Classification:	Reference:	Date:
EL10-018a	ITB10-029a	June 24, 2014

CAN COMMUNICATION CODES – DIAGNOSTIC TIPS & GUIDELINES

This bulletin has been amended to include information on the use of DLC Breakout Box tool J-51513. Please discard previous version.

APPLIED VEHICLES: All 2005–2015 Infiniti vehicles

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 5-12. 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.

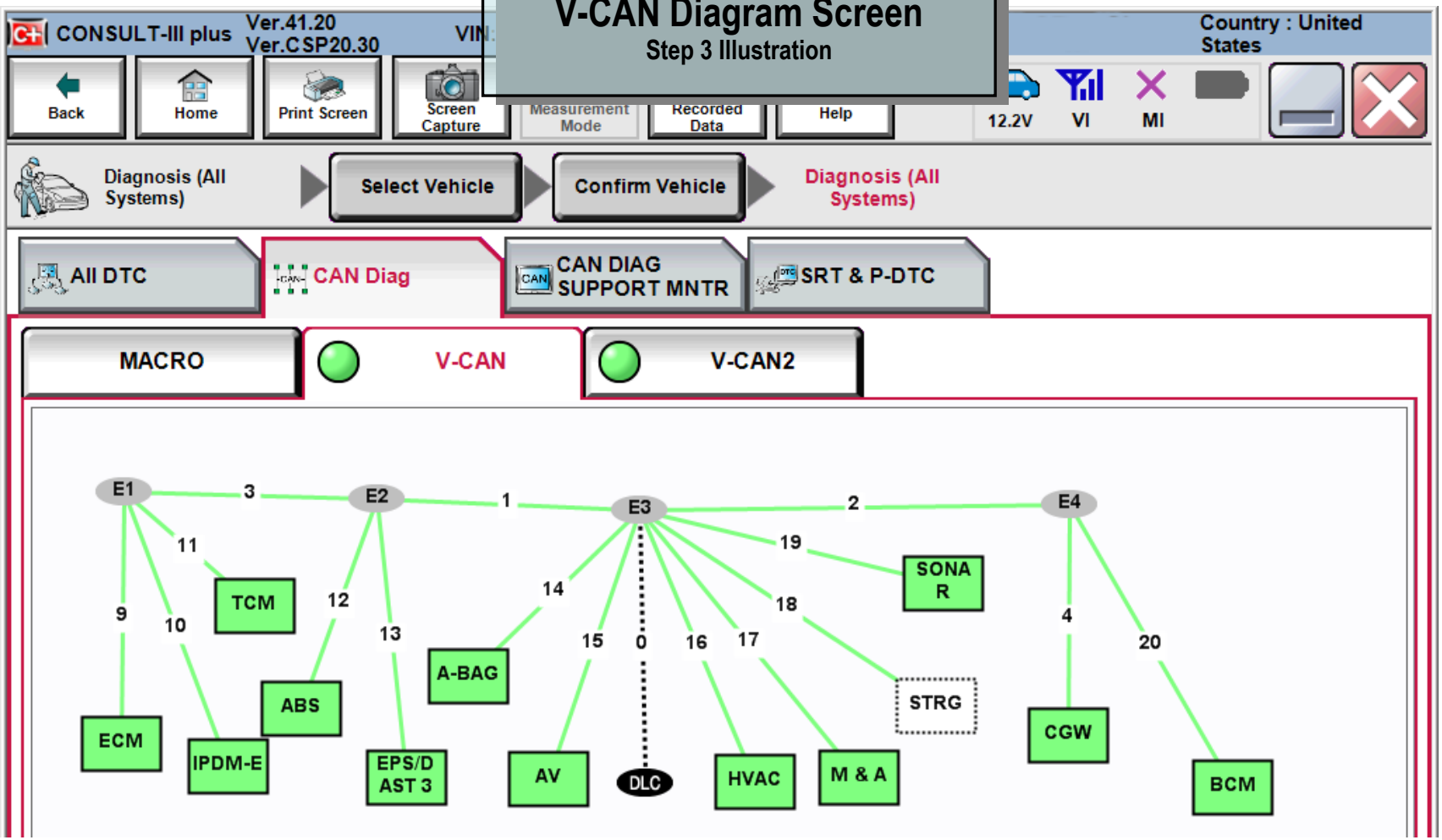
U1001 is for Engine Control Module (ECM) and is related to missing CAN communications on the network.

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

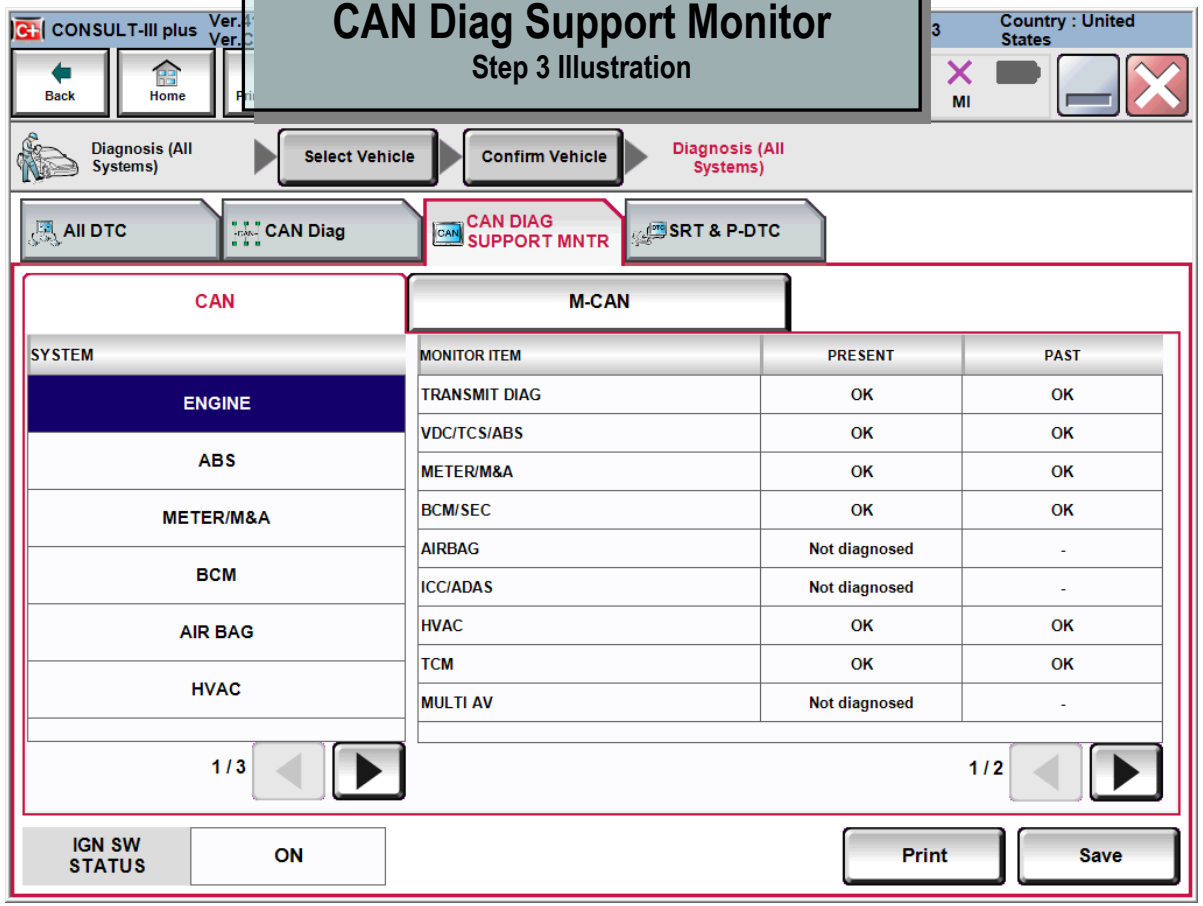
Green = Normal Operation

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 CONSULT-III again. If module is still highlighted in pink, replace module.

CAN Diag Support Monitor

Step 3 Illustration



Saved Date	
System	
P/#	

Vehicle Info

Vehicle Name : ARMADA

Market : NAM Model Year : 2008

Area : North America

Country : U.S.A.

Customer	
Print Date	2009/06/17 09:50:04
Worker	

CAN DIAG SUPPORT MNTR

CAN1	CAN2
CAN H max=4.4V	
CAN H min=2.2V	
CAN L max=3.8V	
CAN L min=0.8V	
Battery(V)13.4V	

CAN

ECU list

ABS, 4WD, I-KEY, IPDM-E, AV, HVAC, TCM, M & A, ECM

ABS

	PRSNT	PAST
INITIAL DIAG	OK	
TRANSMIT DIAG	OK	
ECM	OK	
TCM	OK	
METER/M&A	UNKWN	
STRG	OK	
ICC	UNKWN	
AWD/4WD	OK	

4WD

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
VDC/TCS/ABS	OK	OK
TCM	OK	OK
STRG	OK	OK

I-KEY

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
BCM	OK	OK
METER/M&A	OK	OK
BCM/SEC	UNKWN	0

IPDM-E

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
BCM	OK	OK
BCM/SEC	UNKWN	0

Print Example

AV

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
METER/M&A	OK	OK
BCM/SEC	UNKWN	0
HVAC	OK	OK
STRG	-	-
IPDM E/R	OK	OK
TIRE P	UNKWN	0
TCU	OK	OK

HVAC

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
TCM	-	-
BCM/SEC	UNKWN	0
VDC/TCS/ABS	OK	OK
IPDM E/R	-	-
DISPLAY	OK	OK
I-KEY	-	-
EPS	-	-
AWD/4WD	-	-
e4WD	-	-
ICC	-	-
LANE CAMERA	-	-
TIRE P	-	-

TCM

	PRSNT	PAST
INITIAL DIAG	OK	
TRANSMIT DIAG	OK	
ECM	OK	
VDC/TCS/ABS	OK	
METER/M&A	OK	
ICC/4WD	UNKWN	
AWD/4WD	OK	

M & A

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
TCM	OK	OK
BCM/SEC	UNKWN	0
VDC/TCS/ABS	OK	OK
IPDM E/R	OK	OK
DISPLAY	-	-
I-KEY	OK	OK
EPS	-	-
AWD/4WD	-	-
e4WD	-	-
ICC	-	-
LANE CAMERA	-	-
TIRE P	-	-

ECM

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	OK	OK
METER/M&A	OK	OK
BCM/SEC	UNKWN	0
ICC	-	-
HVAC	-	-
TCM	OK	OK
MULTI AV	-	-
EPS	-	-
IPDM E/R	OK	OK
e4WD	-	-
AWD/4WD	OK	OK

AV communication

ECU list

AV/BNAVI CAL, AUDIO

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 <u>all</u> voltage, resistance and continuity testing directly from the provided "pin-outs" shows in Figure 1 below.
- <u>Do Not</u> connect the C-III plus to this tool. Although it does have a port to do so, the tool currently <u>does not support this function</u>.
- <u>Do Not</u> jumper the "Battery Power" pin-out to either of the ground pin-outs.

  Damage will occur.

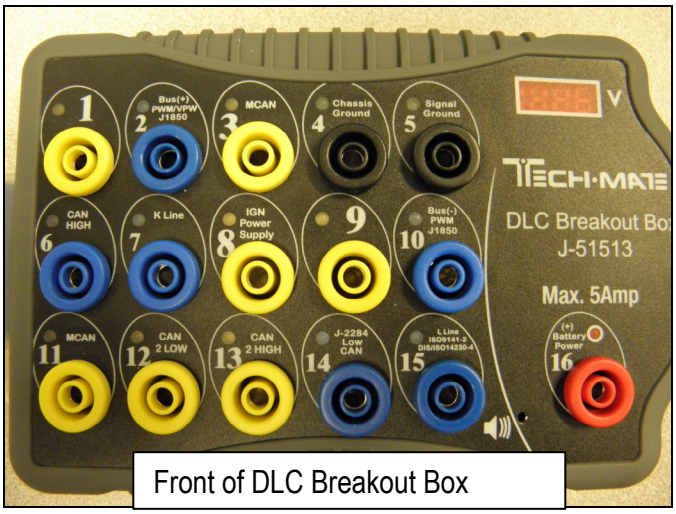


Figure 1

- 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.

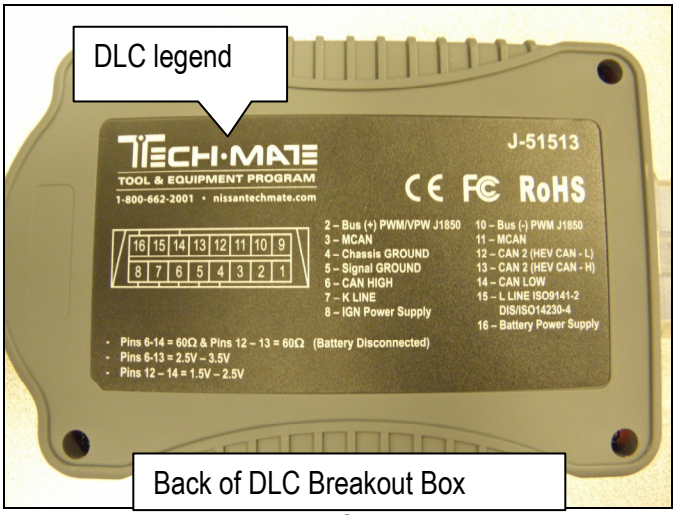


Figure 2

- Figure 3 show 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.

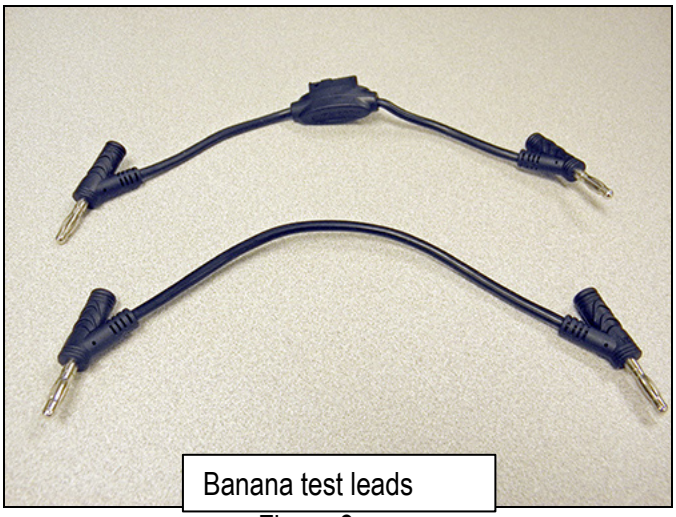
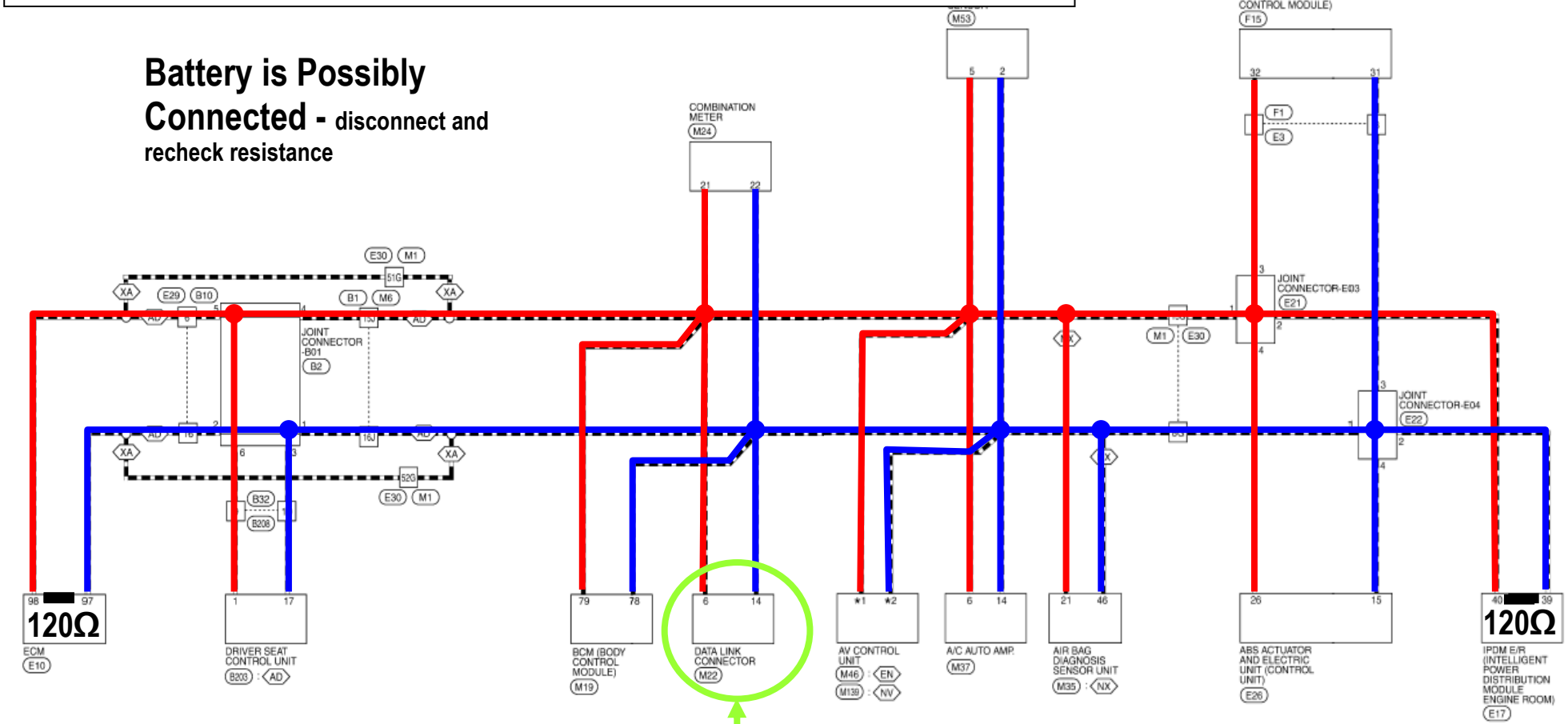
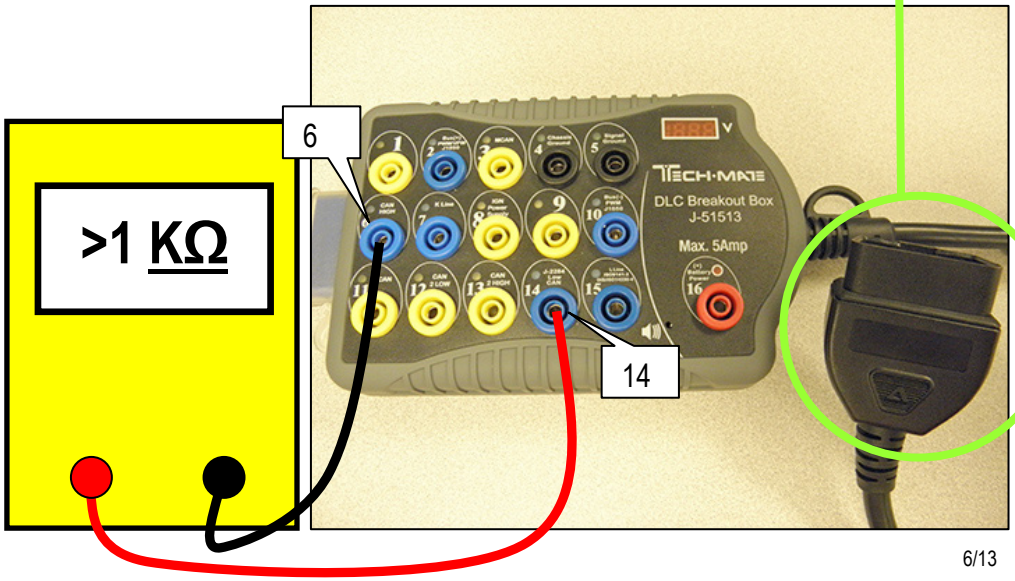


Figure 3

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

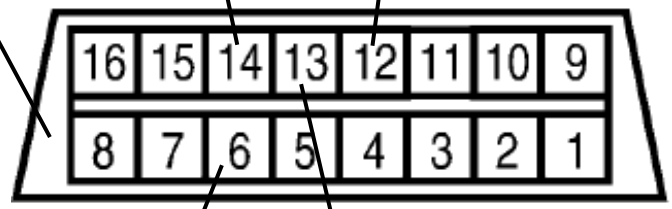




#14 CAN Low

#14 CAN 2* Low

Data Link Connector



#13 CAN 2* High

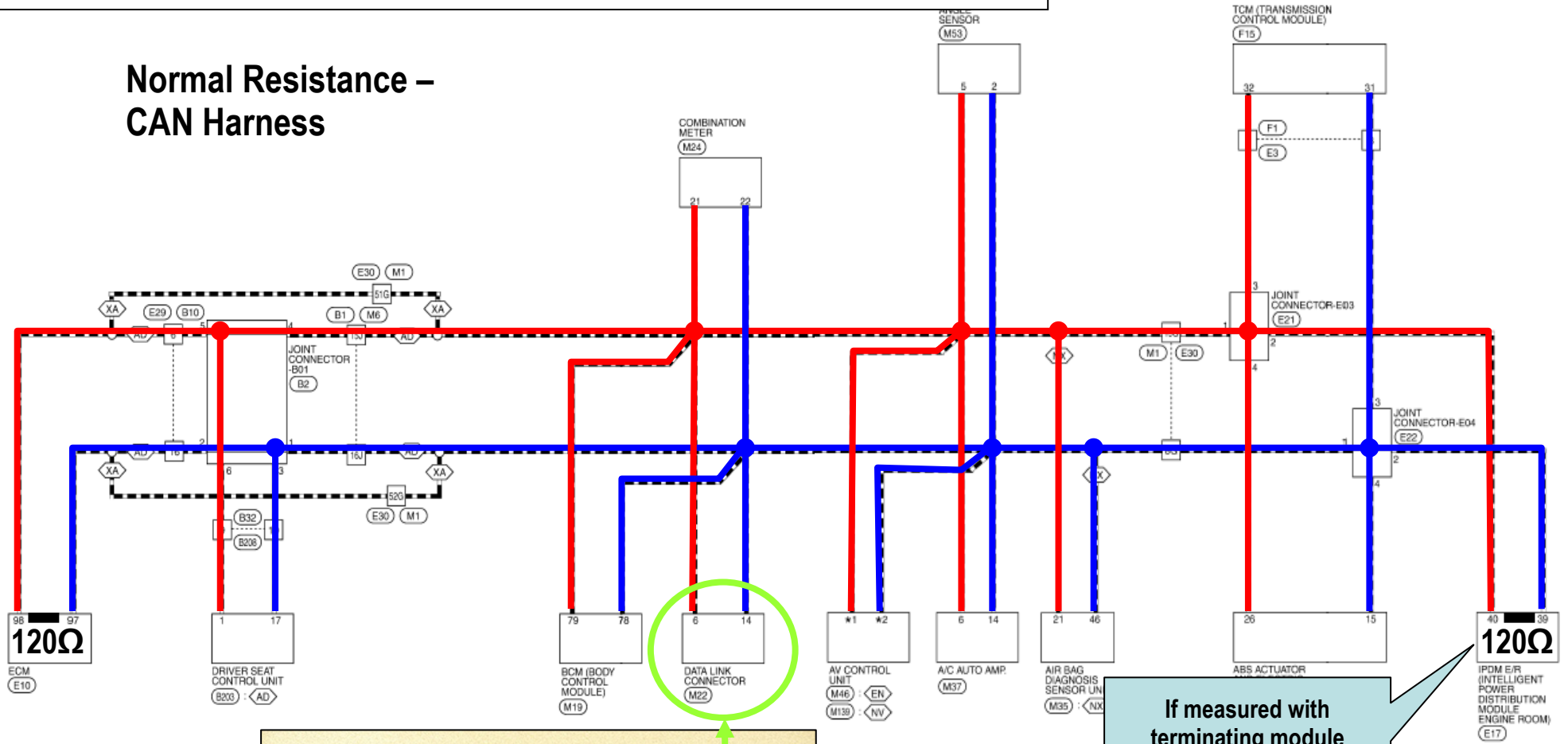
#6 CAN High

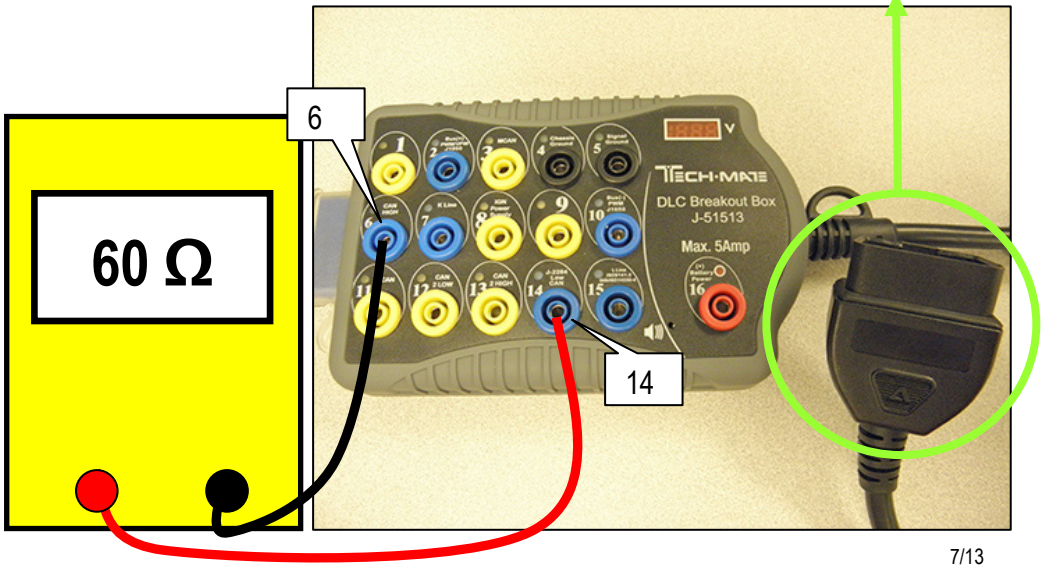
Plug "DLC Breakout Box" J-51513 into DLC

* Certain models are equipped with 2 CAN systems

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

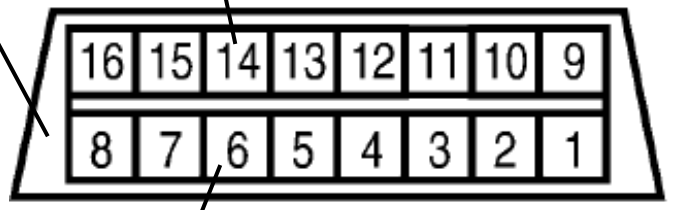




If measured with terminating module disconnected, Resistance = 120 Ω

#14 CAN Low

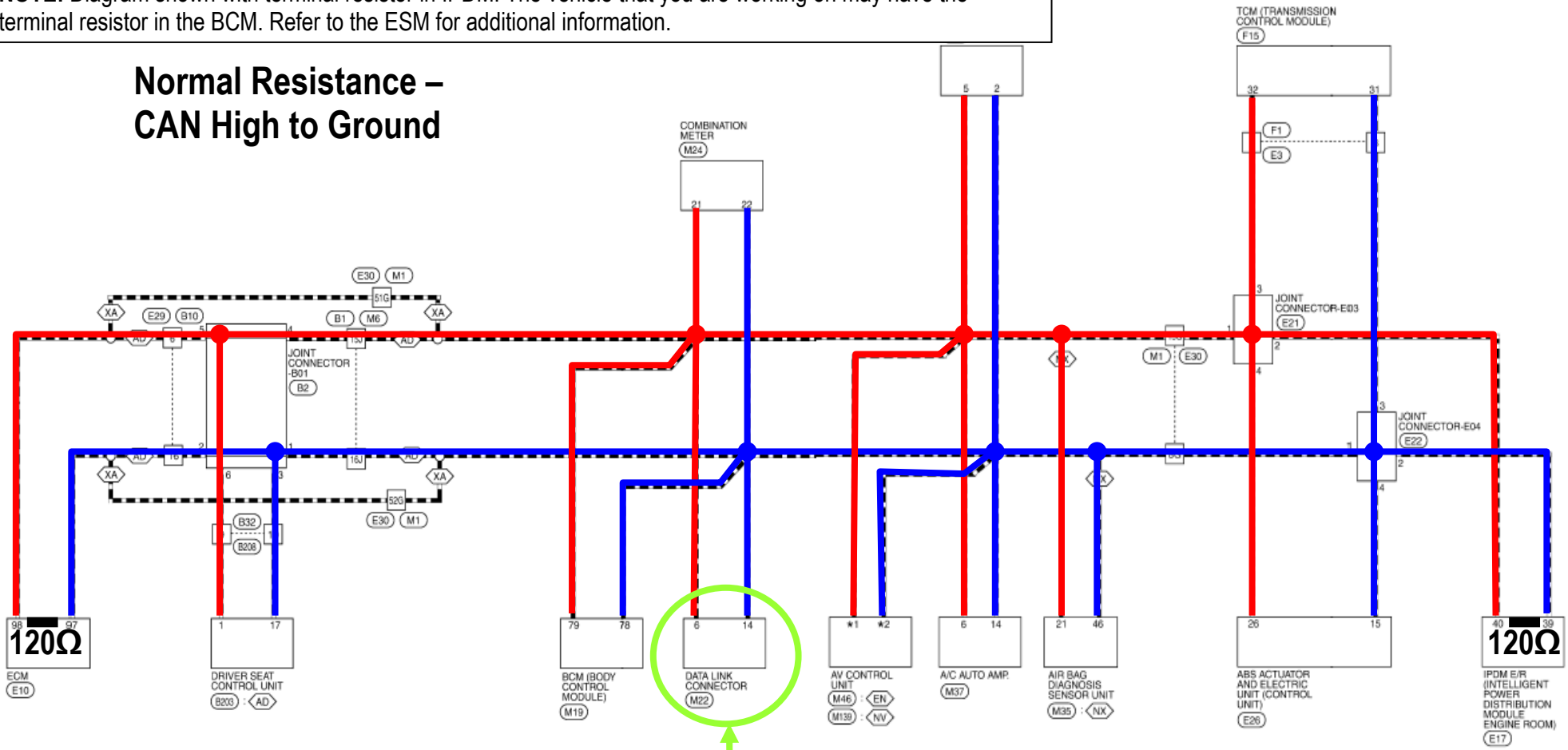
Data Link Connector

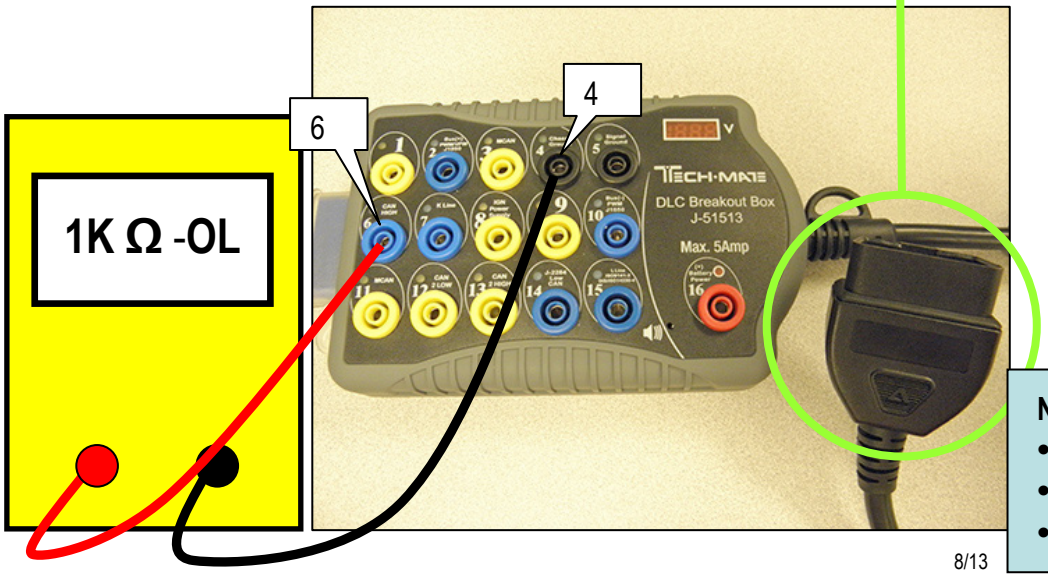


#6 CAN High

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.

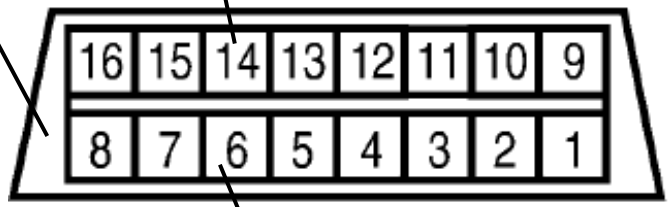
Normal Resistance – CAN High to Ground





#14 CAN Low

Data Link Connector



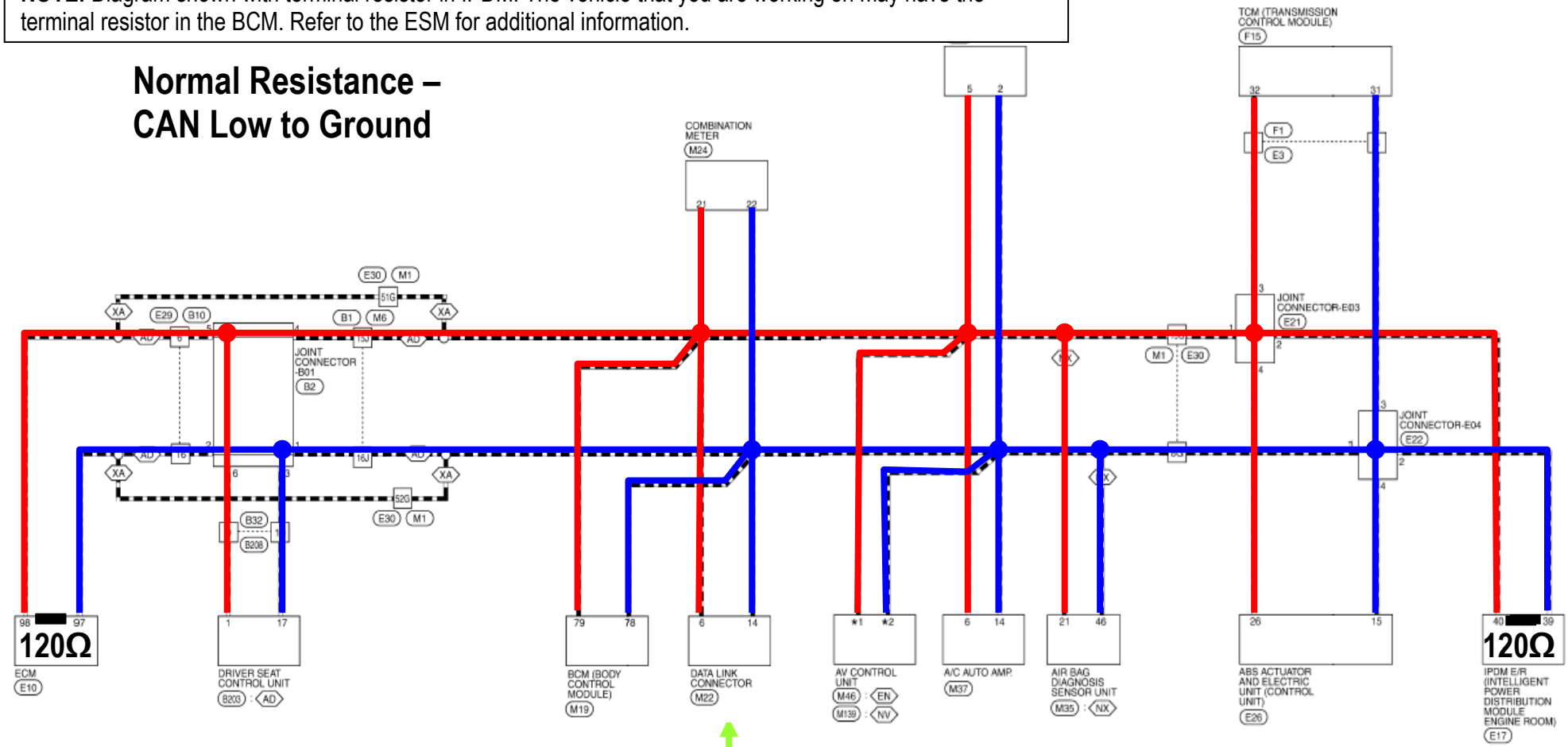
#6 CAN High

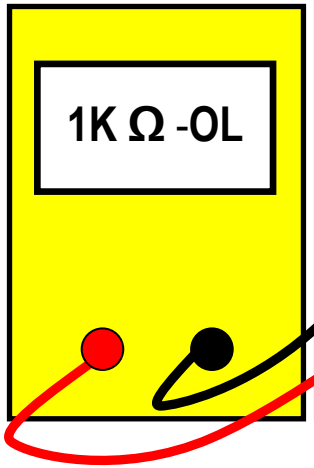
Notes:

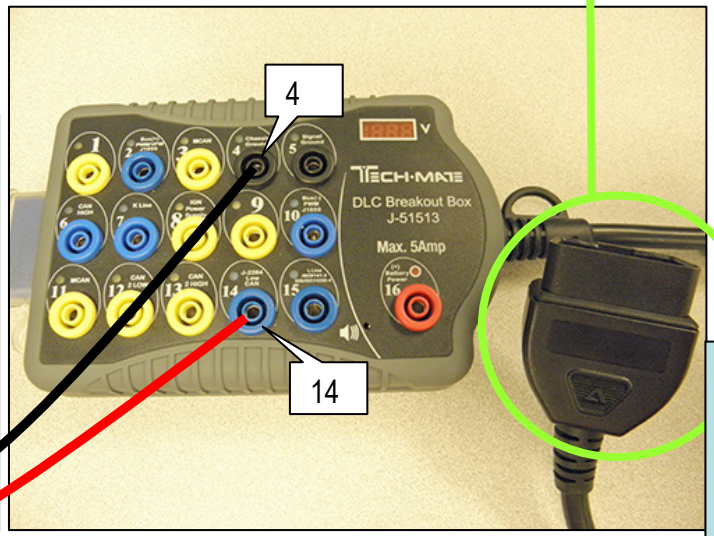
- OL= Open Circuit
- Expect OL if battery negative cable is connected
- Expect 1.0KΩ – 1.2KΩ if battery negative cable is disconnected

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







#14 CAN Low

Data Link Connector

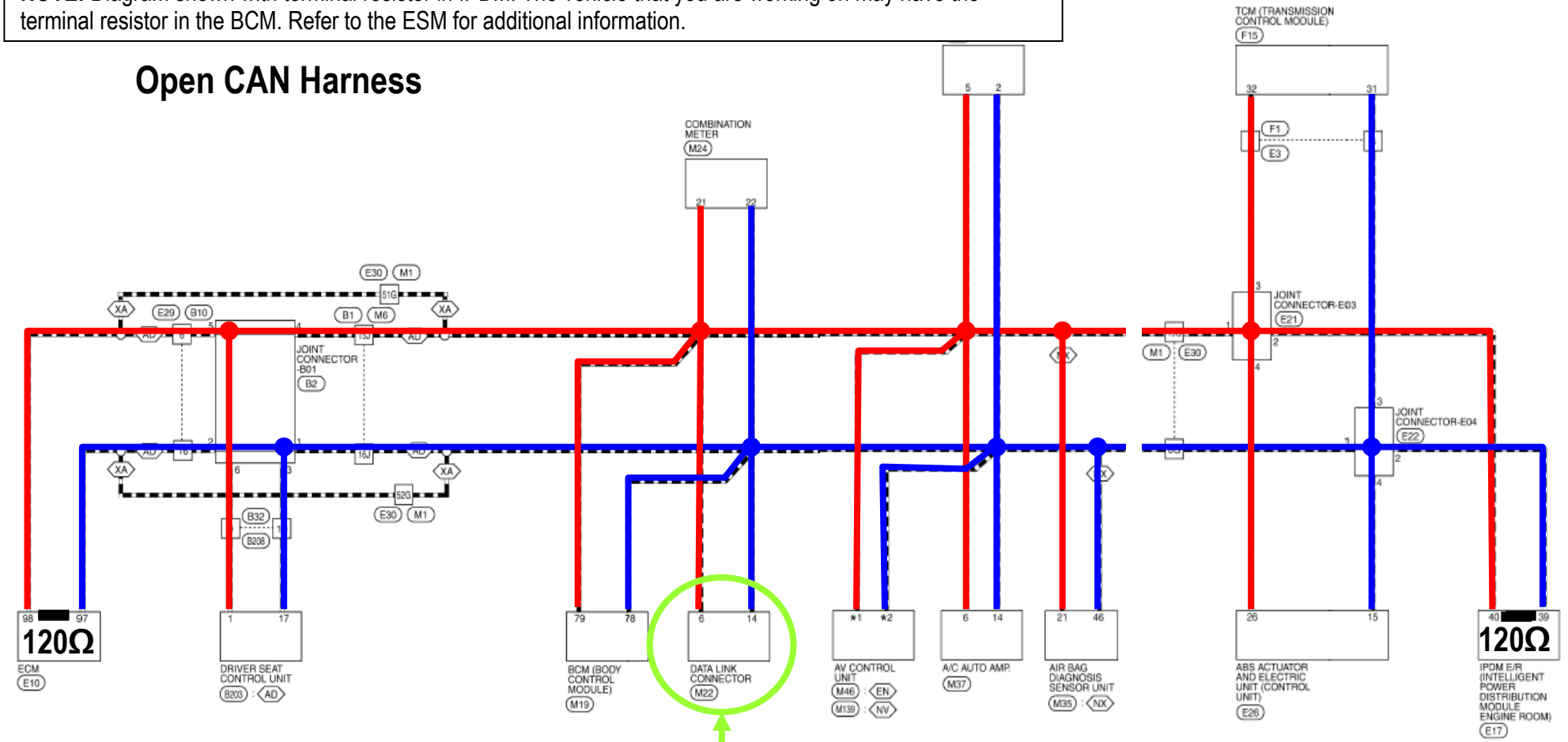
#6 CAN High

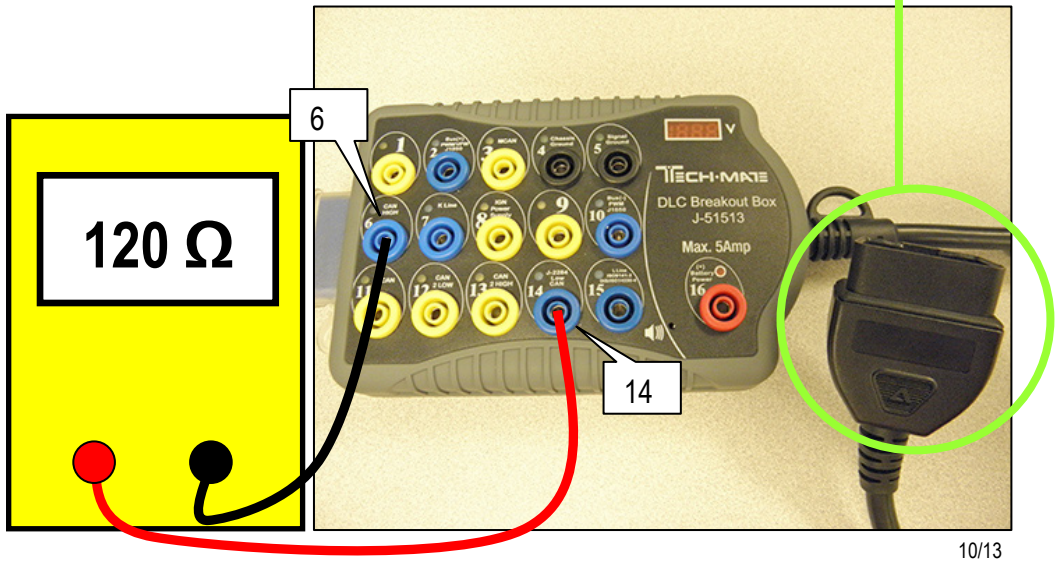
Notes:

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

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.

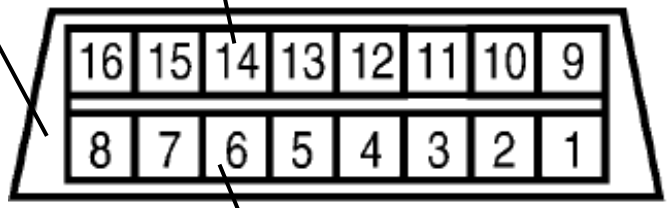
Open CAN Harness





#14 CAN Low

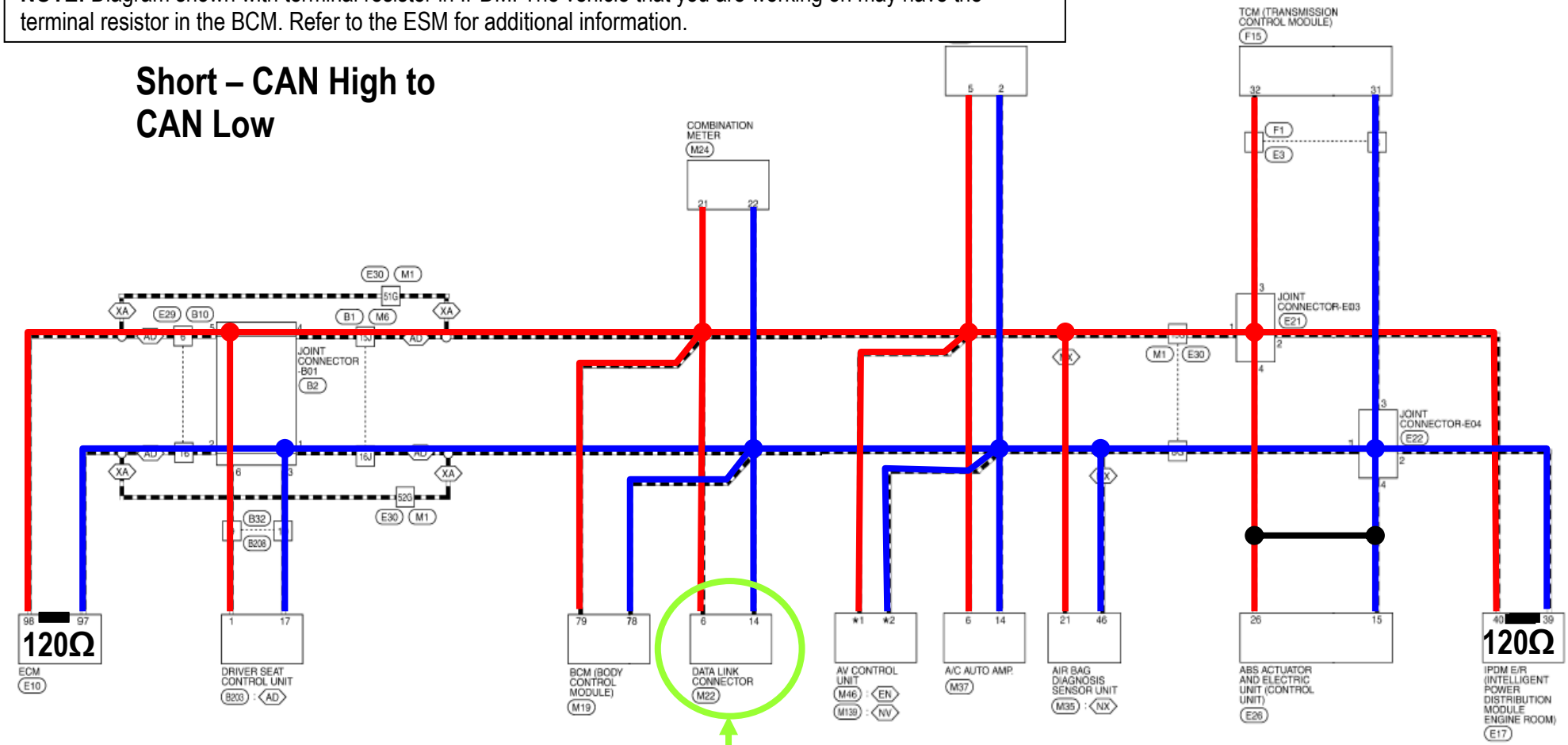
Data Link Connector

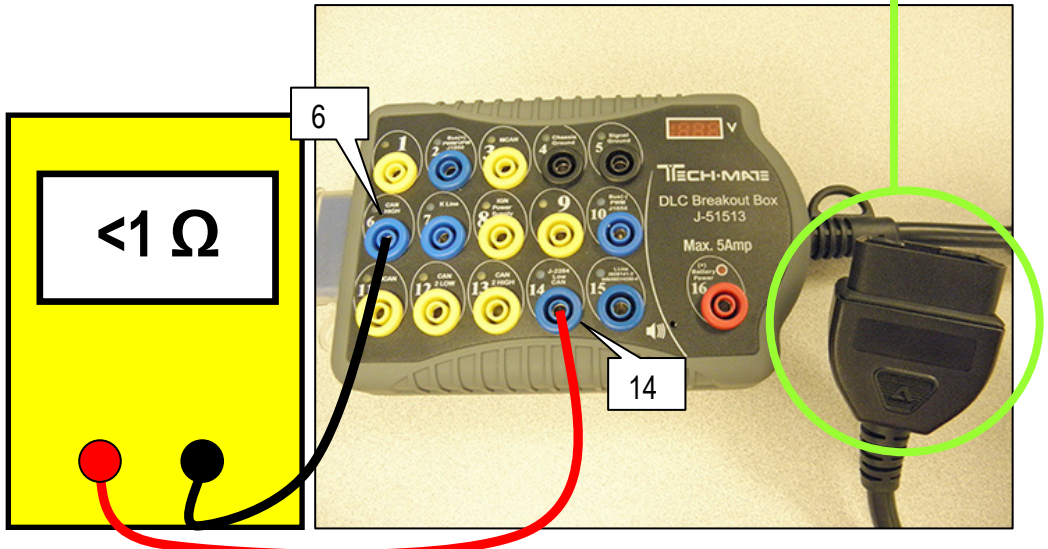


#6 CAN High

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.

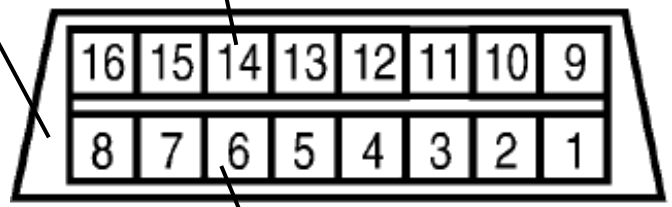
Short – CAN High to CAN Low





#14 CAN Low

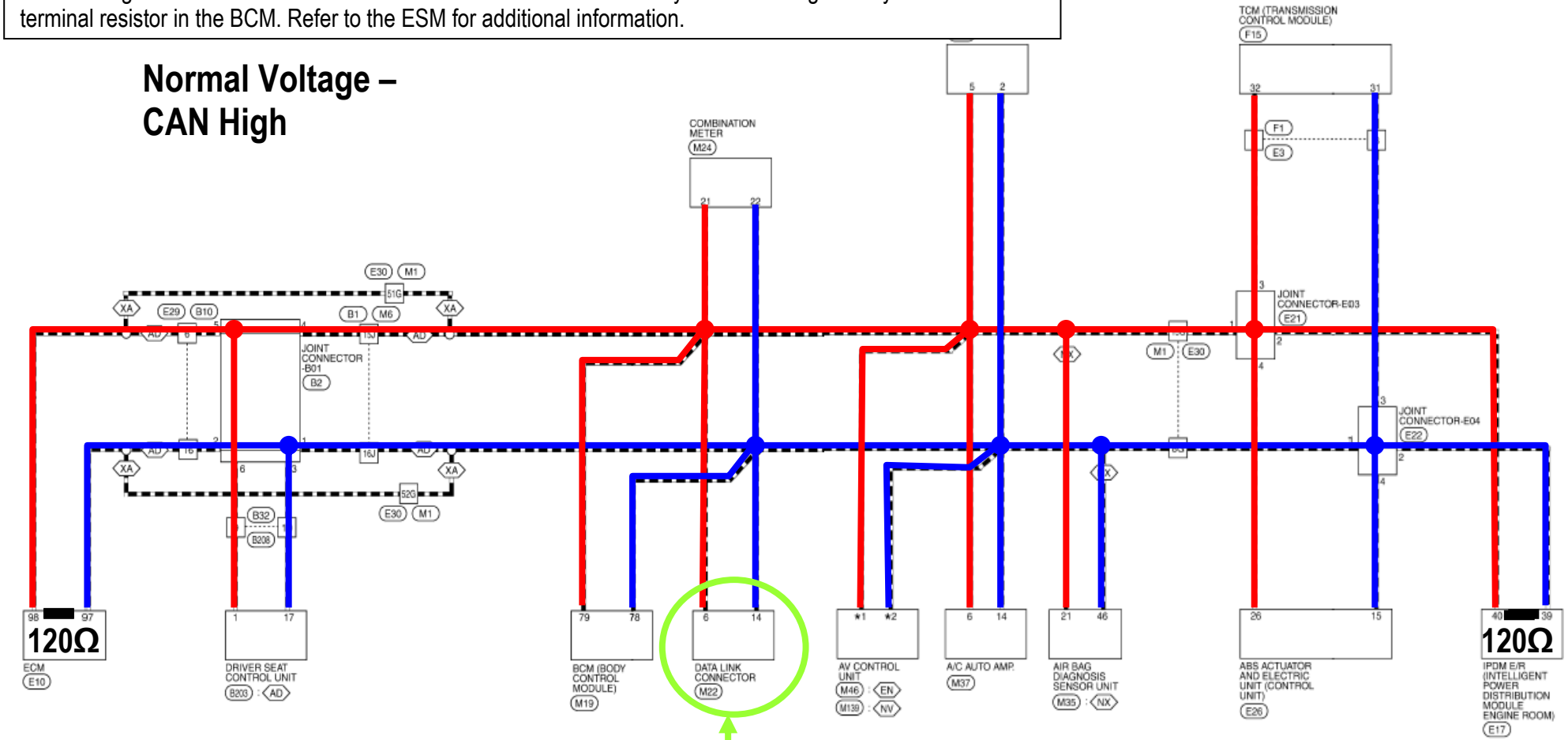
Data Link Connector

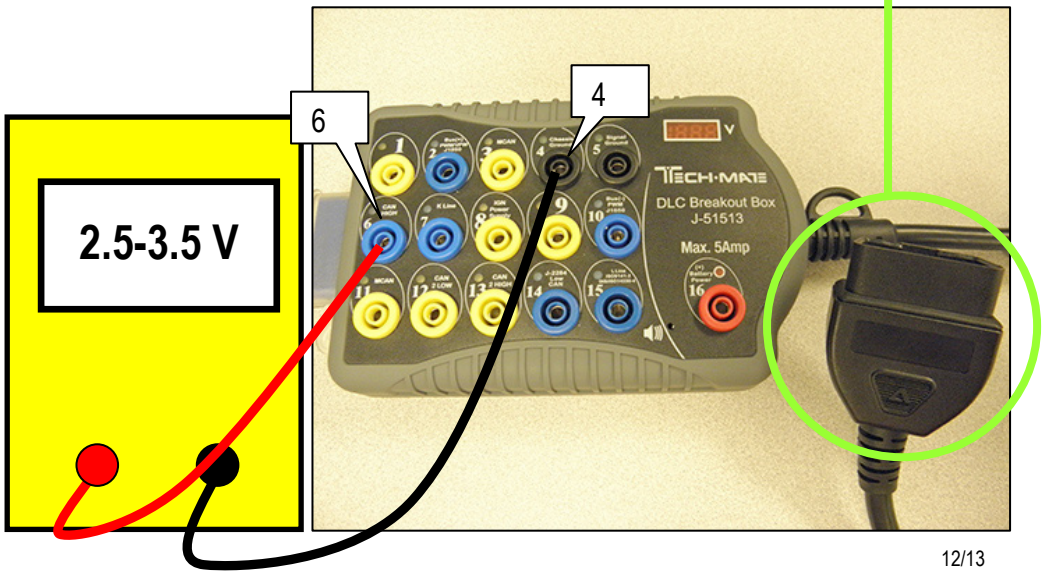


#6 CAN High

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.

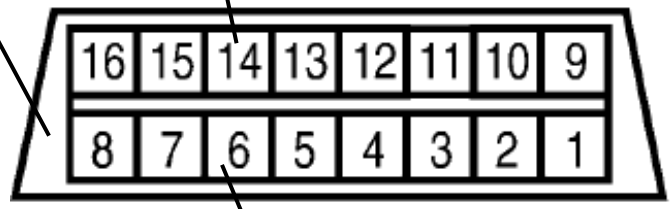
Normal Voltage – CAN High





#14 CAN Low

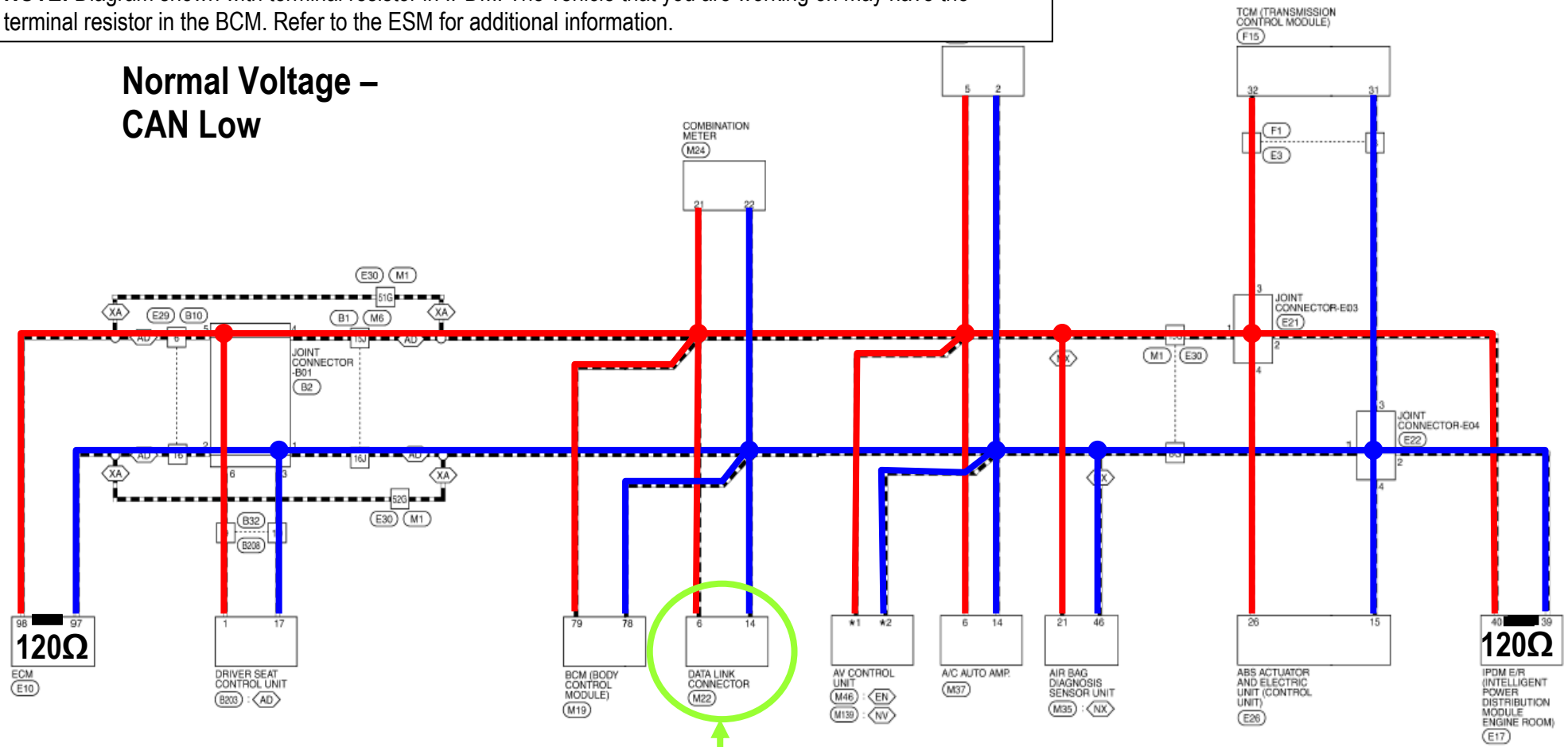
Data Link Connector

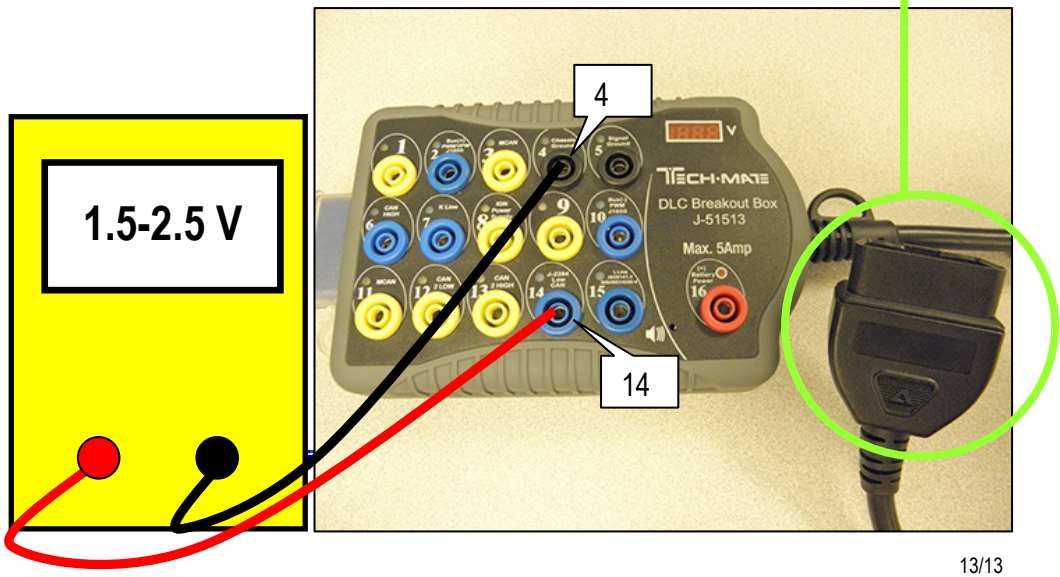


#6 CAN High

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.

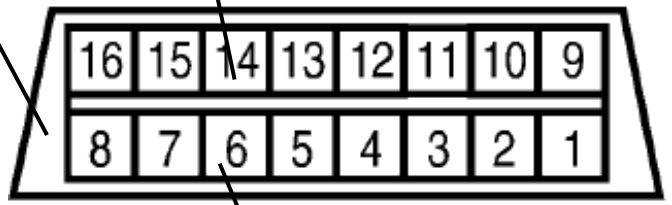
Normal Voltage – CAN Low





#14 CAN Low

Data Link Connector



#6 CAN High