



Lytx® ER-SV2 Freightliner Connection Guide

Last Updated: March 20, 2018

This document is to be used in addition to the Lytx® ER-SV2
Installation Instructions – Heavy Duty Vehicles.

Lytx, Inc.

THE DEVICE SHOULD BE INSTALLED AND MAINTAINED BY QUALIFIED TECHNICIANS. Only a properly qualified technician should install and maintain the ER-SV2. Any electrical work should be performed only by an ASE (minimum T6 & L2), MECP or equivalent certified technician with an expertise in installing and troubleshooting advanced vehicle onboard components including multiplexed circuits. Lytx, Inc. disclaims all responsibility for any damages arising from improper installation and maintenance of the ER-SV2.

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Attention!

This is not a standalone document. It is only intended to be used in conjunction with the ER-SV2 Installation Instructions – Heavy Duty Vehicles (“ER-SV2 HDV Guide”). If you do not have the ER-SV2 HDV Guide, do NOT proceed with installation until you also obtain and read the ER-SV2 HDV Guide from Lytx, Inc. U.S. Technical Support Center at 866.910.0403 or support@lytx.com

Note: Always check to make sure you have the most current guide from Lytx® before beginning any installation work. If you are installing the ER-SV2 on a model vehicle that is not covered by this guide or a model vehicle that has new connection options not shown in this guide, please contact Lytx US Technical Support Center at 866.910.0403 or email support@lytx.com and obtain the necessary guides before beginning installation.

Note: If you find any updates to recommend for this guide or an option available for use on other models or years of vehicles, please email installfeedback@lytx.com.

SAFETY INSTRUCTIONS

Installation Safety Warnings

This Connection Guide is a supplement to the ER-SV2 HDV Guide. All instructions, precautions, and warnings in the ER-SV2 HDV Guide must be followed when using this supplement. Read and follow the instructions and precautions in the ER-SV2 HDV Guide, this Connection Guide, and all documents referenced therein when installing the ER-SV2.

Read and follow the instructions and precautions in this guide and all documents referenced in this guide when installing this device. Always refer to the vehicle manufacturer's service manual for proper installation and wiring of any aftermarket devices, including the Lytx device. Failure to do so may result in property damage and/or personal injury.

WARNING: Park the vehicle on a level surface before beginning any maintenance or installation. Block the wheels to prevent the vehicle from moving. Never work under a vehicle supported only by jacks as jacks can slip and fall over.

EXPLOSION HAZARD: Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

WARNING: Substituting or supplementing components may impair suitability and performance. If you are missing any components contact Lytx Technical Support Center at 866.910.0403 or email support@lytx.com.

WARNING: Wear safe eye protection to prevent serious eye injury when you perform vehicle maintenance or service.

THIS GUIDE IS NOT A SUBSTITUTE FOR A QUALIFIED TECHNICIAN.

THE DEVICE SHOULD NOT INTERFERE WITH THE VEHICLE'S COMPUTER SYSTEMS. The Lytx device interfaces with the vehicle's computer systems to capture data for safety analysis. However, it should not interfere with any of the vehicle's computer systems. If there is a malfunction of the vehicle's computer systems after installation, contact Lytx Technical Support Center at 866.910.0403 or email support@lytx.com immediately. Lytx recommends that you do not drive the vehicle until the malfunction is resolved. Lytx, Inc. disclaims all responsibility for any damages arising from improper installation and maintenance of the device.

WARNING: Some countries/regions have adopted laws that restrict locations where objects can be attached to the vehicle windshield. Always refer to any applicable federal,

state, provincial and local laws that concern mounting devices on vehicle windshields or other locations in a vehicle before choosing a mounting location.

Driver Safety Warnings

WARNING: In order to reduce the potential danger of injuries, the driver and front passenger must always be correctly seated with seat belts correctly fastened when operating the vehicle.

DISCLAIMER: The Lytx Event Recorder is a driver aid only, not a substitute for a safe, conscientious driver. The Lytx Event Recorder cannot compensate for a driver who is distracted, inattentive or impaired by fatigue, drugs or alcohol. Whether or not the Lytx Event Recorder is in use, it is always the responsibility of the driver to take appropriate corrective action. Never wait for the device to provide a warning before taking measures to avoid an accident. Failure to do so can result in serious personal injury or death or severe property damage.

Always, it is the driver's responsibility to:

- Use safe driving techniques
- Exercise proper judgment
- Maintain a safe speed and distance between vehicles
- Take measures to avoid an accident
- Comply with all applicable laws and regulations

WARNING: In certain conditions, including inclement weather, low visibility, certain road conditions (including poor lane markings, construction zones, dirt roads, heavy or complicated traffic, and curvy and winding roads), the Lytx Event Recorder may have limited to no functionality. The Lytx Event Recorder may not detect certain objects such as motorcyclists, bicyclists or pedestrians even in the most ideal conditions. Always keep the lens and view of the Lytx Event Recorder unobstructed and properly calibrated so as not to inhibit function. Driving in certain conditions or any interference with the Lytx Event Recorder can result in false, few or no warnings. The driver must always monitor traffic and surroundings and take measures to avoid an accident; failure to do so can result in serious personal injury or death or severe property damage.

WARNING: If the Lytx Event Recorder is not functioning properly at any time, please contact your supervisor and have the device inspected immediately to correct the issue. Whether or not the Lytx Event Recorder is functioning, it is the driver's responsibility to maintain vehicle control; failure to do so can result in serious personal injury or death or severe property damage.

Adherence to Applicable Local, State and Federal Laws

WARNING: Some jurisdictions have adopted, or may in the future adopt, laws that prohibit objects from being mounted on a vehicle's windshield or other locations in a vehicle. You are responsible for complying with such laws, and Lytx, Inc. does not accept responsibility for your failure to do so.

USA Federal Communications Commission (FCC) Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications to this product not expressly approved by Lytx, Inc. could void the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

It is recommended that the antenna must not be co-located or operating in conjunction with any other antenna or radio transmitter.

Canada – Industry Canada Notice

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

To prevent radio interference to the licensed service, this device must be operated indoors only and should be kept away from windows to provide maximum shielding.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil est conforme aux normes RSS exemptes de licence d'Industrie Canada. Son utilisation est soumise aux deux conditions suivantes: (1) Cet appareil ne doit pas causer d'interférences nuisibles et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences susceptibles de provoquer un fonctionnement indésirable.

Pour éviter les interférences à des services radio autorisés, cet appareil doit être utilisé uniquement à l'intérieur et doit être tenu à l'écart des fenêtres afin de fournir un blindage maximal.



Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Wiring Safety Warnings

WARNING: Only approved wire connection methods are recommended. Refer to the vehicle manufacturer's service manual to determine if soldering, sealing crimp connections, Add-A-Circuit, Posi-Tap, sealing butt connections, or OEM connections to open connection ports are approved. Never use plier tap products such as insulation displacement connectors (i.e. ScotchLoc connectors) when installing the Lytx event recorder.

WARNING: Never wire the Lytx event recorder in a manner that shares a connection with another aftermarket product in the vehicle. Independent connections should always be used.

WARNING: All wires that carry electrical current to the Lytx device must be fused. Failure to fuse the power, ground, and ignition wires can lead to serious personal injury and/or property damage. If any wires or cables containing fuses/fuse boxes need to be cut or otherwise shortened, always be certain to replace such fuses/fuse boxes or install new ones.

WARNING: Wire Protection: Take all necessary measures to protect all wire runs through a metal surface with a grommet or other device and all wire runs outside the vehicle cab with a loom. Always protect against wire fatigue and harness abrasion by properly attaching wires at closely spaced intervals, while avoiding contact with sharp edges or doing anything else that might result in exposed wires. All wires should be secured with tie wraps at least every one foot (30 cm/300 mm) or less. Do not over-tighten any tie wraps.

WARNING: Cable Routing: Make certain that neither the cable nor your installation activities interferes with any airbag-related mechanisms or otherwise risks affecting airbag deployment. Consult the vehicle manufacturer for the location of any airbag sensors and systems and restrictions that may apply.

WARNING — ALWAYS test the other vehicle components on the power circuit of the ER-SV2 to confirm their functionality, especially if the circuit is shared. All active faults in the vehicle system, other devices, and the ER-SV2 must be resolved prior to completing the installation.

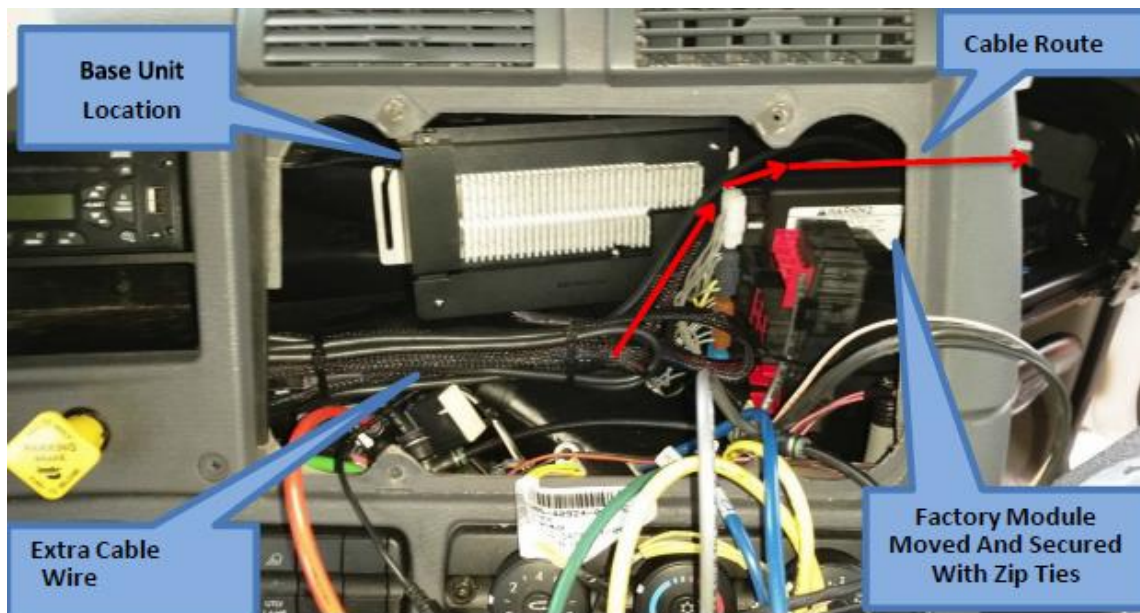
Base Unit Installation

See the ER-SV2 HDV Guide for details on selecting a mounting location and mounting the ER-SV2. Below are some options for mounting locations that have been used, including installing the Base Unit under the passenger seat, under the driver seat, or within the dashboard of the vehicle.

1. **Cascadia Classic:** Behind the center console



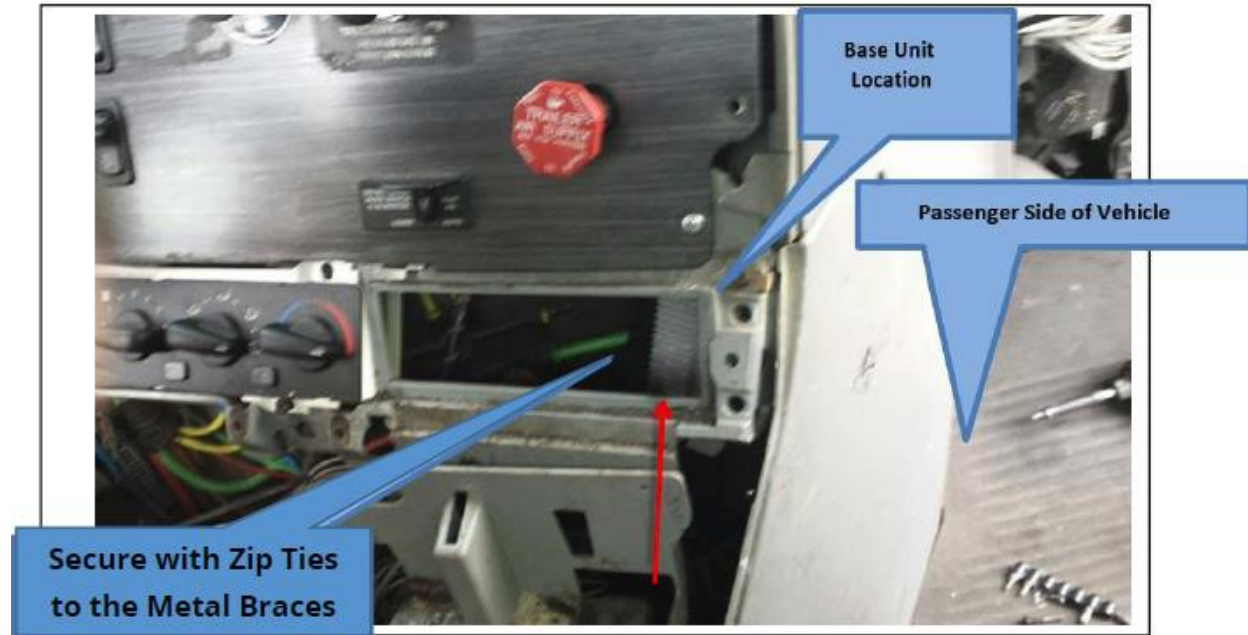
2. **Cascadia Classic (Alternative):** Behind the center dash panel



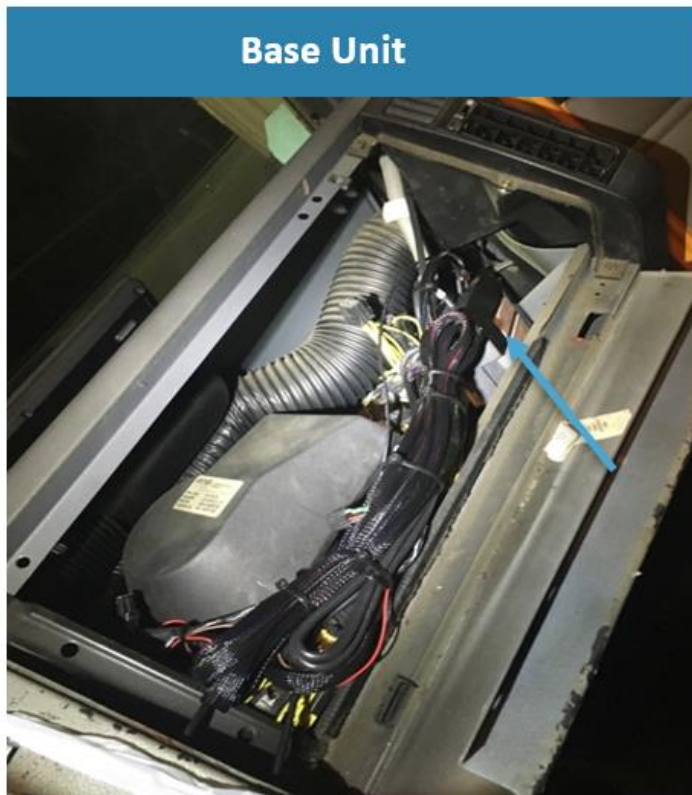
3. **2018+ New Cascadia:** Mount behind fuse panel in the rack, using zip ties to secure.



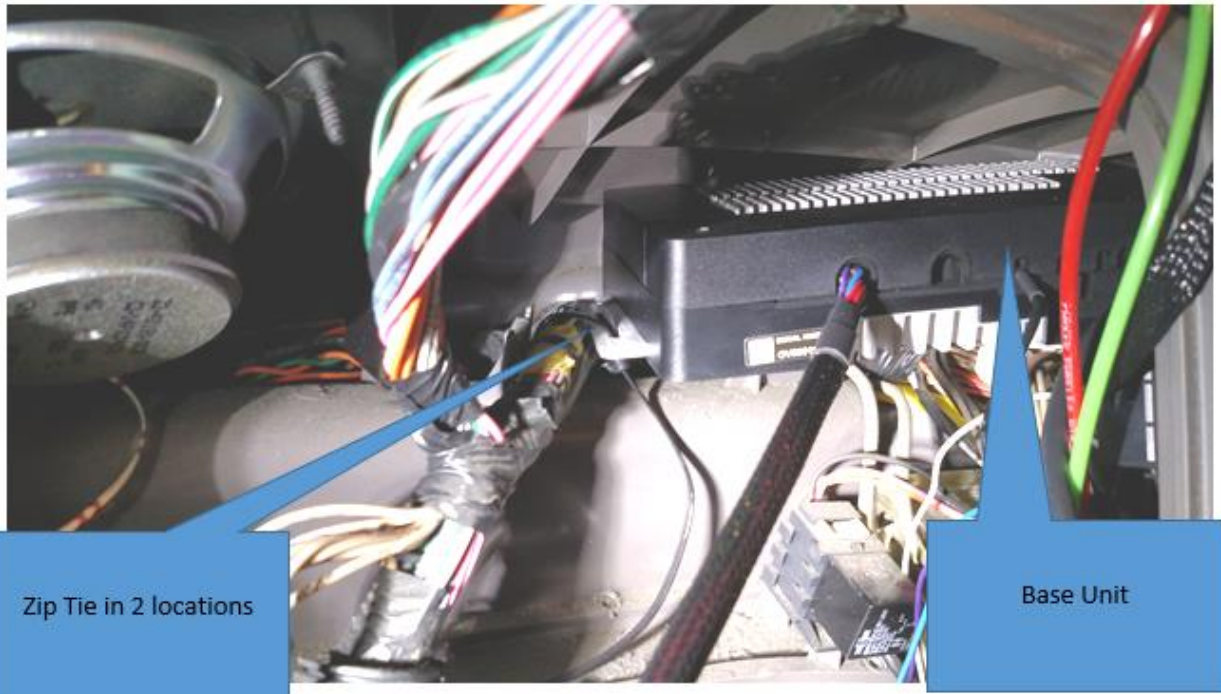
4. **2004-2009 Columbia:** Behind the center of the dash below the parking brake and next to the heater controls. A light grey panel is removed to access the location.



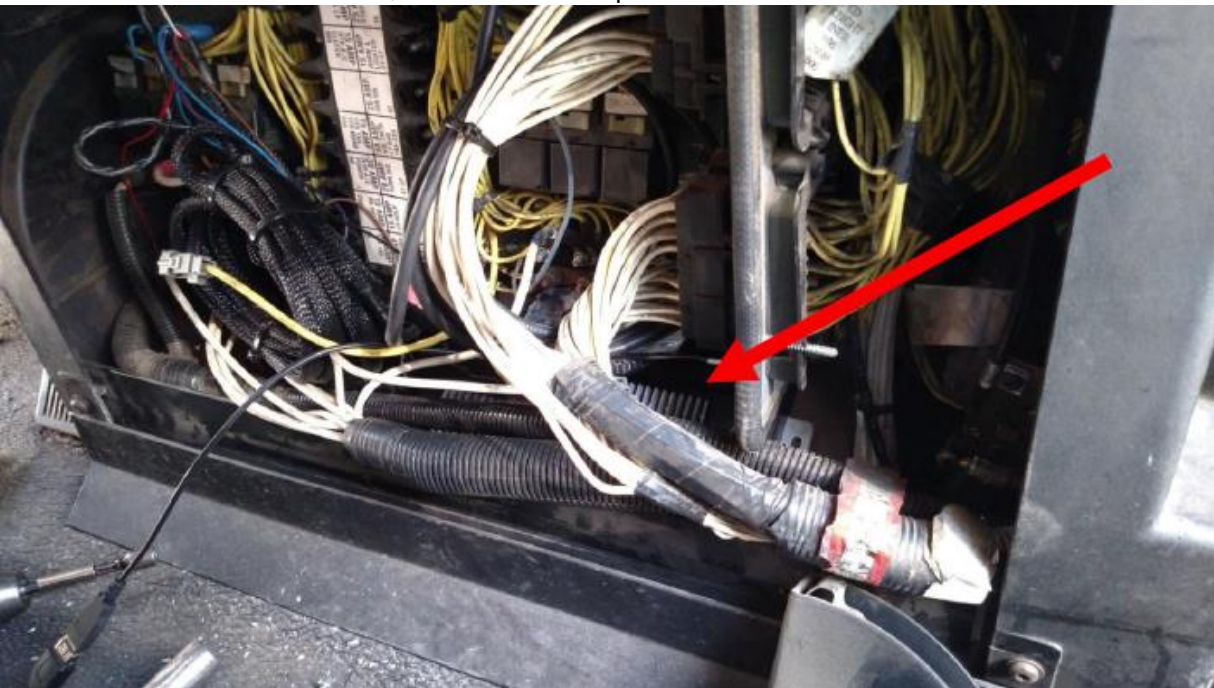
5. **2000-2003 FL70:** Behind the center of the dash on the passenger side. Remove the dash panels with care to access this area of the tractor.



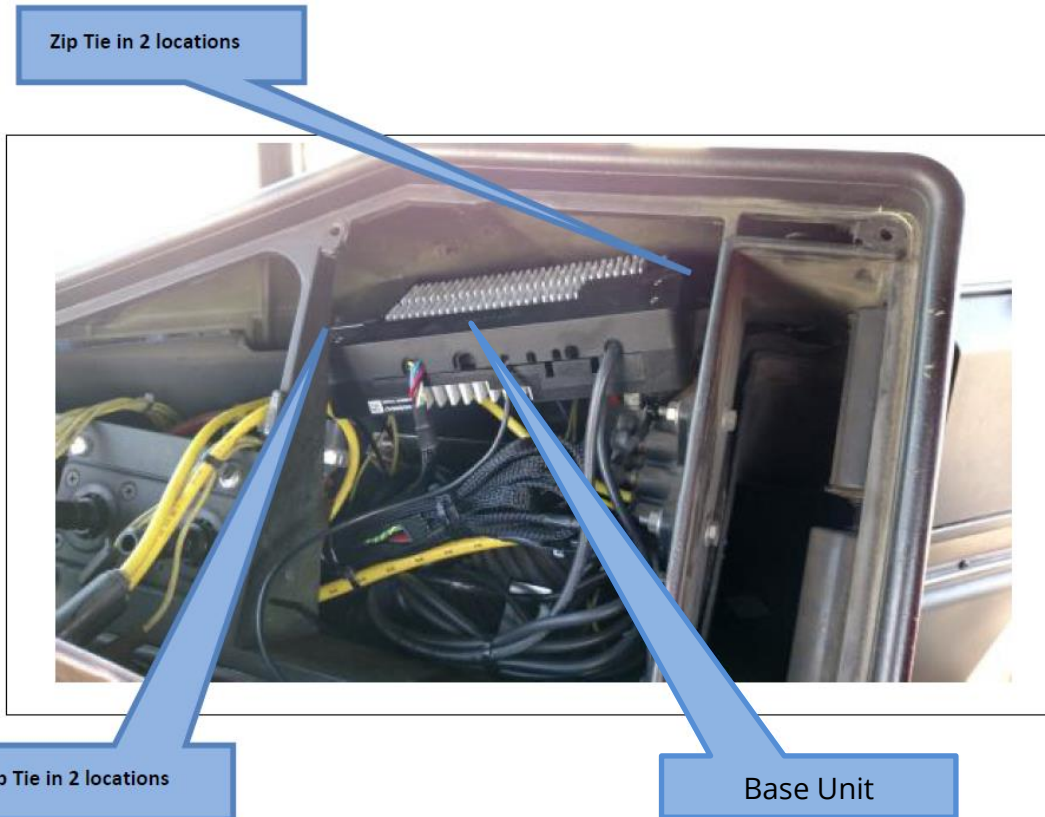
6. **2009 M2:** Behind the center of the dash.



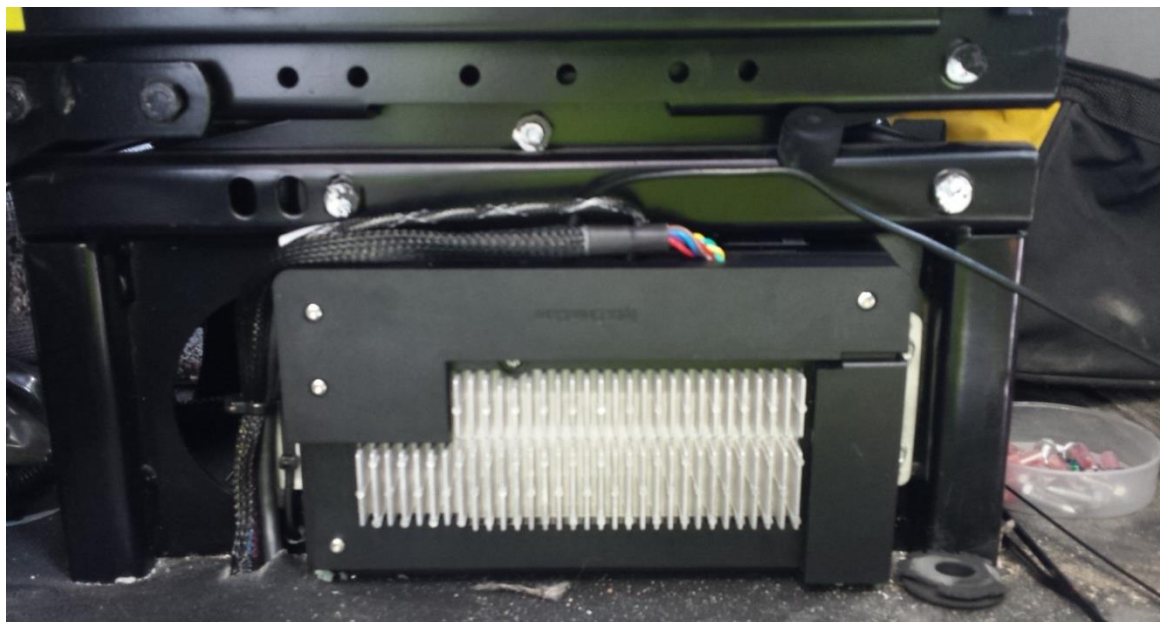
7. **2001 Classic:** On the floor, below the fuse panel



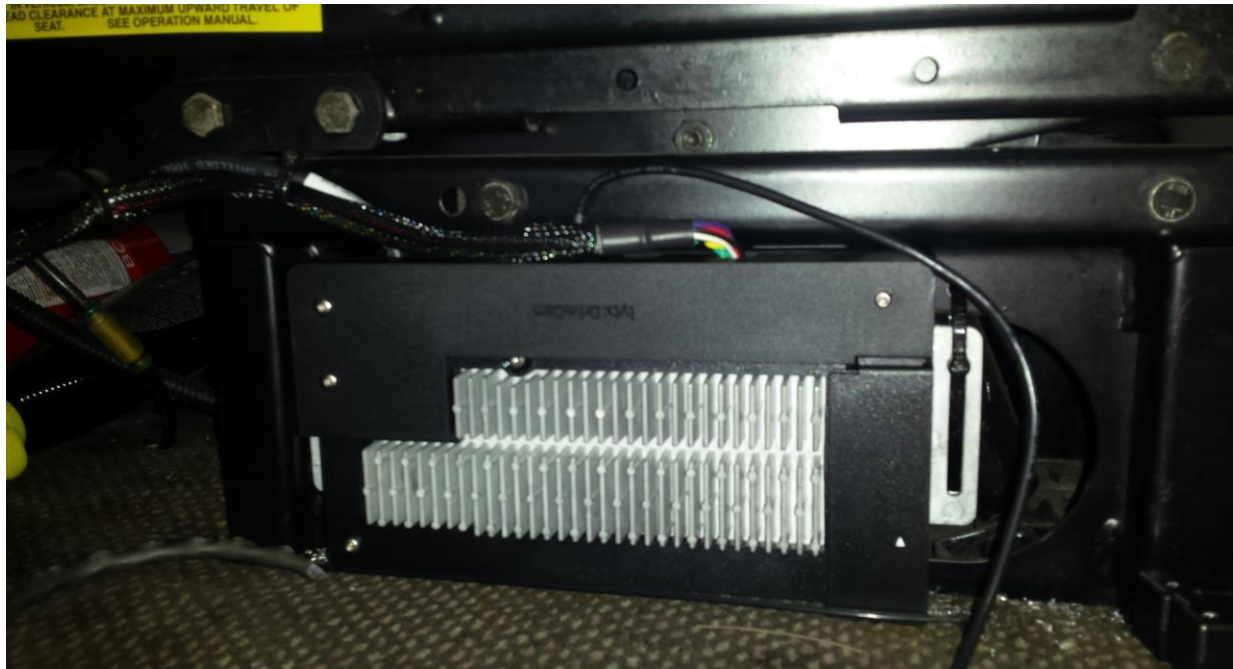
8. **1996-2003 D112:** Behind the center of the dash.



9. **2010-2013 Coronado Glider (Columbia upgrade):** Alongside seat base.



10. **2002 Century:** Alongside the seat base.



Window Unit Placement

See the ER-SV2 HDV Guide for critical information on Window Unit mounting prior to mounting the Window Unit. The Window Unit is typically mounted near the center of the windshield on the passenger's side, with the bottom of the bracket placed in the "allowed" locations as described in the ER-SV2 HDV Guide. The road-facing camera must have a view through the wiper path to operate properly. The interior-facing lens must not interfere with or be able to be blocked by sun visors. Below are examples, including models where Window Unit placement is critical due to the specifics of the vehicle.

1. Typical Freightliner Window Unit Placement.



2. **2018+ New Cascadia:** Mounted using template, to the left of center, allowing the interior-facing lens to view below the extended sun visor.



3. **2000-2003 FL70:** Mount the Window Unit just to the right of the center of the windshield, so that it just clears the drivers visor when it is fully down.

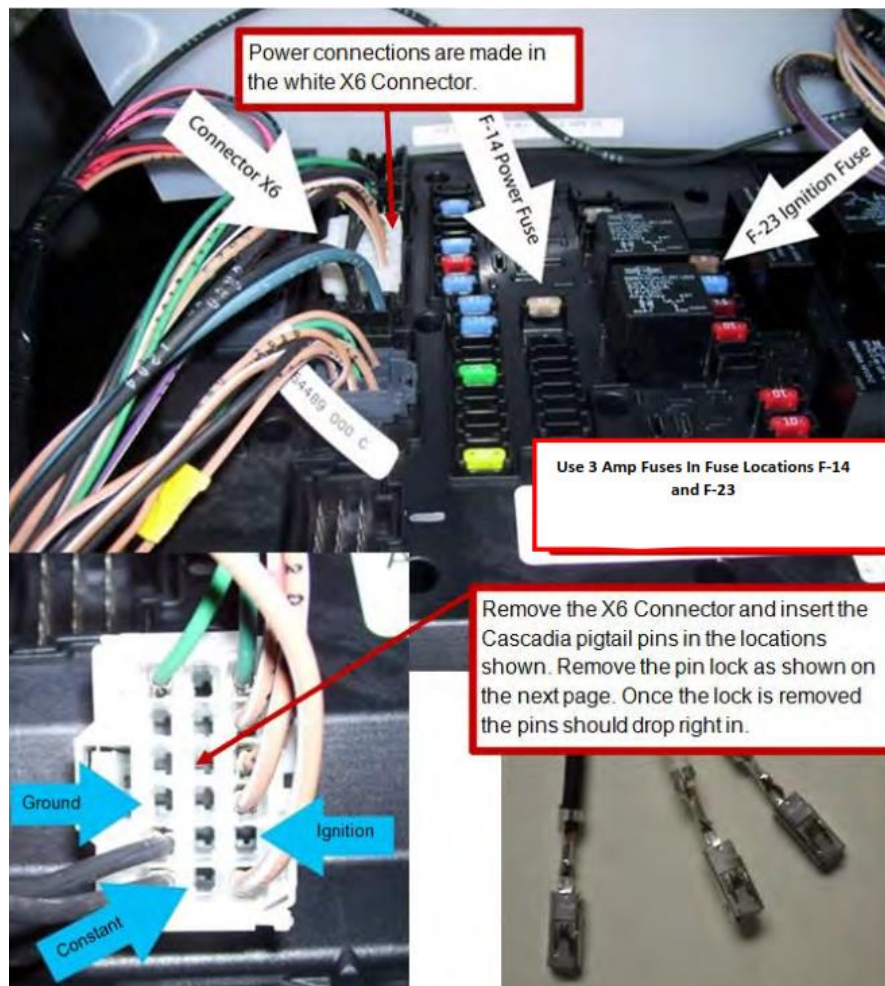


Wiring Installation

WARNING — Only a properly qualified technician should install and maintain the ER-SV 2. Any electrical work should be performed by an experienced technician that has the ability to install and troubleshoot advanced vehicle onboard components including multiplexed circuits. **Always test connections with a meter.** Note that you may have to use an extended power harness running under the hood to bypass the battery disconnect switch. The following photos show the locations where the connection points have been found on various models. Where applicable, we have identified the model year vehicle. Other model year vehicles may have similar installation points.

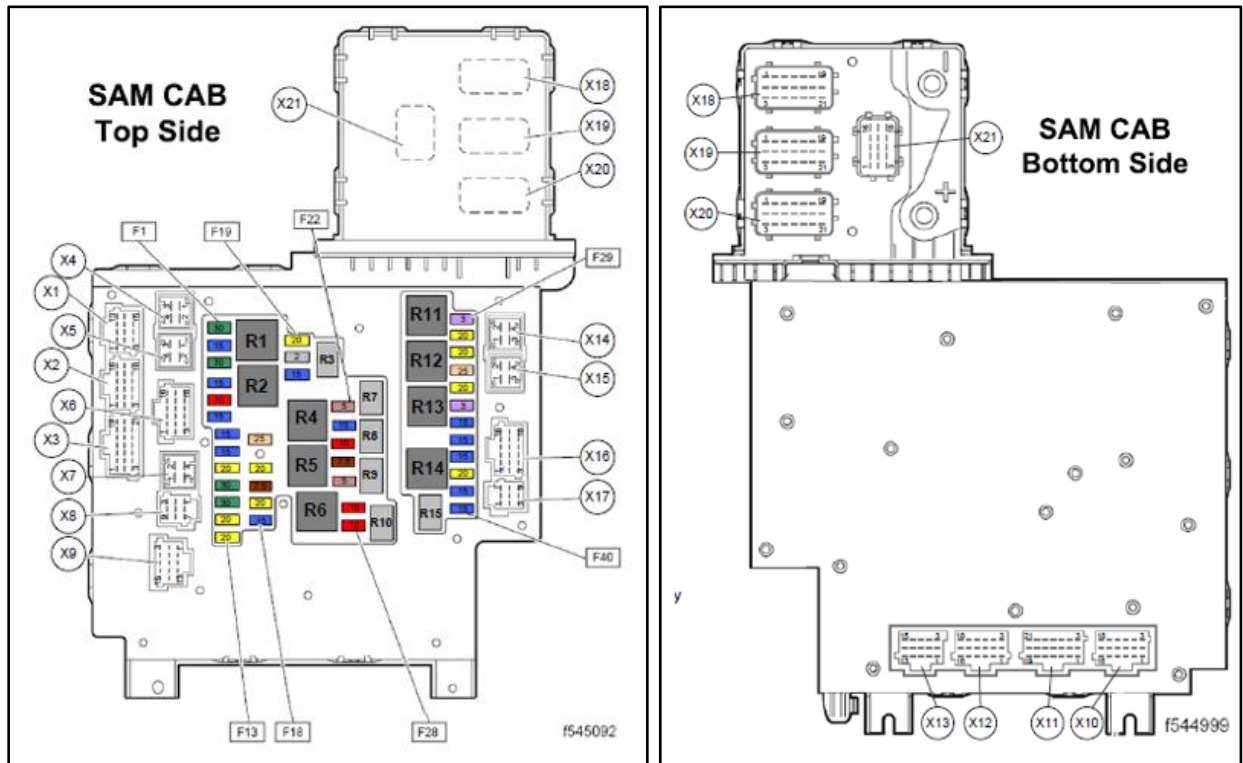
Power, Ground and Ignition Locations

1. **Cascadia Classic:** Connections point are located by the fuse panel which is located under the glove box on the passenger side of the truck.



Cascadia Constant Power, Ignition, and Ground connections

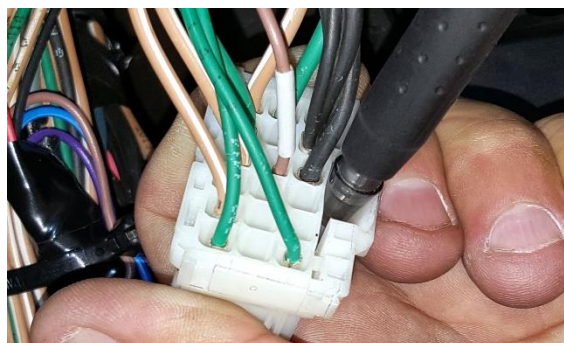
2. **Cascadia Classic (Alternate):** There are multiple options to the ones shown above. If required, the following [plug]/[pin] (fuse) locations can be used. Always check state, provincial and local laws and the vehicle manufacturer's service manual that may require use of another location.



Power: X17/7 (F-37)

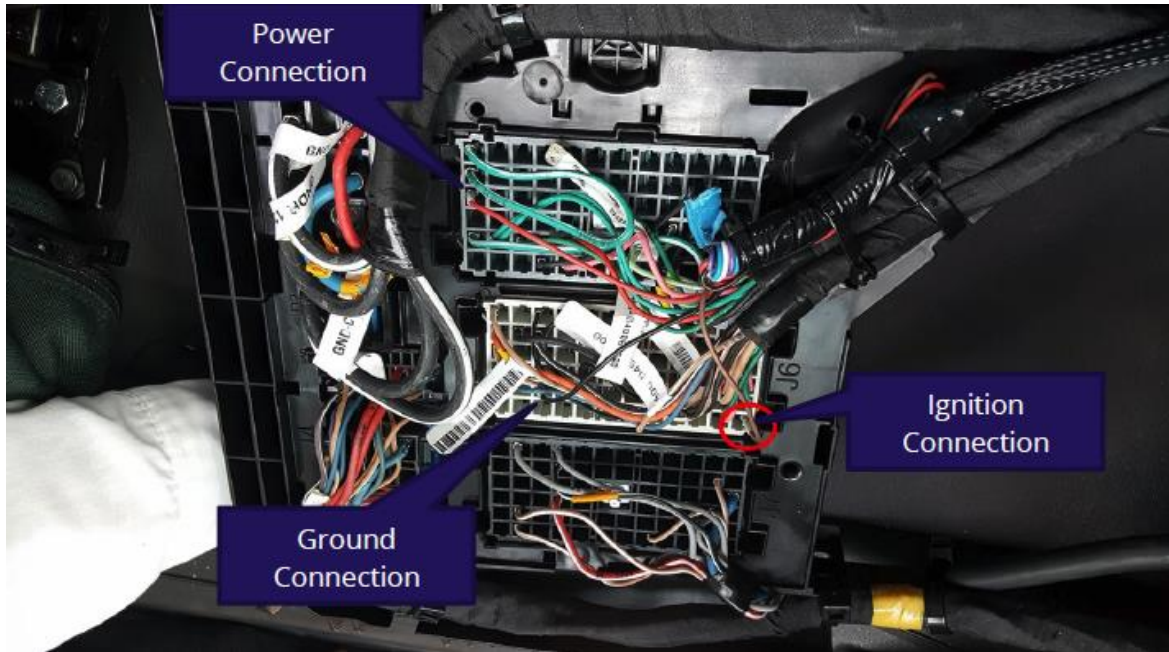
Ignition: X6/8 or X10/1

Ground: X17/6



Note: Using an ink pen to “open” these plugs will allow the pins to slide into place. Verify pin orientation before insertion.

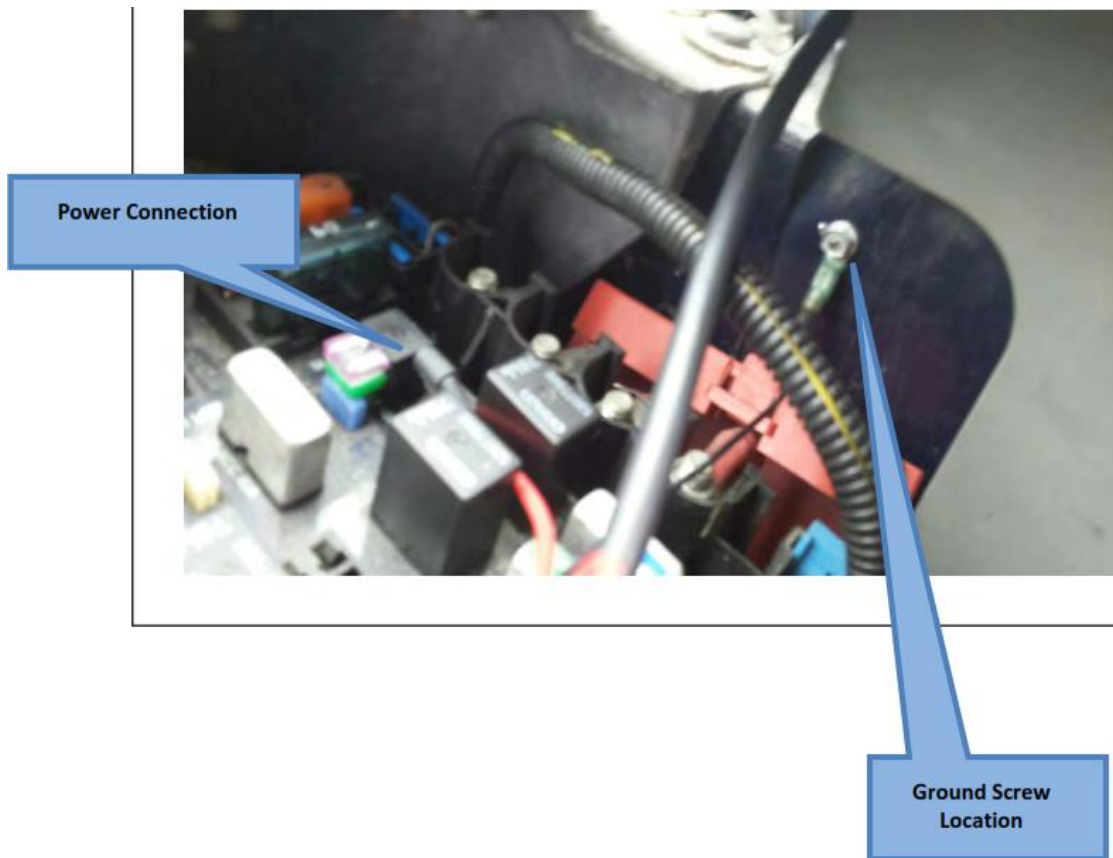
3. **2018 New Cascadia:** Power can be found on Plug J5, Pin C12. Fuse 53 is the corresponding fuse (use 5A). Ignition can be found on Plug J6, Pin F1. Fuse 46 is the corresponding fuse (use 1A). Ground can be found on Plug J6, Pin E10. Alternatively a ring terminal screwed to the vehicle chassis may be used.



5. **2004-2009 Columbia:** Connections are made by the fuse panel which is located on top of the dash.



2004-2009 Columbia Power and Ignition connection points



6. **2000-2003 FL70:** Connection points can be found behind the lower left kick plate.



Power Connection
Ring Terminal

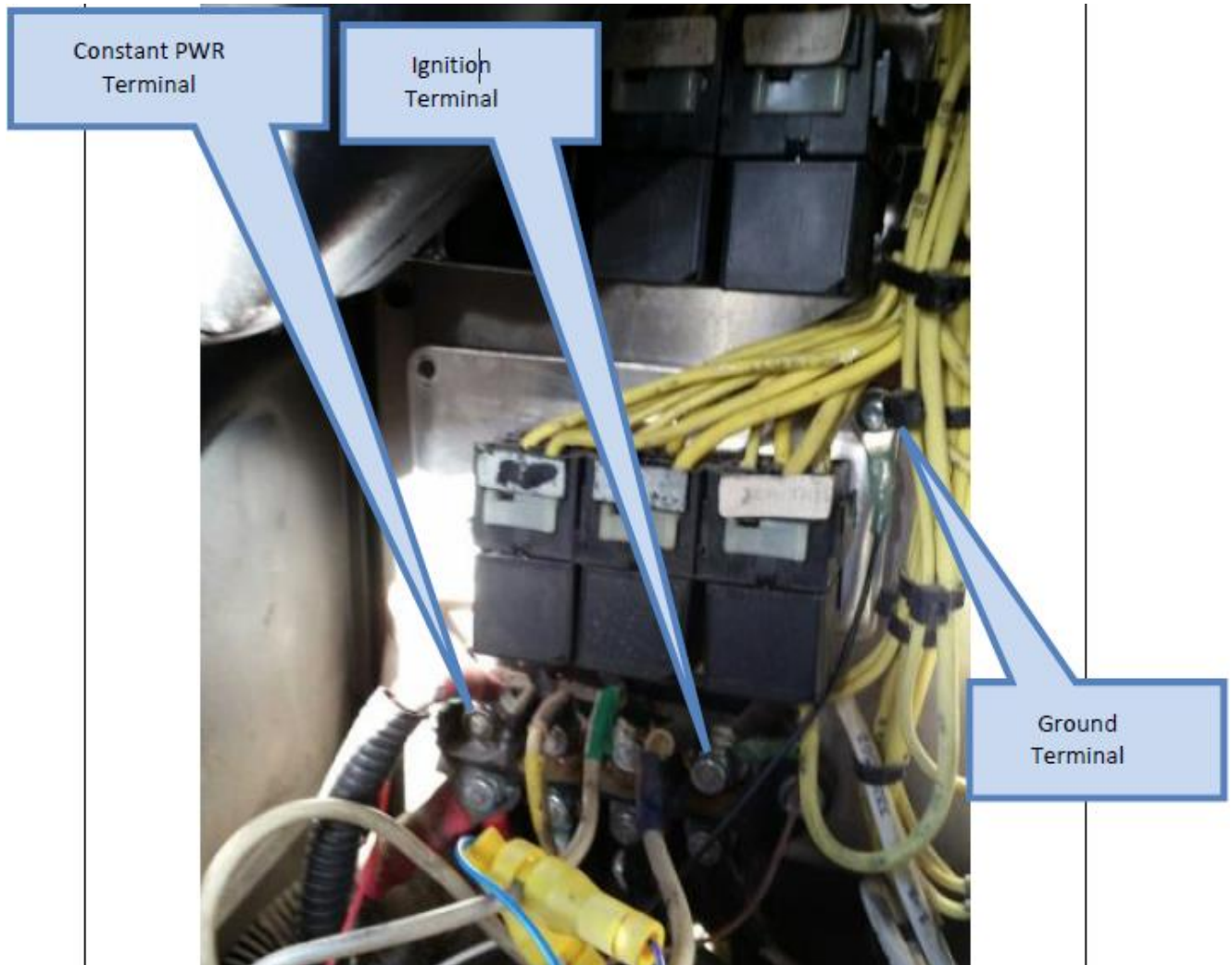
Ground Connection
Ring Terminal



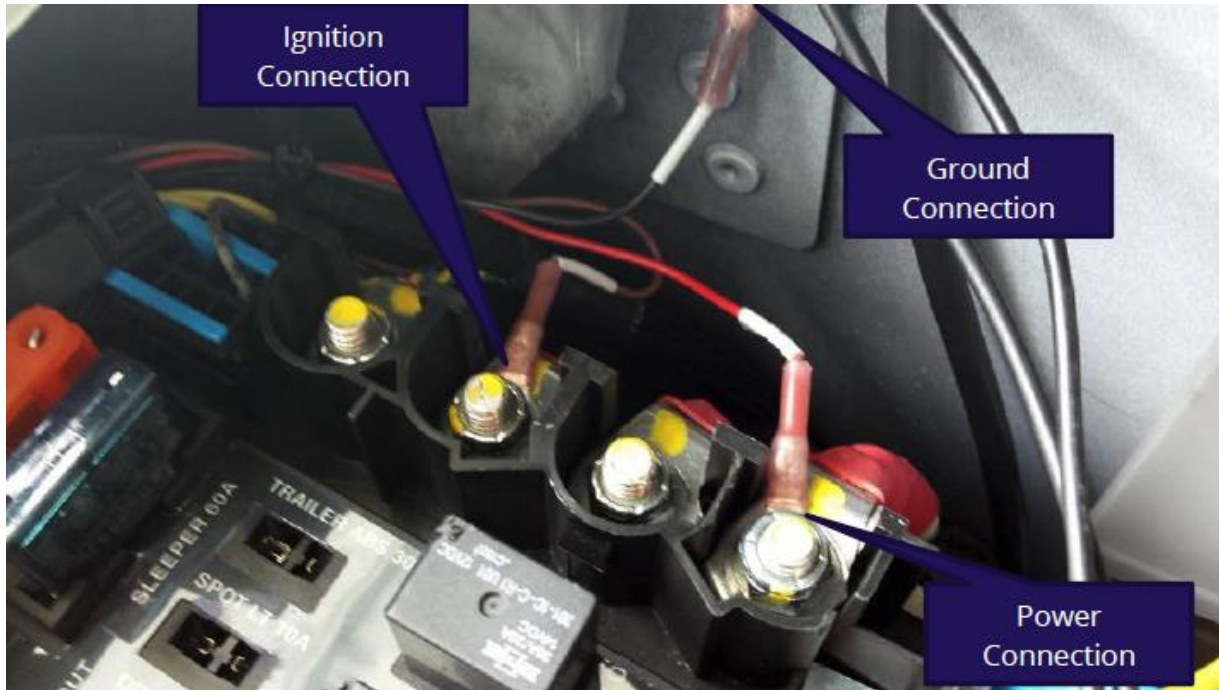
Ignition Connection
Add-A-Circuit /
3 amp fuse

2003 FL-70 Power, Ground and Ignition Connection Points

7. **1996-2003 D112 and Classic:** Connection locations are in the lower center of the dash. Power connections are made via ring terminal connectors.



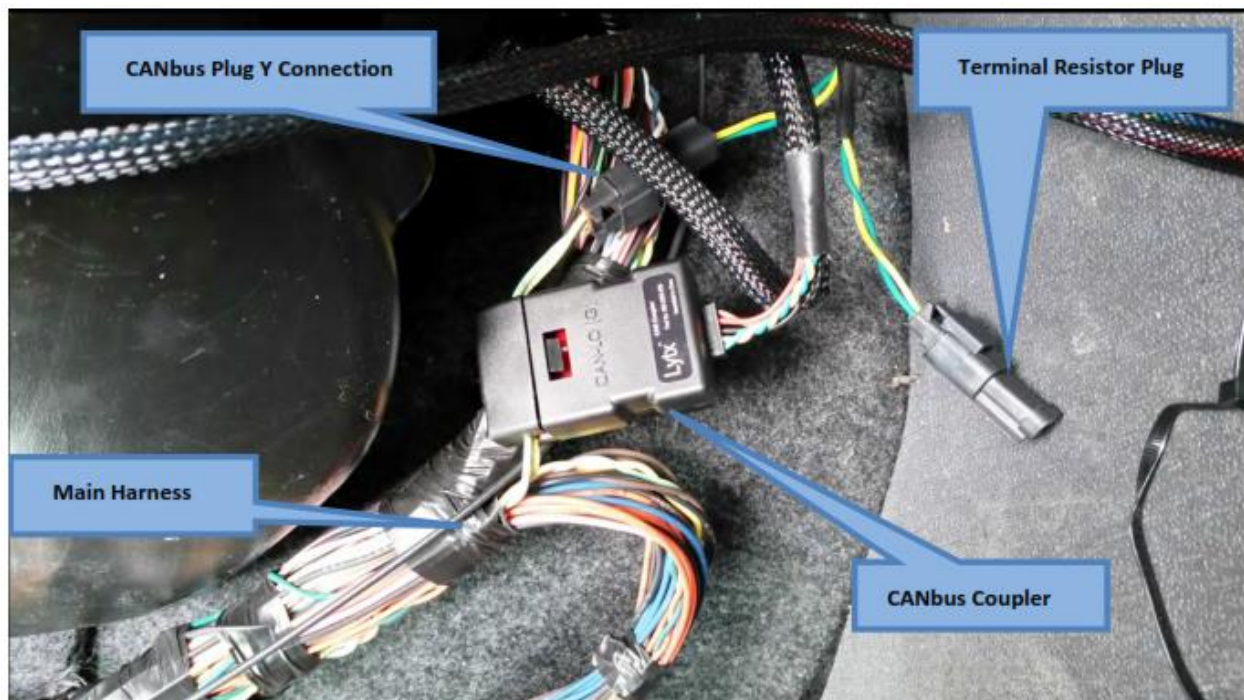
8. **2010-2013 Coronado Glider (upgraded from a Columbia):** Connection locations are near the fuse panel, below the passenger side dash cover. Ground is connected via ring terminal and self-tapping screw.



Vehicle Data Bus Connection

Class 8 vehicles 2008 and newer will have J1939 standard vehicle data bus (green and yellow twisted pair) which is read via the CAN Coupler. Some 2006 and 2007 vehicles will also have J1939 available, but must be tested via the Lytx Installation Tool for engine speed. Vehicles 2007 and older will have J1708 vehicle data bus and must be physically tapped into. See the ER-SV2 HDV Guide for further information. For J1939 vehicles, after the CAN Coupler is in place, use the Lytx Installation Tool to test for brake signal over the vehicle bus. If present, the physical brake signal connection will not be required.

1. **Cascadia Classic:** The CAN bus coupler is attached to the J1939 backbone before the backbone wires enter into the Y-connector and terminal resistor plug as shown below. This connection is below and to the left of the fuse box. Note: the braking signal information is available on the Bus. There is no need to connect a GIO for brake signal.

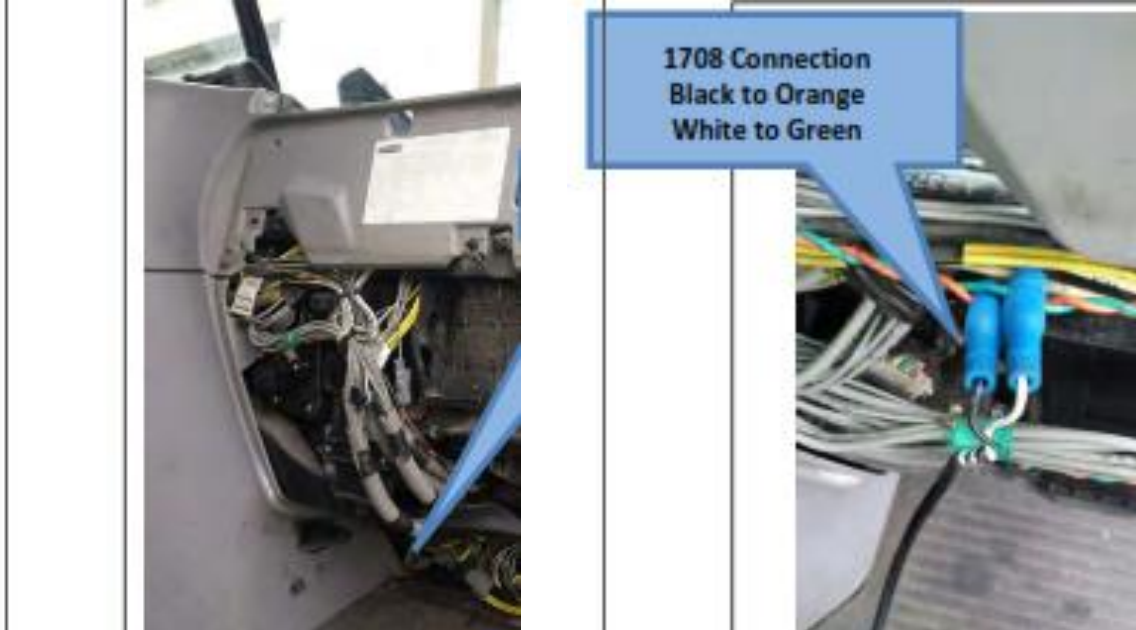


Cascadia J1939 connection

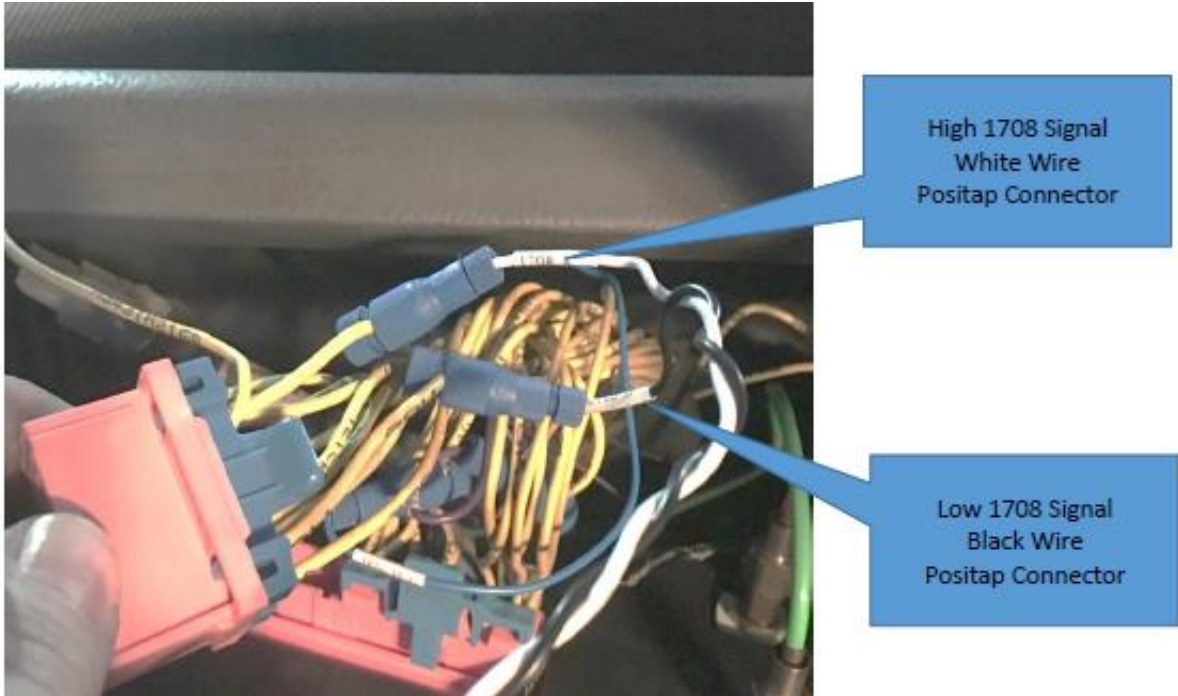
2. **2018+ New Cascadia:** The CAN bus coupler is attached to the J1939 backbone behind the fuse panel by the Base Unit mount.



3. **2004-2009 Columbia:** The J1708 harness is connected to the J1708 bus via Posi-Taps.



- 2000-2003 FL70:** The J1708 connections will be found on the back of the gauge cluster. The J1708 cables are a twisted pair and must be tested for voltage to confirm High and Low signals.

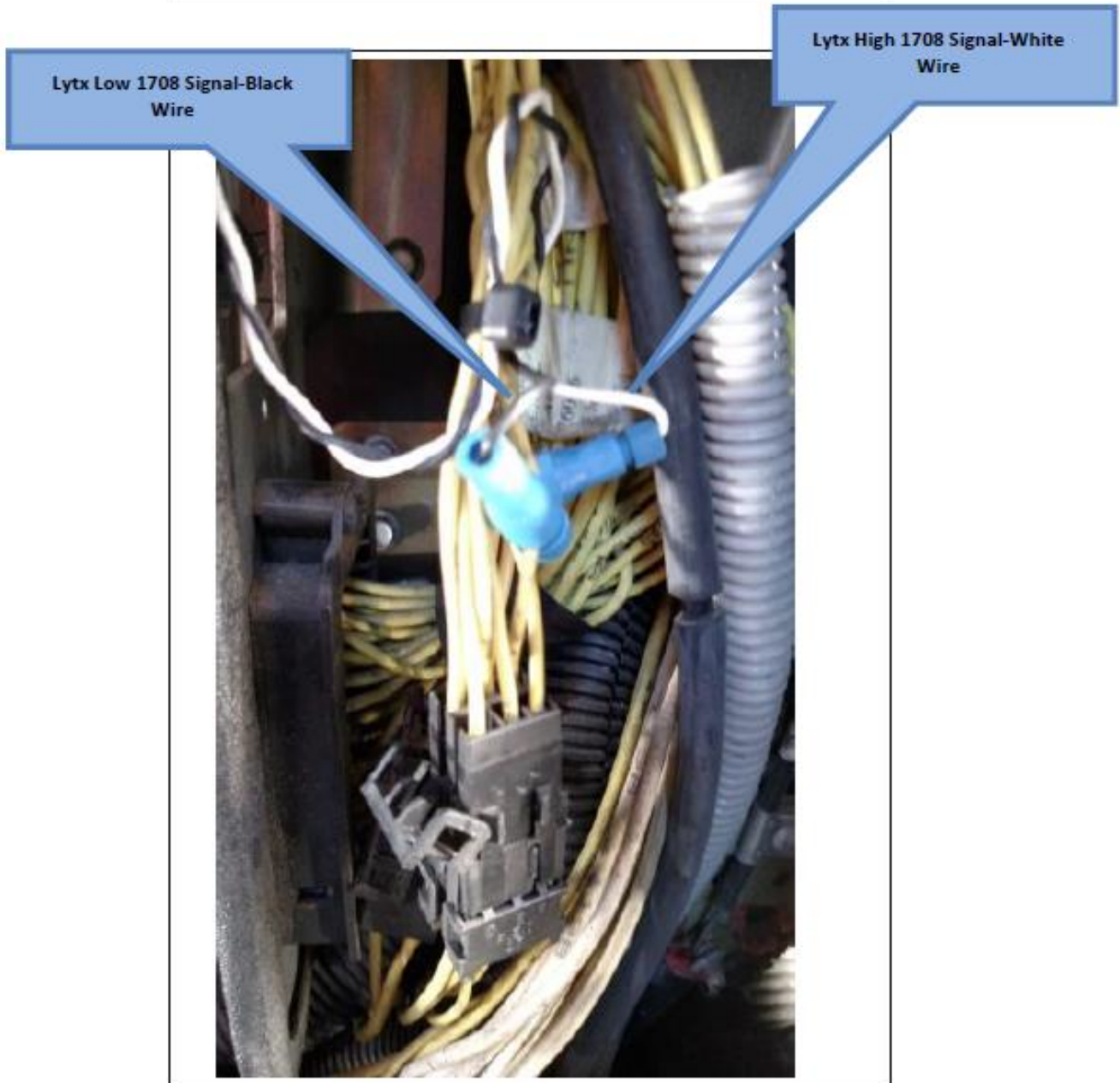


- 2009 M2:** The J1939 connections will be found on the back of the gauge cluster. Use a CAN bus coupler.



6. **1996-2003 D112:** The J1708 connections are on the right hand side of the fuse panel; this is the location of the 6-pin connector. Use the Posi-Tap connection method.

THERE ARE 6 YELLOW WIRES COMING OFF THE PLUG. IT IS IMPERATIVE THAT YOU TEST FOR HIGH AND LOW ON EACH WIRE FOR 1708.



7. **1996-2003 Classic:** The J1708 connections are made near the diagnostic port using Posi-tap connectors. Always test J1708 wires for high and low. See the ER-SV2 HDV Guide for details.



8. **2010-2013 Coronado Glider (upgraded from a Columbia):** The J1708 connections are made below the fuse panel at the orange and green twisted pair. Green is connected to the J1708+ (HI) white wire and Orange is connected to the J1708- (LO) black wire. Always test J1708 wires for HI and LO.



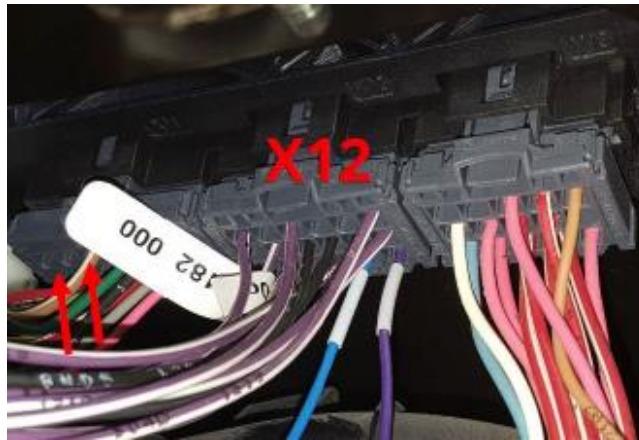
9. **2002 Century:** J1708 twisted pair is found in the lower passenger side footwell below the HVAC motor. Always test J1708 wires for HI and LO.



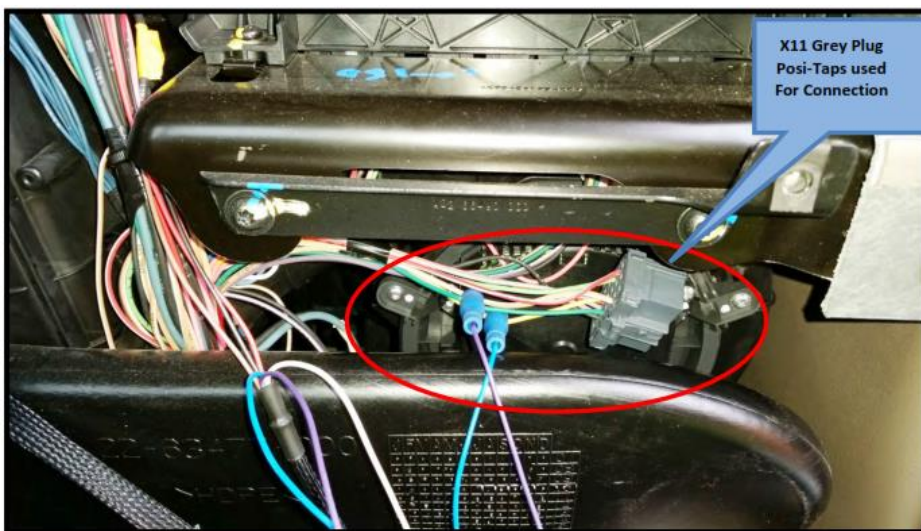
Turn Signal Connections

Turn signal connections are made from the input wires to a turn signal wire on the vehicle that cycles between 0V and 12V/24V when activated. **Always test connections with a meter.** The following photos show the locations where turn signals have been found on various models. Where applicable, we have identified the model year vehicle. Other model year vehicles may have similar installation points. Turn signal wires can always be found at the lights under the hood as a last resort.

1. **Cascadia Classic (Option A):** With a pre-pinned input wire, turn signals are located below the fuse panel on the X12 plug, slot 15 (Left) and slot 18 (Right). A pen can be used to “open” the plugs to allow the pin to seat properly.

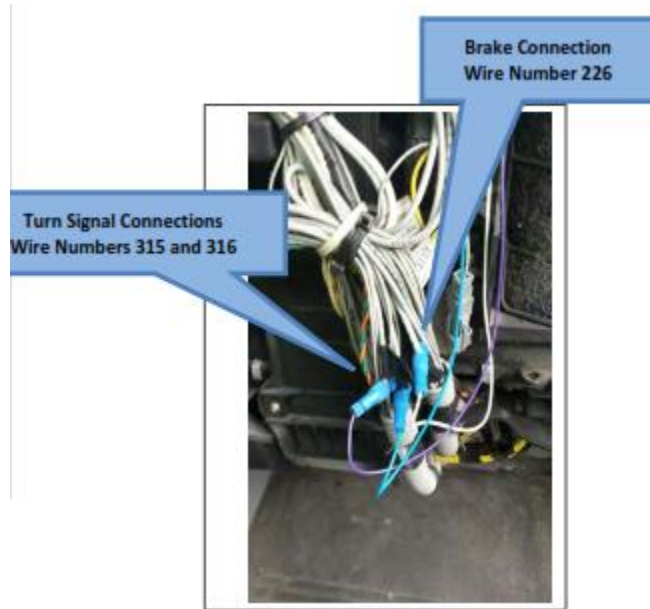


2. **Cascadia Classic (Option B):** For a generic wire harness, the turn signals are connected via Posi-taps to the yellow (Left) and green (Right) wires on plug X11.



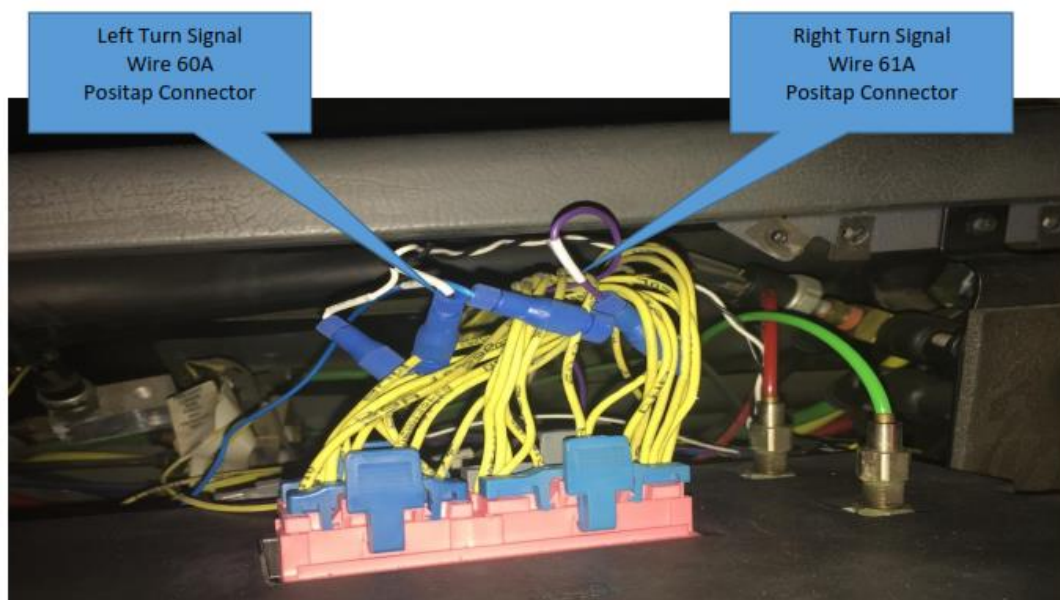
Cascadia Turn signal connections; Left = yellow, Right = Green

3. **2004-2009 Columbia:** Turn signal connections are found below the passenger side dash near the J1708 connections, wire 315 and 316.



2004-2009 Columbia J1708, Turn Signal and Brake signal connections.

4. **2000-2003 FL70:** The left and right turn signal connections are found behind the gauge cluster.

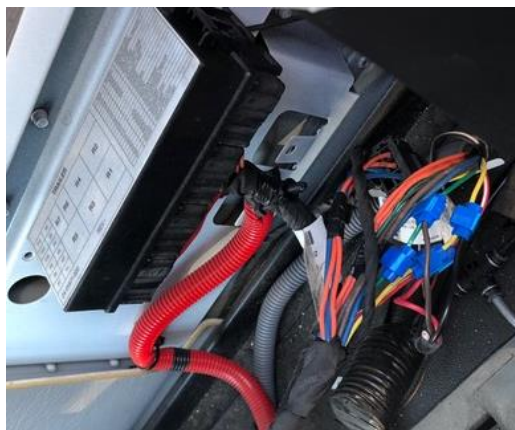


2003 FL-70 Turn signal connections (behind gauge cluster)

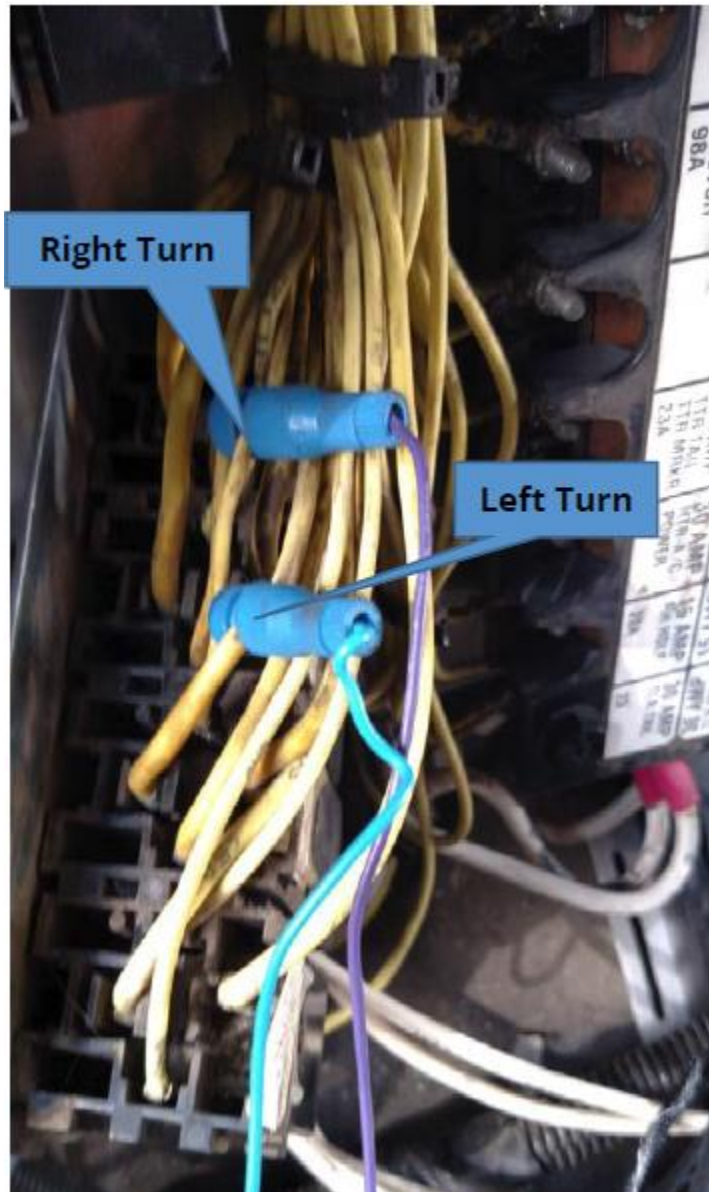
5. **2009 M2:** The left and right turn signal connections will be found at the headlights. Connections are made with a Butt Splice connector. Dual core wire is routed through the firewall in an unused grommet location and zip tied along the frame.



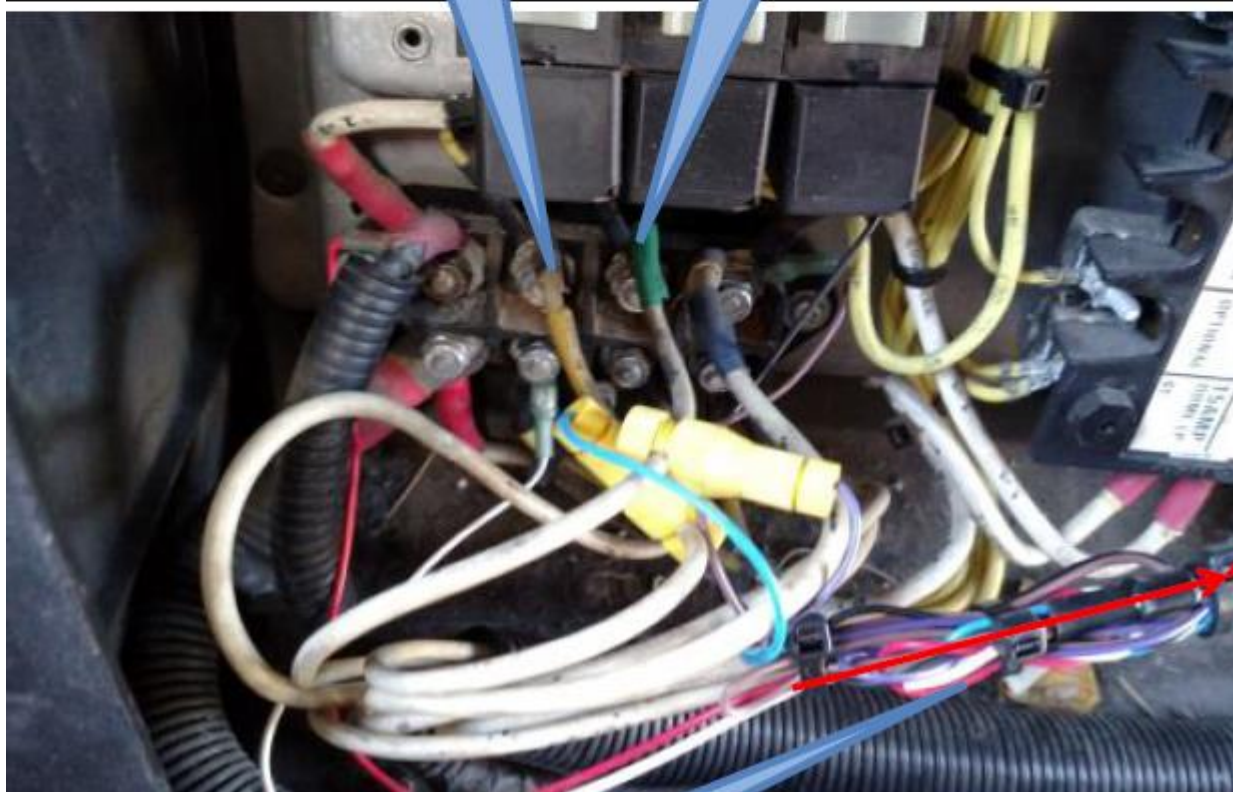
6. **M2 Alternate:** The Chassis Control Module (CHM), which is likely located under the cab on driver side near the fender, has 5 plugs. There are two wires on plug C3 that have L/R turns. The wires are Yellow (L) and Green (R) with a brownish wire between them. Test to confirm. There is also a fuse box behind the driver's seat with the same wires available (2nd photo below).



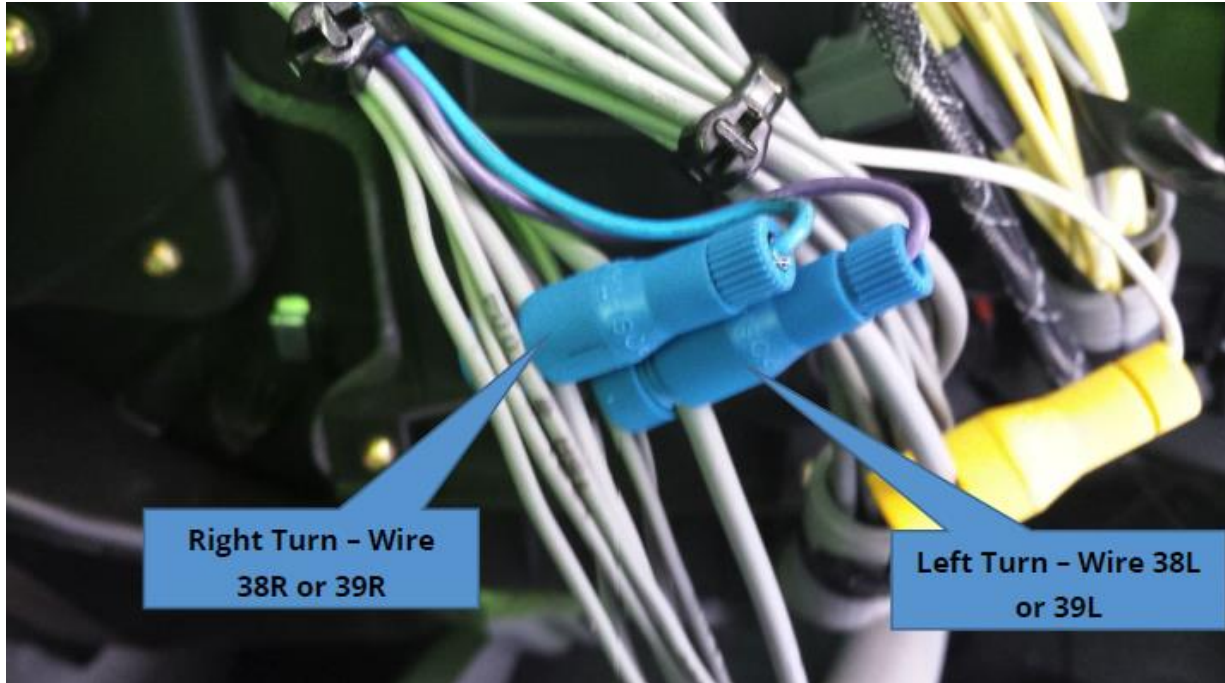
7. **2001 Classic:** The left and right turn signal connections are found near the power and ignition connections. Test the wires to identify which is left and right.



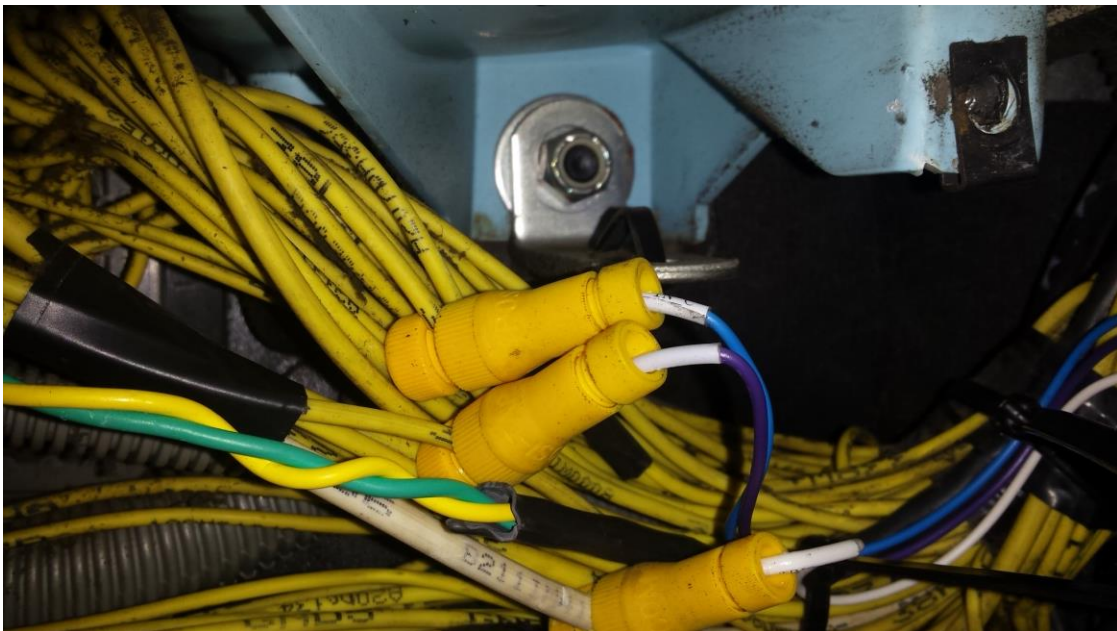
8. **1996-2003 D112:** The left and right turn signal connections will be found in the same location as the power connections. The left turn signal is 1 position to the right side of the constant power. The right turn signal is 1 position to the right of the left turn signal. Yellow Posi-Tap Connections will be the connection method.



9. **2010-2013 Coronado Glider (upgraded from a Columbia):** The right and left turn signal connections are located below the fuse panel on the passenger side. Wires must be tested to ensure they are correct before connections are made.



10. **2002 Century:** Turn signal connection points are found in the lower passenger side footwell below the HVAC motor. Right turn - wire 38R. Left turn - wire 38L.

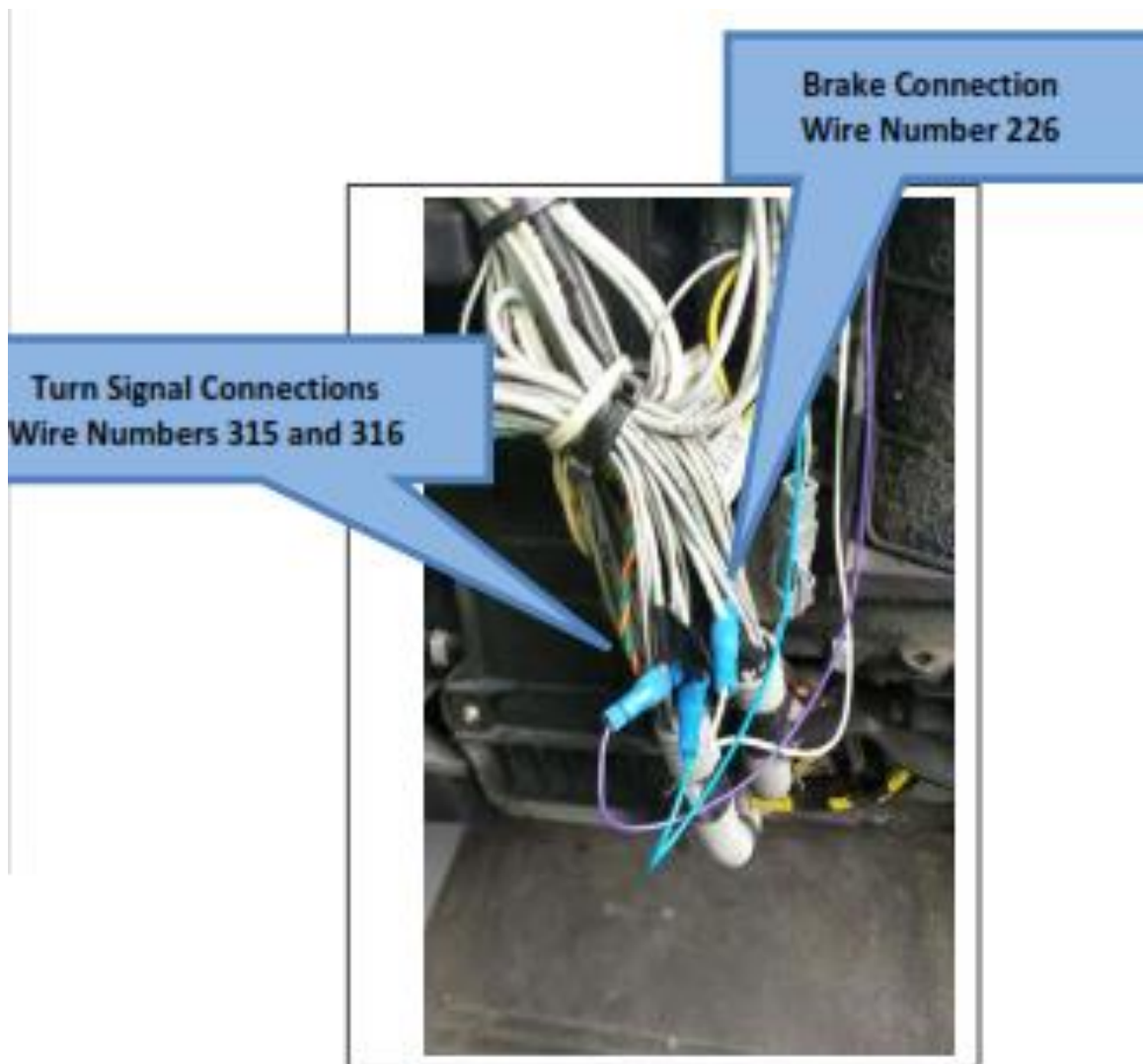


Brake Signal Connection

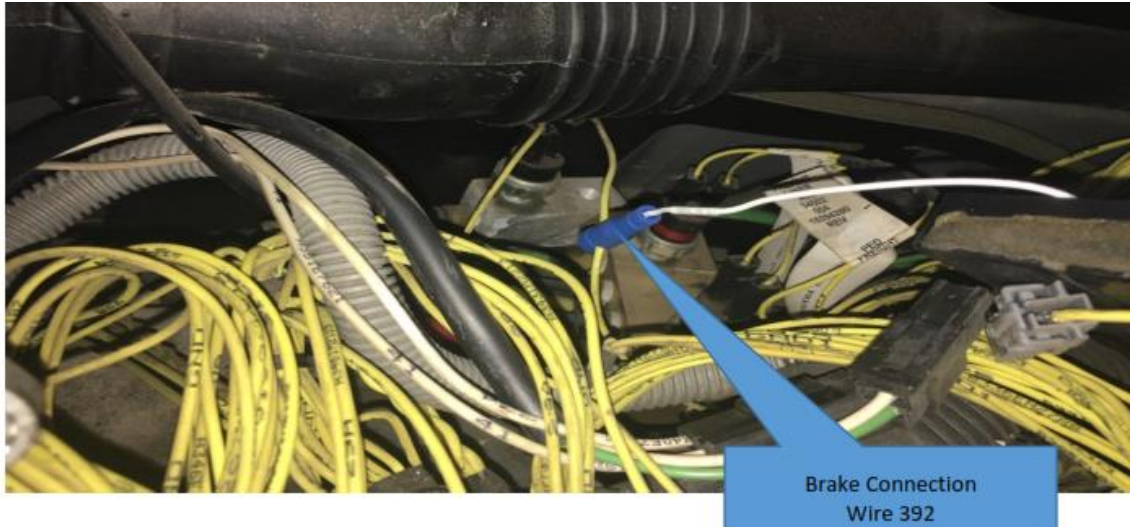
The brake signal input is often available over the vehicle data bus for vehicles 2008 and newer. When it is not, it must be physically connected to a discrete brake signal wire.

Always test connections with a meter. The following photos show the locations where the brake signal connection has been found on various models. Where applicable, we have identified the model year vehicle. Other model year vehicles may have similar installation points.

1. **Cascadia:** Available on J1939 bus. See the Lytx Installation Tool instructions for testing information.
2. **2004-2009 Columbia:** The brake signal connection is found below the passenger side dash near the J1708 connections, wire 226.

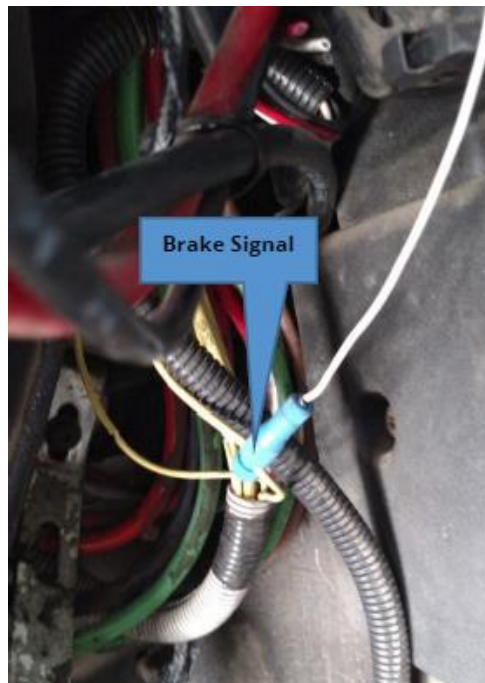


3. **2000-2003 FL70:** The brake signal connection will be found in the same location as the turn signal connections. The brake signal is found on the solenoid for the brake air lines, and is wire C392.

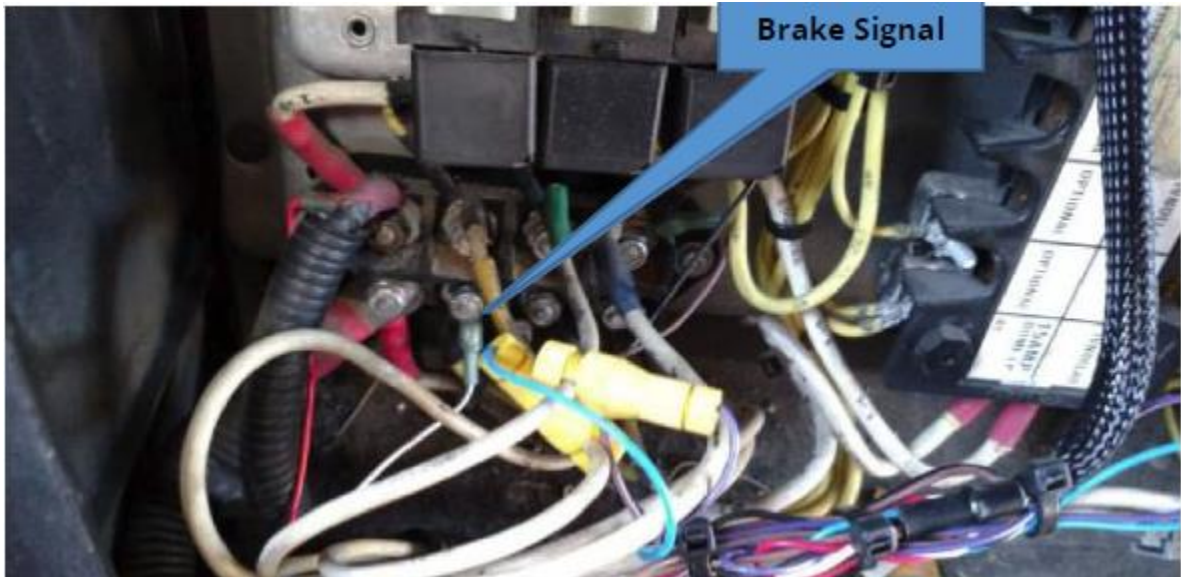


2003 FL-70 Brake signal connection (behind gauge cluster)

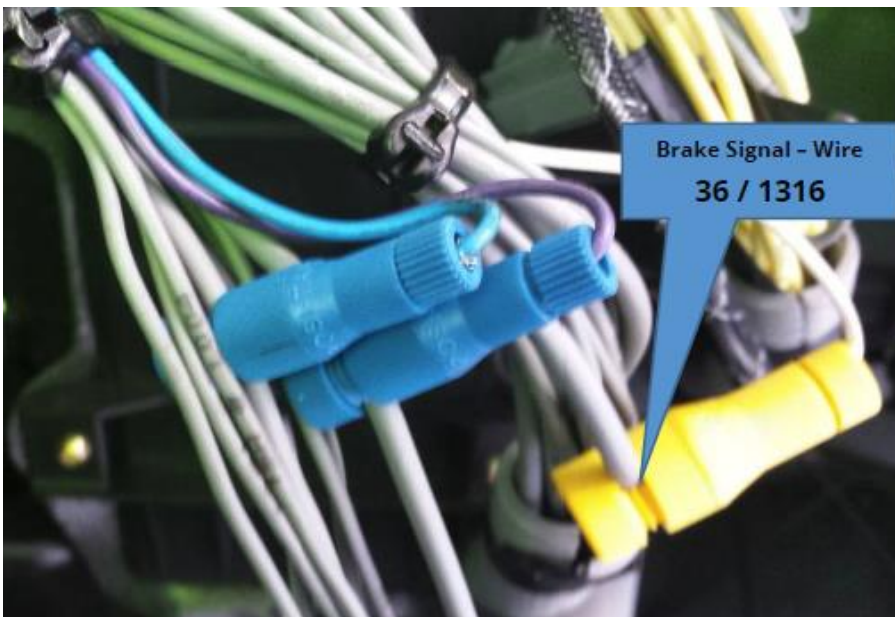
4. **2009 M2:** Available on J1939 bus. See the Lytx Installation Tool instructions for testing information.
5. **2001 Classic:** The brake signal connection is found near the rest of the connections. Always test to verify the correct wire is used.



6. **1996-2003 D112:** The brake signal connections will be found in the same location as the power connections. The brake signal is found on the bottom row of terminals, 2nd position over from the left. Ring Terminal Connections will be the connection method.



7. **2010-2013 Coronado Glider (upgraded from a Columbia):** The brake signal connection is located next to the turn signal connections. The wires must be tested to ensure they are correct before connections are made. The connection method is yellow Posi-Tap.



8. **2002 Century:** The brake signal connection point is found in the lower passenger side footwell below the HVAC motor, wire 36.



Note: If you find any updates to recommend for this guide or an option available for use on other models or years of vehicles, please email installfeedback@lytx.com.

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