



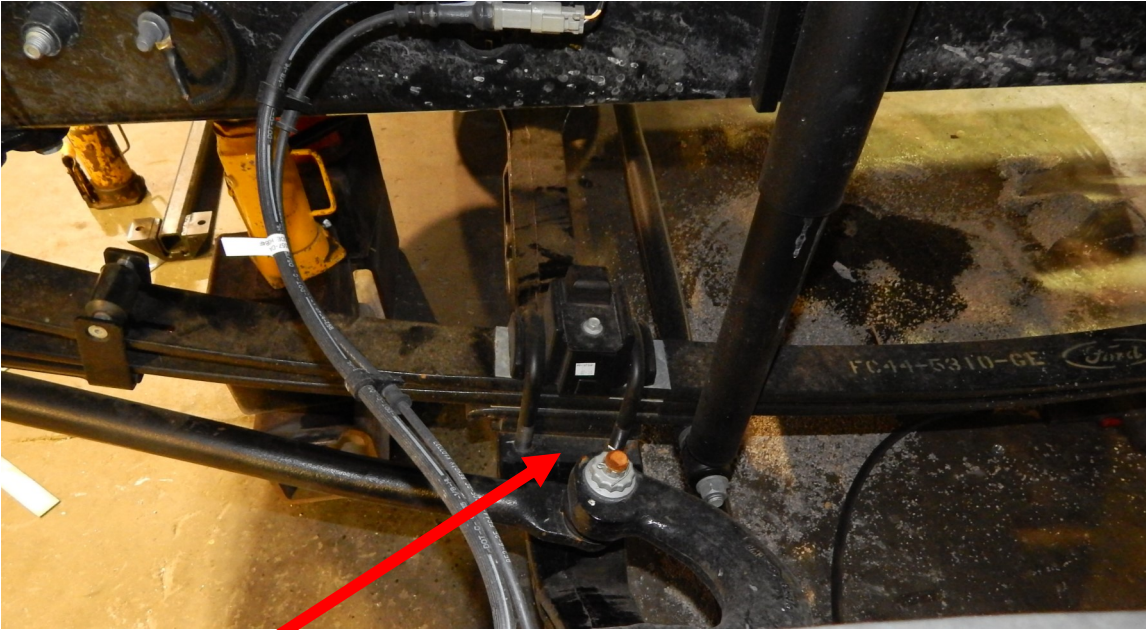
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2016+ Ford F-650 2WD 10k Diesel Chassis Front Installation Instructions



Installation

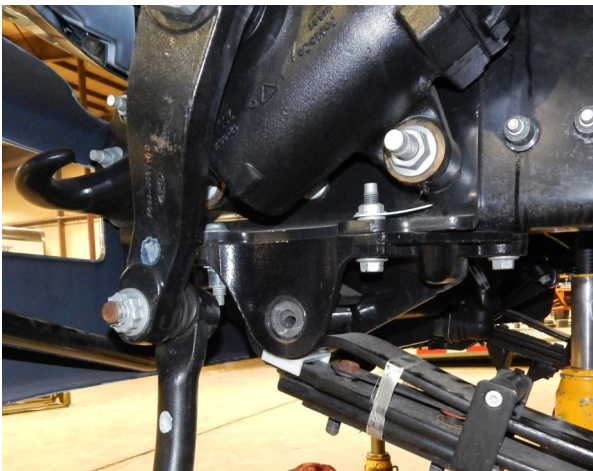
1. Place the vehicle on a level concrete surface. Measure the wheel base and get the angle on the axle (caster). Write those measurements here WB _____
Caster angle _____

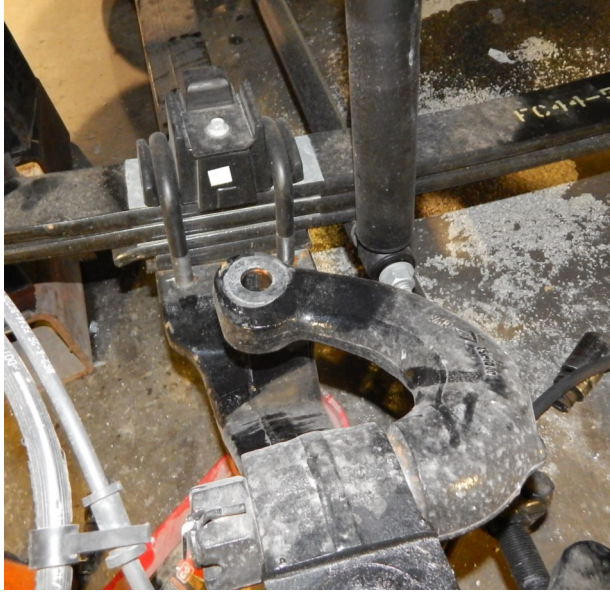


1.
2.

Use an angle finder to measure angle here for caster

2. 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. Remove drivers side leaf springs and bottom shock bolt. To do this, on the drivers side you will have to remove the bolt in gusset from the radiator support, steering arm from the cast knuckle, DEF tank. On the passenger side you only have to remove the gusset on the radiator support.





The radiator bolt in gusset removed on drivers side



Drivers side ready for install

3. Remove the four bolts that fasten the tow hooks to the frame. Locate the drivers side front cross member mounting plate (part# 21401) and slide over the 4 tow hook bolts. Place the tow hook over top of the brace plate and snug the nuts.



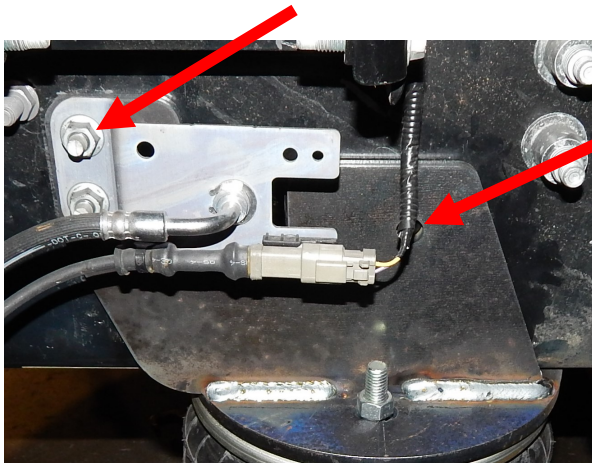
4. Locate the driver side forward trailing arm mount (part# 21404) and one trailing arm with the thicker bushing for the 20 mm OEM bolt. (part# 21414). Set the trailing arm so there is 8.25 "in between the knuckles. Fine tuning will need to be done after the install is complete, but this will be close. The trailing arm tower goes into front leaf spring perch along with the upper trailing arm with the OEM 20mm bolt. Use the three 5/8x2" 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.





5. Locate the drivers side upper air bag mount (part# 21406) and upper pan hard bar brace (part# 21462). Remove the bolts that hold the brake lines to the frame. Drill these holes out to 9/16". The bracket that fastens the brake lines to the frame will also need to be drilled out to 9/16". Fasten the upper air bag mount in place with two 1/2x2"bolts (make sure the brake bracket is in place) and upper pan hard bar brace is on the inside of the frame. The rear hole will need to be drilled out to 9/16". Insert the 1/2x1 3/4" bolt in the rear hole and torque all three 1/2" bolts to 85 ft/lbs. **Be sure to check inside of the frame for any brake lines or wires before drilling!**

These holes are in frame and need to be drilled out to 9/16" (9/16x2" bolts used here)

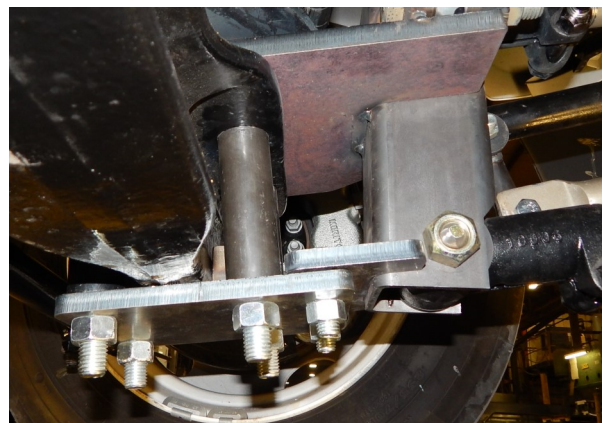


Drill this hole. There is no hole in the frame.

NOTE: Refer to drill diagram on page 17.



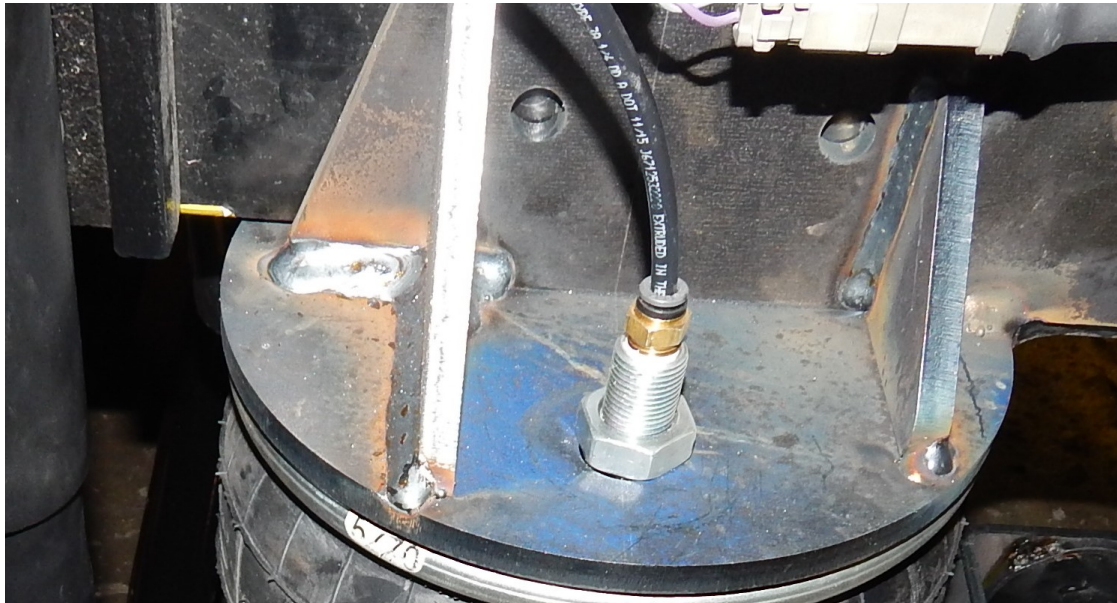
6. Locate the drivers side lower air bag mount (part# 21408), axle clamp (part# 21410) and four spacer bushings (part# 21416). Use the four 3/4x8" bolts to fasten the assembly together. Drop the bolt top down on the lower air bag mount, slide the 4 spacer bushings over the bolts and then slide the lower axle clamp up from the bottom. Torque the 3/4" bolts to 200 ft/lbs. You will also use the two 5/8x2 1/2" bolts to connect the lower axle clamp to the tab coming off the trailing arm tube. Torque the 5/8" bolts to 150 ft/lbs. Now locate the lower trailing arm (part# 21413). Adjust it so the space between the knuckles is 8 1/4". Connect it to the front and rear trailing arm tubes with the 7/8x5" bolts. You will also connect the top trailing arm in place with the 7/8x5" bolts. Just start the lock nuts. They do not need to be tightened yet. Use the 3/4x4 1/2" bolt to connect to the shock.





7. Remove the passenger side leaf springs and lower shock mounts. Just as you did in step 3, remove the four nuts that hold the tow hook to the frame and place the cross member mounting plate (CMP part# 21402PS) over the four bolts. Place the tow hook over the CMP and snug up the bolts. Locate the front trailing arm mount (part#21405) upper trailing arm (part# 21415) and the cross member (part#21043). Set the trailing arm so that it measures 8 1/4" between the knuckles. Insert the trailing arm into the front trailing arm mount and insert into the factory leaf spring perch with the OEM 20mm bolt that held the leaf spring in place. Connect the CMP to the trailing arm mount with the three 5/8x2" bolts. Next, connect the cross member to the cross member mounting plates with the four 1/2x1 1/2" bolts. The 1/2" bolts can be torqued to 85 ft//lbs and the 5/8" bolts to 150 ft/lb once the install is complete.

8. Locate the passenger side upper air bag/pan hard bar mount (part# 21407) and backing plate (part# 21466). These parts squeeze the frame with the backing plate on the inside. You will be drilling eight 9/16" holes in the frame. Use the drill chart on page 17 for reference. While drilling the 9/16" holes, locate the horn bracket and drill those mounting holes out also. Once all the holes are drilled, use the two 1/2x1 3/4" bolts in the bottom of the frame and the six 1/2x2" bolts on the side of the frame. Torque all these 1/2" bolts to 85 ft/lbs.



9. Locate the passenger side lower air bag mount (part# 21409), lower axle clamp (part# 21410) and four bushing spacers (part# 21416). Just as you put the drivers side lower bag assembly in step 6, place the lower bag mount on top of the axle, drop the 3/4x8" bolts down from the top, slide the spacers over the bolts from the bottom and fasten the assembly together with the axle clamp. Now use the 5/8x2 1/2" bolts to fasten the axle clamp to the tube on the lower air bag mount. Torque the 5/8" bolts to 150 ft/lbs. Torque the 3/4" bolts to 200 ft/lbs.



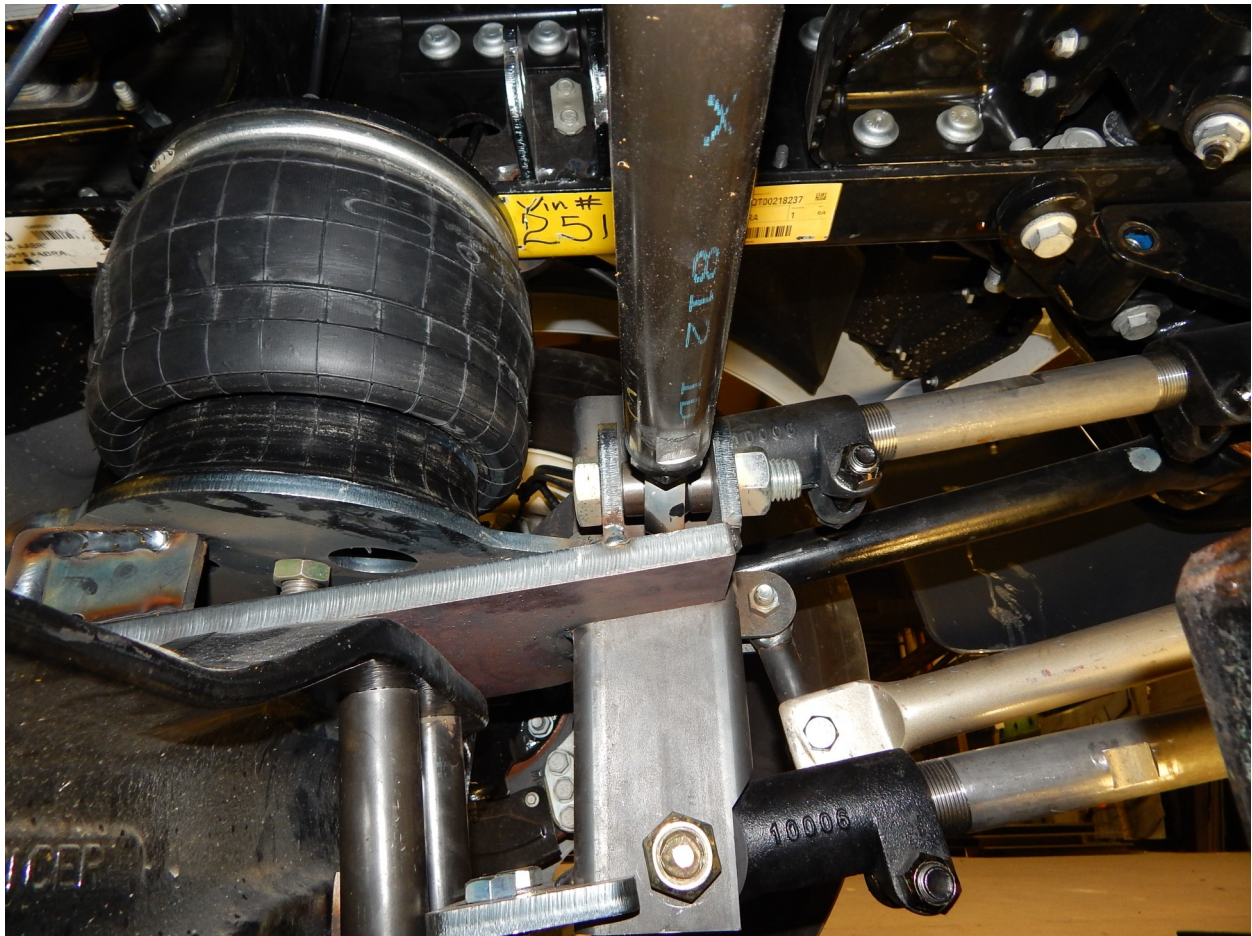
The trailing arms get installed in the next step, air bag gets installed in step 11 and the shocks in step 12.

10. Locate the last remaining trailing arm (part# 21413). 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 7/8x5" bolts.

11. Locate the air bags (part#5770). The one with the top stud cut off is for the passenger side. They install into the upper air bag mount with the 1/2" and 3/4" nuts. The bottom fastens to the lower air bag mount with the 5/8" nut and washer. Torque these nuts to 35 ft/lbs. Install both air bags at this time.

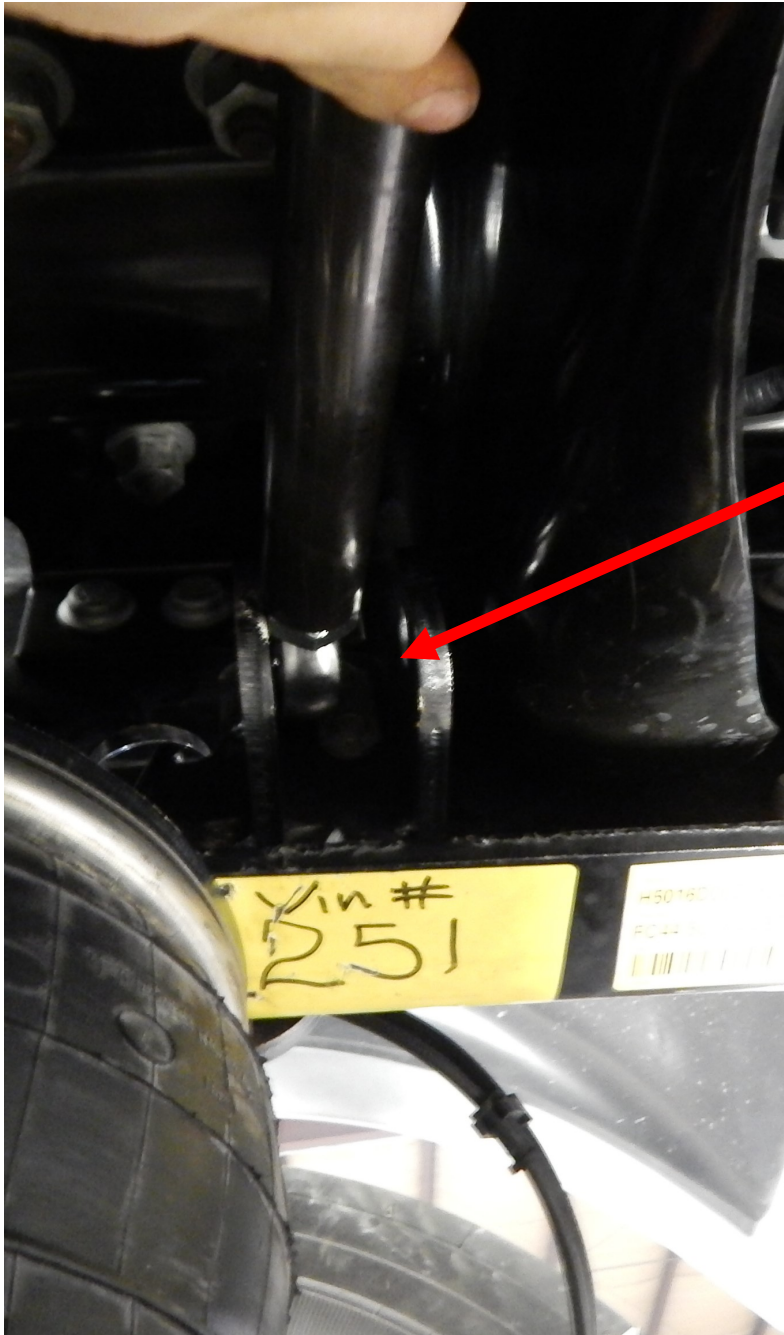
12. If you have not already, fasten the bottom of the shocks to the lower air bag mount with the 3/4x4 1/2" bolts. Torque these 3/4" bolts to 125 ft/lbs. Use a washer on each side if needed.

13. Locate the pan hard bar (part#21412). This is the pan hard bar with 7/8" heim ends. Use the 7/8x4" 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. Make sure the bolt on drivers side has the threads facing the rear of the truck or they may rub on the air bag. Go ahead and torque these bolts to 250 ft/lbs.



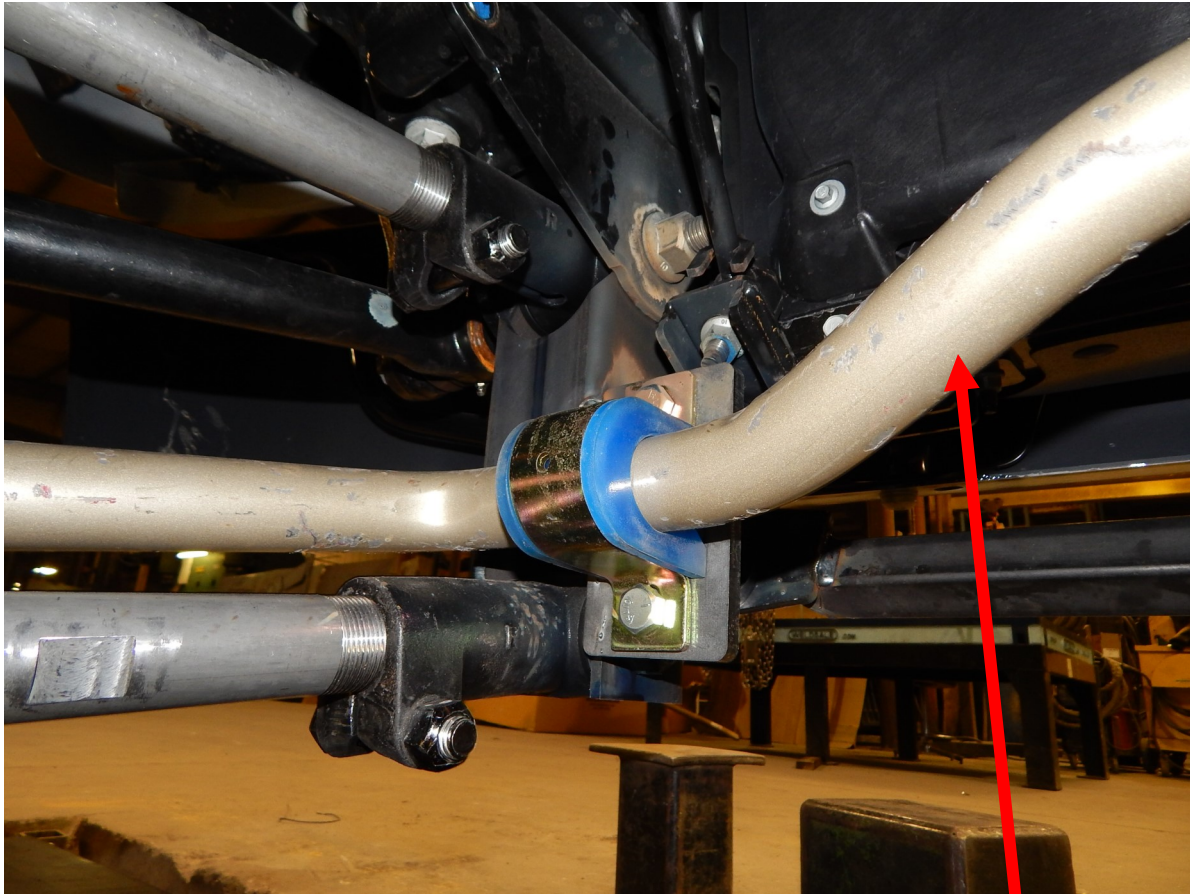
Driver side pictured

14. Locate the pan hard bar brace (part#21465). This bar mounts on the inside of the drivers side frame rail to the upper pan hard bar mount with the 3/4 x 3 1/2" bolt.. The passenger side fastens to the pan hard bar drop on the passenger side with the 3/4x 3 1/2 bolt. NOTE: THE PANHARD BAR DOES NOT USE A SPACER ON EACH SIDE TO CENTER IT LIKE THE LOWER PAN HARD BAR DOES. BOTH SPACERS GO ON THE FRONT SIDE OF THE HEIM END. THE BAR WILL HIT ON THE ENGINE CROSS MEMBER IF YOU TRY TO CENTER IT. Torque both the 3/4" bolts to 150 ft/lbs

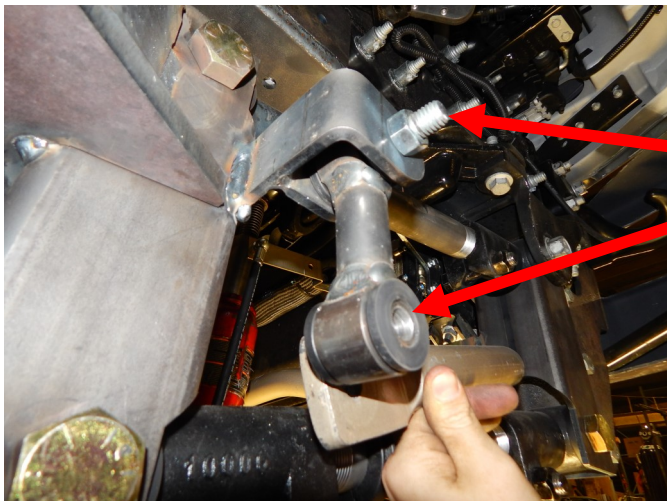


The spacers both go on the front side to space the brace towards the rear

15. Locate the sway bar kit (part#1139-154KLD) and end links (part# 21463 PS and 21411 DS). The sway bar attaches to the front trailing arm mounts with the four 1/2 x 1 1/2" bolts. The end links attach to the end of the sway bar with the 9/16 x 3 1/2" bolts and to the lower bag mounts with the 9/16 x 3 1/2" bolts as well.



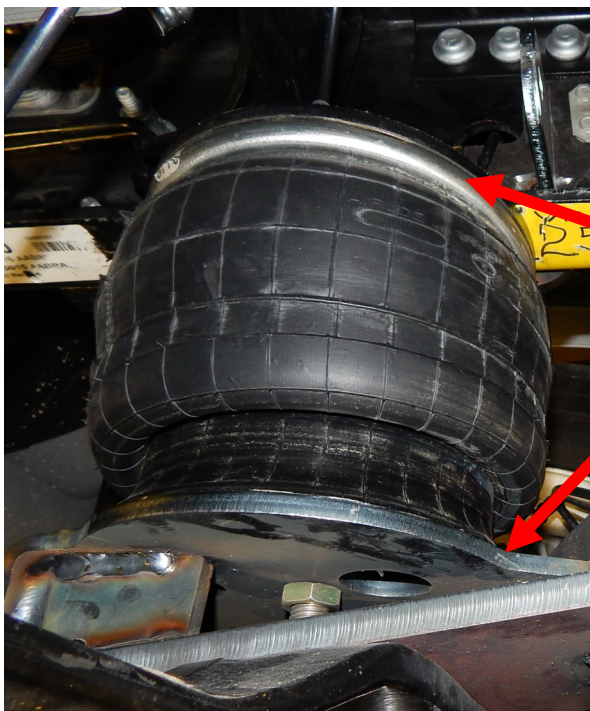
Hump goes up



9/16 x 3 1/2" bolt here

16. 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 (shown below). 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.

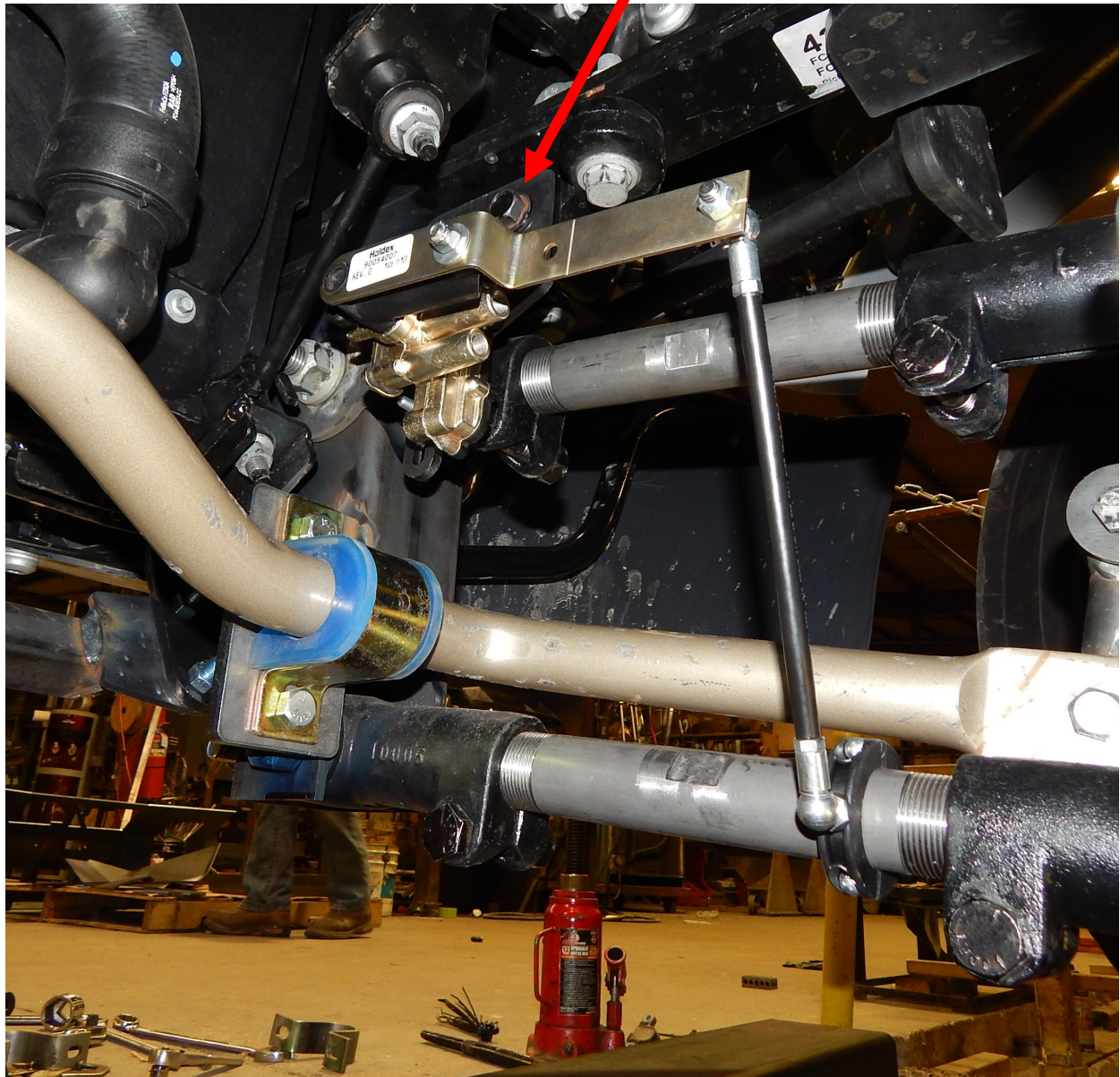
17. Reinstall the radiator support brackets and reattach the steering linkage to the axle.

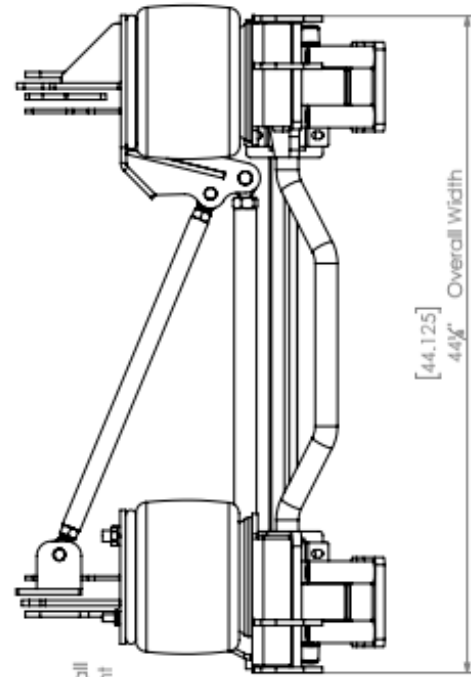
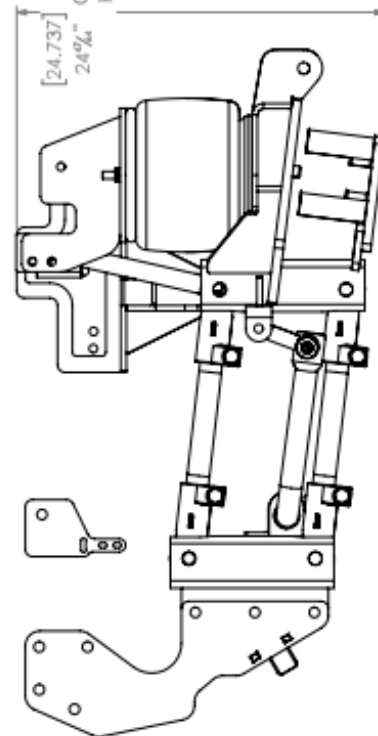
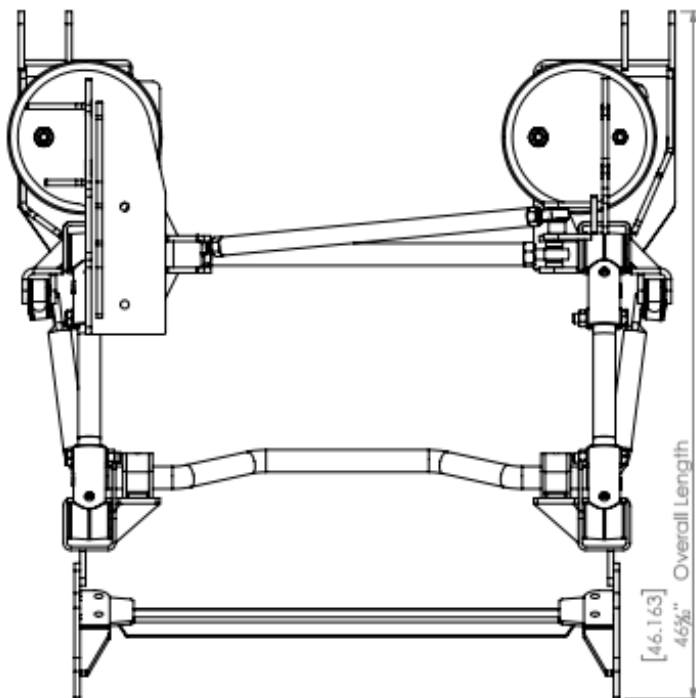


8" between bag mounts is
The desired 'ride height'

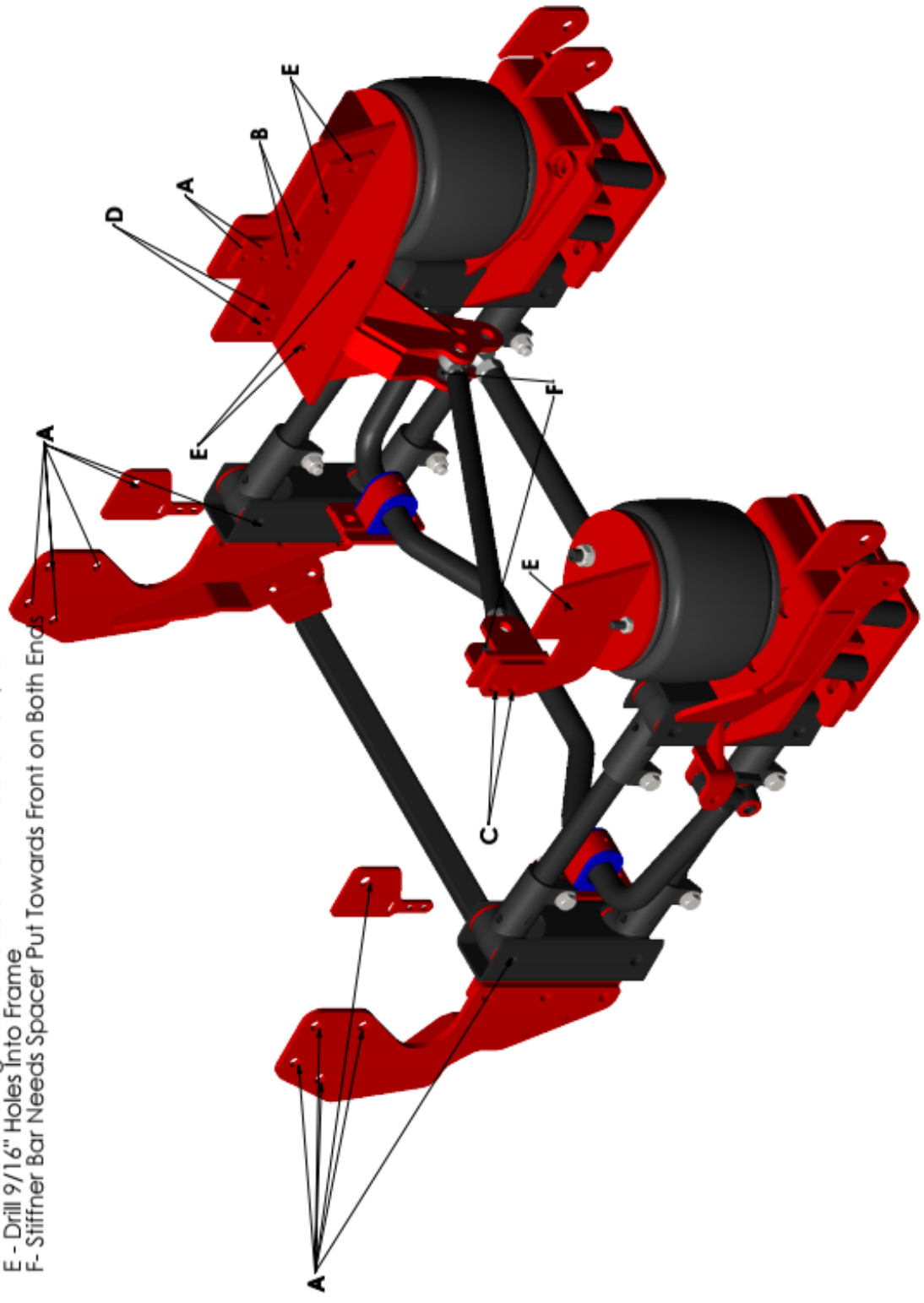
18. Locate the two height control valves, linkage, collar, and height control mounting brackets (part# 21426). The mounting bracket fastens to the frame with the factory bolts in the frame. The height control valves fasten to the brackets with the 1/4x1 1/4" bolts. The collar fastens to the lower trailing 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.

Remove this bolt in the casting and place the height control valve mounting bracket in place





- A - Use Trucks Existing Hardware
- B - Drill Out Existing Frame Holes To 9/16"
- C - Drill Out Existing Frame Holes & Brake Line Bracket To 9/16"
- D - Drill Out Existing Frame Holes & Horn Bracket To 9/16"
- E - Drill 9/16" Holes Into Frame
- F - Stiffner Bar Needs Spacer Put Towards Front on Both Ends



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	21406	(DS) Upper Frame/Bag Mount	1
2	21407	(PS) Upper Frame/Bag Mount	1
3	21408	(DS) Lower Axle/Bag Mount	1
4	21412	Pan Hard Bar (21" Bar)	1
5	21409	(PS) Lower Axle/Bag Mount	1
6	21463	(DS) 3.5" End Link	1
7	21411	(PS) 3.5" End Link	1
8	21410	Lower Axle Clamp	2
9	21416	1.5" OD x 13/16" ID x 4.5" Long Bushing	8
10	21401	(DS) Crossmember Mounting Plate	1
11	21402	(PS) Crossmember Mounting Plate	1
12	21403	Crossmember	1
13	21404	(DS) Front Trailing Arm Mount	1
14	21405	(PS) Front Trailing Arm Mount	1
15	21413	Lower Trailing Arm	2
16	21414	(DS) Upper Trailing Arm (Custom Front Sleeve)	1
17	21415	(PS) Upper Trailing Arm (Custom Front Sleeve)	1
18	1139-154KLD	Sway Bar Kit	1
19	21465	Pan Hard Bar (21" Bar)	1
20	21462	(DS) Upper Frame/ Support Bar Mounting Bracket	1
21	21426	Height Control Sensor Mount	2
22	5770-8.5	BAG KIT - 5770(STD)	1
23	5770-8.5	BAG KIT - 5770(STD)	1
24	21466	(PS) Upper Frame Backing Plate	1
25	18780	7/8" Spacer (1.125" OD x .876" ID x .4" long)	4
26	18778	3/4" Spacer (1.125" OD x .76" ID x .8125" Long)	2