

INSTALL INSTRUCTIONS

**2016-2021 & 2022+
F650-750 CHASSIS CAB
8.5K AXLE FRONT**



#KLM 21500

kelderman



KELDERMAN MANUFACTURING

2686 HIGHWAY 92 EAST OSKALOOSA, IOWA 52577

INFO@KELDERMAN.COM 1-800-334-6150

TABLE OF CONTENTS

♦ KIT NUMBERS.....	(3)
♦ INTRODUCTION.....	(4)
♦ SAFETY.....	(5)
♦ PRODUCT OWNER RESPONSIBILITIES.....	(6)
♦ DISASSEMBLY.....	(7- 1 1)
♦ ASSEMBLY.....	(1 2-26)
♦ KIT DRAWINGS.....	(27)
♦ NOTES.....	(28)
♦ CONTACT INFORMATION.....	(29)



KIT NUMBERS

**THIS INSTALLATION MANUAL COVERS THE FOLLOWING
AIR RIDE KITS.**

KIT NUMBER	DESCRIPTION
KLM21500	2016-2021 & 2022+ F650-750 CHASSIS CAB 8.5K AXLE FRONT



INTRODUCTION

IMPORTANT

- ♦ IT IS IMPORTANT THAT THE ENTIRE INSTALLATION INSTRUCTIONS BE READ THOROUGHLY BEFORE PROCEEDING WITH INSTALLATION.
- ♦ IF YOUR KIT WAS ORDERED RAW, OPEN EVERY BOX AND LOCATE ALL PARTS. THERE ARE SEVERAL SMALLER BUSHING PIECES AND BOLTS THAT ARE PACKAGED SEPARATELY INSIDE THE MAIN BOX.

PRODUCT INSTALLER RESPONSIBILITIES

- ♦ INSTALLER IS RESPONSIBLE FOR INSTALLING THIS PRODUCT IN ACCORDANCE WITH KELDERMAN MFG. INC. SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.
- ♦ INSTALLER IS RESPONSIBLE FOR PROVIDING PROPER INSTALLATION OF VEHICLE COMPONENTS AND ATTACHMENTS AS WELL AS REQUIRED OR NECESSARY CLEARANCE FOR SUSPENSION COMPONENTS, AXLES, WHEELS, TIRES, AND OTHER VEHICLE COMPONENTS TO ENSURE A SAFE AND SOUND INSTALLATION AND OPERATION OF THIS PRODUCT.

DEFINITION OF TERMS

- ♦ **WARNING:** INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.
- ♦ **CAUTION:** A POTENTIAL HAZARDOUS SITUATION MAY RESULT IN PROPERTY DAMAGE.
- ♦ **NOTE:** PROVIDE INFORMATION OR SUGGESTIONS THAT HELP CORRECTLY PERFORM A TASK.
- ♦ **TORQUE:** WHEN ITALICIZED "TORQUE" ALERTS THE INSTALLER TO TIGHTEN FASTENERS TO A SPECIFIED VALUE.

BOLT TORQUE CHART

BOLT SIZE	GRADE 5 TORQUE	GRADE 8 TORQUE
1/4"-20	8 <i>FT-LB</i>	12 <i>FT-LB</i>
3/8"-16	19 <i>FT-LB</i>	26 <i>FT-LB</i>
3/8"-24	21 <i>FT-LB</i>	30 <i>FT-LB</i>
1/2"-13	45 <i>FT-LB</i>	64 <i>FT-LB</i>
1/2"-20	50 <i>FT-LB</i>	70 <i>FT-LB</i>
9/16"-18	70 <i>FT-LB</i>	100 <i>FT-LB</i>
5/8"-11	90 <i>FT-LB</i>	125 <i>FT-LB</i>
5/8"-18	100 <i>FT-LB</i>	150 <i>FT-LB</i>
3/4"-16	175 <i>FT-LB</i>	250 <i>FT-LB</i>
7/8"-14	275 <i>FT-LB</i>	400 <i>FT-LB</i>

SAFETY

YOUR SAFETY AND THE SAFETY OF OTHERS IS VERY IMPORTANT.

- ◆ READ AND UNDERSTAND ALL SAFETY PRECAUTIONS AND INSTRUCTIONS BEFORE INSTALLING THIS PRODUCT.

CAUTION: TRUCKS EQUIPPED WITH PARKING SENSORS OR OTHER LIKE DEVICES.

- ◆ RELOCATION OF THESE DEVICES WILL ALTER THE FIELD OF VIEW. IT IS THE RESPONSIBILITY OF THE OWNER TO UNDERSTAND HOW THESE CHANGES AFFECT THE OPERATION OF THESE SYSTEMS.

WARNING: COMPONENTS UNDER PRESSURE.

- ◆ BLEED ALL PRESSURE FROM THE AIR SYSTEM BEFORE PERFORMING ANY MAINTENANCE OR SERVICE. SERIOUS INJURY COULD OCCUR IF COMPONENTS ARE REMOVED WHILE SYSTEM IS PRESSURIZED.

WARNING: CARELESS INSTALLATION CAN RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE

- ◆ WEAR EYE PROTECTION.
- ◆ DISCONNECT THE BATTERY BEFORE DOING ANY WORK ON THE VEHICLE.
- ◆ WORK ON FLAT LEVEL GROUND.
- ◆ ENSURE TRUCK IS PROPERLY SUPPORTED BY JACK STANDS. NEVER WORK UNDER A VEHICLE SUPPORTED ONLY BY HYDRAULIC JACKS.
- ◆ TAKE PRECAUTIONS WHEN LIFTING PRODUCT. DUE TO THE SIZE AND WEIGHT OF THIS PRODUCT TWO PEOPLE ARE RECOMMENDED FOR INSTALLATION.
- ◆ NEVER WORK DIRECTLY UNDER THE PRODUCT UNTIL IT HAS BEEN SECURELY FASTENED TO THE VEHICLE.
- ◆ AVOID SHARP, HOT, AND MOVING COMPONENTS WHEN ROUTING ELECTRICAL CABLES AND AIR LINES.
- ◆ IF DRILLING, INSPECT BOTH SIDES OF THE SURFACE AND REMOVE/RELOCATE ANY OBJECTS LOCATED IN THE WAY.
- ◆ ENSURE ALL BOLTS ARE PROPERLY TIGHTENED BEFORE DRIVING.

PRODUCT OWNER RESPONSIBILITIES

- ◆ PRODUCT OWNER IS SOLELY RESPONSIBLE FOR PRE-OPERATION INSPECTION, PERIODIC INSPECTIONS, MAINTENANCE, AND USE OF THE PRODUCT AS SPECIFIED BY KELDERMAN MFG. INC. OF PARTICULAR IMPORTANCE IS THE RE-TORQUE OF FASTENERS.
- ◆ THIS RE-TORQUE MUST BE PERFORMED WITHIN 2500 MILES OF THIS PRODUCT BEING PUT INTO SERVICE.
- ◆ THE KELDERMAN AIR SUSPENSION IS FULLY AUTOMATIC IN CONTROLLING THE HEIGHT OF THE CHASSIS WHEN PROPERLY INSTALLED.
- ◆ NO MANUAL INTERVENTION TO CONTROL AIR PRESSURE OR RIDE HEIGHT IS NEEDED DURING THE COURSE OF NORMAL OPERATION.
- ◆ PRODUCT OWNER IS RESPONSIBLE FOR “*DOWN TIME*” EXPENSES, CARGO DAMAGE, AND ALL BUSINESS COSTS AND LOSSES RESULTING FROM A WARRANTABLE FAILURE.

SERVICE INTERVALS

FIRST 2,500 MILES

- ◆ CHECK RIDE HEIGHT $\pm 1/4$ ”
- ◆ CHECK FOR AIR LEAKS AROUND FITTINGS.
- ◆ CHECK FOR ANY LOOSE OR RUBBING HOSES AND WIRES.
- ◆ RE-TORQUE ALL HARDWARE.

EVERY 30,000 MILES

- ◆ CHECK RIDE HEIGHT $\pm 1/4$ ”
- ◆ CHECK FOR AIR LEAKS AROUND FITTINGS.

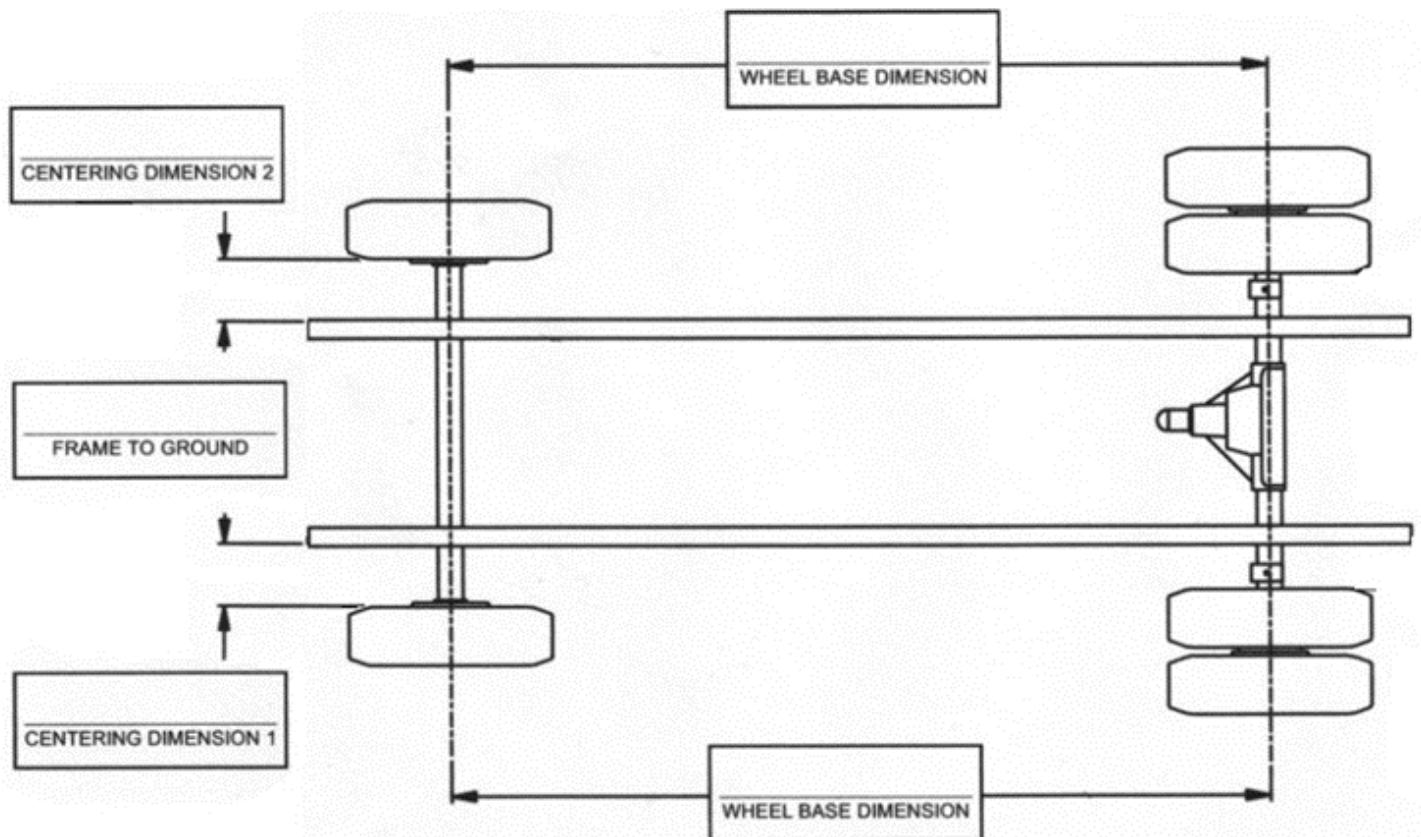
DISASSEMBLY

BEFORE DOING ANYTHING, MEASURE THE PINION ANGLE AND RECORD IT. THIS IS IMPORTANT BECAUSE YOU WILL NEED TO PUT THE AXLE BACK TO THIS MEASUREMENT AFTER INSTALLATION. SEE FIGURE 1.

PINION ANGLE _____



TAKE THE FOLLOWING MEASUREMENTS FOR FUTURE REFERENCE. THESE MEASUREMENTS WILL BE USED TO ADJUST THE SUSPENSION AFTER INSTALLATION.



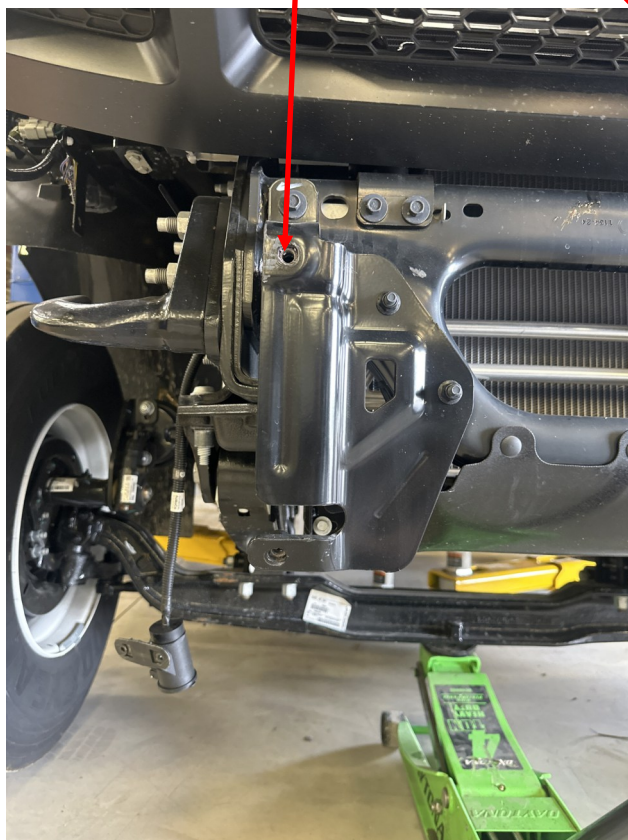
DO DRIVER'S SIDE FIRST BEFORE PROCEEDING TO THE PASSENGER SIDE!

1. PLACE A JACK UNDER EACH SIDE OF THE FRAME JUST BEHIND THE LEAF SPRING SHACKLES. JACK THE TRUCK UP HIGH ENOUGH SO THAT THE TIRES ARE JUST OFF THE GROUND. PLACE A JACK STAND NEXT TO THE JACKS TO PREVENT THE TRUCK FROM FALLING OFF THE JACKS. START BY REMOVING THE BLOCK HEATER PLUG, BUMPER, AND FRONT TWO TIRES. THE BUMPER WILL HAVE (4) BOLTS ATTACHING IT TO THE TRUCK.

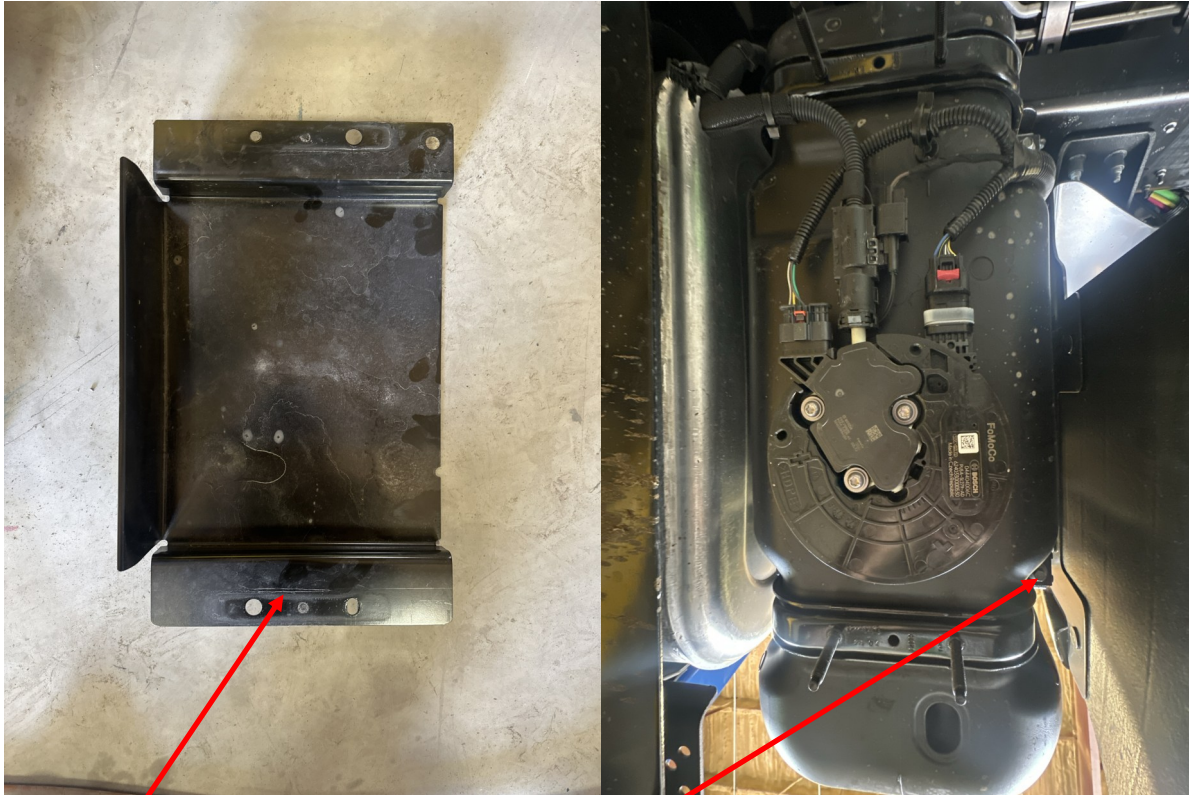
HEATER BLOCK

JACK LOCATION

BUMPER MOUNT LOCATIONS



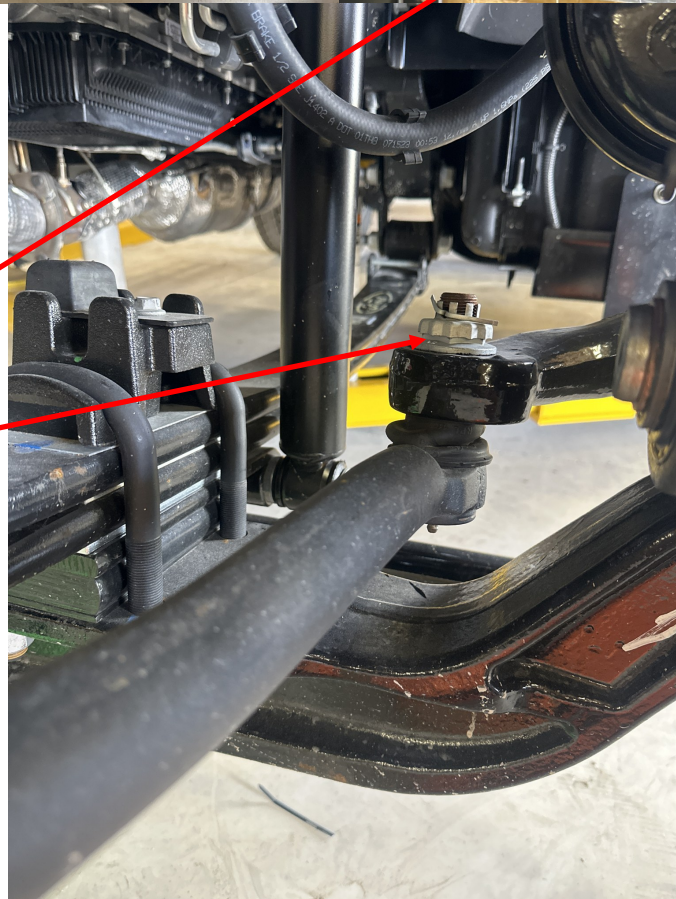
2. REMOVE STEERING ARM FROM CAST KNUCKLE. THEN, BEGIN REMOVING THE DEF TANK. YOU WILL NEED TO REMOVE THE PLATE COVERING THE TANK MOUNTS. ONCE YOU REMOVE THE BRACKET YOU WILL SEE FOUR BOLTS ATTACHING THE TANK TO THE TRUCK. THEN, REMOVE THE TANK TO ACCESS THE REAR LEAF BOLTS AND HANGER. NOTE: WE HAD TO REMOVE PART OF THE WHEEL WELL TO ACCESS TANK BOLTS AND LINES.



COVER PLATE

DEF TANK BRACKET &
BOLTS

STEERING ARM & CAST
KNUCKLE



3. YOU MUST JACK THE FRONT AXLE UP THEN START BY REMOVING THE REAR TOP BOLT OF THE LEAF SPRING. ONCE YOU HAVE THE BOLT REMOVED, YOU MAY REMOVE THE FRONT LEAF SPRING BOLT (KEEP AS YOU WILL USE IT WHEN INSTALLING TRAILING ARM BAR MOUNT. NOTE: USE SOMETHING TO HOLD THE FRONT OF THE LEAF SPRING IN PLACE LIKE A CROWBAR OR A BOLT (THIS WILL STAY IN UNTIL AFTER YOU REMOVE THE U-BOLTS).



4. NEXT, REMOVE THE TOW HOOK, YOU WILL WANT TO KEEP THE TOW HOOK AND HARDWARE AS YOU WILL PUT IT BACK ON AFTER ADDING THE CROSSMEMBER MOUNTING PLATE.



5. YOU MAY NOW REMOVE THE SHOCK. NEXT, THEN REMOVE THE U-BOLTS HOLDING THE LOWER SHOCK MOUNT AND LEAF TO THE FRONT AXLE. AFTER REMOVING THE U-BOLTS, THE LEAF SPRING WILL BE COMPLETELY UNHOOKED. WHILE WATCHING WHERE THE SPRING HAS TENSION, YOU MAY REMOVE IT COMPLETELY FROM THE TRUCK ALONG WITH THE BUMP STOP.



6. REMOVE THE BRAKE LINE BRACKET BOLTS. ONCE DONE WITH STEPS 1-7 YOU MAY MOVE TO ASSEMBLY.



NOTE: HAND TIGHTEN, LEAVE EVERYTHING LOOSE UNTIL YOU FINISH EACH SIDE OF THE TRUCK EXCEPT FOR UPPER BAG MOUNTS.

ASSEMBLY

1. LOCATE THE DRIVERS SIDE FRONT CROSS MEMBER MOUNTING PLATE (#21401) AND SLIDE OVER THE (4) FACTORY TOW HOOK BOLTS. PLACE THE TOW HOOK OVER TOP OF THE BRACE PLATE.

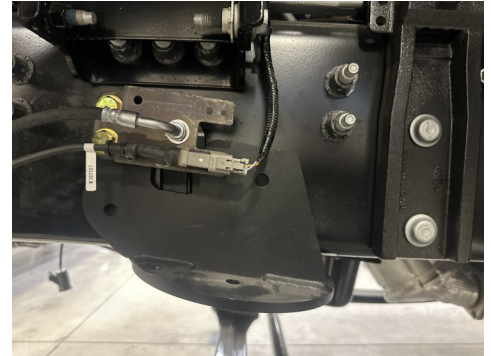
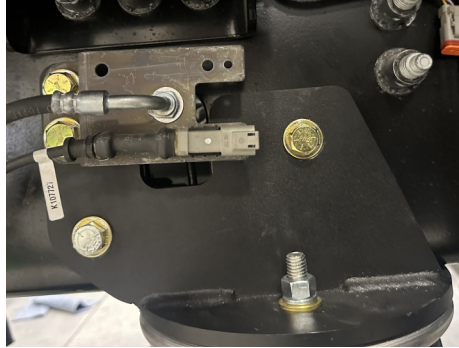
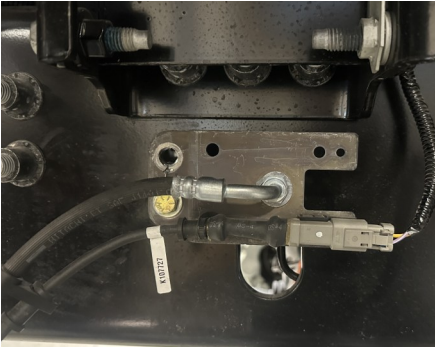


2. LOCATE THE DRIVER SIDE FORWARD TRAILING ARM MOUNT (#21404) AND (1) TRAILING ARM WITH THE THICKER BUSHING FOR THE 20 MM OEM BOLT. SET THE TRAILING ARM SO THERE IS 8.25" IN BETWEEN THE KNUCKLES. FINE TUNING WILL NEED TO BE DONE AFTER THE INSTALL IS COMPLETE, BUT THIS WILL BE CLOSE. THE TRAILING ARM TOWER GOES INTO FRONT LEAF SPRING PERCH ALONG WITH THE UPPER TRAILING ARM WITH THE OEM 20MM BOLT. USE THE (3) 5/8"-18 X 2" BOLTS TO FASTEN THE TRAILING ARM TOWER TO THE BRACE PLATE. YOU WILL TORQUE THE 5/8" BOLTS TO 150 FT/LBS. ONCE THE INSTALL IS COMPLETE.

OEM BOLT AND
TRAILING ARM WITH
TICKER BUSHING



3. LOCATE THE DRIVERS SIDE UPPER AIR BAG MOUNT (#21406) AND UPPER PANHARD BAR BRACE (#10009945). REMOVE THE BOLTS THAT HOLD THE BRAKE LINES TO THE FRAME. DRILL THESE HOLES OUT TO 1/2". THE BRACKET THAT FASTENS THE BRAKE LINES TO THE FRAME WILL ALSO NEED TO BE DRILLED OUT TO 1/2". FASTEN THE UPPER AIR BAG MOUNT IN PLACE WITH (2) 1/2"-20 X 2" BOLTS (MAKE SURE THE BRAKE BRACKET IS IN PLACE) AND UPPER PAN HARD BAR BRACE IS ON THE INSIDE OF THE FRAME. THE (2) REAR HOLES WILL NEED TO BE DRILLED OUT TO 1/2". INSERT THE 1/2"-20 X 1-3/4" BOLT IN THE REAR HOLE. THE HOLE TOWARDS THE FRONT OF THE TRUCK GOING INTO THE BRACES SQUEEZING THE FROM WILL TAKE A 1/2"-13 X 2", LOCK WASHER AND TORQUE ALL (4) 1/2" BOLTS TO 85 FT/LBS. **NOTE:** MAKE SURE YOU CHECK BEHIND THE FRAME FOR ANY BRAKE LINES OR WIRES BEFORE DRILLING. BE SURE TO TIGHTEN THE BOLTS HOLDING THE BRAKE LINE BRACKET IN PLACE. IF YOUR CABLE IS RUBBING AGAINST THE UPPER BAG MOUNT, WE HAVE INCLUDED SPACERS TO PROVIDE CLEARANCE (10031896).

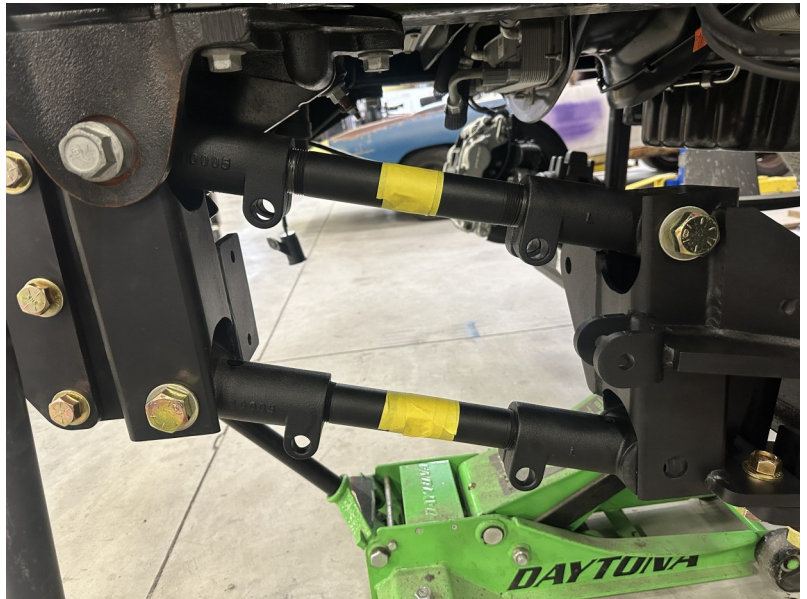


4. FIND THE LOWER BAG MOUNT (#10031604), AXLE SPACERS (#21416), AND LOWER AXLE CLAM (#21410). FIRST, PLACE THE LOWER BAG MOUNT ONTO THE AXLE. MAKE SURE THE ALIGNMENT PIN IS FULLY SEATED IN THE AXLE. NEXT, USE THE AXLE CLAMP AND THE (2) TWO 5/8"-18 X 2-1/2" BOLTS TO SECURE THE AXLE CLAMP TO THE LOWER BAG MOUNT. NEXT, USE THE AXLE SPACERS AND (4) 3/4"-16 X 8" BOLTS TO FULLY INSTALL THE LOWER BAG MOUNT. **REMINDER:** KEEP EVERYTHING LOOSE UNTIL THE DRIVERS SIDE INSTALL IS COMPLETE.



5. FIND THE LOWER TRAILING ARM BAR (BOTH BUSHINGS ARE IDENTICAL). FIRST, INSTALL THE UPPER TRAILING ARM BAR INTO THE LOWER BAG MOUNT. THEN, INSTALL THE LOWER TRAILING ARM BAR. NEXT, MAKE SURE YOUR TRAILING ARMS ARE SET TO 8-1/4" FROM THE FLAT FACE ON EACH KNUCKLE. LASTLY, YOU MAY NOW REINSTALL THE SHOCK USING SPACERS (#18539) ON THE LOWER SHOCK BOLT TOWARDS THE INSIDE OF THE TRUCK. ONCE COMPLETE, TIGHTEN EVERYTHING THAT'S LOOSE ON THIS SIDE OF THE TRUCK.

3/4"-16
x 4-1/2"
BOLT



6. INSTALLING BAG, FIRST, YOU WANT TO INSTALL THE 3" STUD/THEADED ROD INTO THE BAG. THEN SET THE BAG ON THE LOWER BAG MOUNT PUTTING THE STUD THROUGH THE CENTER HOLE ON THE MOUNT. ONCE YOU HAVE IT IN PLACE LOOSELY TIGHTEN THE BOTTOM NUT ON THE BAG. NEXT, JACK THE AXLE OF THE TRUCK UP AND INSERT THE TOP STUDS INTO THE UPPER BAG MOUNT. NOTE: MAKE SURE YOU HAVE THE 3/4" STUD IS IN THE HOLE ON THE PASSENGER SIDE OF THE TRUCK. LASTLY, INSTALL THE 3/4" AND 1/2" ON THE TWO STUDS.

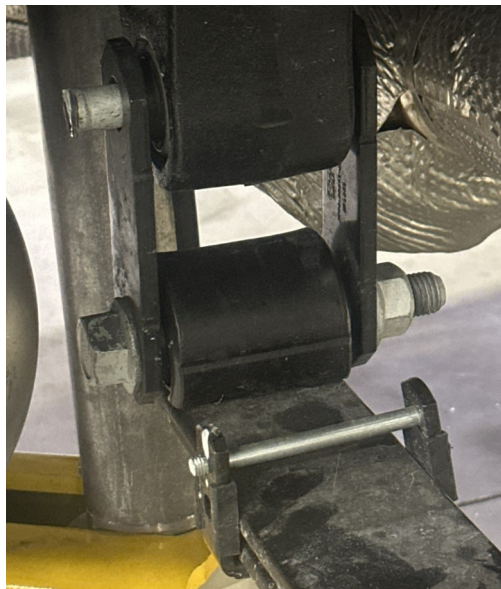


PASSENGER SIDE

7. START BY REMOVING TOW HOOKS, YOU WILL WANT TO KEEP THE TOW HOOK AND HARDWARE AS YOU WILL PUT IT BACK ON AFTER ADDING THE CROSSMEMBER MOUNTING PLATE.



8. NEXT, YOU WILL NEED TO REMOVE THE REAR TOP LEAF SPRING BOLT. TO DO THIS, YOU MUST CUT THE HEAD OFF OF THE BOLT. NOTE: YOU MAY NEED TO MAKE ANOTHER CUT TO GET THE BOLT COMPLETELY OUT. ONCE YOU HAVE THE BOLT REMOVED, YOU MAY REMOVE THE FRONT LEAF SPRING BOLT (KEEP AS YOU WILL USE IT WHEN INSTALLING TRAILING ARM BAR MOUNT.. NOTE: USE SOMETHING TO HOLD THE FRONT OF THE LEAF SPRING IN PLACE LIKE A CROWBAR OR A BOLT (THIS WILL STAY IN UNTIL AFTER YOU REMOVE THE U-BOLTS.



9. LOCATE THE LAST REMAINING TRAILING ARM. SET THE DISTANCE BETWEEN THE KNUCKLES AT 8-1/4". INSERT IT INTO THE LOWER BAG MOUNT AND THE FRONT TRAILING ARM MOUNT WITH THE 7/8"-14 X 5" BOLTS.

10. LOCATE THE AIR BAGS. THE BOTTOM FASTENS TO THE LOWER AIR BAG MOUNT USING A THREADED STUD THAT NEEDS INSERTED INTO THE BOTTOM OF THE BAG. THEN, YOU WILL USE THE 1/2" HARDWARE TO FULLY ATTACH THE BAG TO THE LOWER BAG MOUNT. THEN, INSTALL INTO THE UPPER AIR BAG MOUNT WITH THE 1/2" AND 3/4" NUTS. TORQUE THESE NUTS TO 35 FT/LBS. INSTALL BOTH AIR BAGS AT THIS TIME. NEXT, ADD THE AIR FITTING TO EACH OF THE STUDS COMING OUT OF THE BAG.



11. IF YOU HAVE NOT ALREADY, FASTEN THE BOTTOM OF THE SHOCKS TO THE LOWER AIR BAG MOUNT WITH THE 3/4"-16 X 4-1/2" BOLTS. TORQUE THESE 3/4" BOLTS TO 125 FT/LBS. USE A WASHERS ON EACH SIDE IF NEEDED.



12. NOTE: LEAVE EVERYTHING LOOSE UNTIL YOU FINISH EACH SIDE OF THE TRUCK EXCEPT FOR UPPER BAG MOUNTS. USING THE ORIGINAL HARDWARE AND TOW HOOK REINSTALL WITH (PS) CROSSMEMBER MOUNTING PLATE (CMP) (21402) NOTE: TOW HOOK USES FACTORY HARDWARE.

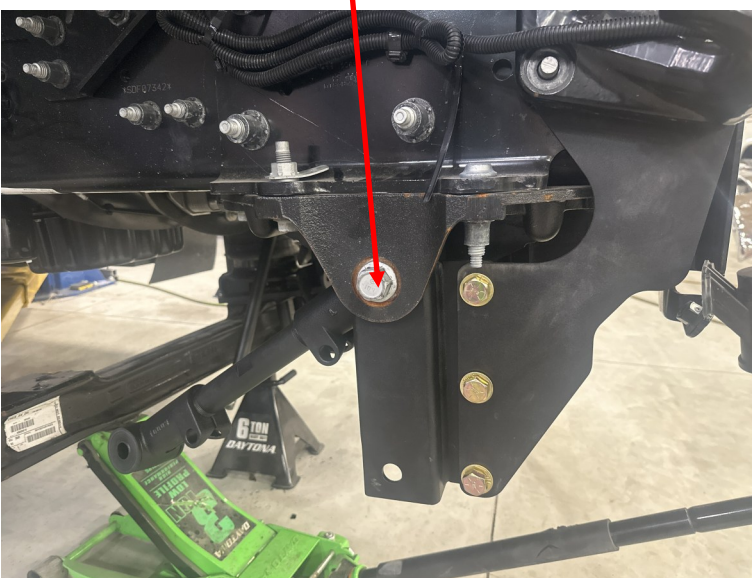


13. FIRST , FIND THE (PS) UPPER TRAILING ARM BAR (NOTE: UPPER ARM HAS A DIFFERENT BUSHING FOR THE SIDE ATTACHING TO THE TRAILING ARM MOUNT), AND TRAILING ARM MOUNT (#21405). YOU WILL NEED TO INSTALL THESE BOTH TOGETHER AND MAY REQUIRE ANOTHER SET OF HANDS. NOTE: PINCH BOLT ON KNUCKLE SHOULD BE FACING THE OUTSIDE OF THE TRUCK TO MAKE SURE BOLT DOESN'T HIT THE HEIGHT CONTROL VALVE. ALINE THE TOP HOLE ON TRAILING ARM MOUNT TO FRONT MOUNTING POINT OF THE LEAF SPRING. USING THE FACTORY FRONT BOLT TO THE LEAF SPRING, MAKE SURE THE BOLT IS GOING THROUGH BOTH THE TRAILING ARM MOUNT AND KNUCKLE ON THE TRAILING BAR ARM. NEXT, USE THE (3) 5/8"-18 X 2" BOLTS AND HARDWARE TO ATTACH THE TRAILING ARM MOUNT TO THE (CMP).



UPPER TRAILING ARM BUSHING FOR TRAILING ARM MOUNT

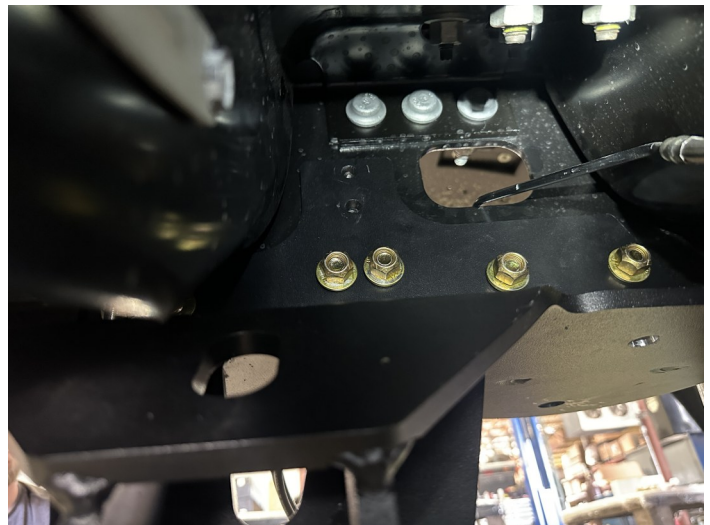
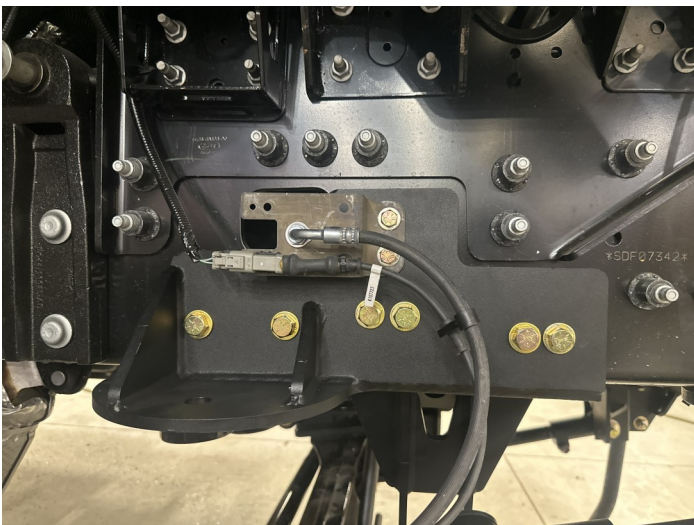
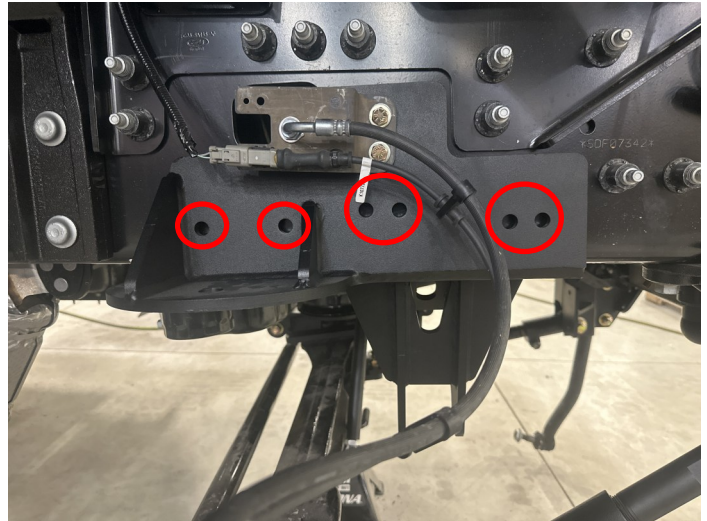
BUSHING ORIENTATION FOR UPPER ARM, UNIQUE BUSHING WILL GO HERE ON EACH SIDE OF THE TRUCK



PINCH BOLT ORIENTATION



14. LOCATE THE PASSENGER SIDE UPPER AIR BAG/PANHARD BAR MOUNT (#10009993) AND BACKING PLATE (#21466). THESE PARTS SQUEEZE THE FRAME WITH THE BACKING PLATE ON THE INSIDE. YOU WILL WANT TO BOLT THE UPPER BAG MOUNT AND THE BACKING PLATE THROUGH THE BRAKE LINE BRACKET BOLTS USING THE (2) 3/8"-24 X 2-1/2". THIS WILL POSITION THE BRACKET TO DRILL THE BOTTOM (3) HOLES TO 1/2". AFTER DRILLING THE BOTTOMS HOLE, YOU MAY ADD (2) 1/2"-20 X 1-3/4" BOLTS IN THE HOLES HOLDING THE MOUNT TO THE FRAME (FULLY TIGHTEN). ONCE YOU HAVE THE BRACKET SECURED WITH BOLTS, YOU MAY DRILL THE TOP 6 HOLES INTO THE SIDE OF THE FRAME TO 1/2". USE THE (6) 1/2"-20 X 2" BOLTS TO SECURE THE BAG MOUNT TO THE FRAME (FULLY TIGHTEN). MAKE SURE TO TIGHTEN THE BOLTS HOLDING THE BRAKE LINE BRACKET IN PLACE. IF YOUR CABLE IS RUBBING AGAINST THE UPPER BAG MOUNT, WE HAVE INCLUDED SPACERS TO PROVIDE CLEARANCE (#10031896).

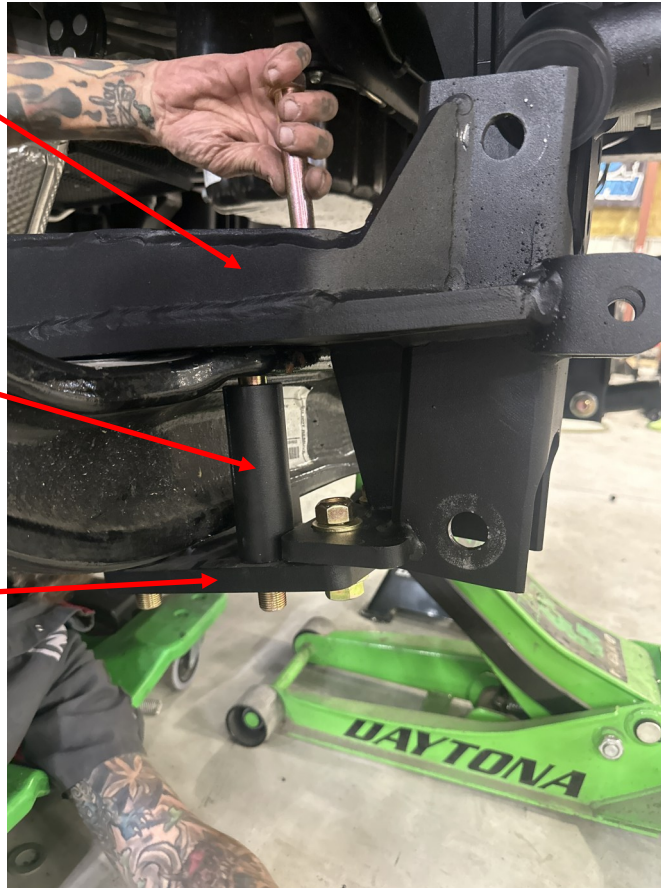


15. FIND THE LOWER BAG MOUNT (#10031609), AXLE SPACERS (#21416), AND LOWER AXLE CLAMP (#21410). FIRST, PLACE THE LOWER BAG MOUNT ONTO THE AXLE. MAKE SURE THE ALIGNMENT PIN IS FULLY SEATED IN THE AXLE. NEXT, USE THE AXLE CLAMP AND THE (2) 5/8"-18 X 2-1/2" BOLTS TO SECURE THE AXLE CLAMP TO THE LOWER BAG MOUNT. NEXT, USE THE AXLE SPACERS AND (4) 3/4"-16 X 8" BOLTS TO FULLY INSTALL THE LOWER BAG MOUNT. REMINDER: KEEP EVERYTHING LOOSE UNTIL THE DRIVERS SIDE INSTALL IS COMPLETE.

LOWER BAG MOUNT

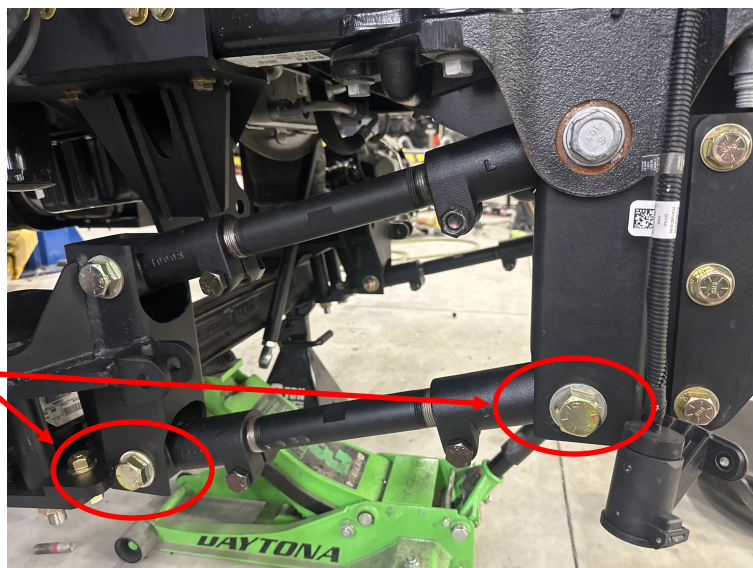
AXLE SPACERS

AXLE CLAMP

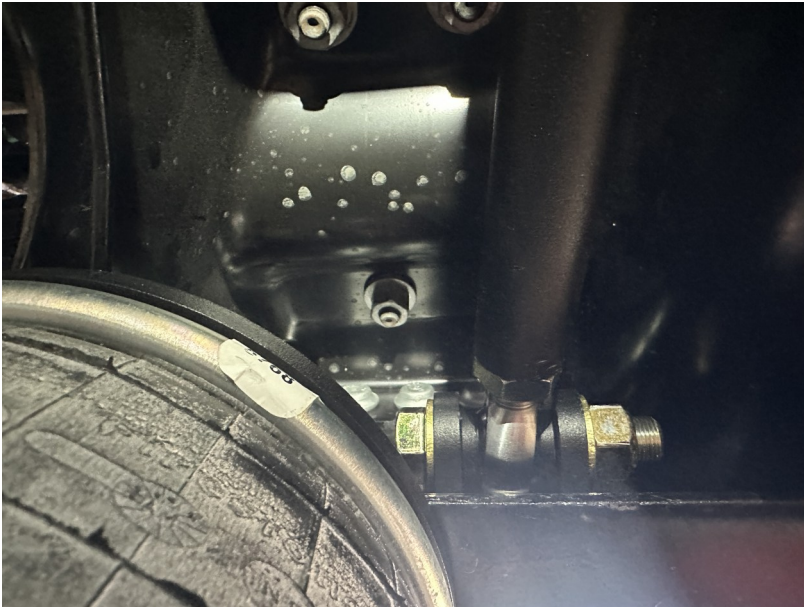


16. FIND THE LOWER TRAILING ARM BAR (BOTH BUSHINGS ARE IDENTICAL). FIRST, INSTALL THE UPPER TRAILING ARM BAR INTO THE LOWER BAG MOUNT. THEN, INSTALL THE LOWER TRAILING ARM BAR. NEXT, MAKE SURE YOUR TRAILING ARMS ARE SET TO 8-1/4" FROM THE FLAT FACE ON EACH KNUCKLE. LASTLY, YOU MAY NOW REINSTALL THE SHOCK (**NOTE: USE (2) 3/4"** FLAT WASHERS ON EACH OF SHOCK AS SPACERS. ONCE COMPLETE, TIGHTEN EVERYTHING THAT'S LOOSE ON THIS SIDE OF THE TRUCK.

7/8"-14 X 5" BOLTS



17. LOCATE THE PAN HARD BAR BRACE. THIS BAR MOUNTS ON THE INSIDE OF THE DRIVERS SIDE FRAME RAIL TO THE UPPER PAN HARD BAR MOUNT WITH THE 3/4"-16 X 3-1/2" BOLT. THE PASSENGER SIDE FASTENS TO THE PAN HARD BAR DROP ON THE PASSENGER SIDE WITH THE 3/4"-16 X 3-1/2 BOLT.



PASSENGER SIDE TOP HOLE

18. LOCATE THE PANHARD BAR (#10009774) THIS IS THE PANHARD BAR WITH JONNY JOINTS. USE THE 3/4"-16 X 4-1/2" BOLT AND SPACERS TO CENTER THE PAN HARD BAR INTO THE MOUNTS ON THE DRIVERS SIDE LOWER AIR BAG MOUNT AND THE PAN HARD BAR MOUNT ON THE PASSENGER SIDE. GO AHEAD AND TORQUE THESE BOLTS TO 250 FT/LBS.



PASSENGER SIDE TOP HOLE



NOTE: THE UPPER SIDE OF THE BAR WILL USE (1) SPACER ON EACH SIDE OF THE KNUCKLE (#10195). THE LOWER SIDE OF THE BAR WILL USE (2) SMALL SPACERS TOWARDS THE REAR OF THE TRUCK (#10199) AND (1) BIG SPACER ON THE FRONT SIDE (#18763).

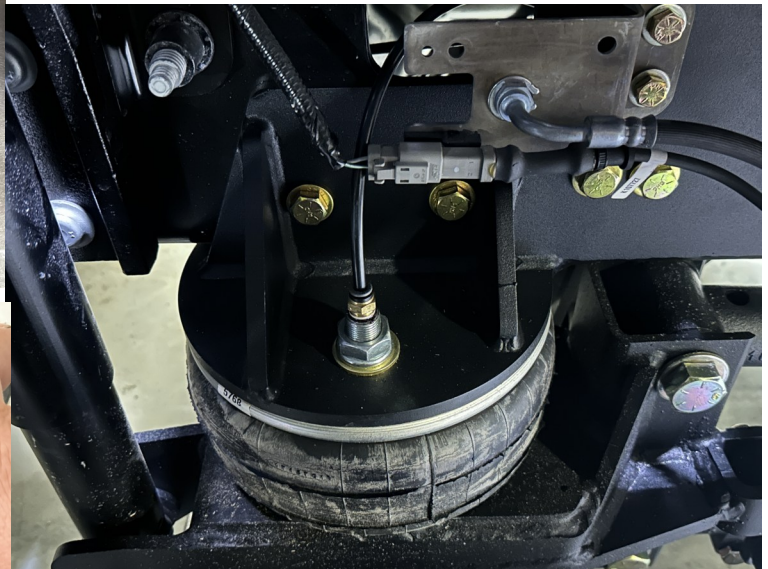
19. INSTALL CROSSMEMBER USING THE (4) 1/2"-20 X 1-1/2" BOLTS.



20. INSTALLING BAG, FIRST, YOU WANT TO INSTALL THE 3" STUD/THREADED ROD INTO THE BAG. THEN SET THE BAG ON THE LOWER BAG MOUNT PUTTING THE STUD THROUGH THE CENTER HOLE ON THE MOUNT. ONCE YOU HAVE IT IN PLACE LOOSELY TIGHTEN THE BOTTOM NUT ON THE BAG. NEXT, JACK THE AXLE OF THE TRUCK UP AND INSERT THE TOP STUDS INTO THE UPPER BAG MOUNT. **NOTE:** MAKE SURE YOU HAVE THE 3/4" STUD IS IN THE HOLE ON THE PASSENER SIDE OF THE TRUCK. LASTLY, INSTALL THE 3/4" AND 1/2" ON THE TWO STUDS.



PASSENGER SIDE



21. LOCATE THE SWAY BAR KIT (#1139-154KLD) AND END LINKS (#10031570). THE SWAY BAR ATTACHES TO THE FRONT TRAILING ARM MOUNTS WITH THE (4) 7/16"-20 X 1-1/2" BOLTS. THE END LINKS ATTACH TO THE END OF THE SWAY BAR WITH THE 1/2"-20 X 3-1/2" BOLTS AND TO THE LOWER BAG MOUNTS WITH THE 1/2"-20 X 3-1/2" BOLTS AS WELL. **NOTE:** (THE "HUMP" OF THE SWAY BAR WILL POINT UP).

7/16"-20 X
1-1/2" BOLTS



1/2"-20 X 3-1/2"
BOLTS



22. NOW THAT THE INSTALL IS NEARLY COMPLETE, GO BACK AND MAKE SURE ALL THE BOLTS ARE TORQUED. INFLATE THE BAGS (OR JACK UP THE FRAME) SO THE BAGS ARE AT 8" TALL. MEASURE BETWEEN THE UPPER AND LOWER AIR BAGS TO GET THE EXACT MEASUREMENT. NOW, GO BACK TO THE FIRST STEP AND ADJUST THE UPPER AND LOWER TRAILING ARMS TO SET THE PINION ANGLE. ONCE THAT IS SET, ADJUST YOUR LOWER PAN HARD BAR SO THE AXLE IS CENTERED. ONCE THESE MEASUREMENTS ARE SET, TORQUE THE PINCH BOLTS TO 125 FT/LBS.

23. REINSTALL THE RADIATOR SUPPORT BRACKETS AND REATTACH THE STEERING LINKAGE TO THE AXLE.



24. LOCATE THE TWO HEIGHT CONTROL VALVES (#80077), LINKAGE (#18156), COLLAR (#10014859), AND HEIGHT CONTROL MOUNTING BRACKETS (#21426). THE MOUNTING BRACKET FASTENS TO THE FRAME WITH THE FACTORY BOLTS IN THE FRAME. THE HEIGHT CONTROL VALVES FASTEN TO THE BRACKETS WITH THE 1/4"-20 X 1-1/4" BOLTS. THE COLLAR FASTENS TO THE LOWER TRAILING ARM AROUND 1/2" FROM THE TREADS. THE HEIGHT CONTROL ARM NEEDS TO BE STRAIGHT OUT WHEN THE AIR BAGS ARE AT 8" TALL. MEASURE BETWEEN THE UPPER AND LOWER AIR BAG MOUNTS WHEN MEASURING THE AIR BAG HEIGHT.

NOTE: KNUCKLE BOLT NEEDS TO BE INSTALLED BEFORE THE HEIGHT CONTROL MOUNTING BRACKET IS INSTALLED.

BALL MUST BE FLIPPED TO THE OTHER SIDE WITH A BALL EXTENSION INSTALLED.



KIT DRAWINGS

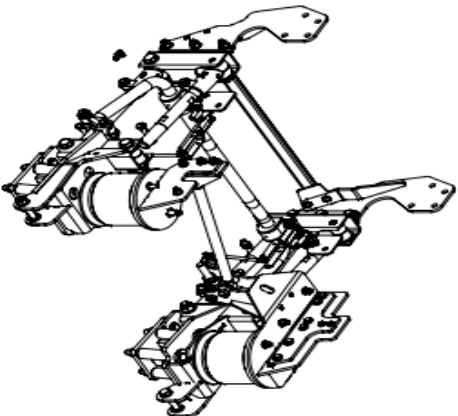
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY	ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1139-154KLD	Sway Bar - 1139-154KLD - 1/1/2 Dia	1	53	51733	Assembly - 9" Sensor Lincoage	2
2	10005	Coil Trailing Arm Knuckle (RH) (1-1/2-12 UNF)	4	54	52114.5	14.5" Trailing Arm Bar	4
3	10195	Helm Spacer .25" (3/4" Bolt)	2	55	80012.5/748	Freelone 5748	2
4	10199	CRR - 1" OD x .757 ID x .440 Thick - Spacer - 3/4" Bolt	1	56	80016	Shoght Air Filling 1/4" NPT to 1/4" Tube (SMC)	2
5	11551	Pole - 1/4" - 1.5" OD x .55" O x 1/4"	1	57	80073	Bolt Stud - .39" Dia - 5/16-18 Thread	2
6	12007	Hex Bolt - 1/2-20 x 1-1/2" - GR8 - Y2	8	58	80077	Holten Mechanical Height Control Valve	1
7	12009	Hex Bolt - 1/2-20 x 1-3/4" - GR8 - Y2	3	59	80077	Holten Mechanical Height Control Valve	1
8	12011	Hex Bolt - 1/2-20 x 2" - GR8 - Y2	9	60	80109	Purchased - (RH) Bolt Joint Rod End 3/4x16 x 3/4"	1
9	12110	Hex Bolt - 1/4" - 20 x 1" - GR5 - Z	4	61	80110	Purchased - (LH) Bolt Joint Rod End 3/4x16 x 3/4"	1
10	12409	Hex Bolt - 5/8"-18 x 2" - GR8 - Y2	6	62	80116	1/4" Tee (Profile Fitting)	1
11	12415	Hex Bolt - 5/8"-18 x 2-1/2" - GR8 - Y2	4	63	80136	Purchased Parts - Bushing - OD 1.27" ID - 1 1/8" Length - 17116	16
12	12420	Hex Bolt - 5/8"-11 x 3-1/4" - GR5 - Z	8	64	80140	Purchased - Sway Bar Bushing Kit - 1-1/2" OD - 4139-180	2
13	12525	Hex Bolt - 3/4"-16 x 3-1/2" - GR8 - Y2	1	65	80281	2.5" Johnny Joint Narrow, 7/8"-14 RH, Bolt Center 3/4" Hole 2.345 OAW Helm End - Reducible	1
14	12533	Hex Bolt - 3/4"-16 x 4-1/2" - GR8 - Y2	5	66	80282	2.5" Johnny Joint Narrow, 7/8"-14 LH, Bolt Center 3/4" Hole Helm End	1
15	12541	Hex Bolt - 3/4"-16 x 8" - GR8 - Y2	8	67	10009933	Weldment - (FS) Upper Bag Mount / P/B Drop - 3/4" Bolt	1
16	12629	Hex Bolt - 7/8" x 5" - GR8 - Y2	6	68	10009945	Weldment - P/B Brace Bar Bracket (DS)	1
17	13000	Flat Washer USS - 1/4" - GR8 - Y2	8	69	13028	Flat Washer SAE - 3/4" - GR8 - Y2	30
18	901064034	Flat Washer USS - 9/16" - GR8 - Y2	16	70	13128	Top Delorified Thread Lock Nut - 1/2-20 - GR8 - Y2	14
19	13023	Flat Washer SAE - 7/16" - GR8 - Y2	4	71	12025	Hex Bolt - 1/2-20 x 3-1/2" - GR8 - Y2	2
20	13024	Flat Washer SAE - 1/2" - GR8 - Y2	52	72	10031610	Assembly - EndLink - 3.50" Center - 1.00" Offset	4
21	13026	Flat Washer SAE - 5/8" - GR8 - Y2	20	73	10031604	Weldment - (DS) Lower Bag/Axe Mount	1
22	13030	Flat Washer SAE - 7/8" - GR8 - Y2	12	74	10031609	Weldment - (FS) Lower Bag/Axe Mount	1
23	13100	Top Delorified Thread Lock Nut - 1/4-20 - GR5 - Z	4	75	13056	Spall Lock Washer - 3/4" - GR8 - Y2	2
24	13101	Top Delorified Thread Lock Nut - 5/16-18 - GR5 - Z	2	76	13050	Spall Lock Washer - 1/2" - GR5 - Z	4
25	13106	Top Delorified Thread Lock Nut - 5/8-11 - WIP/WAX	8	77	13130	Top Delorified Thread Lock Nut - 7/8-14 - GR8 - Y2	6
26	13123	Top Delorified Thread Lock Nut - 7/16-20 - GR8 - Y2	2				
27	13124	Top Delorified Thread Lock Nut - 1/2-20 - GR8 - Y2	24				
28	13126	Top Delorified Thread Lock Nut - 5/8"-18 - GR8 - Y2	10				
29	13144	Hex Nut - 1/2-13 - GR5 - Z	6				
30	13188	Join Nut RH - 3/4-10 - GR8 - Y2	2				
31	13208	Join Nut RH - 3/4-16 - GR5 - Z	1				
32	13209	Join Nut LH - 3/4-16 - GR5 - Z	1				
33	13210	Join Nut RH - 7/8-14 - GR5 - Z	1				
34	13211	Join Nut LH - 7/8-14 - GR5 - Z	1				
35	13415	Hex Bolt - 7/16-20 x 2" - GR8 - Y2	2				
36	14186	Threaded Rod - 1/2-13 x 3" - GR5 - Z	2				
37	18743	CRR - 1.00" OD x .75 ID - 1.05" Long - Spacer	1				
38	18744	Pole - 1/4" - Washer - 1.5" OD x .5935 ID	1				
39	20093	Bushing - 1-1/8" OD x .8870 ID x 3 L	6				
40	21401	Weldment - (DS) Crossmember Mounting Pole	1				
41	21402	Weldment - (FS) Crossmember Mounting Pole	1				
42	21403	Weldment - Crossmember	1				
43	21404	Weldment - (DS) Front Trailing Arm Mount	1				
44	21405	Weldment - (FS) Front Trailing Arm Mount	1				
45	21406	Weldment - (DS) Upper Frame/Bog Mount	1				
46	21410	Weldment - Lower Axe Clamp	2				
47	21416	Bushing - 1.5" OD x 13/16 ID x 4.5 Long	8				
48	21426	Pole - 1/4" - Height Control Sensor Mount	2				
49	21444	Tube - 1.25" OD x .625 ID x 22.5" - Portland Bag - 3/4-16 Internal Thread	1				
50	21446	Pole - 3/8" - (FS) Upper Frame Backing Pole	1				
51	21467	Sleeve Bushing - 1-1/8" OD x .79 ID x 3 L - Trailing Arm (MCO)	2				
52	51472	Assembly - Plastic Sign Color w/ Bolt Stud	2				



REV	ECN	CHANGE DESCRIPTION	BY	DATE	REV	ECN	CHANGE DESCRIPTION	BY	DATE
1					1				
2					2				
3					3				
4					4				

PROJ: 2014-2021 & 2022 Ford F450/750 - 4.5L / 108 Axle - 2.5" Johnny Joint Narrow, 7/8"-14 RH, Bolt Center 3/4" Hole 2.345 OAW Helm End - Reducible

DATE: 9/13/2024

SHEET 1 OF 3

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NOTES

CONTACT INFORMATION

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