



SD17-230/734KIT INSTALLATION MANUAL

REV: BETA (3/27/2018)





SD17-230/734KIT Installation and Operation Manual

Table of Contents

- 1. How to Use this Manual 4
 - 1.1. Interactive Manual using Adobe Reader 4
 - 1.2. Your Kit Part Number and this Manual 4
 - 1.3. Illustration/Photo Details and Orientation..... 4
- 2. Safety First 5
- 3. Application Chart 6
 - 3.1. 100% Direct Bolt-On Vehicle List 6
 - 3.2. **Excluded Vehicles 6
 - 3.3. Aftermarket Product Compatibility 6
- 4. Kit Installation Overview 7
 - 4.1. Approximate Installation Time 8
 - 4.2. ***Quick Install Outline 8
- 5. List of Tools and Supplies 9
 - 5.1. Standard Tool List (Required) 9
 - 5.2. Special Tool List (Recommended) 9
 - 5.3. Shop Consumables List (Recommended) 9
- 6. Parts List 10
 - 6.1. Pre-Packaged Electro-Mechanical Items 10
 - 6.2. Air Fittings and Related Items 11
 - 6.3. Electrical Small Components and Related Items 13
 - 6.4. Bolt-On Mounting Brackets 13
 - 6.5. Hardware/Fasteners 15
- 7. On-Vehicle Electrical Installation 17
 - 7.1. Suggested Wiring Diagram for Horn and Air Compressor 17
 - 7.2. Suggested Wire Routing for Horn, Air Compressor, and Pressure Switch 18
 - 7.3. Disconnect Vehicle Battery(s)..... 18
 - 7.4. Attach Relay to Vehicle..... 18
 - 7.5. Route Wiring and Install Horn Button 18
 - 7.6. Connect Relay to Wiring 20
 - 7.7. Connect Air Horn Solenoid 20
 - 7.8. Pressure Switch 20
- 8. Bench Assembly Steps 20



SD17-230/734KIT

Installation and Operation Manual

8.1	Disassemble Train Horn Kit.....	20
8.2	Mount Small, Medium, and Large Horns to Bracket	22
8.3	Mount Compressor to Bracket	23
8.4	Assemble Fittings and Tubing to Air Tank	24
9.	On-Vehicle Mechanical Assembly Steps.....	26
9.1	Horn Assembly Installation.....	26
9.2	Air Tank Assembly Installation	30
9.3	Compressor and Bracket Installation	37
10.	On Vehicle Air Line Installation	38
10.1.	Suggested Routing Diagram for Horns, Air Tank and Air Compressor	38
10.2.	Connect Air Horns and Install Trumpets	38
10.3.	Connect Air Compressor to Air Tank	39
10.4.	Attach Air Compressor Inlet Filter	40
11.	Initial Testing of Kit.....	40
11.1.	Reconnect Vehicle Battery(s)	40
11.2.	Test Air Compressor	40
11.3.	Test Train Horns.....	40
11.4.	Test Quick Connect Coupler	41
11.5.	Raise/Re-install Spare Tire.....	41
12.	General Operation of Kit	41
12.1.	Compressor Operation	41
12.2.	Horn Operation.....	41
13.	Routine Maintenance	42



SD17-230/734KIT

Installation and Operation Manual

1. How to Use this Manual

1.1. Interactive Manual using Adobe Reader

It is recommended to open this digital PDF using Adobe Reader[®] to take advantage of following key features:

- **Hyperlinks** ([blue underlined text](#)) allow access to additional content via internet; click/tap to activate
- **Table of Contents** page allows easily navigating this manual; click/tap any section line to go to it
- **Bookmarks** allow quickly navigating to any section; click/tap
- **Zoom IN** on pictures by pressing "CTRL and +" at same time on PC, or pinch in on smart devices
- **Zoom OUT** on pictures by pressing "CTRL and -" at same time on PC, or pinch out on smart devices

To install Adobe Reader[®]

On PC, or Mac

1.2. Your Kit Part Number and this Manual

This manual covers installation, testing, and operation of following kit part numbers

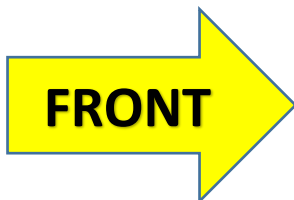
1. **SD17-230KIT** (i.e., 230 Train Horns)
2. **SD17-734KIT** (i.e., 730 Train Horns)

NOTE: Illustrations and pictures contained herein may represent only one kit part number. Where critical differences exist between kits (i.e., different parts, orientation, mounting points, etc.), additional text, or necessary graphics are provided to minimize confusion.

Parts list explicitly state kit differences with **(BOLD TEXT)** inside parenthesis, shown below part number.

1.3. Illustration/Photo Details and Orientation

This manual may use digitally created illustrations, and/or actual photos of example vehicle. These graphics may not include exact items found on your vehicle (i.e., electrical wiring, fuel lines, body panels, etc.). Illustrations typically will be missing details and are for clarity to show critical mounting locations and orientation on vehicle.



Throughout this manual yellow arrows with text reading "FRONT", may be present over illustrations and pictures. These arrows specify direction toward front of vehicle and provide clarity to how illustration is viewed.



SD17-230/734KIT

Installation and Operation Manual

2. Safety First

Read manual thoroughly before starting installation of this kit. Verify you have all parts listed and that you clearly understand this installation procedure. Contact Kleinn technical support for any questions.

Installation of this kit requires **moderate mechanical aptitude**; seek professional help if you're not competent using hand tools in tight uncomfortable spaces, and around possibly rusted and sharp vehicle parts.

Before starting, obtain proper tools required to perform installation correctly, adequate lighting, eye protection, hearing protection for operating train horns, and hand protection to guard against sharp edges and metal burrs, which may be present on kit parts and vehicle parts.

Throughout this manual the following words may be used; be aware of their meaning and application.

CAUTION: means damage could occur to vehicle, or kit parts during, or after installation

WARNING: means injury could occur to you or others, including damage to vehicle, or kit parts

DANGER: means serious injury or death could occur to you or others during installation



SD17-230/734KIT

Installation and Operation Manual

3. Application Chart

3.1. 100% Direct Bolt-On Vehicle List

SD17-230/734KIT is a 100% direct bolt-on aftermarket product for FORD vehicles listed in below chart; every effort has been made to verify correct fitment on these vehicles in their factory, non-modified conditions.

MODEL YR	MODEL	DRIVE	ENGINE	BODY	TRIM
2017+	F-250	2WD, 4WD	ALL	ALL	ALL**
2017+	F-350	2WD, 4WD, DUALIE	ALL	ALL	ALL**

NOTE: All vehicles listed may require drilling holes for ground wires and installing switches, based on preference of installed switch locations and wire grounding points.

3.2. **Excluded Vehicles

SD17-230/734KIT may not be compatible with following FORD vehicles:

1. Any vehicle equipped with Ford snow plow package, power take off, or factory installed front winch

3.3. Aftermarket Product Compatibility

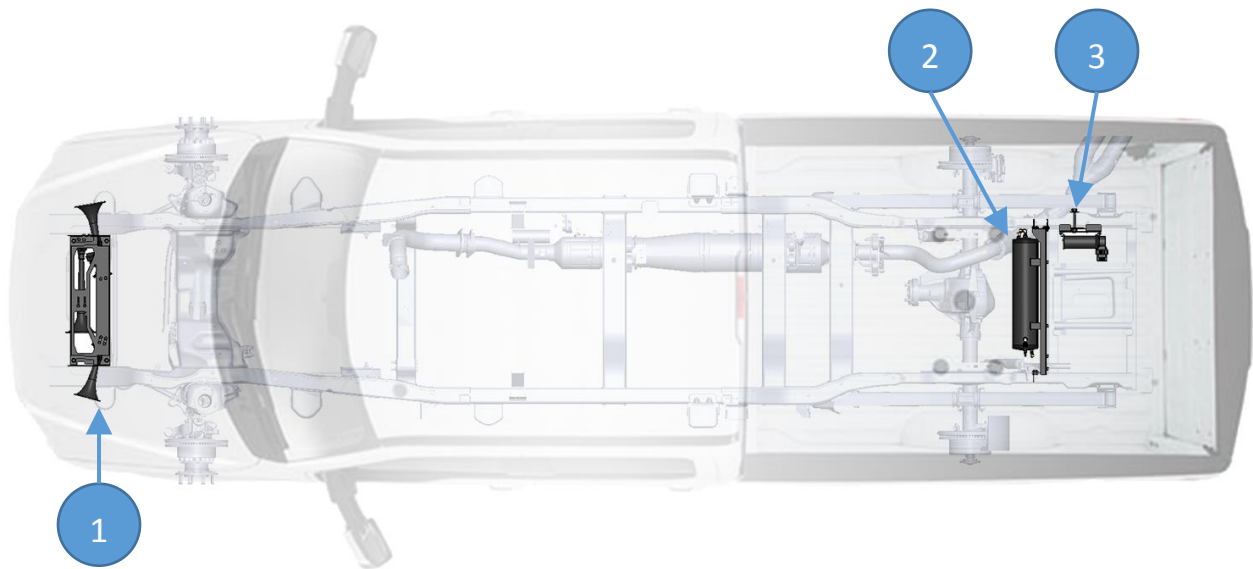
This kit has been designed and tested to be compatible with leading manufacturers of aftermarket truck steps, such as Amp Research Power Steps[®] and all OEM standard and optional steps.

This kit has NOT been designed, or tested to be compatible with leading manufacturers of aftermarket front bumpers.

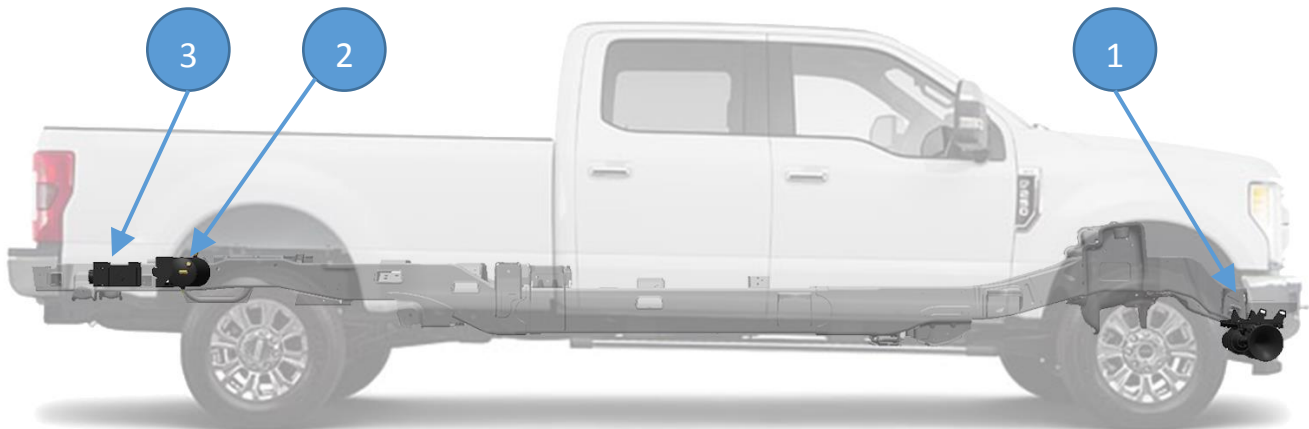
4. Kit Installation Overview

SD17-230/734KIT consists of following sub-systems, located on vehicle, as follows:

ITEM	DESCRIPTION	MOUNTING LOCATION	APPROX. INSTALL TIME
1	230/730 Series Large, Medium, and Small Horn with Air Solenoid	Directly behind front bumper. Attached to frame rails.	2+ Hours
2	Air Tank	Under rear bed floor, directly behind rear axle assembly. Attached to frame rails.	4+ Hours
3	6350RC/6450RC Air Compressor	Under rear bed floor, inside of passenger frame rail above spare tire. Attached to frame rail.	1-2 Hours



Top View – 2017 F-250 Crew Cab Long Bed (734KIT Shown)



Passenger Side View – 2017 F-250 Crew Cab Long Bed (734KIT Shown)



SD17-230/734KIT

Installation and Operation Manual

4.1. Approximate Installation Time

SD17-230/734KIT is a multi-faceted product consisting of multiple mechanical, electrical, and pneumatic components.

For a typical home mechanic, auto enthusiast, or technician installing a Kleinn Bolt-On kit for first time, a professional installation job with setup and testing of final product, is estimated to take:

- **8-12 Hours**
-

4.2. ***Quick Install Outline

For person(s) with experience installing Kleinn bolt-on kits, SD17-230/734KIT can be installed in an order similar to below:

1. Route wiring, install Relay, and Horn Switch
2. Disassemble 230/730 Horn Kit (i.e., separate drivers from trumpets and horn mounting plate)
3. Assemble Air Fittings to Air Tank
4. Assemble Small, Medium & Large Horn Drivers to Horn Bracket
5. Assemble Compressor to Bracket
6. Mount Driver and Passenger Horn Brackets to frame
7. Mount Horns to Vehicle
8. Lower/remove spare tire
9. Mount Air Tank Brackets to frame
10. Mount Air Tank to Air Tank Bracket; pre-wire and pre-plumb Tank first
11. Mount Compressor and Bracket to frame
12. Route Air Tubing, Quick Connect Coupler, Air Compressor filter, and connect all Pneumatic components
13. Test System and adjust, as needed
14. Raise/re-install spare tire



SD17-230/734KIT

Installation and Operation Manual

5. List of Tools and Supplies

5.1. Standard Tool List (Required)

1. Basic mechanic's 3/8" drive socket sets with extensions
 - a. Inch Size Sockets (1/4" – 1" Hex)
 - b. Metric Size Sockets (6mm – 20mm Hex)
2. Basic mechanic's combination wrenches (box/open-end)
 - a. Inch Size Wrenches (1/4" – 1" Hex)
 - b. Metric Size Wrenches (6mm – 20mm Hex)
3. Basic mechanic's screwdriver set (Philips, Flat Head)
4. Diagonal Cutter/Wire Cutter Pliers
5. Wire Strippers
6. Wire Terminal Crimpers
7. Slip-Joint Pliers
8. Utility Knife, or Utility Razor blade
9. Magnetic retrieval tool

5.2. Special Tool List (Recommended)

1. 10-100 ft.-lb. torque wrench
2. 20-150 in.-lb. torque wrench
3. Multi-Meter for 12V DC electrical systems, or equivalent
4. 12V DC Test Light, or equivalent
5. Trim Panel Tool, for removing wiring push pins

5.3. Shop Consumables List (Recommended)

1. Quality Electrical tape
2. Di-electric grease for electrical connections
3. Heat Shrink tubing for electrical connections
4. Blue Loctite (i.e., Loctite PN 242), or equivalent
5. Sand Paper, or Wire Brushes for installing ground wires
6. Extra plastic zip ties > 6" long
7. Extra NPT sealant (i.e., Kleinn Air Horn Juice, Teflon tape, etc.)
8. Touch-up paint for frame/chassis
9. Typical cleanup supplies

6. Parts List

Below Parts List covers following kit part numbers:




1. **SD17-230KIT** (i.e., 230 Train Horns)
2. **SD17-734KIT** (i.e., 730 Train Horns)

Unpackage and organize Kit across a large work area and verify all parts are included, as listed below. Contact Kleinn support if any questions arise.

1. Review pre-packaged items (i.e., train horn box, air compressor, air tank, etc.)
2. Review Air Fittings and Tubing
3. Review Wiring and Accessories
4. Review Bolt-On Mounting Brackets
5. Review Hardware/Fasteners

6.1. Pre-Packaged Electro-Mechanical Items

NOTE: Items in this section come in their own packages and may include additional items inside package

ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
1	1	6350RC (230KIT ONLY)	6350RC Compressor Kit, with included hardware, and remote air supply line	
1	1	6450RC (734KIT ONLY)	6450RC Compressor Kit, with included hardware, and remote air supply line	
2	1	230 (230KIT ONLY)	230 Series Horn Kit, with included solenoid/valve, and 1/4" Air Tubing, 20 ft. long	
2	1	730 (734KIT-ONLY)	730 Series Horn Kit, with included solenoid/valve, and 1/2" Air Tubing, 20 ft. long	

6.2. Air Fittings and Related Items





ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
3	1	6351RT	Air Tank, 6-Port, Long Body	
4	2	51414 (view location on Air Tank)	1/4" NPT X 1/4" Compression Fitting	
5	1	52835 (view location on Air Tank)	1/4" NPT, Drain Valve	
6	1	52175 (view location on Air Tank)	1/4" NPT, 175 PSI Safety Valve	
7	2	59014 (view location on Air Tank)	1/4" NPT, 90 Deg Female Elbow	
8	1	51214L (734KIT-ONLY) (view location on Air Tank)	1/4" NPT X 1/2" Compression Fitting, 90 Deg Elbow	
9	1	53814R (view location on Air Tank)	3/8" NPT FEMALE X 1/4" NPT Reducer Fitting	

SD17-230/734KIT


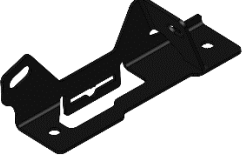
Installation and Operation Manual

10	1	51414L (230KIT ONLY) (view location on Air Tank)	1/4" NPT X 1/4" Compression Fitting, 90 Deg Elbow	
11	1	2151 (view location on Air Tank)	1/4" NPT Pressure Switch	
12	2	25014 (230KIT ONLY)	1/4" Air Tubing, 20 ft. long	
13	2	25012 (734KIT ONLY)	1/2" Air Tubing, 20 ft. long	
14	1	1302	Quick Connect Air Coupler Kit, with relocation bracket	
15	1	INF-1	Inflator Kit, with Air Hose and Bag	
16	1	KLEINN AIR HORN JUICE	Thread Sealant for NPT Fittings	

6.3. Electrical Small Components and Related Items



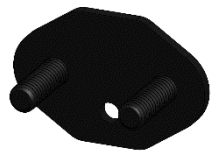
ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
17	1	320	Terminator – Nickel Plated Remote Horn Button	
18	1	WIRE KIT	Full Wire Kit, with electrical connectors and zip ties	
19	1	1/4" WIRE LOOM, 20 ft. Long	1/4" Wire loom for electrical routing	
20	1	1/8" WIRE LOOM, 10 ft. Long	1/8" wire loom for electrical routing	

6.4. Bolt-On Mounting Brackets

ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
21	1	SDGEN4-HORN-BRKT-DR	Horn Mounting Bracket, Driver Side	
22	1	SDGEN4-HORN-BRKT-PA	Horn Mounting Bracket, Passenger Side	

SD17-230/734KIT

Installation and Operation Manual

23	1	SDGEN4-HORN-BRKT-MD	Horn Mounting Plate	
24	1	SDGEN4-TANK-BRKT-PA	Air Tank Bracket, Passenger Side	
25	1	SDGEN4-TANK-BRKT-DR	Air Tank Bracket, Driver Side	
26	3	SDGEN4-TANK-BRKT-NU	Air Tank Nut Plate	
27	1	SDGEN4-COMP-BRKT-PA	Compressor Bracket	

6.5. Hardware/Fasteners



ITEM	QTY	SIZE, TYPE	DESCRIPTION	WHERE USED
HW1	6	5/16"-18 X 1.25", HEX BOLT	HEX BOLT, GRADE 2, ZINC PLATED	HORN MOUNTING (6)
HW2	12	5/16"-18, HEX NUT	HEX NUT, GRADE 2, ZINC PLATED	HORN MOUNTING (6) TANK NUT PLATES (6)
HW3	18	5/16", FLAT WASHER	SAE FLAT WASHER, ZINC PLATED	HORN MOUNTING (12) TANK NUT PLATES (6)
HW4	12	5/16", LOCK WASHER	SPLIT LOCK WASHER, ZINC PLATED	HORN MOUNTING (6) TANK NUT PLATES (6)
HW5	10	7/16"-14 X 1.25", HEX BOLT	HEX BOLT, GRADE 2, ZINC PLATED	HORN PLATE TO BRACKETS (4) TANK BRACKET (2)
HW6	10	7/16"-14, HEX NUT	HEX NUT, GRADE 2, ZINC PLATED	HORN PLATE TO BRACKETS (4) TANK MOUNTING KIT (4) TANK BRACKET (2)
HW7	20	7/16", FLAT WASHER	SAE FLAT WASHER, ZINC PLATED	HORN PLATE (8) TANK MOUNTING (8) TANK BRACKET (4)
HW8	10	7/16", LOCK WASHER	SPLIT LOCK WASHER, ZINC PLATED	HORN PLATE (4) TANK MOUNTING (4) TANK BRACKET (2)
HW9	1	3/4"-10 X 5", HEX BOLT	HEX BOLT, GRADE 2, ZINC PLATED	COMPRESSOR BRACKET



SD17-230/734KIT

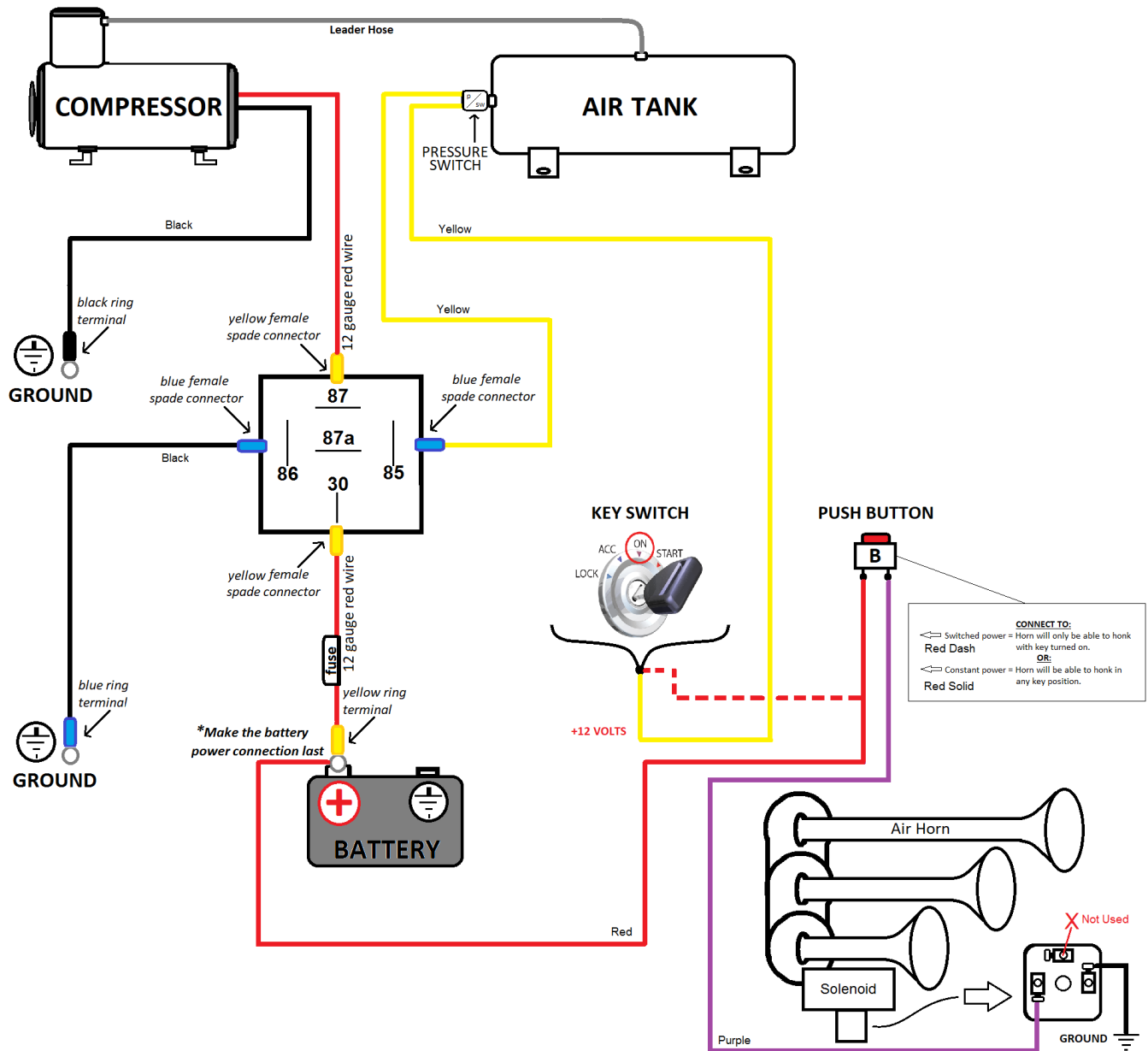
Installation and Operation Manual

HW10	1	3/4", FLAT WASHER	USS FLAT WASHER, ZINC PLATED (.81" ID X 2" OD)	COMPRESSOR BRACKET
HW11	1	3/4", LOCK WASHER	SPLIT LOCK WASHER, ZINC PLATED	COMPRESSOR BRACKET
HW12	3	1/4"-20 X 2", SET SCREW	SET SCREW, HEX DRIVE, BLACK-OXIDE	TANK NUT PLATE
HW13	8	#10, FLAT WASHER	USS FLAT WASHER, ZINC PLATED (.25" ID X .56" OD)	COMPRESSOR MOUNTING BOLTS

7. On-Vehicle Electrical Installation

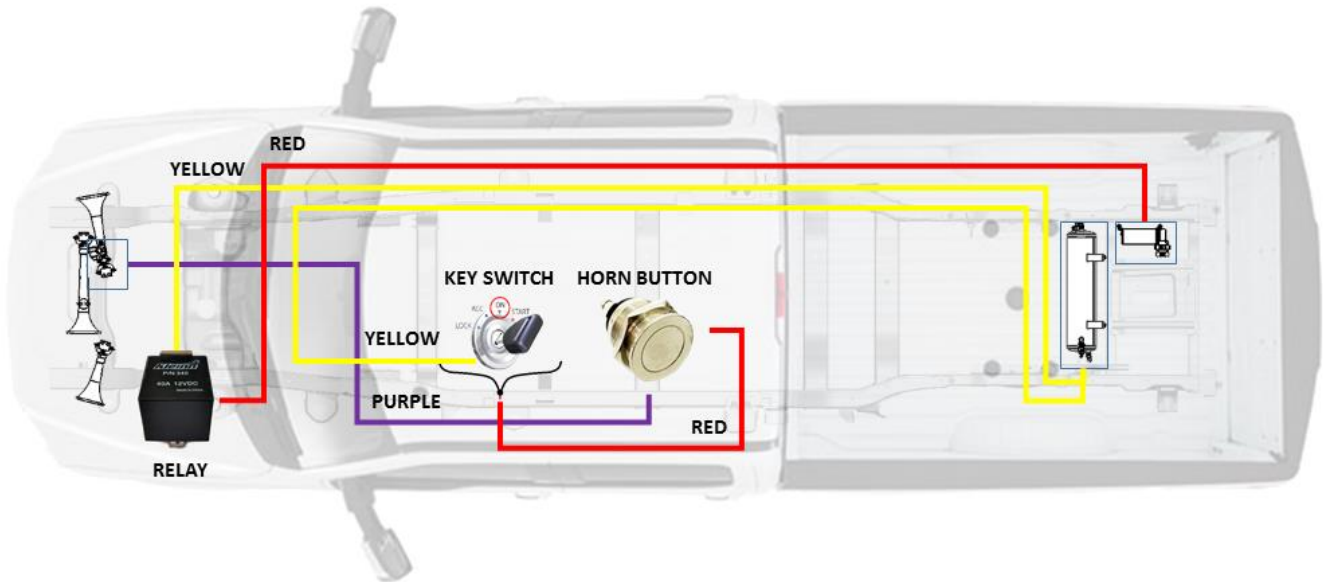
7.1. Suggested Wiring Diagram for Horn and Air Compressor

IGNITION RELAY DIAGRAM FOR 230KIT & 734KIT



7.2. Suggested Wire Routing for Horn, Air Compressor, and Pressure Switch

SD17-230KIT / SD17-734KIT RECOMMENDED WIRE ROUTING



7.3. Disconnect Vehicle Battery(s)

CAUTION: Follow all recommended safety precautions for working on vehicle's electrical system; consult vehicle owner's manual for further instruction.

7.4. Attach Relay to Vehicle

- a. Fasten relay to vehicle body, under hood using supplied self-tapping screws. It is recommended to install in location near factory ground bolt, or battery(s) to minimize drilling holes.
 - i. Reference wiring diagrams

7.5. Route Wiring and Install Horn Button

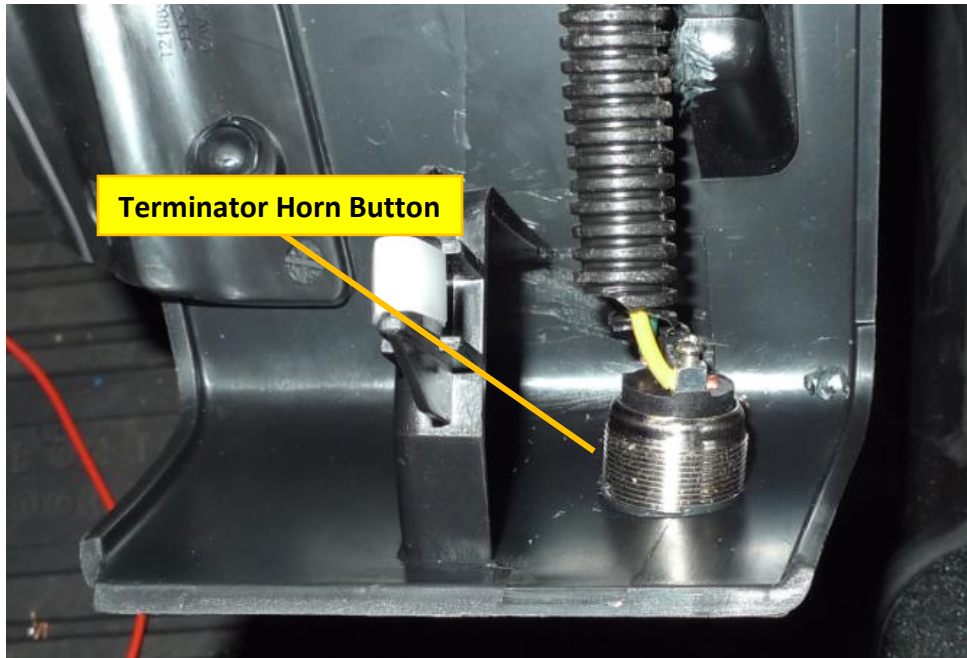
- a. Route wire throughout vehicle, per wiring diagrams; however, installer may route as desired.
 - i. Insert all wiring into included wire loom and ensure loom is away from all sharp edges, hot vehicle parts (i.e., exhaust, engine, radiator), and fasten securely to vehicle using zip ties, or equivalent.

NOTE: Do not cut wires to length until 100% sure of length required for final connections.

- b. Install supplied fuse holder on end of power wire by cutting the loop in fuse holder and connecting supplied Ring terminal to one end and butt connector on other end.

CAUTION: Do not install 30-amp fuse until all electrical connections are final.

- a. Find a suitable location for horn pushbutton (i.e., in dash, center console, etc.). Drill a 3/4" hole at location. Route horn button wires to hole then slide pushbutton retaining nut over wires and connect per wiring diagram. Install pushbutton into hole and tighten retaining nut securely on backside.
 - i. Example Horn Button on backside



- ii. Example location



7.6. Connect Relay to Wiring

- a. Connect routed wiring to relay, per wiring diagram.

7.7. Connect Air Horn Solenoid

- a. Connect routed wiring to Horn Solenoid, per wiring diagram.

7.8. Pressure Switch

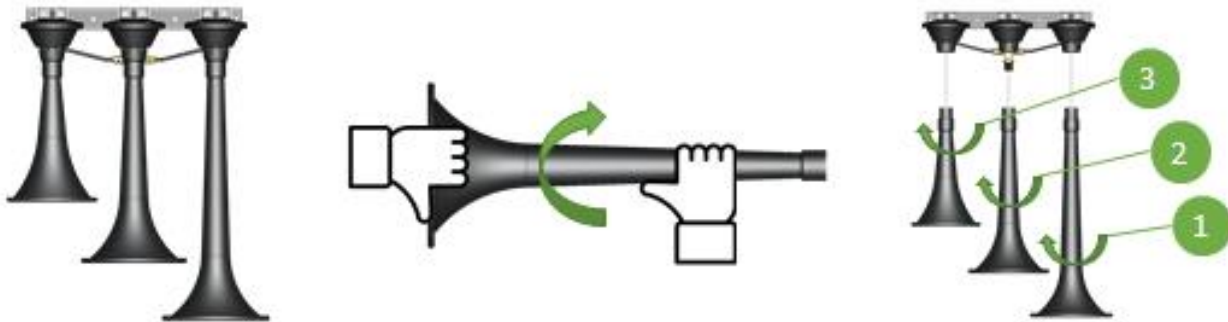
- a. Pressure switch will be connected once Air Tank is installed on bracket; however, due to space constraints, it is optional to connect pressure switch, per wiring diagram then install switch into Air Tank before hanging Tank on its Bracket.

8. Bench Assembly Steps

Complete following steps off vehicle to facilitate final installation.

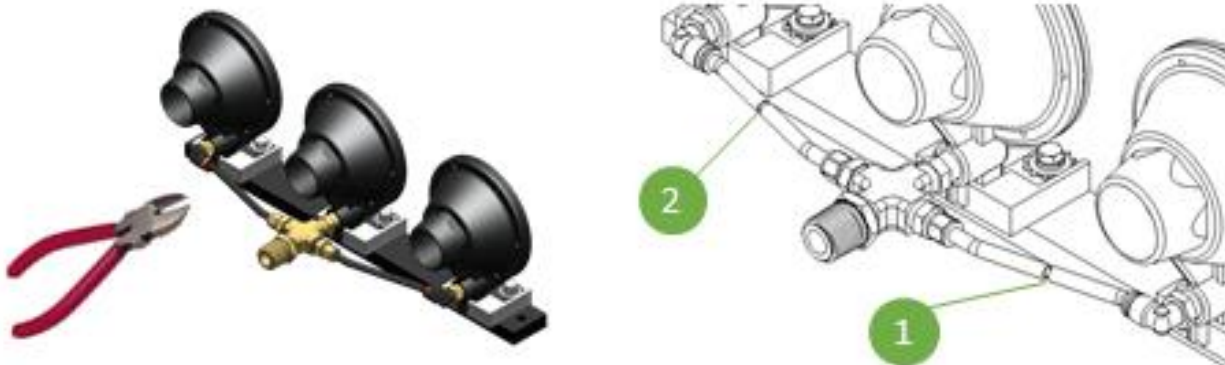
8.1 Disassemble Train Horn Kit

1. Remove trumpets from drivers and set aside.
 - a. Starting with largest trumpet, tightly grasp trumpet with both hands and unscrew counter clockwise; trumpet may be very tight. Repeat on medium trumpet, then small.
 - i. Drivers are identical and do NOT require marking Small, Medium, Large
 - b. If necessary, clamp horn mounting plate to rigid table, in vise, or seek help to hold plate.



2. Cut semi-rigid plastic air tubing between horns.

- a. Use sharp side/diagonal cutters, or equivalent to safely sever tubing.



SD17-230/734KIT

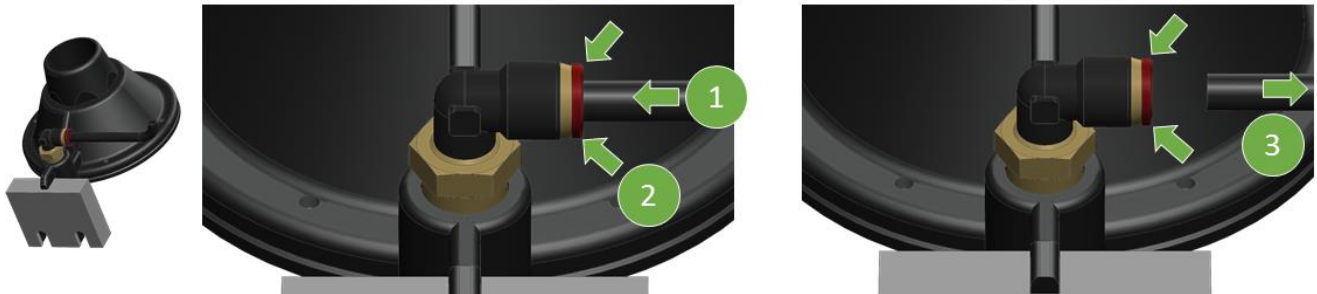
Installation and Operation Manual

WARNING: tubing is difficult to sever using any type of fixed blade (i.e., knife, razor blade, box cutter, etc.)

3. Loosen Compression Nuts on center driver and remove horn drivers from mounting plate.
 - a. Use properly sized socket, or box-end wrench.
 - b. Horn mounting plate and fasteners will NOT be re-used during installation.



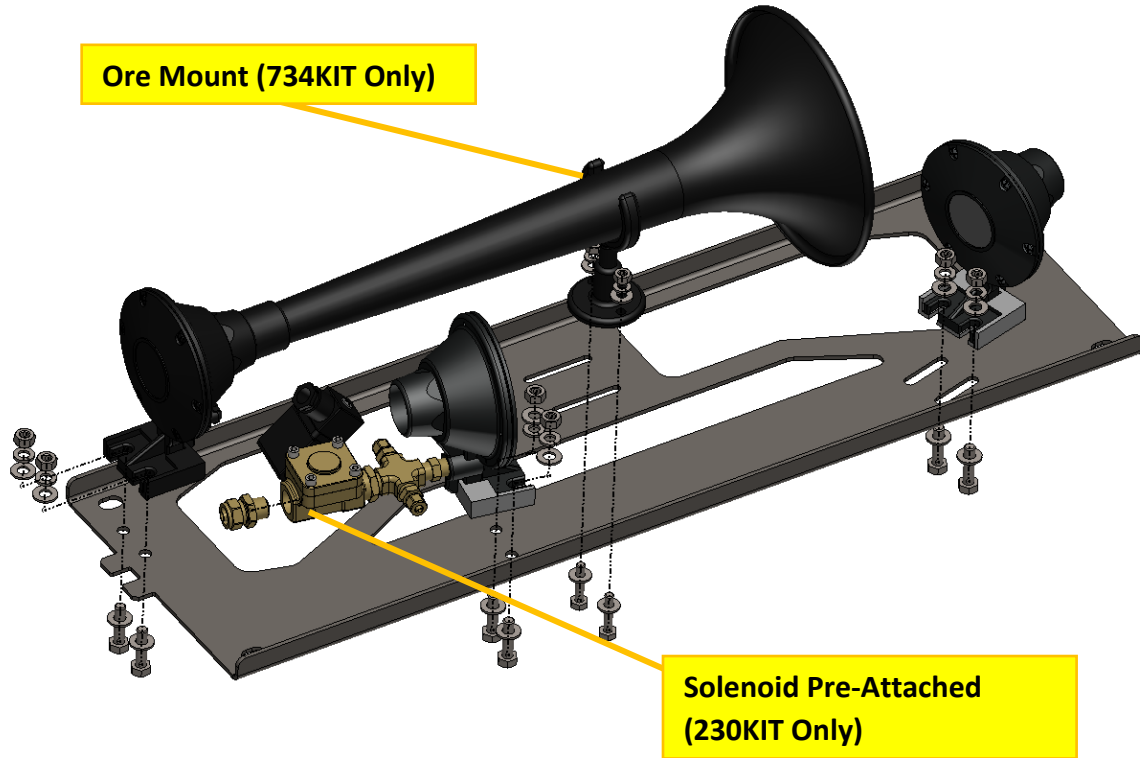
4. Remove cut tubing from fittings.
 - a. Using slip-joint pliers, or equivalent, pull and twist off tubing connected to compression fittings.
 - b. Depress collar on quick release fitting with one hand, then twist and pull plastic tube out with other hand. If necessary, use slip-joint pliers, or equivalent to twist and pull tubing out.



- c. For further instruction on properly using quick fittings, reference this [SMC Video](#)
 - d. Discard old tubing.

8.2 Mount Small, Medium, and Large Horns to Bracket

1. Attach Horn Drivers to bracket, per below illustration.



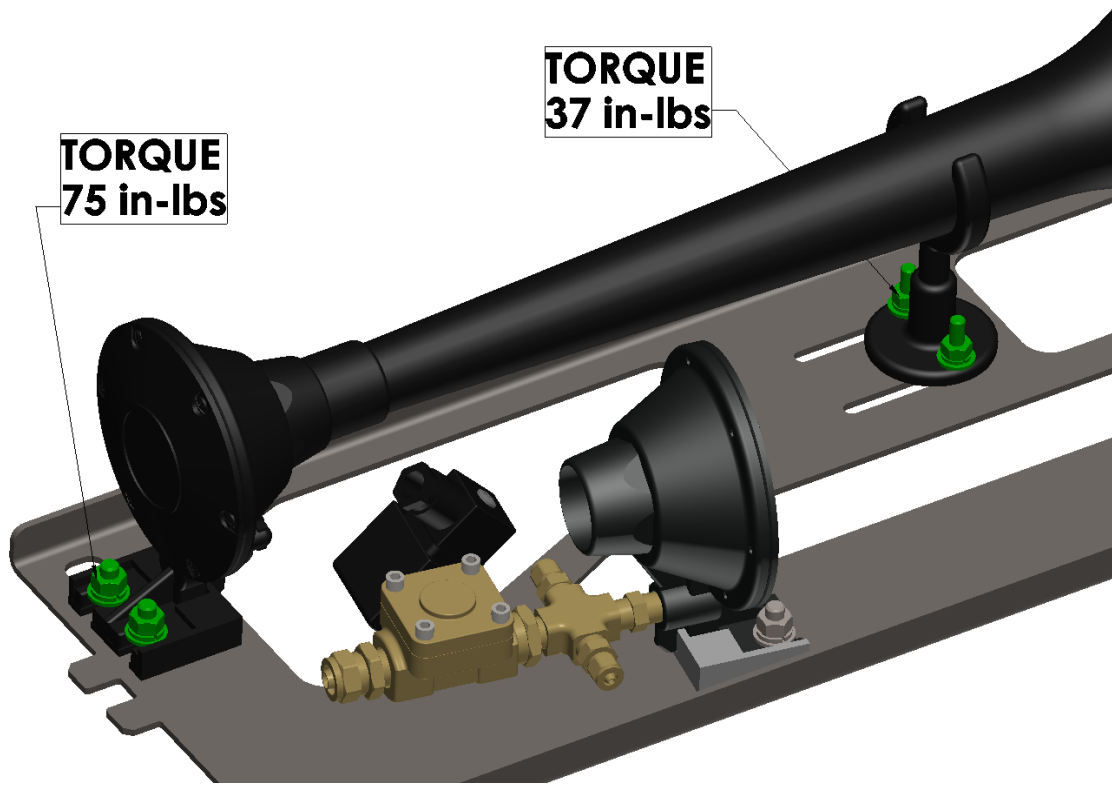
(734KIT Shown)

- a. Use Horn Separation Hardware kit
 - i. Assemble fasteners clean and dry using proper socket and box-end wrench.
 - ii. Hand tighten all fasteners.
- b. Do not use Ore Mount Rubber Bushing (included in kit) on 734KIT.**



- iii. Attach 1/2" Tube fitting to solenoid and tighten to orientation shown
 - i. Apply two small drops of [Kleinn Air Horn Juice](#) to male pipe threads.
 - ii. Verify that air flow arrow on Solenoid points to horn driver and facing up.

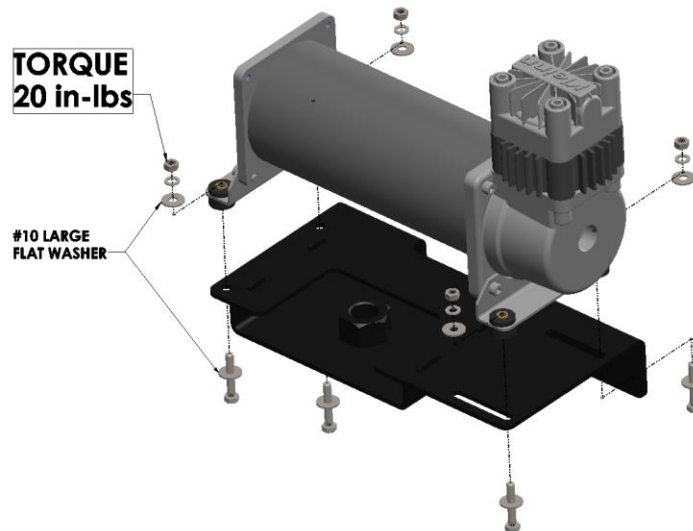
- Center Large horn trumpet between cut-out and final tighten its fasteners, per below illustration.



(734KIT Shown)

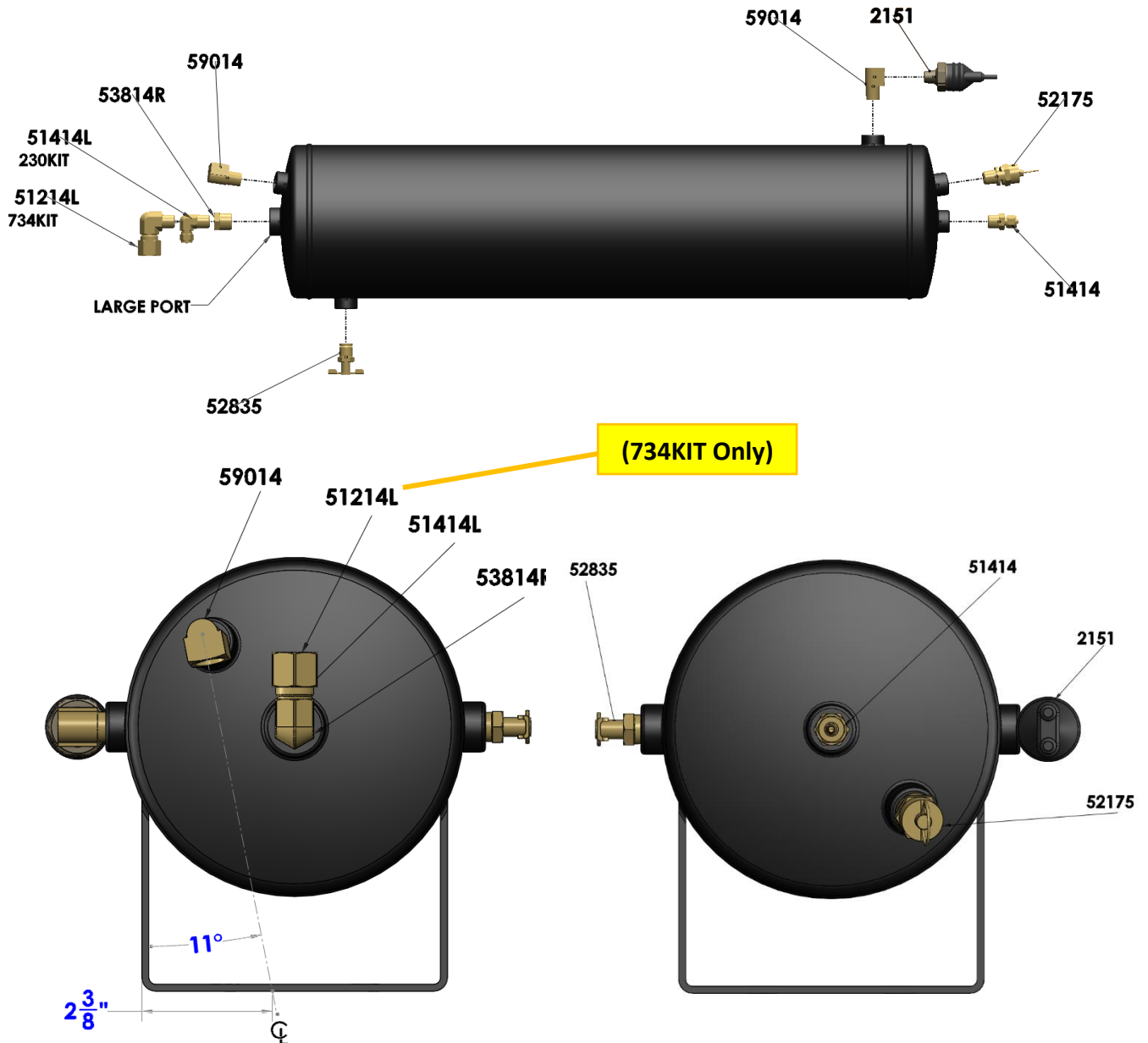
8.3 Mount Compressor to Bracket

- Attach Air Compressor to bracket, per below illustration
 - Assemble fasteners clean and dry, using large washers included in SD17 Hardware kit



8.4 Assemble Fittings and Tubing to Air Tank

1. Attach and tighten air fittings to tank, per below illustrations.
 - a. Apply two small drops of [Kleinn Air Horn Juice](#) to each male pipe thread.
 - b. Hand-tighten each fitting, then further tighten each 1/4-1/2 turn using proper sized box-end wrench; adjust as necessary to match fitting orientation shown.
 - c. Reference Parts List for description of part numbers; [Go to Fittings List](#)

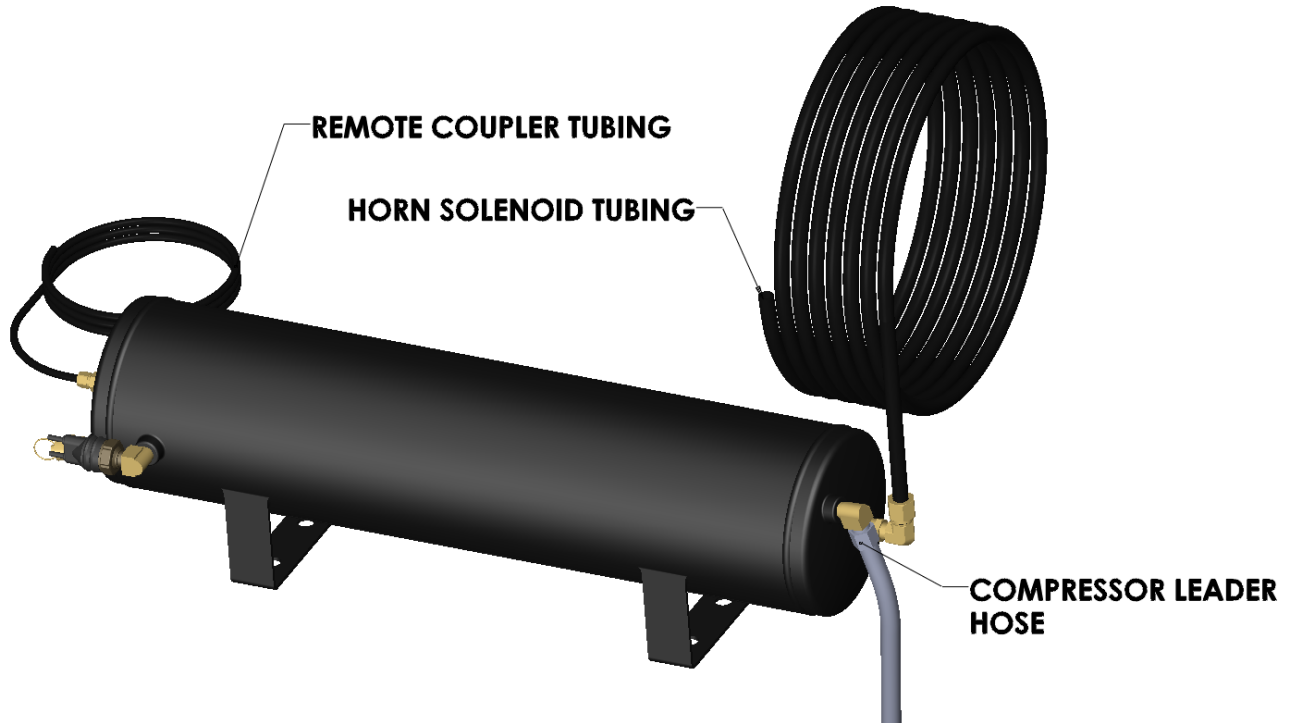


Right and Left side view of Tank with Fittings

SD17-230/734KIT

Installation and Operation Manual

2. Attach air tubing to tank; space constraints exist during tank installation increasing difficulty of this step.
 - a. Remove Air Compressor leader hose from compressor and install, per below illustration
 - b. Apply two small drops of [Kleinn Air Horn Juice](#) to each male pipe thread.
 - c. Hand-tighten each fitting, then further tighten each 1/4-1/2 turn using proper sized box-end wrench; adjust as necessary to match fitting orientation shown.



9. On-Vehicle Mechanical Assembly Steps

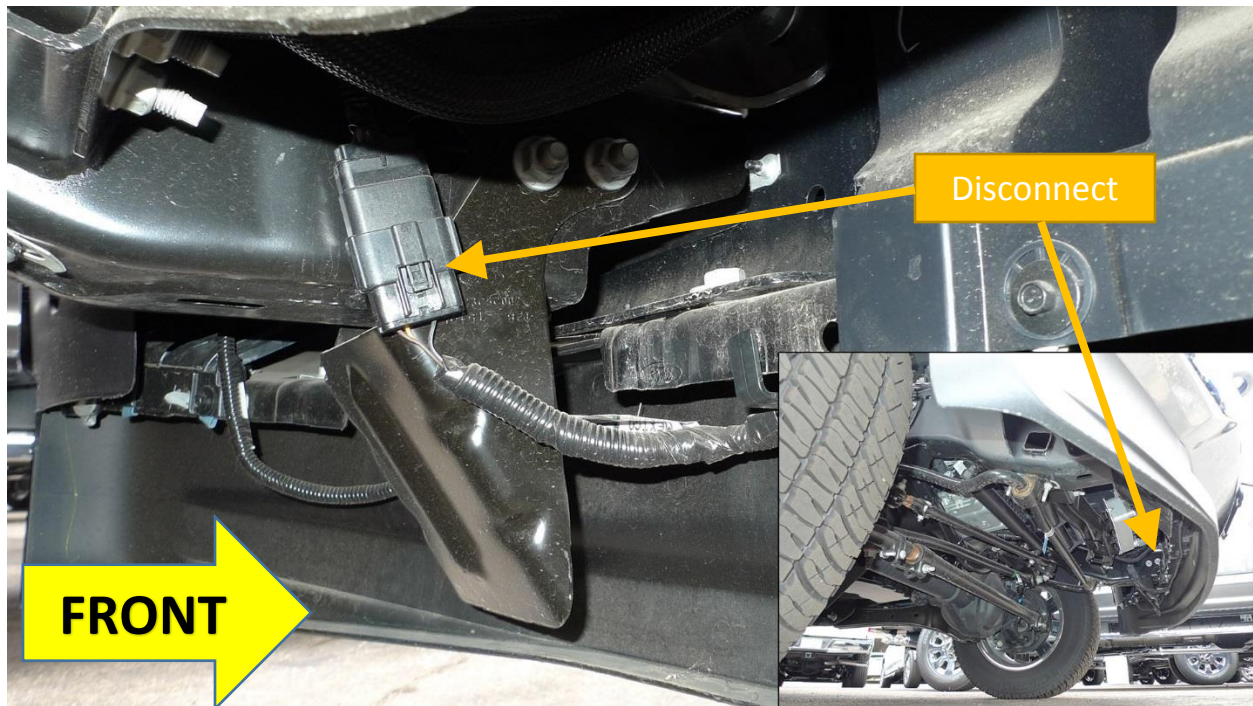
Complete following steps on vehicle.

Raise vehicle off ground using appropriate vehicle lift, ramps, or jack stands.

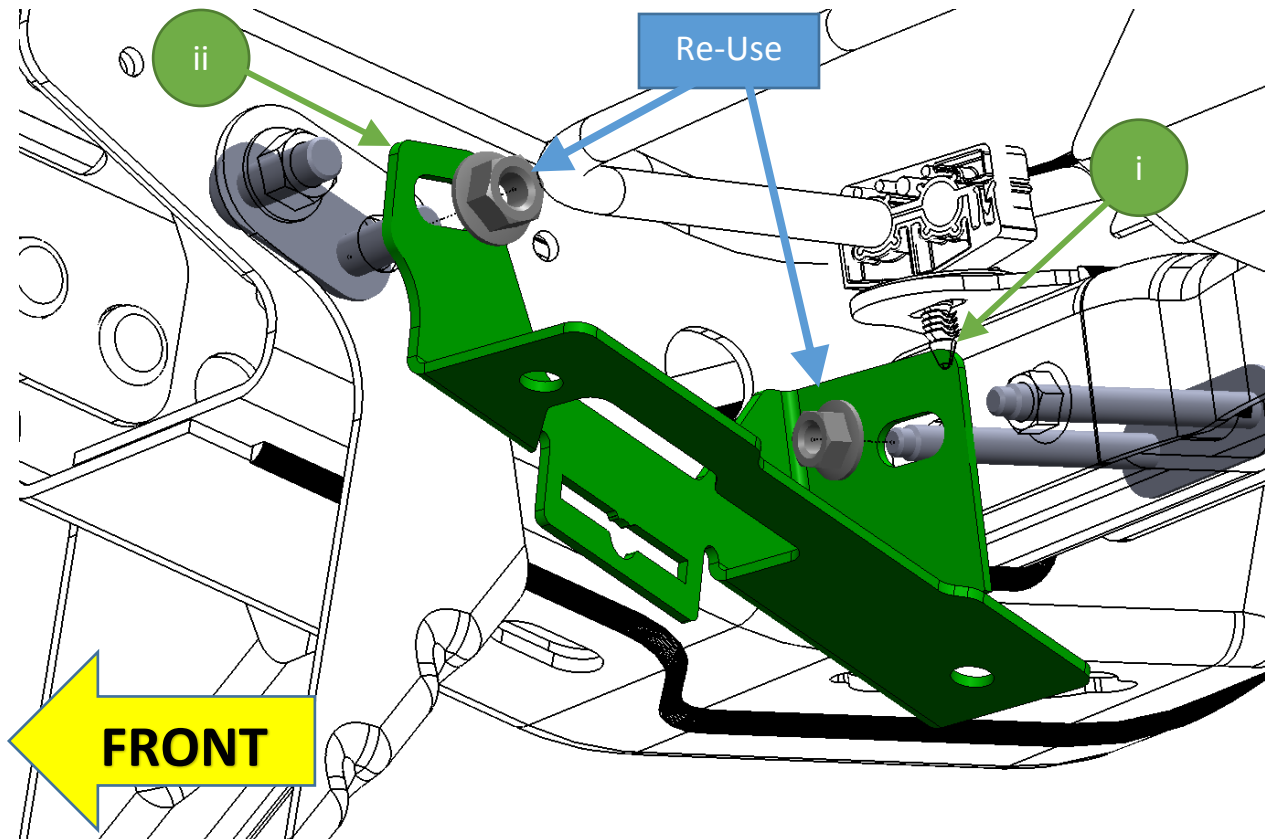
DANGER: Installation requires being underneath vehicle and applying forces to vehicle chassis. Follow all recommended safety precautions for raising vehicle; consult vehicle owner's manual.

9.1 Horn Assembly Installation

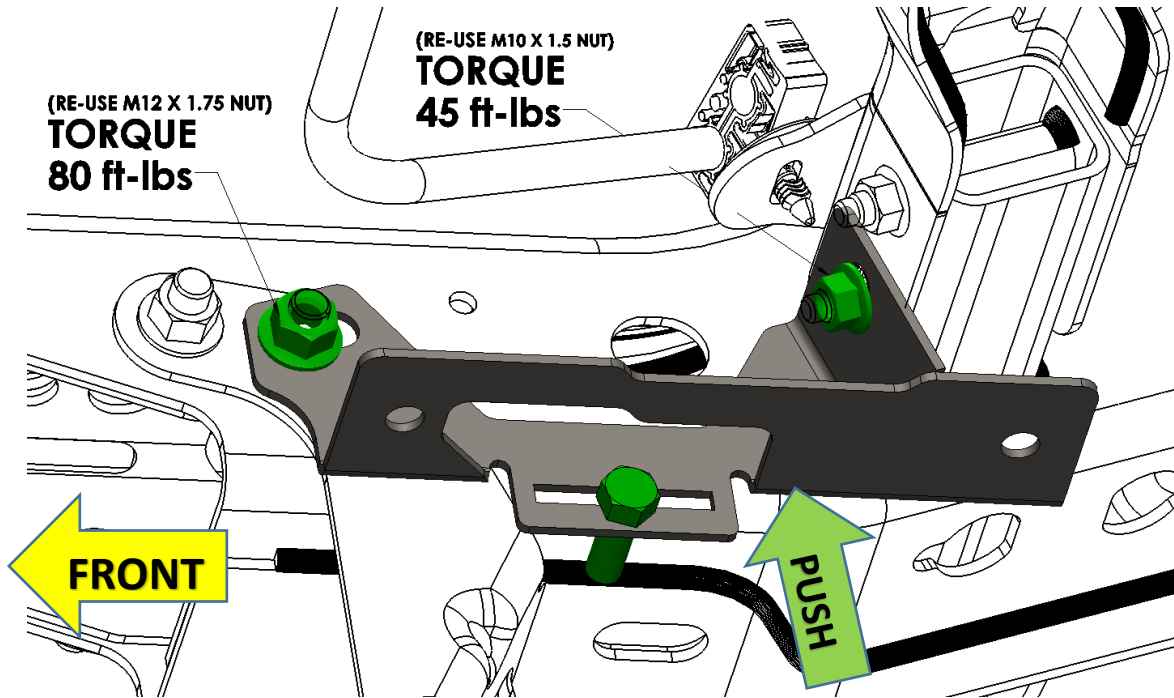
1. Disconnect front bumper fog lights from connector on driver side frame rail, per below picture.



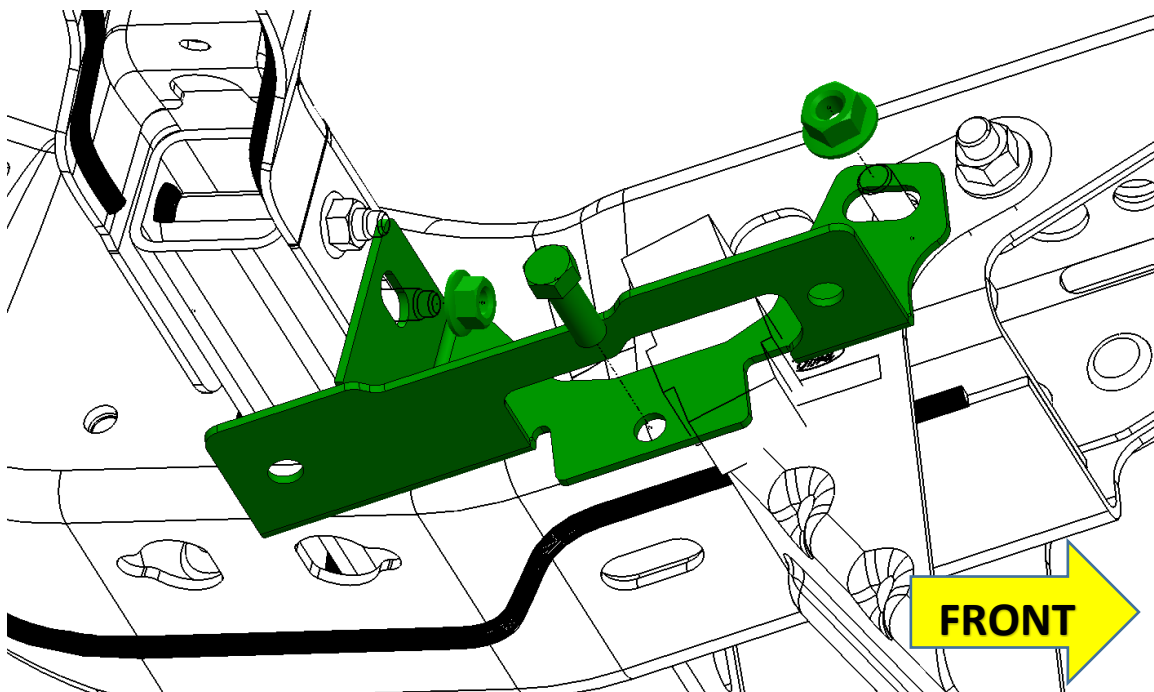
2. Attach Passenger Side Horn bracket onto vehicle chassis, per below illustration.
 - a. Carefully remove original flange lock nuts, as they will be re-used.
 - b. If necessary, allow flange nuts to soak with rust penetrator before loosening.
 - c. To easily install follow this technique:
 - i. Insert back slot over stud with bracket slightly angled
 - ii. With stud through back slot, rotate bracket into position over front stud



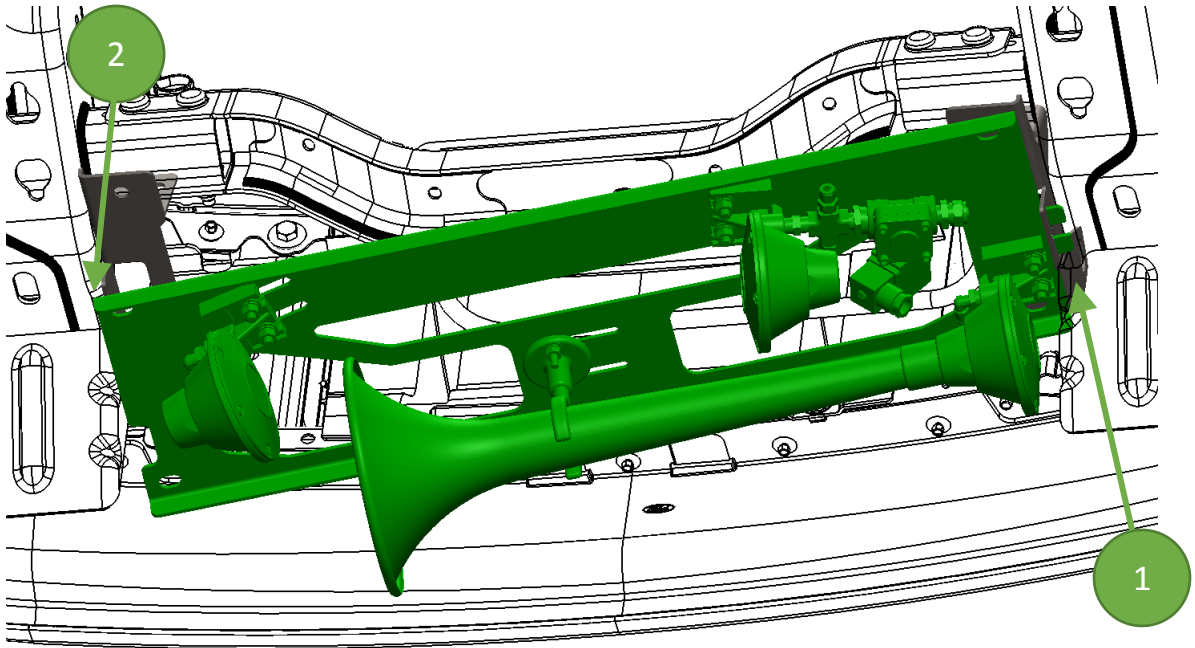
- d. Insert one of supplied 7/16"-14 Hex Bolts into hole, per below illustration and torque flange nuts
 - i. With Hex Bolt in place, push bracket firmly upward toward radiator to force bolt to contact frame rail; the bolt will be removed after bracket is torqued in place.
 - ii. Purpose of this step is to ensure vertical position of both frame brackets are nearly identical.



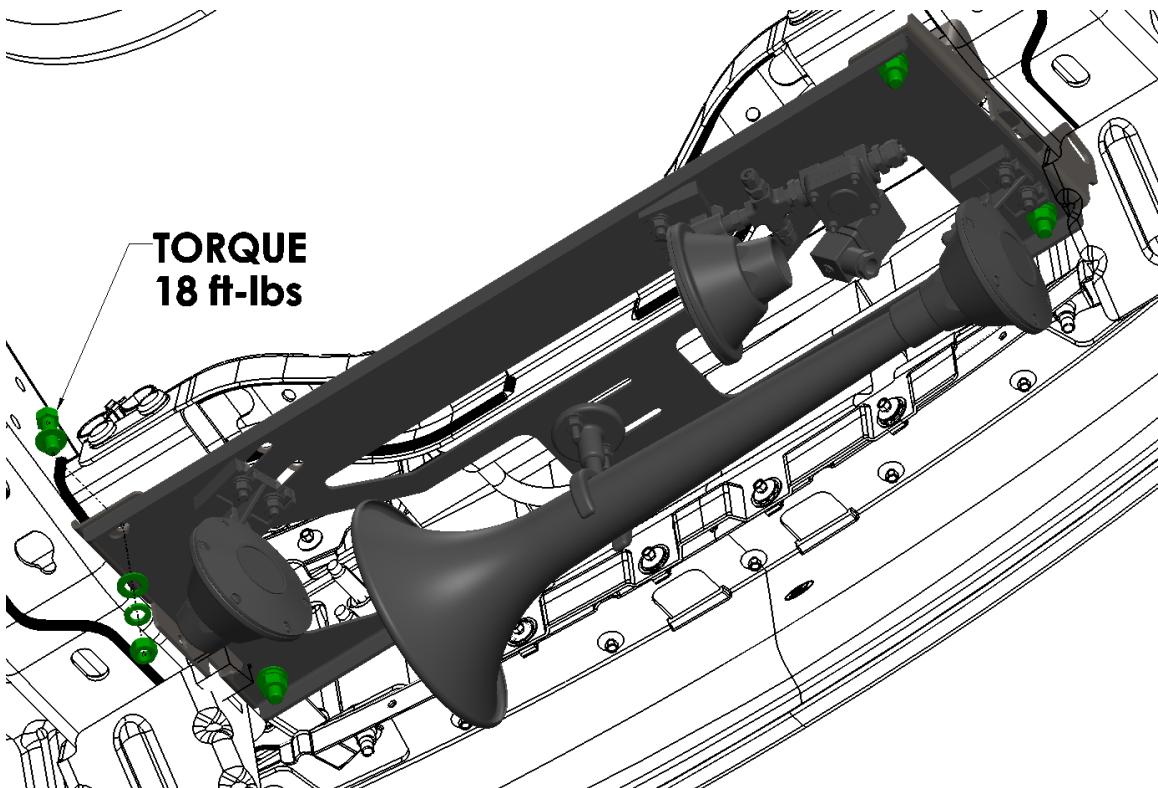
- e. Repeat on Driver Side



- f. Insert Horn Plate assembly into Passenger side bracket at a slight angle and rotate up and into place, per below illustration.



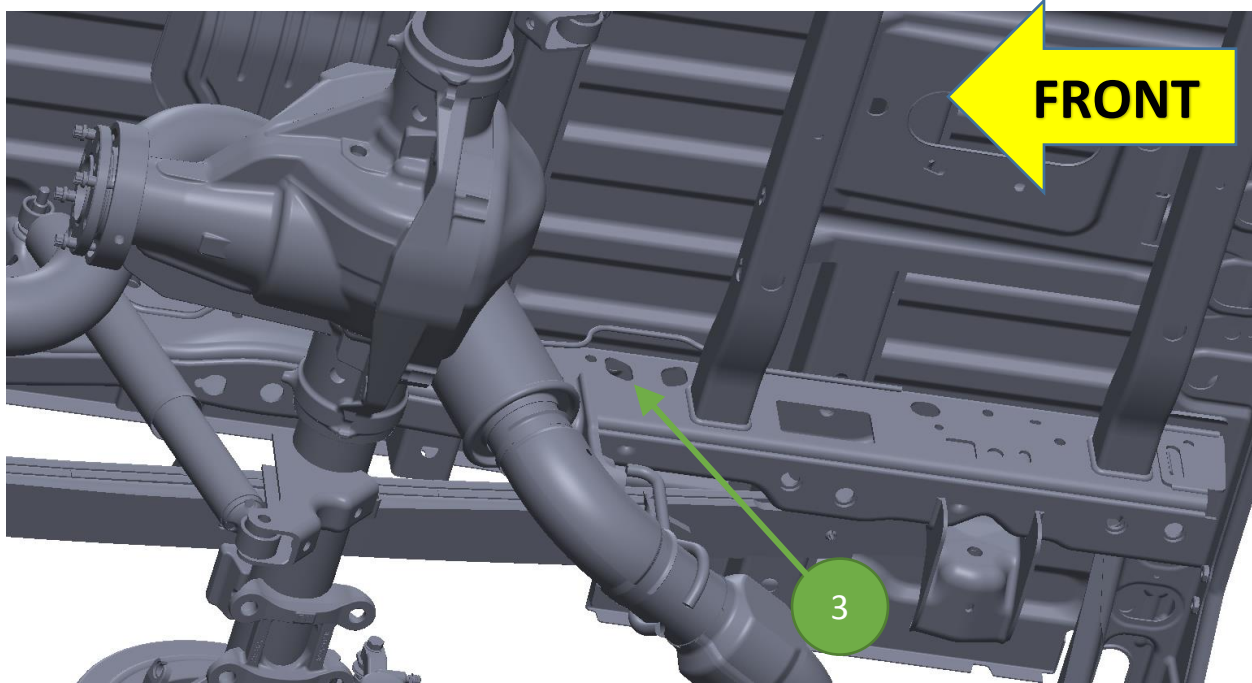
- g. With Horn Plate assembly held in place insert fasteners and torque, per below illustration



9.2 Air Tank Assembly Installation

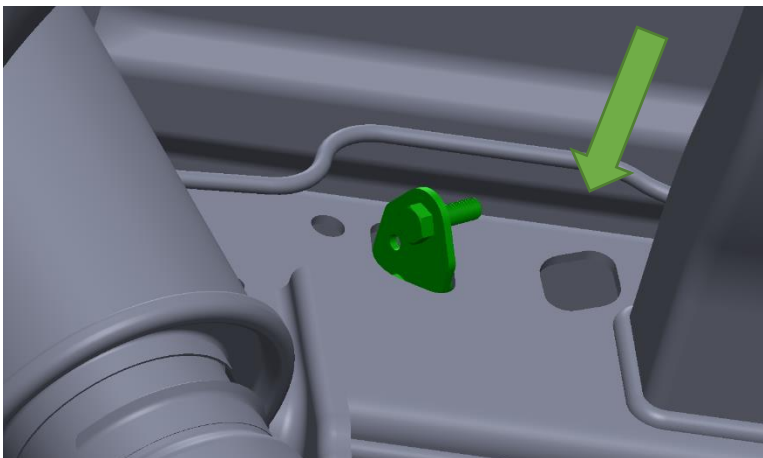
WARNING: Installing air tank onto vehicle chassis requires hands to be near exhaust system; make sure vehicle exhaust is cool enough to touch before installation.

1. Lower/Remove spare tire from back of vehicle; consult owner's manual for direction
2. Before starting, ensure you have immediate access to all set screws included in SD17 Hardware Kit
3. Insert Passenger Front Nut Plate into frame pocket in location shown below

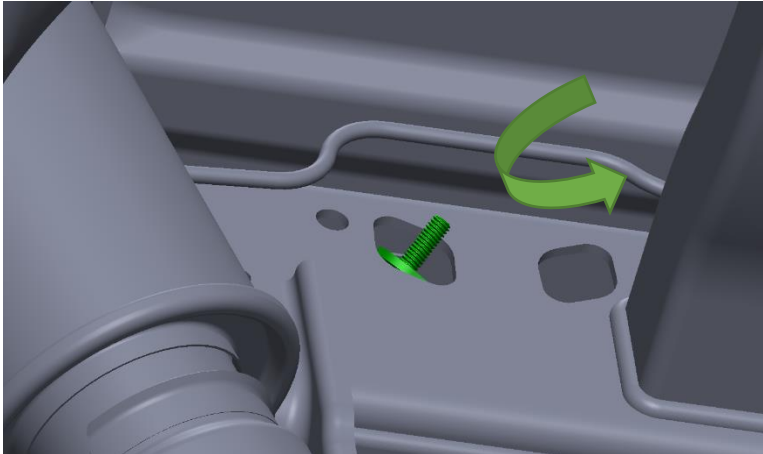


To easily insert Nut Plate, follow this technique:

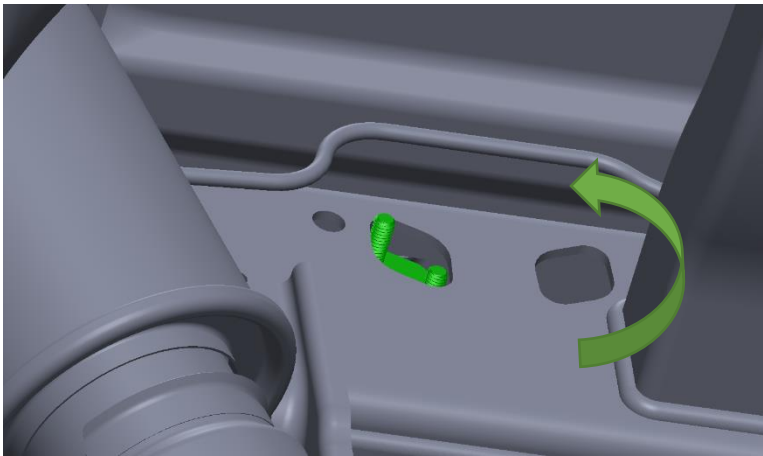
- a. Insert Nut Plate into frame opening while holding threads with fingers



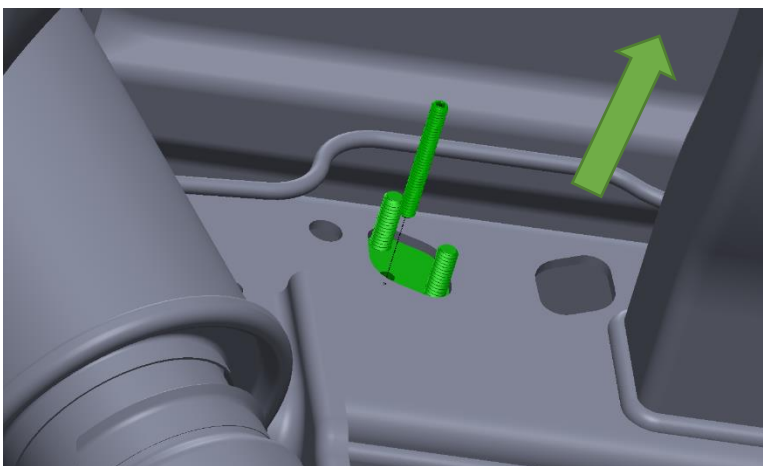
- b. Rotate Nut Plate into frame as if attempting to drop it inside; use caution so as not to drop Nut Plate inside frame. If this occurs, use a magnetic retrieval tool to pick it out, or simply tie string around it before trying to insert it.



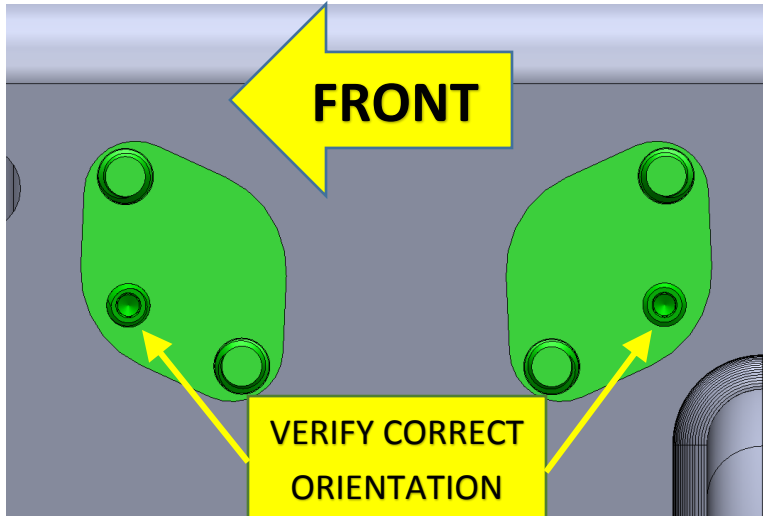
- c. With Nut Plate almost entirely inside frame, rotate it counter clockwise while pulling outward to align threads with hole, as shown.



- d. While holding Nut Plate, thread a set screw through threaded hole until set screw touches inside of frame; this will hold Nut Plate in position.



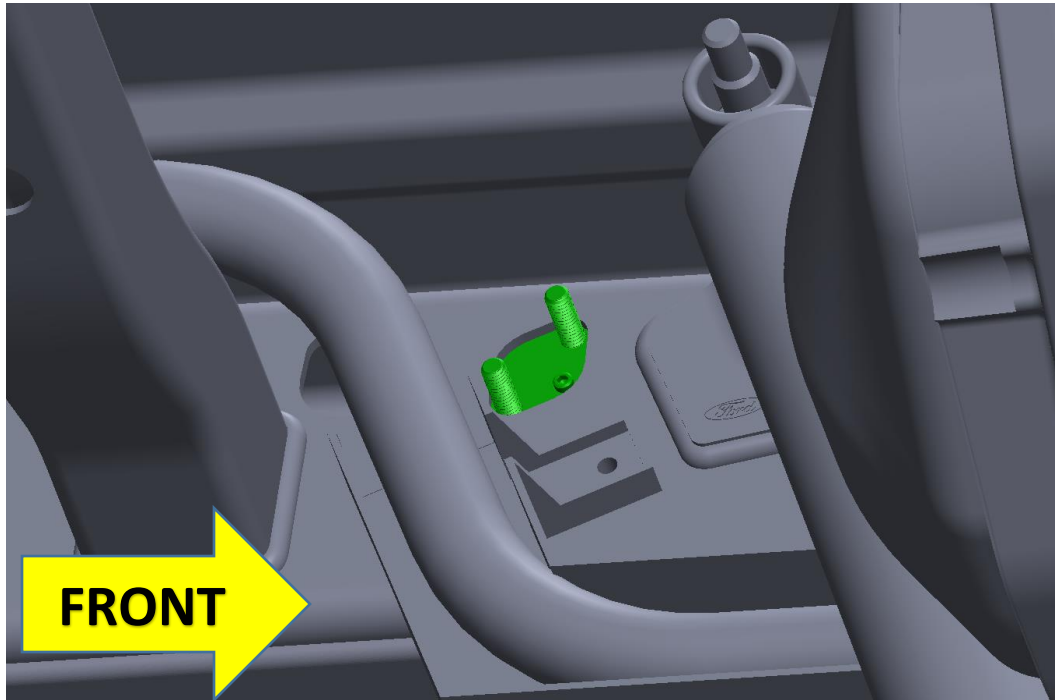
- e. Re-align Nut Plate, if necessary to ensure it is nearly perfectly centered in frame; once happy with location snugly tighten set screw; it will be removed later.
4. Repeat with second Nut Plate in Passenger Rear hole, as shown below.



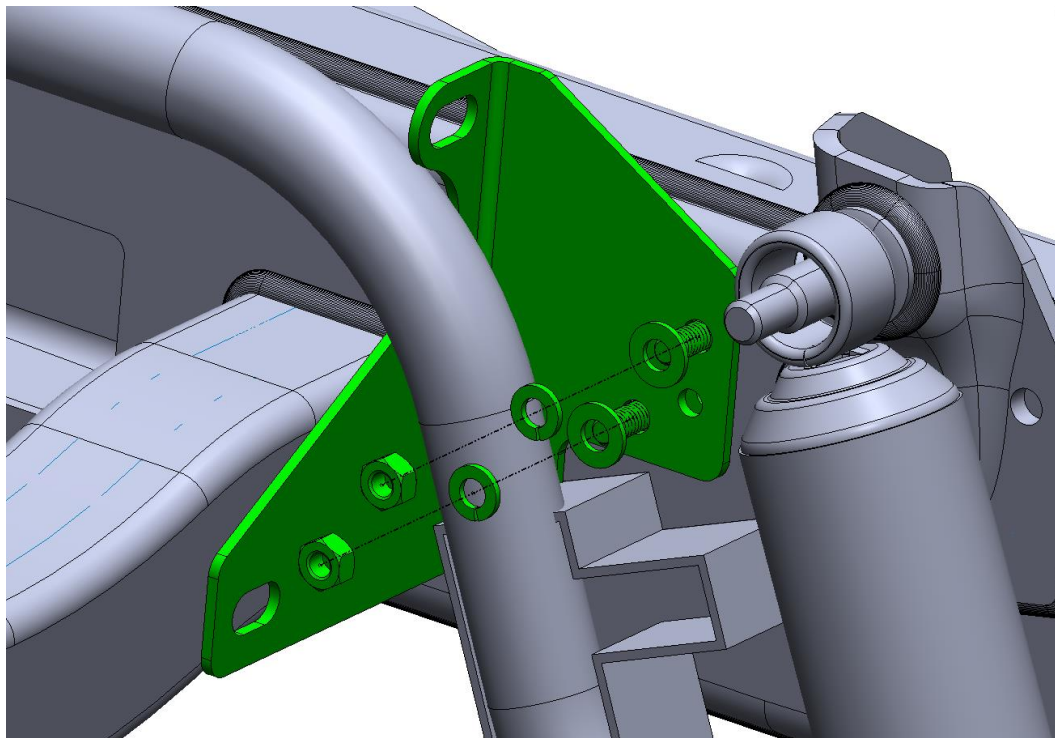
5. Using Panel Trim removal tool, gently remove plastic push pin from wire harness on inside of Driver frame rail, per below. Be careful removing push pin, as it will need to be re-used.



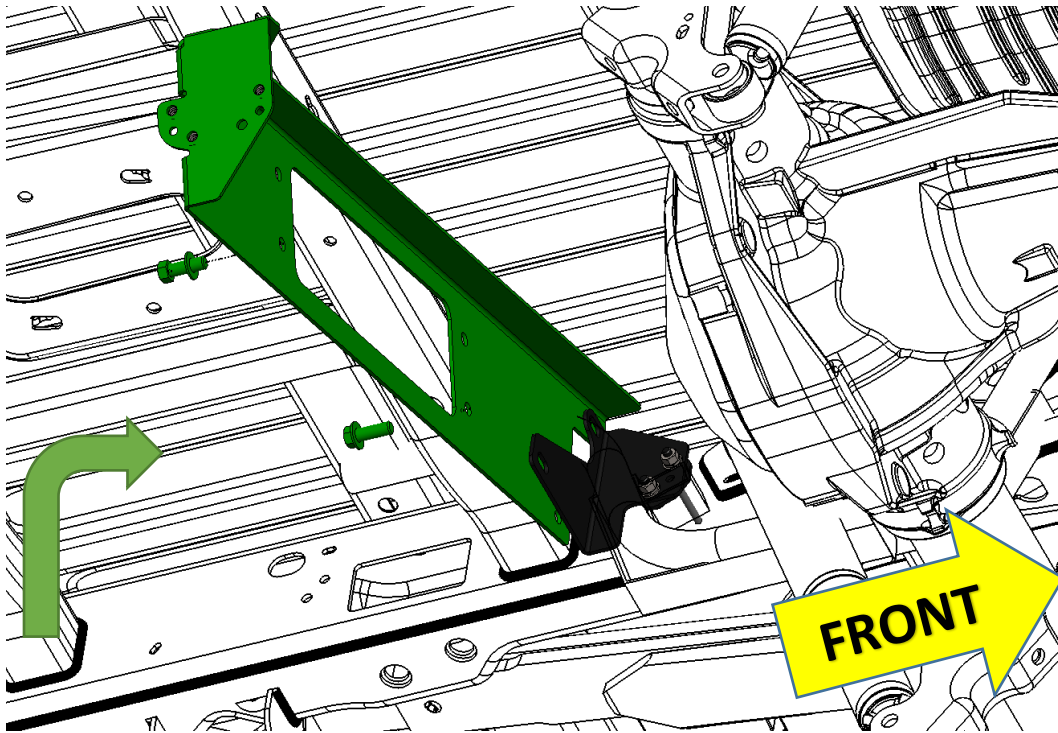
- Using same technique performed earlier, install Driver Front Nut Plate in frame pocket shown below



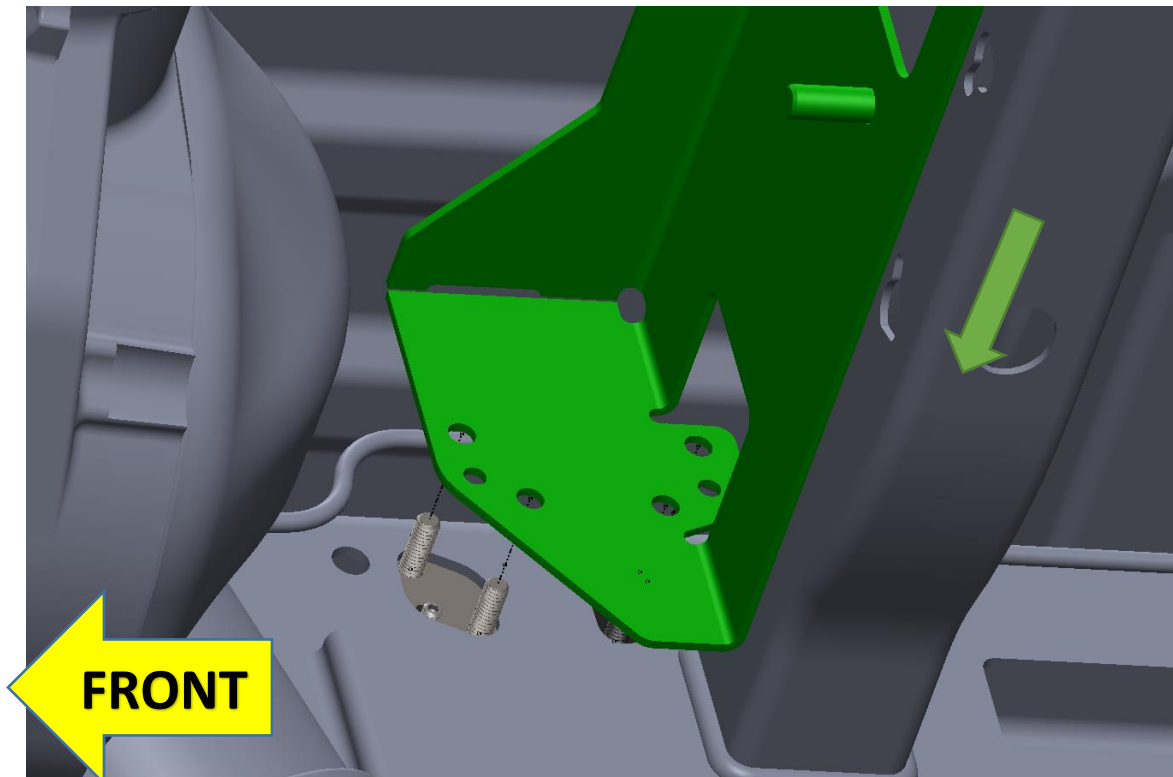
- Insert Driver Side Bracket behind Wire Harness and over threaded studs, as shown below.
 - Install nuts and washers, but leave very loose.
 - Remove set screw by reversing out of through hole in Bracket.



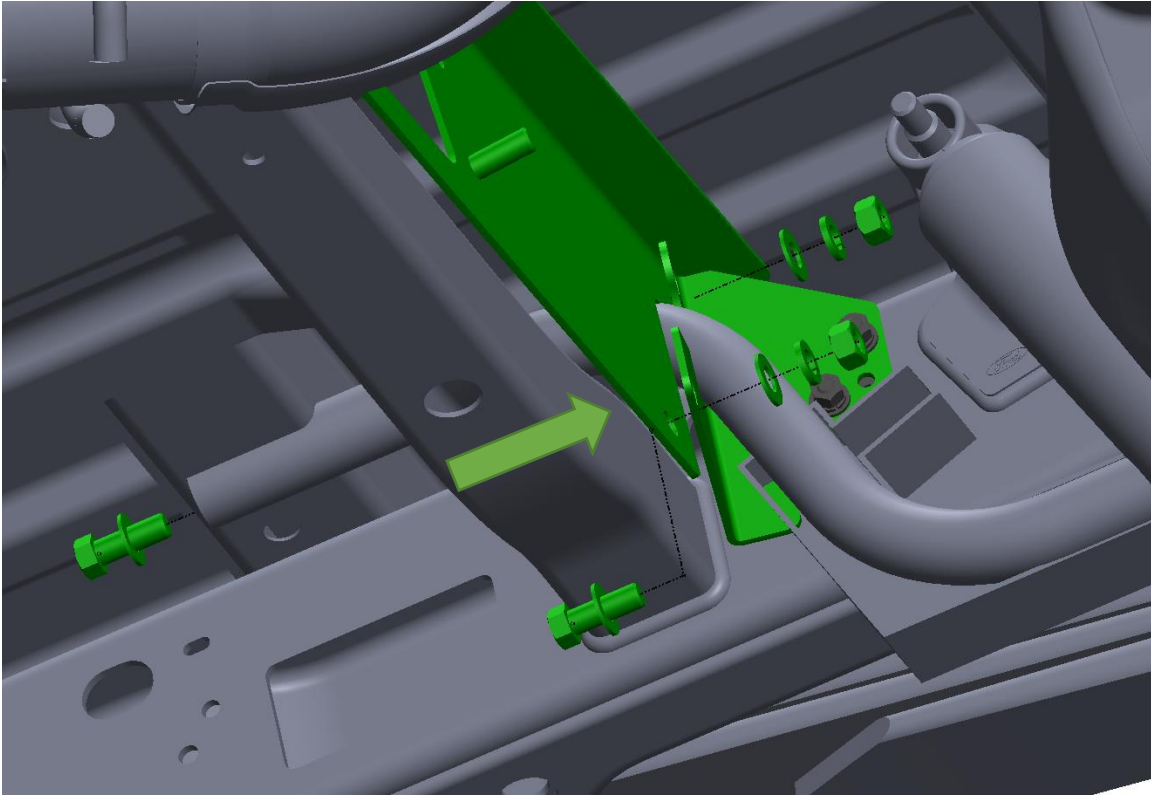
8. Insert (2) 7/16" -14 Hex Bolts and Washers, as shown below; apply tape to heads of bolts to prevent them from falling out of Bracket. Tape will be removed in end.



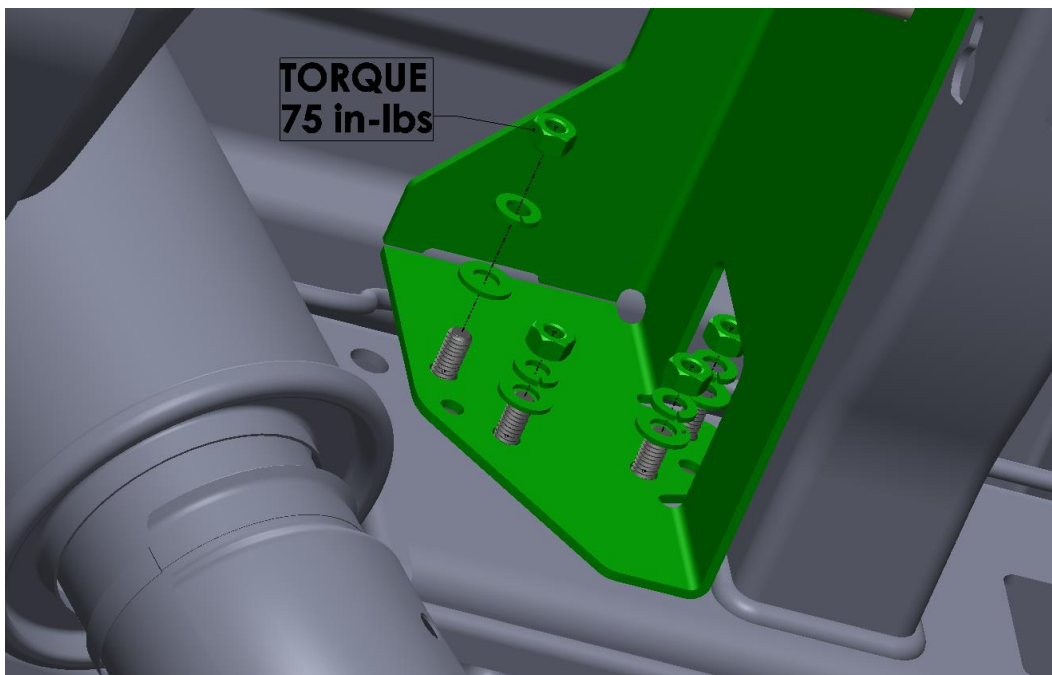
9. Install Passenger Side Bracket over threaded studs, as shown below.



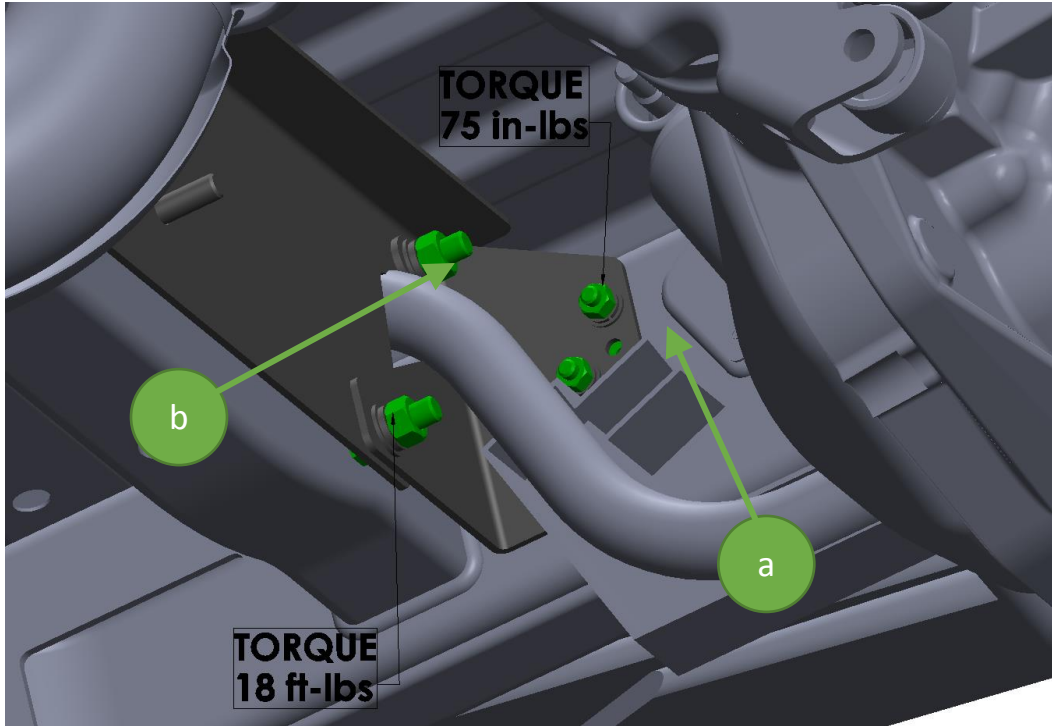
10. Pull both Passenger and Driver Side Bracket away from crossmember and insert 7/16" -14 Hex Bolts, washers, and nuts, as shown below



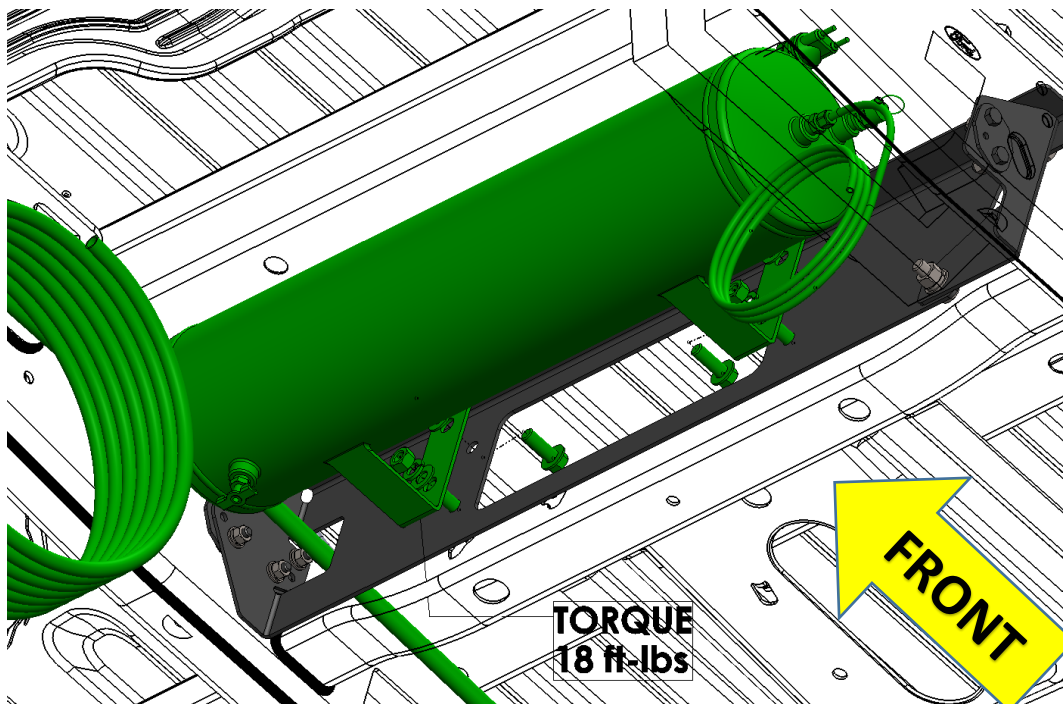
11. Final install Passenger Side Bracket, as shown below.
- Install nuts and washers, and torque as shown.
 - Remove set screws by reversing out of through hole in Bracket.



12. Final tighten Passenger Bracket, as shown below.
 - a. Tighten frame side bolts first
 - b. Tighten Bracket-to-Bracket bolts second

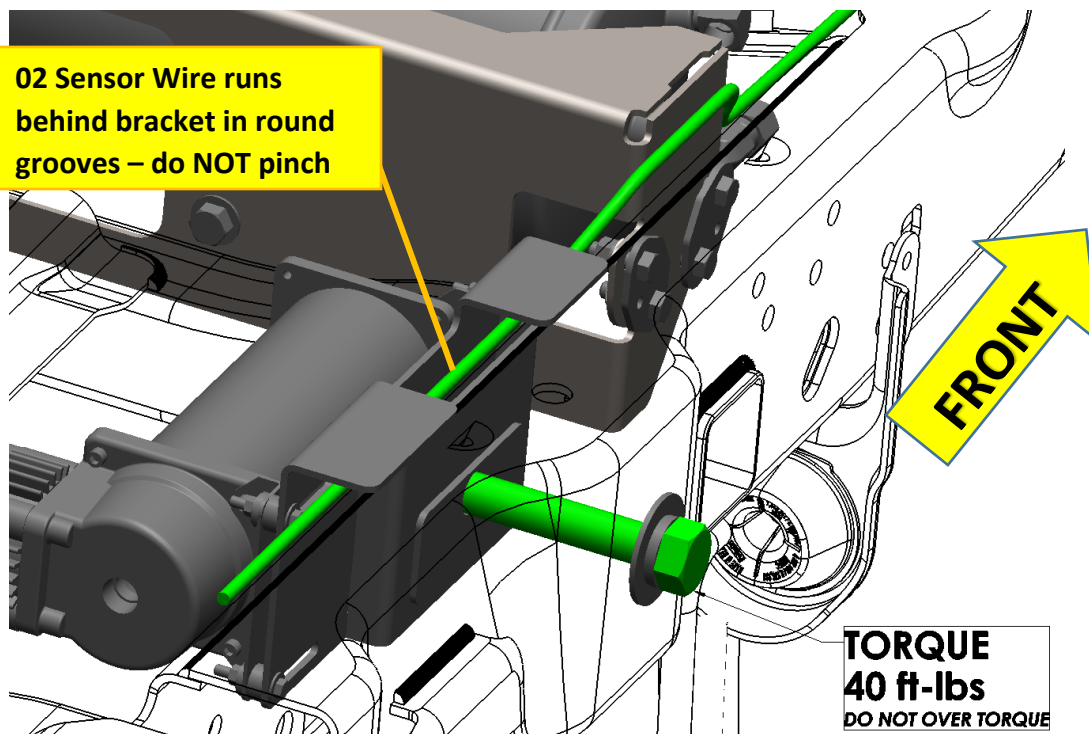
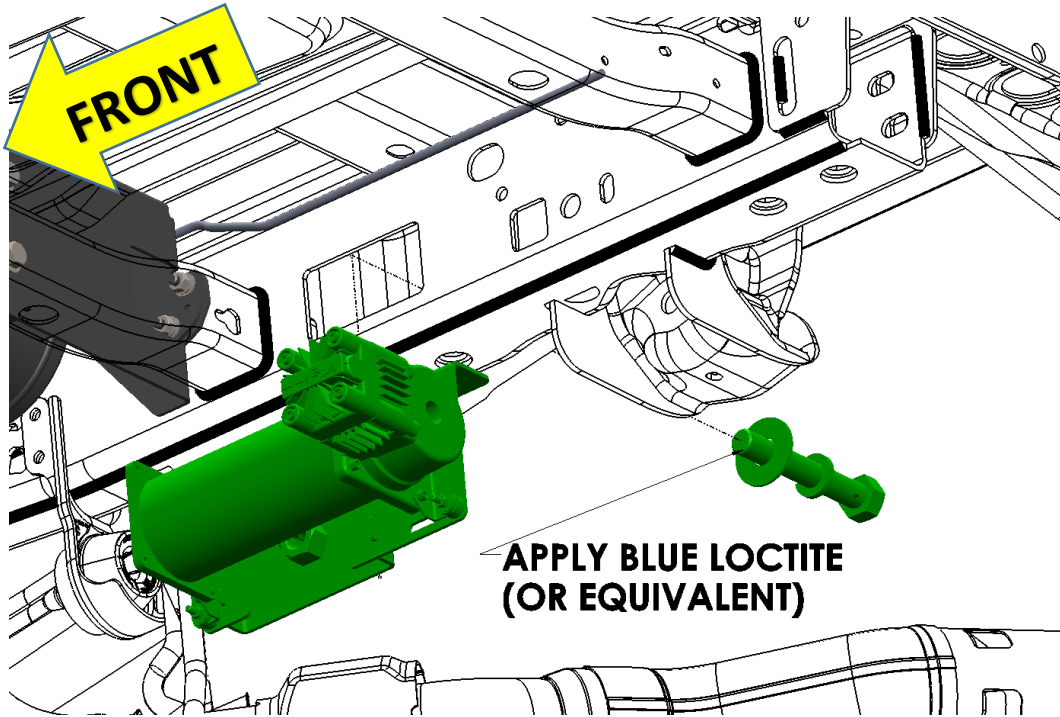


13. Install Air Tank to Bracket, as shown below using Tank Mounting Hardware kit
 - a. Ensure Air Compressor leader hose is pushed through Bracket correctly



9.3 Compressor and Bracket Installation

1. Attach Compressor bracket onto vehicle chassis, per below illustration.
 - a. Ensure bracket is parallel to frame (i.e., level) and is NOT pinching O2 Sensor wire.
 - b. Do NOT over torque bolt and deform, or crush frame

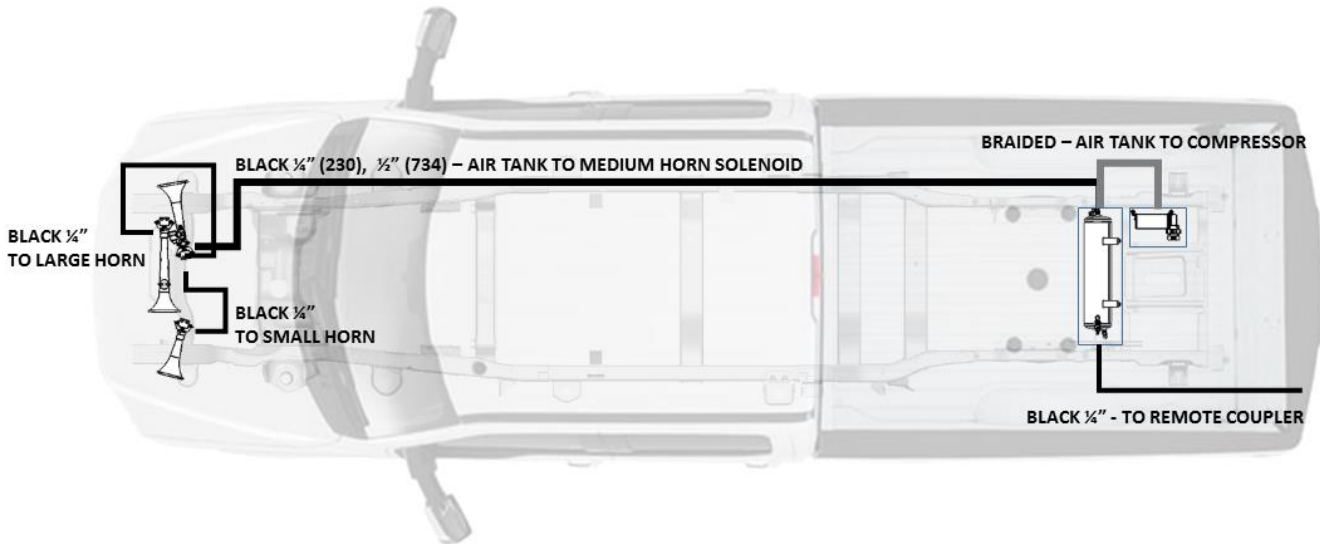


10. On Vehicle Air Line Installation

10.1. Suggested Routing Diagram for Horns, Air Tank and Air Compressor

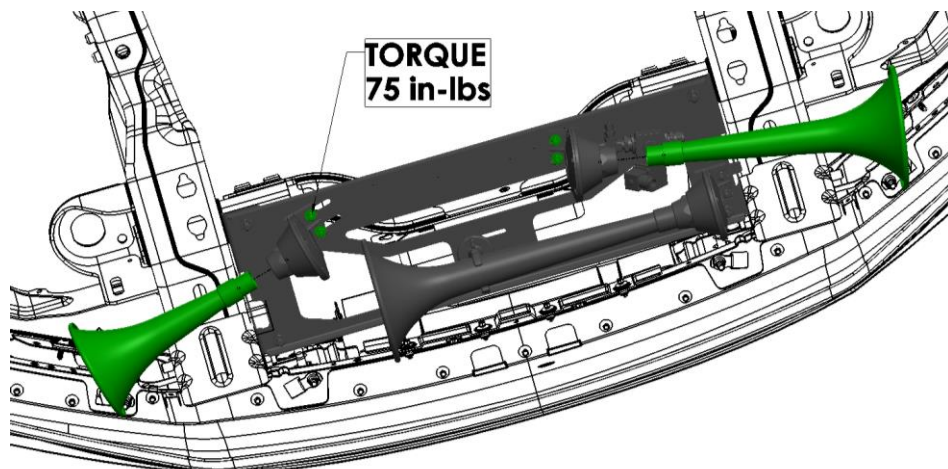
SD17-230KIT / SD17-734KIT

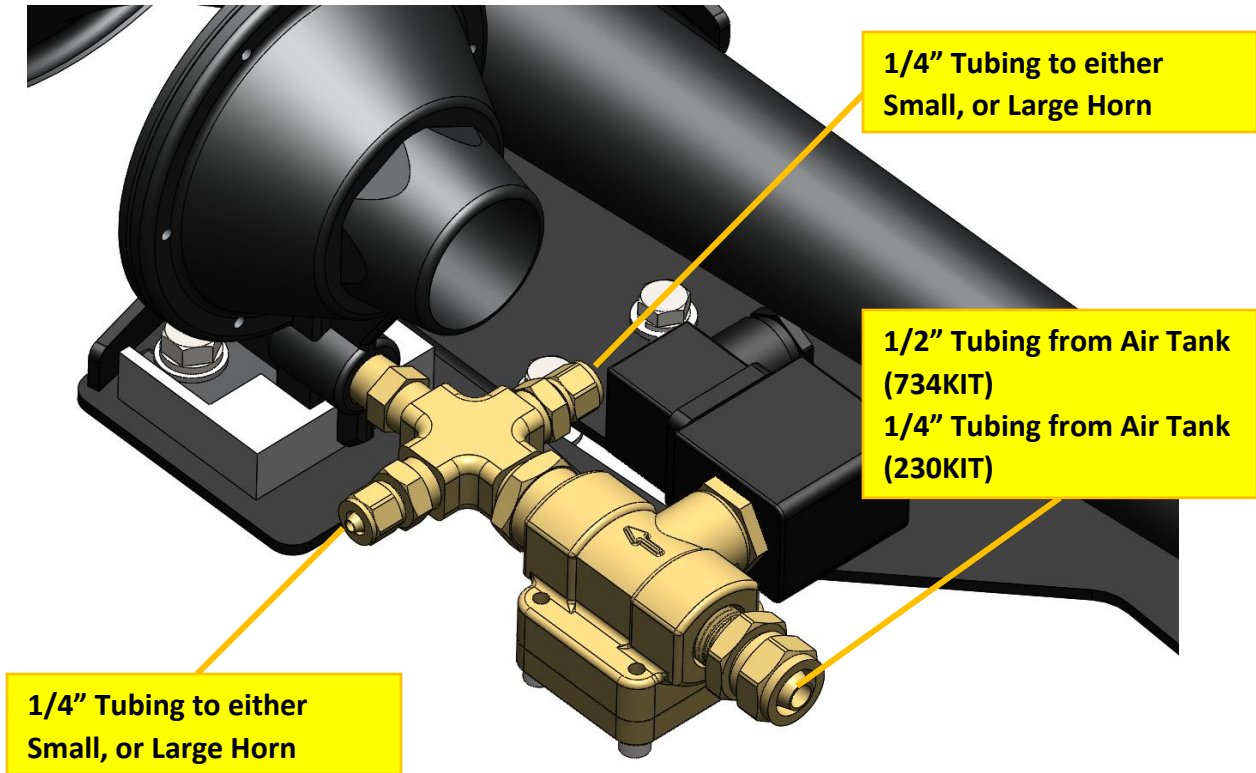
RECOMMENDED TUBE ROUTING



10.2. Connect Air Horns and Install Trumpets

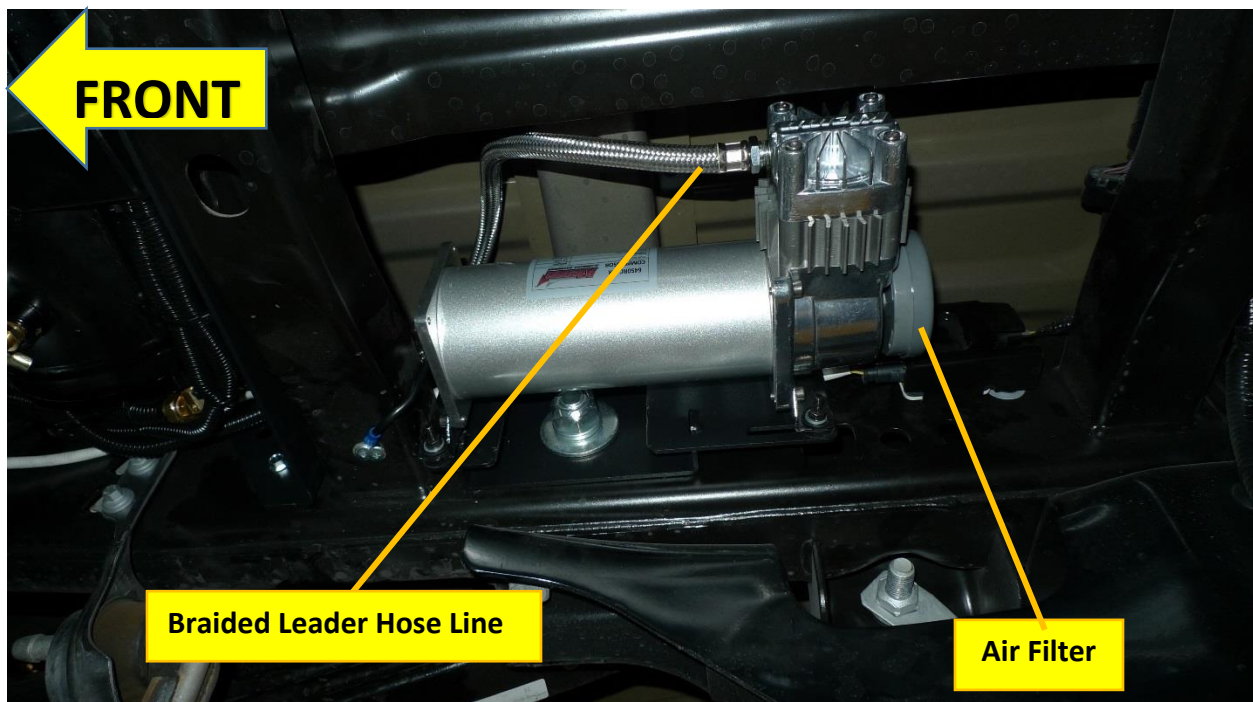
1. Use supplied air tubing and route throughout vehicle, per recommended routing diagram.
 - a. Ensure tubing is away from all sharp edges, hot vehicle parts (i.e., exhaust, engine, radiator), and fasten securely to vehicle using zip ties, or equivalent.
2. Connect Medium Horn Solenoid directly to Air Tank (1/4" (230KIT), or 1/2" (734KIT) tubing)
3. Connect both Small and Large horns directly to tee on Medium horn.
4. Re-install and firmly tighten small and medium trumpets to their respective Horn Drivers, then final torque Horn Mounting Bolts, per below illustration.





10.3. Connect Air Compressor to Air Tank

1. Re-install compressor leader hose (i.e., output hose) onto compressor head, using Kleinn juice.



10.4. Attach Air Compressor Inlet Filter

1. Pry-open plastic air filter housing and install foam filter inside
2. Using included fittings, attached filter housing to front input of Air Compressor
 - a. If preferred, air filter may be installed remotely in place farther away from road grime and water (i.e., inside covered bed, under hood, etc.)



11. Initial Testing of Kit

11.1. Reconnect Vehicle Battery(s)

CAUTION: Before connecting vehicle battery(s), verify all wiring is properly connected and no shorts exists. Use of Multi-Meter, or Test Light is recommended to check continuity of all connections.

11.2. Test Air Compressor

- a. Turn vehicle ignition to on position and allow compressor to fill Air Tank. Initial fill may take approximately 1.5-3 minutes; Air Compressor should shut off automatically once full pressure is achieved.
- b. If compressor runs excessively (i.e., 5 minutes or more), disconnect electrical power to Air Compressor and listen for air leaks in system. Repair any problems and retest; contact Kleinn technical support if problem persists.
- c. Inspect all air line connections (i.e., Air Tank fittings, Quick Connect fittings, Air Horn fittings, etc.) for leaks by using a soap and water solution sprayed directly onto fittings
 - a. System must be pressurized or at least Air Compressor running
- d. If an air leak is found:
 - a. Safely release air pressure from system (i.e., slowly open drain valve)
 - b. Disassemble leaky connection, re-seal and reinstall fittings as needed

11.3. Test Train Horns

- a. Allow Air Compressor to run and shut-off automatically (i.e., Air Tank is full)
- b. Verify all tubing and electrical wire is securely fastened to vehicle, brackets, or kit parts; if necessary, use extra zip ties to hold tubing and wire in place
- c. Ensure all nearby persons have adequate hearing protection and provide courtesy warning to neighbors or others in vicinity

WARNING: NEVER operate train horns with ears close to trumpets or in an enclosed space without [substantial hearing protection](#) (i.e., > Ear Plugs and Ear Muffs) for all



SD17-230/734KIT

Installation and Operation Manual

persons closer than 100 feet from vehicle. Never operate train horns outdoors when persons are near vehicle without adequate hearing protection.

- a. Briefly activate Horns by pressing Horn Button for one (1) second; repeat three (3) times with a short rest period between (i.e., 1-3 seconds)
 - i. Horns should sound as expected and be loud; [click to listen to example 230 Kit](#)
 - ii. Horn sound/loudness will taper quickly as Air Tank loses pressure
- b. Allow Air Compressor to refill tank, if needed and activate Horns for longer three (3) second period to ensure Horns are functioning properly.

11.4. Test Quick Connect Coupler

- a. Allow Air Compressor to refill tank, if needed
- b. Attach supplied INF-1 inflator kit to Quick Connect Coupler and verify adequate air pressure is available
 - i. Test fill tires on vehicle, bicycle, etc.
 - ii. Use Air Blow Gun
 - iii. Use Air Impact Gun

11.5. Raise/Re-install Spare Tire

- a. Reference vehicle owner's manual for specific instructions.

12. General Operation of Kit

12.1. Compressor Operation

WARNING: *Never operate Air Compressor above its MAXIMUM PRESSURE RATING (see label on body). Operation exceeding maximum pressure will damage Air Compressor and may result in Dangerous Air System failure.*

- a. Air compressor is equipped with an automatic thermal overload protection circuit, designed to protect air compressor from overheating and causing permanent damage.
- b. Automatic thermal overload protector will automatically reset after 30 minutes.
- c. To prevent discharge of vehicle's battery and for best performance, keep vehicle's engine running while using air compressor for any prolonged use (i.e., filling tires, using air tools, etc.).

12.2. Horn Operation

- a. Allow Air Compressor to run until it shuts off automatically (i.e., Air Tank is full), or for at least one minute in between horn activations.
- b. Press Horn Button to activate Horns
 - i. Horn sound/loudness will taper quickly as Air Tank loses pressure.
 - ii. Horns should sound for 3-7 seconds depending on kit and tank size

WARNING: *NEVER operate train horns with ears close to trumpets or in an enclosed space without [substantial hearing protection](#) (i.e., > Ear Plugs and Ear Muffs) for all persons closer than 100 feet from vehicle. Never operate train horns outdoors when persons are near vehicle without adequate hearing protection.*

13. Routine Maintenance

Perform following steps at least once during recommended intervals.

1. Yearly, or every 12000 miles verify all mounting fasteners are properly torqued; applying witness marks across fasteners and mounting parts is good practice to quickly ensure fasteners have not moved.



2. Yearly, or every 12000 miles remove all road grime and mud from mounting brackets and kit parts using clean water from a garden hose; pay special attention to corners where dirt may collect. Touch up all paint chips using automotive grade enamel in either spray, or brush form.
NOTE high pressure washers may damage part finishes and must be used with care. Do this more frequently if traveling regularly off-road, or in winter climates where road salts are used.
3. Yearly, or every 12000 miles check electrical and air fitting connections and wires for abrasion, corrosion, or other damage. Replace damaged components.
NOTE: if system runs continuously or turns on unexpectedly, leaks or intermittent electrical connection may be present.
4. Monthly, or every 10 hours of compressor run time, drain moisture from air tank using drain valve installed at bottom of tank.
WARNING: Failure to regularly drain air tank may result in corrosion inside tank and possible failure in tank or air lines, which can suddenly release air pressure causing injury to nearby people.
5. Yearly, or every 12000 miles clean, or replace air compressor air filter element. Replacement frequency depends on operating frequency and conditions of operating environment (i.e., daily use of air compressor in dusty, or wet environment requires more frequent filter change).
NOTE: Never lubricate or add any liquids to the included oil-less air compressor.