LIONC

Technical Bulletin – LionC

Bulletin:	TB-0365_00_A
Title:	Firewall Power and Ground Passthrough Studs Loose
Lion maintenance reporting system (LMRS):	09-01-07-16
Publication date:	2024-06-25
Manufacturing date(s):	2021-2024
Expected repair time:	1.5 hours
Kit part number:	TB-0365_00
WO labor charge code:	Campaign
WO description:	TB-0365_00 – LionC Firewall Stud Torquing
Engineering POC:	Stefano Bianco

Document version

Version	Date	Description
00_A	2024-06-25	Initial release

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Problem

Several Lion C models have been identified with loose firewall power and ground passthrough studs due to insufficient torque. This issue affects both the inner and outer passthrough studs. Loose connections can cause electrical instability, which can adversely affect modules and components.

Solution

The proposed solution is to inspection and re-torque both sides of the passthrough studs.

Lion PN Kit

Lion PN Unit	Description	Quantity
TB-0365_00	**LionC Firewall Passthrough Stud Torquing**	**1**
Lion PN	**Description**	**Quantity**
12610229_00	O-RING, ID 1"1/8, OD 1"3/8, BLACK	2
14800074_00	COTTER PIN, ZINC-PLATED STEEL	1

Reference for Replacement (If Required Only)

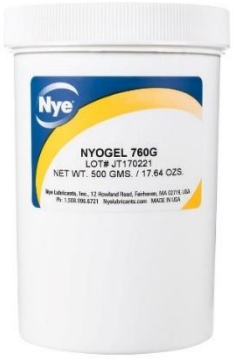
The passthrough studs must only be replaced if presence of burn marks, stripped metal threads, stripped plastic threads or any other abnormalities that deem the assembly damaged.

Lion PN	Description	Quantity
12610227_00	STUD, PASSTHROUGH 3/8 IN. POSITIVE RED	1
12610228_00	STUD, PASSTHROUGH 3/8 IN. NEGATIVE BLACK	1

Special Tools

Description	Image
Torque Wrenches (Sizes: 1/4 in. and 3/8 in. Drive)	

Crowfoot Wrench Attachments (size: 3/4 in.)	
Deep Sockets (sizes: 1-1/2 in. and 3/4 in.)	
Straight Allen key Socket with 3/8 in. Drive (size: 3/16 in.)	
Standard Hand Tools	

Multimeter	
Nyogel 760G (Dielectric Grease)	
RTV Silicon Sealant	
Paint Marker	

Permanent Marker	
Masking Tape	
Shop Towel	

Security Measures

Important Information

Make sure the work can be done safely:

- **Make sure the vehicle is parked on a flat surface.**
- **Apply the parking brake.**
- **Put chocks on the wheels.**
- **Turn the start switch to “OFF” position.**
- **Turn the battery disconnect switch to “OFF” position.**

1. Preliminary Steps

Steps	
1-A	Open the hood, locate the power and ground passthrough studs on the firewall.

Figure 1 - Location of studs on the firewall

1-B	Remove the protective caps on both studs. Using a multimeter, verify that there is no voltage difference between the positive and negative studs before proceeding to section 3 Tightening of the Hood Side Passthroughs.

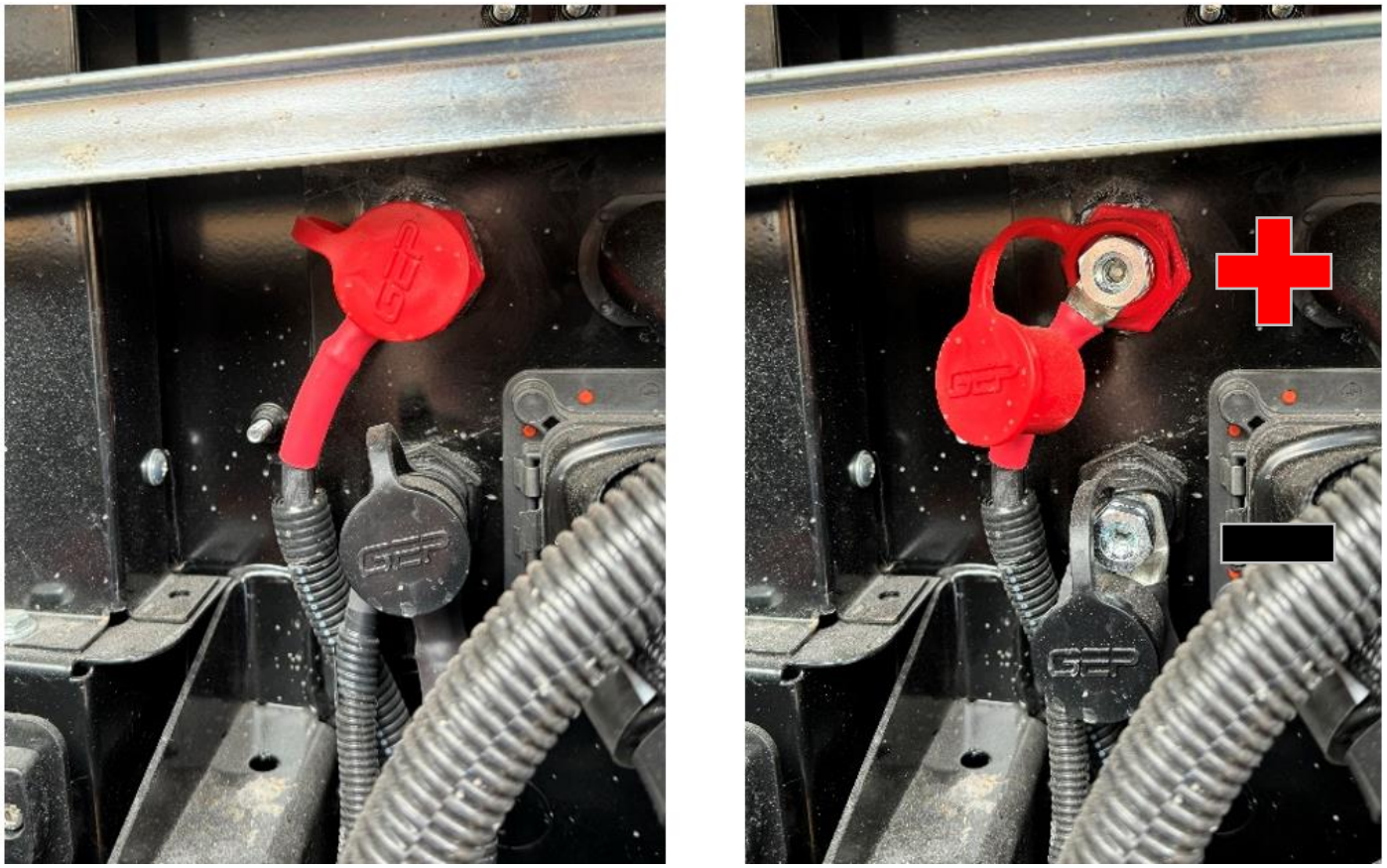


Figure 2 - Removal of stud caps

Important	• *Using a shop towel, remove all dielectric grease present on the studs and within the Allen keyhole before proceeding to step* **3-A**. • *Thoroughly cleaning the stud will reduce the risk of stripping the threads and the Allen keyhole.* • *Refer to the Passthrough Stud Reference Guide in the Appendix of this document before performing any work outlined in the next step.*

2. Additional Preliminary Steps for Full Air Configuration Only

Steps	
Important	**Ensure that all security measures are applied before proceeding.** **If the vehicle you are working on is equipped with air brakes, ensure to follow the next steps:**
2-A	Press the brake pedal until there is no more air in any lines of the system.
2-B	Locate the air tanks found below the driver side frame rails.

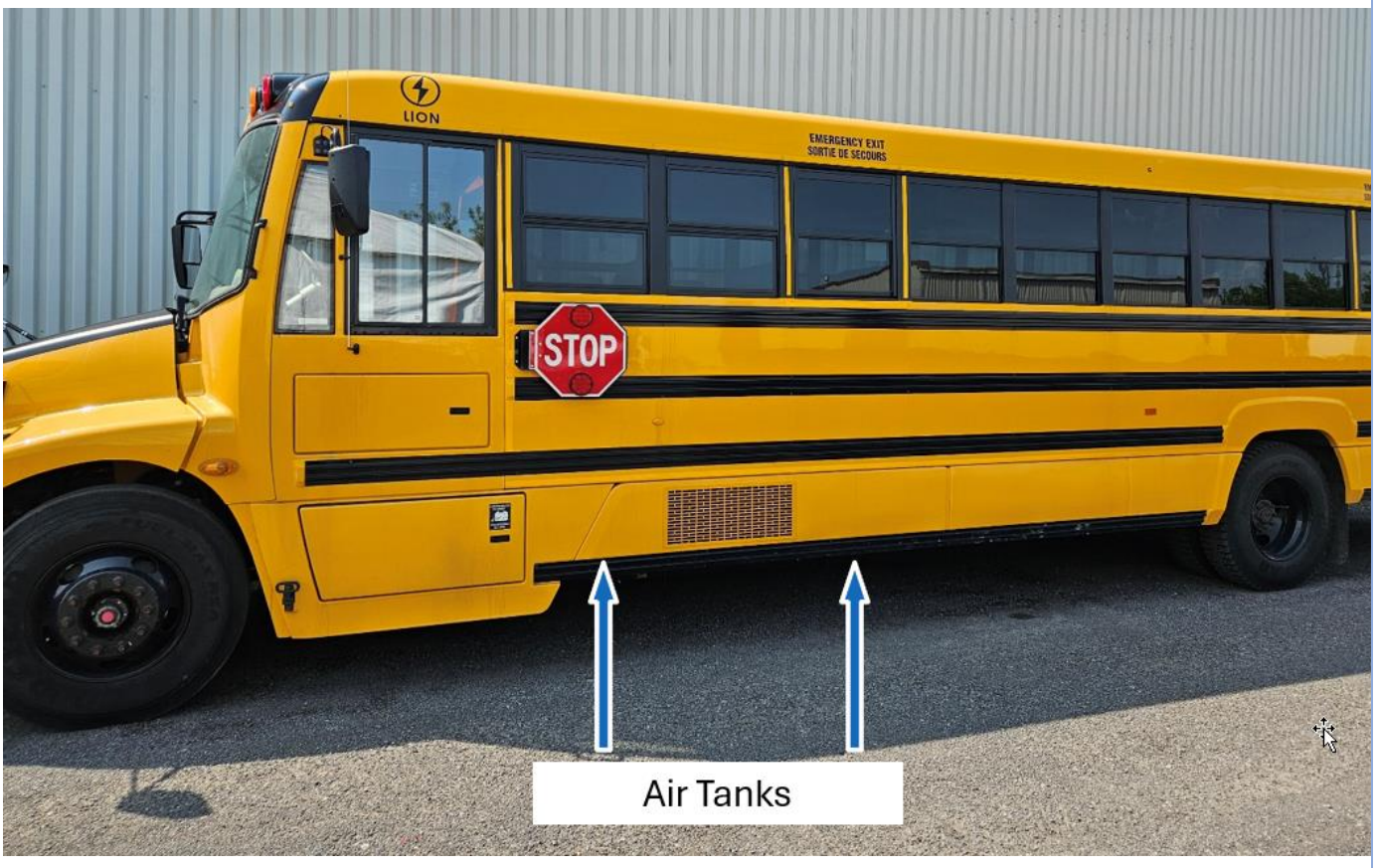


Figure 3 - Air Tank Location

2-C	Empty the air tanks by pulling downwards on the air release valve until no air comes out.

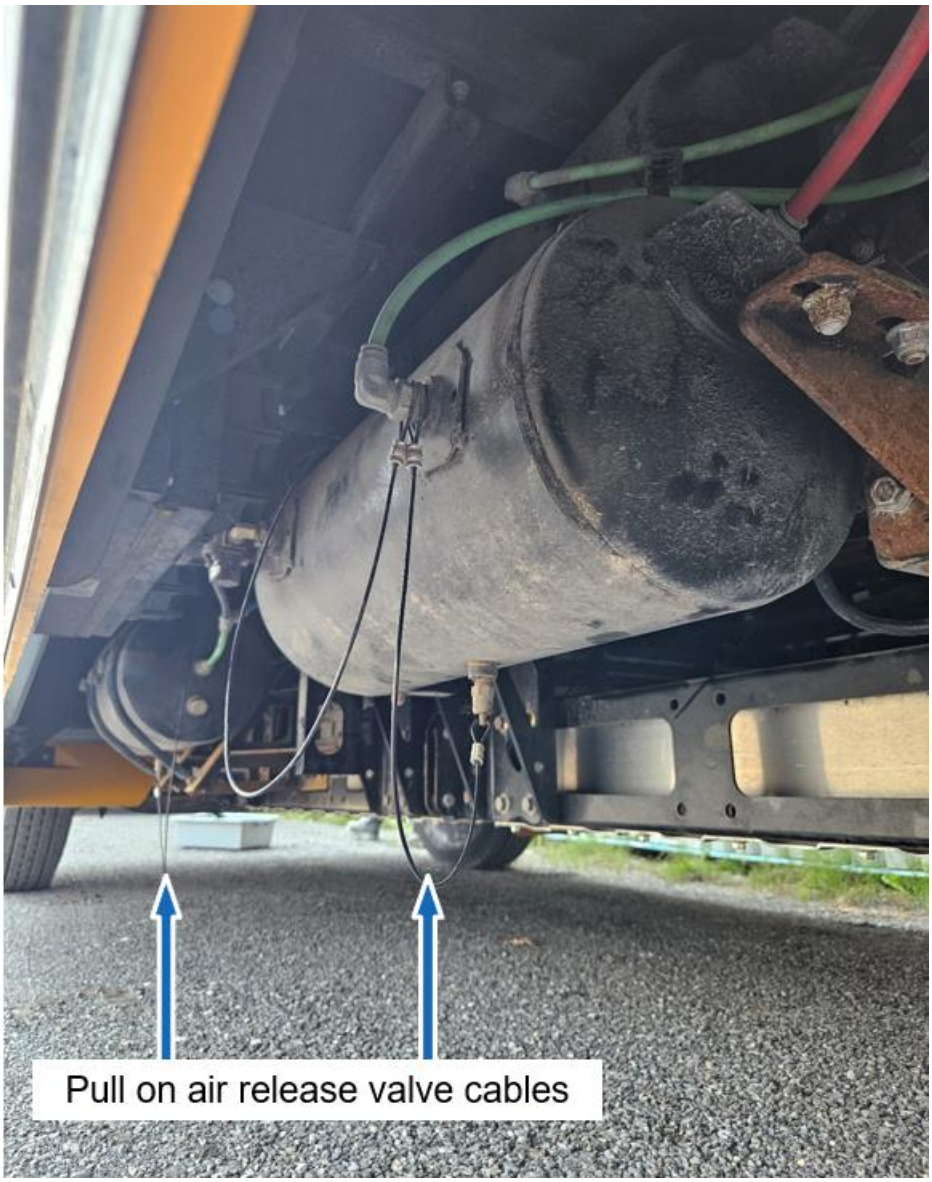


Figure 4 - Air release valve

2-D	Ensure that the air pressure gauge on the dash shows 0 PSI.
2-E	Using tape and a permanent marker, label the air hoses with the letter identification “A” and “B” as per figure 5 to ensure proper reconnection.

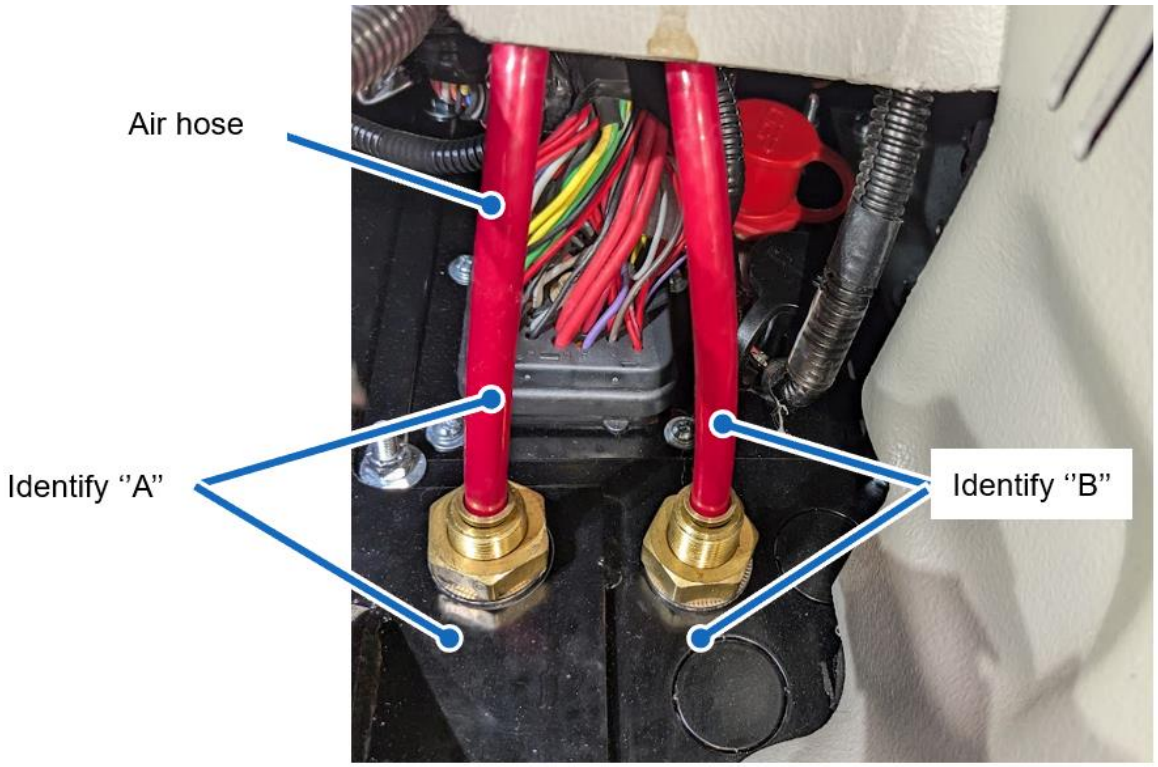


Figure 5 - Brake pedal air hoses

2-F	Remove the two air hoses located near the brake pedal by pushing on the hose collar and gently pulling on the hose.
NOTE	*An appropriately sized open-end wrench can be used to apply pressure to the hose collar.*

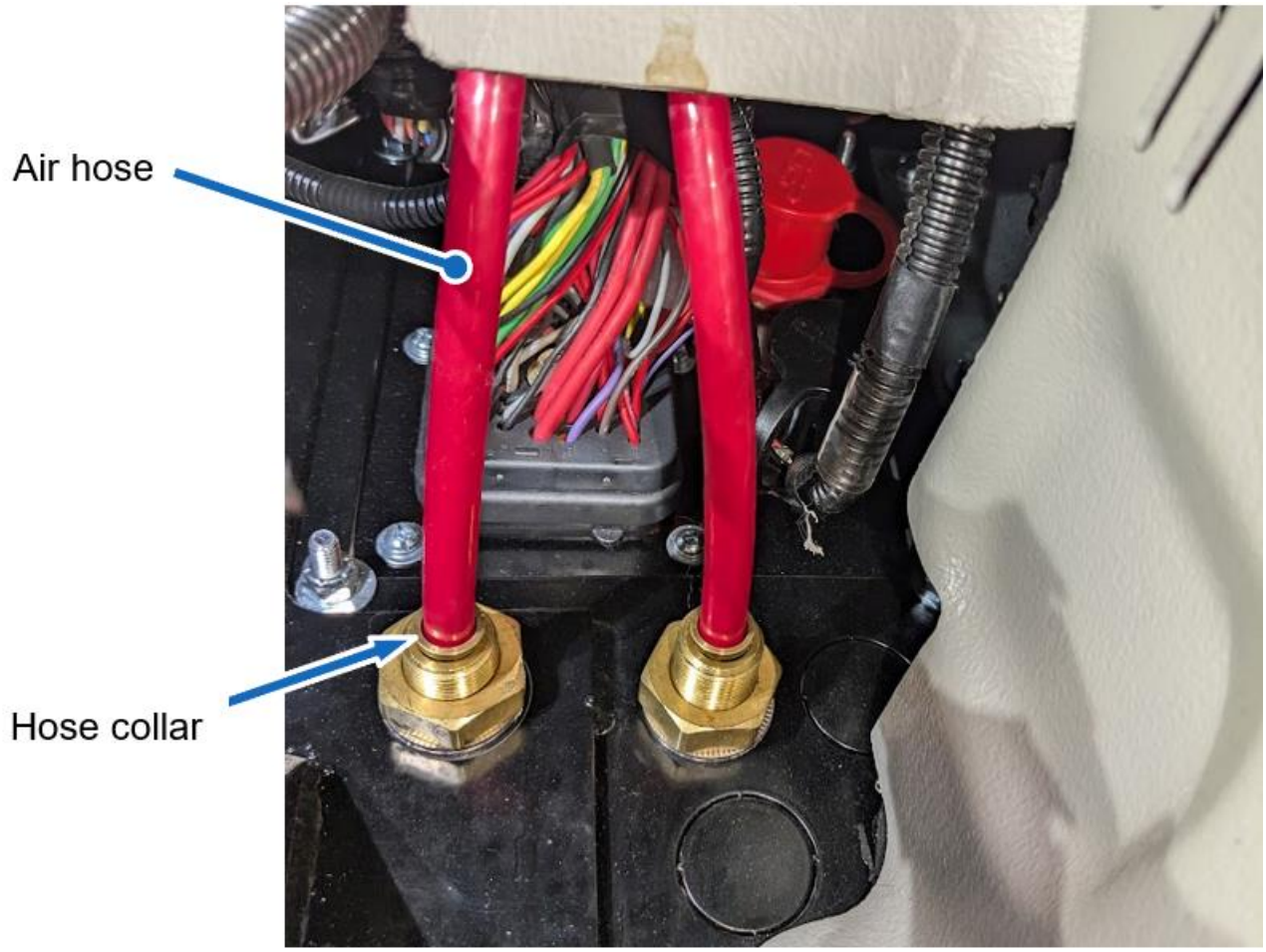


Figure 6 - Brake pedal air hoses

3. Tightening of the Hood Side Passthroughs

3-A	Locate the 12 V power and ground passthrough studs located under the hood.
NOTE	*Only these two components need to be torqued. Refer to the image below for passthrough stud referencing and location.*

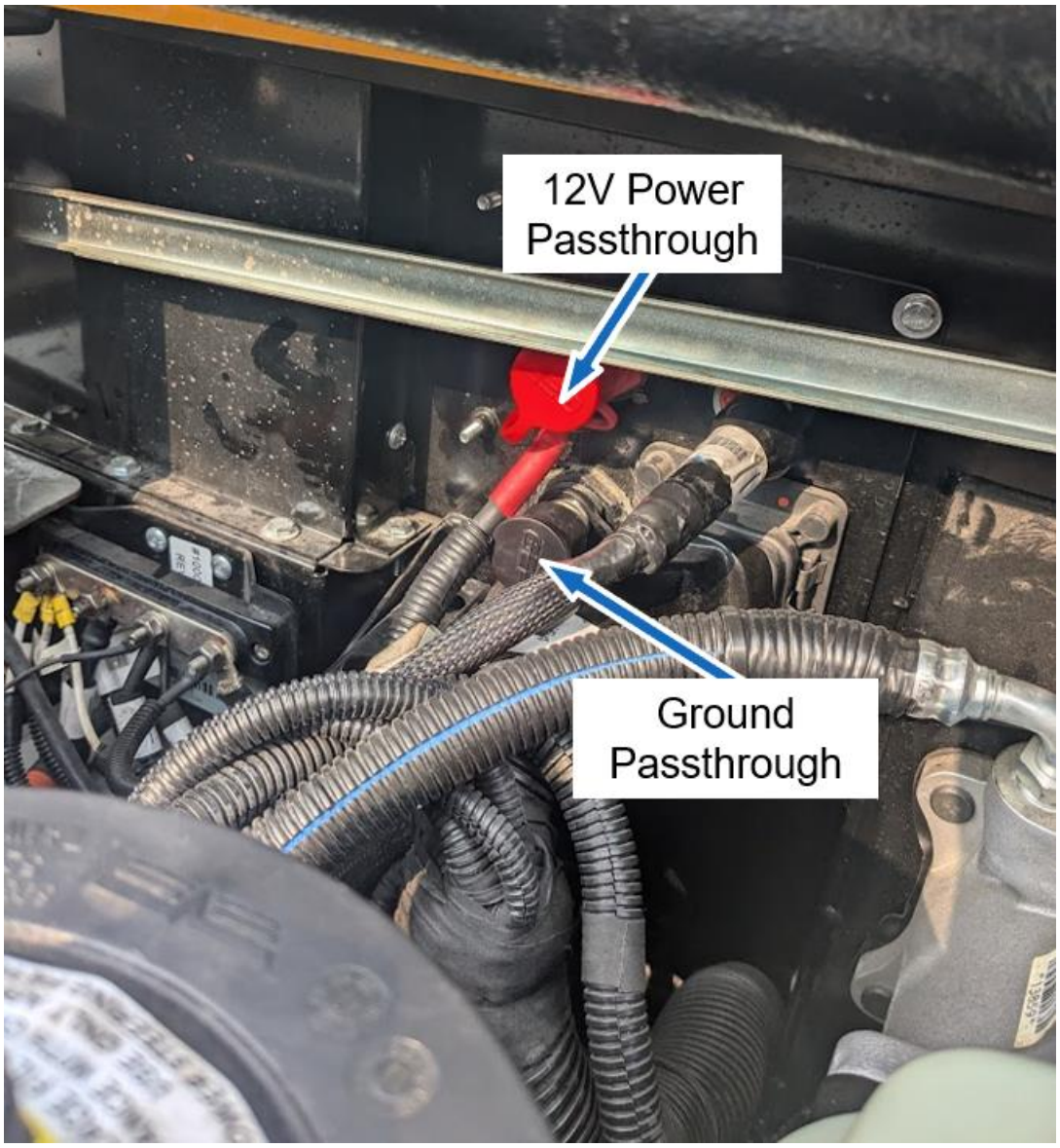


Figure 7 - View of power and ground passthrough studs

Important	*Refer to the Passthrough Stud Reference Guide found in the Appendix of this document before performing any work outlined in the next step.*
3-B	Using the appropriate socket wrench, remove the metal nut, the electrical connection (lug or ring terminal) and the plastic nut. Inspect the stud assembly for any abnormalities.
Important	*If burn marks, stripped metal threads, stripped plastic threads, or other abnormalities are found on the passthrough studs, replace the affected passthrough assemblies by ordering the necessary parts from the Service Parts Department.*
3-C	If no abnormality is found, replace the rubber O-ring ***PN #12610229_00*** **(only for 12 V power and ground passthrough)**. If O-ring is not present, install one as well.

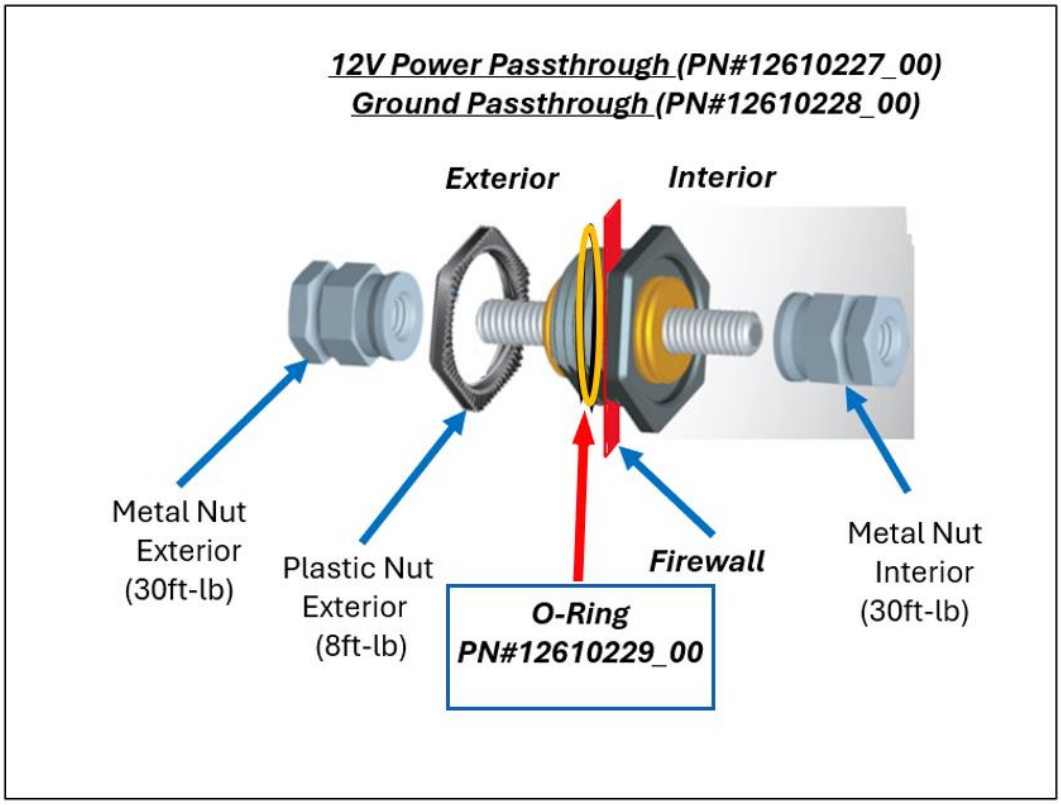


Figure 8 - Passthrough component view

3-D	Tighten the plastic nut with the appropriate deep socket and torque value according to the table in the Appendix (Passthrough Stud Reference Guide).
Important	Ensure that the socket does not touch the stud when tightening the plastic nut.

3-E	With the metal nut and the electrical connection removed, apply RTV silicon between the passthrough plastic body and the firewall to protect against water intrusion.

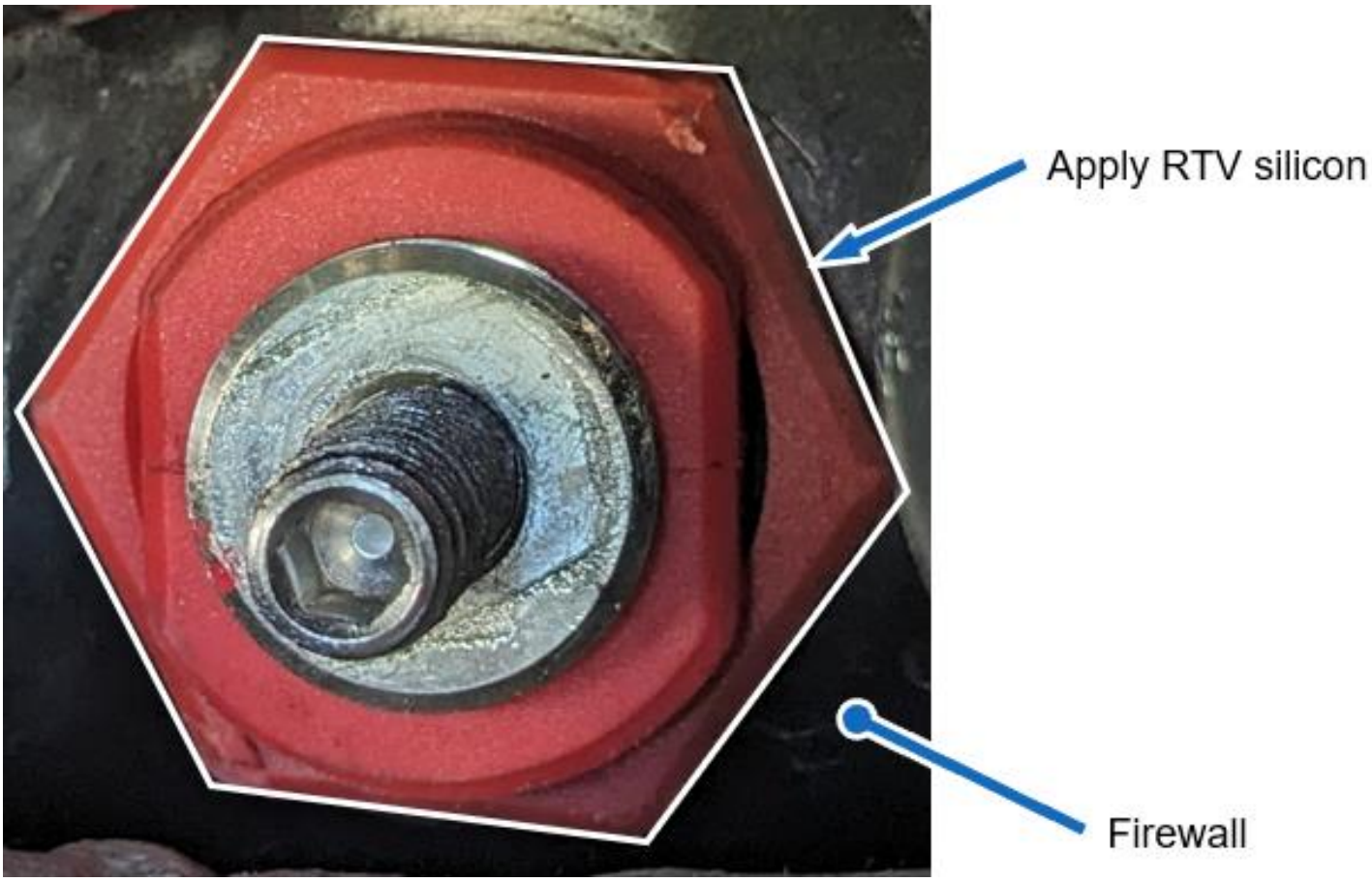


Figure 9 - View of passthrough stud without electrical connection for RTV Silicon applications.

Important	*Ensure that the electrical connections, passthrough stud, and nut are free of any dirt, debris, RTV Silicon or grease before continuing the procedure.*

3-F	Insert the O-ring of the plastic terminal cover onto the electrical wiring before reinstalling the nut and securing the connection.
Important	*Ensure that the O-ring is not between the electrical lug and the passthrough stud.*

Figure 10 - View of the correct O-ring placement

3-G	Set your torque wrench to 30 ft-lb (40 Nm). Using a 3/4 in. crowfoot attachment and extension on your torque wrench, position it on the 12 V passthrough nut.

3-H	Insert a 3/16 in. Allen socket into the stud.
Important	*Ensure that there is no dielectric grease in the stud before inserting the Allen socket.*

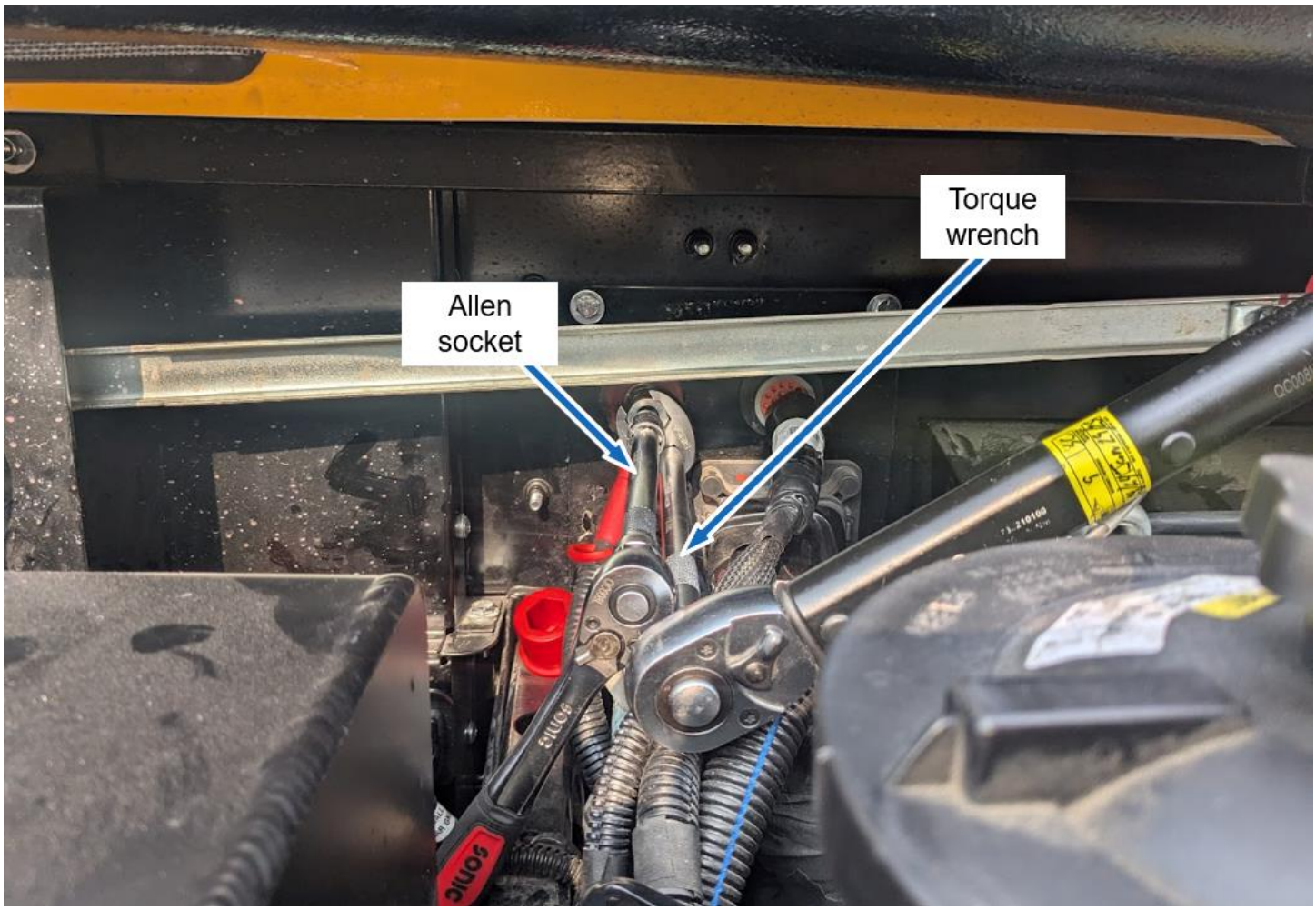


Figure 11 -View of Allen socket inserted in the stud

3-I	Torque the nut to 30 ft-lb (40 Nm) by turning the torque wrench clockwise and the Allen key counterclockwise.
Important	*Be sure to follow the designated crowfoot orientation as outlined in the CROWFOOT TORQUE WRENCH USAGE AND BEST PRACTICES, while tightening the nut.*

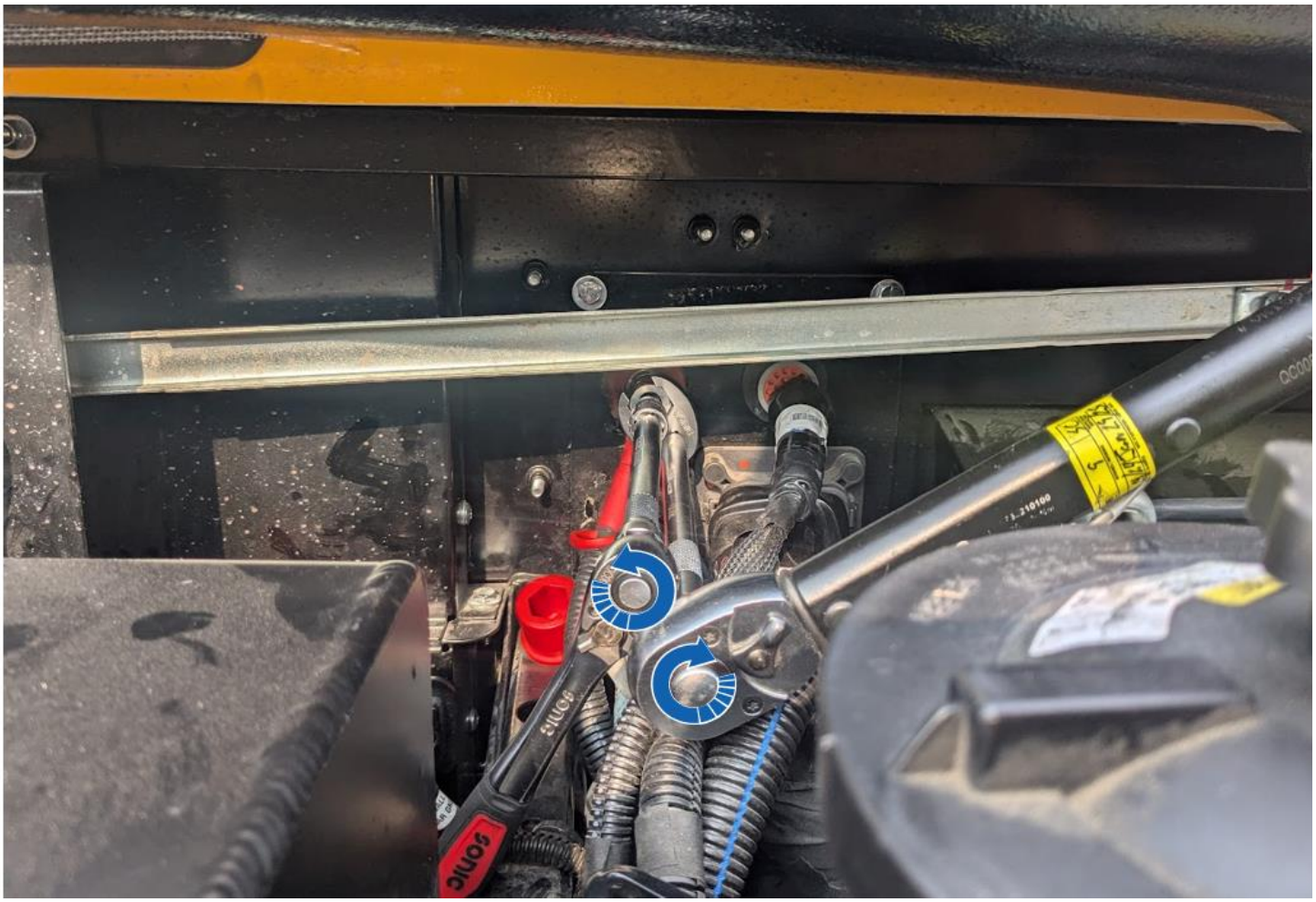


Figure 12 - Applying the correct torque to the nut

3-J	Using a paint marker; mark the nut, electrical lug, and the passthrough assembly body.
3-K	Apply force to the electrical cable by hand and check for looseness.
3-L	Apply Nyogel 760G on the nut, electrical lug, and passthrough stud.
3-M	Replace the plastic cap onto the nut.
3-N	Repeat steps from 3-B to 3-M for the ground passthrough stud.

4. Disassembly of Interior Panels to Access Pass-Through Studs

Steps	
Important	• **For full-air configuration only:** Ensure that the air tanks are completely empty before proceeding. Refer to section Additional Preliminary Steps for Full Air Configuration Only. • The access to interior passthroughs is physically small and difficult to reach. • Take the appropriate measures such as adding a foam pad and/or wearing knee protectors, if necessary, before beginning the work.
4-A	In the driver area, locate the lower center plastic panel situated under the radio.

Figure 13 - Location of lower-central panel

4-B	Using a Phillips screwdriver, remove 6 screws to loosen the panel.
NOTE	*This makes it easier to access the internal studs.*

Figure 14 - Removal of access panel screws

4-C	Remove the panel to gain access to the power and ground passthrough studs.

Figure 15 - Removal of access panel screws+

4-D	Disconnect the accelerator and brake pedal connectors by prying them upwards on the clip by hand.

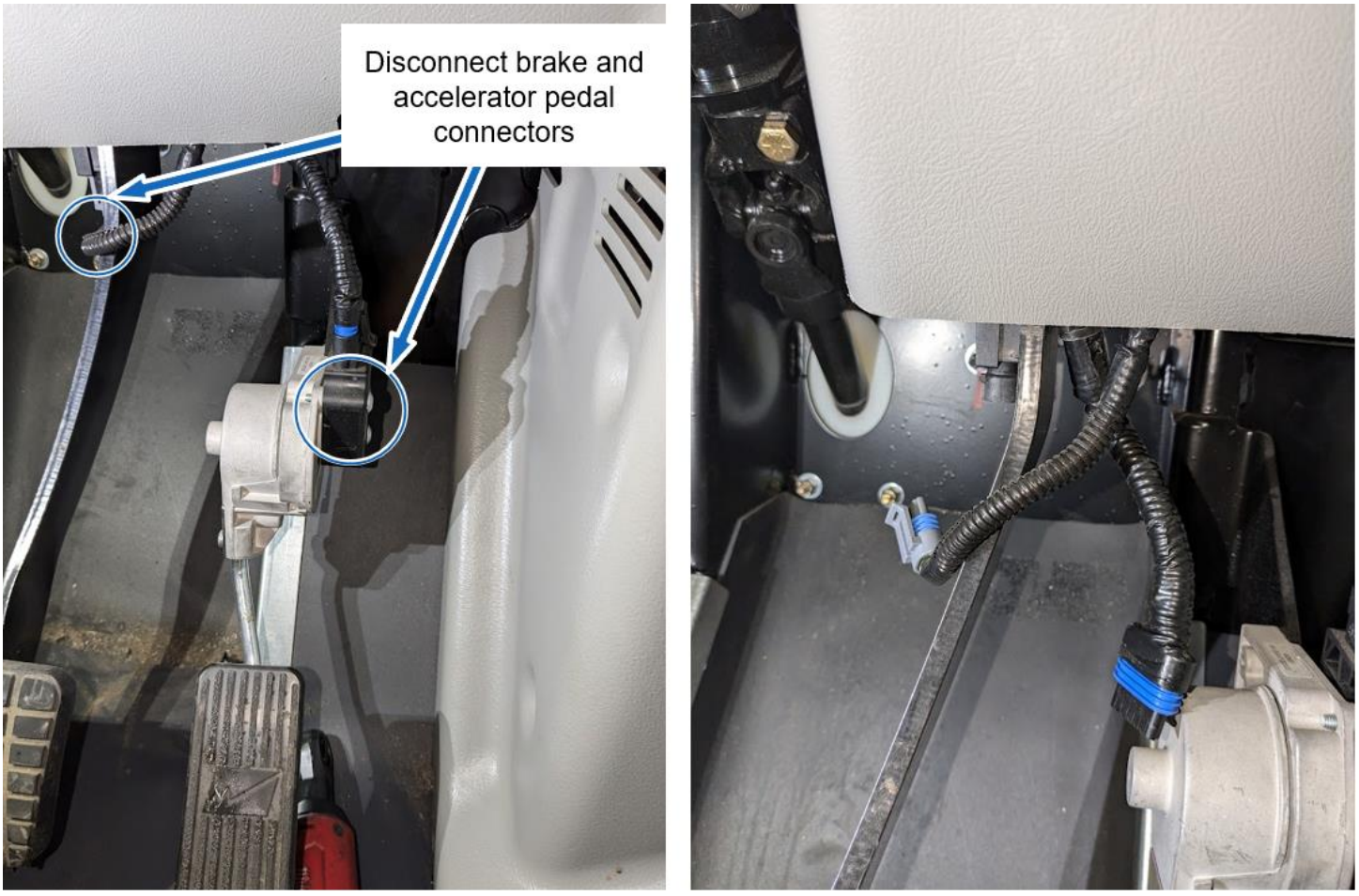


Figure 16 - View of the accelerator pedal connector

4-E	To gain access to both studs, disconnect the 48-pin connector by removing the bolt located in the center of the square housing and gently pull it outwards on the connector.
CAUTION	**Never pull on the wires. Always disconnect by firmly gripping the plastic connector.**

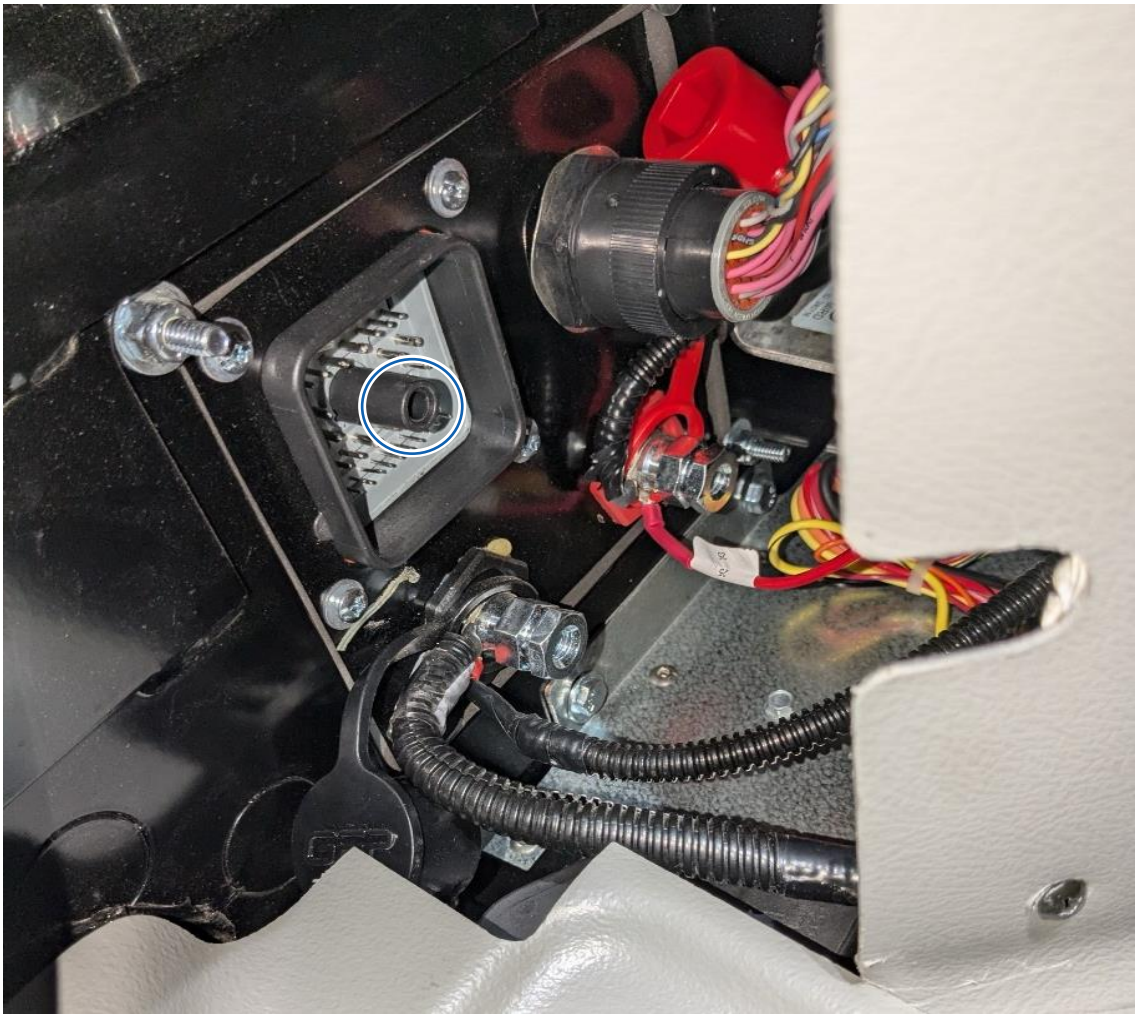


Figure 17 - View of the 48-pin connector housing

4-F	Disconnect the brake pedal from the brake master cylinder fork by removing the cotter pin and pulling the guide pin toward the driver side window. Discard the original cotter pin.
NOTE	Disconnecting the brake pedal provides clearance for the torque wrench during tightening.

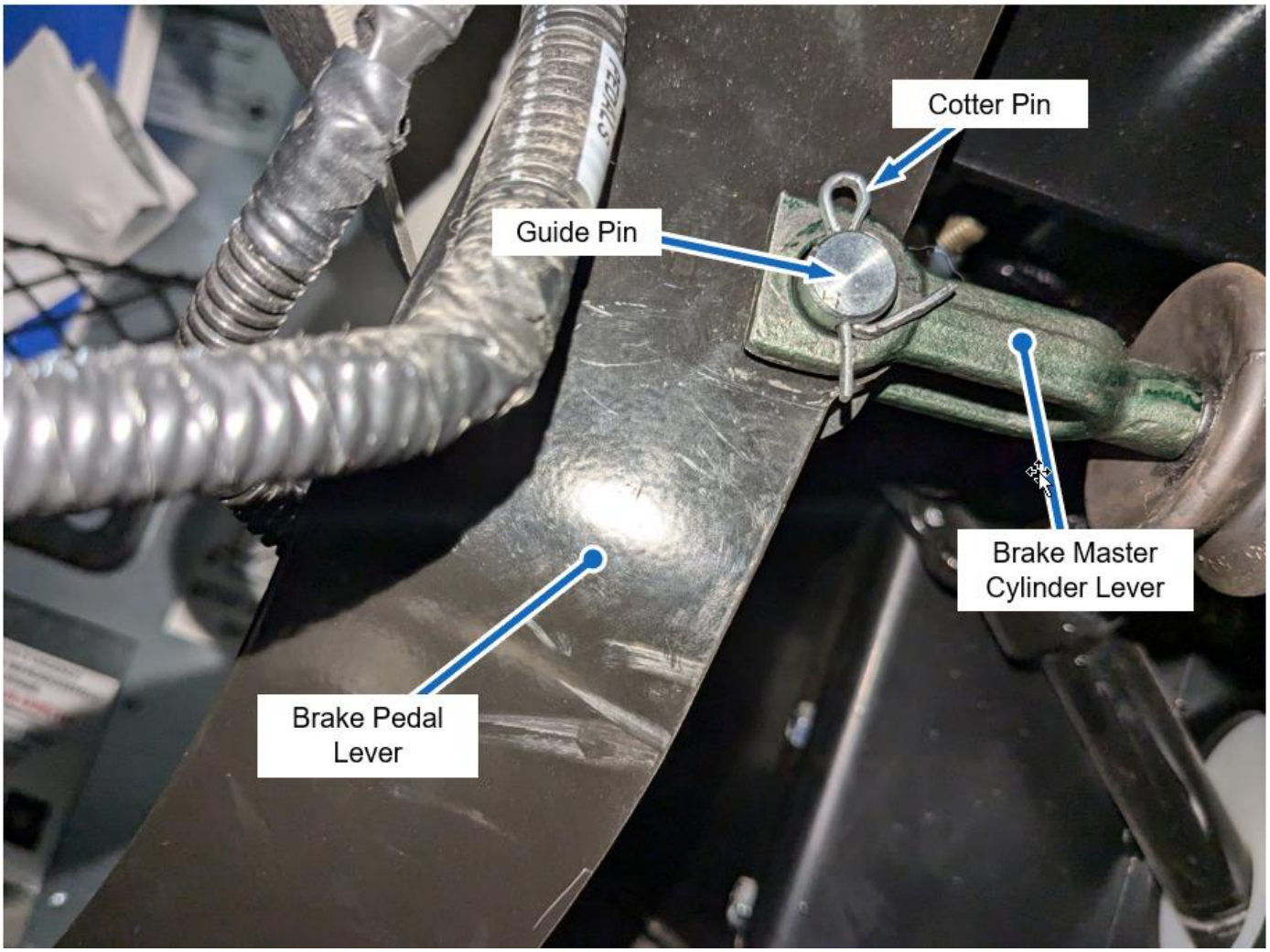


Figure 18 - Picture of the brake pedal and brake pedal stud with a proper view of cotter pin.

4-G	Remove the protective caps on both passthrough studs.

5. Tightening of the Interior Side Passthrough Nuts

5-A	Place a wrench with a 3/4 in. socket on the firewall power passthrough stud. Hold the wrench on the bracket found below the windshield.
NOTE	*Positioning the wrench on the bracket allows the stud to be locked in place while tightening the inner passthrough nut.*

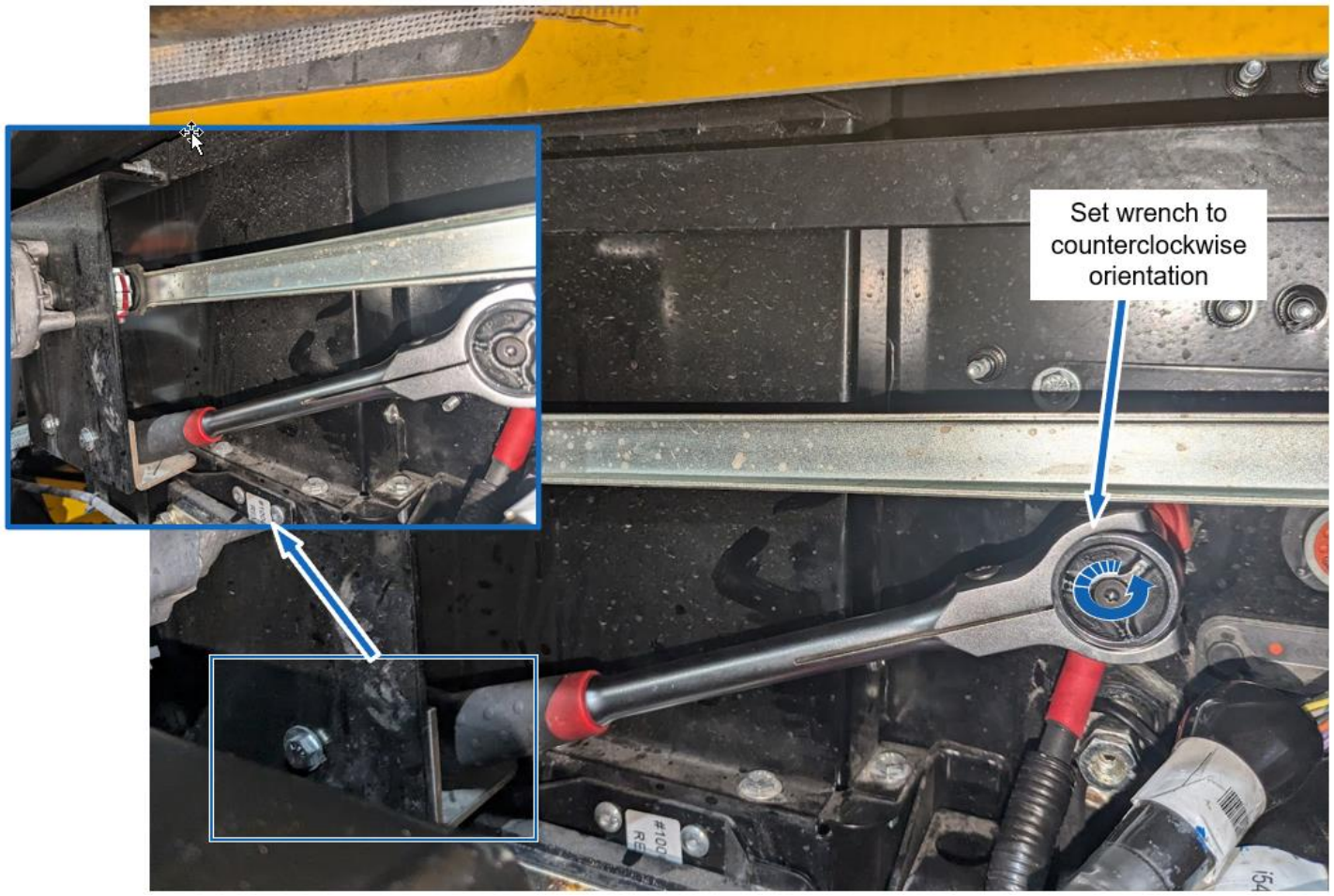


Figure 19 - Wrench locked in position (firewall side)

5-B	Using a torque wrench and a 3/4 in. deep socket, torque the inner power passthrough nut to 30 ft-lb (40 Nm).

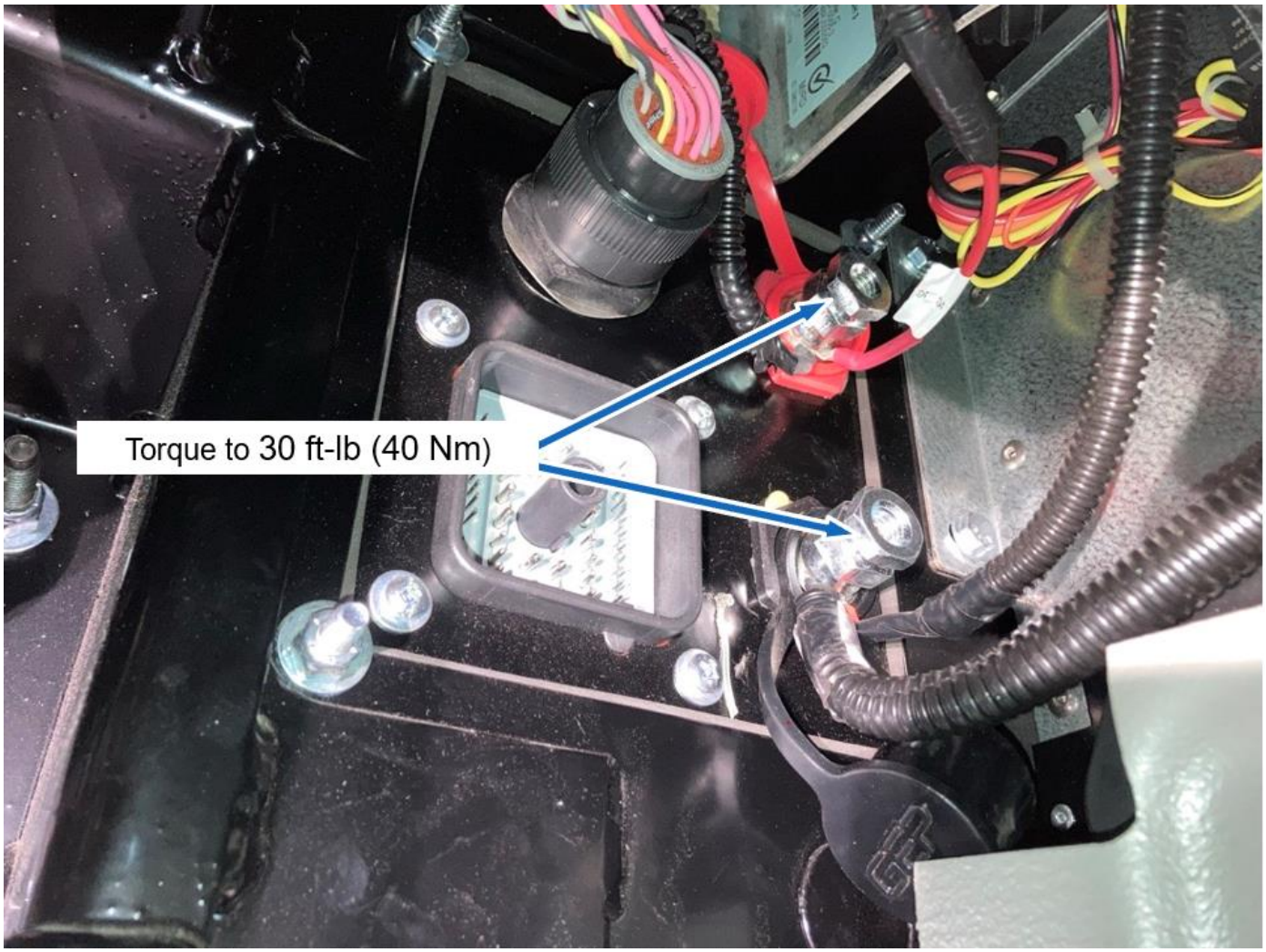


Figure 20 - Interior Passthrough studs

5-C	Repeat steps 5-A to 5-B for the ground passthrough stud.
5-E	Using a paint marker; mark the nut, electrical lug, and the body of passthrough assembly.
5-F	Apply force to the electrical cable by hand and check for looseness.

5-G	Reinstall the plastic caps to the passthrough studs.
5-H	Reinstall the 48-pin connector previously removed and tighten the bolt to 32 lb-in (3.60 Nm).

Figure 21 - 48 pin connector torque.

5-l	Reinstall the brake pedal lever to the brake master cylinder fork by fully inserting the guide pin and installing a new cotter pin PN# 14800074_00. Bend the cotter pin as shown in the figure below.

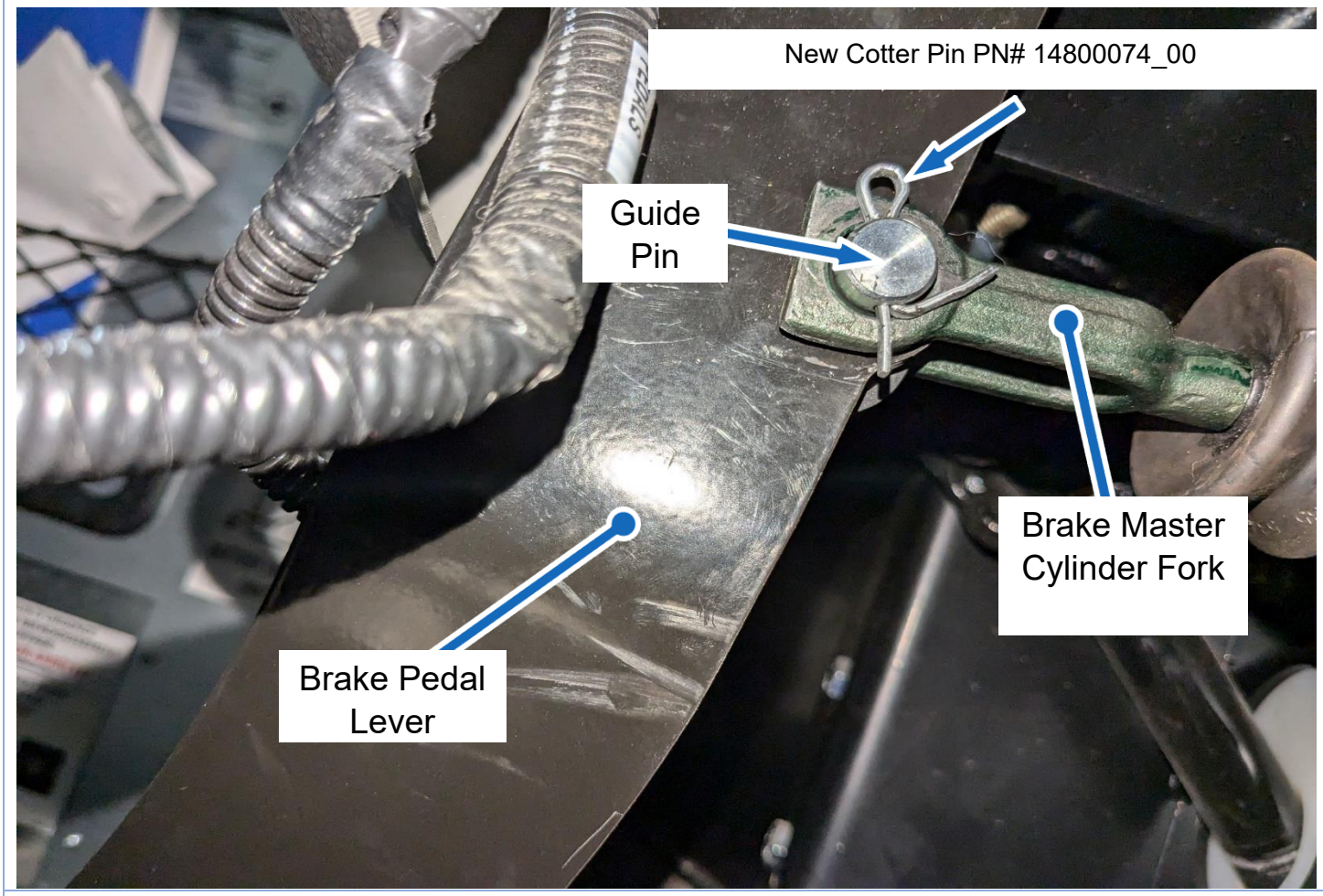


Figure 22 - Reassembly of the brake pedal

For Full Air Lion C Configuration Only	
5-K	Re-install the air hoses by pushing the collar into the connector and inserting the hose. Ensure that the air hoses are properly seated and that the collar is retracted.
Important	Ensure to respect the order of the cables previously identified in step 2-E.

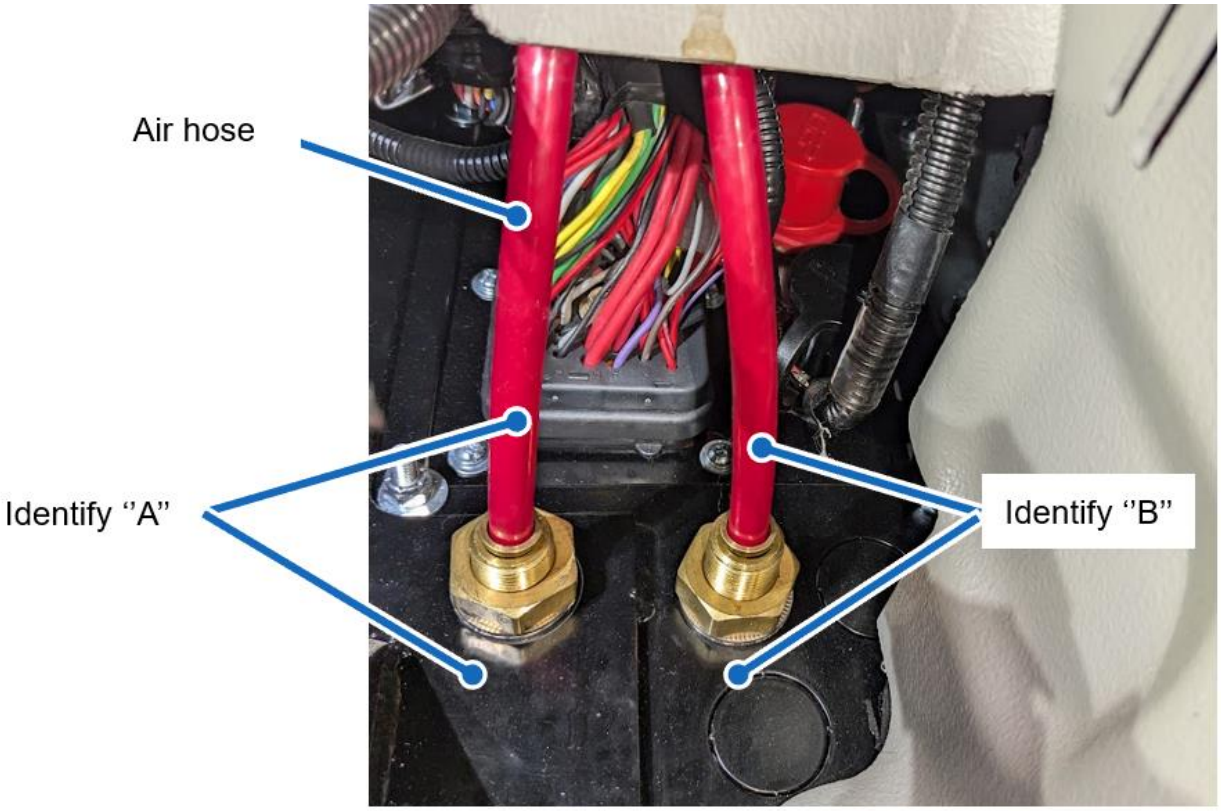


Figure 23 - Reinstallation of the air hoses.

5-L	Reinstall accelerator pedal connector and brake light switch connector.

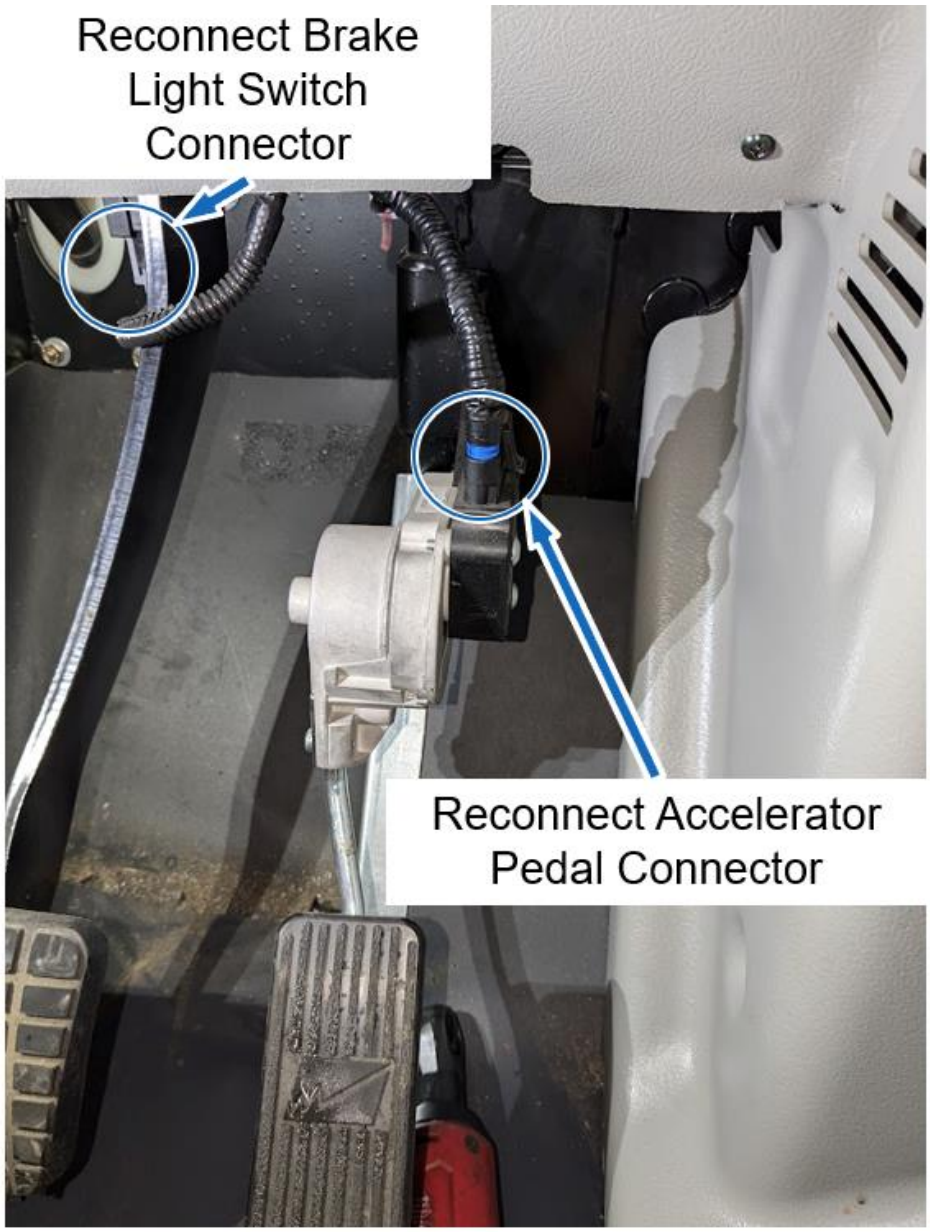
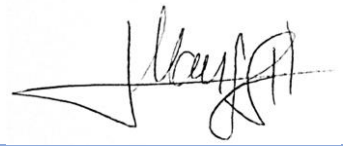


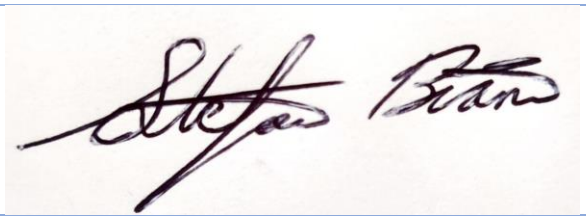
Figure 24 - Reconnection of brake and accelerator pedal connectors

6. Validation

Steps	
6-A	Turn the battery disconnect switch to “ON” position.
6-B	Turn the start switch to “START” position to active high-voltage system.
6-B	Using a multimeter, measure the voltage between the positive and negative passthrough studs to validate the presence of a stable 12 V voltage.
6-C	Ensure there is no DTC’s present on the vehicle.
6-D	***For Full Air Configuration Only:*** Ensure that the air compressor is activated and that the air tank pressure is steady.
6-E	***For Full Air Configuration Only:*** Inspect the air hoses near the brake pedal and make sure there are no air leaks at the collar.
6-F	Press and release the brake pedal to check whether the brake lights turn on and turn off.
6-G	• Place the selector gear in “D” (Drive) and move the vehicle frontwards. • Check that the accelerator pedal works by increasing the vehicle speed. • Press the brake pedal and ensure that the vehicle’s brake is working properly.

Approvals

Technical Publications			
Technical Writer	Allan Inhauser		
Signature		Signed Date:	2024-08-20

Service Engineering			
Student - Service Engineering Specialist	Stefano Bianco		
Signature		Signed Date:	2024-08-20

Service Engineering			
Technical Lead Mechanical	Guillaume LaGarde-Lynch		
Signature		Signed Date:	2024-08-20

Appendix

Crowfoot Torque Wrench Usage and Best Practices

Steps	Description
Important	When using a crowfoot adapter on a torque wrench, the angle between the crowfoot and the torque wrench is important. *Always position the torque wrench into the **preferred orientation** of 90 degrees.* *If clearance problems occur when using the tool in this orientation, the **acceptable orientation** may be used.*
Preferred Orientation	Ensure that the crowfoot attachment is at 90 degrees relative to the torque wrench.

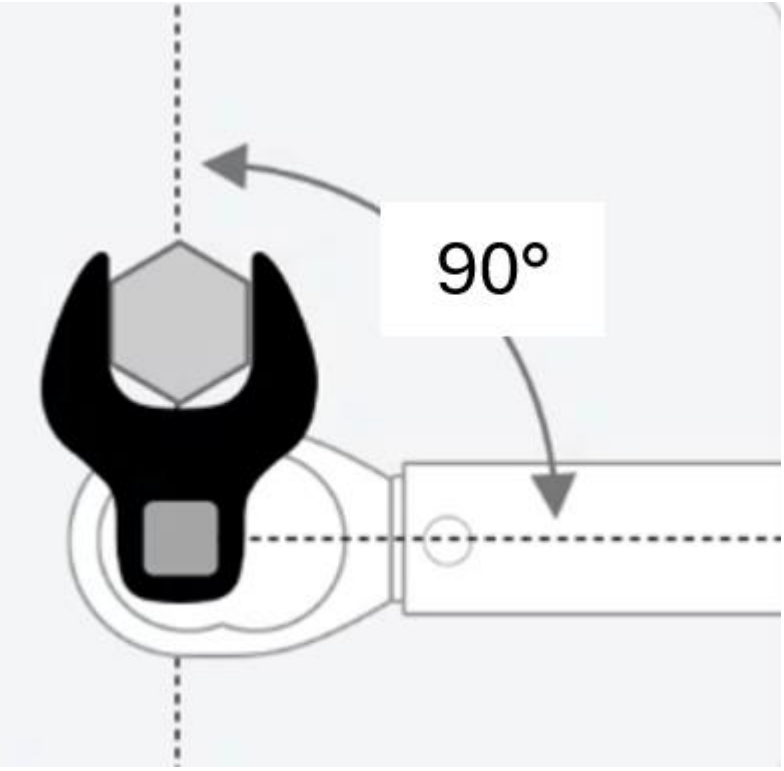


Figure 22 -Diagram demonstrating the preferred crowfoot orientation.

Acceptable Orientation	Ensure that the crowfoot attachment is between 90 degrees and 180 degrees relative to the torque wrench.

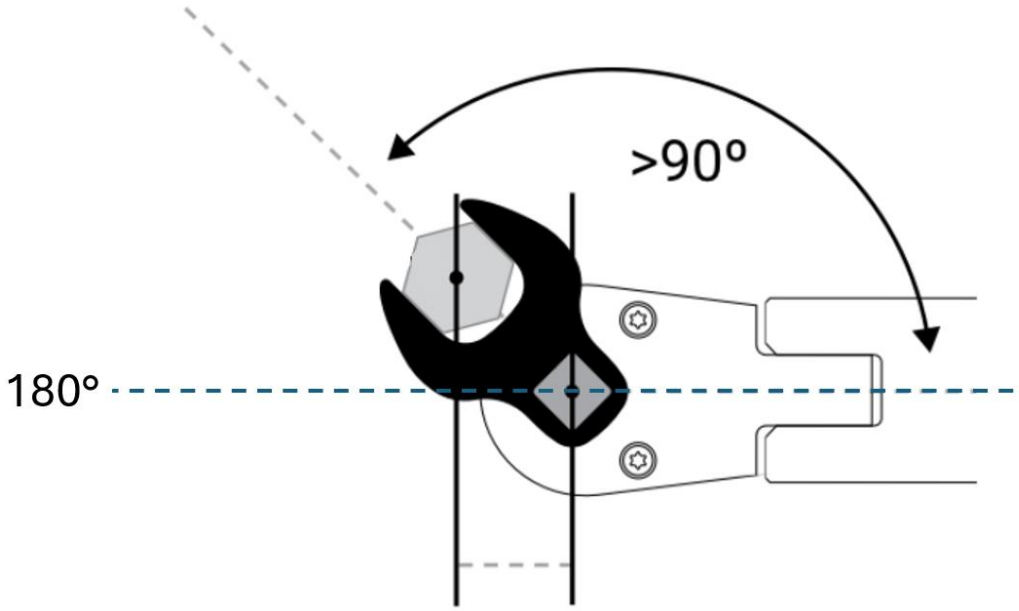


Figure 23 - Diagram demonstrating the acceptable crowfoot orientation

Passthrough Stud Reference Guide

Pass Through Reference	Part Number	Torque for Plastic Nut	Deep Socket Size for Plastic Nut (in)	Torque for Metal Nut	Crowfoot Size for Metal Nut (in)	Allen Socket Size for Metal Nut	Seal PN#12610229_00
12V Power	12610227_00	8 ft lb (11 Nm)	1-1/2	30 ft lb (40 Nm)	3/4	3/16 in	Yes
Ground	12610228_00	8 ft-lb (11 Nm)	1-1/2	30 ft-lb (40 Nm)	3/4	3/16 in	Yes

Table 1 - Passthrough stud lookup table.

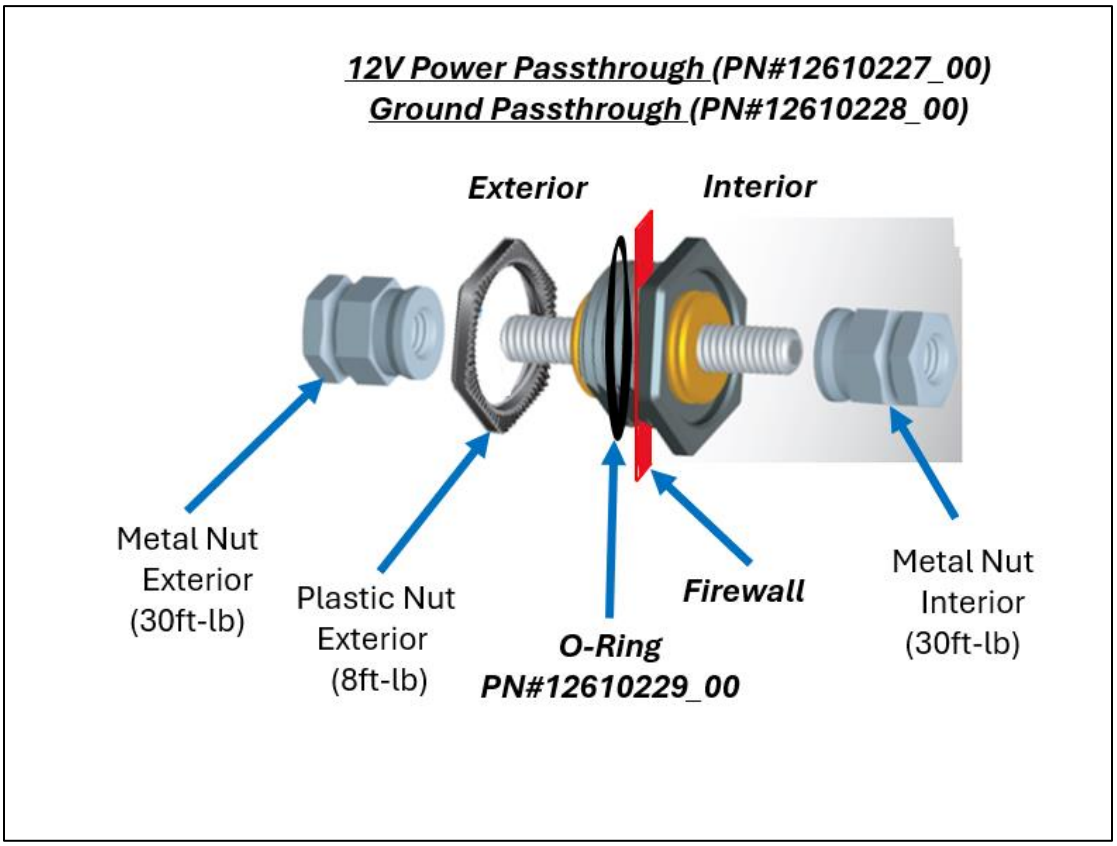


Figure 24 - 12 V power and ground passthrough stack up