)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D75-11 (CANH) - D75-12 (CANL)	V - W*1	Ignition switch off	54 to 69 ohms
	G - W*2		
D75-11 (CANH) - D75-14 (GND)	V- W-B*1	Ignition switch off	
	G- W-B*2		200 ohms

D75-12 (CANL) - D75-14 (GND)	W - W-B	Ignition switch off	or higher
D75-11 (CANH) - D75-21 (B)	V - P*1	Ignition switch off	6 kohms or higher
	G - P*2		
D75-12 (CANL) - D75-21 (B)	W - P	Ignition switch off	

*1: w/ Smart Key System

*2: w/o Smart key System

16. **CHECK CENTER AIRBAG SENSOR ASSEMBLY**

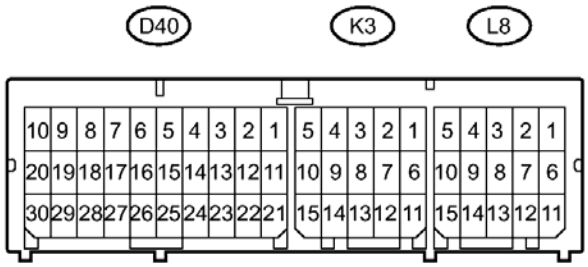


Fig. 44: Center Airbag Sensor Assembly Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D40 center airbag sensor assembly connector.

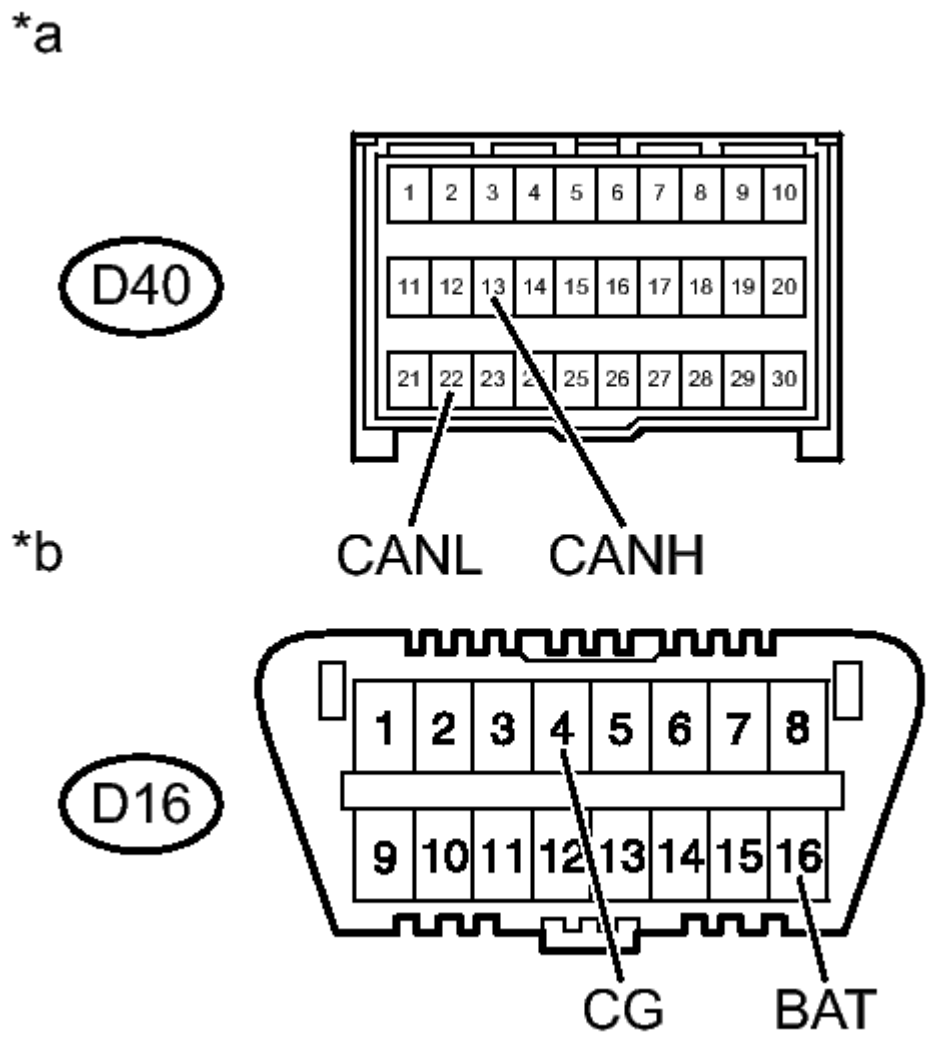


Fig. 45: Center Airbag Sensor Assembly Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Center Airbag Sensor Assembly)
*b	DLC3

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D40-13 (CANH) - D40-22 (CANL)	B - W	Ignition switch off	54 to 69 ohms
D40-13 (CANH) - D16-4 (CG)	B - W-B	Ignition switch off	200 ohms or higher
D40-22 (CANL) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D40-13 (CANH) - D16-16 (BAT)	B - B	Ignition switch off	6 kohms or higher
D40-22 (CANL) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

17. **CHECK POWER STEERING ECU**

    a. Disconnect the D35 and D36 power steering ECU connectors.

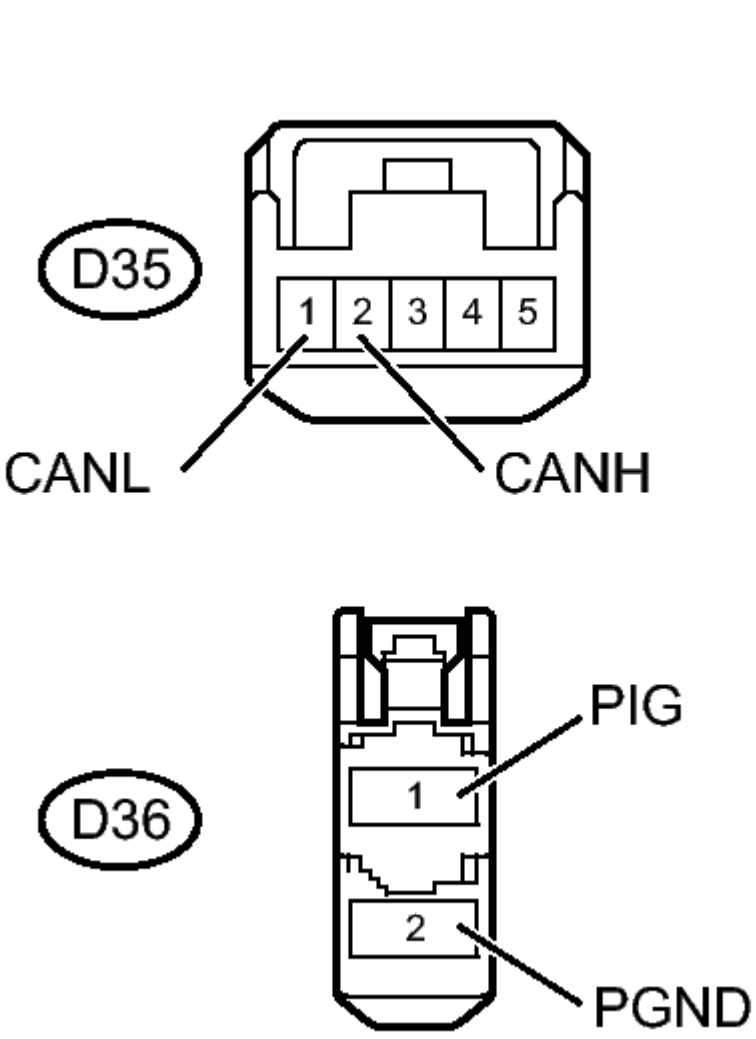


Fig. 46: Power Steering ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

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

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D35-2 (CANH) - D35-1 (CANL)	BR - W	Ignition switch off	54 to 69 ohms
D35-2 (CANH) - D36-2 (PGND)	BR - W-B	Ignition switch off	200 ohms or higher
D35-1 (CANL) - D36-2 (PGND)	W - W-B	Ignition switch off	200 ohms or higher
D35-2 (CANH) - D36-1 (PIG)	BR - B	Ignition switch off	6 kohms or higher
D35-1 (CANL) - D36-1 (PIG)	W - B	Ignition switch off	6 kohms or higher

18. **CHECK 4WD CONTROL ECU**
    a. Disconnect the K1 4WD control ECU connector.

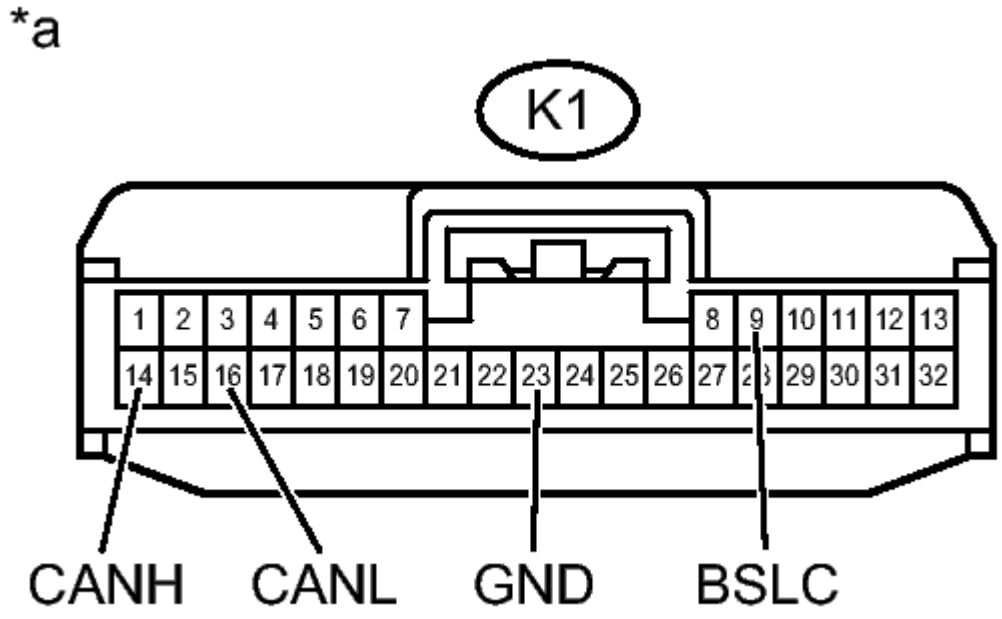


Fig. 47: 4WD Control ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

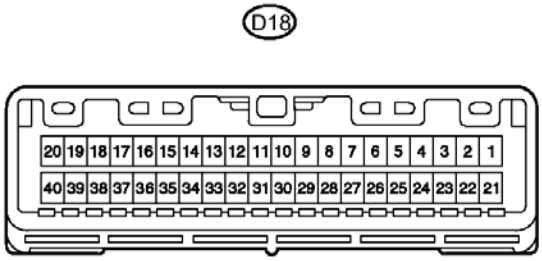
TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to 4WD Control ECU)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
K1-14 (CANH) - K1-16 (CANL)	L - W	Ignition switch off	54 to 69 ohms
K1-14 (CANH) - K1-23 (GND)	L - W-B	Ignition switch off	200 ohms or higher
K1-16 (CANL) - K1-23 (GND)	W - W-B	Ignition switch off	200 ohms or higher
K1-14 (CANH) - K1-9 (BSLC)	L - R	Ignition switch off	6 kohms or higher
K1-16 (CANL) - K1-9 (BSLC)	W - R	Ignition switch off	6 kohms or higher

19. **CHECK COMBINATION METER**



T

Fig. 48: Combination Meter Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D18 combination meter connector.

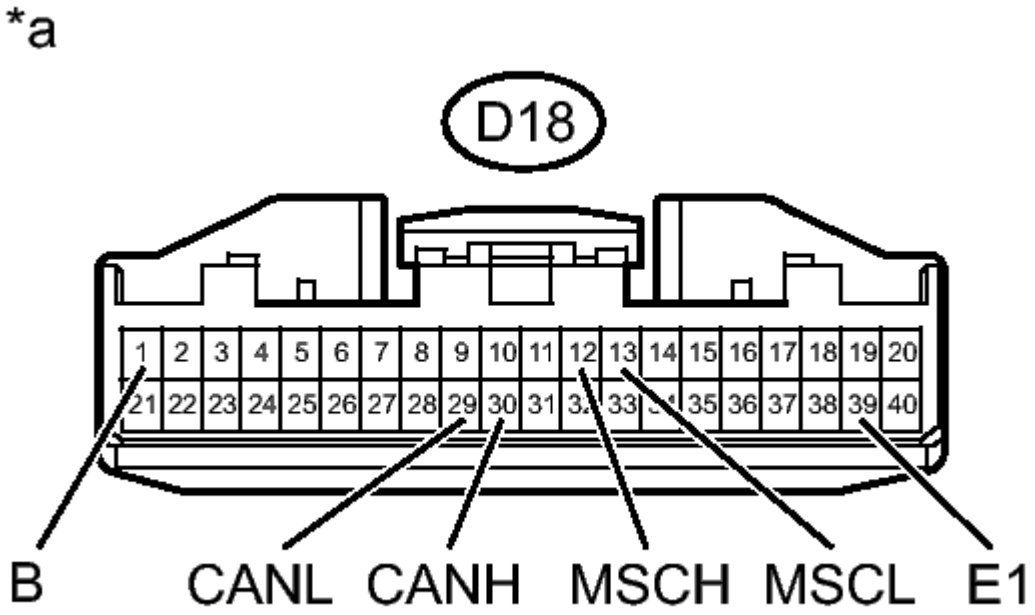


Fig. 49: Combination Meter Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector

	(to Combination Meter)

STANDARD RESISTANCE: V BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D18-30 (CANH) - D18-29 (CANL)	P - W	Ignition switch off	108 to 132 ohms
D18-30 (CANH) - D18-39 (E1)	P - W-B	Ignition switch off	200 ohms or higher
D18-29 (CANL) - D18-39 (E1)	W - W-B	Ignition switch off	200 ohms or higher
D18-30 (CANH) - D18-1 (B)	P - W	Ignition switch off	6 kohms or higher
D18-29 (CANL) - D18-1 (B)	W - W	Ignition switch off	6 kohms or higher

STANDARD RESISTANCE: MS BUS

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D18-12 (MSCH) - D18-13 (MSCL)	GR - W	Ignition switch off	108 to 132 ohms
D18-12 (MSCH) - D18-39 (E1)	GR - W-B	Ignition switch off	200 ohms or higher
D18-13 (MSCL) - D18-39 (E1)	W - W-B	Ignition switch off	200 ohms or higher
D18-12			

(MSCH) - D18-1 (B)	GR - W	Ignition switch off	6 kohms or higher
D18-13 (MSCL) - D18-1 (B)	W - W	Ignition switch off	6 kohms or higher

20. **CHECK DRIVING SUPPORT ECU (w/ Dynamic Radar Cruise Control System)**
    a. Disconnect the A44 driving support ECU connector.

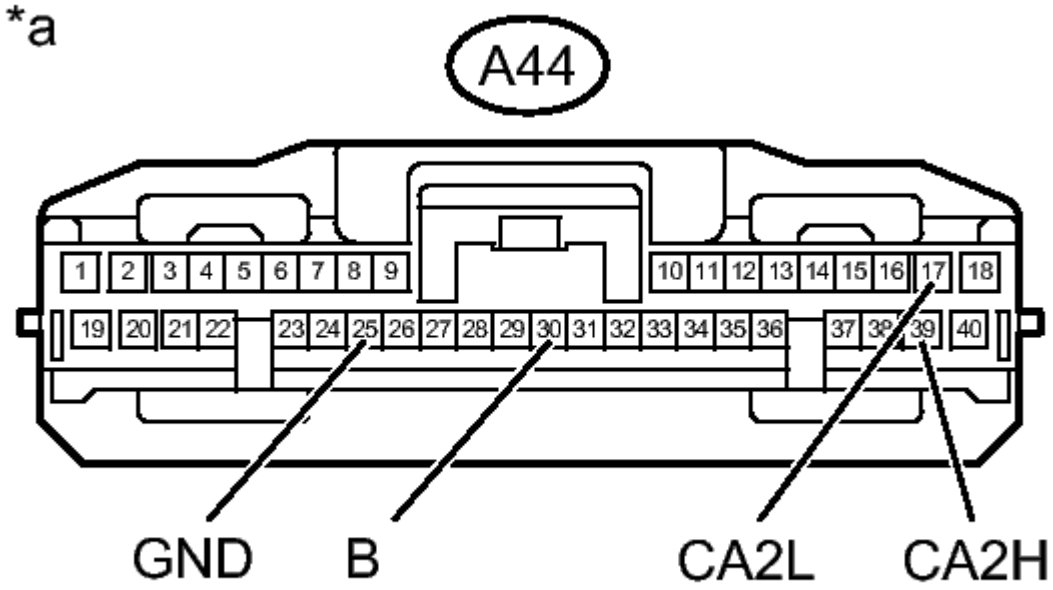


Fig. 50: Driving Support ECU Connector Terminal Identification - w/ Dynamic Radar Cruise Control System
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Driving Support ECU)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A44-39 (CA2H) - A44-17 (CA2L)	R - W	Ignition switch off	54 to 69 ohms
A44-39 (CA2H) - A44-25 (GND)	R - BR	Ignition switch off	200 ohms or higher
A44-17 (CA2L) - A44-25 (GND)	W - BR	Ignition switch off	200 ohms or higher
A44-39 (CA2H) - A44-30 (B)	R - L	Ignition switch off	6 kohms or higher
A44-17 (CA2L) - A44-30 (B)	W - L	Ignition switch off	6 kohms or higher

21. **CHECK AFS ECU (HEADLIGHT SWIVEL ECU) (w/ HID Headlight System)**



Fig. 51: AFS ECU (Headlight Swivel ECU) Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the A45 AFS ECU (headlight swivel ECU) connector.

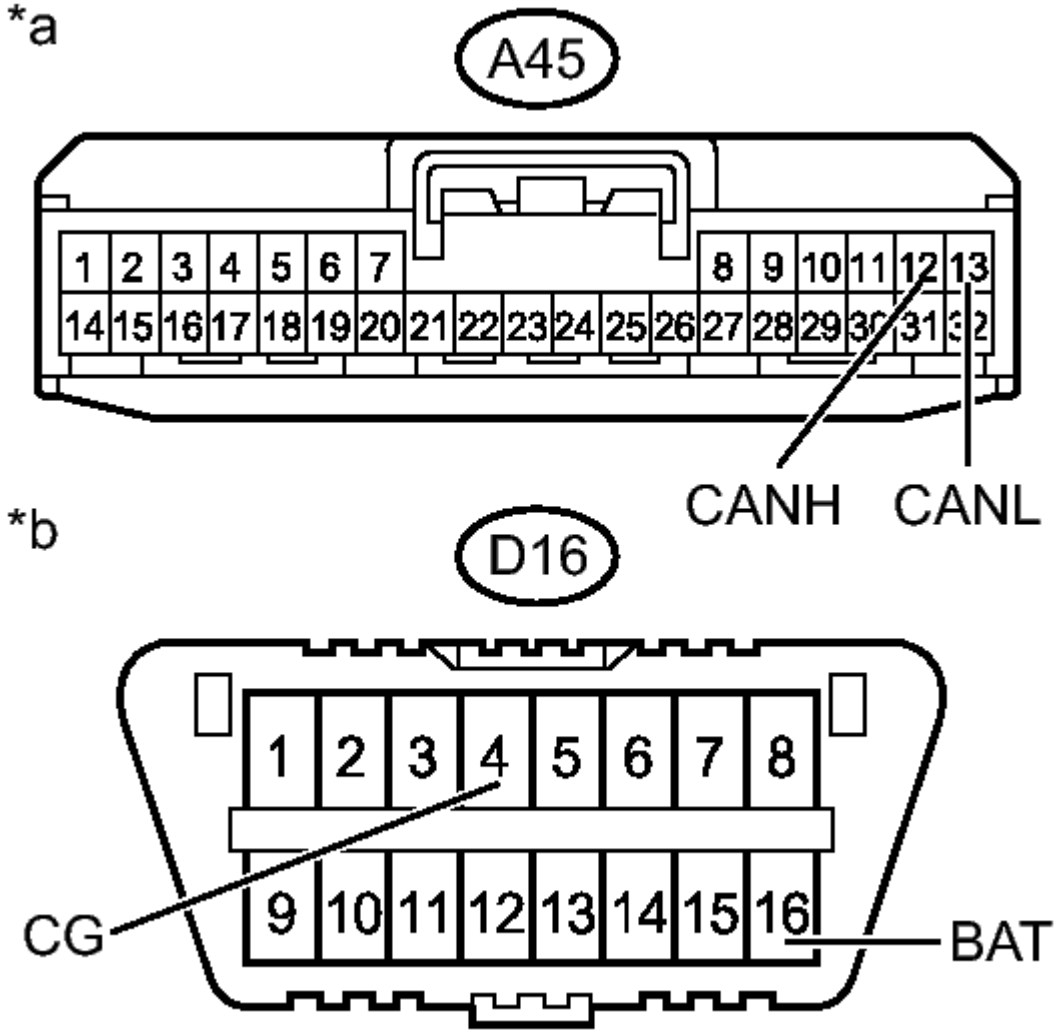


Fig. 52: AFS ECU (Headlight Swivel ECU) Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

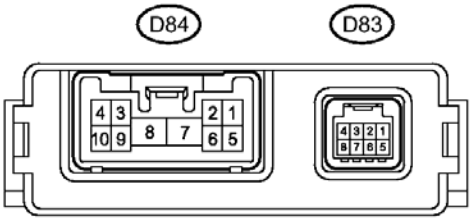
*a	Front view of wire harness connector (to AFS ECU (Headlight Swivel ECU))

*b	DLC3

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
A45-12 (CANH) - A45-13 (CANL)	G - W	Ignition switch off	54 to 69 ohms
A45-12 (CANH) - D16-4 (CG)	G - W-B	Ignition switch off	200 ohms or higher
A45-13 (CANL) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
A45-12 (CANH) - D16-16 (BAT)	G - B	Ignition switch off	6 kohms or higher
A45-13 (CANL) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

22. **CHECK SEAT BELT CONTROL ECU (w/ Pre-collision System)**



H

Fig. 53: Seat Belt Control ECU Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D83 and D84 seat belt control ECU connectors.

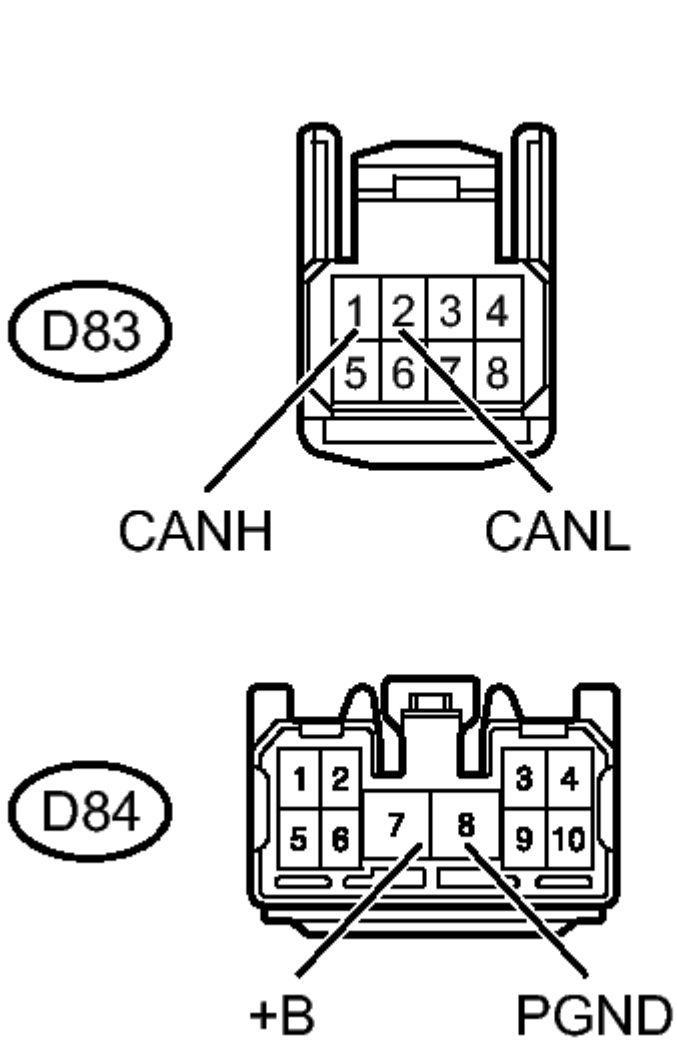


Fig. 54: Seat Belt Control ECU Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Seat Belt Control ECU)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D83-1 (CANH) - D83-2 (CANL)	B - W	Ignition switch off	54 to 69 ohms
D83-1 (CANH) - D84-8 (PGND)	B - W-B	Ignition switch off	200 ohms or higher
D83-2 (CANL) - D84-8 (PGND)	W - W-B	Ignition switch off	200 ohms or higher
D83-1 (CANH) - D84-7 (+B)	B - R	Ignition switch off	6 kohms or higher
D83-2 (CANL) - D84-7 (+B)	W - R	Ignition switch off	6 kohms or higher

23. **CHECK PARKING ASSIST ECU (w/ Parking Assist Monitor System)**

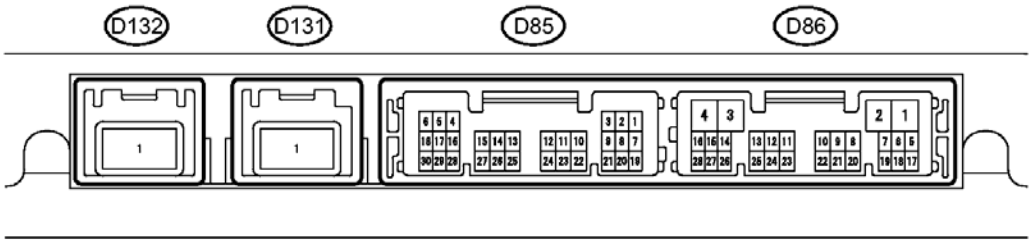


Fig. 55: Parking Assist ECU Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D86 parking assist ECU connector.

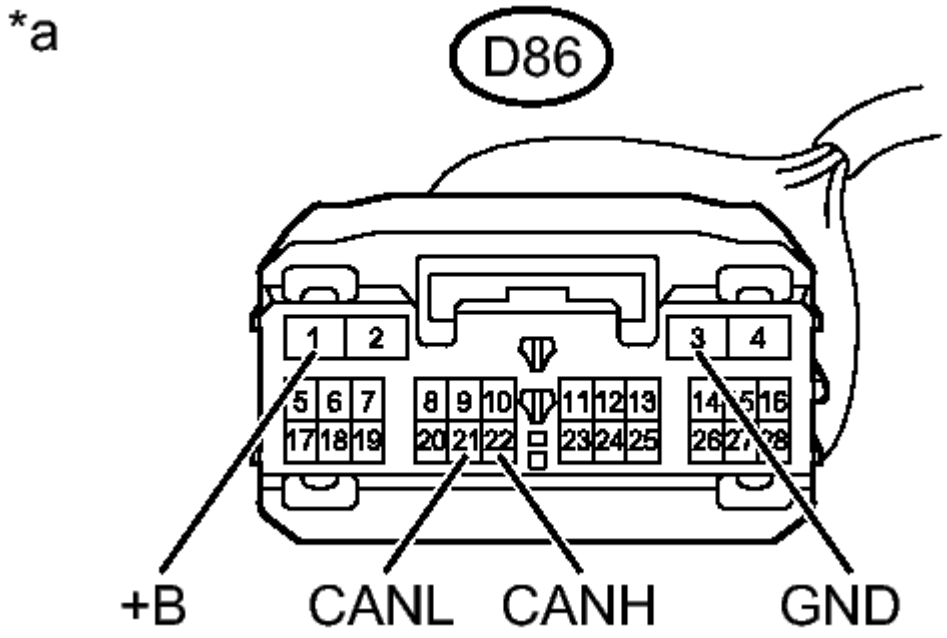


Fig. 56: Parking Assist ECU Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Parking Assist ECU)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D86-22 (CANH) - D86-21 (CANL)	L - W	Ignition switch off	54 to 69 ohms
D86-22 (CANH) - D86-3	L - W-B	Ignition switch off	200 ohms or higher

(GND)			
D86-21 (CANL) - D86-3 (GND)	W - W-B	Ignition switch off	200 ohms or higher
D86-22 (CANH) - D86-1 (+B)	L - B	Ignition switch off	6 kohms or higher
D86-21 (CANL) - D86-1 (+B)	W - B	Ignition switch off	6 kohms or higher

24. **CHECK CLEARANCE WARNING ECU (w/ Intuitive Parking Assist System)**

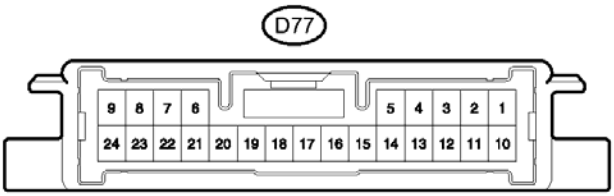


Fig. 57: Clearance Warning ECU Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the D77 clearance warning ECU connector.

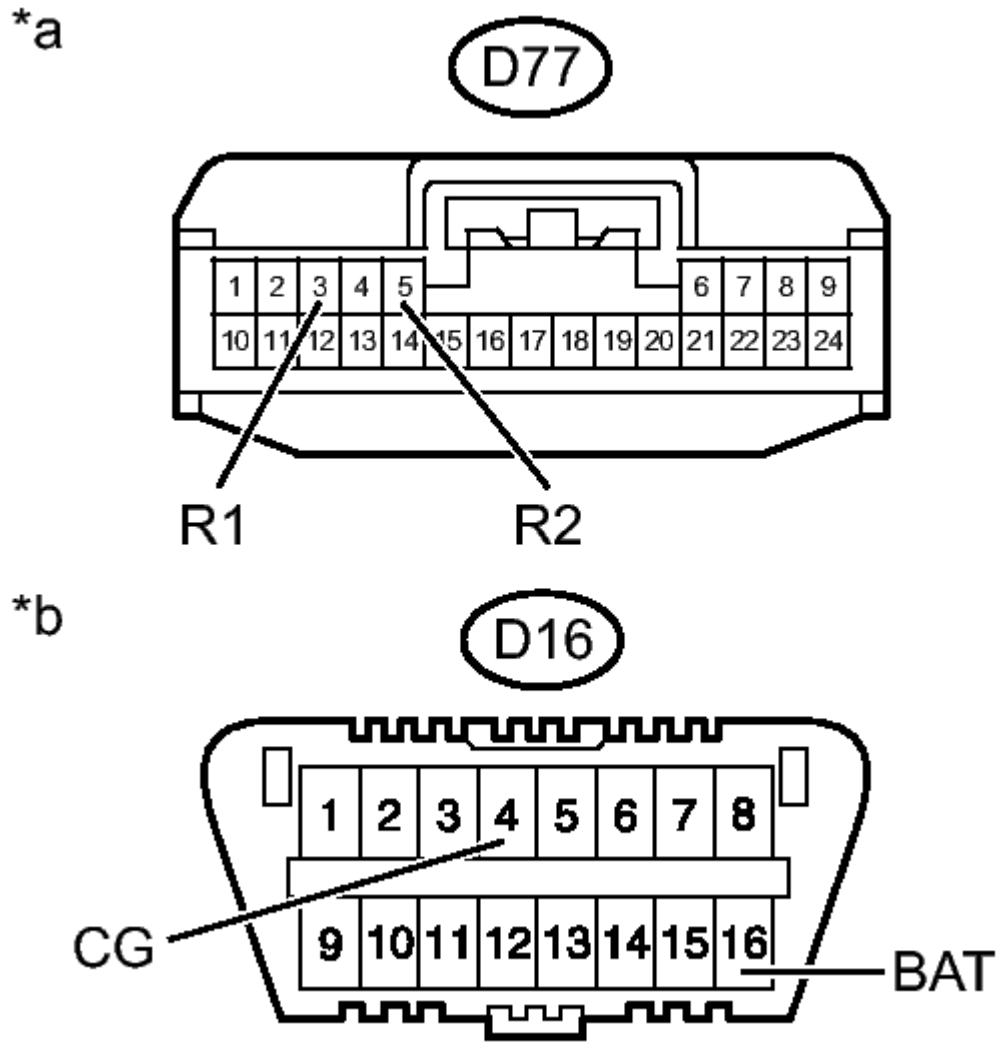


Fig. 58: Clearance Warning ECU Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

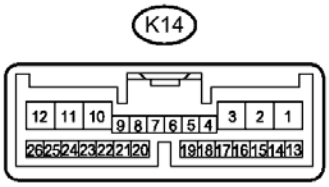
TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Clearance Warning ECU)
*b	DLC3

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
D77-3 (R1) - D77-5 (R2)	BR - W	Ignition switch off	54 to 69 ohms
D77-3 (R1) - D16-4 (CG)	BR - W-B	Ignition switch off	200 ohms or higher
D77-5 (R2) - D16-4 (CG)	W - W-B	Ignition switch off	200 ohms or higher
D77-3 (R1) - D16-16 (BAT)	BR - B	Ignition switch off	6 kohms or higher
D77-5 (R2) - D16-16 (BAT)	W - B	Ignition switch off	6 kohms or higher

25. **CHECK POWER BACK DOOR UNIT (BACK DOOR ECU) (w/ Power Back Door)**



H

Fig. 59: Power Back Door Unit (Back Door ECU) Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the K14 power back door unit (back door ECU) connector.

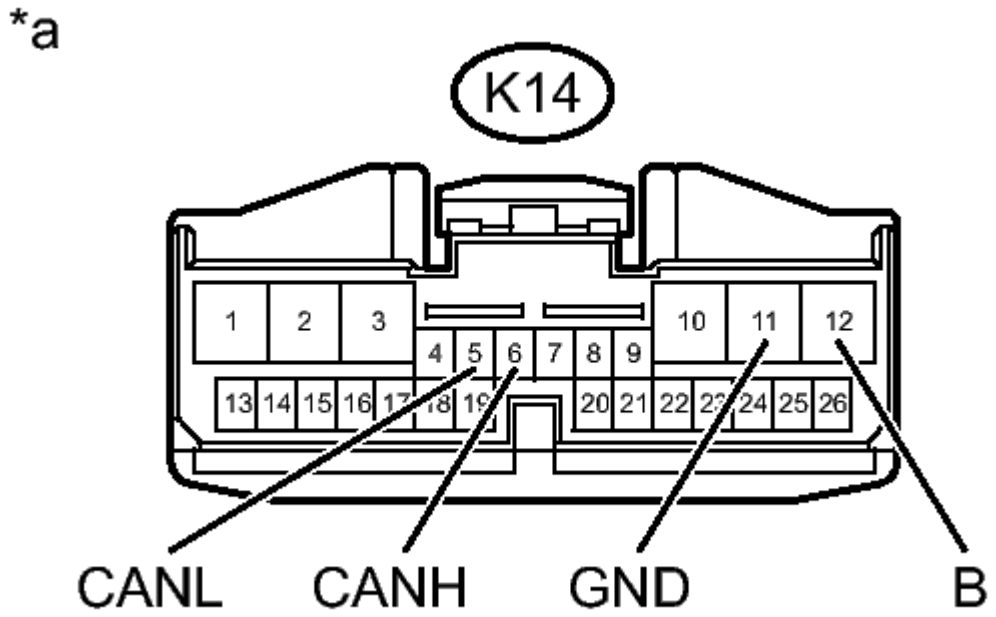


Fig. 60: Power Back Door Unit (Back Door ECU) Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

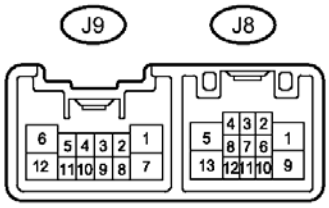
*a	Front view of wire harness connector (to Power Back Door Unit (Back Door ECU))

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
K14-6 (CANH) - K14-5 (CANL)	BR - W	Ignition switch off	54 to 69 ohms

K14-6 (CANH) - K14-11 (GND)	BR - W-B	Ignition switch off	200 ohms or higher
K14-5 (CANL) - K14-11 (GND)	W - W-B	Ignition switch off	200 ohms or higher
K14-6 (CANH) - K14-12 (B)	BR - B	Ignition switch off	6 kohms or higher
K14-5 (CANL) - K14-12 (B)	W - B	Ignition switch off	6 kohms or higher

26. **CHECK SLIDE DOOR MOTOR UNIT LH (w/ Power Slide Door)**



H

Fig. 61: Slide Door Motor Unit LH Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the J9 slide door motor unit LH connector.

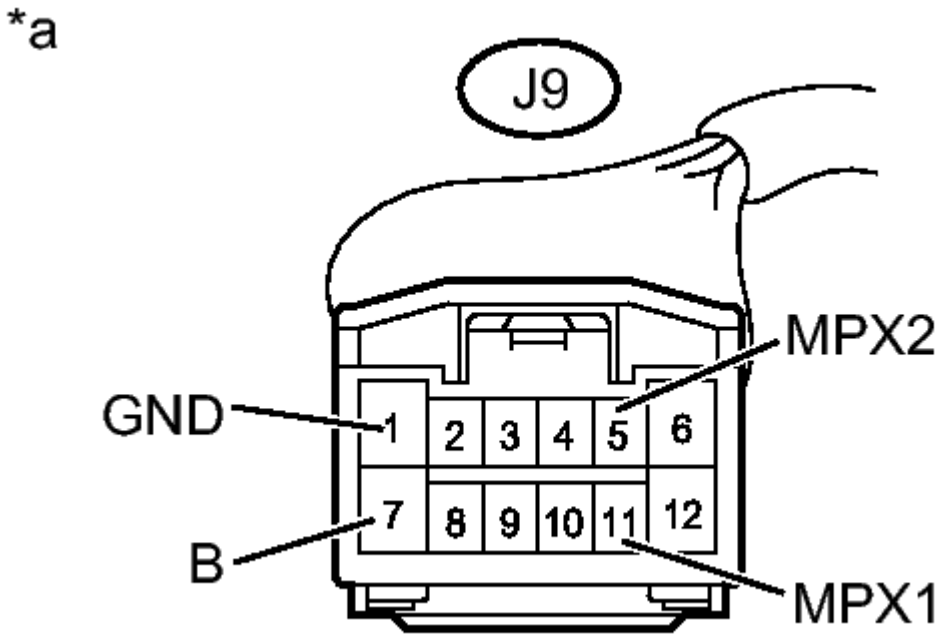


Fig. 62: Slide Door Motor Unit LH Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

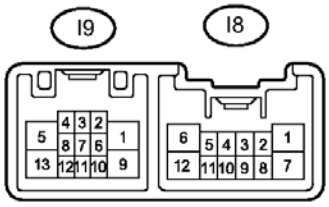
*a	Front view of wire harness connector (to Slide Door Motor Unit LH)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
J9-11 (MPX1) - J9-5 (MPX2)	R - W	Ignition switch off	54 to 69 ohms
J9-11 (MPX1) - J9-1	R - W-B	Ignition switch off	200 ohms or higher

(GND)			
J9-5 (MPX2) - J9-1 (GND)	W - W-B	Ignition switch off	200 ohms or higher
J9-11 (MPX1) - J9-7 (B)	R - LG	Ignition switch off	6 kohms or higher
J9-5 (MPX2) - J9-7 (B)	W - LG	Ignition switch off	6 kohms or higher

27. **CHECK SLIDE DOOR MOTOR UNIT RH (w/ Power Slide Door)**



H

Fig. 63: Slide Door Motor Unit RH Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the I8 slide door motor unit RH connector.

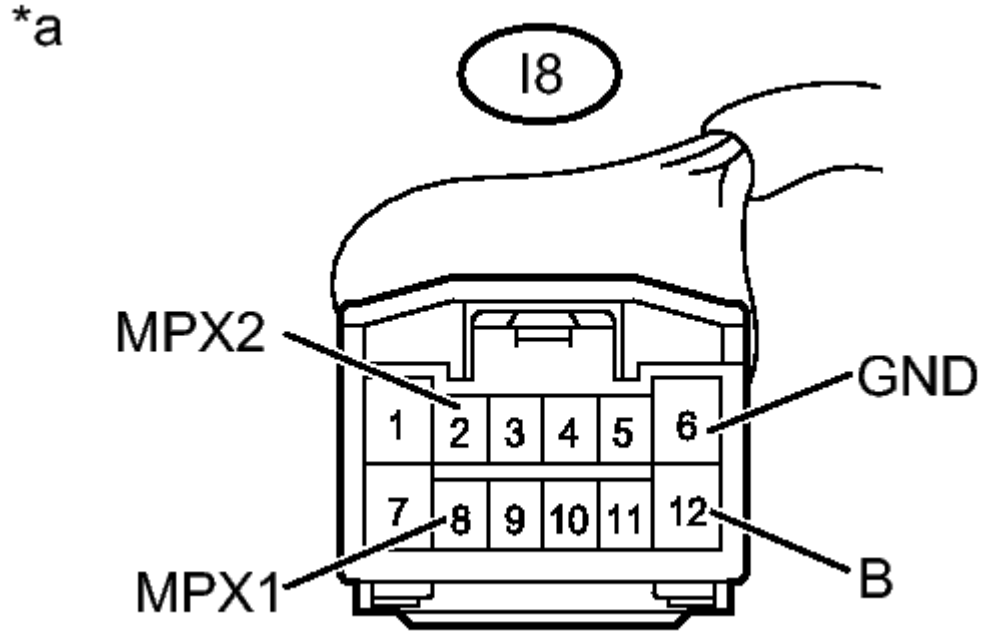


Fig. 64: Slide Door Motor Unit RH Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

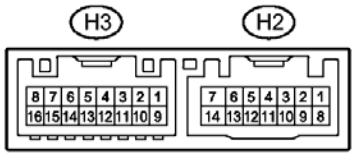
TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door Motor Unit RH)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
I8-8 (MPX1) - I8-2 (MPX2)	R - W	Ignition switch off	54 to 69 ohms
I8-8 (MPX1) - I8-6 (GND)	R - W-B	Ignition switch off	200 ohms or higher
I8-2 (MPX2) - I8-6 (GND)	W - W-B	Ignition switch off	200 ohms or higher
I8-8 (MPX1) - I8-12 (B)	R - LG	Ignition switch off	6 kohms or higher
I8-2 (MPX2) - I8-12 (B)	W - LG	Ignition switch off	6 kohms or higher

28. **CHECK OUTER MIRROR CONTROL ECU ASSEMBLY LH (w/ Seat Position Memory)**



H

Fig. 65: Outer Mirror Control ECU Assembly LH Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the H2 outer mirror control ECU assembly LH connector.

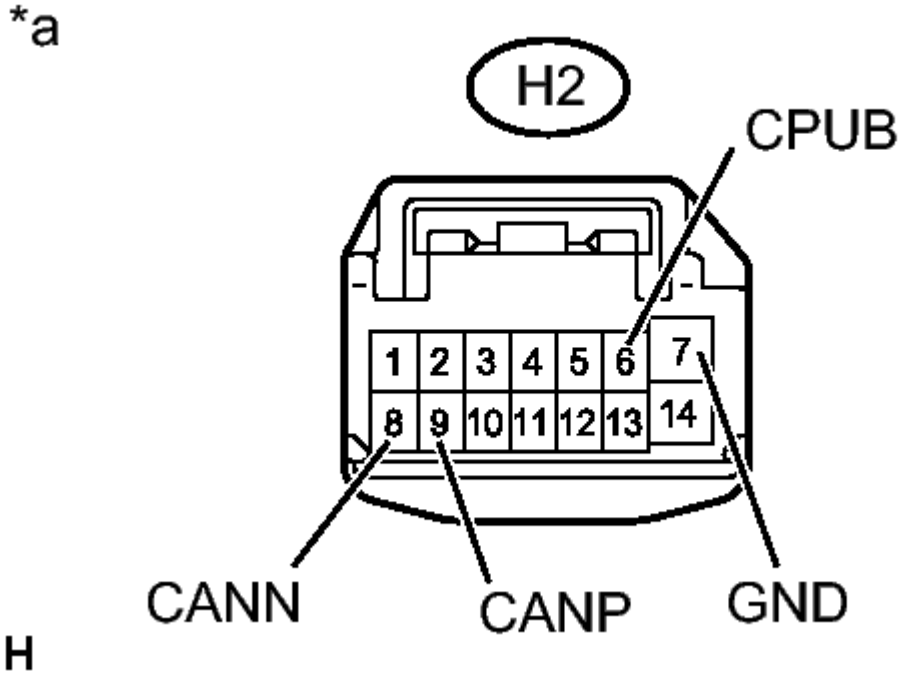


Fig. 66: Outer Mirror Control ECU Assembly LH Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

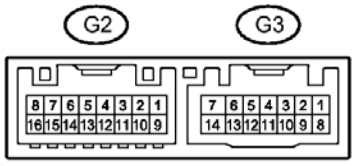
*a	Front view of wire harness connector (to Outer Mirror Control

	ECU Assembly LH)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
H2-9 (CANP) - H2-8 (CANN)	P - W	Ignition switch off	54 to 69 ohms
H2-9 (CANP) - H2-7 (GND)	P - W-B	Ignition switch off	200 ohms or higher
H2-8 (CANN) - H2-7 (GND)	W - W-B	Ignition switch off	200 ohms or higher
H2-9 (CANP) - H2-6 (CPUB)	P - LG	Ignition switch off	6 kohms or higher
H2-8 (CANN) - H2-6 (CPUB)	W - LG	Ignition switch off	6 kohms or higher

29. **CHECK OUTER MIRROR CONTROL ECU ASSEMBLY RH (w/ Seat Position Memory)**



H

Fig. 67: Outer Mirror Control ECU Assembly RH Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the G3 outer mirror control ECU assembly RH connector.

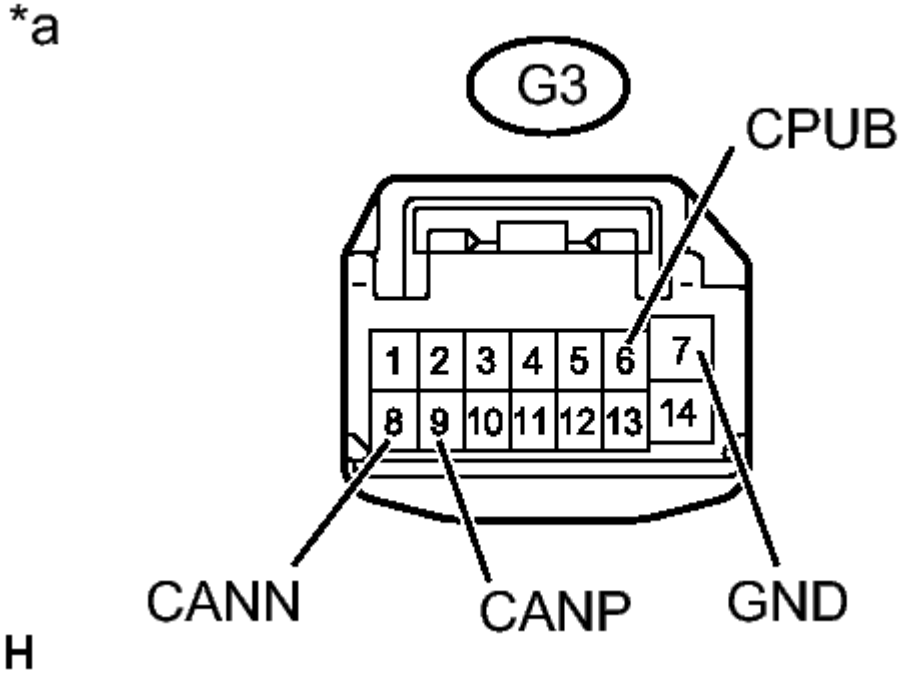


Fig. 68: Outer Mirror Control ECU Assembly RH Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Outer Mirror Control ECU Assembly RH)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
G3-9 (CANP) - G3-8 (CANN)	GR - W	Ignition switch off	54 to 69 ohms
G3-9			

(CANP) - G3-7 (GND)	GR - W-B	Ignition switch off	200 ohms or higher
G3-8 (CANN) - G3-7 (GND)	W - W-B	Ignition switch off	200 ohms or higher
G3-9 (CANP) - G3-6 (CPUB)	GR - B	Ignition switch off	6 kohms or higher
G3-8 (CANN) - G3-6 (CPUB)	W - B	Ignition switch off	6 kohms or higher

30. **CHECK POSITION CONTROL ECU AND SWITCH (w/ Seat Position Memory)**

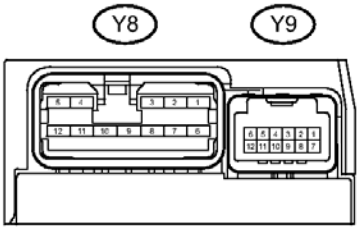


Fig. 69: Position Control ECU And Switch Connector Terminal Identification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the Y8 and Y9 position control ECU and switch connectors.

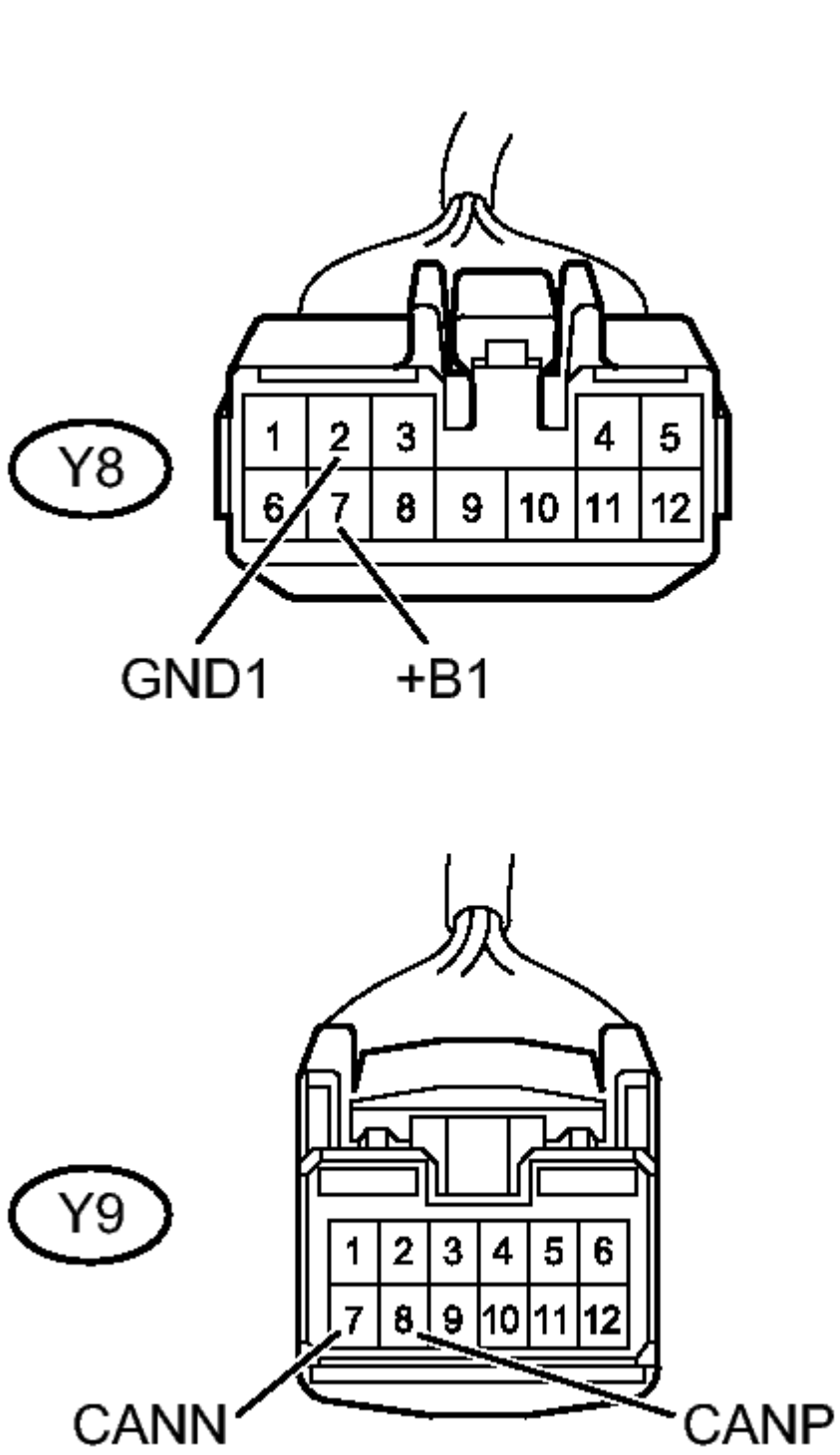


Fig. 70: Position Control ECU And Switch Connector Terminal Identification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Position Control ECU and Switch)

STANDARD RESISTANCE

Terminal No. (Symbol)	Wiring Color	Switch Condition	Specified Condition
Y9-8 (CANP) - Y9-7 (CANN)	B - W	Ignition switch off	54 to 69 ohms
Y9-8 (CANP) - Y8-2 (GND1)	B - W-B	Ignition switch off	200 ohms or higher
Y9-7 (CANN) - Y8-2 (GND1)	W - W-B	Ignition switch off	200 ohms or higher
Y9-8 (CANP) - Y8-7 (+B1)	B - W	Ignition switch off	6 kohms or higher
Y9-7 (CANN) - Y8-7 (+B1)	W - W	Ignition switch off	6 kohms or higher

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. **BUS CHECK**

   HINT:

   Only CAN communication system DTCs for each ECU can be displayed on the Techstream.

a. Select "CAN Bus Check" from "System Select".

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

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

ECU/Sensor Name	Techstream Display	Check method
Master Cylinder Solenoid (Skid Control ECU)	ABS/VSC/TRAC	Installed on all vehicles
Air Conditioning Amplifier	Air Conditioner	Installed on all vehicles
Combination Meter	Combination Meter	Installed on all vehicles
Position Control ECU and Switch	Driver Seat	for Power Seat with Memory
ECM	Engine	Installed on all vehicles
Power Steering ECU	EPS	Installed on all vehicles
4WD Control ECU	Four Wheel Drive Control	for AWD
Clearance Warning ECU	Intuitive Parking Assist	w/ Intuitive Parking Assist System
Outer Mirror Control ECU Assembly LH	L-Mirror	w/ Memory
Main Body ECU	Main Body	Installed on all

		vehicles
Parking Assist ECU	Parking Assist System	w/ Parking Assist Monitor System
Power Back Door Unit (Back Door ECU)	Power Back Door	w/ Power Back Door
Power Management Control ECU	Power Management	w/ Smart Key System
Network Gateway ECU	CAN Gateway2	w/o Smart Key System
Outer Mirror Control ECU Assembly RH	R-Mirror	w/ Memory
Slide Door Motor Unit LH	Rear Left Door	w/ Power Slide Door
Slide Door Motor Unit RH	Rear Right Door	w/ Power Slide Door
Certification ECU	Smart Access / Smart Key / Wireless Tuner	w/ Smart Key System
Center Airbag Sensor Assembly	SRS Airbag	Installed on all vehicles
Steering Angle Sensor	Steering Angle Sensor	Installed on all vehicles
Yaw Rate Sensor	Yaw Rate / Deceleration Sensor	w/ VDIM
Driving Support	Cruise Control (ACC)	w/ Dynamic Radar Cruise

ECU		Control System
AFS ECU (Headlight Swivel ECU)	AFS/HL Auto Leveling	w/ HID Headlight System
Seat Belt Control ECU	Pre-Collision	w/ Pre-collision System

3. **DTC TABLE BY ECU**

HINT:

- In the CAN communication system, CAN communication system DTCs stored by the ECU can be output 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".

a. SKID CONTROL ECU

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0100	Lost Communication with ECM/PCM "A"
U0123*1	Lost Communication with Yaw Rate Sensor Module
U0124*1	Lost Communication with Lateral Acceleration Sensor Module
U0126	Lost Communication with Steering Angle Sensor Module
	ECM Communication

C1203*1	Circuit Malfunction
C1437	Lost Communication with ECM

*1: w/ VDIM

b. MAIN BODY ECU

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0100	Lost Communication with ECM
U0101	Lost Communication with TCM
U0151	Lost Communication with Airbag ECU
U0155	Lost Communication with Combination Meter
U0200	Lost Communication with "Door Control Module B"
U0201	Lost Communication with "Door Control Module C"
U0202	Lost Communication with "Door Control Module D"

U0199	Lost Communication with "Door Control Module A"
U0208	Lost Communication with "Seat Control Module A"
U0327	Software Incompatibility with Vehicle Security Control Module
U1002 (CAN MS BUS)	Lost Communication with Gateway Module (Main body ECU)
U1104	Lost Communication with Driving Support ECU
U1133	Lost Communication with Power Management Module

c. CERTIFICATION ECU (SMART KEY ECU)

For vehicles with the smart key system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0142	Lost Communication with Main Body ECU
B2799	Engine Immobiliser

	System Malfunction

d. PARKING ASSIST ECU

For vehicles with the parking assist monitor system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0126	Lost Communication with Steering Angle Sensor Module
U0129	Lost Communication with Skid Control ECU
U0140	Lost Communication with Main Body ECU
U1110	Lost Communication with Clearance Warning ECU

e. CLEARANCE WARNING ECU

For vehicles with the intuitive parking assist system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0101	Lost Communication with TCM
	Lost Communication

U0155	with Instrument Panel Cluster Control Module

f. AIR CONDITIONING AMPLIFIER

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
B1499	Communication Malfunction (Engine and Meter ECU)

g. 4WD CONTROL ECU

For AWD only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0100	Lost Communication with ECM/PCM "A"
U0123	Lost Communication with Yaw Rate Sensor Module
U0124	Lost Communication with Lateral Acceleration Sensor Module
U0126	Lost Communication with Steering Angle Sensor Module
	Lost

U0129	Communication with Brake System Control Module

h. ECM

HINT:

ECM is connected to the CAN communication system but CAN communication DTCs are not stored.

i. OUTER MIRROR CONTROL ECU

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0142	Lost Communication with Main Body ECU

j. CENTER AIRBAG SENSOR ASSEMBLY

HINT:

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

k. DRIVING SUPPORT ECU

For vehicle with dynamic radar cruise control only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0122	Lost Communication with Vehicle Dynamics

	Control Module
U0123	Lost Communication with Yaw Rate Sensor Module
U0126	Lost Communication with Steering Angle Sensor Module
U1100	Lost Communication with Seat Belt Control Module
U1104	Lost Communication with Driving Support ECU

l. POWER MANAGEMENT CONTROL ECU

For vehicle with smart key system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0100	Lost Communication with ECM

m. POSITION CONTROL ECU AND SWITCH

For power seat with memory only.

HINT:

The position control ECU and switch is connected to the CAN communication system but CAN communication DTCs are not stored.

n. AFS ECU

For vehicle with HID headlight system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0101	Lost Communication with TCM
U0126	Lost Communication with Steering Angle Sensor Module
U0129	Lost Communication with Brake System Control Module
U0142	Lost Communication with Main Body ECU

o. NETWORK GATEWAY ECU

For vehicle without smart key system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0104	Lost Communication with Driving Support ECU
U0182	Lost Communication with AFS ECU
U1100	Lost Communication with Seat Belt Control Module
	Lost

U1110	Communication with Clearance Sonar Module
U110B	Lost Communication with Parking Assist Control Module "B"

p. POWER STEERING ECU

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0100	Lost Communication with ECM
U0129	Lost Communication with Brake System Control Module

q. SEAT BELT CONTROL ECU

For vehicle with pre-collision system only.

HINT:

DTC communication uses the CAN communication system.

DTC Code	Detection Item
U0122	Lost Communication with Vehicle Dynamics Control Module
U0140	Lost Communication with Main Body ECU
	Lost

U0151	Communication with Airbag ECU
U1104	Lost Communication with Driving Support ECU

r. STEERING ANGLE SENSOR

HINT:

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

s. YAW RATE SENSOR

For vehicle with the VDIM only.

HINT:

The yaw rate sensor is connected to CAN communication system but CAN communication DTCs are not stored.

t. COMBINATION METER

HINT:

The combination meter is connected to CAN communication system but CAN communication DTCs are not stored.

u. POWER BACK DOOR UNIT (BACK DOOR ECU)

For vehicle with the power back door only.

HINT:

The power back door unit (back door ECU) is connected to CAN communication system but CAN communication DTCs are not stored.

v. SLIDE DOOR MOTOR UNIT (SLIDE DOOR ECU)

For vehicle with the power slide door only.

HINT:

The slide door motor unit (slide door ECU) is connected to CAN communication system but CAN

communication DTCs are not stored.

4. **DTC COMBINATION TABLE**

Output from	Output DTC	Detected Communication Stop Mode				
		V1 Bus				
		ECM Communication Stop Mode	Skid Control ECU Communication Stop Mode	Yaw Rate Sensor Communication Stop Mode	Steering Angle Sensor Communication Stop Mode	Power Ste ECU Communic Stop Mo
Skid Control ECU	C1437	o	o	X	X	X
	U0100	o	o	X	X	X
	U0126	X	o	X	o	X
	U0123*1	X	o	o	X	X
	U0124*1	X	o	o	X	X
	C1203*1	o	o	X	X	X
Certification ECU*2	U0142	o	X	X	X	X
	B2799	o	X	X	X	X
Driving Support ECU*3	U0122	X	o	X	X	X
	U0123	X	X	o	X	X
	U0126	X	X	X	o	X
	U1100	-	-	-	-	-
	U1104	-	-	-	-	-
Main Body ECU	U0151	X	X	X	X	X
	U0155	X	X	X	X	X
	U0100	o	X	X	X	X
	U0101	o	X	X	X	X
	U0201	-	-	-	-	-
	U0202	-	-	-	-	-
	U0327	X	X	X	X	X
	U1002	-	-	-	-	-
	U1133	X	X	X	X	X
	U0208	-	-	-	-	-
	U0199	-	-	-	-	-
	U0200	-	-	-	-	-
	U1104	X	X	X	X	X
Air Conditioning Amplifier	B1499	X	X	X	X	X
AFS ECU*4	U0101	o	X	X	X	X
	U0129	X	o	X	X	X
	U0126	X	X	X	o	X

	U0142	X	X	X	X	X
Parking Assist ECU*5	U0126	X	X	X	o	X
	U0129	X	o	X	X	X
	U0140	X	X	X	X	X
	U1110	X	X	X	X	X
Power Steering ECU	U0129	X	o	X	X	o
	U0100	o	X	X	X	o
Power Management Control ECU*2	U0100	o	X	X	X	X
Network Gateway ECU*6	U0104	-	-	-	-	-
	U0182	-	-	-	-	-
	U1100	-	-	-	-	-
	U1110	-	-	-	-	-
	U110B	-	-	-	-	-
Seat Belt Control ECU*7	U0122	X	o	X	X	X
	U1104	-	-	-	-	-
	U0151	X	X	X	X	X
	U0140	X	X	X	X	X
Outer Mirror Control ECU*8	U0142	-	-	-	-	-
Clearance Warning ECU*9	U0101	o	X	X	X	X
	U0155	X	X	X	X	X
4WD Control ECU*10	U0100	o	X	X	X	X
	U0126	X	X	X	o	X
	U0123	X	X	o	X	X
	U0124	X	X	o	X	X
	U0129	X	o	X	X	X

Output from	**Output DTC**	**Detected Communication Stop Mode**			
		V1 Bus			
		Center Airbag Sensor Communication Stop Mode	**Air Conditioning Amplifier Communication Stop Mode**	**Certification ECU Communication Stop Mode**	**Combination Meter ECU Communication Stop Mode**
Skid Control	C1437	X	X	X	X
	U0100	X	X	X	X
	U0126	X	X	X	X

ECU	U0123*1	X	X	X	X
	U0124*1	X	X	X	X
	C1203*1	X	X	X	X
Certification ECU*2	U0142	X	X	o	X
	B2799	X	X	o	X
Driving Support ECU*3	U0122	X	X	X	X
	U0123	X	X	X	X
	U0126	X	X	X	X
	U1100	-	-	-	-
	U1104	-	-	-	-
Main Body ECU	U0151	o	X	X	X
	U0155	X	X	X	o
	U0100	X	X	X	X
	U0101	X	X	X	X
	U0201	-	-	-	-
	U0202	-	-	-	-
	U0327	X	X	o	X
	U1002	-	-	-	-
	U1133	X	X	X	X
	U0208	-	-	-	-
	U0199	-	-	-	-
	U0200	-	-	-	-
	U1104	X	X	X	X
Air Conditioning Amplifier	B1499	X	o	X	X
AFS ECU*4	U0101	X	o	X	X
	U0129	X	X	X	X
	U0126	X	X	X	X
	U0142	X	X	X	X
Parking Assist ECU*5	U0126	X	X	X	X
	U0129	X	X	X	X
	U0140	X	X	X	X
	U1110	X	X	X	X
Power Steering ECU	U0129	X	X	X	X
	U0100	X	X	X	X
Power Management Control ECU*2	U0100	X	X	X	X
	U0104	-	-	-	-

Network Gateway ECU*6	U0182	-	-	-	-
	U1100	-	-	-	-
	U1110	-	-	-	-
	U110B	-	-	-	-
Seat Belt Control ECU*7	U0122	X	X	X	X
	U1104	-	-	-	-
	U0151	o	X	X	X
	U0140	X	X	X	X
Outer Mirror Control ECU*8	U0142	-	-	-	-
Clearance Warning ECU*9	U0101	X	X	X	X
	U0155	X	X	X	o
4WD Control ECU*10	U0100	X	X	X	X
	U0126	X	X	X	X
	U0123	X	X	X	X
	U0124	X	X	X	X
	U0129	X	X	X	X

Output from	**Output DTC**	**Detected Communication Stop Mode**			
		V1 Bus			
		Main Body ECU Communication Stop Mode	**4WD Control ECU Communication Stop Mode**	**Power Management Control ECU Communication Stop Mode**	**Network Gateway ECU Communication Stop Mode**
Skid Control ECU	C1437	X	X	X	X
	U0100	X	X	X	X
	U0126	X	X	X	X
	U0123*1	X	X	X	X
	U0124*1	X	X	X	X
	C1203*1	X	X	X	X
Certification ECU*2	U0142	X	X	X	X
	B2799	X	X	X	X
Driving Support ECU*3	U0122	X	X	o	o
	U0123	X	X	o	o
	U0126	X	X	o	o
	U1100	-	-	-	-
	U1104	-	-	-	-
	U0151	o	X	X	X
	U0155	o	X	X	X

Main Body ECU	U0100	o	X	X	X
	U0101	o	X	X	X
	U0201	-	-	-	-
	U0202	-	-	-	-
	U0327	o	X	X	X
	U1002	-	-	-	-
	U1133	o	X	o	X
	U0208	-	-	-	-
	U0199	-	-	-	-
	U0200	-	-	-	-
	U1104	o	X	o	o
Air Conditioning Amplifier	B1499	X	X	o	X
AFS ECU*4	U0101	X	X	o	o
	U0129	X	X	o	o
	U0126	X	X	o	o
	U0142	o	X	o	o
Parking Assist ECU*5	U0126	X	X	o	o
	U0129	X	X	o	o
	U0140	o	X	o	o
	U1110	X	X	o	o
Power Steering ECU	U0129	X	X	X	X
	U0100	X	X	X	X
Power Management Control ECU*2	U0100	X	X	o	X
Network Gateway ECU*6	U0104	-	-	-	-
	U0182	-	-	-	-
	U1100	-	-	-	-
	U1110	-	-	-	-
	U110B	-	-	-	-
Seat Belt Control ECU*7	U0122	X	X	X	X
	U1104	-	-	-	-
	U0151	X	X	X	X
	U0140	o	X	o	o
Outer Mirror Control ECU*8	U0142	-	-	-	-
Clearance Warning	U0101	X	X	o	o

ECU*9	U0155	X	X	o	o
4WD Control ECU*10	U0100	X	o	X	X
	U0126	X	o	X	X
	U0123	X	o	X	X
	U0124	X	o	X	X
	U0129	X	o	X	X

Output from	Output DTC	Detected Communication Stop Mode			
		V2 Bus			
		Network Gateway ECU Communication Stop Mode	Power Management Control ECU Communication Stop Mode	Driving Support ECU Communication Stop Mode	AFS ECU Communication Stop Mode
Skid Control ECU	C1437	-	-	-	-
	U0100	-	-	-	-
	U0126	-	-	-	-
	U0123*1	-	-	-	-
	U0124*1	-	-	-	-
	C1203*1	-	-	-	-
Certification ECU*2	U0142	-	-	-	-
	B2799	-	-	-	-
Driving Support ECU*3	U0122	o	o	o	X
	U0123	o	o	o	X
	U0126	o	o	o	X
	U1100	X	X	o	X
	U1104	-	-	o	-
Main Body ECU	U0151	-	-	-	-
	U0155	-	-	-	-
	U0100	-	-	-	-
	U0101	-	-	-	-
	U0201	-	-	-	-
	U0202	-	-	-	-
	U0327	-	-	-	-
	U1002	-	-	-	-
	U1133	-	-	-	-
	U0208	-	-	-	-
	U0199	-	-	-	-
	U0200	-	-	-	-
	U1104	o	o	o	X
Air Conditioning	B1499	-	-	-	-

Amplifier					
AFS ECU*4	U0101	o	o	X	o
	U0129	o	o	X	o
	U0126	o	o	X	o
	U0142	o	o	X	o
Parking Assist ECU*5	U0126	X	X	X	X
	U0129	X	X	X	X
	U0140	X	X	X	X
	U1110	X	X	X	X
Power Steering ECU	U0129	-	-	-	-
	U0100	-	-	-	-
Power Management Control ECU*2	U0100	-	-	-	-
Network Gateway ECU*6	U0104	o	X	o	X
	U0182	o	X	X	o
	U1100	o	X	X	X
	U1110	o	X	X	X
	U110B	o	X	X	X
Seat Belt Control ECU*7	U0122	o	o	X	X
	U1104	X	X	o	X
	U0151	o	o	X	X
	U0140	o	o	X	X
Outer Mirror Control ECU*8	U0142	-	-	-	-
Clearance Warning ECU*9	U0101	o	o	X	X
	U0155	o	o	X	X
4WD Control ECU*10	U0100	-	-	-	-
	U0126	-	-	-	-
	U0123	-	-	-	-
	U0124	-	-	-	-
	U0129	-	-	-	-

Output from	**Output DTC**	**Detected Communication Stop Mode**		
		V2 Bus		
		Seat Belt Control ECU Communication Stop Mode	**Clearance Warning ECU Communication Stop Mode**	**Parking Assist ECU Communication Stop Mode**

Skid Control ECU	C1437	-	-	-
	U0100	-	-	-
	U0126	-	-	-
	U0123*1	-	-	-
	U0124*1	-	-	-
	C1203*1	-	-	-
Certification ECU*2	U0142	-	-	-
	B2799	-	-	-
Driving Support ECU*3	U0122	X	X	X
	U0123	X	X	X
	U0126	X	X	X
	U1100	o	X	X
	U1104	-	-	-
Main Body ECU	U0151	-	-	-
	U0155	-	-	-
	U0100	-	-	-
	U0101	-	-	-
	U0201	-	-	-
	U0202	-	-	-
	U0327	-	-	-
	U1002	-	-	-
	U1133	-	-	-
	U0208	-	-	-
	U0199	-	-	-
	U0200	-	-	-
	U1104	X	X	X
Air Conditioning Amplifier	B1499	-	-	-
AFS ECU*4	U0101	X	X	X
	U0129	X	X	X
	U0126	X	X	X
	U0142	X	X	X
Parking Assist ECU*5	U0126	X	X	X
	U0129	X	X	X
	U0140	X	X	X
	U1110	X	o	X
Power Steering ECU	U0129	-	-	-
	U0100	-	-	-
Power Management				

Control ECU*2	U0100	-	-	-
Network Gateway ECU*6	U0104	X	X	X
	U0182	X	X	X
	U1100	o	X	X
	U1110	X	o	X
	U110B	X	X	o
Seat Belt Control ECU*7	U0122	o	X	X
	U1104	o	X	X
	U0151	o	X	X
	U0140	o	X	X
Outer Mirror Control ECU*8	U0142	-	-	-
Clearance Warning ECU*9	U0101	X	o	X
	U0155	X	o	X
4WD Control ECU*10	U0100	-	-	-
	U0126	-	-	-
	U0123	-	-	-
	U0124	-	-	-
	U0129	-	-	-

Output from	Output DTC	Detected Communication Stop Mode				
		MS Bus				
		Main Body ECU Communication Stop Mode	Position Control ECU and Switch Communication Stop Mode	Outer Mirror Control ECU Communication Stop Mode	Slide Door ECU Communication Stop Mode	Back Do ECU Communic Stop Mo
Skid Control ECU	C1437	-	-	-	-	-
	U0100	-	-	-	-	-
	U0126	-	-	-	-	-
	U0123*1	-	-	-	-	-
	U0124*1	-	-	-	-	-
	C1203*1	-	-	-	-	-
Certification ECU*2	U0142	-	-	-	-	-
	B2799	-	-	-	-	-
Driving Support ECU*3	U0122	-	-	-	-	-
	U0123	-	-	-	-	-
	U0126	-	-	-	-	-
	U1100	-	-	-	-	-

	U1104	-	-	-	-	-
Main Body ECU	U0151	-	-	-	-	-
	U0155	-	-	-	-	-
	U0100	-	-	-	-	-
	U0101	-	-	-	-	-
	U0201	o	X	X	o	X
	U0202	o	X	X	o	X
	U0327	-	-	-	-	-
	U1002	o	o	o	o	o
	U1133	-	-	-	-	-
	U0208	o	o	X	X	X
	U0199	o	X	o	X	X
	U0200	o	X	o	X	X
	U1104	-	-	-	-	-
Air Conditioning Amplifier	B1499	-	-	-	-	-
AFS ECU*4	U0101	-	-	-	-	-
	U0129	-	-	-	-	-
	U0126	-	-	-	-	-
	U0142	-	-	-	-	-
Parking Assist ECU*5	U0126	-	-	-	-	-
	U0129	-	-	-	-	-
	U0140	-	-	-	-	-
	U1110	-	-	-	-	-
Power Steering ECU	U0129	-	-	-	-	-
	U0100	-	-	-	-	-
Power Management Control ECU*2	U0100	-	-	-	-	-
Network Gateway ECU*6	U0104	-	-	-	-	-
	U0182	-	-	-	-	-
	U1100	-	-	-	-	-
	U1110	-	-	-	-	-
	U110B	-	-	-	-	-
Seat Belt Control ECU*7	U0122	-	-	-	-	-
	U1104	-	-	-	-	-
	U0151	-	-	-	-	-
	U0140	-	-	-	-	-
Outer Mirror						

Control ECU*8	U0142	o	X	o	X	X
Clearance Warning ECU*9	U0101	-	-	-	-	-
	U0155	-	-	-	-	-
4WD Control ECU*10	U0100	-	-	-	-	-
	U0126	-	-	-	-	-
	U0123	-	-	-	-	-
	U0124	-	-	-	-	-
	U0129	-	-	-	-	-

HINT:

o: Stored.

x: When one side of branch wire is open, storage may occur.

*1: w/ VDIM

*2: w/ Smart Key System

*3: w/ Dynamic Radar Cruise Control System

*4: w/ HID Headlight System

*5: w/ Parking Assist Monitor System

*6: w/o Smart Key System

*7: w/ Pre-collision System

*8: w/ Memory

*9: w/ Intuitive Parking Assist System

*10: for AWD

FAIL-SAFE CHART

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.

System	Function (Function Description)	1. Control Master 2. System Related 3. Control Actuator	Fail-safe Operation	Driver Detectable	DTC
SFI	Electric load control (Idle up by electric load)	1. ECM 2. Air Conditioning Amplifier, Main Body ECU 3. -	No idle up by electric load.	Idle engine speed may not be stable.	-
	Air conditioner coordination (Idle up by compressor load)	1. ECM 2. Air Conditioning Amplifier, Power Management Control ECU 3. -	Air Conditioning coordination does not work. (no idle up)	Air conditioning does not work.	-
	Integrated control (VSC) (non driveforce demand) (Calculate driver needed torque by accelerator pedal movement)	1. ECM 2. Skid Control ECU, Yaw Rate Sensor, Steering Angle Sensor, Driving Support ECU 3. -	Integrated control does not work.	-	-
	ECT indicator in meter (Shift position, switch, mode, etc.)	1. ECM 2. Combination Meter ECU 3. -	Indicator OFF.	-	-
	Shift timing change at coast Shift up delay requested by air	1. ECM 2. Air Conditioning	Coast down shift does not work.	-	-

	conditioning	Amplifier 3. -			
Cruise Control	Cruise control	1. ECM, Driving Support ECU 2. Skid Control ECU, Combination Meter 3. -	Cruise control does not work.	Cruise main indicator blinks	-
Brake	VDM control (ABS/VSC/TRC integrated control)	1. Skid Control ECU 2. ECM, Yaw Rate Sensor, Steering Angle Sensor 3. -	During control: After backup control finishes, move to normal brake and disable control. Not controlled: Disable control.	Warning light comes on	C1437, U0126, U0123, U0124
Meter	Warning light control and diagnosis service	1. Combination Meter ECU 2. - 3. -	-	-	-
Brake	VDM control constants (Switching ABS/VSC/TRC constants)	1. Skid Control ECU 2. ECM 3. -	Disable control	Warning light comes on	C1203
	TRC function (Stabilize vehicle start)	1. Skid Control ECU 2. ECM, Steering Angle Sensor 3. -	During control: After backup control finishes, move to normal brake and disable control. Not controlled: Disable control.	Warning light comes on	C1437, U0126, U0100
	VSC function (Prevent skid when cornering)	1. Skid Control ECU 2. ECM, Steering Angle Sensor 3. -	During control: After backup control finishes, move to normal brake and disable control. Not controlled: Disable control.	Warning light comes on	C1437, U0126, U0100

Meter	Warning light control and diagnosis service	1. Combination Meter ECU 2. - 3. -	-	-	-
Yaw Rate	Trigger response/Auto transmission (Yaw rate sensor signal output	1. Yaw Rate Sensor 2. - 3. -	Transmit YGS1S03 (YGS0=1) every 12 ms.	-	-
Steering Angle	Steering angle sensor (Measure the steering angle)	1. Steering Angle Sensor 2. Skid Control ECU 3. -	Transmit STR1S01 (STS0=1) every 12 ms.	VSC warning light comes on	-
EPS	Electric power steering system (Assist power is adjusted by vehicle speed)	1. Power Steering ECU 2. Skid Control ECU 3. -	Assist power is limited.	EPS warning light comes on	U0129
	Electric power steering system (Assist is started at engine start, stopped at engine stop)	1. Power Steering ECU 2. ECM 3. -	Assist start delay.	EPS warning light comes on	U0100
	Smart function (Smart lock/Smart warning/Smart illumination)	1. Main Body ECU, Certification ECU 2. Combination Meter ECU 3. -	Operation suspended.	-	U0142
	Wireless function (Wireless lock/unlock/trunk/panic)	1. Main Body ECU, Certification ECU 2. - 3. -	Operation suspended.	-	U0142
		1. Main Body ECU			

Smart Key	Remote engine start (Remote engine start ECU requires immobiliser unset permission)	2. ECM, Power Management Control ECU, Certification ECU 3. -	The remote engine start operation is not done.	-	B2779
	Engine switch illumination (Turns engine switch illumination ON/OFF.)	1. Certification ECU 2. Main Body ECU 3. -	Engine switch illumination does not work. (1) When engine switch illumination is OFF: Does not illuminate. (2) When engine switch illumination is ON: Does not turn off illumination.	-	U0142
Front Power Seat	Memory function (When smart or wireless unlock is done, seat and tilt and telescopic are moved to a preset position)	1. Main Body ECU 2. Position Control ECU and Switch 3. -	Engine switch illumination does not work. (1) When engine switch illumination is OFF: Does not illuminate. (2) When engine switch illumination is ON: Does not turn off illumination.	-	U0142

Main Body	VAST function (Recognize the driver by smart key and initialize several settings according to the driver information)	1. Main Body ECU 2. Air Conditioning Amplifier, Certification ECU 3. -	Cannot recognize the driver.	-	U0142
Airbag	Event data recorder (When the recording conditions of the event data recorder are met, it memorizes the vehicle state data: vehicle speed, accelerator pedal angle, engine RPM, shift position, etc.)	1. Center Airbag Sensor Assembly 2. ECM, Combination Meter ECU 3. -	The previous value is maintained. An invalid value is memorized in event data recorder.	-	-
	TC diagnostic code output service (While TC=ON is being received from ENG, diagnostic codes are sent in response to diagnostic output requests from the MET.)	1. Combination Meter ECU 2. ECM, Center Airbag Sensor Assembly 3. -	TC-La service ends.	-	-
	Airbag warning light control (Turns airbag warning light ON/OFF.)	1. Combination Meter ECU 2. Center Airbag Sensor Assembly 3. -	-	-	-
	Crash detection signal notification (Sends collision status information to enable fuel cut during a vehicle collision.)	1. ECM 2. Center Airbag Sensor Assembly 3. -	-	-	-
	Driver side seat belt buckle switch signal (Turns driver side seat belt warning light	1. Main Body ECU 2. Center Airbag Sensor	-	-	-

	ON/OFF.)	Assembly 3. -			
Occupant Classification	Front passenger side seat belt buckle switch signal (Turns passenger side seat belt warning light ON/OFF.)	1. Combination Meter ECU 2. Center Airbag Sensor Assembly 3. -	-	-	-
	Front passenger side seat occupant detection signal (Turns passenger side seat belt warning light ON/OFF.)	1. Combination Meter ECU 2. Center Airbag Sensor Assembly 3. -	-	-	-
Pre-collision	Driver side and front passenger side seat belt buckles switch signal (Used for the PSB operation judgment for driver side and front passenger side)	1. Seat Belt Control ECU 2. Center Airbag Sensor Assembly 3. -	-	-	-
Clearance Sonar	Clearance sonar system (Buzzer alarm and display according to distance measured by sensors)	1. Clearance Warning ECU 2. ECM, Combination Meter ECU 3. -	Clearance sonar display OFF Obstacle detection OFF	Clearance sonar warning light is ON for 3 seconds.	U0101, U0155
Cruise Control	ACC (Acceleration and deceleration control for following a vehicle in the lane ahead.)	1. Driving Support ECU, ECM 2. ECM, Skid Control ECU, Yaw Rate Sensor, Steering Angle Sensor, Combination Meter ECU,	ACC system does not work.	Cruise indicator blinks.	-

		Main Body ECU 3. -			
Pre-collision	PCS (Seat belt and brake control before a collision)	1. Driving Support ECU 2. Skid Control ECU, Yaw Rate Sensor, Steering Angle Sensor 3. -	PCS system does not work.	PCS indicator blinks, buzzer.	U0122, U0123, U0126, U1100
Air Conditioning	Air conditioning control by engine coolant temperature and engine type	1. Air Conditioning Amplifier 2. ECM 3. -	Default operation	-	-
	Compressor lock detection by engine speed	1. Air Conditioning Amplifier 2. ECM 3. -	Default operation	-	-
	Illumination brightness information to LIN panel	1. Air Conditioning Amplifier 2. Main Body ECU 3. -	Keep the current status	-	-
	Air conditioning tuning by destination	1. Air Conditioning Amplifier 2. Main Body ECU 3. -	Default operation	-	B1499
	Operation mode switching and ambient temperature display compensation by vehicle speed	1. Air Conditioning Amplifier 2. Combination Meter ECU 3. -	Poor performance	-	B1499

Main Body	Door lock (Lock/Unlock control (Key-linked operation, auto unlock function when key is left in vehicle))	1. Main Body ECU 2. ECM, Center Airbag Sensor Assembly, Combination Meter ECU, Slide Door Motor Unit (Slide Door ECU) 3. -	Auto unlock function when key is left in vehicle, shift-linked auto lock/unlock, and speed-linked auto lock/unlock do not work.	-	U0151, U0155, U0100, U0101, U0201, U0202
	Wireless/smart (Wireless/smart control (Receiving of wireless/smart requests))	1. Certification ECU 2. Main Body ECU 3. -	Smart/wireless control does not work. Door lock/unlock control does not work. Smart back door opener control does not work.	-	U0327
	Alarm	1. Main Body ECU 2. ECM, Power Management Control ECU 3. -	-	-	U0100, U0101, U1133
	Lighting control (DRL control)	1. Main Body ECU 2. ECM 3. -	DRL control does not work.	-	U0100, U0101
Meter	Display auto dimmer	1. Combination Meter ECU 2. - 3. -	Automatic display dimmer control when not at tail cancel status. Display/indicator are dimmed when light sensor indicates lower brightness than display dimmer setting value.	-	U0155

Main Body	Illumination control	1. Main Body ECU 2. Certification ECU 3. -	Dome lamp OFF	-	U0327
	Seat and mirror control (Position memory)	1. Main Body ECU 2. Power Management Control ECU, Certification ECU, Position Control ECU and Switch, Outer Mirror Control ECU Assembly 3. -	-	-	U0208, U0199, U0200
	Hazard flasher control	1. Driving Support ECU 2. Main Body ECU 3. -	-	-	U1104
	Diagnosis/C-BEST (Diagnosis Phase 4)	1. - 2. Main Body ECU 3. -	-	-	-
Rear View Monitor	Wide back monitor (Detects R position and sends back camera image to navigation display.)	1. Parking Assist ECU 2. Skid Control ECU, Main Body ECU, Steering Angle Sensor 3. -	Camera image OFF, back to navigation mode or guide line detected. Clearance sonar display OFF.	Cannot see camera image when shift position is R. Caution message displayed.	U0126, U0129, U0140, U1110
	Power back door	1. Power Back Door Unit			

Power Back Door	operation condition (Prohibits PBD function according to vehicle condition (IG, shift position P, vehicle speed, remote start, lock position.)	(Back Door ECU) 2. ECM, Combination Meter, Main Body ECU 3. -	PBD does not work. (Warn with buzzer when operation request is received.)	Buzzer	-
	Power back door operation request (Starts PBD operation by receiving request trigger from operation switch or wireless switch.)	1. Power Back Door Unit (Back Door ECU) 2. Main Body ECU, Certification ECU 3. -	PBD does not work.	-	-
	Power back door operation status output (Outputs hazard ON request and door status during PBD operation.)	1. Power Back Door Unit (Back Door ECU) 2. Main Body ECU 3. -	Indicator in meter is not ON when PBD is open. Hazard is not ON when PBD is operated.	-	-
	Diagnosis service (PBD customize, malfunction detection, active test, etc.)	1. Power Back Door Unit (Back Door ECU) 2. Main Body ECU 3. -	Diagnosis service unavailable.	-	-
	Opening PSD is disabled by Shift Position (Power Slide Door cannot be opened unless shift position is P with IG ON.)	1. Slide Door Motor Unit (Slide Door ECU) 2. ECM 3. -	PSD does not work.	-	-
	Wireless signal canceled by key switch (Disables wireless request when key is inserted)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU	PSD does not work.	-	-

		3. -			
Power Slide Door	Opening PSD is disabled by Stop Light Switch (Power Slide Door cannot be opened if brake is not depressed.)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU 3. -	PSD does not work.	-	-
	Opening PSD is disabled by Parking Brake (Power Slide Door cannot be opened if parking brake is not applied.)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU 3. -	PSD does not work.	-	-
	Operation by PSD switch (Start / reverse)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU 3. -	PSD does not work.	-	-
Power Slide Door	Opening PSD is disabled by Door Lock Position (Power Slide Door opening operating cannot be started when the door lock is almost closed.)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU 3. -	PSD does not work.	-	-
	Operation by wireless (Start/reverse)	1. Slide Door Motor Unit (Slide Door ECU) 2. Main Body ECU, Certification ECU 3. -	PSD does not work.	-	-
	Enable wireless operation by engine	1. Slide Door Motor Unit (Slide Door ECU)	PSD does not	-	-

	starter	2. Main Body ECU 3. -	work.		
	Disable operation by vehicle speed	1. Slide Door Motor Unit (Slide Door ECU) 2. Combination Meter ECU 3. -	PSD does not work.	-	-
	Diagnostic Information Output	1. Slide Door Motor Unit (Slide Door ECU) 2. DLC3 3. -	Diagnostic function does not operate.	-	-
Active Torque Control 4WD	ATC 4WD system (Driving torque is distributed to front and rear wheels based on driving conditions.)	1. 4WD Control ECU 2. ECM, Skid Control ECU, Yaw Rate Sensor, Steering Angle Sensor 3. -	4WD control disabled.	4WD warning light comes on.	U0073, U0126, U0100, U0129
	Tachometer (The meter displays engine speed information via an analog gauge)	1. Combination Meter ECU 2. ECM 3. -	Tachometer indicates 0 RPM	-	-
	Speedometer (The meter displays vehicle speed information via an analog gauge.)	1. Combination Meter ECU 2. Skid Control ECU 3. -	Speedometer indicates 0 MPH (km/h)	-	-
	Temp gauge (The meter displays engine coolant temperature via an analog gauge)	1. Combination Meter ECU 2. ECM 3. -	Temperature gauge indicates "C"	-	-
			Meter will stop		

Meter	Odometer (The meter displays distance traveled via an LCD display. The meter integrates the value)	1. Combination Meter ECU 2. Skid Control ECU 3. -	odometer accumulation, and the maintenance required telltale will not illuminate.	-	-
	Automatic transmission position (The meter displays automatic transmission position information via indicators and sequential shift information via an LCD display)	1. Combination Meter ECU 2. ECM 3. -	Meter will not display automatic transmission shift position or sequential shift gear.	-	-
	Brake telltale (The meter controls the brake telltale)	1. Combination Meter ECU 2. Skid Control ECU, Main Body ECU 3. -	Meter will illuminate the brake telltale.	Meter will illuminate the brake telltale.	-
	Airbag telltale (The meter controls the airbag telltale)	1. Combination Meter ECU 2. Center Airbag Sensor Assembly 3. -	Meter will illuminate the airbag telltale.	Meter will illuminate the airbag telltale.	-
	Seat belt (driver side) telltale (The meter controls the driver side seat belt telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will illuminate the driver side seat belt telltale.	Meter will illuminate the driver side seat belt telltale.	-
	Door ajar telltale (The meter controls the door ajar telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will retain the current state of the door ajar telltale.	-	-
	High beam telltale (The meter controls the high beam telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will retain the current state of the high beam telltale.	-	-

Meter	Tail light telltale (The meter controls the tail light telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will retain the current state of the tail telltale.	-	-
	Head light telltale (The meter controls the head light telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will retain the current state of the head telltale.	-	-
	Front fog telltale (The meter controls the front fog telltale)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will retain the current state of the front fog telltale.	-	-
	Cruise telltale (The meter controls the cruise telltale)	1. Combination Meter ECU 2. ECM 3. -	Meter will retain the current state of the cruise telltale.	-	-
	ABS telltale (The meter controls the ABS telltale)	1. Combination Meter ECU 2. Skid Control ECU 3. -	Meter will illuminate the ABS telltale.	Meter will illuminate the ABS telltale.	-
	VSC OFF telltale (The meter controls the VSC OFF telltale)	1. Combination Meter ECU 2. Skid Control ECU 3. -	Meter will retain the current state of the VSC OFF telltale.	-	-
	Slip telltale (The meter controls the slip telltale)	1. Combination Meter ECU 2. Skid Control ECU 3. -	Meter will retain the current state of the slip telltale.	-	-
	EPS telltale (The meter controls the EPS telltale)	1. Combination Meter ECU 2. Power Steering ECU 3. -	Meter will illuminate the EPS telltale.	Meter will illuminate the EPS telltale.	-

Meter	4WD telltale (The meter controls the 4WD telltale)	1. Combination Meter ECU 2. 4WD Control ECU 3. -	Meter will retain the current state of the 4WD telltale.	-	-
	Cruise set telltale (The meter controls the cruise set telltale)	1. Combination Meter ECU 2. ECM 3. -	Meter will retain the current state of the cruise set telltale.	-	-
	Seat belt (front passenger side) telltale (The meter controls the seat belt (front passenger side) telltale)	1. Combination Meter ECU 2. Center Airbag Sensor Assembly 3. -	Meter will retain the current state of the seat belt (front passenger side) telltale.	-	-
	Seat belt buzzer (The meter controls the seat belt buzzer)	1. Combination Meter ECU 2. ECM, Skid Control ECU, Center Airbag Sensor Assembly, Main Body ECU 3. -	Meter will retain the current state of the seat belt buzzer.	-	-
	Key in ignition reminder buzzer (The meter controls the key in ignition reminder buzzer)	1. Combination Meter ECU 2. Main Body ECU 3. -	Meter will not sound the key in ignition reminder buzzer.	-	-
	Smart key periodic buzzer (The meter controls the smart key periodic buzzer)	1. Combination Meter ECU 2. Certification ECU 3. -	Meter will not sound the smart key periodic buzzer.	-	-
	Immobiliser buzzer (The meter controls the	1. Combination Meter ECU 2. Certification	Meter will retain the current state of the immobiliser	-	-

	immobiliser buzzer)	ECU 3. -	buzzer.		
Meter	Smart key single buzzer (The meter controls the smart key single buzzer)	1. Combination Meter ECU 2. Certification ECU 3. -	Meter will retain the current state of the smart key single buzzer.	-	-
	Smart key continuous buzzer (The meter controls the smart key continuous buzzer)	1. Combination Meter ECU 2. Certification ECU 3. -	Meter will not sound the smart key continuous buzzer.	-	-
	Park brake set buzzer (The meter controls the park brake set buzzer)	1. Combination Meter ECU 2. Skid Control ECU, Main Body ECU 3. -	Meter will not sound the park brake set buzzer.	-	-
	Door ajar buzzer (The meter controls the door ajar buzzer)	1. Combination Meter ECU 2. Skid Control ECU, Main Body ECU 3. -	Meter will not sound the door ajar buzzer.	-	-
	Shift reject buzzer (The meter controls the shift reject buzzer)	1. Combination Meter ECU 2. ECM 3. -	Meter will retain the current state of the shift reject buzzer.	-	-
	HVAC system display (The meter controls the display of HVAC information in the accessory meter)	1. Combination Meter ECU 2. Air Conditioning Amplifier 3. -	Meter will retain the current state of the HVAC display.	-	-
	Outside temperature display (The meter controls the display of outside temperature in the accessory meter)	1. Combination Meter ECU 2. Air Conditioning Amplifier 3. -	Meter will not display outside temperature.	-	-

Power Management Control	Push start (power source switching) (Request starter ON by push start switching signal)	1. Power Management Control ECU 2. ECM, Combination Meter ECU, Main Body ECU 3. -	Engine start instruction is not displayed.	-	U0100
Pre-collision	PCS (brake) (Roll up seat belt when immediate braking or out of control)	1. Seat Belt Control ECU 2. Skid Control ECU, Center Airbag Sensor Assembly, Main Body ECU 3. -	Control disabled.	PCS indicator comes on.	U0122, U0151, U0140
	PCS (radar) (Roll up seat belt when unable to avoid collision)	1. Seat Belt Control ECU 2. Skid Control ECU, Center Airbag Sensor Assembly, Driving Support ECU, Main Body ECU 3. -	Control disabled.	PCS indicator comes on.	U0122, U1104, U0151, U0140
	Request meter to indicate malfunction information	1. Seat Belt Control ECU 2. Skid Control ECU, Center Airbag Sensor, Driving Support ECU, Main	-	-	-

		Body ECU 3. -			
	Output 2 digit diagnosis code by indicator blinking	1. Seat Belt Control ECU 2. ECM 3. -	-	-	-
AFS	Gate way (Serial signal gateway between vehicle CAN and smart beam sensor LIN)	1. AFS ECU 2. ECM, Skid Control ECU, Steering Angle Sensor, Main Body ECU 3. -	AFS ECU continues transmitting to LIN.	Cannot be recognized.	U0101, U0129, U0126, U0142
Power Mirror Control	Electrical remote control mirror (When mirror control switch is operated, this function moves mirror surface vertically or laterally to enable driver to attain optimal mirror angle)	1. Outer Mirror Control ECU Assembly 2. Main Body ECU 3. -	Electrical remote control mirror does not operate.	Can be recognized due to unusual operation.	U0142
	Memory function (This function stores adjusted mirror position in driver and front passenger outer mirror control and mirror position changes according to memory)	1. Outer Mirror Control ECU Assembly 2. Main Body ECU 3. -	Memory function does not operate. (Does not store mirror position / Not change mirror position)	Can be recognized due to unusual operation.	-
	Mirror defogger (This function turns on mirror defogger when rear window defogger switch is turned on)	1. Outer Mirror Control ECU Assembly 2. Air Conditioning Amplifier, Main Body ECU 3. -	Mirror defogger does not operate.	Can be recognized due to unusual operation.	U0142

	Underfoot illumination (This function turns on underfoot illumination according to request)	1. Outer Mirror Control ECU Assembly 2. Main Body ECU 3. -	Underfoot illumination does not operate.	Can be recognized due to unusual operation.	-
	Memory switch signal transmission (This function transmits memory switch operation state on CAN)	1. Outer Mirror Control ECU Assembly 2. - 3. -	Memory function does not operate. (Does not store mirror position / Not change mirror position)	Can be recognized due to unusual operation.	-
	Power retractable mirror (This function retracts outer mirrors when mirror retract switch is pressed)	1. Outer Mirror Control ECU Assembly 2. Main Body ECU 3. -	Power retractable mirror does not operate.	Can be recognized due to unusual operation.	-
Front Power Seat	Seat memory system (Adjusts each seat position using memory number from main body ECU and other data)	1. Position Control ECU and Switch 2. ECM, Combination Meter ECU, Main Body ECU, Power Management Control ECU 3. -	Memory system and memory call system and return away do not operate.	-	-
CAN Gateway	CAN gateway (V1 - V2)	1. Network Gateway ECU 2. - 3. -	-	-	U0104, U0182, U1100, U1110, U110B

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

CAN COMMUNICATION SYSTEM

DTC Code	Detection Item	Trouble Area	DTC Output from	See
U0100	Lost Communication with ECM / PCM	- ECM main wire or connector - Power source circuit of ECM - ECM	Power management control ECU	Refer to **DTC U0100: Lost Communication with ECM / PCM**
U0104	Lost Communication with Driving Support ECU	- Driving support ECU branch wire or connector - Power source circuit of driving support ECU - Driving support ECU	Power management control ECU*5 or network gateway ECU*6	Refer to **DTC U0104: Lost Communication with Driving Support ECU**
U0164	Lost Communication with A/C ECU	- Air conditioning amplifier branch wire or connector - Power source circuit of air conditioning amplifier - Air conditioning amplifier	Power management control ECU	Refer to **DTC U0164: Lost Communication with A/C ECU**
U0182	Lost Communication with AFS ECU	- AFS ECU branch wire or connector - Power source circuit of AFS ECU - AFS ECU	Power management control ECU*5 or network gateway ECU*6	Refer to **DTC U0182: Lost Communication with AFS ECU**
	Lost	- Outer mirror control ECU RH branch wire or connector		

U0199	Communication with "Door Control Module A"	- Power source circuit of outer mirror control ECU RH - Outer mirror control ECU RH	Main body ECU	Refer to **DTC U0199: Lost Communication with "Door Control Module A"**
U0200	Lost Communication with "Door Control Module B"	- Outer mirror control ECU LH branch wire or connector - Power source circuit of outer mirror control ECU LH - Outer mirror control ECU LH	Main body ECU	Refer to **DTC U0200: Lost Communication with "Door Control Module B"**
U0201	Lost Communication with "Door Control Module C"	- Power source circuit of slide door motor unit RH - Slide door motor unit RH - Slide door motor unit RH branch wire or connector	Main body ECU	Refer to **DTC U0201: Lost Communication with "Door Control Module C"**
U0202	Lost Communication with "Door Control Module	- Power source circuit of slide door motor unit LH - Slide door motor unit LH	Main body ECU	Refer to **DTC U0202: Lost Communication with "Door Control Module D"**

	D"	- Slide door motor unit LH branch wire or connector		
U0208	Lost Communication with "Seat Control Module A"	- Power source circuit of position control ECU and switch assembly - Position control ECU and switch assembly - Position control ECU and switch branch wire or connector	Main body ECU	Refer to **DTC U0208: Lost Communication with "Seat Control Module A"**
U1002	Lost Communication with Gateway Module (Power Management2)	- Power management bus circuit - ECM main wire or connector - Power management control ECU main wire or connector - Air conditioning amplifier branch wire or connector - ECM - Power management control ECU - Air conditioning amplifier - No. 3 junction connector	Power management control ECU	Refer to **DTC U1002: Lost Communication with Gateway Module (Power Management2)**

U1002 (CAN MS BUS)	Lost Communication with Gateway Module (Main body ECU)	- MS bus circuit - Main body ECU main wire or connector - Combination meter main wire or connector - Outer mirror control ECU Assembly LH branch wire or connector*1 - Outer mirror control ECU Assembly RH branch wire or connector*1 - Back door ECU branch wire or connector*2 - Position control ECU and switch branch wire or connector*3 - Slide door motor unit LH branch wire or connector - Slide door motor unit RH branch wire or connector*4 - Main body ECU -	Main body ECU	Refer to **DTC U1002 (CAN MS BUS): Lost Communication with Gateway Module (Main body ECU)**

		Combination meter - Outer mirror control ECU Assembly LH*1 - Outer mirror control ECU Assembly RH*1 - Back door ECU*2 - Position control ECU and switch*3 - Slide door motor unit LH*4 - Slide door motor unit RH*4 - No. 2 CAN junction connector		
		- V2 bus circuit - Power management control ECU*5 or network gateway ECU*6 main wire or connector - Seat belt control ECU branch wire or connector*7 - AFS ECU branch wire or connector*8 - Parking assist ECU		

(CAN No. 2 BUS)	Lost Communication with Gateway Module (Network Gateway ECU)	branch wire or connector*9 - Driving support ECU branch wire or connector*10 - Clearance warning ECU branch wire or connector*11 - Seat belt control ECU*7 - AFS ECU*8 - Parking assist ECU*9 - Driving support ECU*10 - Clearance warning ECU*11 - No. 1 CAN junction connector	Power management control ECU*5 or network gateway ECU*6	Refer to **DTC U1002 (CAN No. 2 BUS): Lost Communication with Gateway Module (Network Gateway ECU)**
U1100	Lost Communication with Seat Belt Control ECU	- Seat belt control ECU branch wire or connector - Power source circuit of seat belt control ECU - Seat belt control ECU	Power management control ECU*5 or network gateway ECU*6	Refer to **DTC U1100: Lost Communication with Seat Belt Control ECU**
U110B	Lost Communication with Parking	- Parking assist ECU branch wire or connector - Power source circuit	Power management control ECU*5 or	Refer to **DTC U110B: Lost Communication with Parking Assist Control Module "B"**

	Assist Control Module "B"	of parking assist ECU - Parking assist ECU	network gateway ECU*6	
U1110	Lost Communication with Clearance Sonar Module	- Clearance warning ECU branch wire or connector - Power source circuit of clearance warning ECU assembly - Clearance warning ECU assembly	Power management control ECU*5 or network gateway ECU*6	Refer to **DTC U1110: Lost Communication with Clearance Sonar Module**

*1: w/ Memory
*2: w/ Power Back Door
*3: for Power Seat with Memory
*4: w/ Power Slide Door
*5: w/ Smart Key System
*6: w/o Smart Key System
*7: w/ Pre-collision System
*8: w/ HID Headlight System
*9: w/ Parking Assist Monitor System
*10: w/ Dynamic Radar Cruise Control System
*11: w/ Intuitive Parking Assist System