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 Cargo  
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122SD and Coronado  
 Business Class M2  
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 108SD/114SD

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**Description of Revisions:** *This bulletin replaces the version dated October 2015. New kit numbers are provided in [Table 1](#), and instructions are revised to include EPA16 vehicles.*

## General Information

The Virtual Technician (VT) HU generates diagnostic information to aid the customer and the technician in diagnosing vehicle fault issues. The system creates log files, captures fault codes, and sends alert messages and other advanced diagnostic information to the Detroit Customer Support Center. The Virtual Technician utilizes GPS navigation, GSM (cellular telephone) communication, and a J1939 connection for databus monitoring. Virtual Technician does not require any driver input to function. The unit is located behind the auxiliary dash panel.

## Parts

See [Table 1](#) for the kit used in this procedure.

		Kit
Kit Number	Description (IMACS)	Description
A66-07059-000	KIT-VIRTUAL TECHNICIAN,PRE-EPA16,P3	Virtual Technician Kit - Cascadia, Pre-EPA16
A66-05540-000	KIT-VIRTUAL TECHNICIAN,EPA16,P3	Virtual Technician Kit - Cascadia, EPA16

**Table 1, Kit**

## Installation Instructions

1. Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the rear tires.
2. Remove the driver instrument panel, the auxiliary instrument panel, the passenger-side lower kick panel, and the the lower center cover. Refer to [Section 60.06](#) in the *Cascadia Workshop Manual* for instructions.
3. **Install the power and ground wiring.**
  - 3.1 Disconnect the negative cables from the batteries.
  - 3.2 Remove the bulkhead connector from the engine-side frontwall. See [Fig. 1](#).

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**Fig. 1, Removing the Bulkhead Connector Mounting Bolt**

- 3.3 Remove the red terminal lock from the bulkhead connector ( [Fig. 2](#) ), then remove the seal from cavity 37 on the connector.

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**Fig. 2, Removing the Bulkhead Connector Terminal Lock**

3.4 Feed wire A06-91061-000 into the conduit supplied in the kit. See [Fig. 3](#).



**Fig. 3, Feeding Wire A06-91061-000 into the Conduit**

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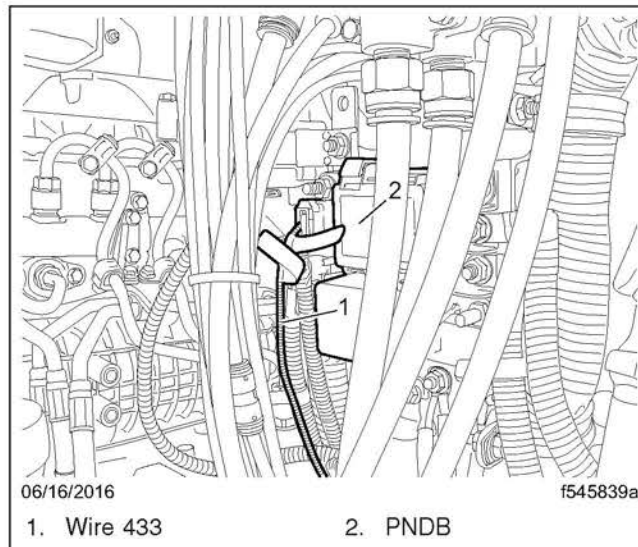
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- 3.5 Insert wire A06-91061-000 into cavity 37 of the bulkhead connector. Make sure the wire snaps into place, then gently tug the wire to make ensure that it is securely seated in the connector. See [Fig. 4](#).



**Fig. 4, Inserting Wire A06-91061-000 in to the Bulkhead Connector**

- 3.6 Insert the other end from wire A06-91061-000 in PNDB cavity 3, which is powered by fuse C. See [Fig. 5](#).



**Fig. 5, Circuit 433 Installation**

- 3.7 Secure wire A06-91061-000 to the bulkhead connector harness with cable ties. See [Fig. 6](#).

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**Fig. 6, Securing Wire 433 with a Cable Tie**

- 3.8 From the cab-side frontwall, insert the green wire (433) from the harness supplied in the kit in to cavity 37 of the bulkhead connector. See [Fig. 7](#).



**Fig. 7, Bulkhead Connector Inside the Cab**

- 3.9 Install the red terminal lock on the bulkhead connector, then install the bulkhead connector on the engine-side frontwall.

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### 4. Route and the VT harness and install for the databus connections for pre-EPA16 vehicles.

NOTE: For EPA16 vehicles, continue with step 5.

- 4.1 Feed the harness from the bulkhead connector, behind the driver instrument panel, to the area of the auxiliary instrument panel. See [Fig. 8](#).



**Fig. 8, Harness Wires Routed to the Auxiliary Instrument Panel**

- 4.2 Remove the terminating resistor ([Fig. 9](#)) from the databus connector, and install the terminating resistor in the A66-06315 harness, then connect the harness into the databus connector. See [Fig. 10](#).

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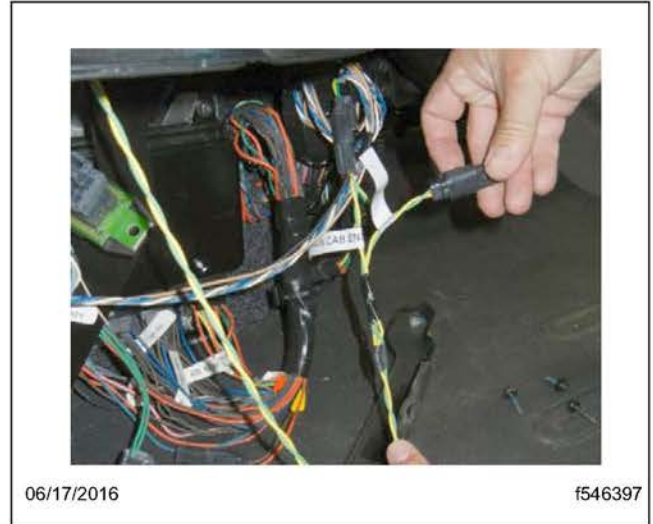


**Fig. 9, Terminating Resistor Located Behind the Lower Center Cover**

4.3 Continue with step 6.

**5. Route and install the VT harness and install the databus connections for EPA16 vehicles.**

- 5.1 Feed the harness from the bulkhead connector behind the dash to the area behind the passenger-side kick panel.
- 5.2 Locate the J1939 splice pack. See [Fig. 11](#).

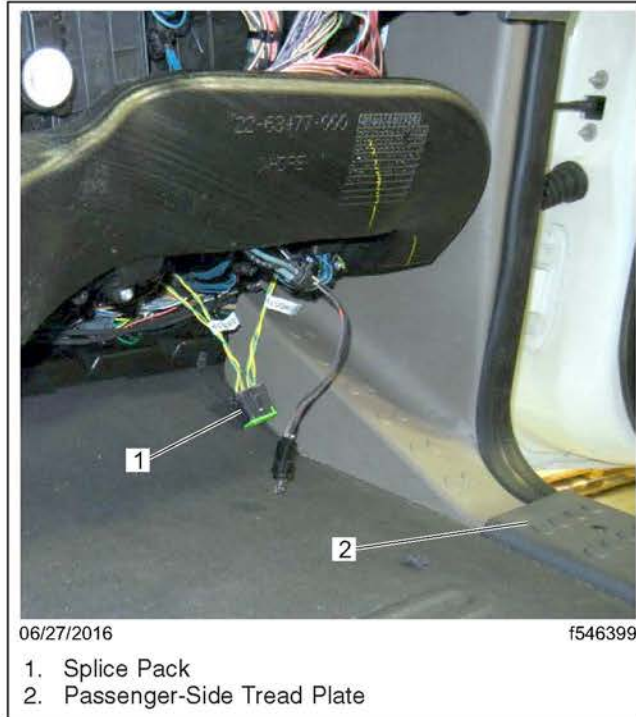


**Fig. 10, Terminating Resistor and Databus Connector Installed**

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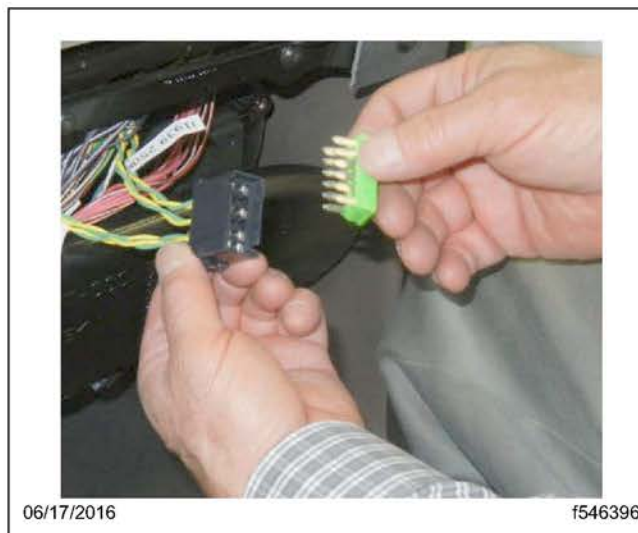
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**Fig. 11, Splice Pack Located Behind Passenger-Side Kick Panel**

5.3 Remove the terminal lock from the splice pack. See [Fig. 12](#).



**Fig. 12, Terminal Lock Removed from the Splice Pack**

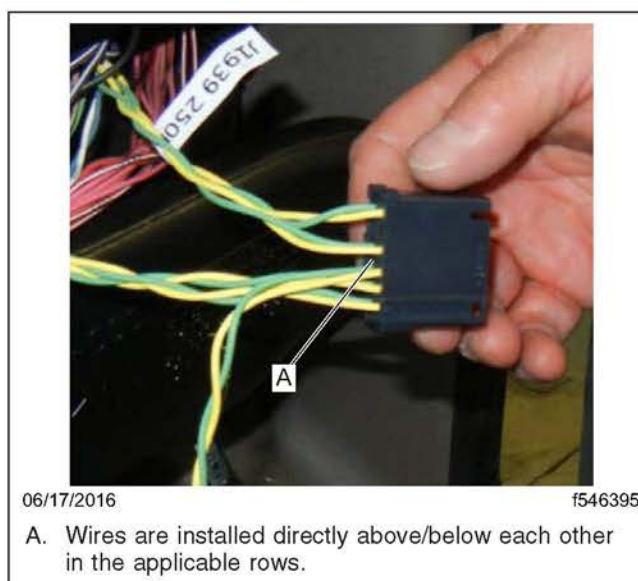
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- 5.4 Install the yellow and green wires in the splice pack, making sure the green wire is inserted in the row with green wires (cavities G - M) and the yellow wire is inserted in the row with yellow wires (cavities A - F). The wires should be directly above/below each other. See [Fig. 13](#).



**Fig. 13, Yellow and Green Wires Installed in the Splice Pack**

- 5.5 Install the terminal lock on the J1939 splice pack.
6. **Install the ignition and ground wires.**
  - 6.1 Locate circuit 81C and the ground splice packs. See [Fig. 14](#) . The Splice packs are located behind the auxiliary instrument panel.

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**Fig. 14, Splice Pack Located Behind the Auxiliary Instrument Panel**

- 6.2 Remove the ground and ignition splice pack lock and insert the wires as follows.
- 6.3 Insert the pink ignition wire in the ignition (81C) splice pack. Use any available cavity.
- 6.4 Insert the black ground wire in the ground splice pack. Use any available cavity.
- 6.5 Install the retainers in the splice packs.

**7. Install the Virtual Technician HU.**

- 7.1 Record the GPS ID from the label on the back side of the new Virtual Technician HU.
- 7.2 Affix two strips of hook and loop tape on the back of the VT box. Remove the protective film from the adhesive, and press the VT box firmly to the top of the HVAC ducting, making sure that the connectors are facing out.
- 7.3 Connect the 4-pin connector to the VT HU.
- 7.4 Connect the 10-pin connector to the VT HU.

NOTE: Two interlocked tie straps are required to wrap around the HVAC ducting and the Virtual Technician HU box.

- 7.5 Secure the Virtual Technician HU to the HVAC ducting with two interlocked tie straps. Tighten them securely. See [Fig. 15](#).

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**Fig. 15, Virtual Technician Secured with Tie Straps**

**8. Verify the installation of the Virtual Technician HU.**

- 8.1 Connect the batteries.
- 8.2 If no LEDs light up with the ignition ON, diagnose supplied power and ground to the unit. See [Fig. 16](#) and [Table 2](#). There are five LEDs visible on the VT module.

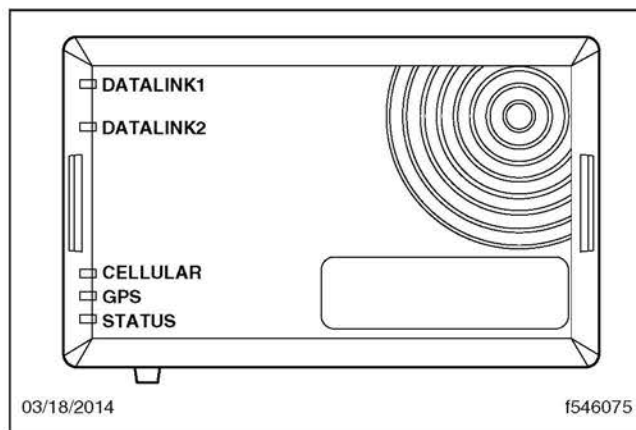
Diagnostic LEDs			
Name	Color	Function	Action
Datalink1	Red	<b>Red Flash (1Hz):</b> J1708 connectivity (disabled). No J1708 activity detected (device is awake). Device is not wired for J1708 connectivity.	Red is the normal and expected state.
Datalink2	Red and Green	<b>Red Flash (1Hz):</b> J1939 connectivity. No J1939 activity detected (device is awake).  <b>Green Flash (1Hz):</b> J1939 activity detected (device is awake) .	Green flash is expected, if LED is flashing red diagnose J1939 connectivity issue at the terminals.

Diagnostic LEDs			
Name	Color	Function	Action
Cellular	Amber	<p><b>Solid:</b> GPS connection successful.</p> <p><b>One Flash:</b> Initializing.</p> <p><b>Two Flashes:</b> Acquiring time zone information.</p> <p><b>Three Flashes:</b> Attempting to make a GPS connection.</p>	<p>Solid is expected – if otherwise call the Customer Support Center for further instruction.</p> <p>NOTE: The VT must be in a network service area.</p>
GPS	Green or Amber*	<p><b>Solid:</b> Satellites acquired.</p> <p><b>One Flash at 1 Hz:</b> Acquiring satellites.</p>	Refer to J1939 Fault codes if a problem is suspected.
Status	Green	<p><b>Solid:</b> Engine running.</p> <p><b>One Flash at 1 Hz:</b> Engine not running; no data to send.</p> <p><b>Two Flashes at 1 Hz:</b> Data is available to be sent.</p> <p><b>Four Flashes at 1 Hz:</b> GPS storage log is full.</p>	Refer to J1939 Fault codes if a problem is suspected.

\* Lamp is colored green when an external GPS antenna is used. The lamp is amber when the unit is using the internal GPS antenna.

**Table 2, Diagnostic LEDs**

- 8.3 Install the driver instrument panel, and the auxiliary instrument panel, the lower center cover, and the passenger-side lower kick panel. Refer to [Section 60.06](#) in the *Cascadia Workshop Manual* for instructions.



**Fig. 16, Virtual Technician HU LEDs**

- 8.4 Start the vehicle and drive to an open area, at least 40 feet (12 meters) away from any buildings. Park the vehicle and keep the ignition in the ON position. Apply the parking brake.

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- 8.5 Call the *Detroit Customer Support Center*. Make sure to have the vehicle serial number and the Virtual Technician GPS ID number available so that the new VT can be registered.

## Warranty

This is an informational bulletin only. Warranty does not apply.