



# Stock Height and 2 Inch Lift Rear Air Ride Installation Manual

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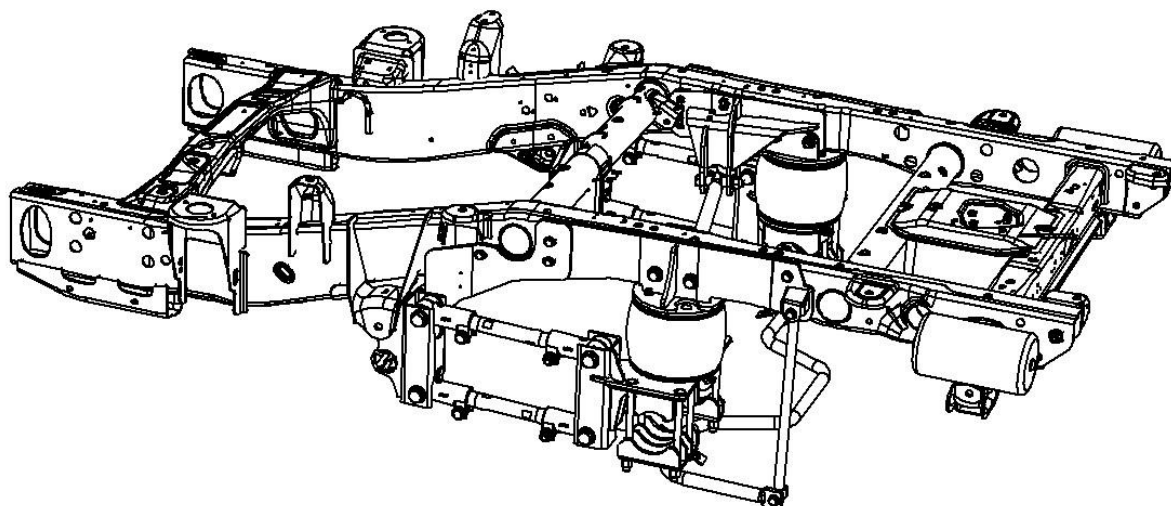
- 2020+ Chevy / GMC 2500/3500

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# Kelderman 4-Link Air Ride

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## Kit Numbers

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- This installation manual covers the following air ride kits.

Kit Number	Description
10006054	2020+ GMC/ Chevy 2500/3500 stock height rear air ride
10006647	2020+ GMC/ Chevy 2500/3500 2" Lift rear air ride

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# Introduction

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- **Important**

It is important that the entire installation instructions be read thoroughly before proceeding with installation.

- **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.

- **Product Owner Responsibilities**

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 90 days or 1000 miles of this product being put into service.

- **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.

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# Safety

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- **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: 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 three 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.
- 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.

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# Suspension Removal

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- 1: 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**\_\_\_\_\_



*Figure 1*

- 2: The bed must be removed from the truck.

- 3:** Take the following measurements for future reference. You will need to refer to these measurements to adjust the suspension system. See figure 2 below.

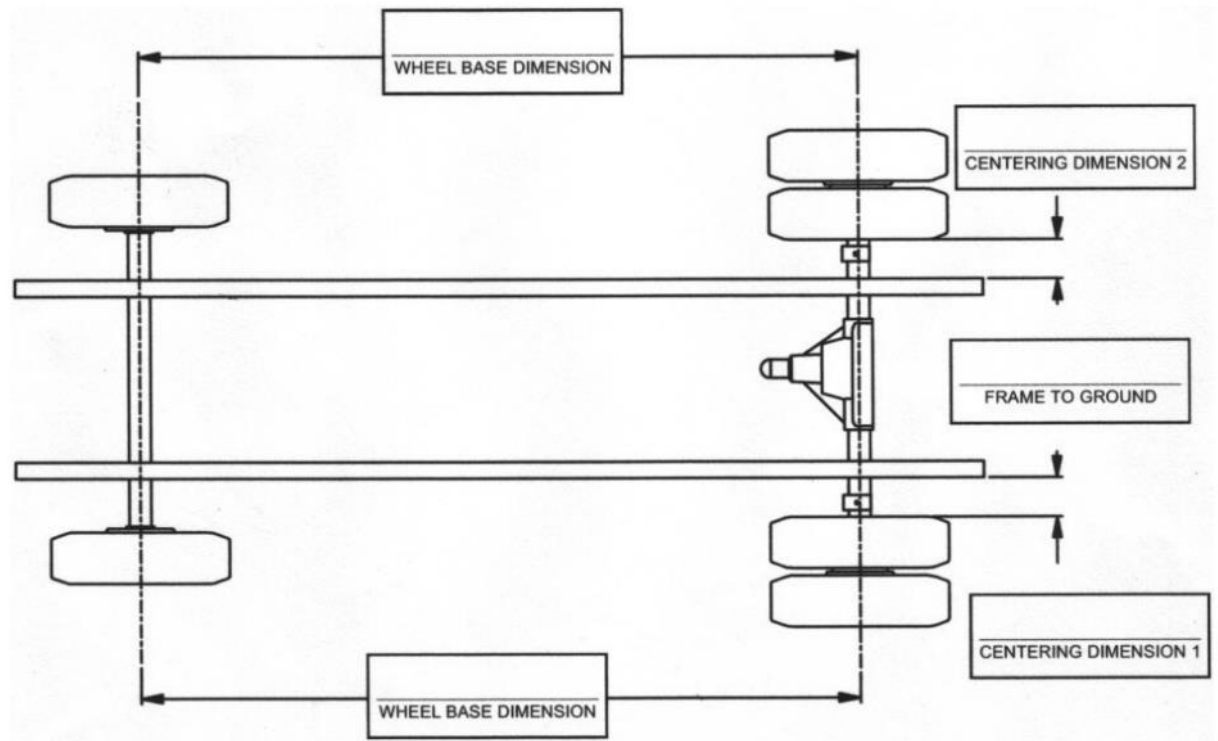


Figure 2

- 4:** Jack up the rear of the frame so that most of the tension is off of the leaf springs. Place a set of jack stands under the frame and block the tires so the axle won't move.
- 5:** Support the front of the pinion with a jack stand.
- 6:** Remove the leaf springs, shocks and sway bar, if equipped. Keep the mounting hardware for later use.
- 7:** Remove upper overload pads, if equipped.
- 8:** Cut bump stop pads off of the top side of the axle and grind the axle smooth. See figure 3.

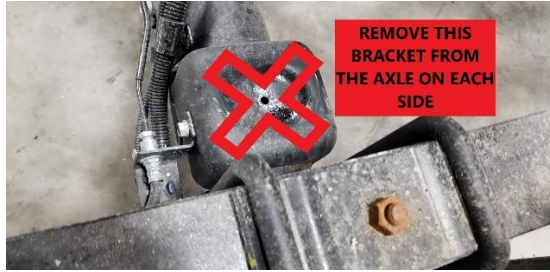


Figure 3

- 9:** Cut factory bump stop brackets off of the frame rails and grind the frame smooth. See figure 4.



Figure 4

- 10:** Paint or apply undercoating to areas that have been cut and ground on to protect from rust.



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# Air Ride Installation

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- Open every box and locate all parts. There are several smaller bushing pieces and bolts that are packaged separately inside the main box.

**1: NOTE: All of the bolts in this kit use a flat washer on each side of the bolt.**

**2: NOTE: Snug all bolts but do not tighten until the entire kit is installed**

**3:** Remove the plate on top of the differential and disconnect the lines from the plate. Replace it with P/N 10006521. Use two factory bolts and one M8-1.25 x 40mm bolt, washer, lock washer and spacer. See figures 5 and 6.

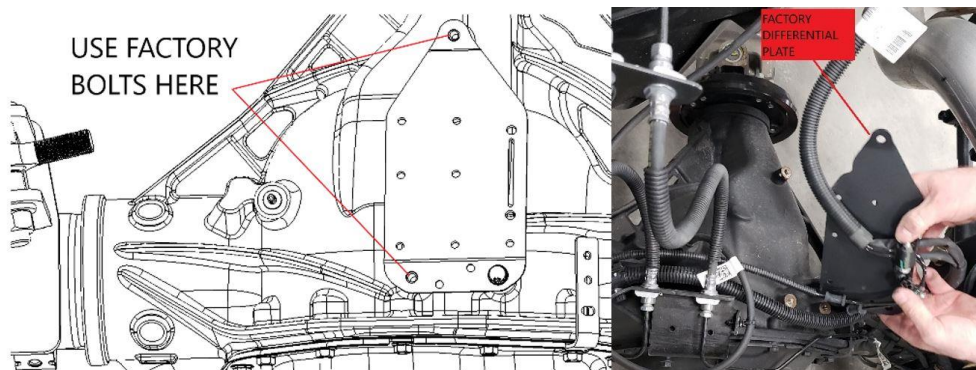


Figure 5

Figure 6

- 4:** Locate the upper bag mounts Driver Side (DS) P/N 10006396 and Passenger Side (PS) P/N 10006704. Temporarily bolt each upper bag mount to the frame so that you can locate the two holes to drill into the frame directly above each air bag. The holes need to be drilled to 15/16" through the outer wall of the frame **ONLY**. It may be necessary to remove the bag mount and die grind the holes to get everything to align properly. After the holes are drilled, remove the bag mounts. See figures 6,7,8,9 and 10.

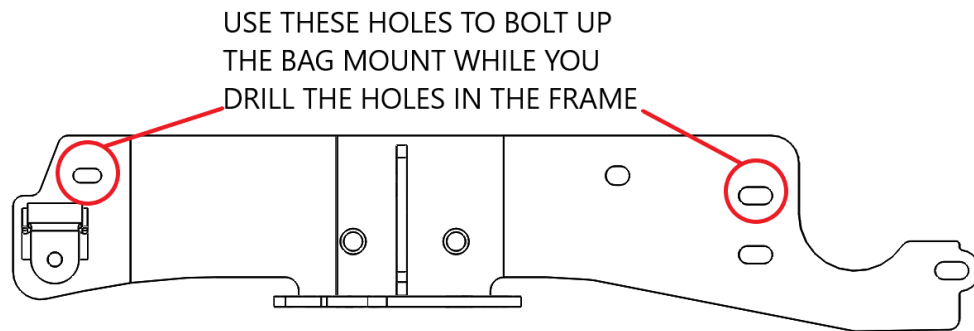


Figure 7

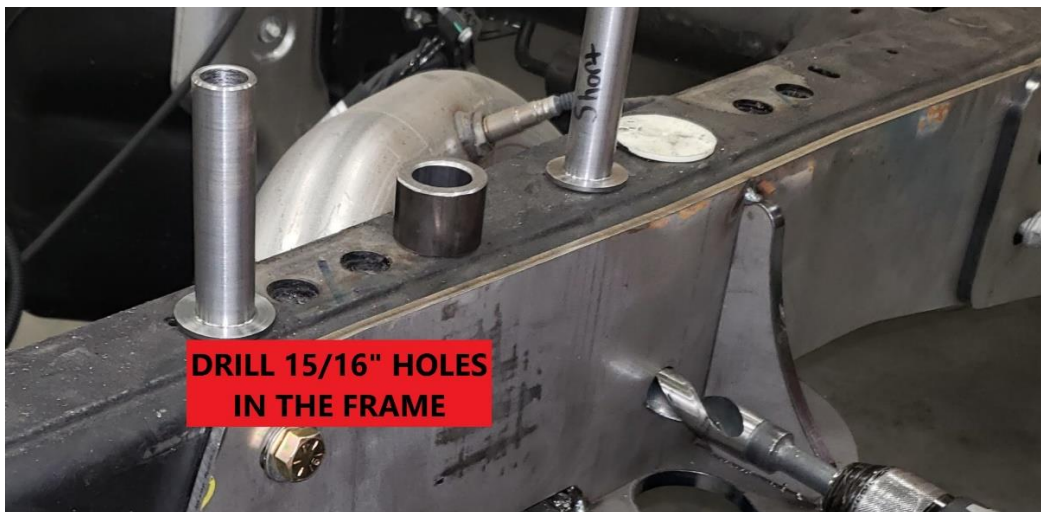


Figure 8

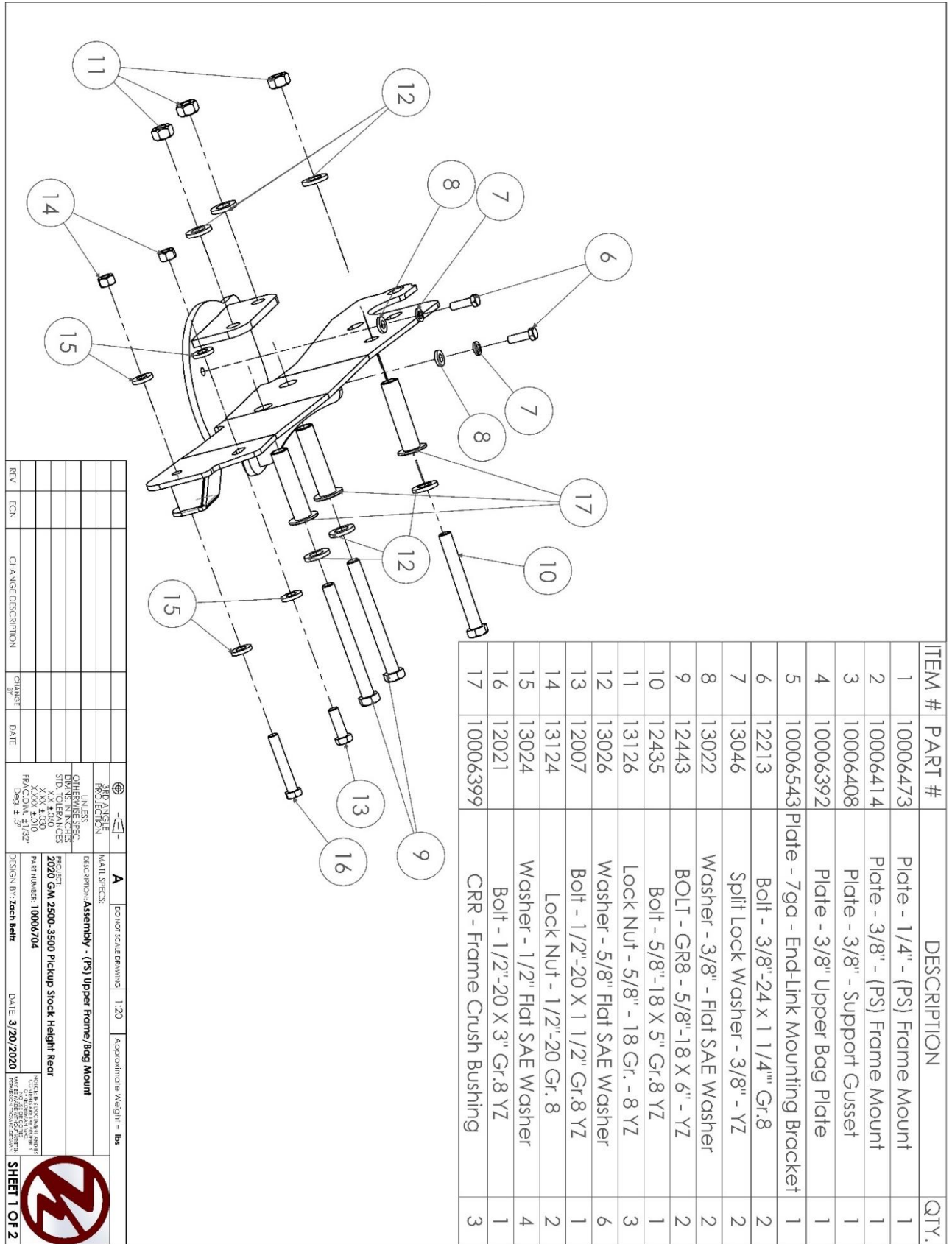


Figure 9





- 5:** Drill 11/16" holes in the inside frame rail to correspond with the holes in the outside of the frame. See figure 11.



Figure 11

- 6:** Locate the lower bag mounts air bags, axle clamps and axle clamp hardware. DS lower bag mount P/N 10006347, DS axle clamps P/N 10006365 and P/N 10006422. PS lower bag mount P/N 10006369, and PS axle clamp 10006366. Locate the axle bolts in the bolt kit, locate the two 9" axle bolts and place them in the bag mounts to the rear inside hole on the PS bag mount, rear middle on the DS bag mount, to clear the sway bar when the suspension is fully extended. These shorter bolts will also use top lock nuts P/N 13126, instead of the high nuts P/N 13179. Mount the bag mounts using the factory leaf spring pad to position the bag mounts. Insert a parallel arm into the lower mount and use the mounting bolt and spacer to align the axle clamp and parallel arm mount on each side before tightening anything. See figures 12,13, 14,15 and 16.

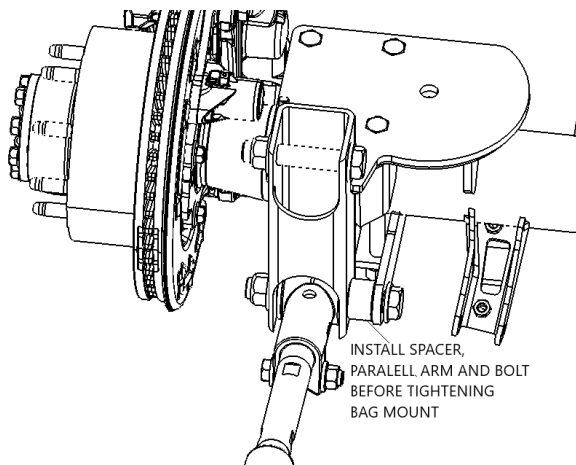


Figure 12

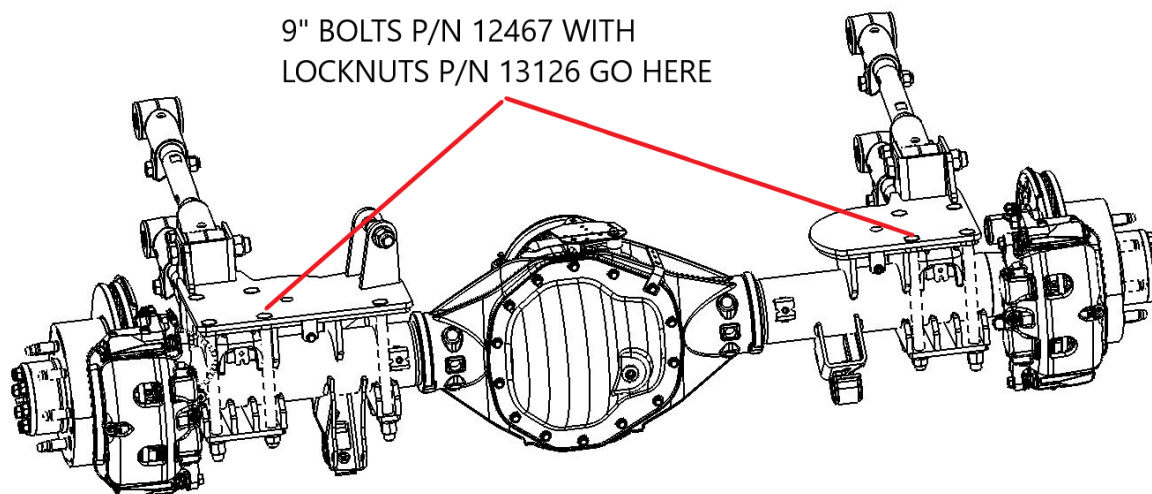


Figure 13

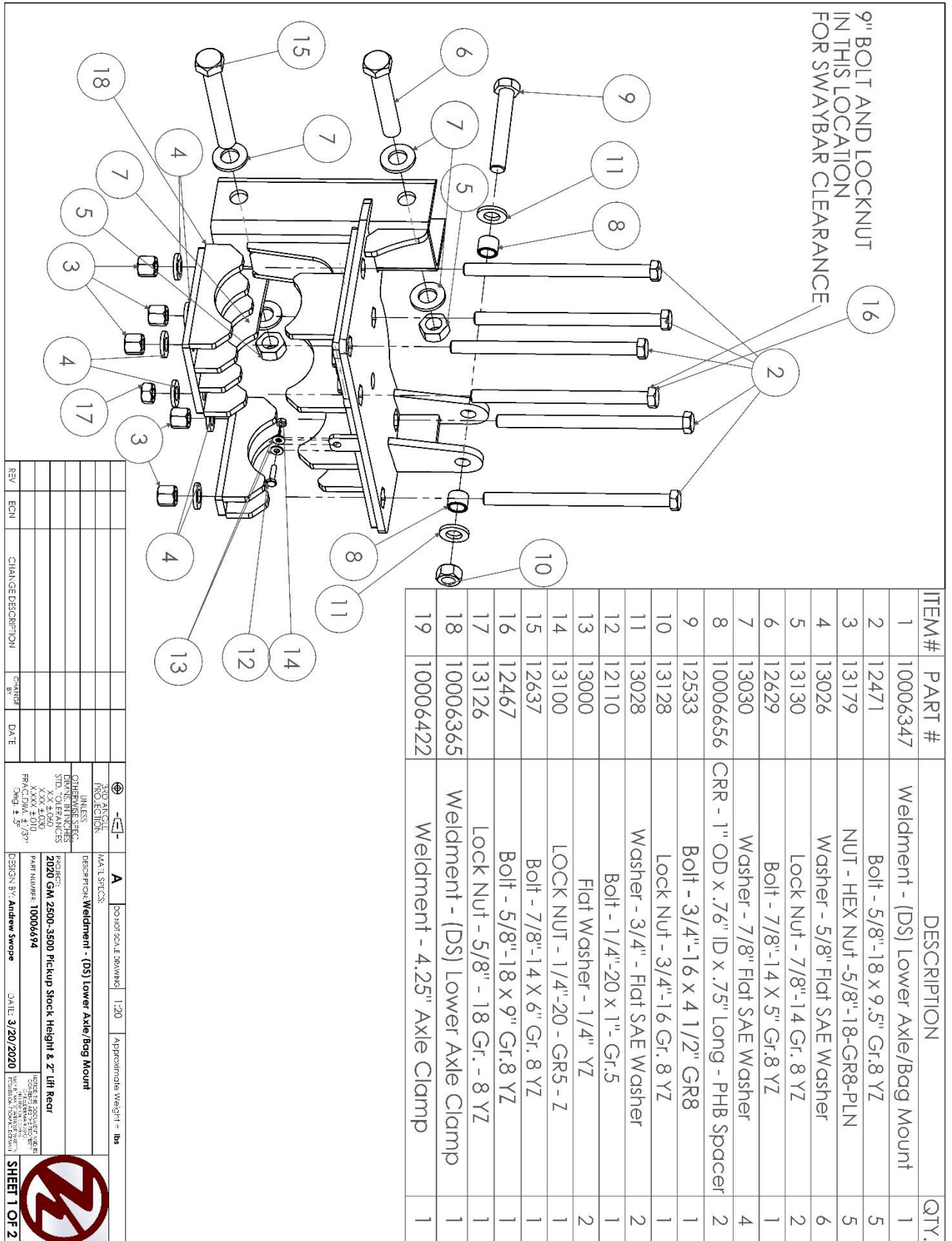


Figure 14



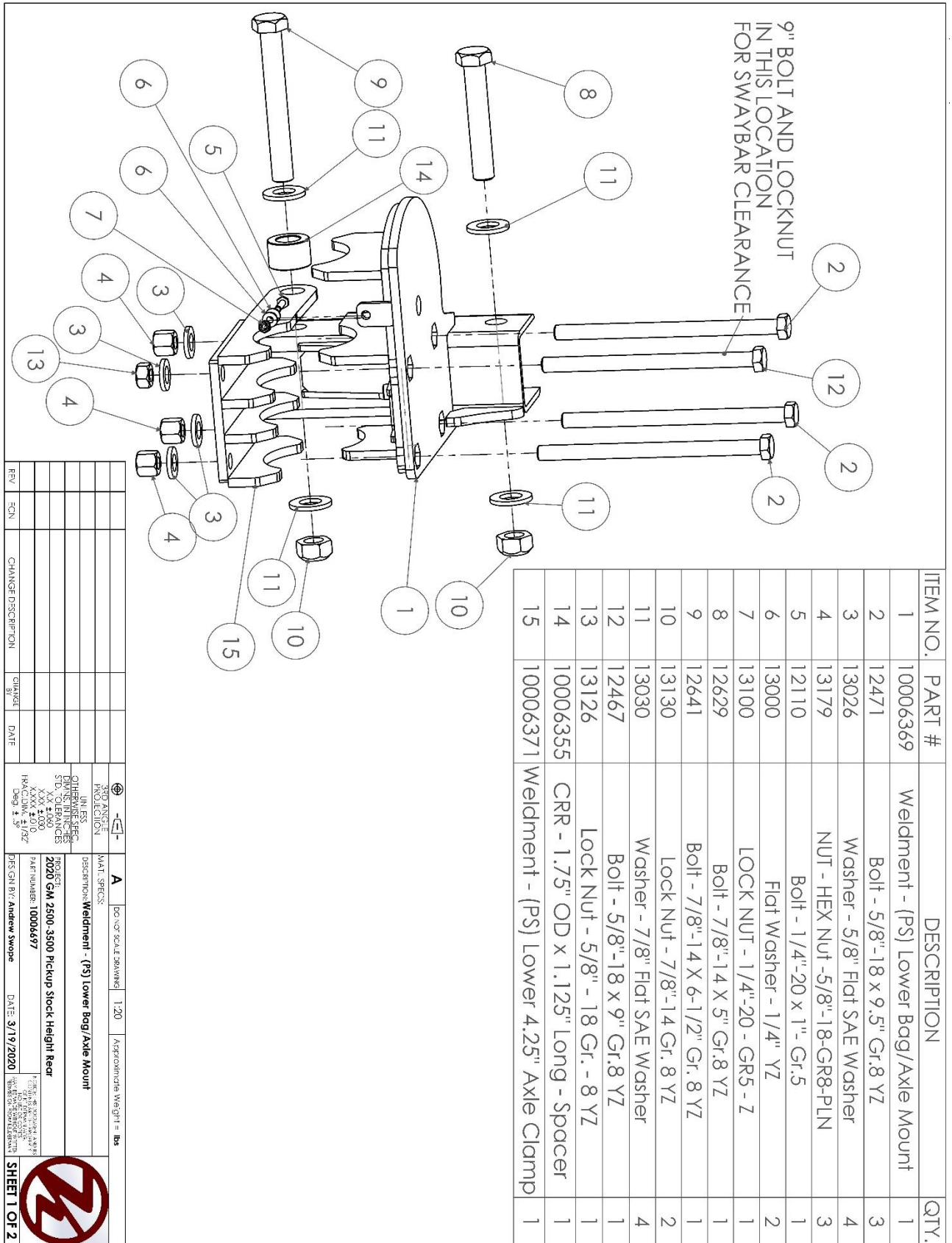


Figure 15

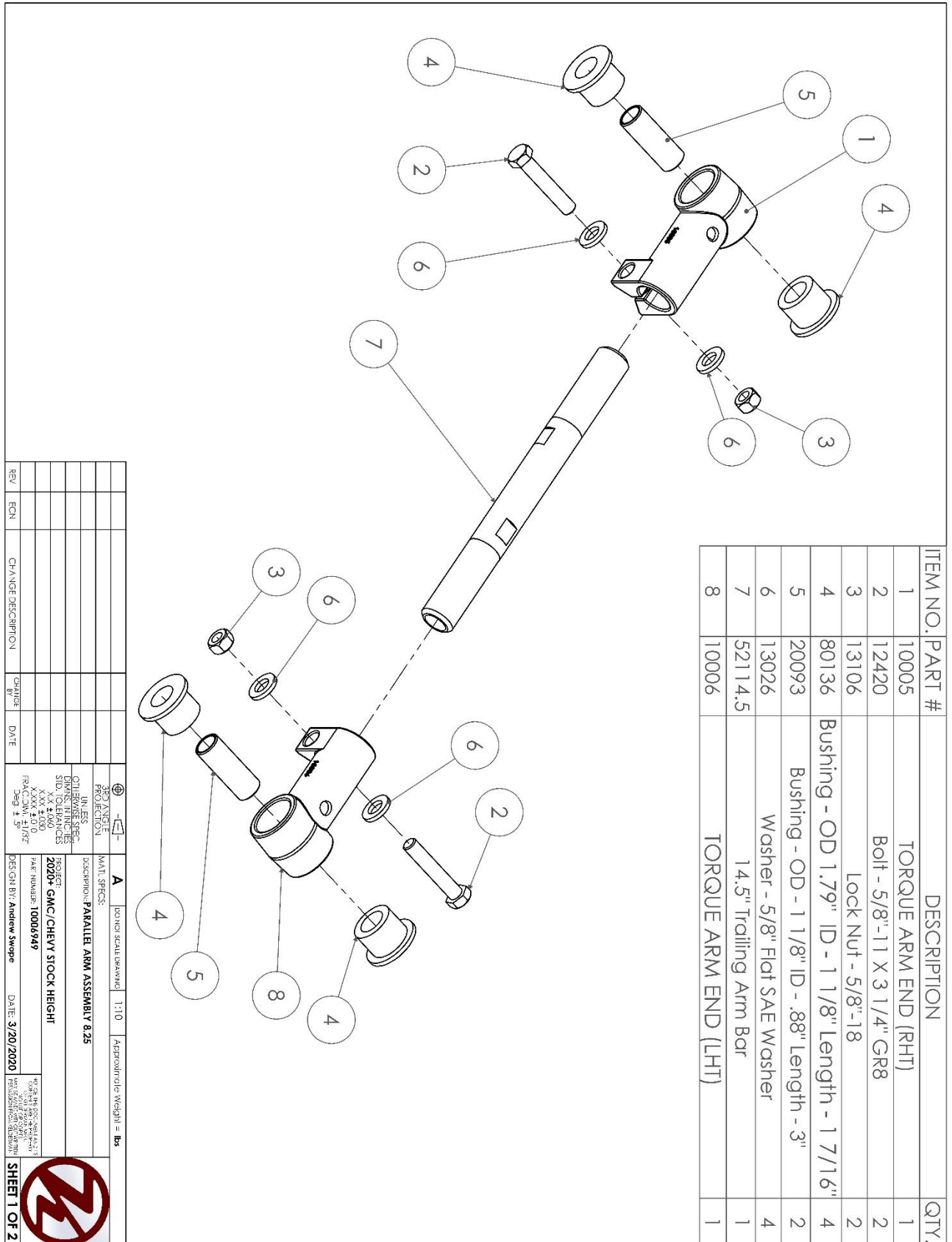


Figure 16

- 7:** Mount the air bags to the upper bag mounts with  $3/8"$  x  $1\ 1/4"$  – 16 bolts, lock washers and flat washers. Be sure to align the air port with the notch in the bag mount. Install the  $3/4"$  x  $3/4"$  90° air fitting into the air port on the air bag. See figure 17.

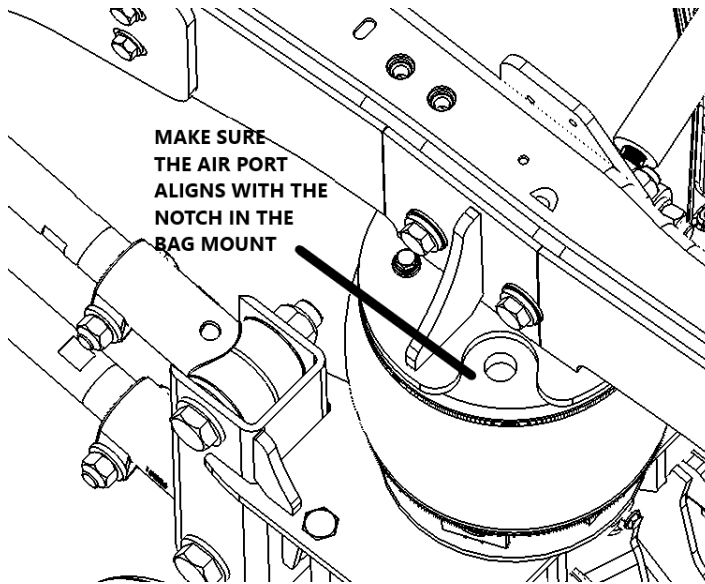


Figure 17

- 8:** Mount the upper bag mount to the frame on the driver's side. Use the  $5/8"$  x  $5"$ , P/N 12435, and the  $5/8"$  x  $6"$  bolts, P/N 12443, along with the Crush Bushings, P/N 10006399. Also install the  $1/2"$ -20 x  $1\ 1/2"$  bolt P/N 12007. Do not install the three forward bolts yet, as they go through the front trailing arm mounts as well. Install the crush bushings through the upper bag mount and the holes that you drilled into the frame. See figures 9 and 18.
- 9:** Mount the upper bag mount to the frame on the passenger's side. Use the  $5/8"$  x  $5"$ , P/N 12435, and the  $5/8"$  x  $6"$  bolts, P/N 12443, along with the Crush Bushings, P/N 10006399. Also install the  $1/2"$ -20 x  $1\ 1/2"$  bolt P/N 12007. The upper Panhard bar mount must be installed at the same time. It goes against the frame, see figure 19. Do not install the three forward bolts yet, as they go through the front trailing arm mounts as well. Install the crush bushings through the upper bag mount and the holes that you drilled into the frame. See figures 10, 18, 19, and 20.

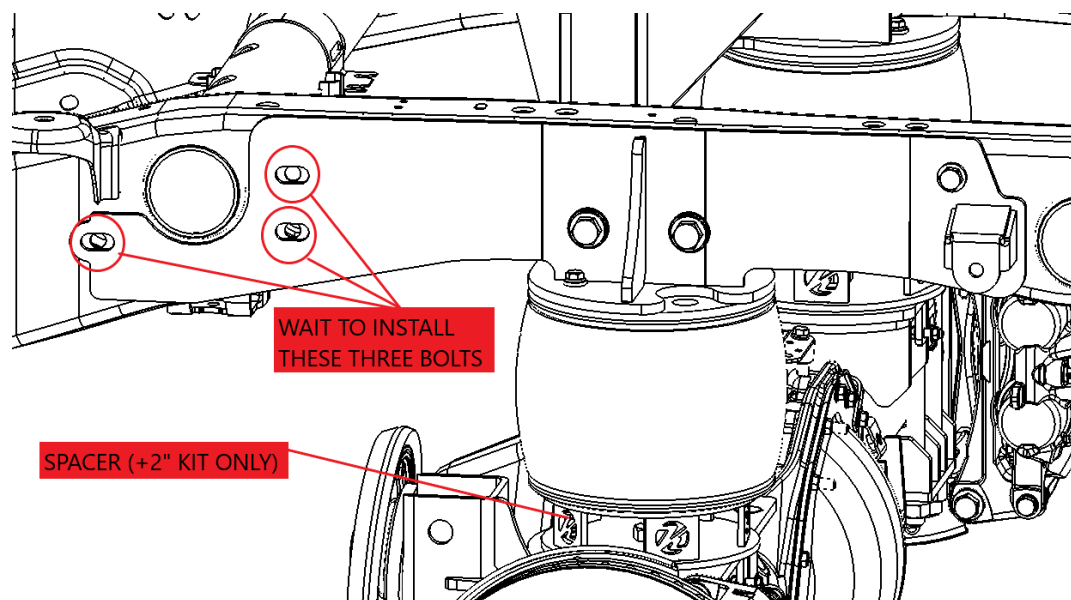


Figure 18

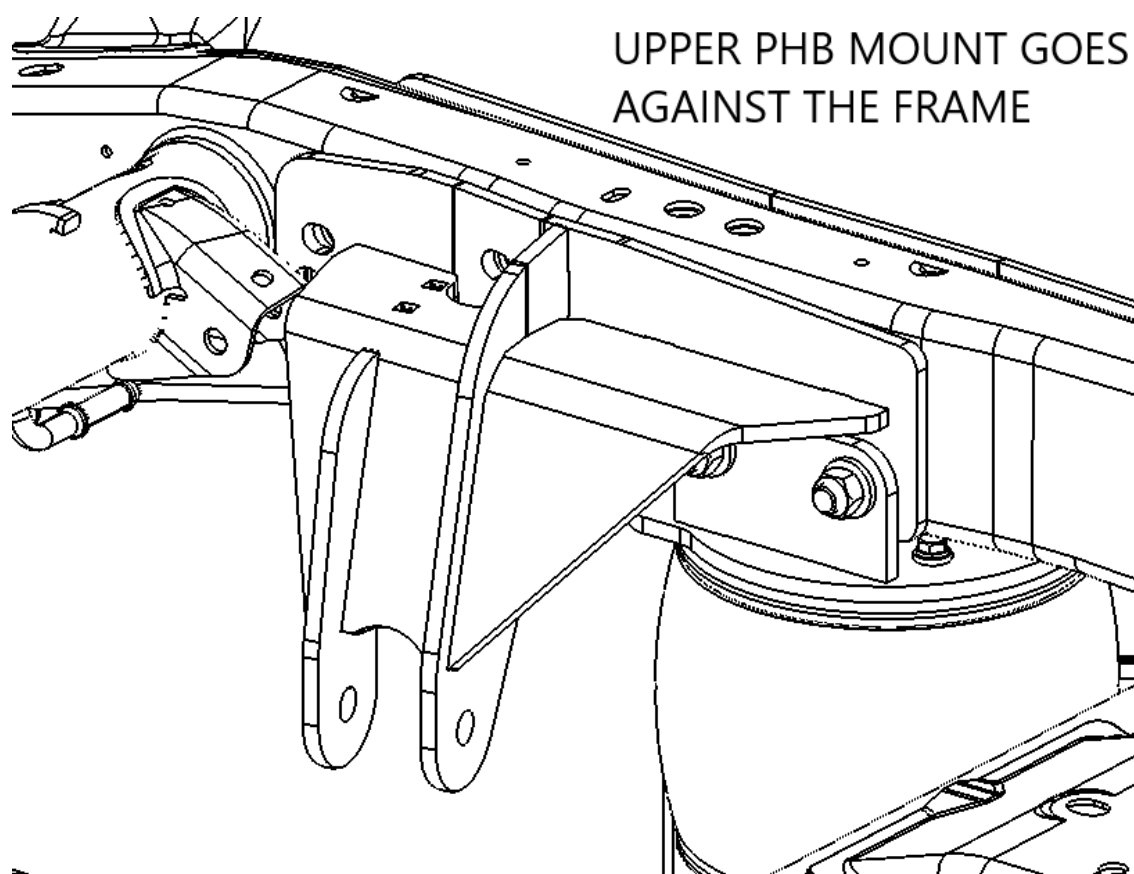
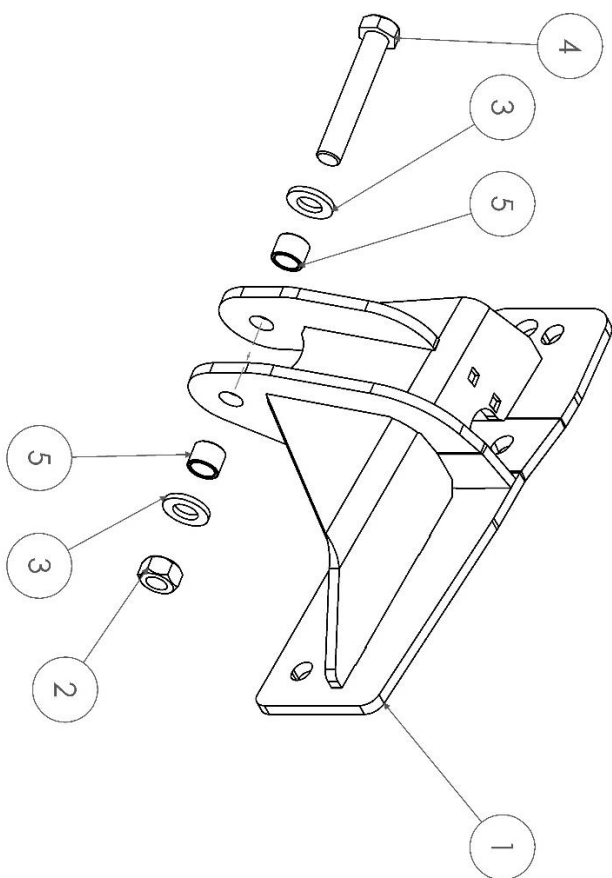


Figure 19

ITEM NO.	PART #	DESCRIPTION	QTY
1	10006469	Weldment - Panhard Bar Bracket	1
2	13128	Lock Nut - 3/4"-16 Gr. 8 YZ	1
3	13028	Washer - 3/4" - Flat SAE Washer	2
4	12533	Bolt - 3/4"-16 x 4 1/2" GR8	1
5	10006656	CRR - 1" OD x .76" ID x .75" Long - PHB Spacer	2


























REV	ECN	CHANGE DESCRIPTION	CHANGE BY	DATE	  <b>3RD ANGLE PROJECTION</b>	 <b>ASME Y14.5M-2018</b>
					 <b>ASME Y14.5M-2018</b>	 <b>ASME Y14.5M-2018</b>
					 <b>ASME Y14.5M-2018</b>	 <b>ASME Y14.5M-2018</b>
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Figure 20

- 10:** Mount the air bags to the lower bag mounts. For stock height kits, mount the bag directly to the bag mount. For +2" lift kits, mount the bag spacer to the bag and then mount that assembly to the lower bag mount. The bag itself takes a  $\frac{3}{4}$ " coarse thread jam nut, lock washer and flat washer. The bag spacer, for +2" kits, mounts with a  $\frac{3}{4}$ " fine thread jam nut, lock washer and flat washer.
- 11:** The fuel tank will need to be taken loose and slid toward the center of the truck to allow access to the bolt holes to mount the trailing arm mounts.
- 12:** Locate the front trailing arm mounts. DS Perch Mount P/N 10006415, PS Perch Mount P/N 10006377. Place them against of the upper bag mount side plate. The front of the mount goes into the front leaf spring mount and uses the factory leaf spring bolt. If your truck came with overload springs, you will use the M12 x 1.75 – 60mm bolts on the Driver's Side and M12 x 1.75 – 140mm on the Passengers Side. If your truck did not come with factory overload springs see the following step. See figures 21,22, and 23.
- 13:** If your truck did not come with overload springs, you will use 7/16" hardware in those holes. If using the 7/16" hardware, the larger washer goes on the outside of the kit, the smaller washer goes into the frame. See figure 21.

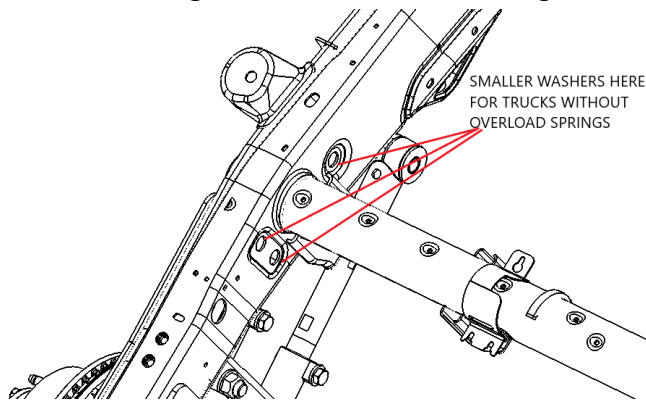


Figure 21









- 14:** Locate the trailing arms P/N 10006949. Preset the trailing arm length to 8 ¼" between the cast knuckles. The front bars attach to the forward trailing arm plate with the 7/8" x 5 ½" bolts, the top rear attach with 7/8" x 5" bolts, and the bottom rear attach with 7/8" x 6 ½" bolts. **DO NOT TORQUE THESE BOLTS UNTIL THE INSTALL IS COMPLETE.** See figures 22,23,24, and 25. **NOTE: FOR 2 INCH LIFT KITS, PRESET TRAILING ARM LENGTH TO 8 ½"**



Figure 24

***Set this length to 8 ½" for 2 inch lift kits***

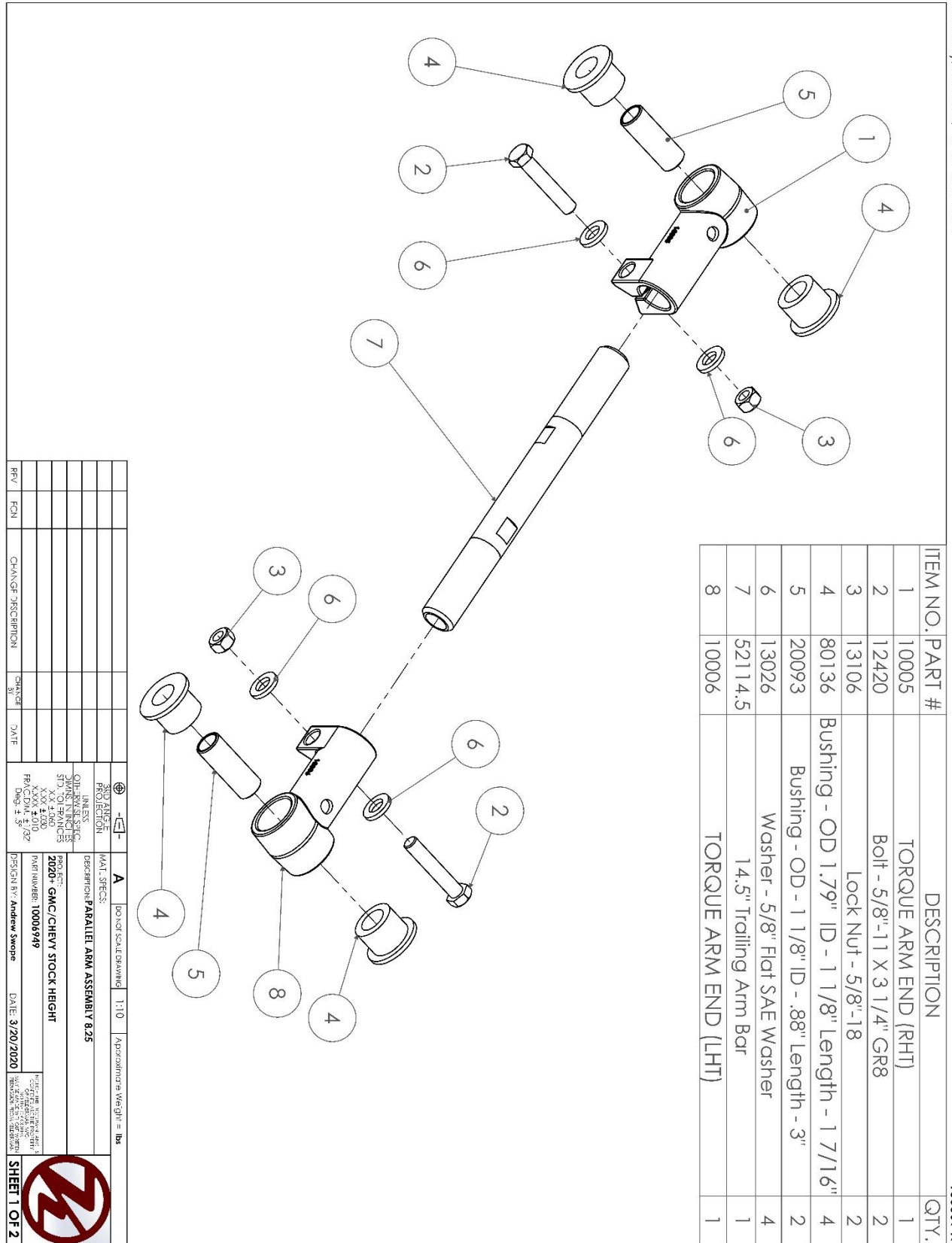


Figure 25

- 15:** Locate the accumulator tanks P/N 10006420 (DS) and P/N 10006421 (PS). These tanks fasten into the factory rear leaf spring shackle mounts with the factory bolts. Make sure that the large port for the  $\frac{3}{4}$ " air fitting is pointing forward. Torque the factory leaf spring bolt to 135 ft./lbs. once the tank is secured within the mount, run the  $\frac{3}{4}$ " air line from the large fitting in the air tank to the fitting in the air bag. Torque the nut on the bottom of the bag to 35 ft./lbs. See figure 26.

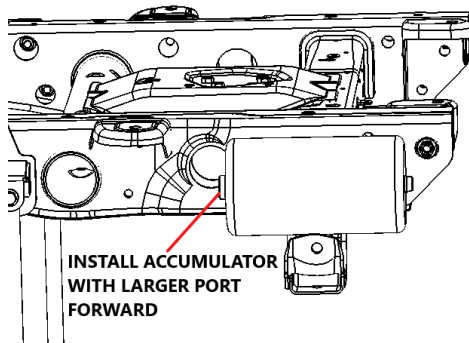


Figure 26

- 16:** Locate the Panhard Bar P/N 10007434, Johnny Joints P/N 80281 & 80282 and Jam Nuts 13210 & 13211. Assemble Jam nuts to Johnny Joint ends and install Johnny Joints to Panhard Bar. It fastens to the upper and lower Panhard bar mounts with  $\frac{3}{4}$ " x 4- $\frac{1}{2}$ " bolts. Torque bolts to 200 ft./lbs. See figure 27.

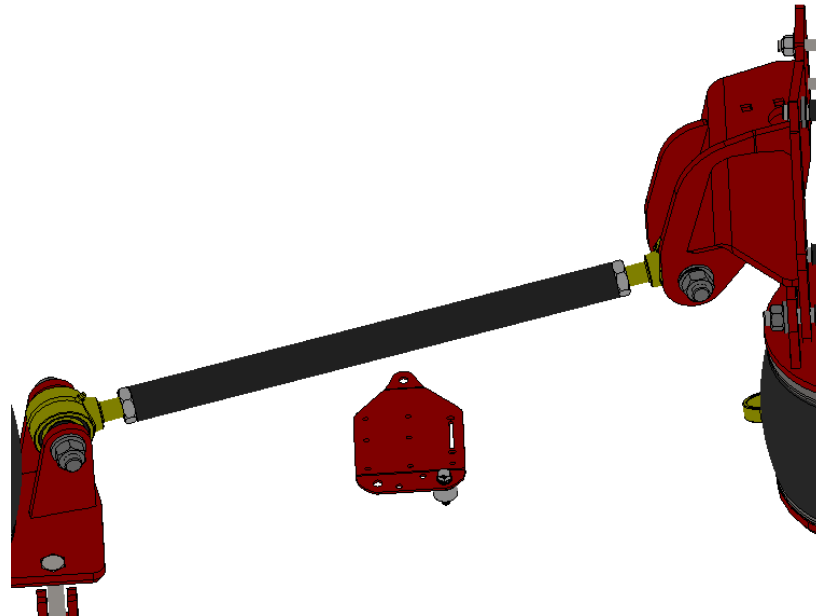


Figure 27

- 17:** Locate the sway bar P/N 80259, mounting clamps P/N 80271, sway bar bushings P/N 80256, and sway bar end links (**P/N 19238 for stock height, P/N 10006911 for +2"**). The sway bar fastens to the axle in the factory location, if equipped, on the shock mounts. If your truck did not come with a factory sway bar, you will need to tap the factory weld nuts to 3/8"-24 to mount the mounting clamps to the axle. If your truck came with a factory sway bar, use the factory bolts to mount the new clamps. The upper end of the end links mount to the pockets in the upper bag mounts with 1/2" x 3" bolts. The lower end of the end links attach to the frame with 1/2" x 3" bolts as well, be sure to use the large machined washer on the bolt head, P/N 11551. Use the supplied grease between the sway bar and the sway bar bushings to prevent squeaking. See figure 28 and 29.

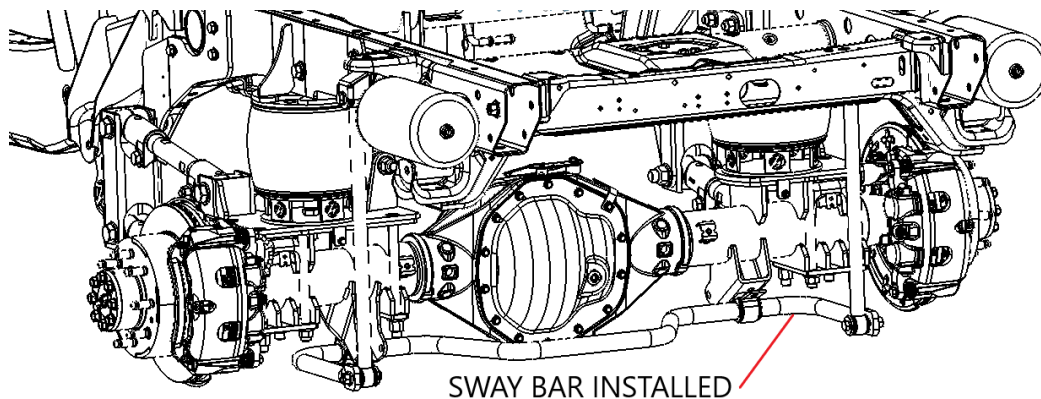


Figure 28

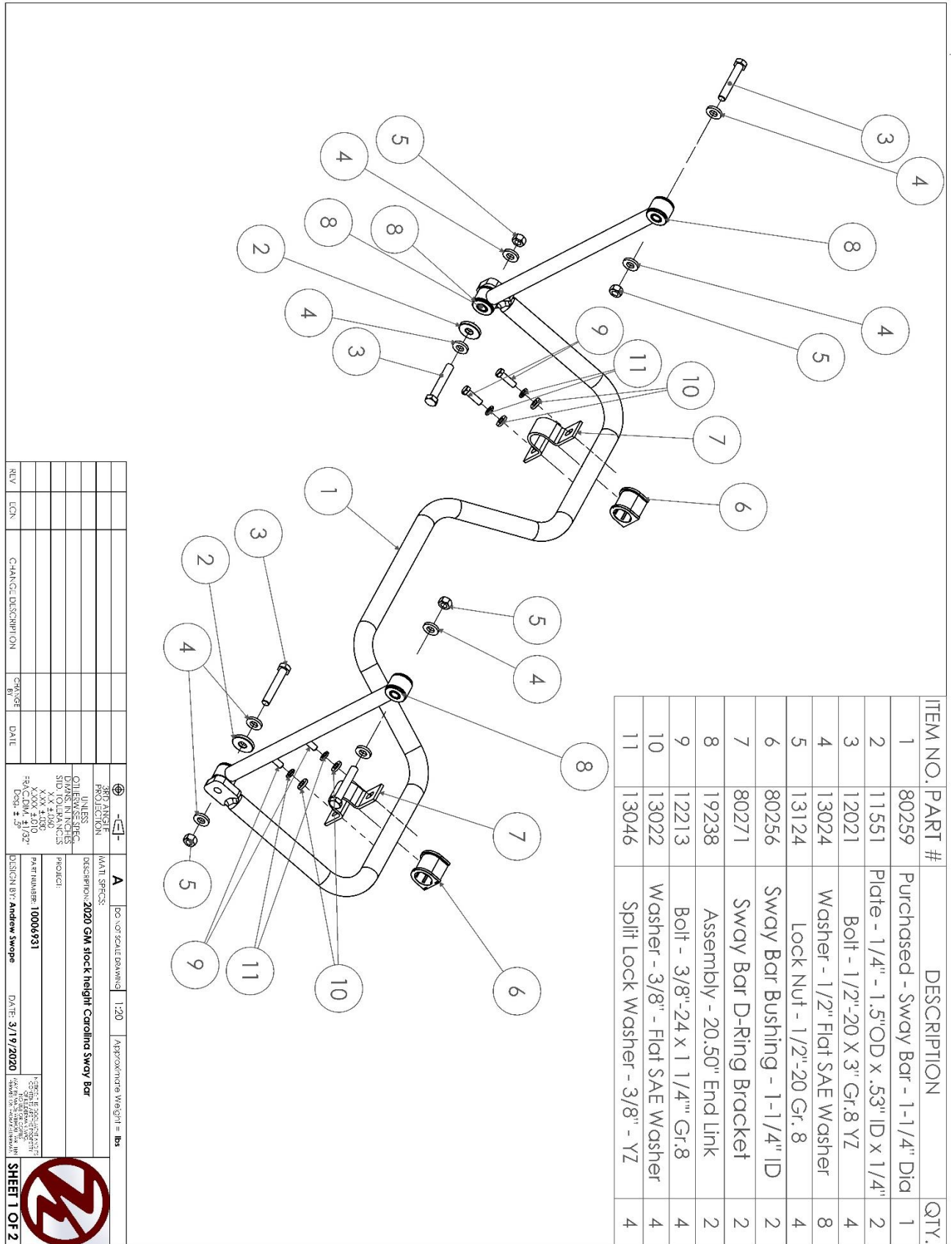


Figure 29



- 18:** Once the kit is installed, inflate the airbags to 7 ½" this is where the airbag rides the best. Measure off of the front axle ball joints to make sure that the axle is square with the front. See figure 30.

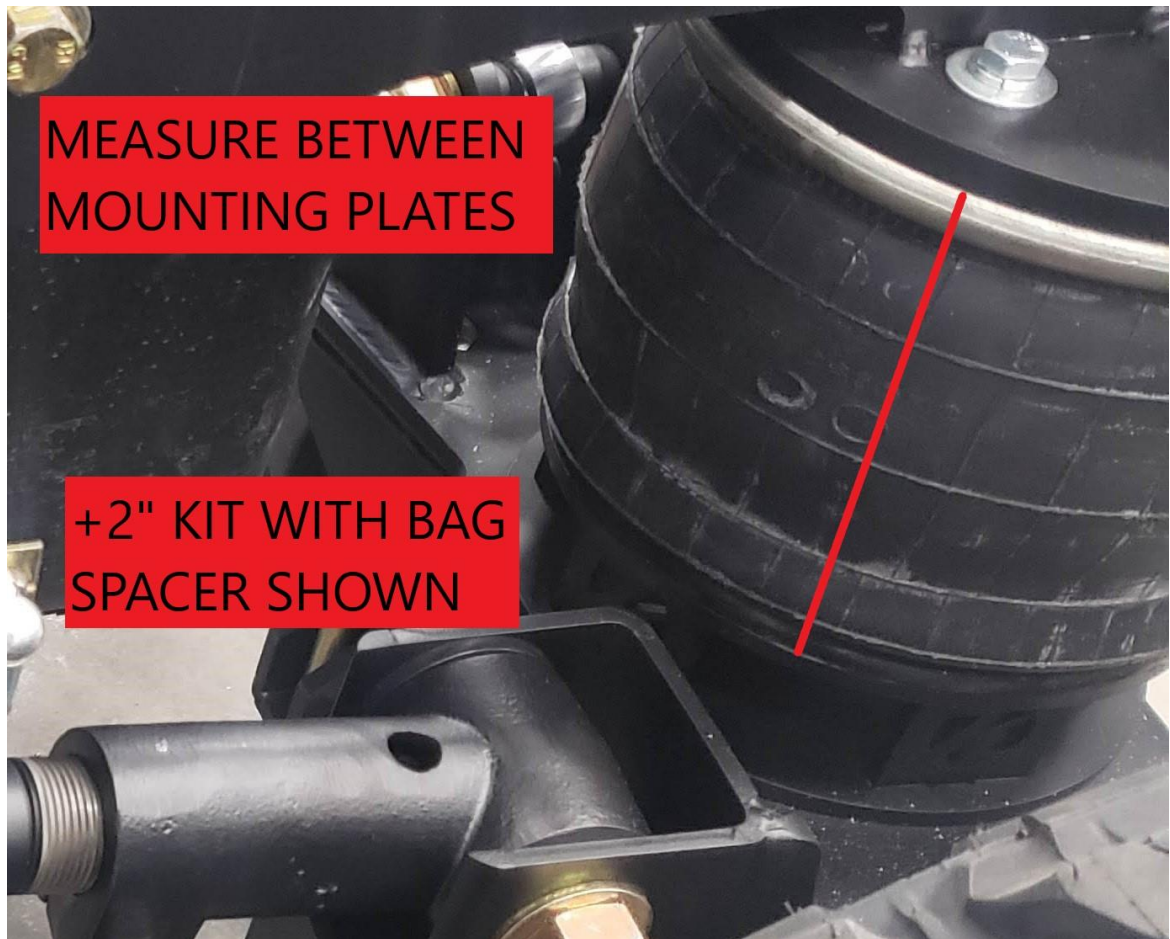


Figure 30

**19:** Mount the height control sensors to the Perch Mount using the hardware provided with the sensors. The mechanical valve must be vertical when installed and the arm must be horizontal at ride height. The height control valves are the same for each side of the truck. The height control valve has a built in 8 second delay. See figure 31.

**NOTE:** before installing the mechanical valve, rotate the arm clockwise and counterclockwise 4-5 times each way. This will prepare the internals for operation after sitting in inventory.



Figure 31

**20:** The recommended mounting location for the compressor box and air tank is where the spare tire originally went. Use the supplied mounting brackets and weld them to the cross member. Refer to figures 12-14 for plumbing and wiring of the air system. On this system you will run the air line from the height control valve to the accumulator tank. You will connect the air bag to the accumulator tank with the  $\frac{3}{4}$ " tubing and connectors. See figures 32 and 33.

***Make sure to use a battery protection device on the batteries or unhook the batteries before welding!***



Figure 32





Figure 33

**21:** After install is complete, and the rear axle is square, torque all fasteners to the specifications in the chart below.

Bolt Size	Torque
1/4"-20	70 <i>in-lb</i>
3/8"-16	20 <i>ft-lb</i>
1/2"-20	50 <i>ft-lb</i>
9/16"-18	100 <i>ft-lb</i>
5/8"-18	250 <i>ft-lb</i>
7/8"-14	300 <i>ft-lb</i>

**22:** After the bolts are torqued and the air bags are inflated to ride height, you can now replace the bed.

**23:** Set the pinion angle to the measurement that you took in Suspension Removal step 1.

**24:** Now the truck is ready for a test drive. Pay close attention to how the truck handles and if there are any vibrations.

- 25:** When you test drive the truck, if the truck pulls to one side, shorten the **opposite side** trailing arms one turn and test drive again. Repeat until pull is no longer noticeable.

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## Owner Responsibilities

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The Kelderman suspension needs no lubrication and little maintenance. However, immediate corrective action should be taken if a serious malfunction occurs.

**CAUTION!** If maintenance or service is to be done on the air system, be sure to drain all air from the system. Serious injury could occur if components are removed while system is full of air.

### **PRODUCT OWNER RESPONSIBILITIES**

- Owner is solely responsible for pre-operation inspection, periodic inspections, maintenance, and use of the product as specified in the particular Kelderman MFG. instructions available by product model, except as provided in this warranty, and for maintenance of other vehicle components. Of particular importance is the re-torque of fasteners including axle bolts, four link bolts, and pan hard bar bolts. This re-torque must be performed within 90 days of the suspension being put into service.
- Owner is responsible for "down time" expenses, cargo damage, and all business costs and losses resulting from a warrantable failure.
- 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 operation.
- The Compressor Switch must be on for the compressor to operate. During difficult starting circumstances, (i.e. extremely cold weather) it is recommended to turn the compressor switch off until the vehicle is running, so it will not draw current from the battery. The compressor is controlled by the pressure switch located in the Air Control Box. This switch automatically turns the compressor on when the tank pressure falls below 110 psi, and turns them off at 145 psi.
- The Low Pressure Warning Light indicates a severe drop in tank pressure (below 45 psi). Immediate corrective action should be taken to determine the cause of air loss. Compressor switch should be turned off if Low Pressure Warning Light is on, and remains on even after the compressor has run for a normal period of time. **NOTE:** The Low Pressure Warning Light could come on briefly when the "Dump" feature is being used.
- When the weather is below freezing, it is important to release any moisture contained within the air tank on a daily basis. This is done by pulling on the attached release cable for approximately 5 seconds or turning the petcock. Not releasing the moisture on a regular basis will cause the drain valve to not operate properly.

### **CHECK AT EVERY VEHICLE SERVICE INTERVAL:**

Check Ride Height  $\pm 1/4"$

Check for air leaks around fittings.

### **CHECK AFTER THE FIRST 1000 MILES:**

Recheck & tighten any loose fasteners.

Check for any loose or worn components.

### **CHECK AFTER EVERY 30,000 MILES:**

Check trailing arm bushings and pan hard bar bushings for wear; replace if worn.

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# Notes

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## Contact Information

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- Kelderman Manufacturing appreciates your business. We strive to meet the needs of our customers by providing the highest quality products. If you have any questions concerning our products please call or email us at the following:

**2686 Highway 92  
Oskaloosa, Iowa 52577**

**Phone: 1-800-334-6150**

**Fax: (641) 673-4168**

**Email: [info@kelderman.com](mailto:info@kelderman.com)**

