

> Constellation Heritage
> 4700 Models

> 4800 Models
> 4900 Models
> 5700 Models

5900 Models
> 6900 Models

**Western Star
Service Bulletin**

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

IMPORTANT: This bulletin applies to EPA10, EPA13, GHG14, and EPA16 vehicles with Detroit™ DD13, DD15 and DD16 engines.

The Virtual Technician (VT) HU generates diagnostic information to aid the *Detroit™ Customer Support Center* and the technician in diagnosing complex engine control issues. The system creates sensor log files, captures fault codes, and sends alert messages and other advanced diagnostic information to the *Detroit Customer Support Center*. The VT 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 VT is located behind the dash, next to the passenger-side glove box.

Parts

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

| Kit | | |
|---------------|----------------------------|--|
| Kit Number | Description (IMACS) | Description |
| A66-05700-000 | KIT-VIRT TECH,5700,WST | Western Star, 5700 |
| A66-05696-000 | KIT-VIRT TECH,NON-5700,WST | Western Star, Pre-EPA16 4700, 4800, 4900, and 6900 |
| A66-05697-000 | KIT-VIRT TECH,NON-5700,WST | Western Star, EPA16 4700, 4800, 4900, and 6900 |

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. **Install the power and ground wiring. Refer to wiring diagram G06-82895.**
 - 2.1 Disconnect the negative cables from the batteries.
 - 2.2 Remove the instrument cluster, the CB radio, and any other devices or panels necessary for harness routing. Refer to the *Western Star Workshop Manual* for instructions.
 - 2.3 Access the ground and ignition splice packs, located behind the center dash panel. See [Fig. 1](#).

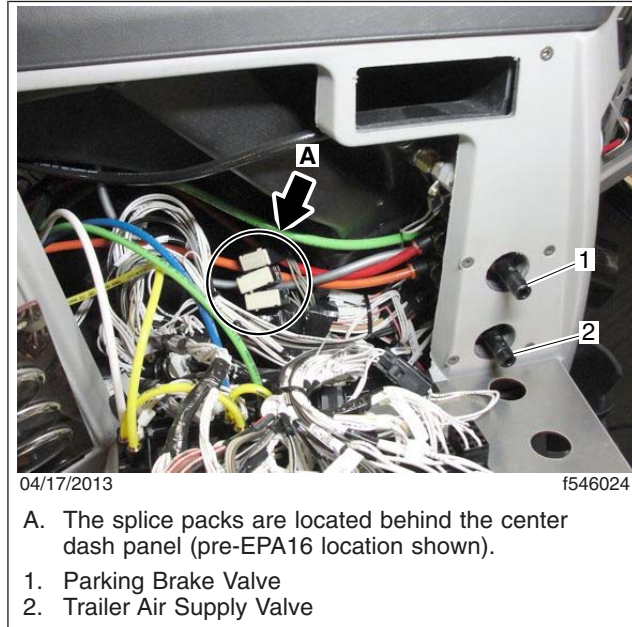


Fig. 1, Western Star Dash Assembly

- 2.4 Remove the ground and ignition splice pack lock and insert the wires from the A06-82896-000 harness (A06-83364-000 for the 4700).
- 2.5 Insert the pink wire 81C from the A06-82896-000 harness (A06-83364-000 for the 4700) to the ignition splice pack. Use any available cavity.
- 2.6 Insert the black ground wire from the A06-82896-000 harness (A06-83364-000 for the 4700) in the ground splice pack. Use any available cavity.
- 2.7 Route the green power wire 433 on the A06-82896-000 harness (A06-83364-000 for the 4700) behind the dash to the bulkhead connector.
- 2.8 Remove the bulkhead connector, above the airlines, on the frontwall (engine side).
- 2.9 Remove the terminal locks and insert the green wire 433 from the A06-82896-000 harness (A06-83364-000 for the 4700) in cavity 27 of the dash side of the bulkhead connector.
- 2.10 Insert the green wire 433 of the A06-82897-000 harness (A06-83365-000 for the 4700) in cavity 27 of the engine side of the bulkhead connector.

IMPORTANT: Vehicles with an EPA07 or EPA10 engine have a 40-pin bulkhead connector. All 4700 vehicles and vehicles with an EPA13 and EPA16 engine have a 76-pin bulkhead connector.

- 2.11 Insert the other end of green wire 433 from the A06-82897-000 harness (A06-83365-000 for the 4700) in powernet distribution box (PNDB) cavity 3. See [Fig. 2](#).
- 2.12 Insert the terminal lock into the bulkhead connector, then connect the dash and engine side of the connector. See [Fig. 3](#).

> Constellation
Heritage
> 4700 Models

> 4800 Models
> 4900 Models
> 5700 Models

5900 Models
> 6900 Models

**Western Star
Service Bulletin**

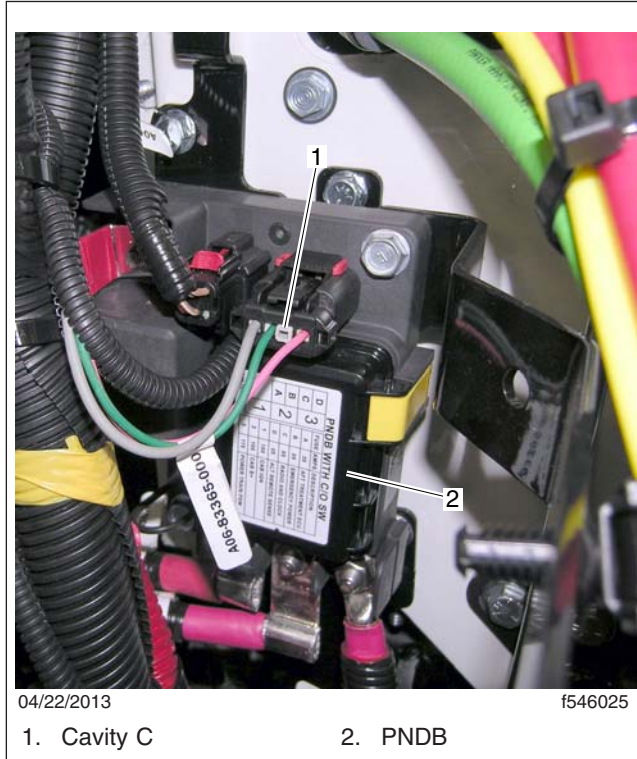


Fig. 2, PNDB on the Frontwall

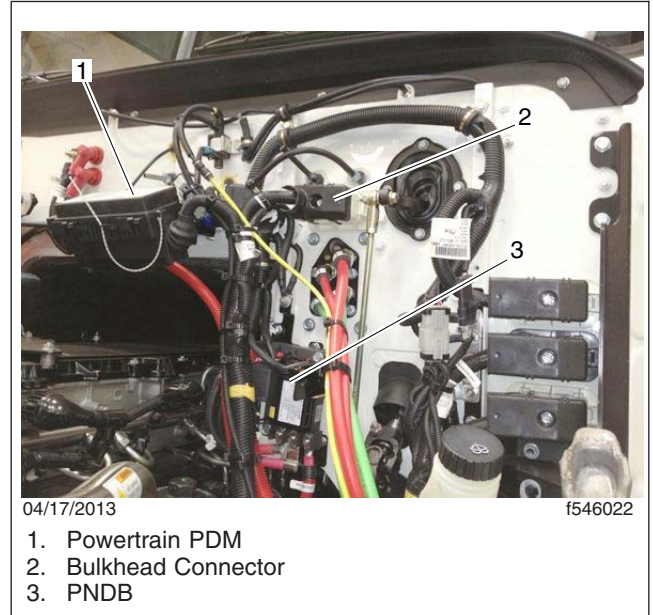


Fig. 3, Bulkhead Connector on the Engine Side of the Frontwall

3. If installing Virtual Technician on EPA16 vehicles, and later, proceed to step 5.

On 4800, 4900, and 6900 model vehicles built between June 6, 2011 and prior to EPA16, the J1939 10-pin connector is installed in production next to the Virtual Technician HU. A J1939 jumper harness is not required. If the vehicle is in this group, continue with step 6.

4. **Install the J1939 harness on pre-EPA2016 vehicles.**

On 4800, 4900, and 6900 models built *before* June 6, 2011, and all 4700 models, a J1939 jumper harness (A06-87079-xxx) must be installed. The location of the terminating resistor depends on the vehicle model:

- On 4800, 4900, and 6900 models, the terminating resistor is located behind the driver-side instrument panel. See [Fig. 4](#).
- On 4700 models, the terminating resistor is located behind the glove box. See [Fig. 5](#).

- 4.1 Remove the 120-ohm terminating resistor from the J1939 backbone connector, located behind the instrument panel.

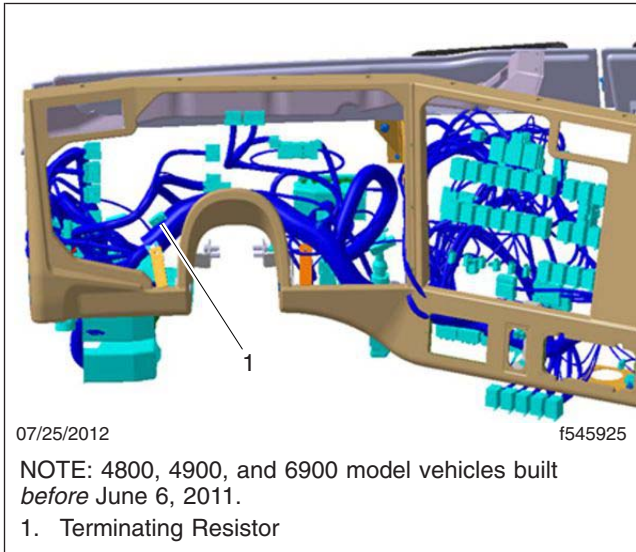


Fig. 4, Terminating Resistor Located Behind the Driver-Side Instrument Panel

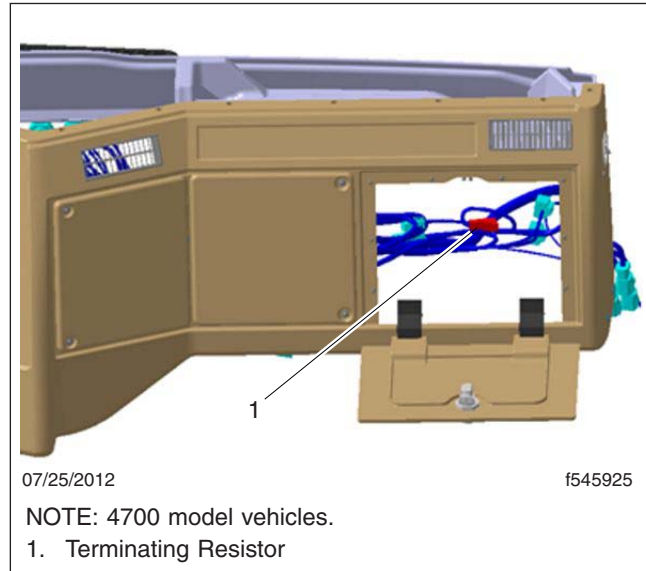


Fig. 5, Terminating Resistor Located Behind the Glove Box

- 4.2 Install the 120-ohm terminating resistor to the 2-pin male connector on the A06-87079-108 harness for 4800, 4900, 6900 model vehicles, and A06-87079-008 for 4700 model vehicles.
- 4.3 Connect the 2-pin female connector from the A06-87079-108 harness for 4800, 4900, 6900 model vehicles, and A06-87079-008 for 4700 model vehicles to the backbone connector where the 120-ohm terminating resistor was originally removed.

NOTE: The Virtual Technician HU 4-pin connector on the A06-82896-000 harness (A06-83364-000 for 4700), and the Virtual Technician HU 10-pin connector on the A06-87079-108 harness (on 4800, 4900, 6900 model vehicles built prior to June 6, 2011), are both routed from below the dash to the VT HU located behind the passenger side glove box. On the 4800, 4900, and 6900 model vehicles built after June 6, 2011, the VT HU 10-pin connector is routed from behind the glove box to the VT HU.

5. Install the J1939 harness on EPA16 and newer vehicles.

- 5.1 Locate the J1939 datalink splice pack. The splice pack is located under the dash, on the right-hand side of the steering wheel. See [Fig. 6](#).

> Constellation
Heritage
> 4700 Models

> 4800 Models
> 4900 Models
> 5700 Models

5900 Models
> 6900 Models

Western Star
Service Bulletin



Fig. 6, J1939 Splice Pack

- 5.2 Remove the terminal lock from the splice pack.
- 5.3 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.
- 5.4 Install the terminal lock on the J1939 splice pack.

NOTE: The Virtual Technician HU 4-pin connector on the A06-82896-000 harness (A06-83364-000 for 4700), and the Virtual Technician HU 10-pin connector on the A06-87079-108 harness (on 4800, 4900, 6900 model vehicles built prior to June 6, 2011), are both routed from below the dash to the VT HU located behind the passenger side glove box. On the 4800, 4900, and 6900 model vehicles built after June 6, 2011, the VT HU 10-pin connector is routed from behind the glove box to the VT HU.

6. Install the Virtual Technician HU.

- 6.1 Record the GPS ID, VIN, and ESN from the label on the back side of the new Virtual Technician HU.
- 6.2 Remove the passenger side glove box.
- 6.3 Install the VT HU mounting bracket 06-82953-000, using four 6 x 5/16 screws, between the glove box and the inside dash wall. See A18-52930, page 2, View A.
- 6.4 Snap the VT HU into the mounting bracket.
- 6.5 Connect the 4-pin connector from the A06-82896-000 (A06-83364-000 for the 4700) to the VT. See [Fig. 7](#).

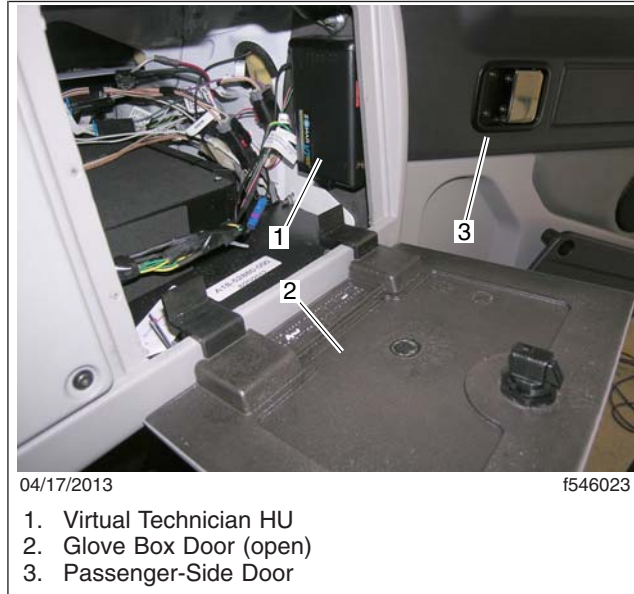


Fig. 7, Virtual Technician HU, Installed

- 6.6 Connect the VT HU 10-pin connector from the A06-87079-008 harness (4700 model vehicles), A06-87079-108 harness (4800, 4900, 6900 model vehicles built prior to June 6, 2011), or factory-installed dash harness (4800, 4900, 6900 model vehicles built after June 6, 2011) to the VT.
- 6.7 Screw on the GPS antenna cable to the threaded GPS label connection.
7. **Verify the installation of the Virtual Technician HU.**
 - 7.1 Connect the batteries.
 - 7.2 If no LEDs light up with the ignition ON, diagnose supplied power and ground to the unit. See [Fig. 8](#) and [Table 2](#). There are seven LEDs visible on the VT module. 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.
 - 7.3 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.
 - 7.4 Install the passenger-side glove box.
 - 7.5 Install the instrument cluster, the CB radio, the front switch panel, and the passenger-side lower kick panel, and any other devices or panels that were removed.

> Constellation
Heritage
> 4700 Models

> 4800 Models
> 4900 Models
> 5700 Models

5900 Models
> 6900 Models

Western Star
Service Bulletin

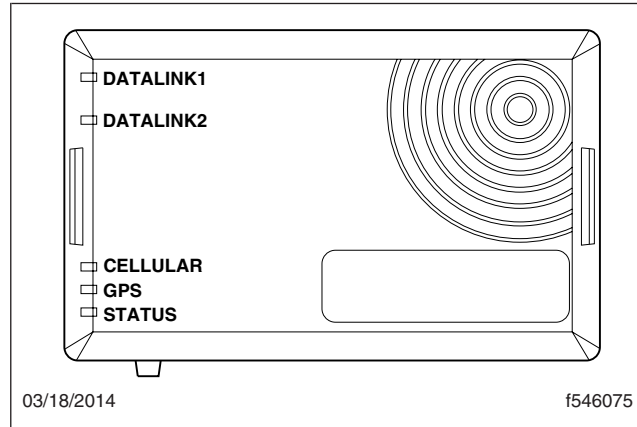


Fig. 8, Virtual Technician HU LEDs

| Diagnostic LEDs | | | |
|-----------------|-----------------|---|---|
| Name | Color | Function | Action |
| Datalink1 | Red | Red Flash (1Hz): 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 | Red Flash (1Hz): J1939 connectivity. No J1939 activity detected (device is awake). Green Flash (1Hz): J1939 activity detected (device is awake) . | Green flash is expected with the ignition ON; if the LED is flashing red, diagnose J1939 connectivity issue. |
| Cellular | Amber | Solid: GSM connection successful. One Flash: Initializing. Two Flashes: Acquiring time zone information. Three Flashes: Attempting to make a GSM connection. | Solid is expected – if otherwise call the Customer Support Center for further instruction. NOTE: The VT must be in a network service area. |
| GPS | Green or Amber* | Solid: Satellites acquired. One Flash at 1 Hz: Acquiring satellites. | Refer to J1939 Fault codes if a problem is suspected. |

| Diagnostic LEDs | | | |
|-----------------|-------|--|---|
| Name | Color | Function | Action |
| Status | Green | <p>Solid: Engine running.</p> <p>One Flash at 1 Hz: Engine not running; no data to send.</p> <p>Two Flashes at 1 Hz: Data is available to be sent.</p> <p>Four Flashes at 1 Hz: 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

Warranty

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