Classification:	Reference:	Date:
EL10-018B	ITB10-029B	January 26, 2022

CAN COMMUNICATION CODES – DIAGNOSTIC TIPS AND GUIDELINES

This bulletin has been amended. See AMENDMENT HISTORY on the last page.
Please discard previous versions of this bulletin.

APPLIED VEHICLES: All 2005-2022 Infiniti vehicles except:

- 2022 QX60 (L51)

SERVICE INFORMATION

Related to communication codes **U1000, U1001, U1002, U1010:**

- **Always** diagnose the communication codes first.
- When a module reports a U1000 code, it is typically operating normally; however, there is a communication error external to that module on the CAN network.
- U1000 indicates an error. V-CAN diagram or CAN Diag Support Monitor provides data to determine the location of the error.

Step 1

Complete the CAN diagnosis with CONSULT-III plus (C-III plus).

- Ensure the correct CAN type is selected. Selecting the incorrect CAN type will lead to mis-diagnosis.

Step 2

View the V-CAN screen (shown on page 3) or print all CAN Diag Support Monitors (shown on page 4).

Step 3

Read the V-CAN diagram using the key provided **OR** reference the appropriate Electronic Service Manual (ESM) to analyze the CAN Diag Support Monitor data. Determine the incident according to the display.

Step 4

If V-CAN diagnosis is not available or inconclusive, refer to the basic CAN diagnostic guidelines shown on pages 6-13. These represent electrical values of the CAN system measured at the Data Link Connector or connectors at non-termination units.

To properly perform these basic checks:

- The battery should be disconnected for resistance checks.
- The ignition should be OFF.

Tips if a control module is the suspected root cause:

- Improper module configuration or incorrect part numbers may set CAN DTCs.
- Low battery voltage may set CAN DTCs.
- **Always** confirm the power, ground, and CAN resistance at a suspect module before replacing the module. Resistance should be close to 60 ohms at the module (measured with the battery disconnected). The resistance at terminating modules should be close to 120 ohms. Examples of terminating modules include IPDM, ECM, or BCM. Reference the appropriate ESM to determine the terminating modules.

DEFINITION OF CAN CODES

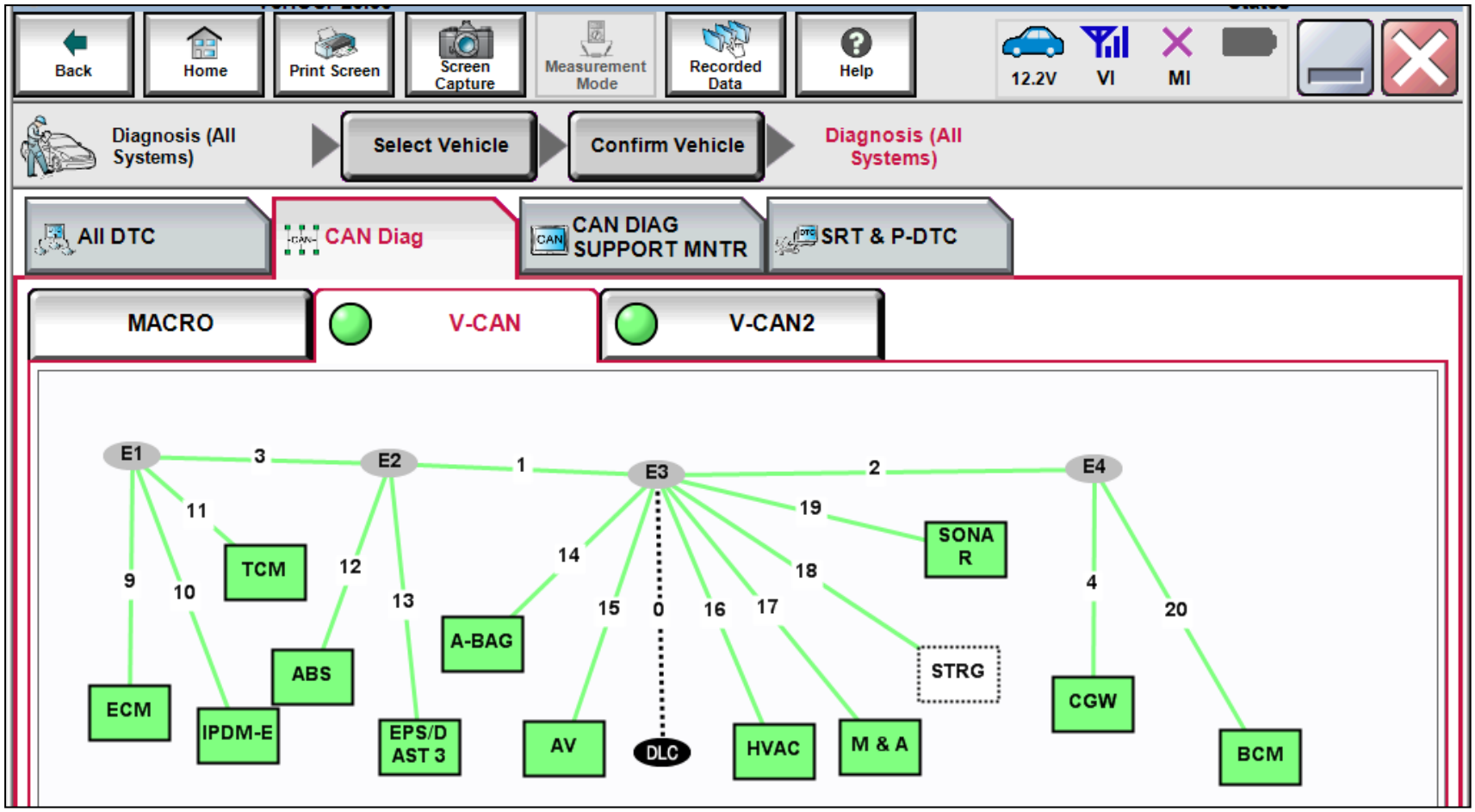
U1000 is related to missing CAN communications on the network.

U1001 is for Engine Control Module (ECM) and is related to missing CAN communications on the network.

U1002 is related to missing CAN communications on the network but has a tighter spec than U1000.

U1010 - Module has internal errors.

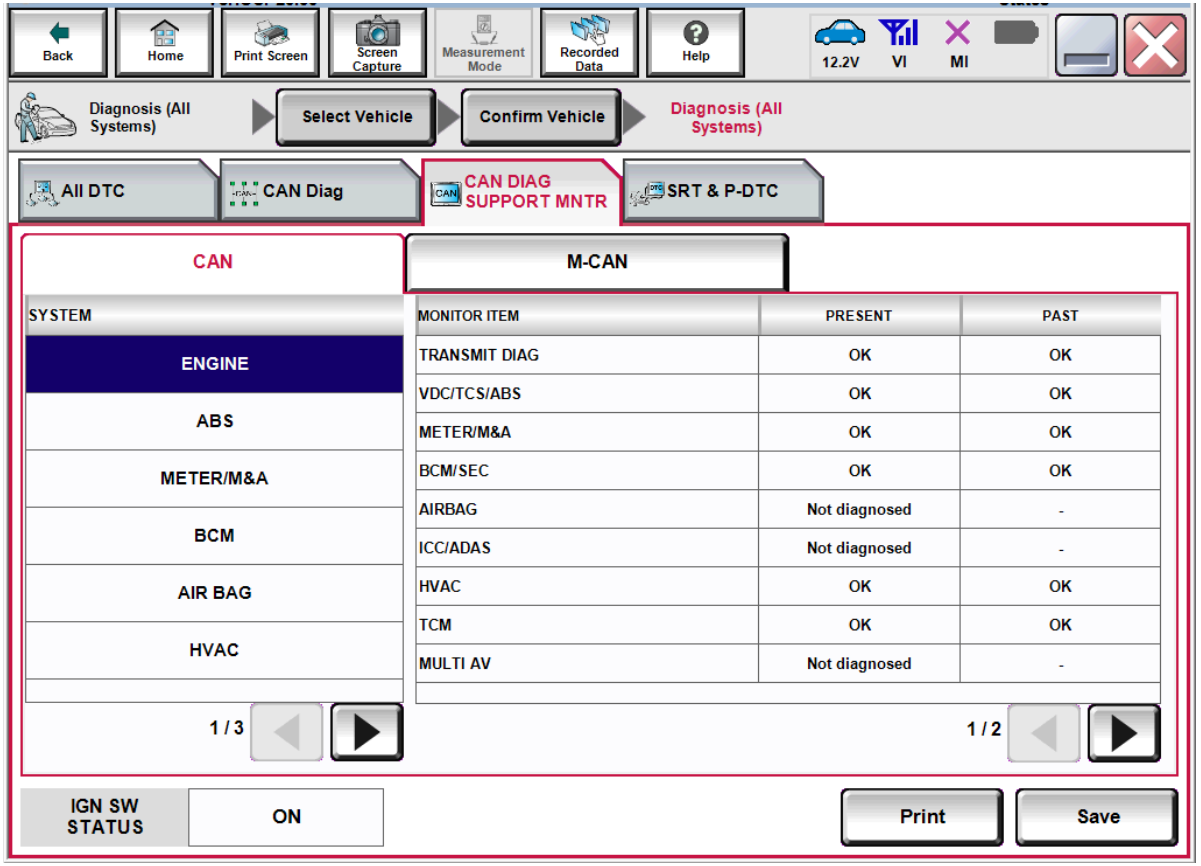
V-CAN Diagram Screen
Step 3 Illustration

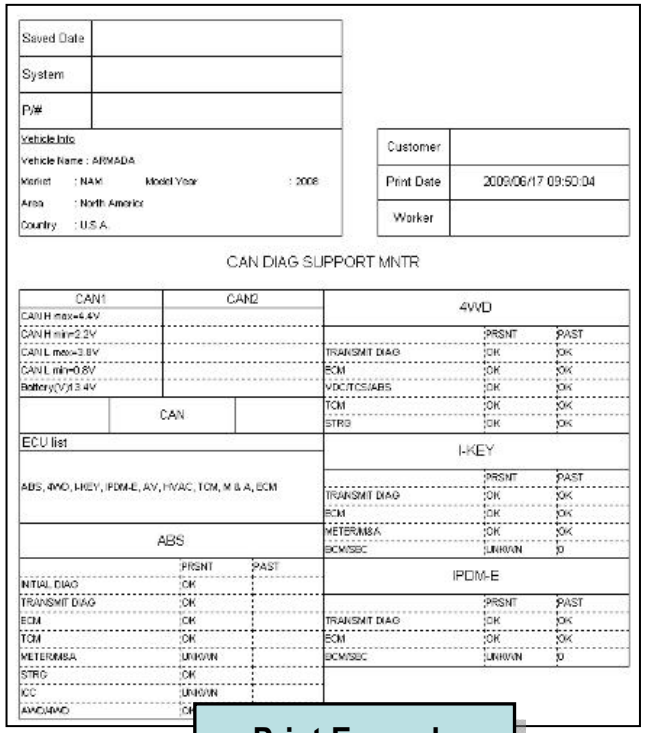


Red = Current Communication Error
Orange = Past or Intermittent Communication Error
Black = Not Diagnosed
Green = Normal Operation
Pink = Module Error

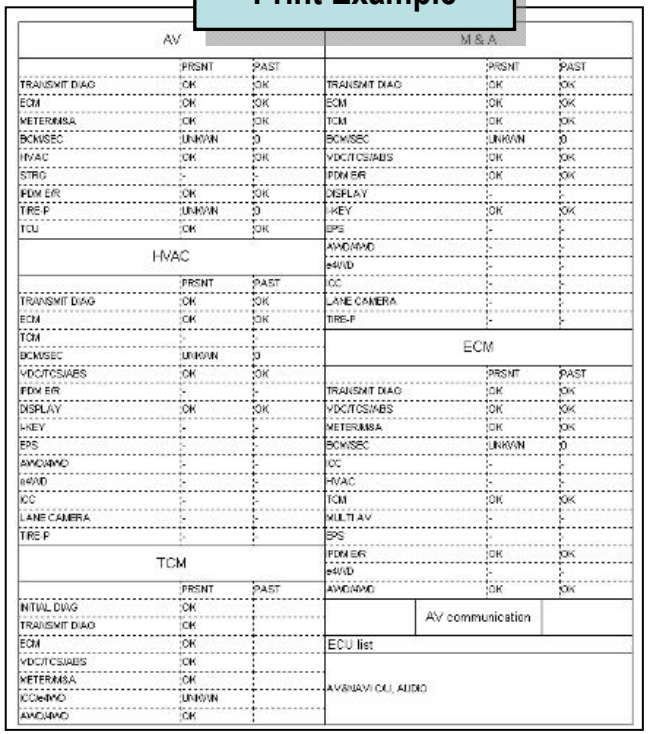
NOTE: If module is highlighted in pink when other modules or segments are highlighted in red or orange, perform diagnosis on other modules, erase DTCs, and run Auto CAN diagnosis with C-III plus again. If module is still highlighted in pink, replace module.

CAN Diag Support Monitor
Step 3 Illustration





Print Example



NOTE:
These prints are needed for ESM CAN Diagnosis or if the V-CAN diagram diagnosis is not available.

DLC Breakout Box J-51513

When performing any pin testing of the CAN systems at the DLC (Data Link Connector), "DLC Breakout Box" J-51513 should be used.

- Plug the DLC Breakout Box into the vehicle DLC connector and perform all voltage, resistance and continuity testing directly from the provided "pin-outs" shown in Figure 1.
- Do not connect the CONSULT PC to this tool. Although it does have a port to do so, the tool currently does not support this function.
- Do not jumper the "Battery Power" pin-out to either of the ground pin-outs.

  Damage will occur.

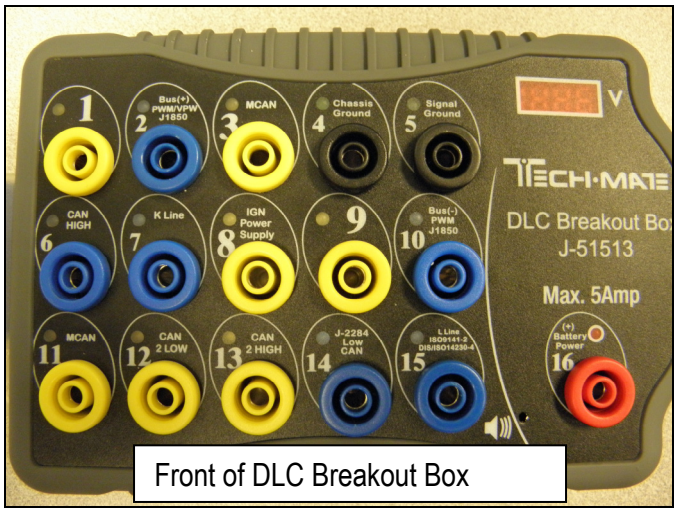


Figure 1

- All pin-out locations are marked in accordance with their associated DLC connections and will allow convenient pin testing of the DLC connector.
- Figure 2 shows the back of the DLC Breakout Box, and has a legend of the DLC pins.

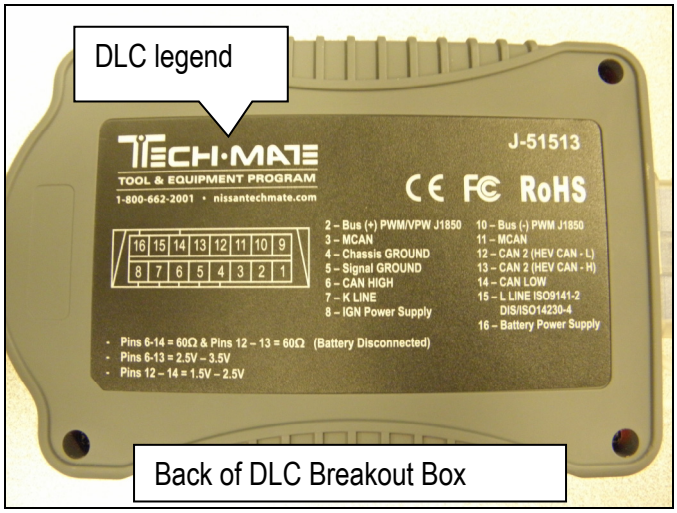


Figure 2

- Figure 3 shows Banana leads that are supplied with the DLC Breakout Box and are used to connect to a DVOM.

  NOTE: 48" Banana Leads (J-35616-20W) are available and are sold separately.

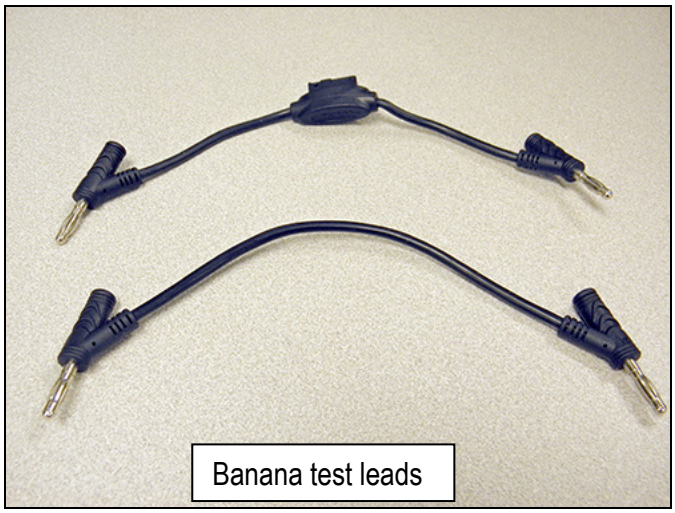
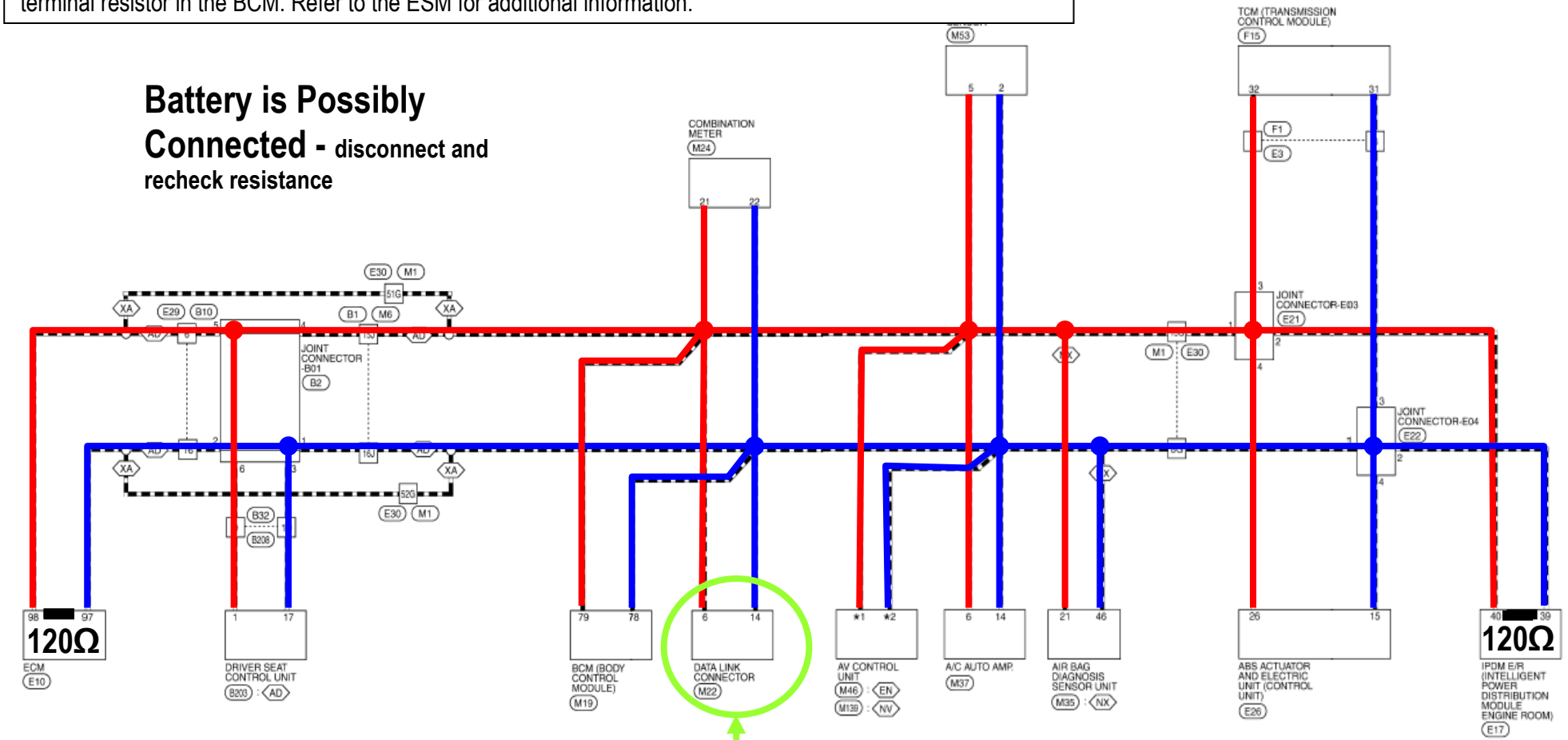
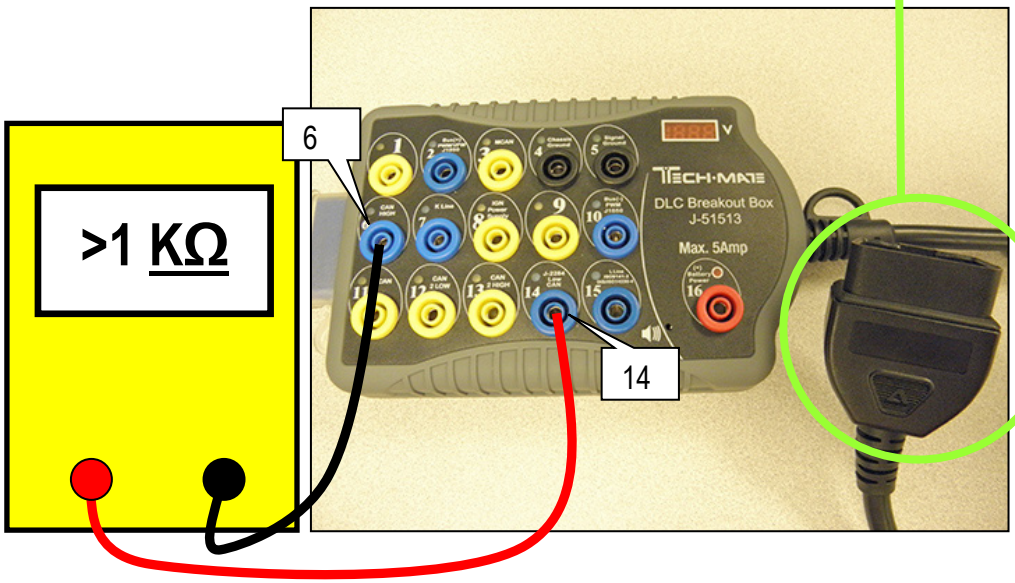


Figure 3

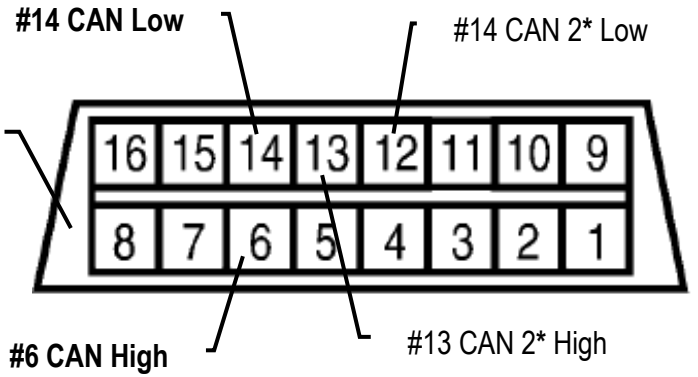
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Battery is Possibly Connected - disconnect and recheck resistance





Plug "DLC Breakout Box" J-51513 into DLC



* Certain models are equipped with 2 CAN systems

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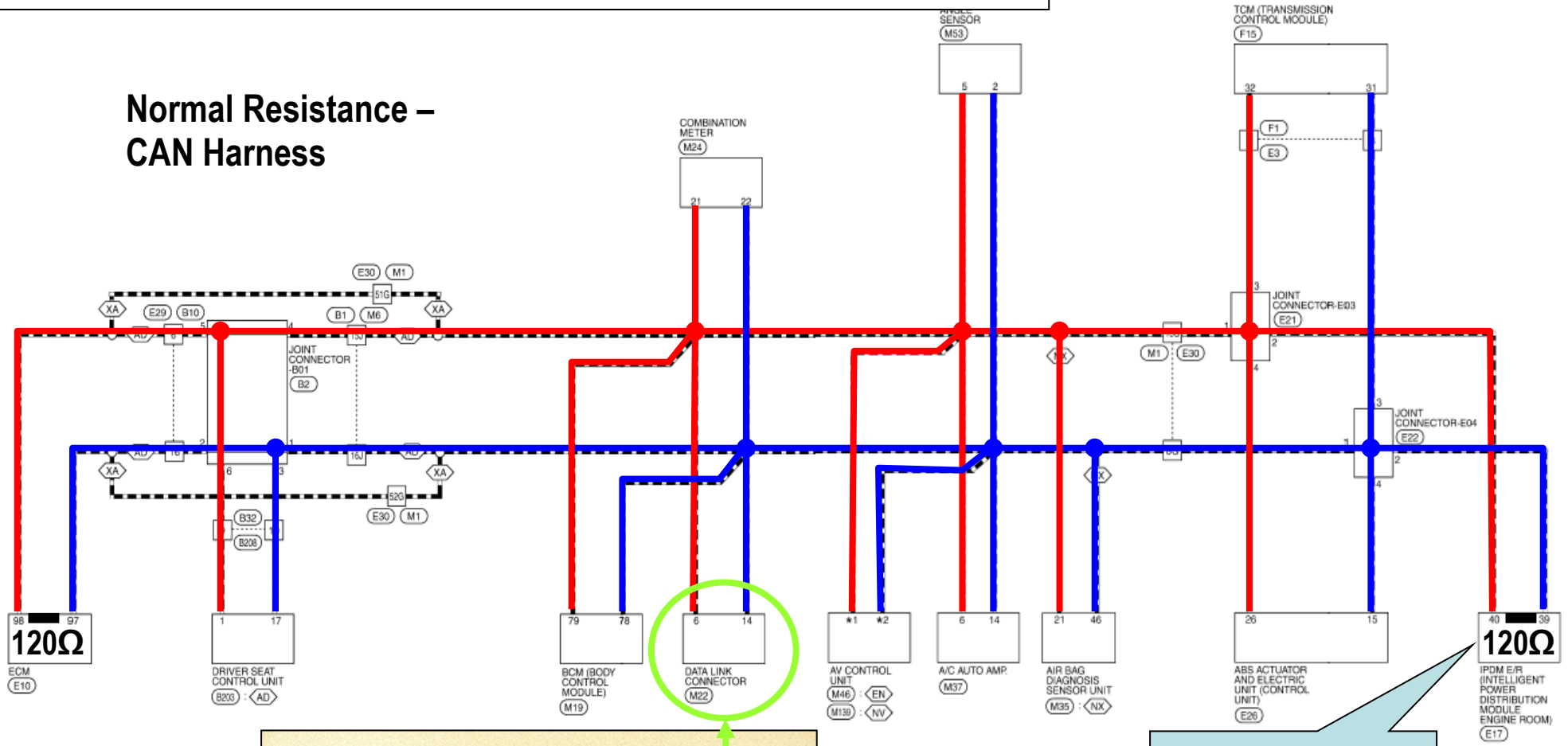
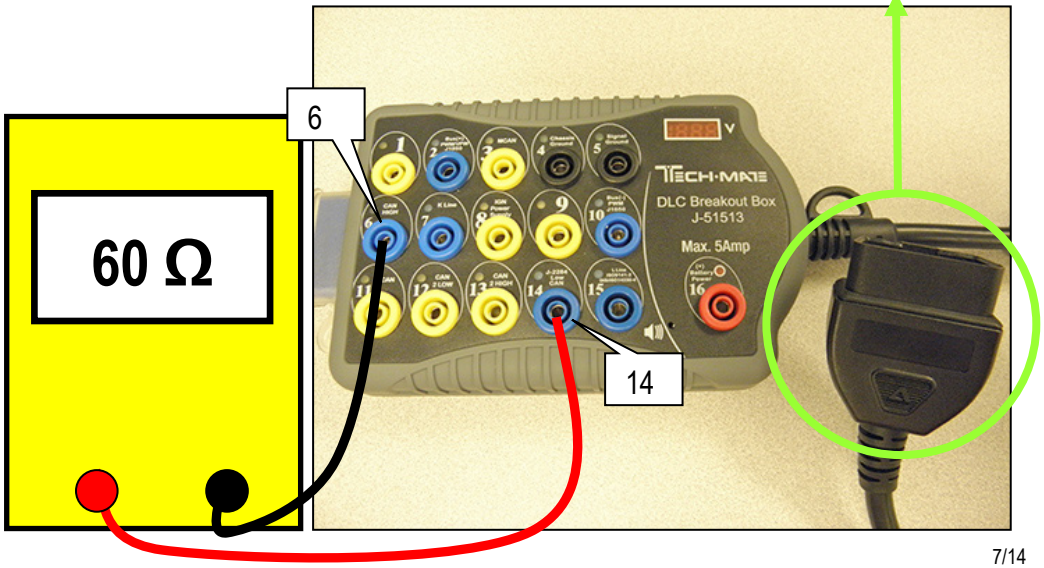
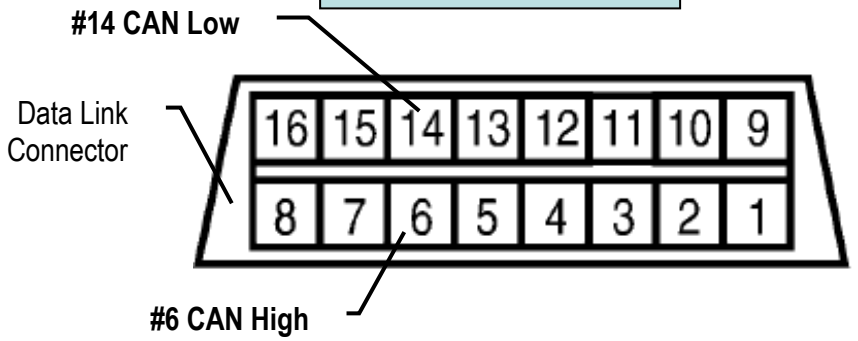
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Normal Resistance – CAN Harness





If measured with terminating module disconnected, Resistance = 120 Ω



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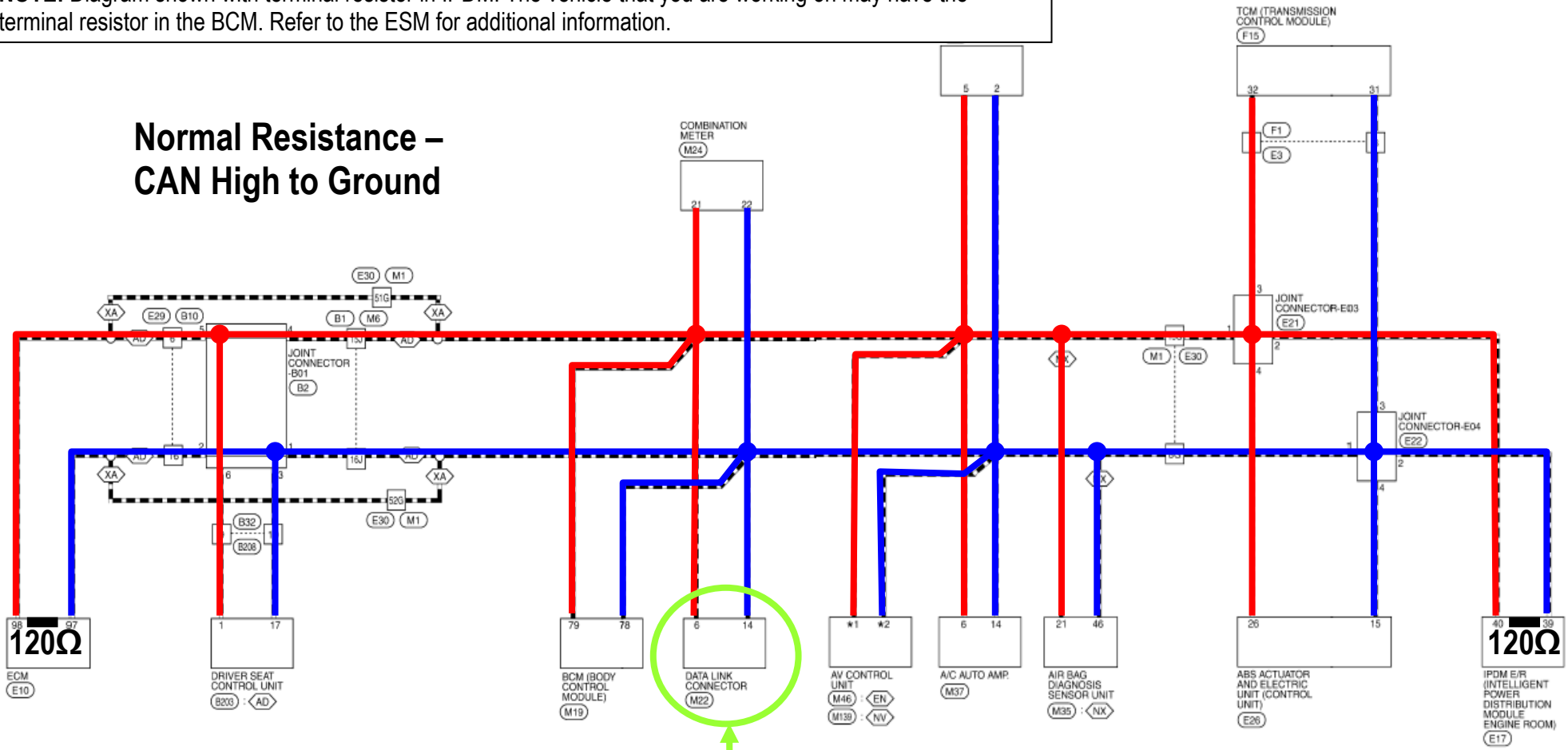
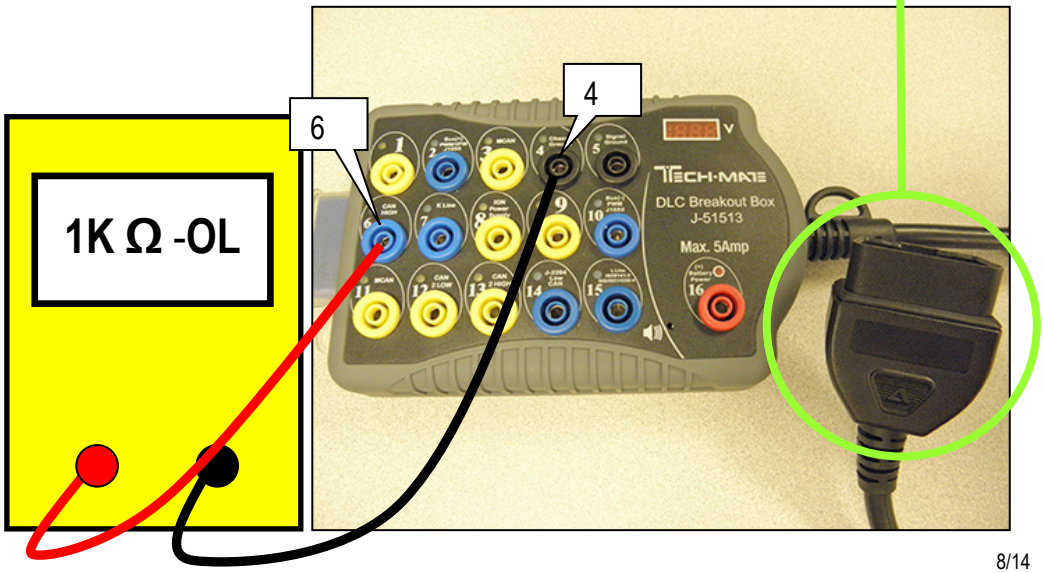
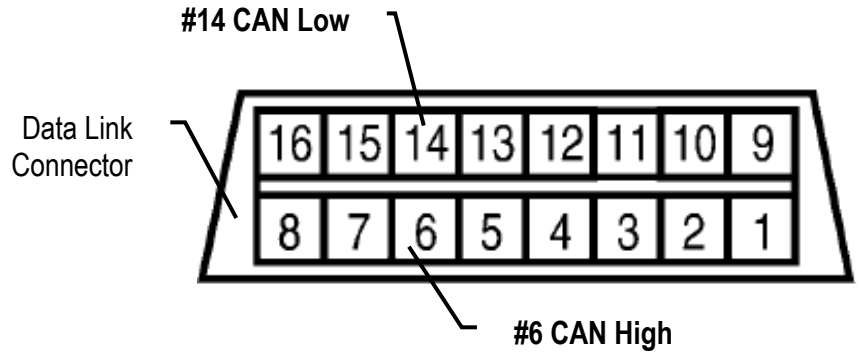
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Normal Resistance – CAN High to Ground







Notes:
- OL= Open Circuit
- Expect OL if battery negative cable is connected
- Expect 1.0KΩ – 1.2KΩ if battery negative cable is disconnected

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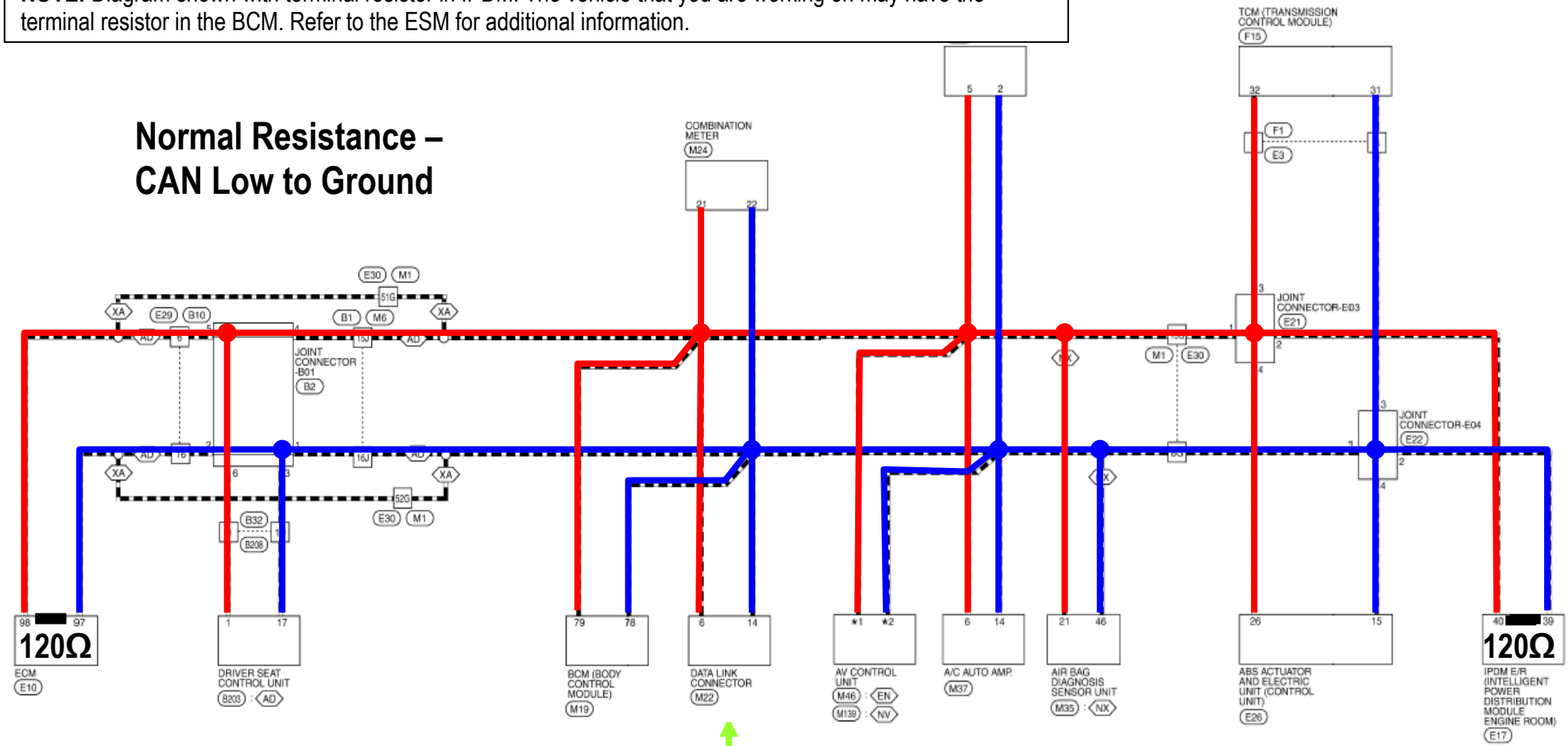
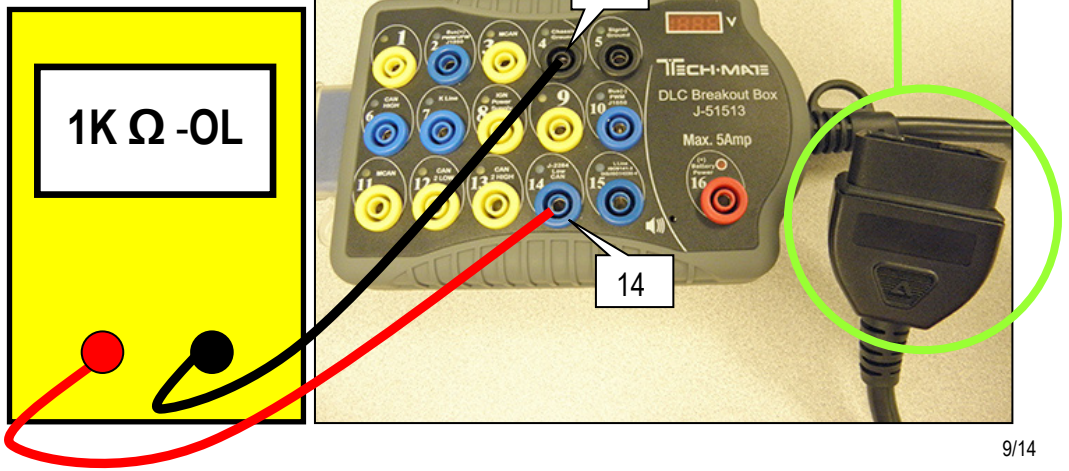
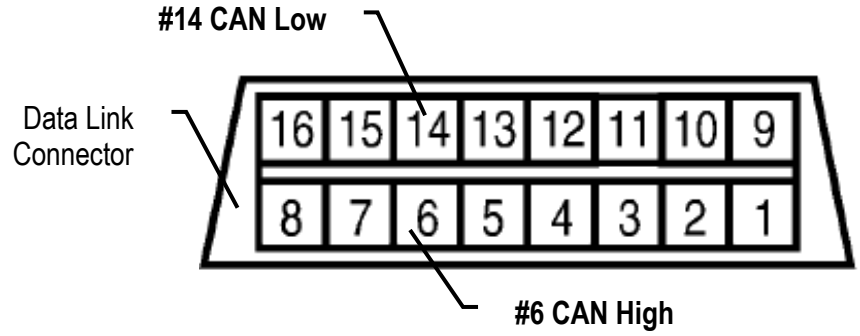
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Normal Resistance – CAN Low to Ground







Notes:
- OL= Open Circuit
- Expect OL if battery negative cable is connected
- Expect 1.0KΩ – 1.2KΩ if battery negative cable is disconnected

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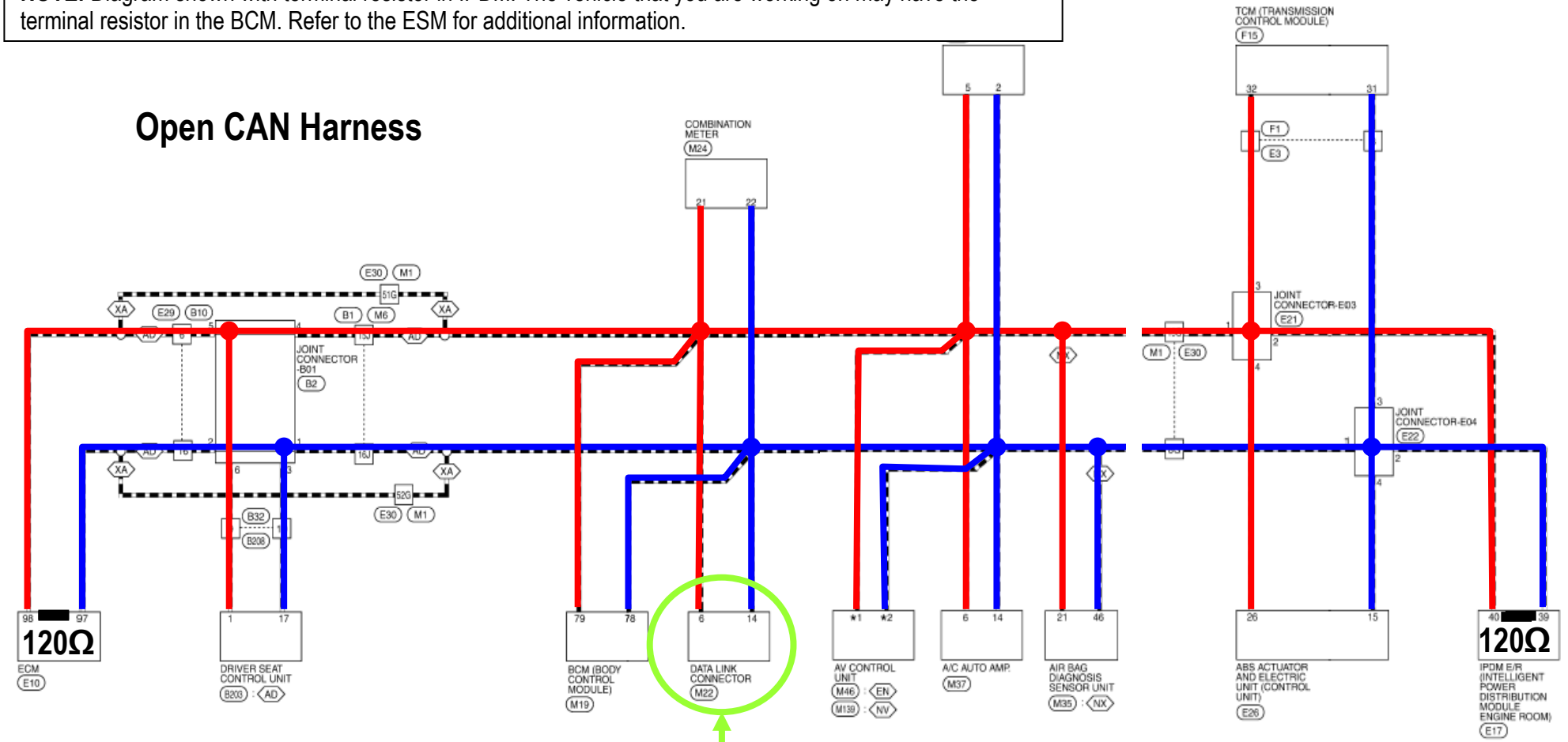
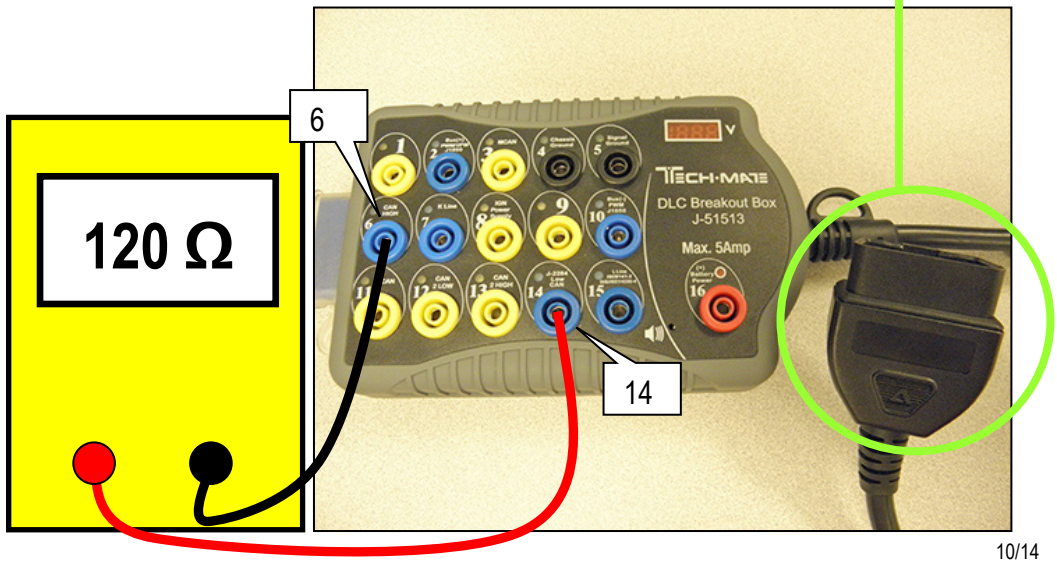
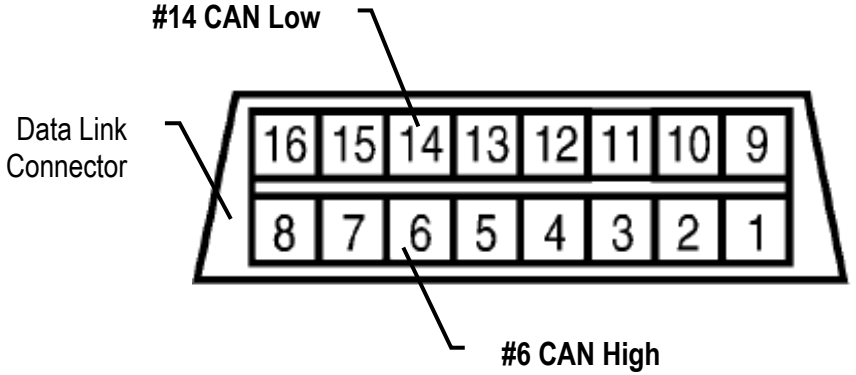
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Open CAN Harness







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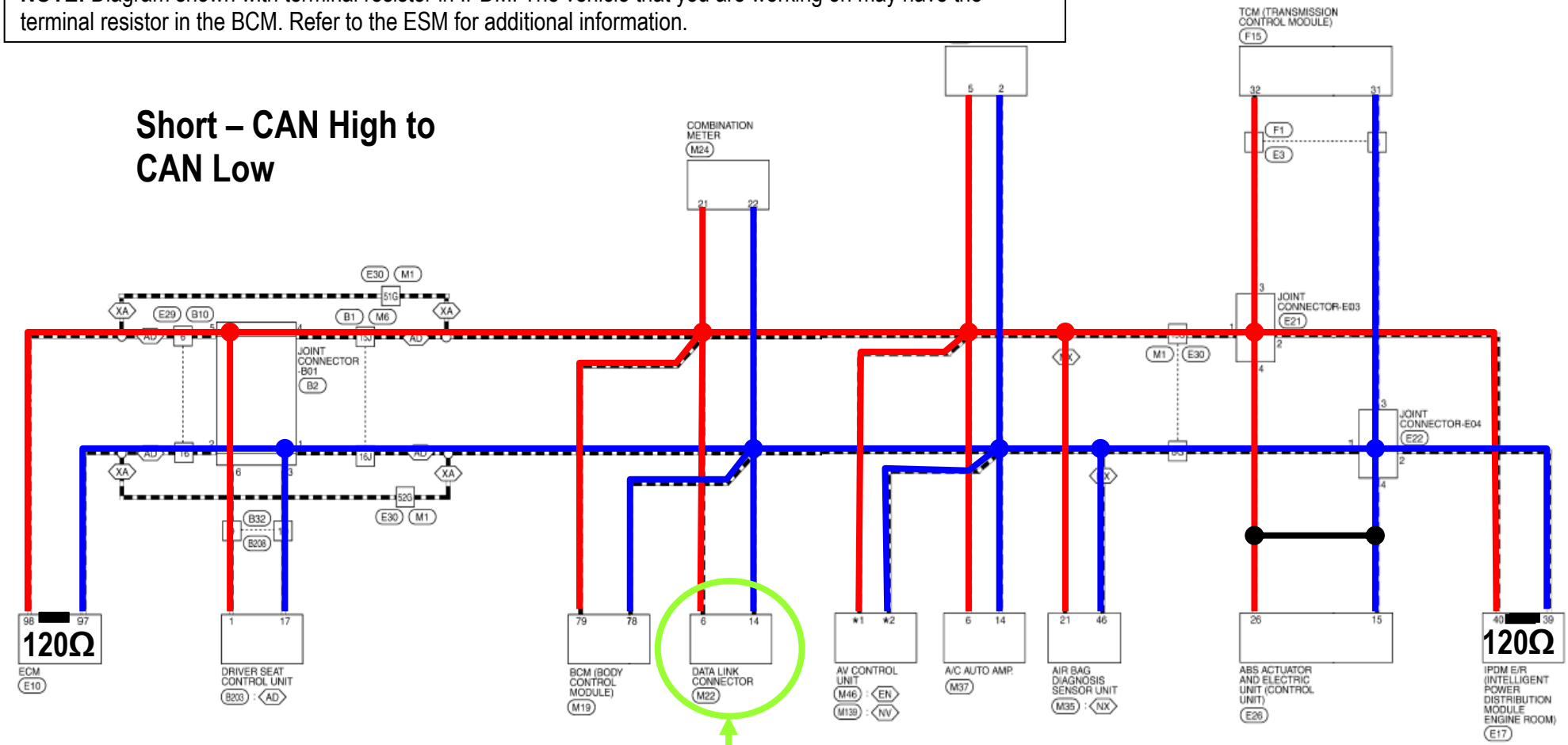
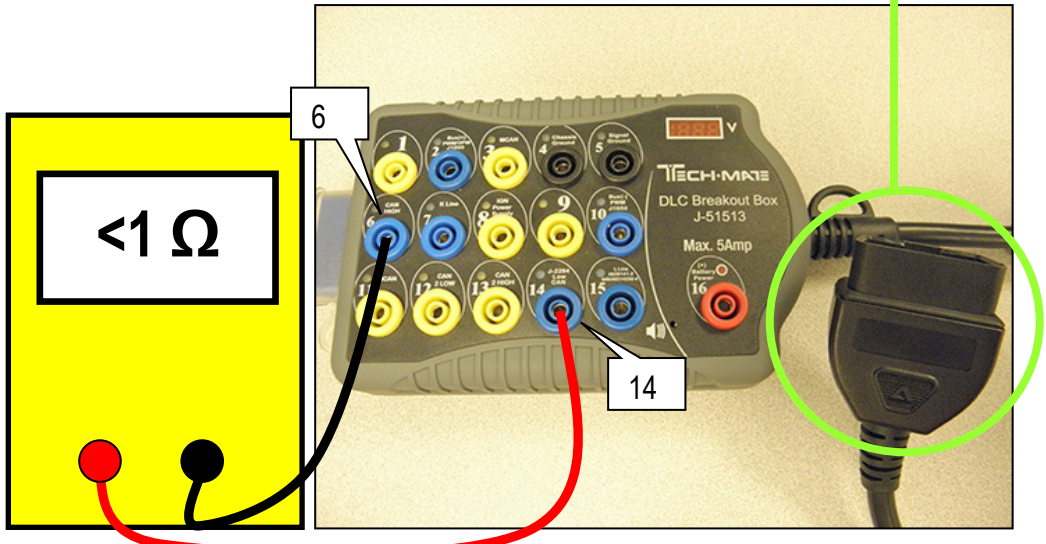
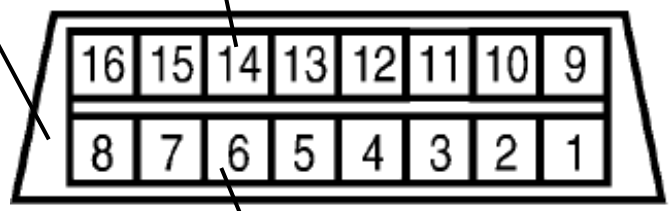
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Short – CAN High to CAN Low





Data Link Connector



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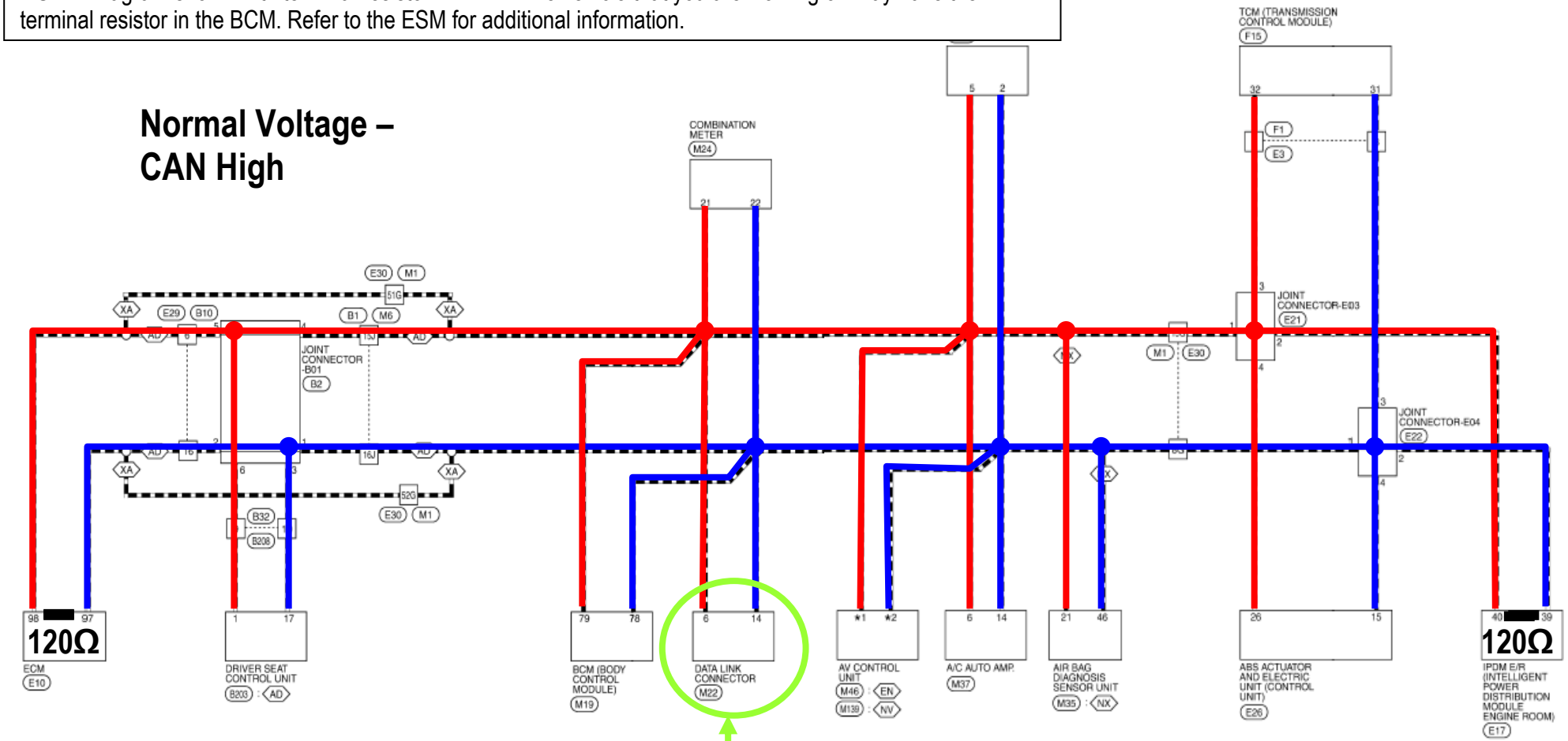
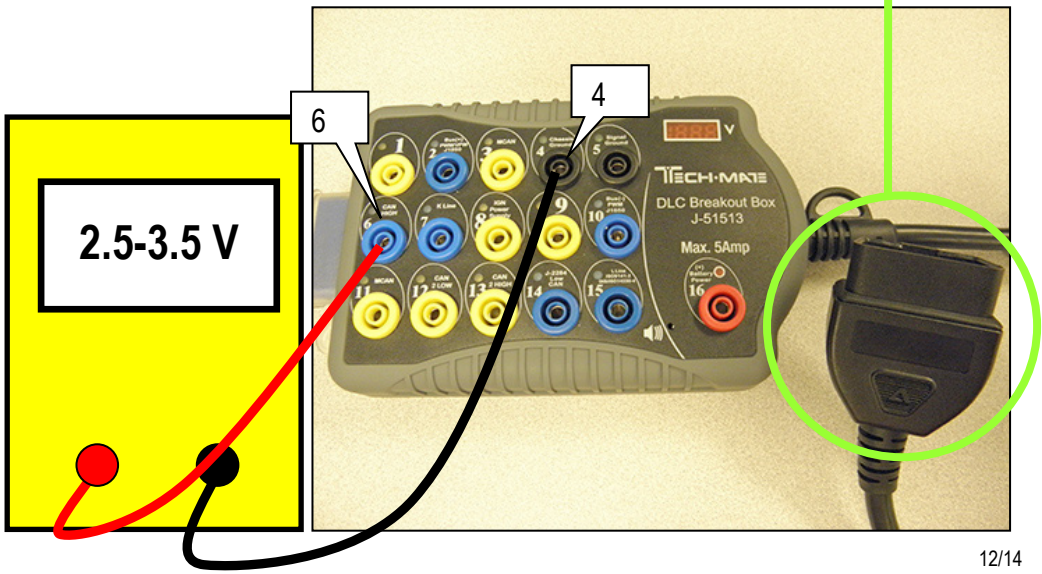
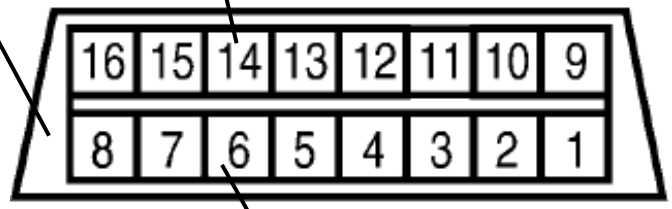
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Normal Voltage – CAN High





Data Link Connector



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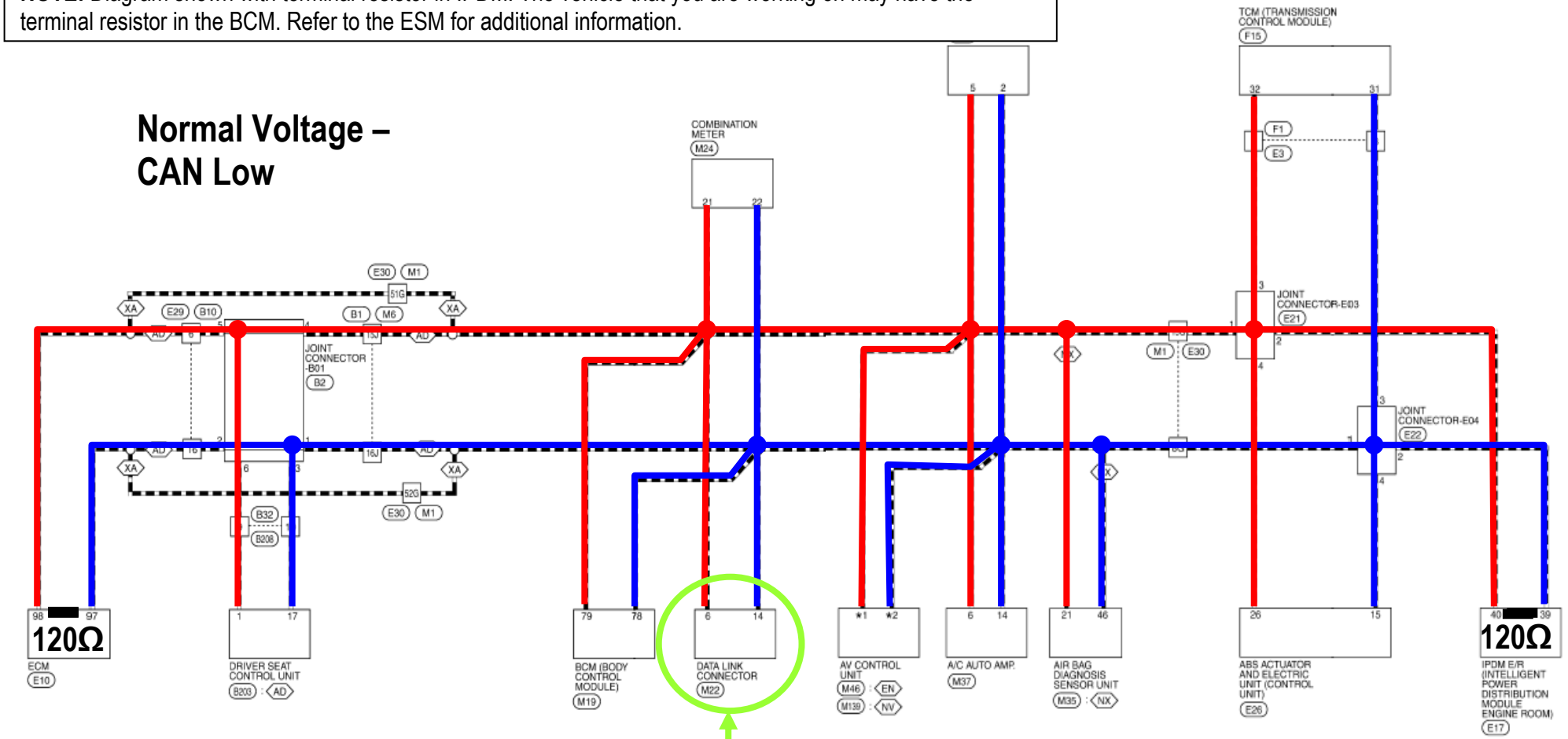
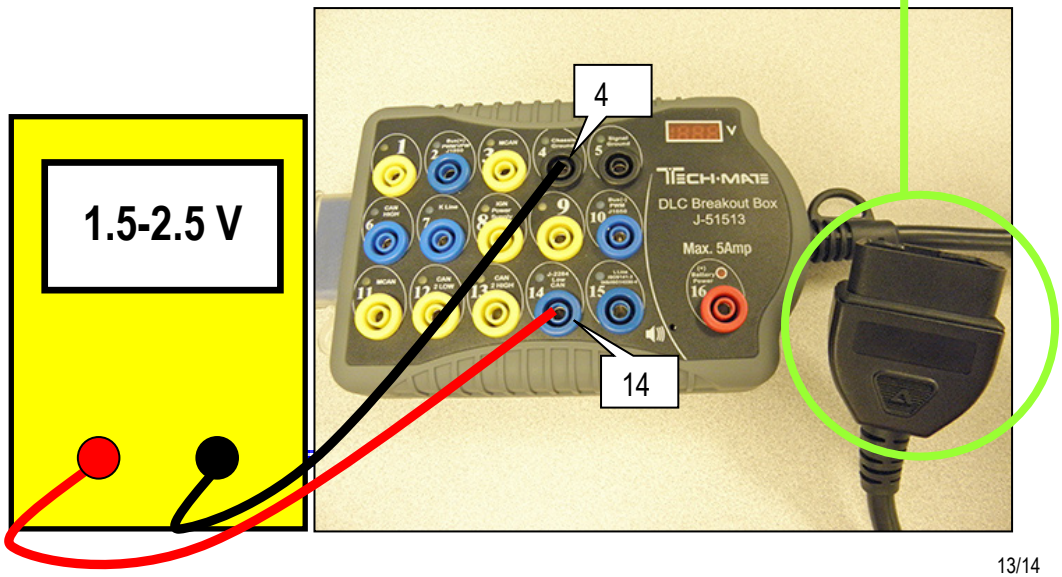
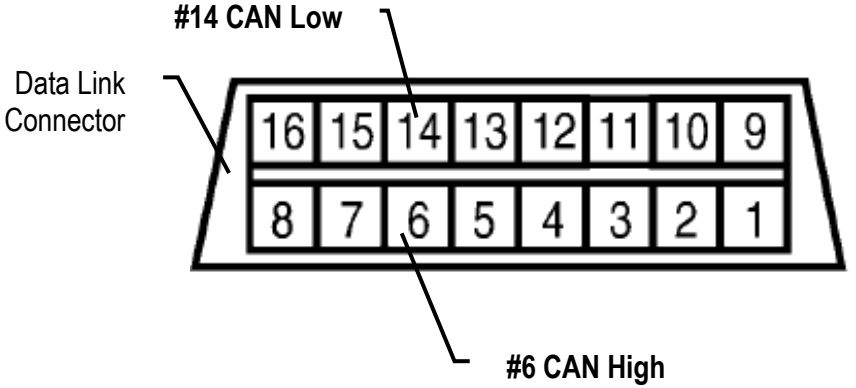
NOTE: Diagram shown with terminal resistor in IPDM. The vehicle that you are working on may have the terminal resistor in the BCM. Refer to the ESM for additional information.

Normal Voltage – CAN Low







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AMENDMENT HISTORY

PUBLISHED DATE	REFERENCE	DESCRIPTION
May 7, 2010	ITB10-029	Original bulletin published
June 24, 2014	ITB10-029A	Information added regarding the use of DLC Breakout Box tool J-51513
January 26, 2022	ITB10-029B	**APPLIED VEHICLES** revised