AIR SUSPENSION SYSTEMS

2686 Highway 92 - Oskaloosa, IA 52577
phone: 641.673.0468 - fax: 641.673.4168
www.kelderman.com

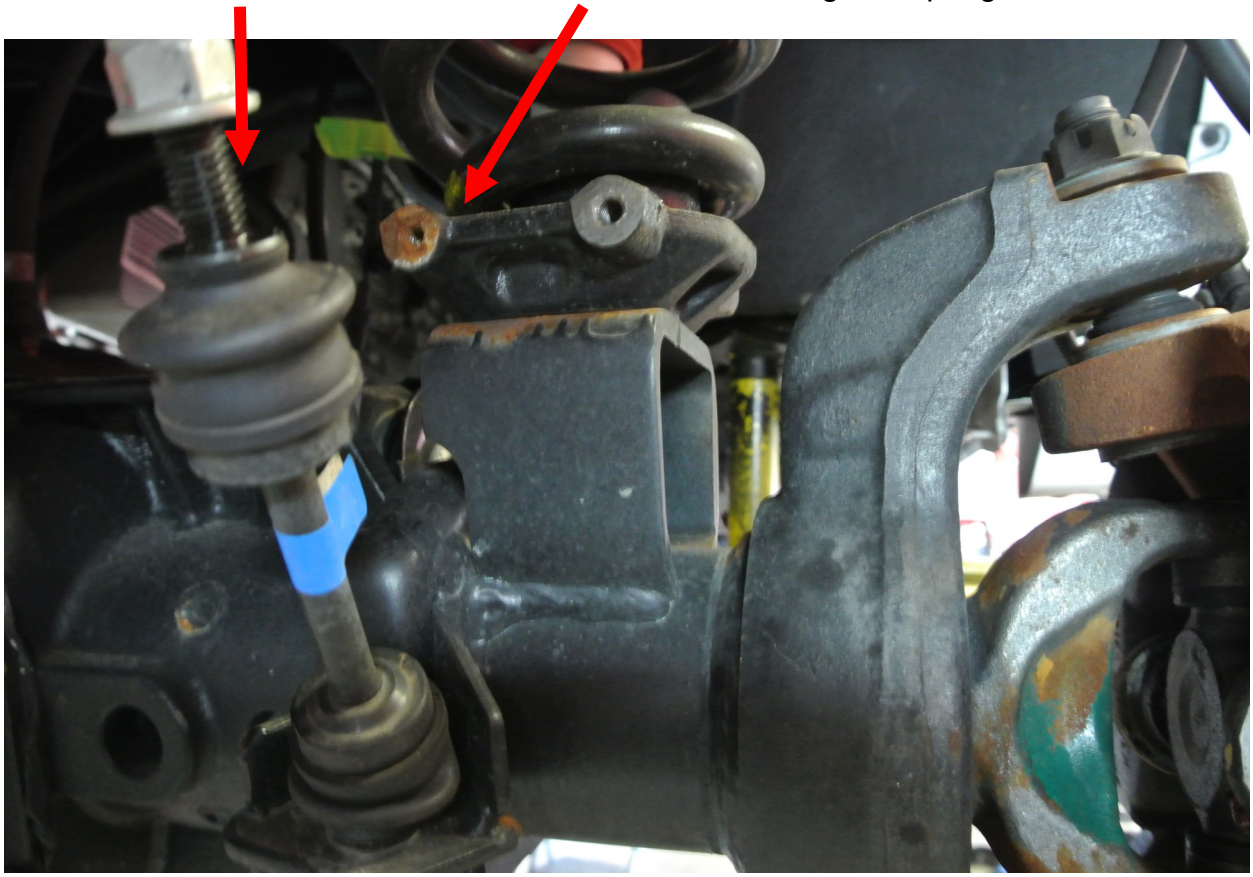
2011+ Ford Super Duty 4x4 Front 4-6” Lift Kit Installation Instructions

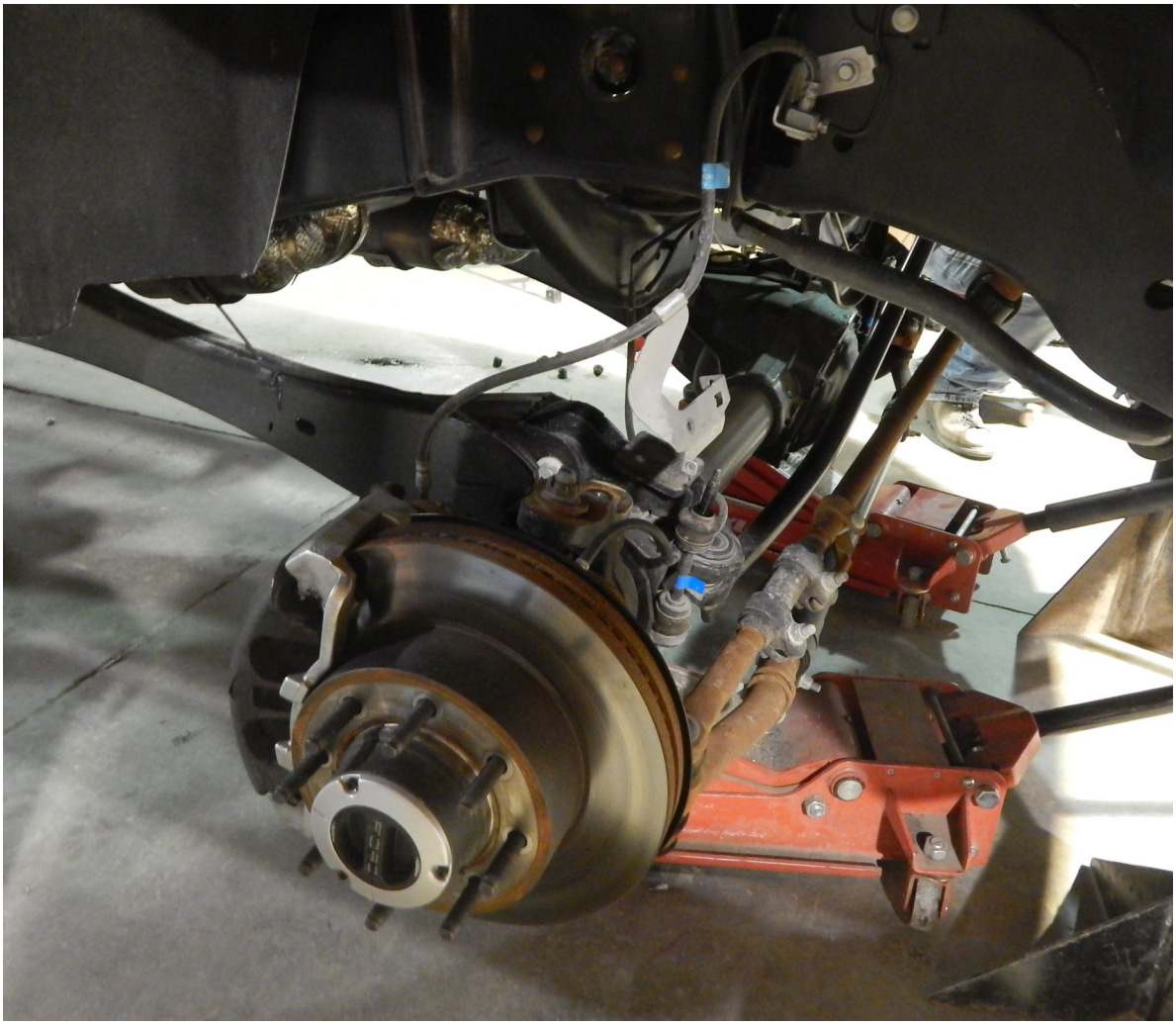
1. Before you remove anything off the truck, measure the pinion angle on the bottom of the differential. Make sure to record the measurement here _____. Once the kit is installed, check to see that the pinion angle is close to original. This will keep the correct caster and camber.

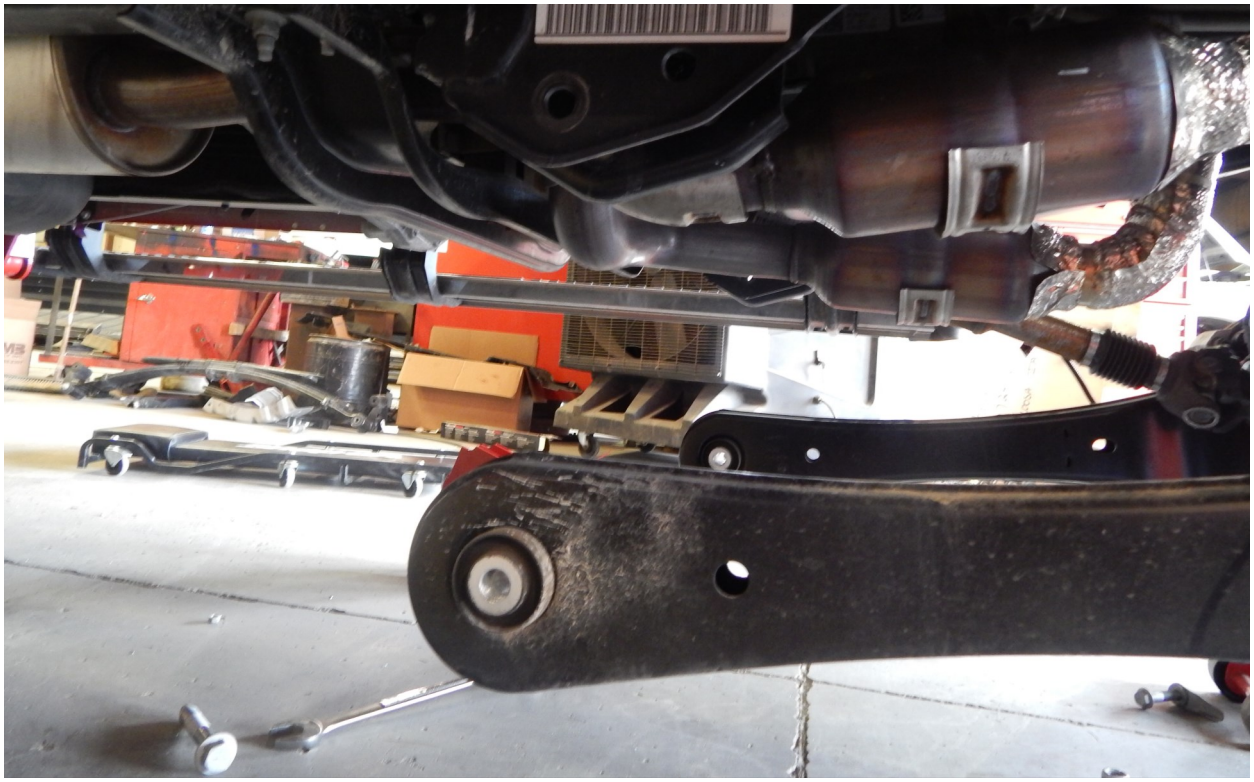
2, Jack the truck up from the axle until the wheels are off the ground. Place a jack stands under the front of the frame. Keep the jack under the axle and remove the wheels. Now that the wheels are off, remove the shocks and unhook the sway bar end links. Let the jack down and remove the coils and cast spring perch bolted on top of the axle. You will have to unbolt the brake lines from the casting.

Sway bar unhooked from sway bar

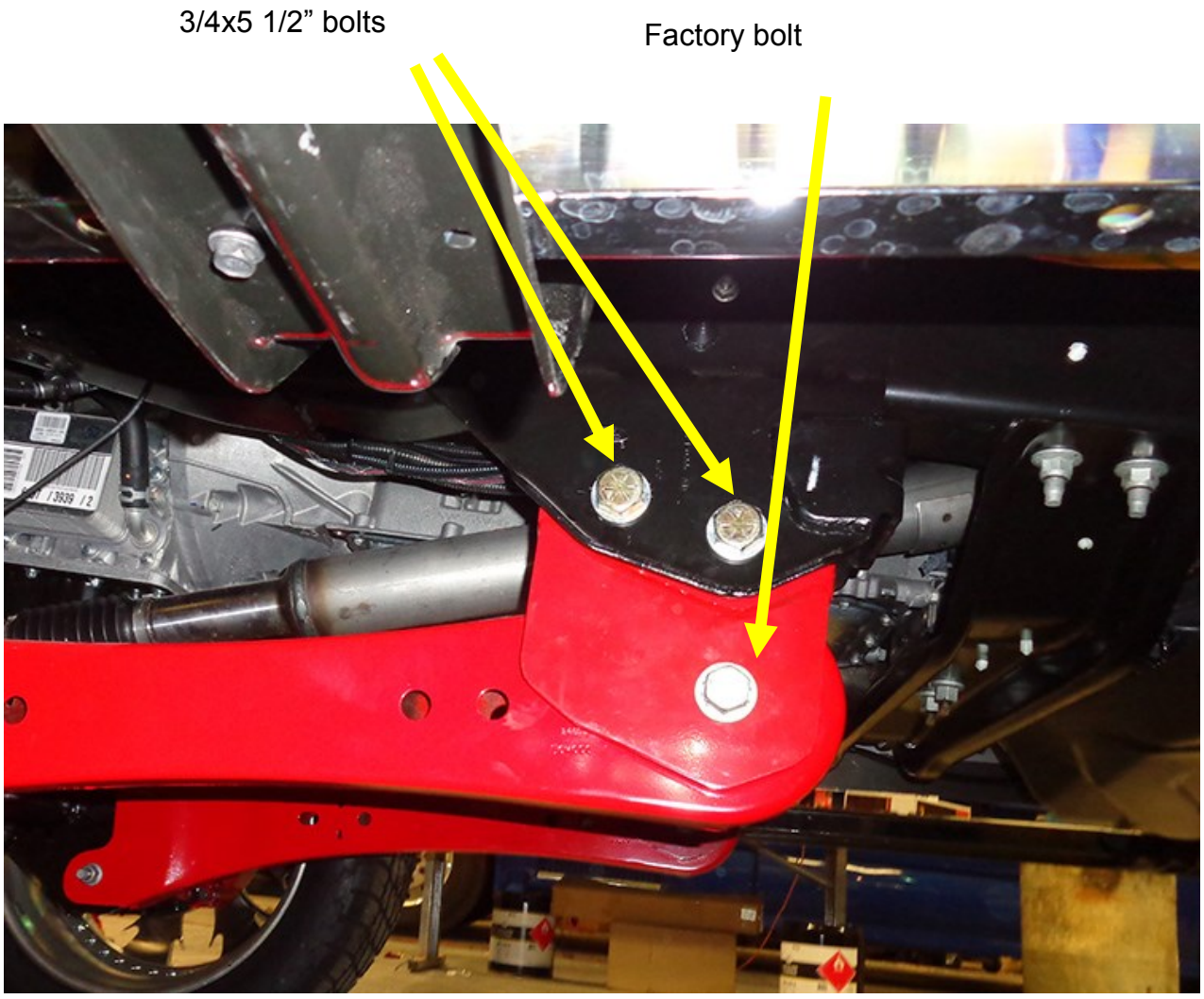
Remove casting and springs





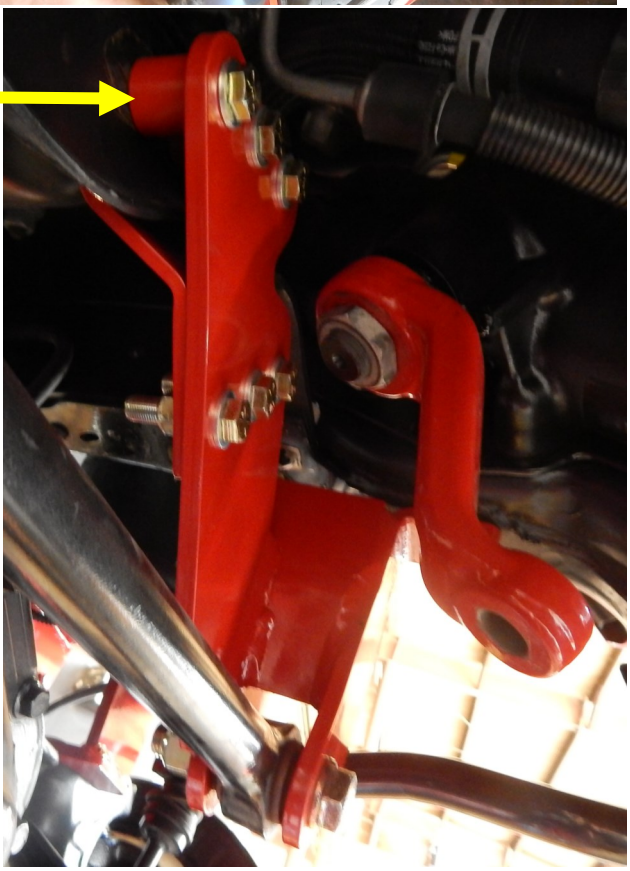


3. Remove the rear bolts that hold the factory trailing arms in place. Locate the trailing arm drops (part# 16846). They fasten into the factory trailing arm mount with four 3/4x 5 1/2" bolts. Use the picture below for placement of the bolts. Torque these bolts to 175 ft/lbs. Next, insert the factory trailing arm into the drop and fasten with the 3/4x 5 1/2" bolts. Torque this bolt to 175 ft/lbs also. Do both sides at the same time.

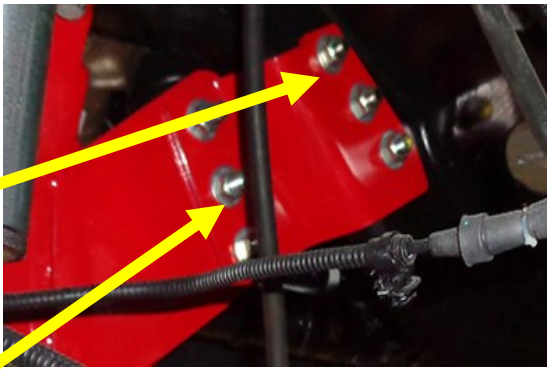


4. Remove the steering arm from the stock pitman arm. Set aside the nut, locking crown and cotter pin. Now remove the pitman arm. You will reuse the nut and lock washer. Next remove the pan hard bar bolt and pan hard bar mount. Locate and install the drop pitman arm (part# FA 450). Torque the factory nut to 275 ft/lbs and torque the steering arm ball joint nut to 115 ft/lbs. Reinstall the locking crown and cotter pin. NOTE: After 15 miles re-torque the pitman arm.

spacer



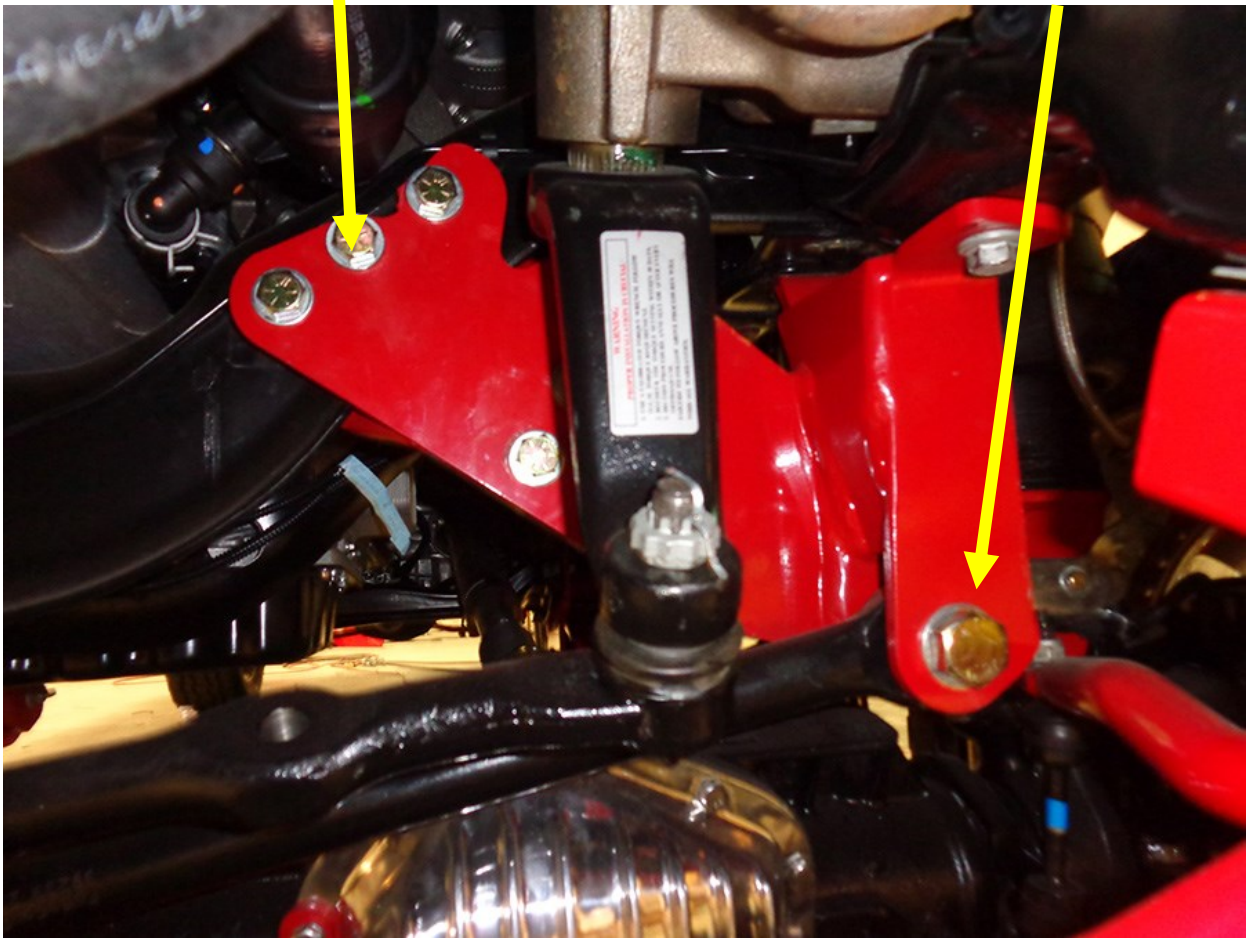
5. Locate the pan hard bar (track bar) drop bracket (part# 16847) with backing plate, (part# 15381). Install the pan hard bar drop and backing plate with the supplied bolts and spacers. Use the pictures below for bolt placement. NOTE: The button head bolt goes in the hole closest to the air bag. Make sure the smooth head is on the bottom of the frame with the nut and threads on the inside of the frame. Torque the M20 bolt to 150 ft/lbs and the 1/2" bolts to 85 ft/lbs



These three bolts are 1/2x3 install the spacers between engine cross member and pan hard bar mount.

1/2x2" bolts

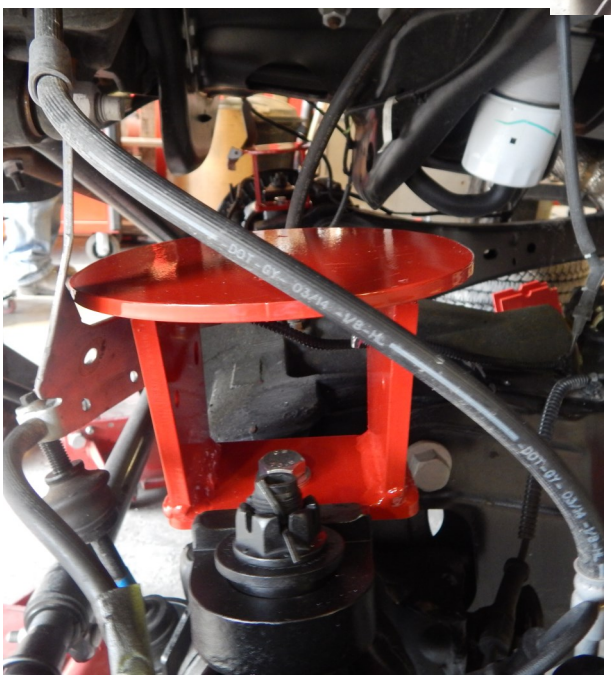
M20x100 bolt



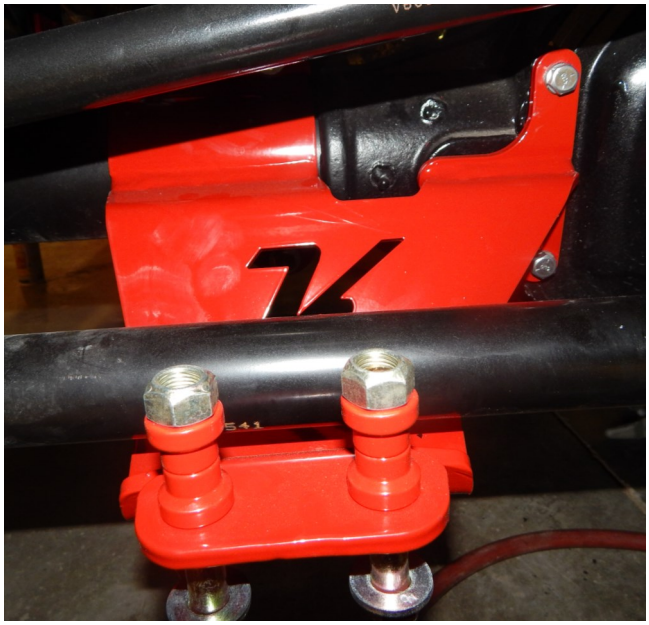
6. Locate the upper air bag mounts (part# 30044DS and 30045PS). The upper air bag mounts bolt into the upper spring perch. Set the orientation of the upper air bag mount so the tab for the 3/8” bolt is directly facing outwards . With the upper bag mount in place mark the 3/8” holes into the spring bucket (three total). Once the 3 holes are marked, drill them out to 7/16”. Install the upper bag mount with the 3/8x1 1/2” bolts. Torque the 3/8” bolts to 45 ft/lbs.

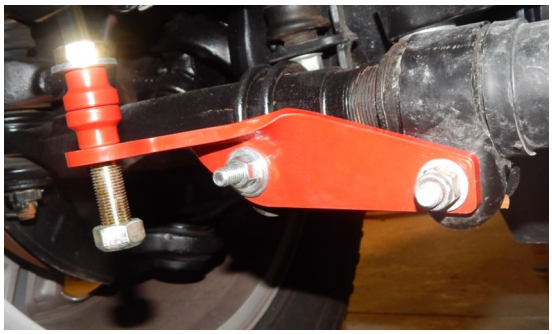
7. Locate the lower bag mounts (part# 20651DS and 20650PS) . They fasten on top of the axle where the cast coil perches mounted. Use the M14x40 bolts to fasten the brackets in place. Torque the bolt to 125 ft/lbs. The brake lines will fasten to the mounts with the 1/4” bolts in step 11.

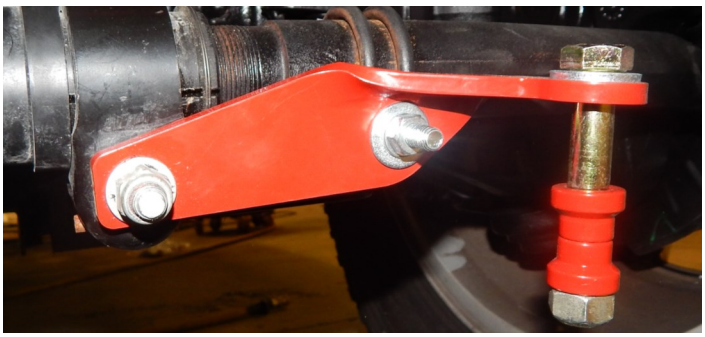
8. Locate the 5323 air bags. They fasten into the upper air bag mounts with the 1/2” and 3/4” nuts and lock washers. The bottom fastens to the lower air bag mount with the 1/2x3 1/2” bolts. Torque the upper bag nuts to 35 ft/lbs as well as the bottom 1/2” bolt. Now locate the air fitting and install into the air port. Once the fitting is finger tight tighten it one complete turn.



Factory upper shock mount







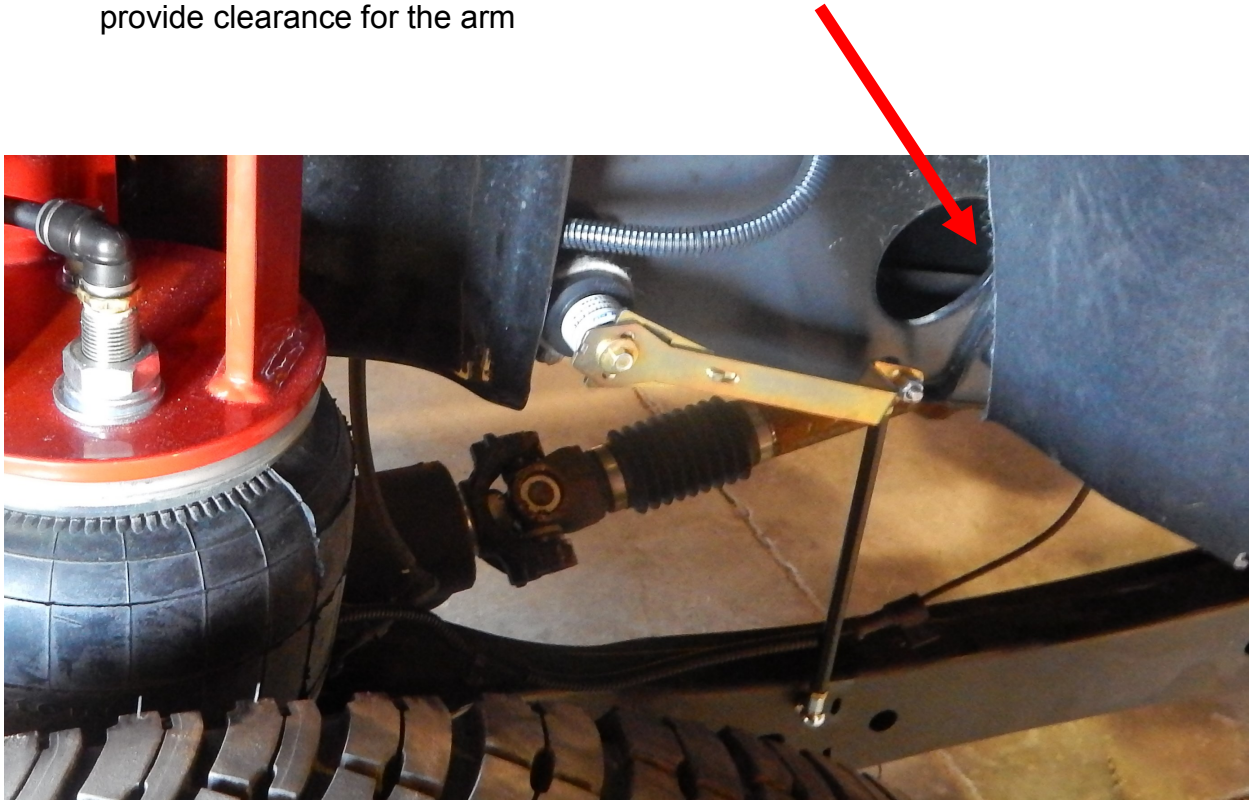
9. Locate the upper shock mounts (part# 17139). They fasten into the original upper shock hole in the spring bucket. Remove the upper rubber mounting brackets from the factory shocks and use them and the M12x70 to fasten into place. Insert the bolt so the threads are up. Torque this bolt to 65 ft/lbs. Now install the shocks with the 1/2x3" bolts. Torque these bolts to 85 ft/lbs. Depending on what brand of shock is used, you may need spacers or washers to center the shock.
10. Reattach the sway bar to the sway bar end links using the sway bar drop brackets. Torque the nuts to 45 ft/lbs.

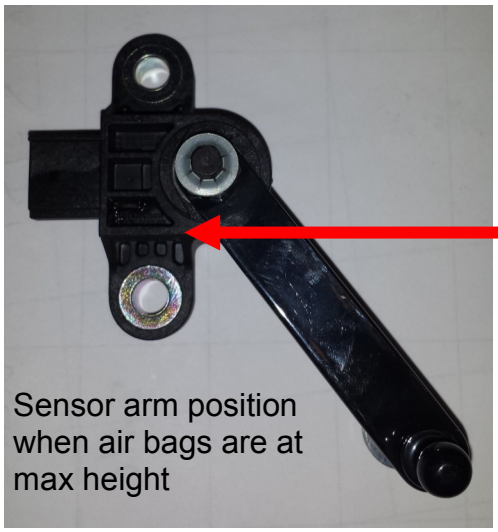
11. Locate the extended brake lines. You can install them now. It is personal preference if you want to remove the steel mounting bracket or use it. Some trimming will be required to the bracket if you want to use it. It will fasten to the lower bag mount with the 1/4" bolts.
12. Locate the steering stabilizer kit. Begin with the middle section with the K in it (part# 10665). It fastens to the middle of the axle with the axle clamp (part# 16008) and the four 7/16x2" bolts. It also will fasten to the axle with 2 of the differential cover bolts. If you are using the stock cover you will need to use some washers to fill the gap. That mounting bracket is designed to work with cast aftermarket units that are thicker than the OEM cover. Once all the bolts are started tighten the diff cover bolts to 25 ft/lbs and the 7/16 bolts to the 55 ft/lbs. Now locate the outer shock mounts/ears (part# 16891PS and 16892DS). They fasten to the steering tie rod with the factory bolts. Tighten these nuts back up at 30 ft/lbs. Now locate the shocks. They fasten to the middle section with the 1/2x201/2" bolts. Use the spacers on each side of the heim end. Also use the spacers on the other end of the shocks. Fasten them in place with the 1/2x 21/2"

13. Set the air bags at 8” tall. You can use the jack to do this or air up the system. Measure in between the upper and lower air bag mounts . This will be the ride height and according to Firestone, this is the “sweet spot” where the air bag rides the smoothest. Now locate the height control valve or electronic sensor, depending on what system you have purchased. When mounting the sensor or leveling valve you will have to drill and tap it into the frame. A 1/4-20” bolt works best. The picture below shows a mechanical valve mounted. It is pointing towards the back of the truck. The electronic sensor is much smaller in size. Since it has less throw, it needs to be mounted closer to the trailing arm pivot point. The other option to drilling and tapping the electronic sensor is to drop it down below the frame with a steel bracket. Whatever option chosen, make sure that the sensor arm has room to move up and down without interference. NOTE: The sensor has a dead band when the arm is maxed out in both directions. Proper installation will have about 1/8” gap between the sensor arm and the plastic stops in both directions.

bolts. Now torque all the 1/2” botls to 85 ft/lbs.

Hadley sensor pictured at ride height. It is bolted to the truck frame after drilling and tapping for the 1/4x20” bolt. The sensor linkage is 10 3/4” long. The bottom trailing arm is drilled and tapped for 5/16x18 ball. It works best to have the air bag height at 8” and then set the sensor so its close to the middle of the range when installing. NOTE: The inner fender liner is cut to provide clearance for the arm





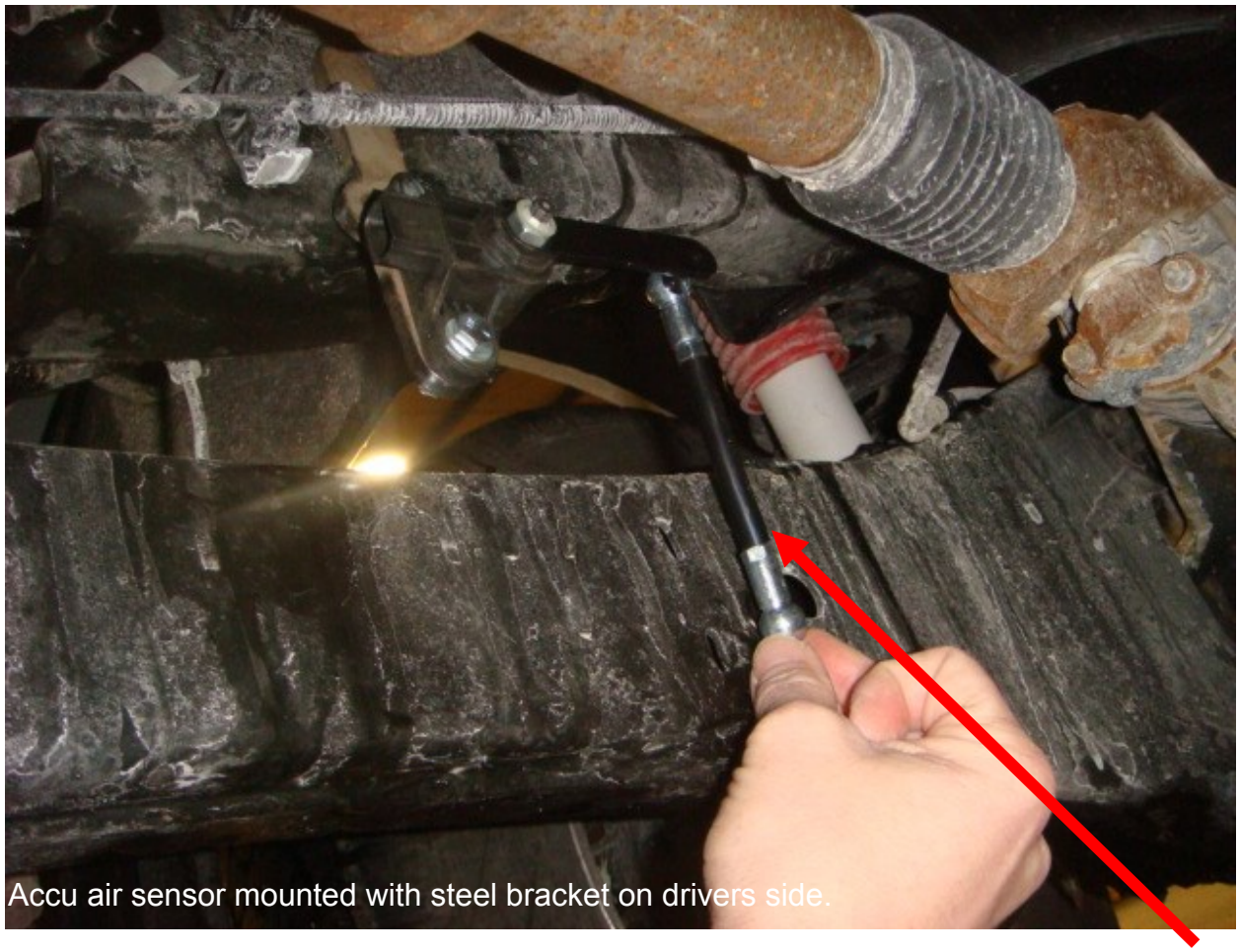
Sensor arm position when air bags are at max height

Make sure to have 1/8” gap between the sensor arm and the stops when air system is maxed out as well as fully dumped

NOTE: The sensor sweep probably wont be this extreme, nor does it have to be

Sensor position when air is dumped

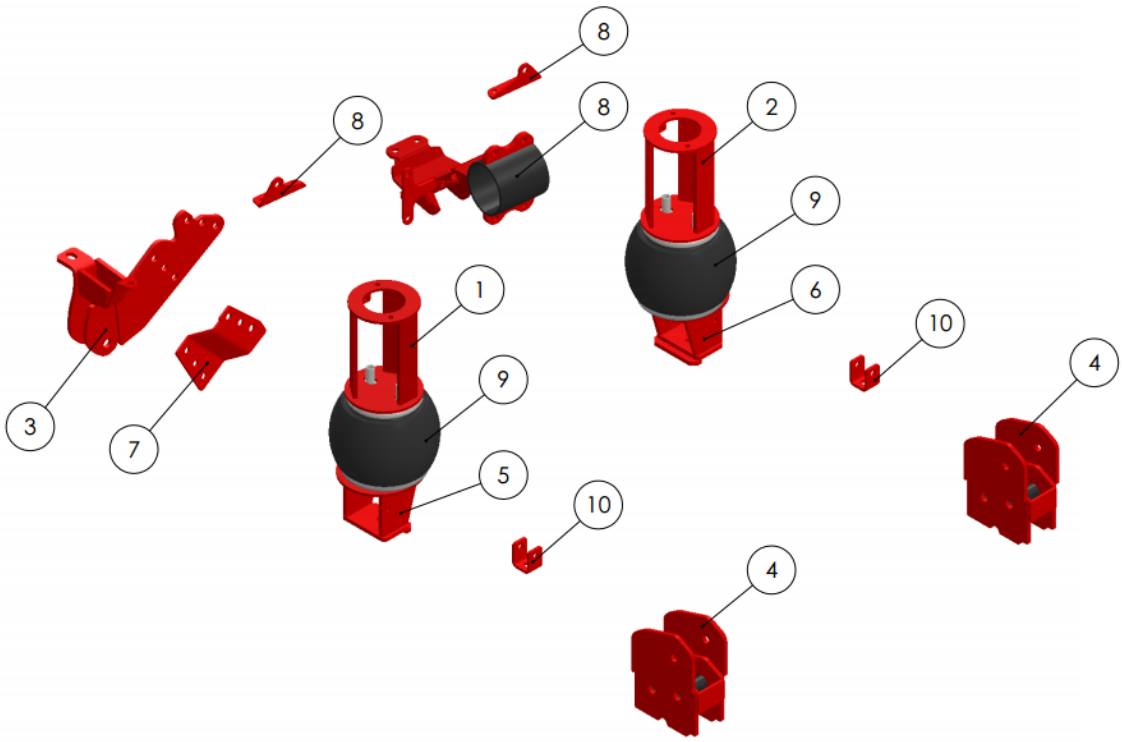
The mechanical valve at ride position. Note the arm is straight. Before installing rotate the arm 3 turns each way to get the internal parts ready for operation. The top port is exhaust, the bottom port is input from tank and middle port is out to air bags.



Accu air sensor mounted with steel bracket on drivers side.

The sensor linkage can be shortened. Just remove the female connector off the rod as well as the jam nut. Then remove the black sleeve. The threaded rod can be shortened if needed. The Accu air sensor can be mounted like the Hadley valve is on the previous page.

Sensor linkage mounted on outside of passengers side trailing arm



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	30044	(DS) 9" Bag Riser / Mount	1
2	30045	(PS) 9" Bag Riser / Mount	1
3	16847	(PHB) Front Drop Bracket	1
4	16846	4" Trailing Arm Drop Mount	2
5	20651	(DS) Lower Bag Mount	1
6	20650	(PS) Lower Bag Mount	1
7	15381	(PHB) Front Drop Wavy Plate	1
8	16005	ASSEMBLY	1
9	5323	FIRESTONE AIR BAG - 5323	2
10	17137(S&T)	Shock Mounting Bracket w/ Bend	2

Commercial Product Warranty, Disclaimers and Warnings
Kelderman techs are available at 641-673-0468 M-F 7:00-4:00 CST

Kelderman Air Suspension Systems offer a 3 year/ 100,000 mile Limited Warranty, parts and labor, to the original retail purchaser who owns the vehicle on which the unit was installed, for defects in materials and workmanship related to the fabricated parts. Non fabricated parts such as air bags, air compressors, gauges, solenoid kits, and electronic or mechanical air ride control systems are covered for 1 year/ 50,000 miles for parts and labor. In cases where ride control systems manufactured by The Air Lift Company or Hadley Products are provided, the ride control warranty in this document will not apply. Instead, the warranty will be that of Hadley and Air Lift.

Kelderman Air Suspension Systems must be contacted for warranty authorization before any diagnostic work or repairs are performed. At that time, Kelderman will provide diagnostic assistance and authorization for the repairs if warrantable. Any unauthorized diagnostic work performed before contacting Kelderman will not be covered under the warranty program if deemed unreasonable.

Kelderman Air Suspension System does not warrant any product for finish, alterations, modifications and/or installation different from Kelderman's instructions. Alterations / modifications to the final product include, but are not limited to powder coating, plating, and/or welding which will void the warranty. Some damage may occur to the finish of the parts during shipping. This is considered normal and is not covered under warranty.

Kelderman tries to ensure that the suspension parts fit the vehicles they were designed for, but due to unknown vehicle manufacturer's production changes and/or inconsistencies by the vehicle manufacture, Kelderman cannot be responsible for 100% fitment.

Kelderman's obligation under this warranty is limited to the replacement of the defective parts only. Freight charges, incidental or consequential damages are expressly excluded from this warranty. Kelderman is not responsible for damages and/or warranty of other vehicle parts related or non-related to the installed Kelderman Air Suspension System. This warranty is expressly in lieu of all other warranties expressed or implied. This warranty shall not apply to any product that has been subject to accident, negligence, alteration, abuse or misuse as determined by Kelderman.

Kelderman Air Suspension Systems are designed to be installed, and run at the recommended ride heights provided by Kelderman. All warranties will become void if Kelderman systems are run outside the recommended ride heights, or if the systems are combined/substituted with other suspension kits. Combination and/or substitution of other components may cause premature wear and inhibit the Kelderman Air Suspension from operating as designed, which may cause severe injury or death. Kelderman does not warrant parts not manufactured by Kelderman.

It is the installer and sellers reasonability to review all these warranties, warnings and disclaimers with the consumer prior to installation.

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December, 2011