VERSION 1.4

A 17/64“ drill bit is required.

A 5/16”-18 tap and 1/4” and 13/64” drill bit is required if installing height control sensors or valves

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2016-2018/2019+ Ram 4500/5500 2-Stage Front Air Suspension Installation Instructions

KIT NUMBERS

- This installation manual covers the following air ride kits.

Kit Number	Description
10004488	**Kit - 2019-2024 Ram 4500-5500 Chassis Cab Stock Height Front Air Suspension**
KLM21525	**Kit - 2016-2018 Ram 4500-5500 Chassis Cab 2-Stage Front Air Suspension**

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 *FT-LB*	12 *FT-LB*
3/8”-16	31 *FT-LB*	44 *FT-LB*
3/8”-24	*35 FT-LB*	49 *FT-LB*
1/2"-13	75 *FT-LB*	106 *FT-LB*
1/2"-20	85*FT-LB*	120 *FT-LB*
9/16”-18	121 *FT-LB*	171 *FT-LB*
5/8”-11	150 *FT-LB*	212 *FT-LB*
5/8”-18	170 *FT-LB*	240 *FT-LB*
3/4"-16	297 *FT-LB*	420 *FT-LB*
7/8”-14	474 *FT-LB*	669 *FT-LB*

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 needing 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 ± 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

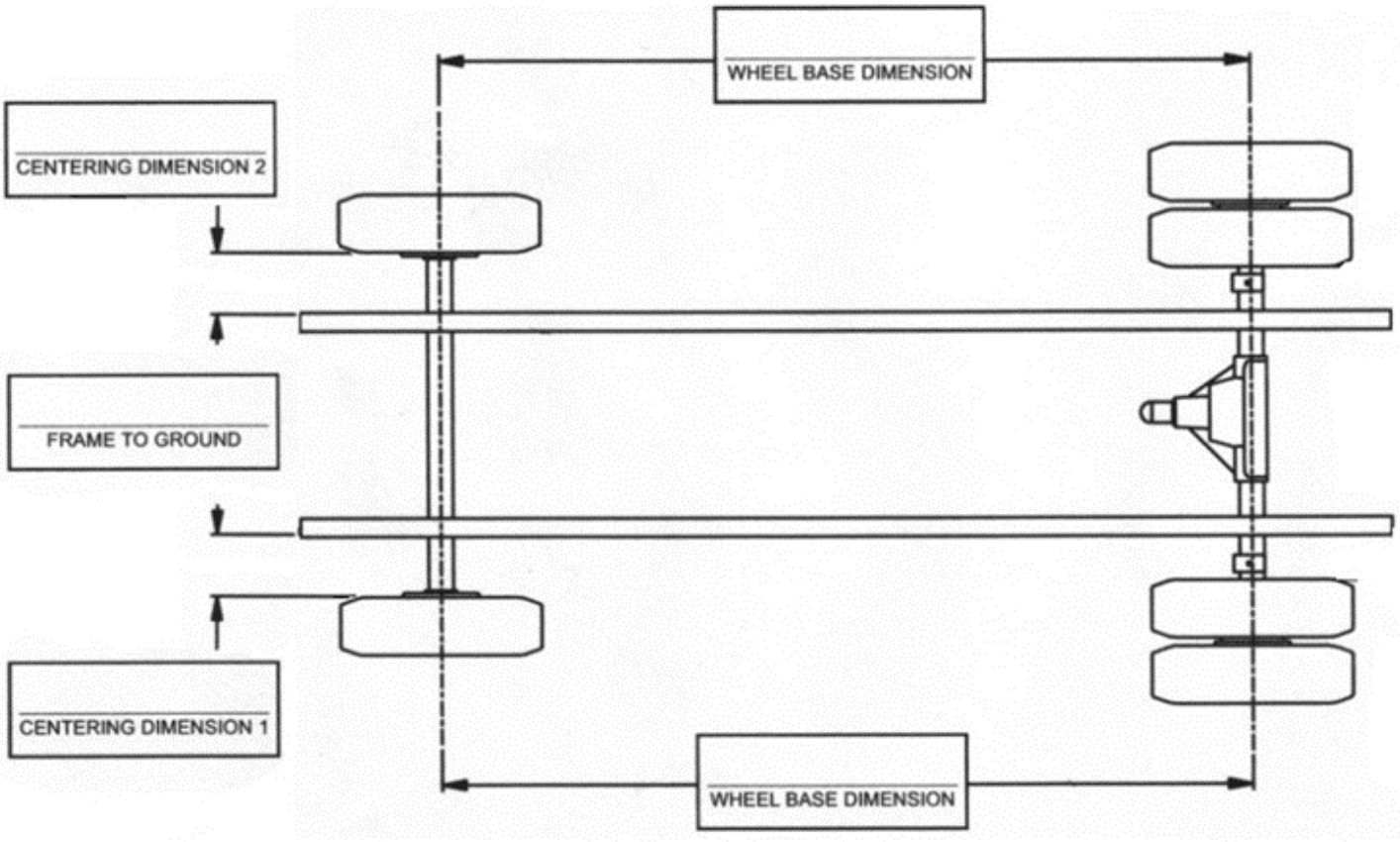
- Check Ride Height ± 1/4"
- Check for air leaks around fittings.

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.

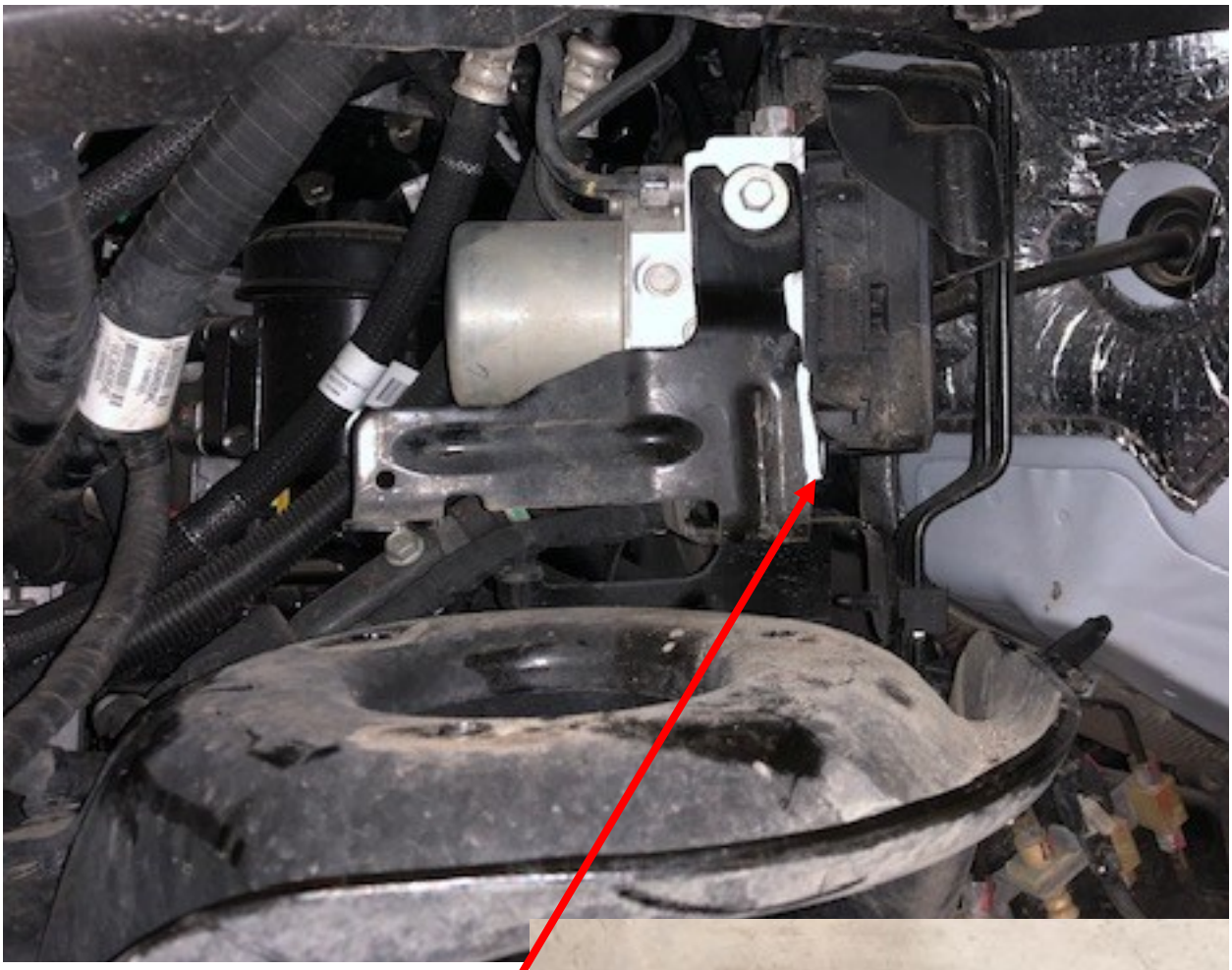


1. *These instructions work for 2019+ RAM 4500/5500 Kits (# 1004488) and 2016-2018 RAM 4500/5500 Kits (Part # KLM21525).* Jack the truck up by the frame and remove the tires. You will need a couple of floor jacks under the front axle to keep the axle from dropping when you remove the shock. We will install the drivers side first. The passenger side mounts exactly the same but does not have anything above the shock mount. If two people are doing the install both sides can be done at once.

2. Remove the nut from the sway bar end link and remove the shocks. Drop the jacks that are holding the axle up until the tension is off the coil springs.

Remove the plastic inner fender liner, the coil springs and bump stops from both sides

3. On the drivers side, cut the rear tab off the ABS motor mount. It will interfere with the upper shock mount. The bracket will now be held in place with just the front bolt.

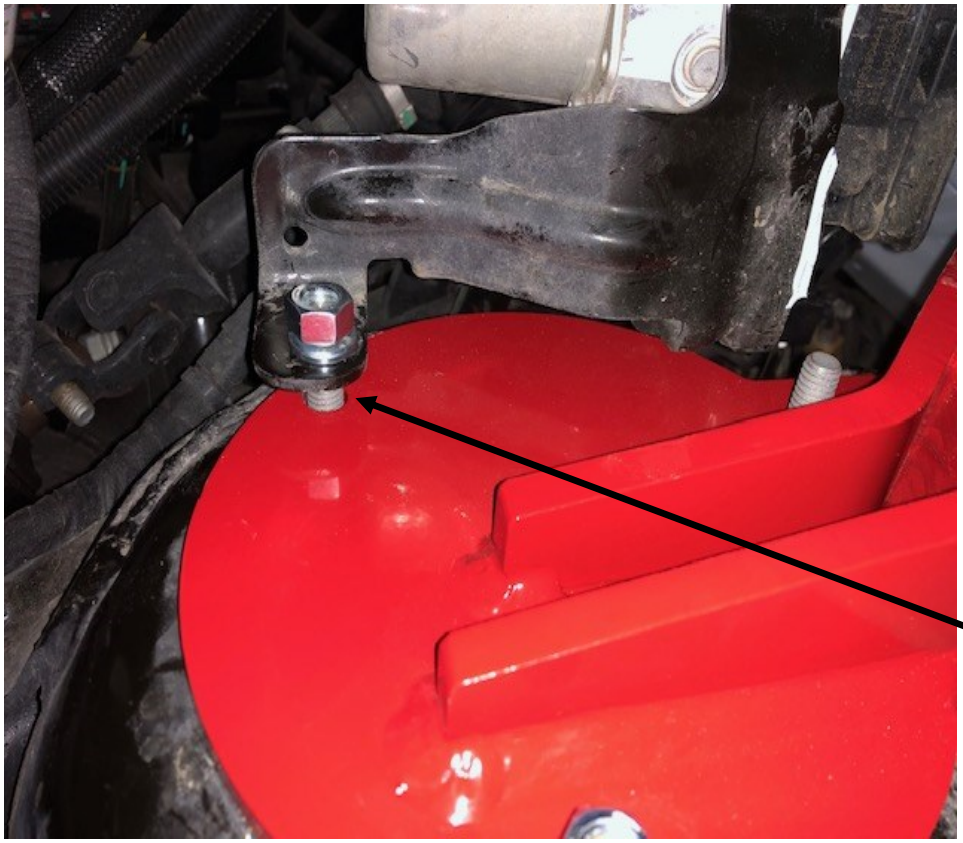


This tab needs to be cut off the mount

4. Locate the lower air bag mount (Part # DS-21528 and PS-21531) and air bag (80012-5323). The air bag fastens to the lower air bag with the 1/2” x 3-3/4” bolt. The air bag must be indexed 180 degrees off with the mounting tab on the bottom of the air bag. Torque the 1/2” bolt to 35 ft./lbs. Do not mount this assembly yet. It gets installed after the upper bag mount and shock mount.

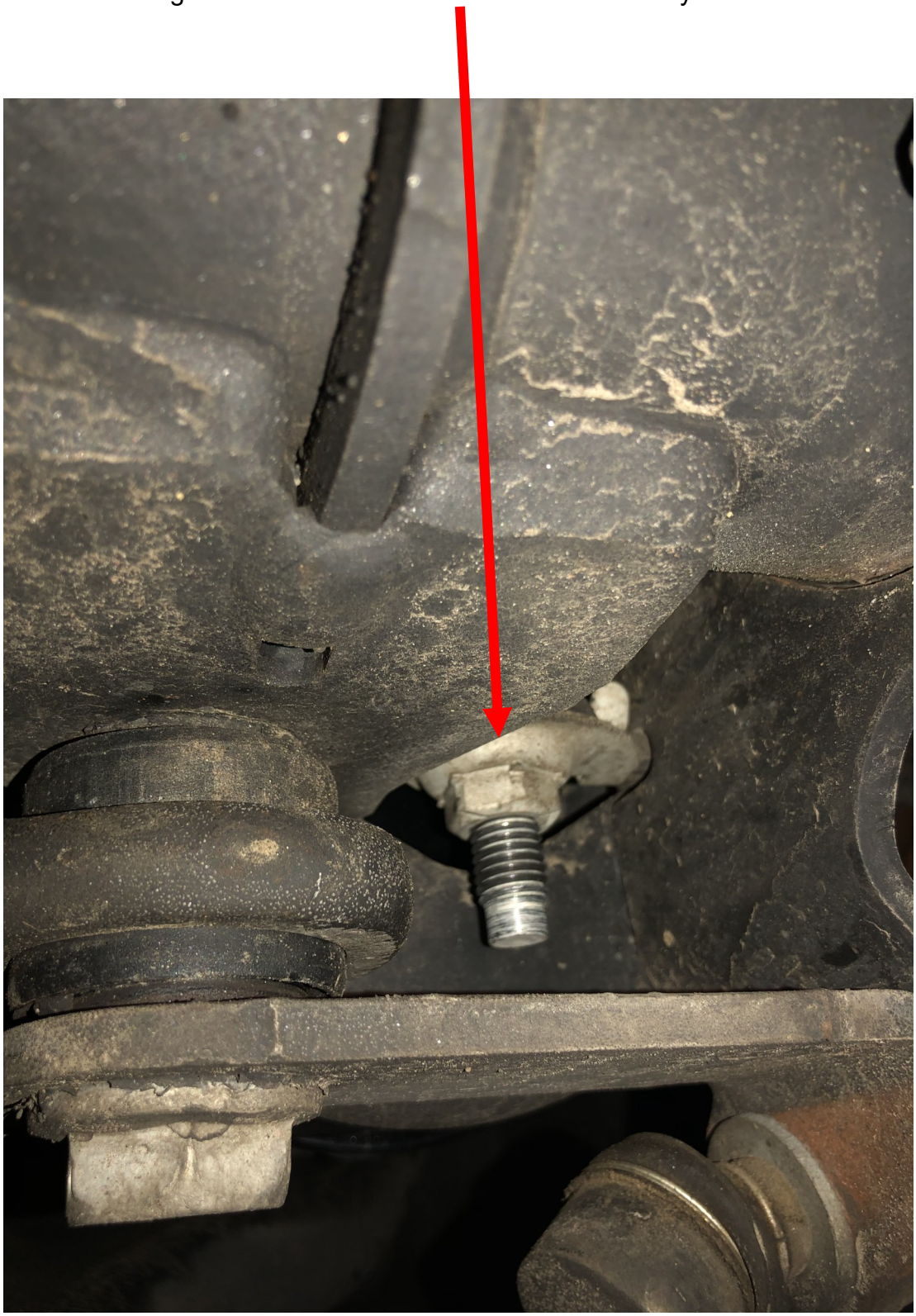
The upper studs and the lower mount need to be 180 degrees from each other

5. Locate the upper bag mount (Part # DS-21527 and PS-21530 and upper shock mount (Part # DS-21526 and PS-21529). Insert the upper bag mount into the factory spring perch with the air port facing out away from the frame (towards the tire). Slide the upper bag mount in place, then slide the upper shock mount over the 3/8” studs on the upper bag mount. Starting with the nut closest to you, fasten the two parts together with the 3/8” lock washer and nut. Snug this up tight. Slide the ABS front bracket down on the inside front 3/8” stud. Install the last two 3/8” lock washers and nuts. Torque all three nuts to 35 ft./lbs.



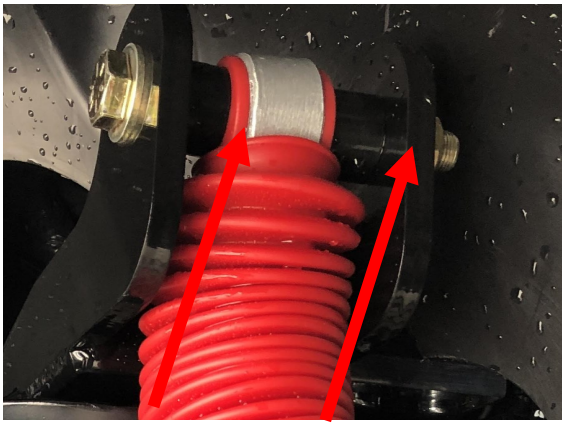
6. Drop the lower bag mount/air bag assembly into the lower spring perch. The lower bag mount fastens in place with the lower shock bolt and factory nut that has the tab on it. Torque this bolt to 125 ft./lbs.

Lower air bag mount fastens into the axle with the factory lower shock bolt

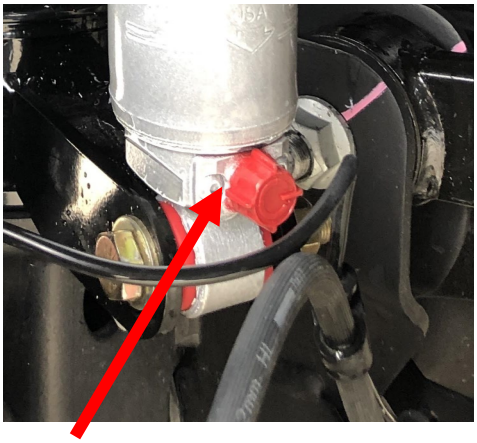


7. Jack the axle up so the air bag studs slide up into the upper air bag mount. Use the 1/2” and 3/4” lock washers and nuts to fasten the air bag to the upper bag mount. Torque these nuts to 35 ft./lbs.

8a. Locate the Rancho shocks (Part # 80096/RS99113 and four shock spacers (Part # 11565). The shocks are a 9 way adjustable shock. Set the dial to setting 3. That has proven to be the best valving to work with the air bag. Use the 1/2” x 4-1/2” bolts and spacers to install the top of the shock to the shock mount. Use the 1/2” x 3” bolt on the bottom. Torque the shock bolts to 65 ft./lbs.



One spacer on each side



Adjustment knob

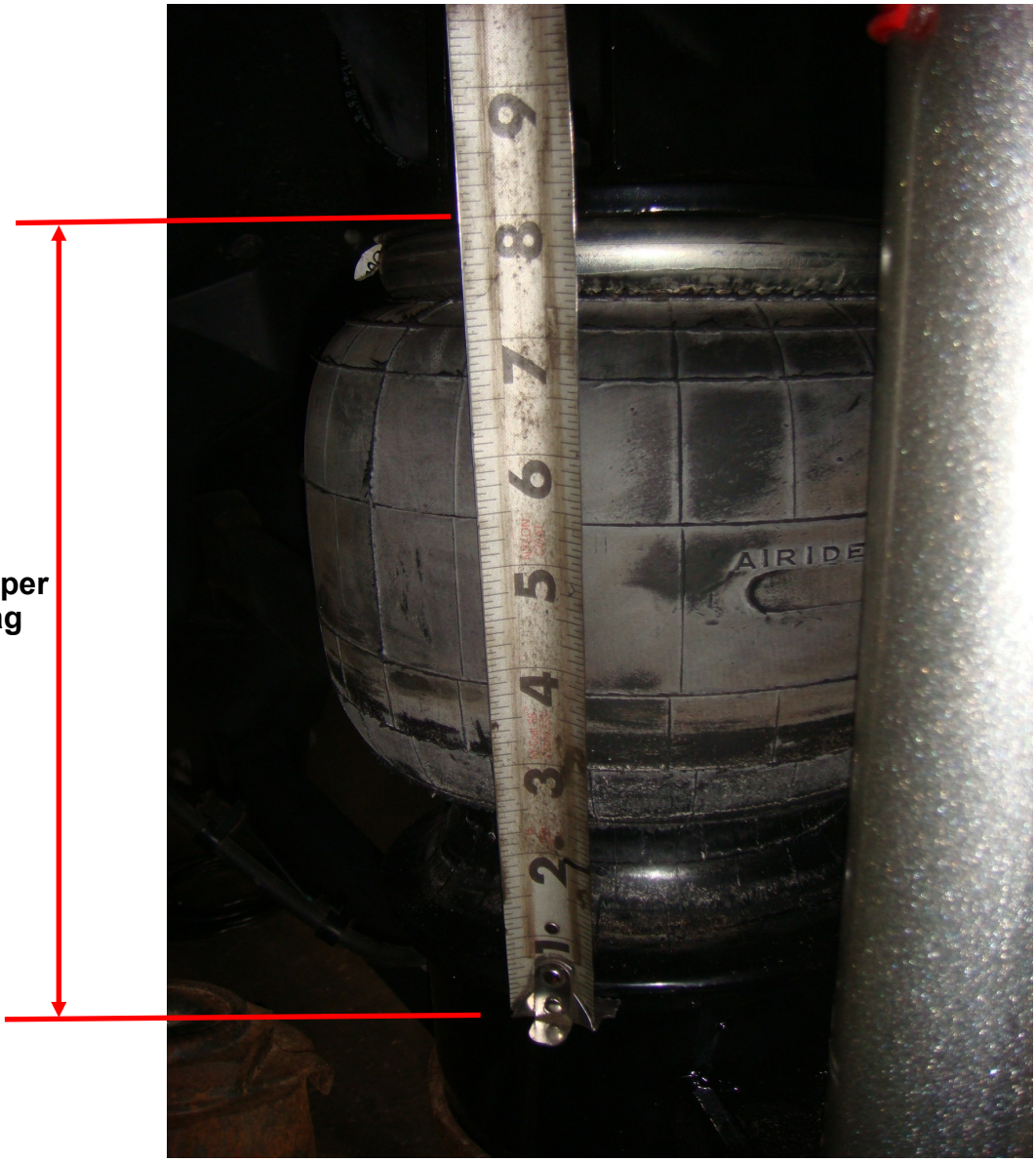
8b. If using Raptor shocks, locate (2) RAP-10151 shocks and attach them to the upper and lower shock mounts. Use the 1/2” x 4-1/2” bolts and spacers to install the top of the shock to the shock mount. Use the 1/2” x 3” bolt on the bottom. Torque the shock bolts to 65 ft./lbs.

AIR BAG PLUMBING

The best ride for the air bag is 8”, this is where the OEM alignment is most accurate. When measuring the air bag, measure between the upper and lower mounting brackets.

There are three options for air controls. Manual fill, Mechanical valves, and Electronic Sensors

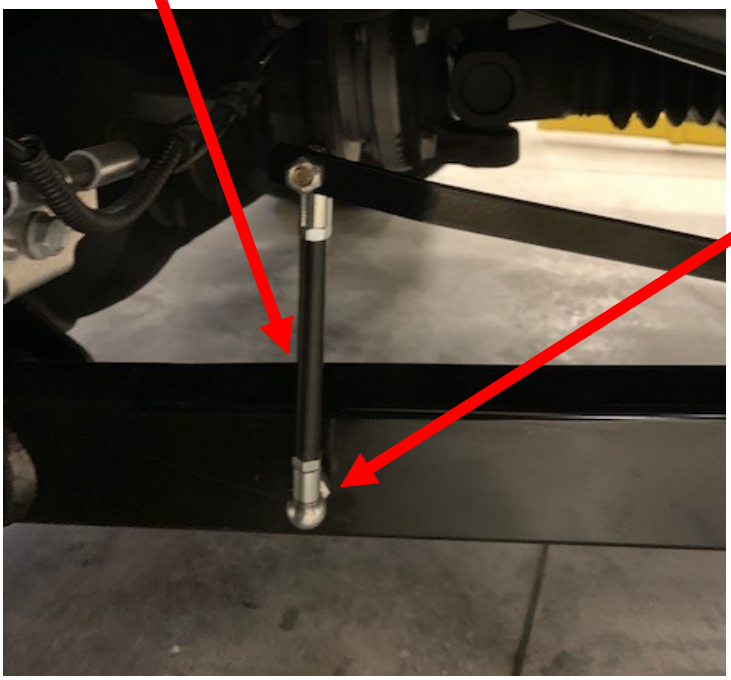
1. **Manual fill.** If you are not running any onboard air controls on the truck, simply air up the air bags with the supplied Schrader valves. You will insert the air fitting in the air port and tighten it finger tight, then one full turn after that. Determine where you want to place your Schrader valves. Under the hood or right off the air bag are popular choices. Once you have decided on the Schrader valve placement, cut the air line to fit between the valve and the air bag fitting. Use a razor blade and cut the air line so it’s straight and clean. Push the air lines into the fittings. Alternate sides when filling the air bags. *Inflating one bag completely without alternating will result in the first bag becoming taller and require more adjustments*. Typical pressures on this system will be around 65-75 psi. Both sides should end up being within 5-10 pounds of each other. ***Pressure in the system can vary depending on weight, application, etc.***



2. **Mechanical and Electronic:** The electronic sensors and mechanical valves fasten to a sensor mount with 1/4” x 1” bolts. The sensor mount must be welded on the inside of the frame. The best spot for the mount is just in front of the factory lower trailing arm mount. Weld the sensor bracket so the upper hole is 1/2” below the frame.

Weld the sensor mounting tab just in front of the lower trailing arm mounting bracket

Linkage pictured is 4-1/2” long



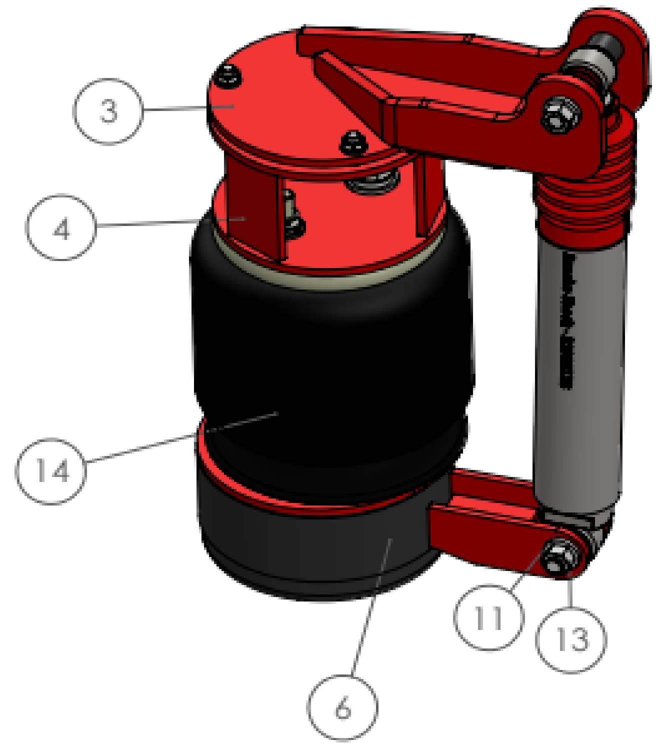
Drill a 17/64” hole in the lower trailing arm and tap with a 5/16-18 tap. The ball stud will thread here. When the air bag is at 8”/ride height, and the sensor arm is straight out, measure center to center on the ball studs (it should be around 4 1/2”. Cut the linkage to that dimension. The female end of the ball stud mount has a clip, that needs to be pulled to remove the linkage. *You cannot pull the linkage off without pulling the locking clip.*

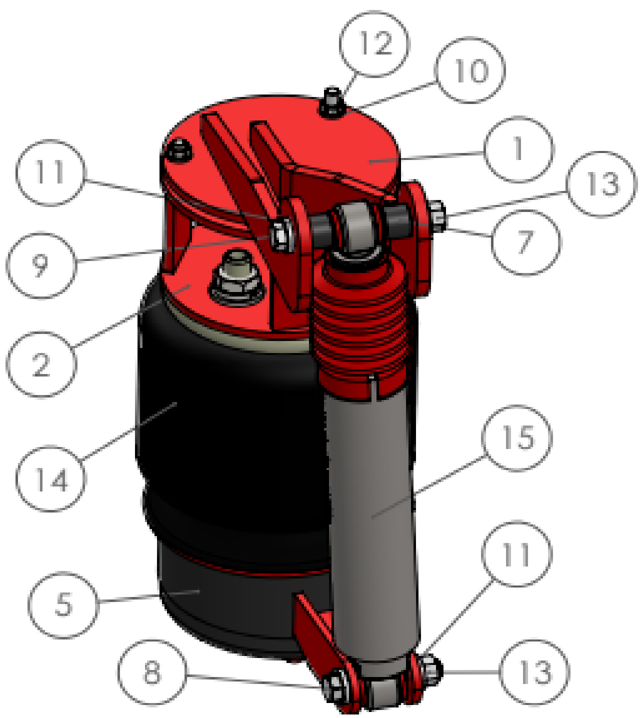
The height control valve mounting tab is welded on the inside of the frame just in front of the lower OEM trailing arm mounting assembly. When the airbag is inflated to 8”/ride height, and the height control valve is straight out, go straight down and drill and tap the ball stud into the upper trailing arm

Fine tuning of the mechanical arm can be done by loosening the nut on the arm and raising or lowering the arm on the valve. Once the truck ride height is set tighten the nut back up.

4-1/2” linkage pictured

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	21526	Weldment - (DS) Upper Shock Bracket	1
2	21527	Weldment - (DS) 3.75" Bag Riser	1
3	21529	Weldment - (PS) Upper Shock Bracket	1
4	21530	Weldment - (PS) 3.75" Bag Riser	1
5	10005049	Weldment - (DS) Lower Axle/Bag Mount	1
6	10005048	Weldment - (PS) Lower Axle/Bag Mount	1
7	11565	CRR - Shock Spacer - 1.00" OD x .51" ID x .75" Long	4
8	12021	Bolt - 1/2"-20 X 3" Gr.8 YZ	2
9	12033	Bolt - 1/2"-20 X 4 1/2" Gr.8	2
10	13046	Split Lock Washer - 3/8" - YZ	6
11	13024	Washer - 1/2" Flat SAE Washer	8
12	13162	Hex Nut - 3/8"-20 Gr. 8 YZ	6
13	13164	Hex nut - 1/2"-20 Gr.8 YZ	4
14	80012-5323	Purchased Parts - Firestone 5323	2
15	80096	Rancho RS999113	2





REV	ECN	CHANGE DESCRIPTION	CHANGE BY	DATE

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPEC. DIMS. IN INCHES STD. TOLERANCES X.X ±.060 X.XX ±.030 X.XXX ±.010 FRAC.DIM. ±1/32" Deg. ± .5°

A | DO NOT SCALE DRAWING | 1:50 | Approximate Weight = lbs

MATL SPECS:

DESCRIPTION: Stock Height - Front

PROJECT: 2019 Ram 4500-5500 Chassis Cab

PART NUMBER: 10004488

DESIGN BY: DATE: 7/19/2019

SHEET 1 OF 3

****NOTE:** Once the system is wired up and plumbed, turn on the ignition and the compressor will start running. Upon first start up when there is no air in the tank, it will take around 6-8 minutes until the system is charged, air bags filled. After the compressor shuts off, check for leaks. It works best to use soapy water or gas leak detector sold at hardware stores. Check all the fittings and connections in the entire system.

FINAL INSPECTION CHECKLIST

1. Air System Start Up and Check - remove all jacks, and air the system up by either using the fill valve on the air tank or by starting the vehicle and switching the compressor switch to "ON". Note: the maximum allowable pressure in the air tank is 175 psi. It is recommended to fill the air tank using the supplied Schrader valve so that the compressors are not taxed too much by running for a long period of time.

2. Height Control Valve Operation Check - with one end of the valve linkage disconnected, rotate the valve arm down 45°, air should exhaust from the air bag. Rotating the valve arm up 45° should cause the valve to fill the air bag.

3. Measure & Record the "Ride Height" of the air bag - measure ride height of the air bag from upper air bag mount to lower air bag mount (see picture below). The kit is designed to ride at 8". To adjust the ride height, complete the following steps (see picture on next page). Loosen upper height control valve bolt. Rotating height control valve body toward rear of chassis this will increase the ride height. Rotating height control valve body toward front of chassis will decrease ride height. Tighten upper height control valve bolt. Once the ride height is set, reconnect the linkages. Jostle the suspension up and down and allow it to come back to ride height. Recheck the initial measurement and adjust if needed.

4. Bushing Bolts Final Torque - with the suspension at ride height, torque all bushing fasteners. This will include all fasteners for the Control Arm and Pan Hard Bar. (Refer to *Torque* table for specific torques).

5. Reinstall shocks and mounting nuts.

6. Move the suspension through its entire range of motion by inflating and deflating the air bags to achieve full travel. Check for any interference with the pan hard bar, axle, shocks, exhaust, frame, brake lines, fuel lines, etc. Reconnect valve linkage to trailing arm.

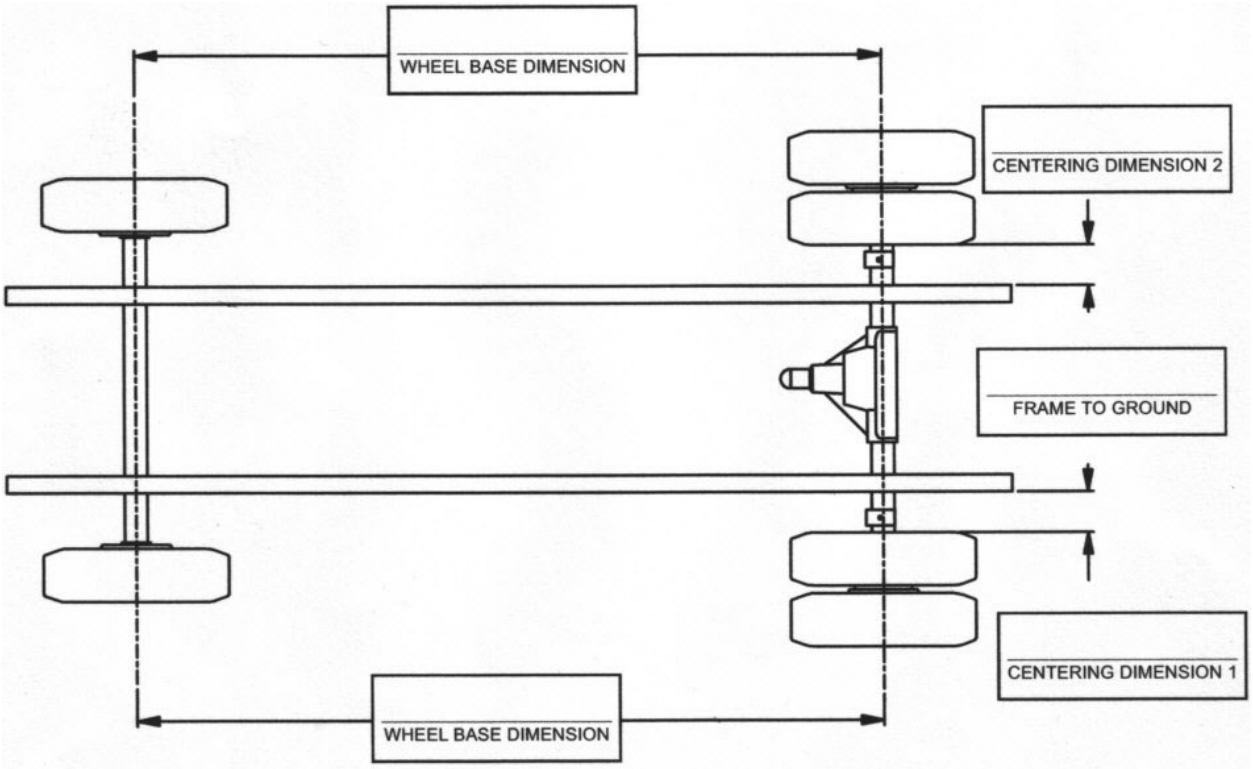
7. Recheck all fasteners for specified torque.

8. Double check all electrical connections and wire routings.

9. **IMPORTANT!** Check all fittings and air lines for air leaks.

10. Measure and record wheelbase and centering dimensions on final dimension sheet.

FINAL DIMENSION SHEET



OPERATION GUIDELINES

1. After all final checks are complete, it is recommended to perform a road test. If vehicle pulls to the left or right, or any driveline vibration occurs, return and recheck wheelbase measurements and driveline angles. **Note**: improper driveline angles may have a detrimental affect on ride, U-joints, and transmission.

2. **Kneeling Operation**: Moving the dump switch to "ON" position will exhaust all air from the air bags and lower the rear of the vehicle approximately 3-4 inches. Air bags will inflate when the switch is returned to the "OFF" position. **WARNING: Do not drive the vehicle while the Dump Switch is on and the air bags are deflated.**

3. **IMPORTANT!** During servicing check tightness of all fasteners and for any air systems leaks.

4. **IMPORTANT!** Immediate corrective action should be taken if malfunctions occur.

5. **Air Bag Ride Height Setting Procedure for Systems with Dual Height Control Valves**

1. Deflate the passenger side air bag by disconnecting the linkage from the arm.
2. With the driver side linkage connected, measure the ride height and adjust accordingly by the methods mentioned above.
3. Once the ride height is set for the driver side, repeat the same steps for the passenger side, including deflating the driver side air bag.
4. Once the ride height is set, reconnect the linkages.
5. Jostle the suspension up and down (or take the vehicle on a short drive) and allow it to come back to ride height. Recheck the initial measurement and adjust if needed.

Note: this procedure to set ride height can be done when empty or under light load.

SERVICE & MAINTENANCE

The Kelderman suspension needs no lubrication and little maintenance. The following components should be checked at the same time the chassis is being serviced. However, immediate corrective action should be taken if a serious malfunction occurs. See Exploded Assembly on page 18 for details.

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

Note: It is important to release any moisture contained within the air reservoir on a daily basis. Not releasing the moisture on a regular basis will cause the drain valve to not operate properly, and may cause the valve to malfunction. Excess moisture in the system can also cause premature failure of other components including the tank itself.

AIR BAG SERVICE

The forward air bag can be serviced without removing the axle brackets from the axle. Detach the upper air bag mounting studs from the upper bag plate. Utilizing a modified 3/4" wrench, the forward air bag lower mounting bolt can be loosened. Rotate the air bag counter-clockwise off the lower mounting bolt to remove air bag. To install, reverse the process.

SERVICE & MAINTENANCE CHECKLIST

1. Check and document rear axle alignment.
2. Verify ride height at 8" between upper and lower air bag mounting plates.
3. Verify suspension function via dump and re-inflation.
4. Check for air leaks and system integrity.
5. Check clearances throughout suspension motion range.
6. Check driveline angle.
7. Check 4 wheel alignment.

NOTES

CONTACT INFORMATION

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:

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