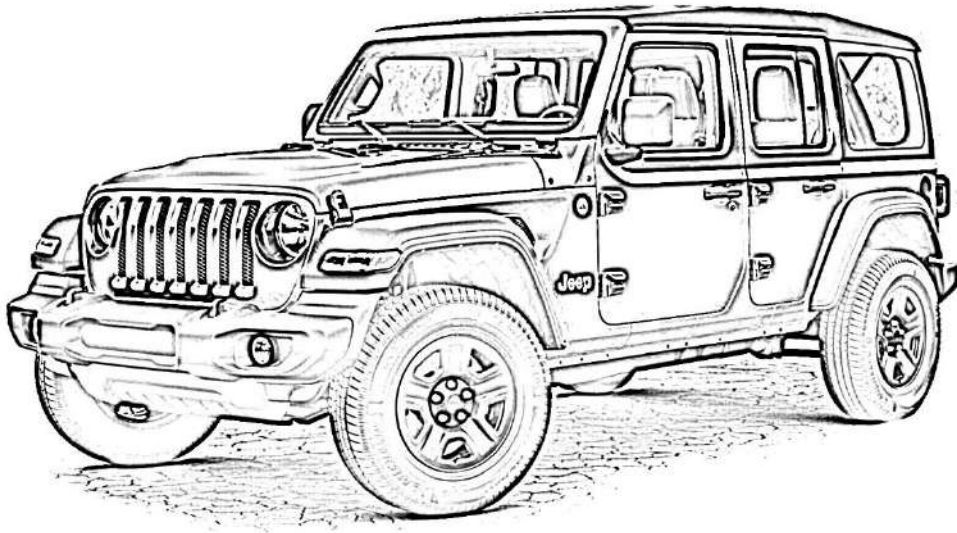




JL-220

INSTALLATION MANUAL

REV: BETA (10/5/2018)



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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
 - Includes [Installation Figures](#) and "[Figure xx](#)"
- **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

1.2. Your Kit SKU Number and this Manual

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

1.2.1. **JL-220** (i.e., 220 Train Horn with On-Board Air System)

1.2.2. **JL OBA** (i.e., On-Board Air System)

1.2.3. **JK6450** (i.e., Dual Compressor Upgrade)

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.



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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.

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



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3. Application Chart

3.1. 100% Direct Bolt-On Vehicle List

JL-220 is a 100% direct bolt-on aftermarket product for Jeep 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
2018-CURRENT	JLU	ALL	3.6L	4 DOOR	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

JL-220 is NOT compatible with following JEEP vehicles:

- 3.2.1. ALL 2-Door Jeep JL
- 3.2.2. Jeep JLU with 3.0L Diesel/Hybrid.

3.3. Aftermarket Product Compatibility

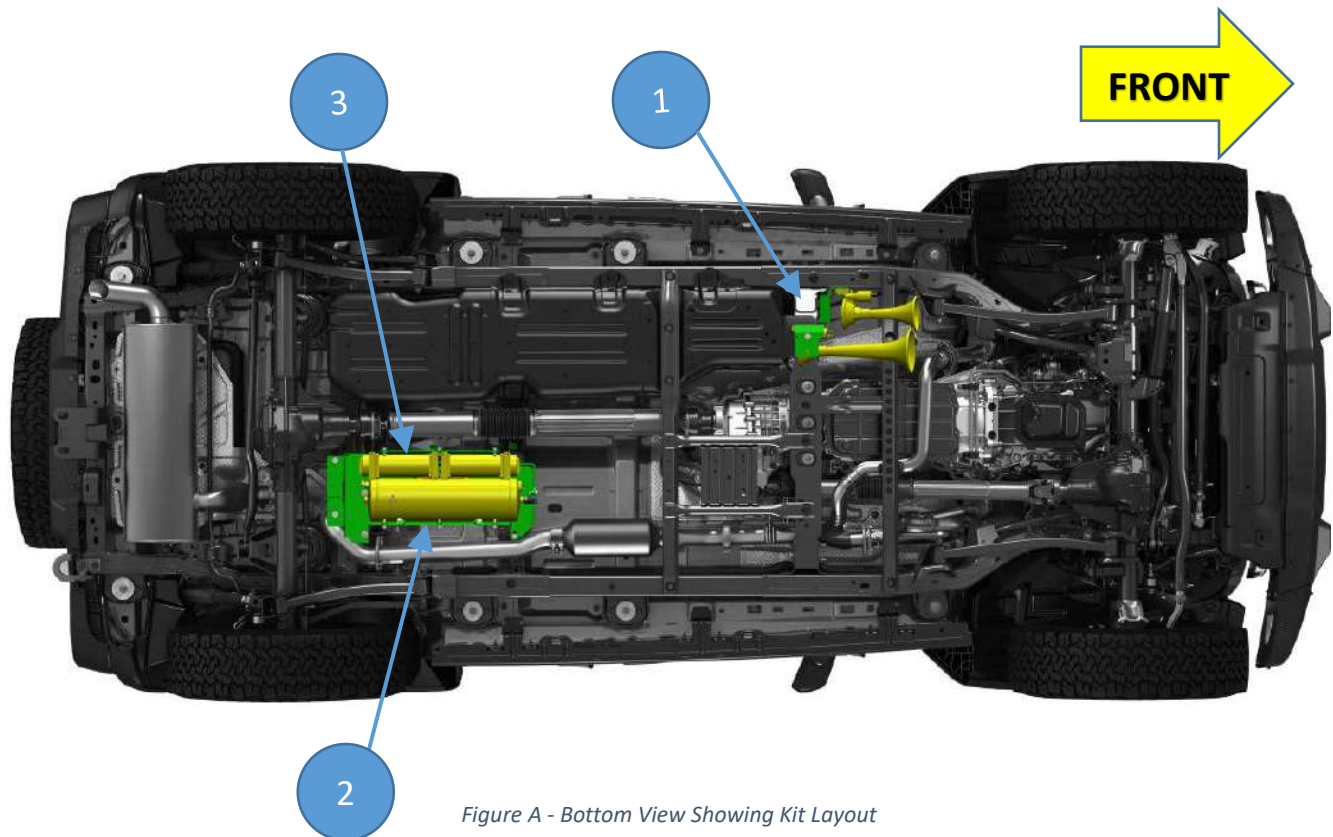
This kit has been designed and tested to be compatible with leading manufacturers of aftermarket truck steps, such as Amp Research Power Steps[®] and all OEM standard and optional steps.

This kit has NOT been designed, or tested for use with leading manufacturers of aftermarket exhaust systems.

4. Kit Installation Overview

JL-220 consists of following sub-systems, located on vehicle, as follows:

ITEM	DESCRIPTION	MOUNTING LOCATION	APPROX. INSTALL TIME
1	220 Series Dual Horn with Air Solenoids	Passenger side frame rail, next to transmission.	2+ Hours
2	3 Gal. Air Tank	Under vehicle, in between driveshaft & exhaust.	2+ Hours
3	6450RC Air Compressor **Dual Air Compressor with JK6450 Upgrade Kit	Under vehicle, in between driveshaft & exhaust.	1-2 Hours





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4.1. Approximate Installation Time

JL-220 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:

- **6-10 Hours**
-

4.2. ***Quick Install Outline

For person(s) with experience installing Kleinn bolt-on kits, JL-220 can be installed in an order similar to below:

1. Route Wiring, install Relay, and install Horn Switch
2. Install Air Tank brackets
3. Install Air Tank with fittings installed.
4. Install Compressors onto bracket.
5. Install Compressor Air Filter
6. Bolt Compressor bracket to Tank Bracket.
7. Connect air lines and wiring.
8. Remove Factory splash shield in front of Gas tank
9. Bolt in horn bracket with horn drivers bolted to bracket.
10. Connect wiring and air lines.
11. Install Trumpets into Horn Drivers.
12. Install Quick Connect Coupler and route Air Tubing
13. Test System and adjust, as needed



5. List of Tools and Supplies

5.1. Standard Tool List (Required)

- 5.1.1. Basic mechanic's 3/8" drive socket sets with extensions
 - Inch Size Sockets (1/4" – 1" Hex)
 - Metric Size Sockets (6mm – 20mm Hex)
- 5.1.2. Basic mechanic's combination wrenches (box/open-end)
 - Inch Size Wrenches (1/4" – 1" Hex)
 - Metric Size Wrenches (6mm – 20mm Hex)
- 5.1.3. Basic mechanic's screwdriver set (Philips, Flat Head)
- 5.1.4. Diagonal Cutter/Wire Cutter Pliers
- 5.1.5. Wire Strippers
- 5.1.6. Wire Terminal Crimpers
- 5.1.7. Slip-Joint Pliers
- 5.1.8. Utility Knife, or Utility Razor blade
- 5.1.9. Magnetic retrieval tool

5.2. Special Tool List (Recommended)

- 5.2.1. 10-100 ft.-lb. torque wrench
- 5.2.2. 20-150 in.-lb. torque wrench
- 5.2.3. Multi-Meter for 12V DC electrical systems, or equivalent
- 5.2.4. 12V DC Test Light, or equivalent
- 5.2.5. Trim Panel Tool, for removing wiring push pins

5.3. Shop Consumables List (Recommended)

- 5.3.1. Quality Electrical tape
- 5.3.2. Di-electric grease for electrical connections
- 5.3.3. Heat Shrink tubing for electrical connections
- 5.3.4. Blue Loctite (i.e., Loctite PN 242), or equivalent
- 5.3.5. Sand Paper, or Wire Brushes for installing ground wires
- 5.3.6. Extra plastic zip ties > 6" long
- 5.3.7. Extra NPT sealant (i.e., Kleinn Air Horn Juice, Teflon tape, etc.)
- 5.3.8. Touch-up paint for frame/chassis
- 5.3.9. Typical cleanup supplies



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6. Parts List

Below Parts List covers following kit part numbers:



- 6.1.1. **JL-220** (i.e., 220 Train Horns)
- 6.1.2. **JL OBA** (i.e., On Board Air System Only)
- 6.1.3. **JK6450** (i.e., dual compressor upgrade kit)

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.


- 6.1.4. Review pre-packaged items (i.e., train horn box, air compressor, air tank, etc.)
- 6.1.5. Review Air Fittings and Tubing
- 6.1.6. Review Wiring and Accessories
- 6.1.7. Review Bolt-On Mounting Brackets
- 6.1.8. Review Hardware/Fasteners

6.2. 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	6450RC	6450RC Compressor Kit, with included hardware, and remote air supply line	
2	1	220	220 Series Horn Kit, with included solenoid/valve, and 1/4" Air Tubing, 20 ft. long	

6.3. Air Fittings and Related Items

ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
3	1	6353RT	Air Tank, 9-Port	
4	1	52835 (view location on Air Tank)	1/4" NPT, Drain Valve	
5	1	52175 (view location on Air Tank)	1/4" NPT, 175 PSI Safety Valve	
6	3	50040 (view location on Air Tank)	1/4" NPT Hex Plug	
7	2	51414L (view location on Air Tank)	1/4" NPT X 1/4" Compression Fitting, 90 Deg Elbow	
8	2	59014 (view location on Air Tank)	1/4" NPT X 1/4" NPT, 90 Deg Elbow. Male to Female.	
9	1	2151 (view location on Air Tank)	1/4" NPT Pressure Switch	







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10	1	25014	1/4" Air Tubing, 10 ft. long	
11	1	1302	Quick Connect Air Coupler Kit, with relocation bracket	
12	1	INF-1	Inflator Kit, with Air Hose and Bag	
13	1	KLEINN AIR HORN JUICE	Thread Sealant for NPT Fittings	

6.4. Electrical Small Components and Related Items

ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
13	1	320	Terminator – Nickel Plated Remote Horn Button	
14	1	WIRE KIT	Full Wire Kit, with electrical connectors and zip ties	
15	1	¼" WIRE LOOM, 20 ft. Long	1/4" Wire loom for electrical routing	
16	1	1/8" WIRE LOOM, 10 ft. Long	1/8" wire loom for electrical routing	

6.5. Bolt-On Mounting Brackets & Special Hardware

ITEM	QTY	PART NUMBER	DESCRIPTION	PICTURE
17	1	JL-201	JK-JL ADAPTER, FRAME	
18	1	JL-202	FRAME STRAP	

19	1	JL-301	HORN MOUNTING BRACKET	
20	1	JK-101	COMPRESSOR MOUNTING BRACKET, SKID PLATE	
21	1	JK-201	AIR TANK MOUNTING BRACKET	
22	2	JK-202	AIR TANK STRAP	



6.6. Hardware/Fasteners

ITEM NO.	PART TYPE	PART SIZE	QTY.	WHERE USED
1	HEX NUT, GRADE 2, ZINC-PLATED	7/16"-14	4	ADAPTER BRACKET (3) MOUNTING STRAP (1)
2	FLAT WASHER, SAE, ZINC-PLATED	7/16" ID X 0.93 OD	4	ADAPTER BRACKET (3) MOUNTING STRAP (1)
3	HEX NUT, GRADE 2, ZINC-PLATED	5/16"-18	4	HORN (4)
4	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	5/16"	4	HORN (4)
5	FLAT WASHER, SAE, ZINC-PLATED	5/16" ID X 0.69 OD	4	HORN (4)
6	SQUARE NECK BOLT, GRADE 2, ZINC-PLATED	7/16"-14 X 1"	4	ADAPTER BRACKET (3) MOUNTING STRAP (1)
7	HEX BOLT, GRADE 8.8, ZINC-PLATED	M6 X 1 X 30 LONG	1	TANK BRACKET TO FRAME (1)
8	FLAT WASHER, DIN FENDER, ZINC-PLATED	M6 ID X 18 OD	1	TANK BRACKET TO FRAME (1)
9	HEX BOLT, GRADE 5, ZINC-PLATED	3/8"-16 X 1" LONG	7	SKID PLATE (6) MOUNTING STRAP (1)
10	FLAT WASHER, SAE, ZINC-PLATED	3/8" ID X 0.82 OD	7	SKID PLATE (6) MOUNTING STRAP (1)
11	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	7/16"	4	ADAPTER BRACKET (3) MOUNTING STRAP (1)
12	FLAT WASHER, METRIC DIN 125, ZINC-PLATED	M12 X 24 OD	4	ADAPTER BRACKET TO FRAME (2) HORN BRACKET (2)
13	HEX NUT, GRADE 2, ZINC-PLATED	10-24	8	COMPRESSORS (8)
14	LOCK WASHER, STANDARD SPLIT, ZINC-PLATED	M5	8	COMPRESSORS (8) - INCLUDED IN COMPRESSOR BOX
15	FLAT WASHER, DIN, ZINC-PLATED	M5 ID X 10 OD	8	COMPRESSORS (8) - INCLUDED IN COMPRESSOR BOX
16	HEX BOLT, GRADE 2, ZINC-PLATED	1/4"-20 X 1" LONG	4	TANK MOUNTING (4)
17	FLAT WASHER, SAE, ZINC-PLATED	1/4" ID X 0.63 OD	5	TANK MOUNTING (4) HORN BRACKET (1)



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18	HEX BOLT, GRADE 8.8, ZINC-PLATED	M12 X 1.5 X 25 LONG	2	ADAPTER BRACKET (2)
19	HEX BOLT, GRADE 8.8, ZINC-PLATED	M12 X 1.5 X 70 LONG	1	HORN BRACKET (1)
20	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	M12	3	ADAPTER BRACKET (2) HORN BRACKET (1)
21	RUBBER EDGE TRIM (U)	7.5" LONG	2	AIR TANK (2)
22	RUBBER EDGE TRIM (U)	8" LONG	1	HORN BRACKET (1)
23	RUBBER EDGE TRIM (C)	9" LONG	2	AIR TANK (2)
24	FLAT WASHER, FENDER, ZINC-PLATED	5/16" ID X 1.25 OD	1	TANK BRACKET TO FRAME (1)
25	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	3/8"	1	TANK BRACKET TO FRAME (1)
26	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	M6	1	TANK BRACKET TO FRAME (1)
27	LOCK WASHER, EXTERNAL TOOTH, ZINC-PLATED	1/4"	5	TANK MOUNTING (4) HORN BRACKET (1)
28	HEX NUT, GRADE 8.8, ZINC-PLATED	M12 X 1.5	1	HORN BRACKET (1)
29	HEX NUT, GRADE 8.8, ZINC-PLATED	M6 X 1.0	1	HORN BRACKET (1)

End of Section

7. On-Vehicle Electrical Installation

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

Review Suggested Wiring Diagram for Ignition Relay

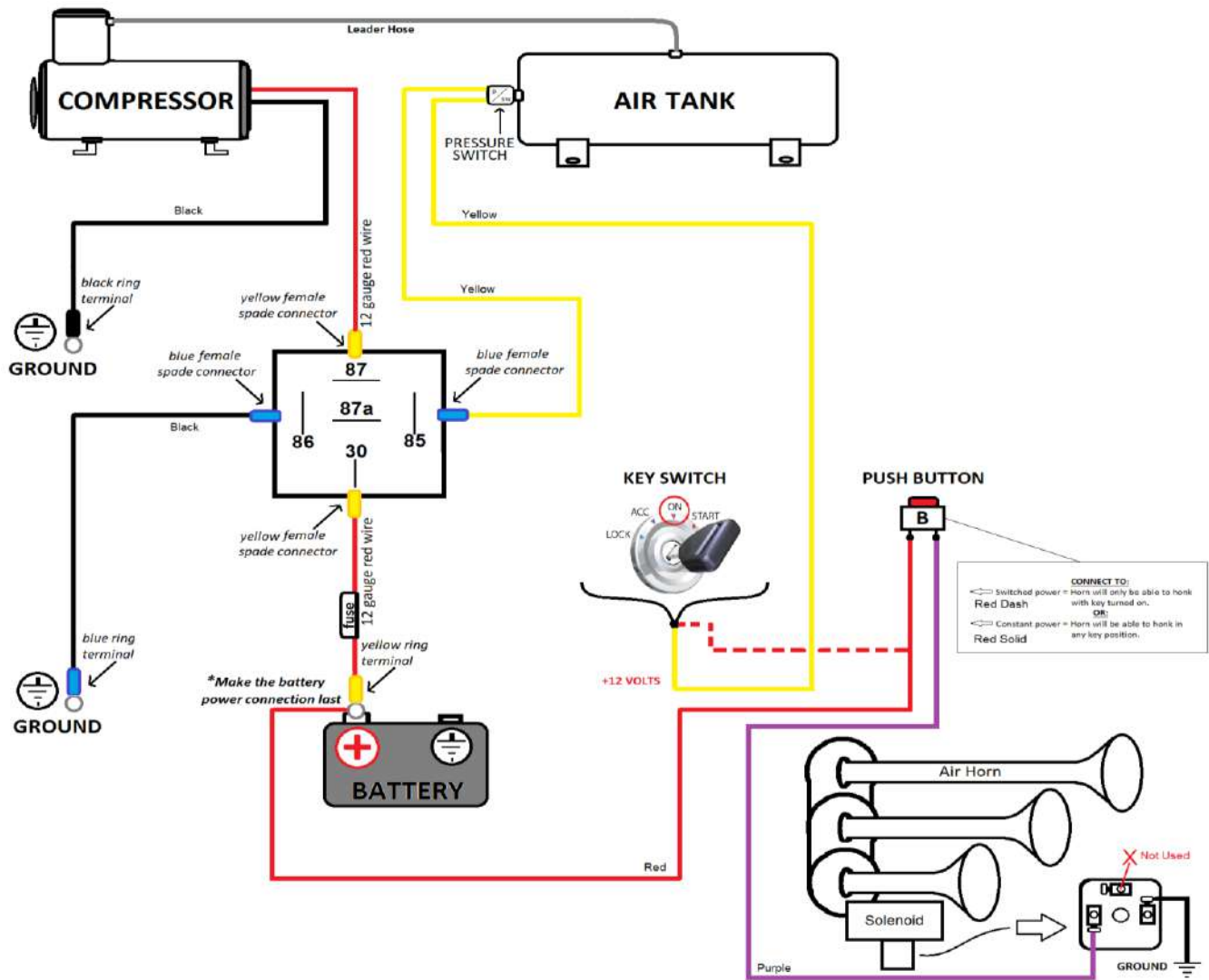


Figure 1 Suggested Ignition Relay Diagram for 220.

7.1. Review suggested Wire Routing for Horn, Air Compressor, and Pressure Switch

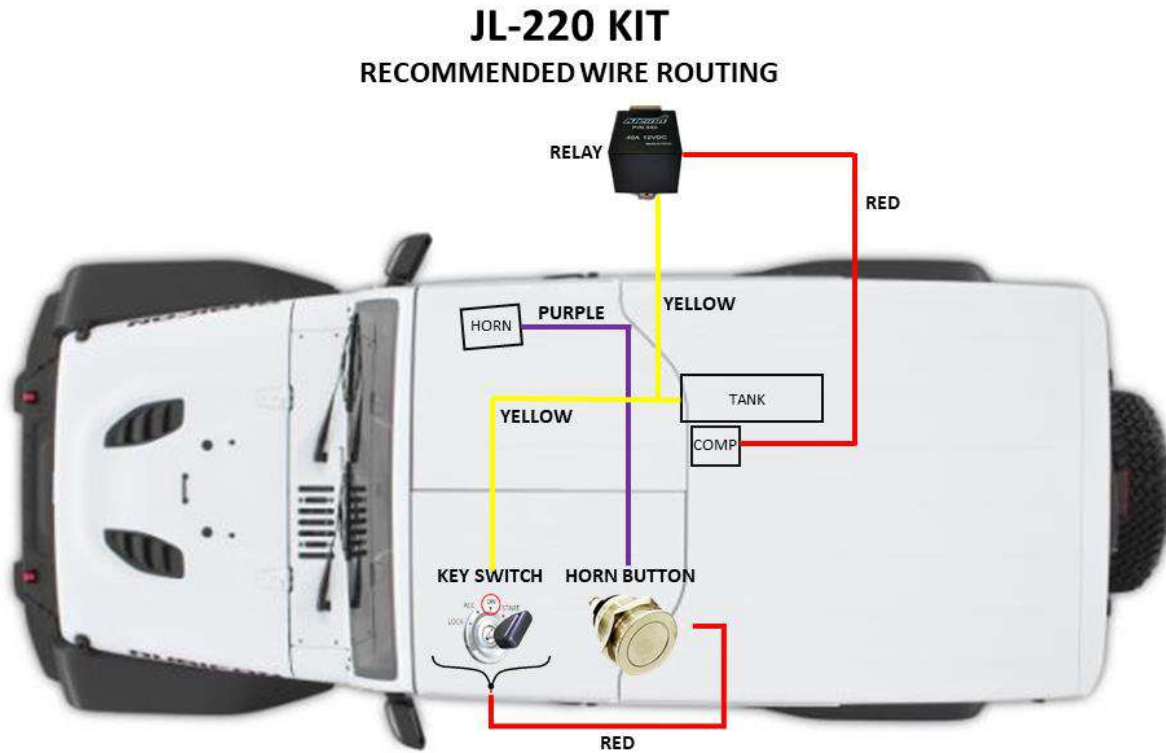


Figure 2 Suggested Wire Routing for Horn, Air Compressor, and Pressure Switch

7.2. Disconnect Vehicle Battery(s)

7.3. Attach Relay to Vehicle

7.4. Route Wiring and Install Horn Button

7.4.1. Route wiring throughout vehicle, per diagrams; however, installer may route as desired.

7.4.2. 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.

7.4.3. 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.

7.4.4. Find a suitable location for horn push-button (i.e., in dash, center console, etc.); verify location has 1"+ of clearance behind for terminals. Mark location for drilling.



NOTE: FOR VEHICLES WITH FACTORY UPFITTER SWITCHES:

If your vehicle is equipped with factory upfitter (i.e., auxiliary) switches, you may elect to use them for your Kleinn Air Horn kit; consult Owners Manual, or dealership for further instructions on what wire terminals to use and programming required.

7.4.5. Drill a 3/4" hole at location. Route horn button wires to hole then slide push-button retaining nut over wires and connect per wiring diagram. Install push-button into hole and tighten retaining nut securely on backside.

7.5. Connect Relay to Wiring

7.5.1. Find a suitable location for included relays, typically under hood close to battery or grounding blocks; use supplied self tapping screws to attach to body, as necessary.

7.5.2. Connect routed wiring to relay, per wiring diagram.

[See Figure 1](#)

7.6. Connect Air Horn Solenoid

- 7.6.1. Vehicle space constraints make it difficult to connect Air Horn Solenoid in-vehicle; therefore, it is recommended to cut and connect a section of wiring to Solenoid during bench assembly, then perform final connection once Air Horn assembly is installed.

7.7. Pressure Switch

- 7.7.1. Vehicle space constraints make it difficult to connect pressure switch in-vehicle; therefore, it is recommended to cut and connect a section of wiring to pressure switch during bench assembly, then perform final connection once Air Tank is installed in vehicle.

End of Section

8. Bench Assembly Steps

Complete following steps off vehicle to facilitate final installation.

NOTE: ALL HARDWARE WILL BE SPECIFIED IN INSTRUCTIONS USING ITEM NO.'S FOUND IN PARTS LIST. [See Parts List](#). Assemble ALL fasteners clean and dry using proper socket and box-end wrench. (Not including Air fittings)

8.1. Horn Bracket Assembly

- 8.1.1. Using JL-301, install horn drivers onto studs, following Figure 3, using Hardware #3, #4, & #5. Tighten completely.

NOTE: Make sure edges of horn drivers are parallel to edges of brackets shown in Figure 3 in red.

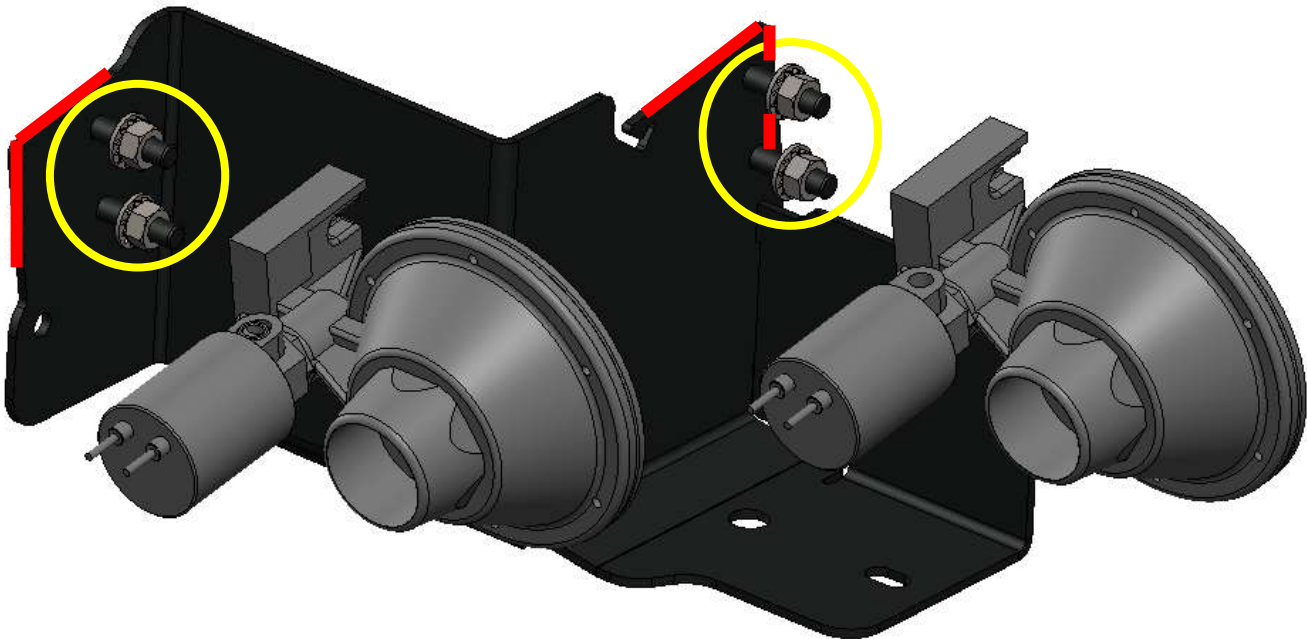


Figure 3 Horn Driver Installation onto JL-301

- 8.1.2. Attach air tubing and wiring now, but **do not** trim to length until horn bracket is installed.

NOTE: Make sure solenoid orientation matches Figure 3.



8.1.3. To protect fuel line against potential abrasion during severe off-road use, install rubber trim #22 to JL-301, along outer edge shown in red in below figure; zip tie ends of trim to reliefs cut into bracket.

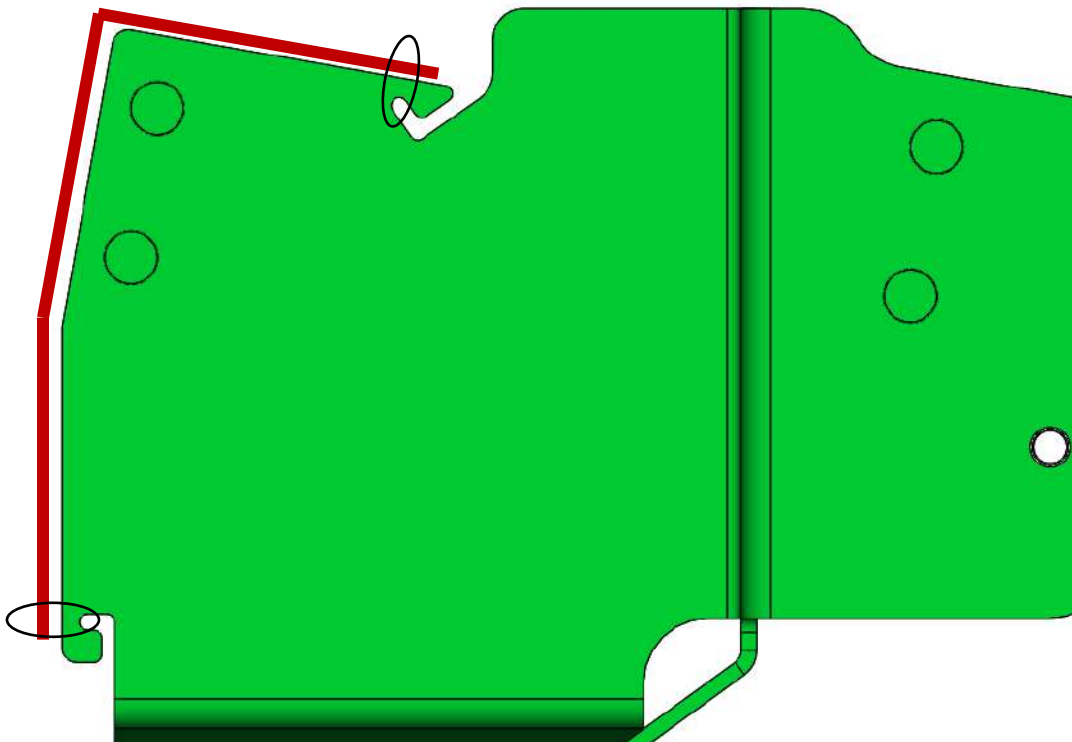
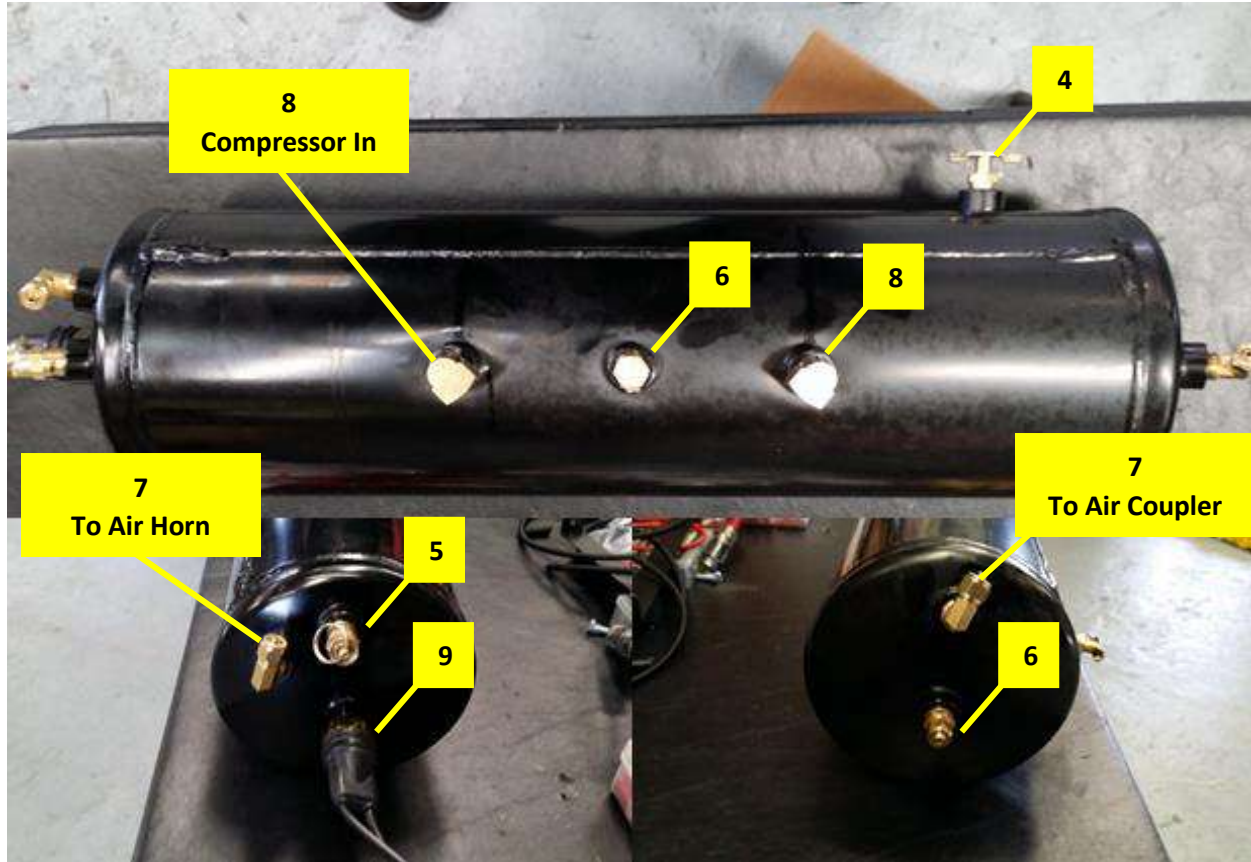


Figure 4 #22 shown ziptied to JL-301

8.2. Air Tank Fittings

8.2.1. Apply two small drops of [Kleinn Air Horn Juice](#) to each male pipe thread.

8.2.2. Attach air fittings to tank, per below illustration, [Click Here to View Fittings List](#)



8.2.3. 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 in above figure.

8.3. Attach Compressor onto Bracket

8.3.1. Using #13, #14, & #15, mount Compressor(s) to JK-101, with the head(s) of the Compressor(s) facing outwards.

8.3.2. Ensure Compressor is oriented properly, with output "leader" hose facing inward, as shown below.

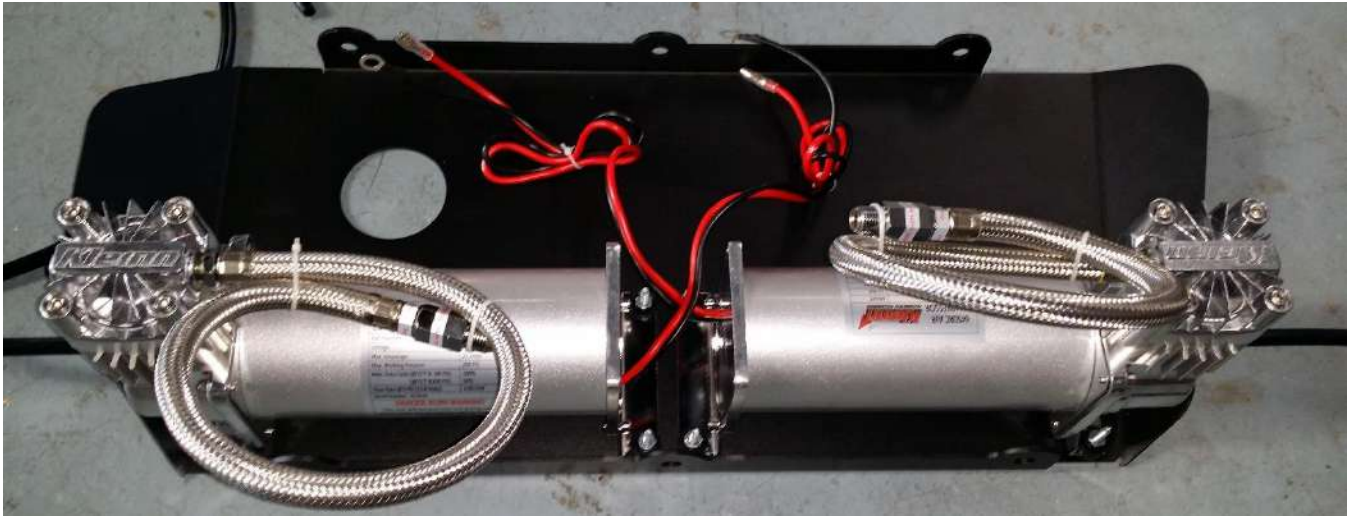


Figure 5 Compressor Mounted onto JK-101 **JK6450 Upgrade Shown

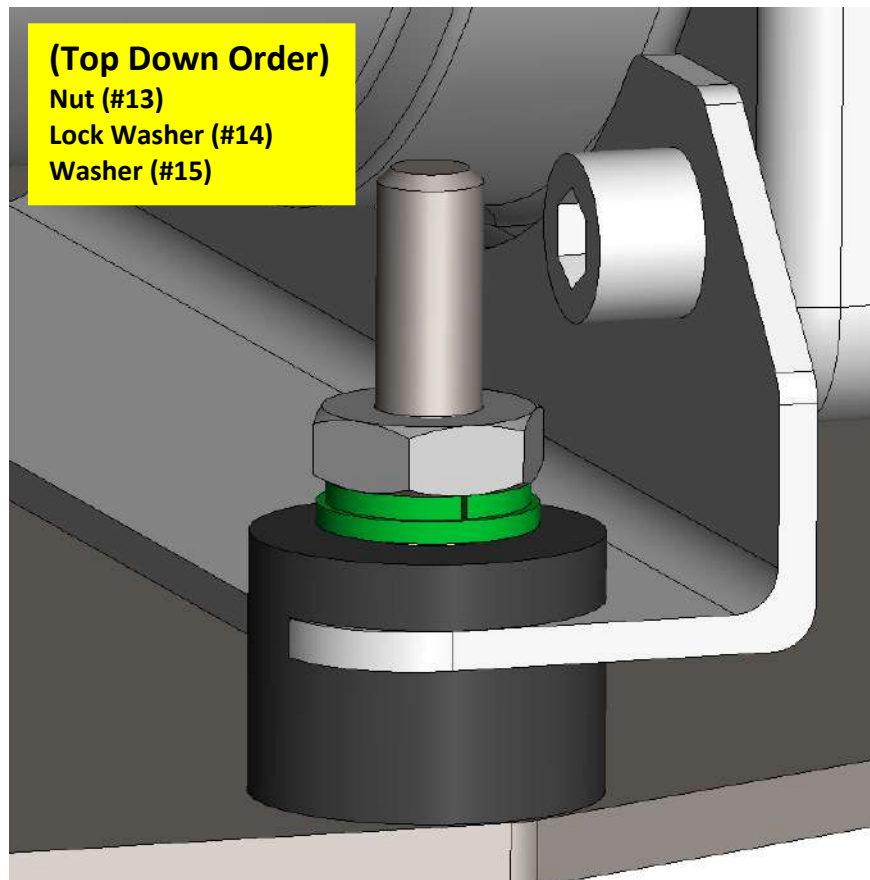


Figure 6 Compressor fasteners

8.3.3. Tighten all fasteners firmly.

8.3.4. Install Air Compressor filter(s) to each Compressor, or if preferred to mount filters remotely, attach threaded barb to front of compressor.

End of Section

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. Adapter Bracket Installation

9.1.1. Locate two threaded holes on rear crossmember, directly in front of rear coil springs.

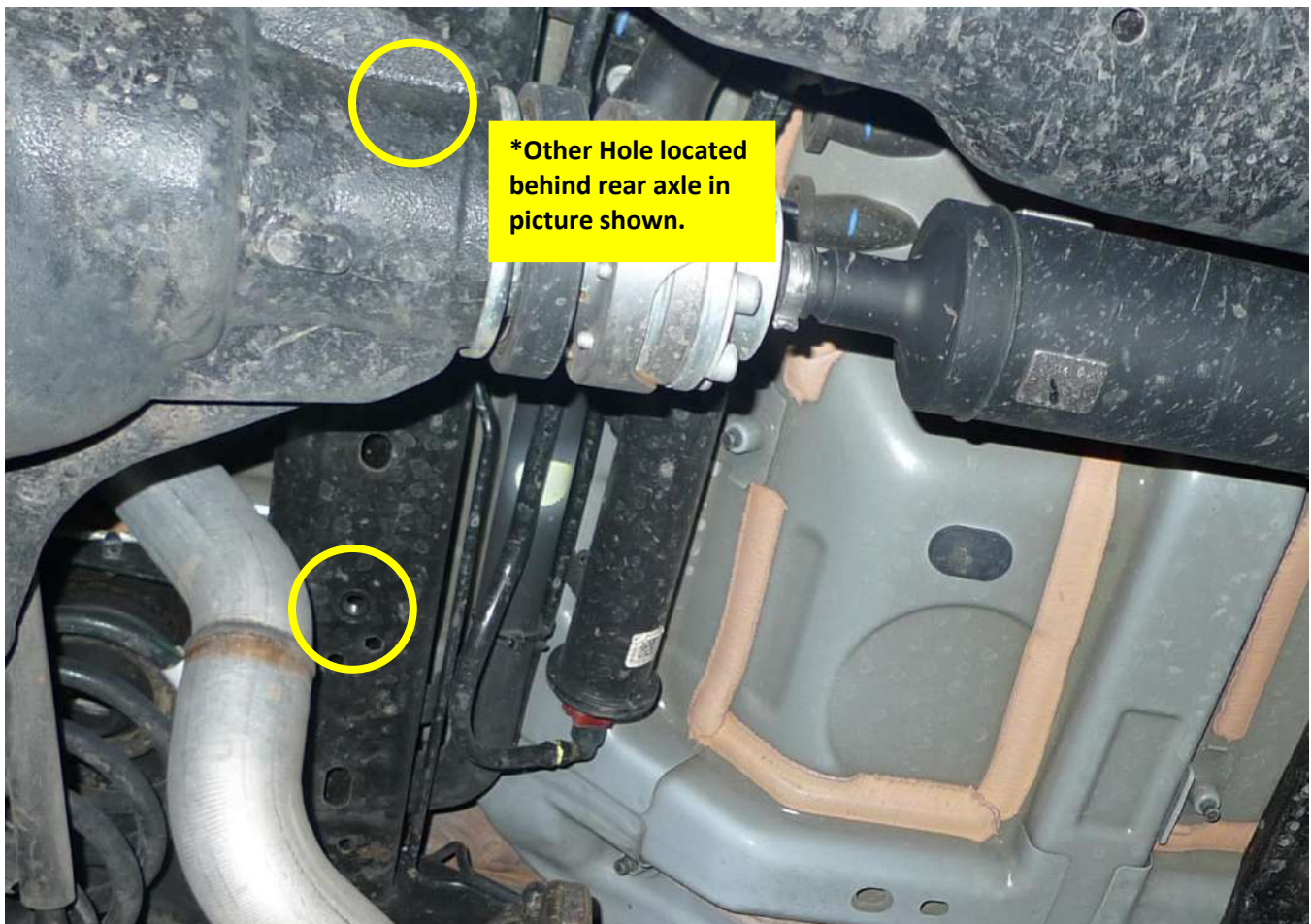


Figure 7 Rear Crossmember Mounting Locations

9.1.2. Using (2) #12, #18, & #20, install JL-201, as shown below. Leave bolts slightly loose for now.



Figure 8 JL-201 Adapter Bracket Bolted in Place

9.2. Air Tank Bracket Installation

9.2.1. Remove long ground strap nut on middle crossmember, shown circled in Figure 9 & 10.



Figure 9 Middle Crossmember



Figure 10 Crossmember nut removed; bracket shown in place

9.2.2. Hang JK-201 on top of JL-201, aligning holes shown circled in Figure 8.

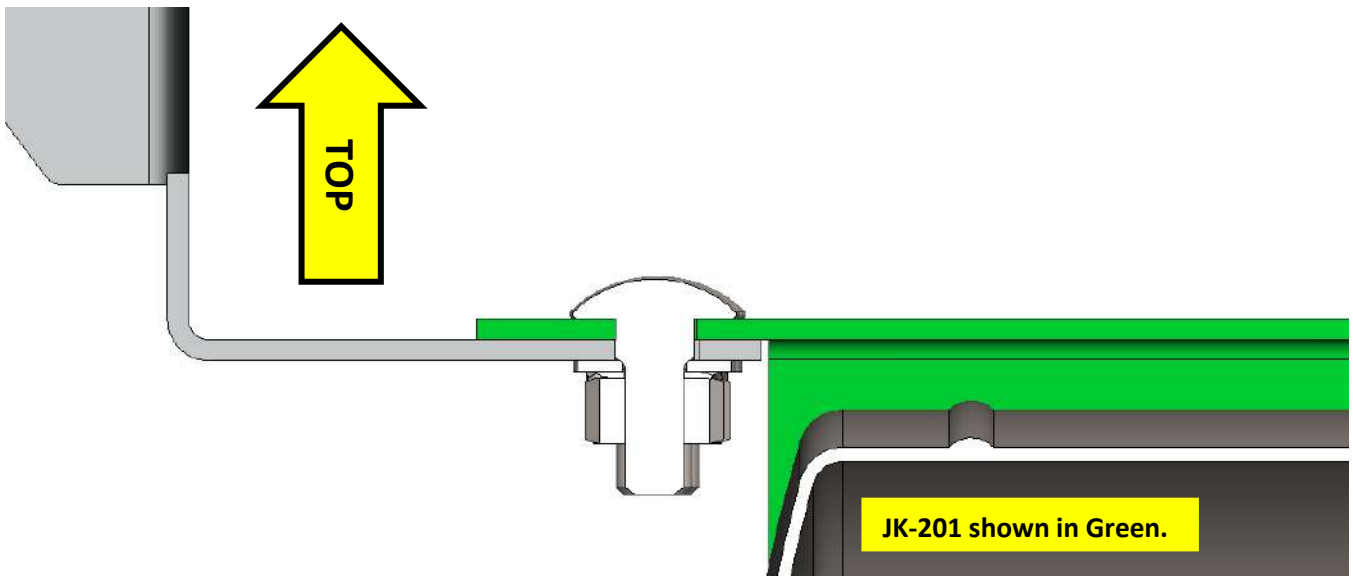


Figure 11 JK-201 & JL-201

- 9.2.3. While holding bracket in place, install M6 bolt #7, #8, & #26 through hole shown circled in Figure 13. This hole intersects a tapped hole in middle crossmember; hand tighten fastener.
- 9.2.4. With JK-201 over crossmember stud, reinstall nut removed above, using #24 washer. Hand tighten fastener.

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- 9.2.5. Insert QTY (3) #6 facing downwards, through JK-201 and into JL-201. Locations shown circled in Figure 8
- 9.2.6. Secure JK-201 & JL-201 with #1, #2, & #11, as shown below. Hand tighten fasteners.

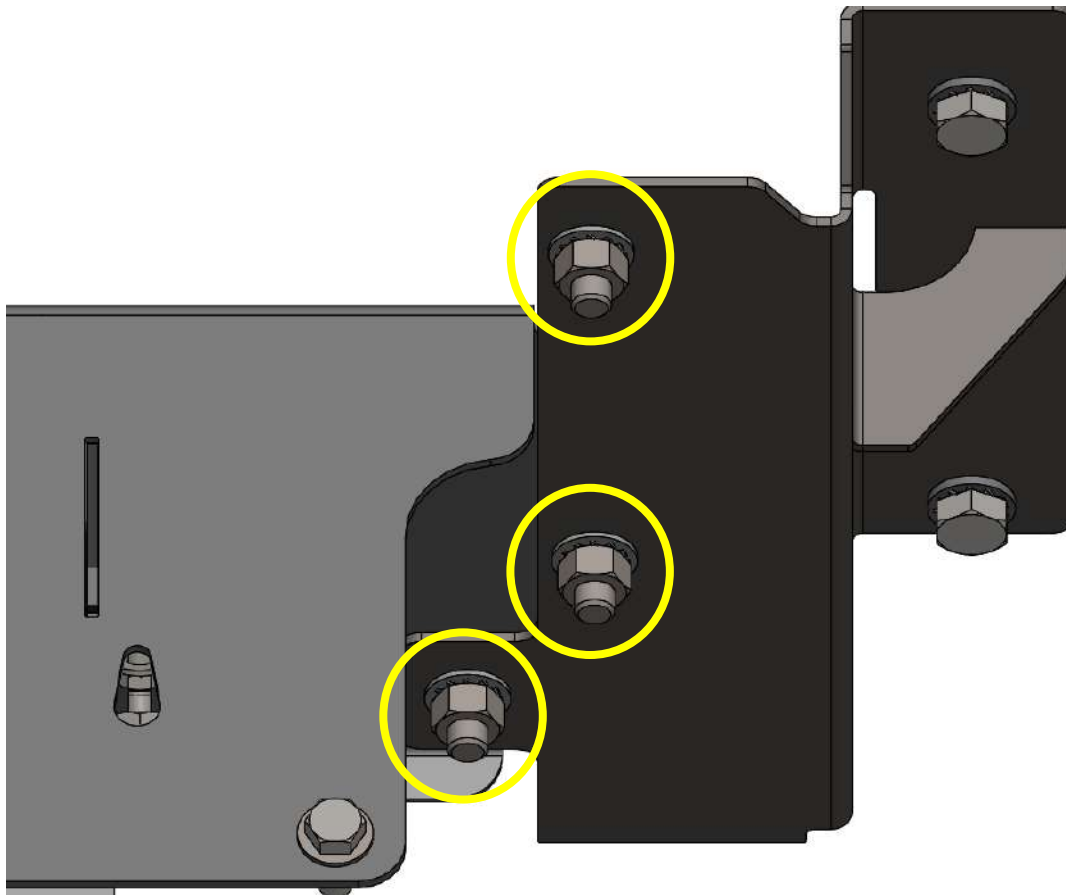


Figure 12 JK-201 & JL-201 Hardware Attached

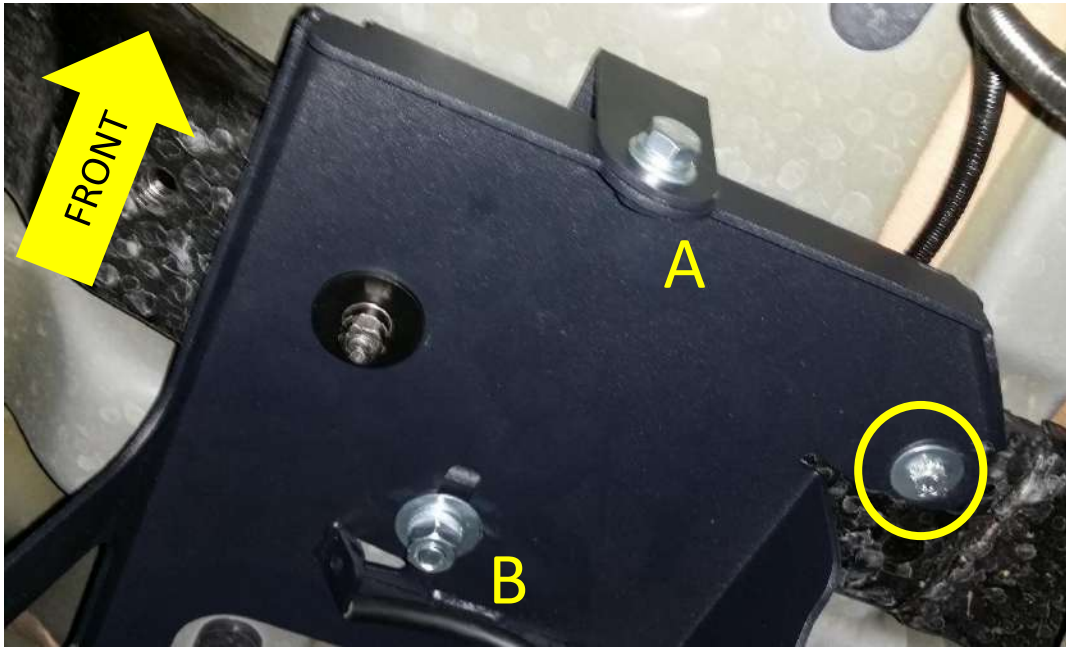


Figure 13 JK-201 Mounting Points

- 9.2.7. Attach JL-202 strap over crossmember and secure to points “A” & “B,” shown in Figure 13. Use Hardware #1, #2, #6, & #11 for B, and #9, #10, & #25 for A. It is easiest to slide strap over crossmember in large space between underbody and crossmember near driveshaft.
- 9.2.8. Firmly tighten all fasteners in following order:
1. Tighten JL-202 bolts
 2. Tighten M6 Bolt #7
 3. Tighten ground strap nut
 4. Tighten QTY (3) carriage bolts #1
 5. Tighten QTY (2) M12 bolts connecting JL-201 to rear crossmember

9.3. Air Tank Installation

9.3.1. Attach #21 to JK-201 tank supports.

NOTE: Use a short section of tape to secure rubber if it falls off during installation process.

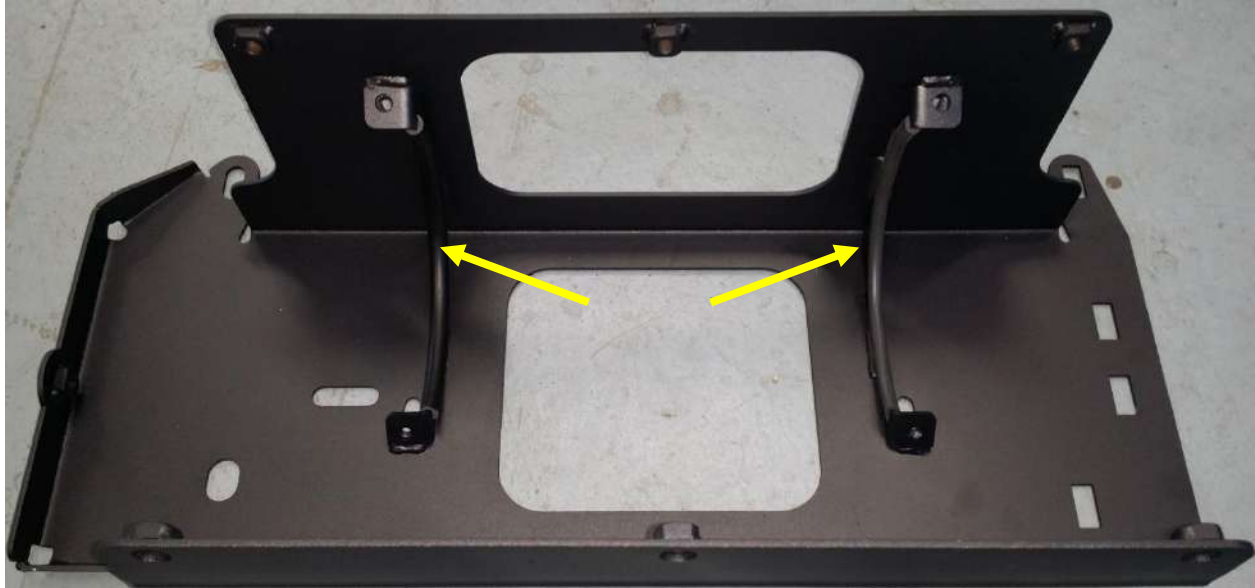


Figure 14 Rubber Insert on JK-201

9.3.2. Attach both JK-202 to JK-201, using one #16, #17 & #27.



Figure 15 JK-202 Attached to JK-201

9.3.3. Bend JK-202 around the tank, so that it ends up having a similar radius.



Figure 16 JK-202 Bent around Air Tank

9.3.4. Attach #23 to JK-202, following Figure 17. (#23 shown in green)



Figure 17 #23 Shown Attached to JK-202

- 9.3.5. Lift Air tank into position, with Drain facing downwards, and towards the rear of the vehicle. Center the Air tank within the JK-202 straps.
- 9.3.6. Use the remaining #16, #17 & #27, securing the Air Tank, and tighten fasteners firmly.

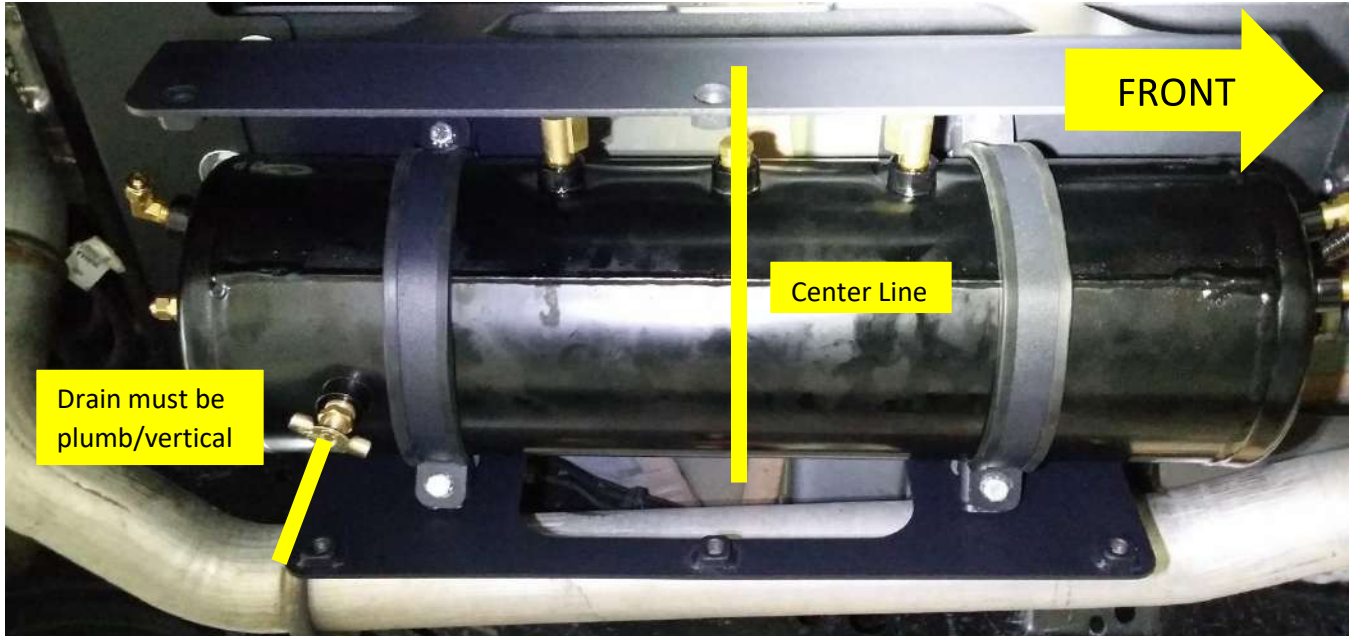


Figure 18 Air Tank Mounted to JK-201

9.4. Compressor Installation

- 9.4.1. Attach JK-101 (Compressor Assembly) to JK-201 (Air Tank Assembly), and bolt together using #9 & #10 and tighten all bolts firmly.

NOTE: Air tank Drain hole on JK-101 will be towards the rear of the vehicle.



Figure 19 JK-101 Mounted

9.5. Connect Air Compressor to Air Tank

- 9.5.1. Apply two small drops of [Kleinn Air Horn Juice](#) to male pipe thread on Compressor outlet “leader” hose and connect to #8 fitting shown above. Firmly tighten.
- 9.5.2. Connect remote air filter to Compressor if you elected to route remote filters.

9.6. Connect Remote Quick Connect Kit to Vehicle

- 9.6.1. Route and attach Quick Connect Coupler Kit to vehicle, as desired using attachment bracket and self-drilling fasteners, supplied in Coupler package
- 9.6.2. Use supplied 1/4” tubing and attach to port shown above

Some optional locations include under hood, near grill, behind bumper, in bed rail, etc.



Figure 20 Air Coupler Mounted To Bumper

9.7. Horn Bracket Installation

- 9.7.1. Remove the M6 nut and bolt from the factory gas tank splash shield. (Near Transmission Crossmember)

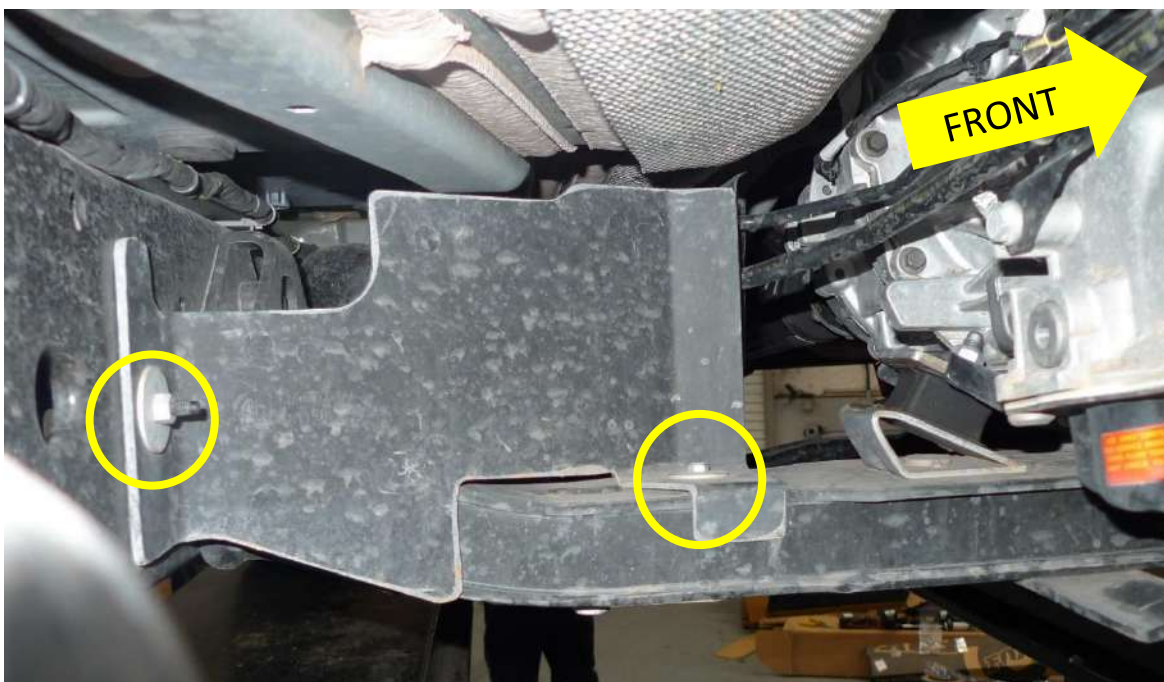


Figure 21 Factory Splash Guard Mounting Points

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- 9.7.2. Remove the shield from the vehicle but keep the bolt, and discard nut.
- 9.7.3. Install JL-301 with horn drivers still attached.



Figure 22 JL-301 Attached to Vehicle

- 9.7.4. Install #17, #26, & #29 on frame stud.



Figure 23 JL-301 Attached to Frame Stud

- 9.7.5. Remove the factory gas tank skid plate bolt that attaches to the same crossmember.



Figure 24 Factory Gas Tank Skid Plate Bolt

- 9.7.6. In the same hole, insert #19 & #12 through the threaded hole and tighten, and check that it's protruding from the top of the crossmember through JL-301.
- 9.7.7. Using #12, #20, #28, secure JL-301 to the other end of bolt #19.
- 9.7.8. Reinstall OEM Bolt as well, shown in Figure 25.

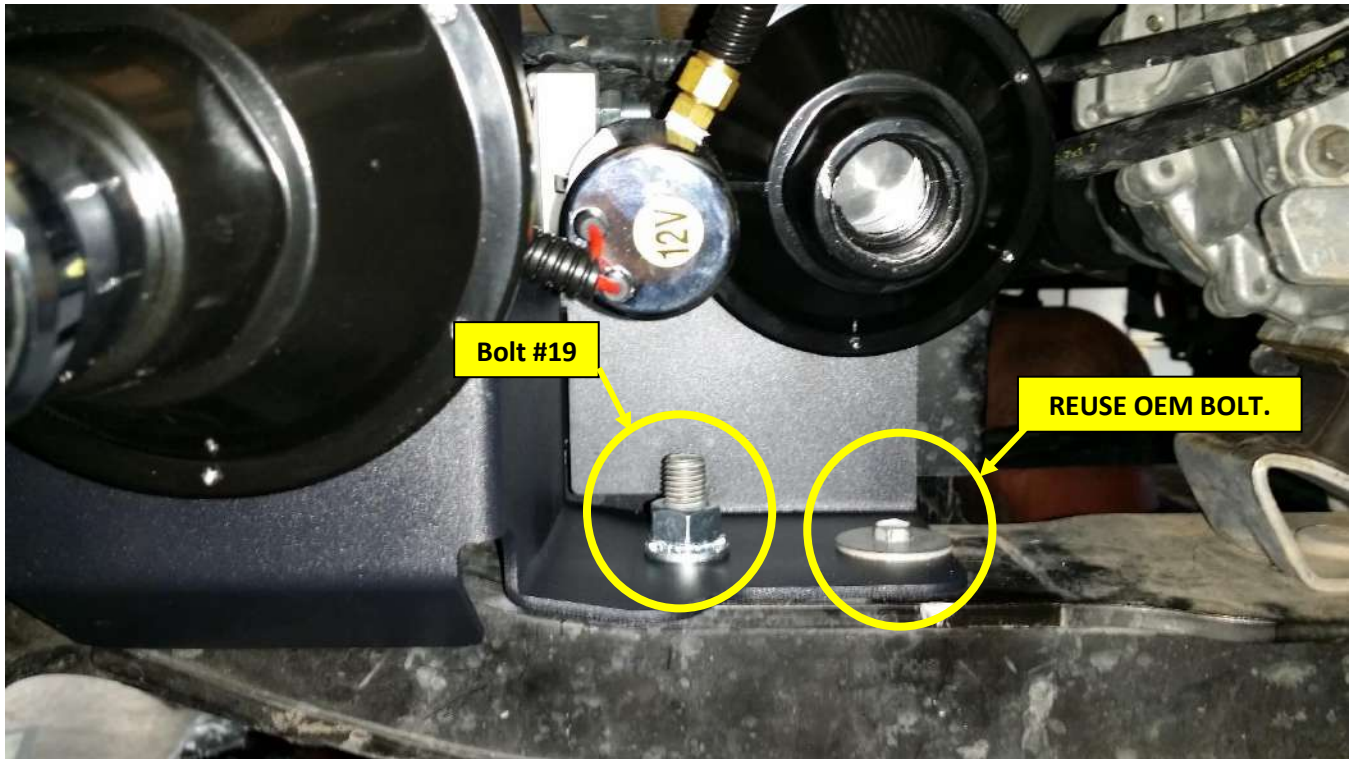


Figure 25 Horn Bracket Crossmember Mounts

9.7.9. Fully tighten all the horn bracket mounting hardware.



Figure 26 Horn Assembly Installed w/ Wiring and Air Lines

9.7.10. Thread horn trumpets into their respective horn drivers, as shown below; tighten with both hands until snug.

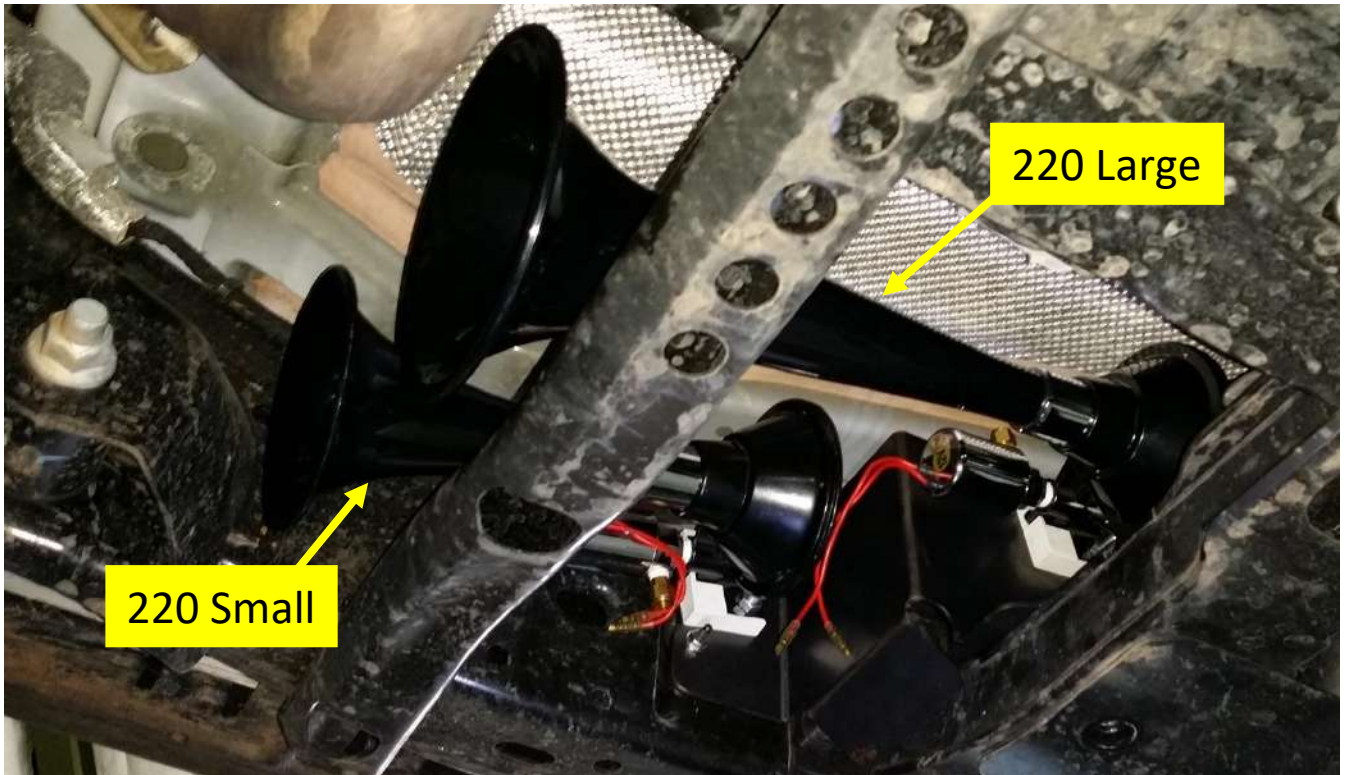


Figure 27 Horn Trumpets Installed

End of Section



10. Initial Testing of Kit

10.1. 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.

10.2. Test Air Compressor

- 10.2.1. 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.
- 10.2.2. 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.
- 10.2.3. 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
- 10.2.4. System must be pressurized or at least Air Compressor running
- 10.2.5. If an air leak is found:
- 10.2.6. Safely release air pressure from system (i.e., slowly open drain valve)
- 10.2.7. Disassemble leaky connection, re-seal and reinstall fittings as needed

10.3. Test Train Horns

- 10.3.1. Allow Air Compressor to run and shut-off automatically (i.e., Air Tank is full)
- 10.3.2. 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
- 10.3.3. 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 persons closer than 100 feet from vehicle. Never operate train horns outdoors when persons are near vehicle without adequate hearing protection.

- 10.3.4. 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)
- 10.3.5. Horns should sound as expected and be loud; [click to listen to example 230 Kit](#)
- 10.3.6. Horn sound/loudness will taper quickly as Air Tank loses pressure
- 10.3.7. Allow Air Compressor to refill tank, if needed and activate Horns for longer three (3) second period to ensure Horns are functioning properly.

10.4. Test Quick Connect Coupler

- 10.4.1. Allow Air Compressor to refill tank, if needed
- 10.4.2. Attach supplied INF-1 inflator kit to Quick Connect Coupler and verify adequate air pressure is available
- 10.4.3. Test fill tires on vehicle, bicycle, etc.
- 10.4.4. Use Air Blow Gun
- 10.4.5. Use Air Impact Gun

End of Section



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11. General Operation of Kit

11.1. 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.*

- 11.1.1. Air compressor is equipped with an automatic thermal overload protection circuit, designed to protect air compressor from overheating and causing permanent damage.
- 11.1.2. Automatic thermal overload protector will automatically reset after 30 minutes.
- 11.1.3. 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.).

11.2. Horn Operation

- 11.2.1. 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.
- 11.2.2. Press Horn Button to activate Horns
- 11.2.3. Horn sound/loudness will taper quickly as Air Tank loses pressure.
- 11.2.4. 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.*

12. Routine Maintenance

Perform following steps at least once during recommended intervals.

- 12.1. 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.
- 12.2. Yearly, or every 12000 miles inspect fuel lines behind JL-301 Horn bracket, to **verify no abrasion or rubbing.**
- 12.3. 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.

- 12.4. 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.

- 12.5. 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.*

- 12.6. 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).