KLM16288
KLM53000

Version 1.2

kelderman®

AIR SUSPENSION SYSTEMS

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2006-2019 Ford F-53 Chassis 2-Stage Front Suspension Installation Instructions (4” LEAF SPRINGS)

Installation

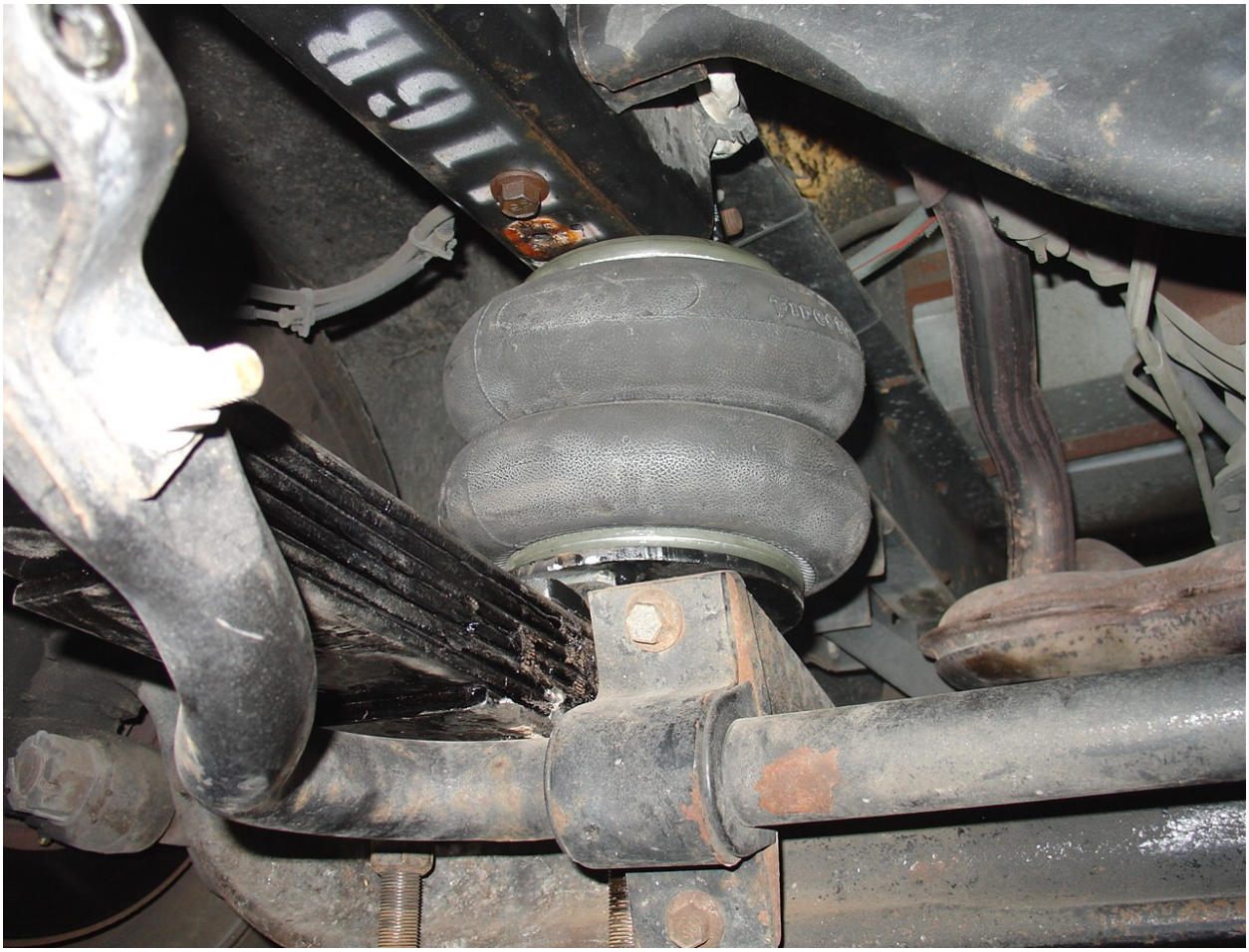
1. Place the coach on a level concrete surface.

2. Place a jack under each side of the frame just behind the leaf spring shackles. Jack the coach up high enough so that the tires are just off the ground. Place a jack stand next to the jacks to prevent the coach from falling off the jacks.

3. It works best to install one side at a time. Remove the lower shock bolt. Remove the factory sway bar, panhard bar, panhard bar axle mount (located on driver's side - keep these bolts as they will be reused). Remove upper panhard bar mount (located on passenger's side inner frame rail). Remove the bump stop and leaf spring. Keep track of the U-bolts that hold the front of the leaf in place as well as the bolt that connects the rear of the leaf spring to the shackle.

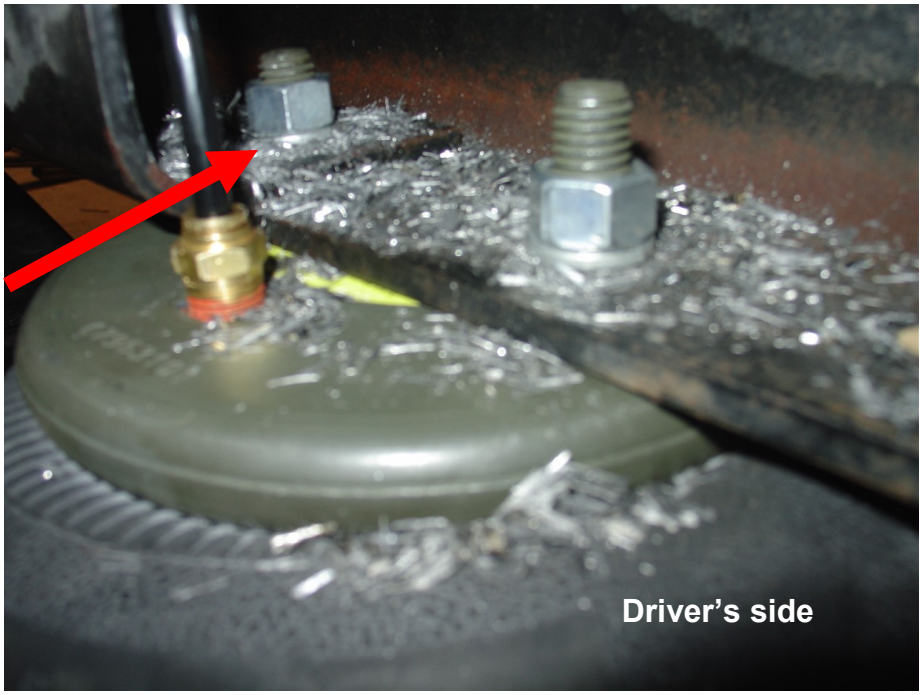
NOTE: If you have Banks headers installed, refer to page 7 and 8 regarding installation of the passengers side.

The picture below shows the kit installed



4. Two holes (anything between 1/2” - 5/8” will work) need to be drilled in the bottom of the frame. These holes will not be centered. They need to be towards the inside of the frame. If the frame is has an inner bracket, that bracket will need to be trimmed to allow for the air fitting. These holes are what the air bag studs fit into. Locate the bolt (may be a huck bolt, middle on passenger side and rear on the drivers side) in the bottom of the frame that is about 4 1/2” forward of the double wall frame. Measure and center punch 5-1/2” back and 1/2” back, centering the location in the center of the frame. See the picture on the following page as well as the pictures below.

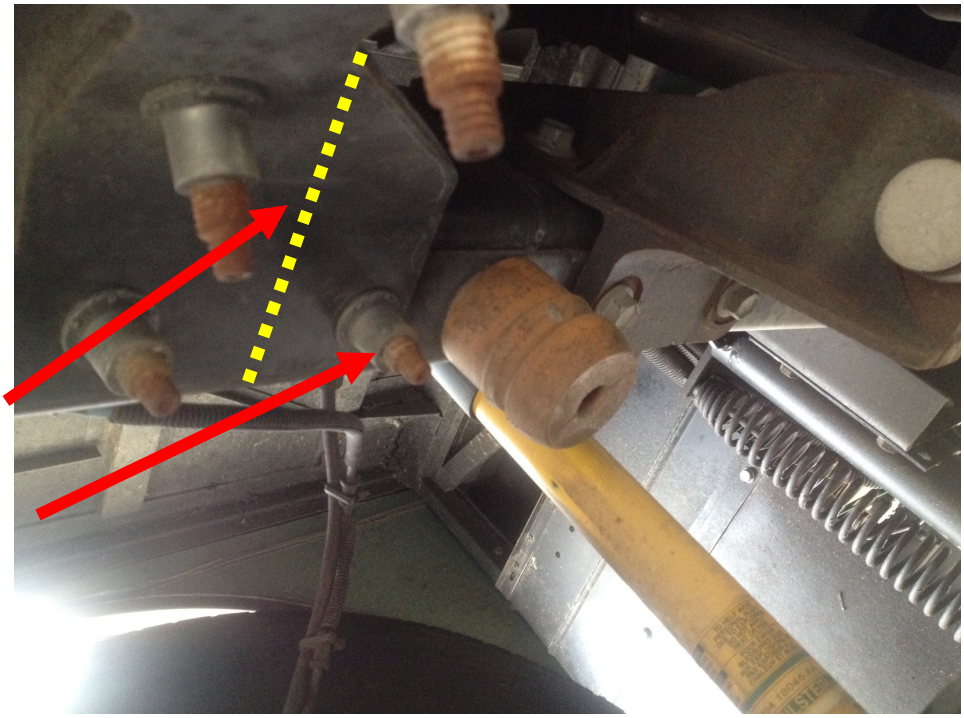
This hole is drilled through the double-layered section of the frame.

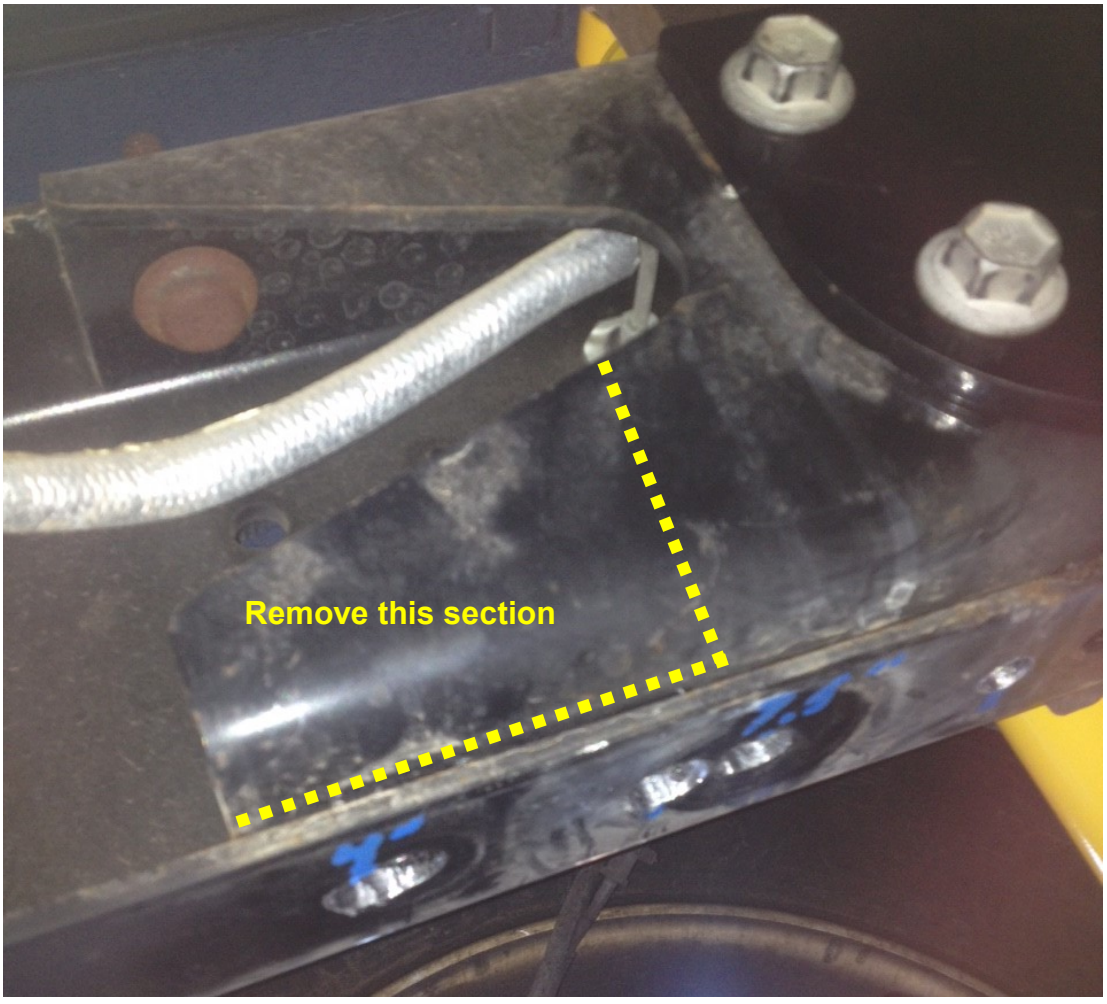


If your chassis has this bracket on the passenger side, it needs to be cut to allow space for the air bag.

Cut here

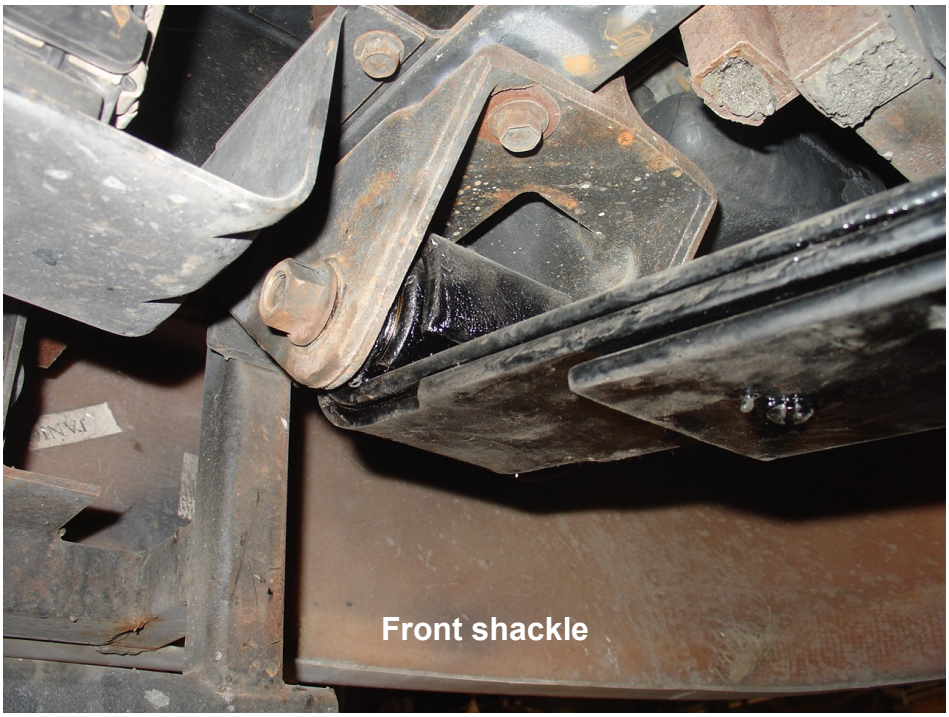
remove this bolt

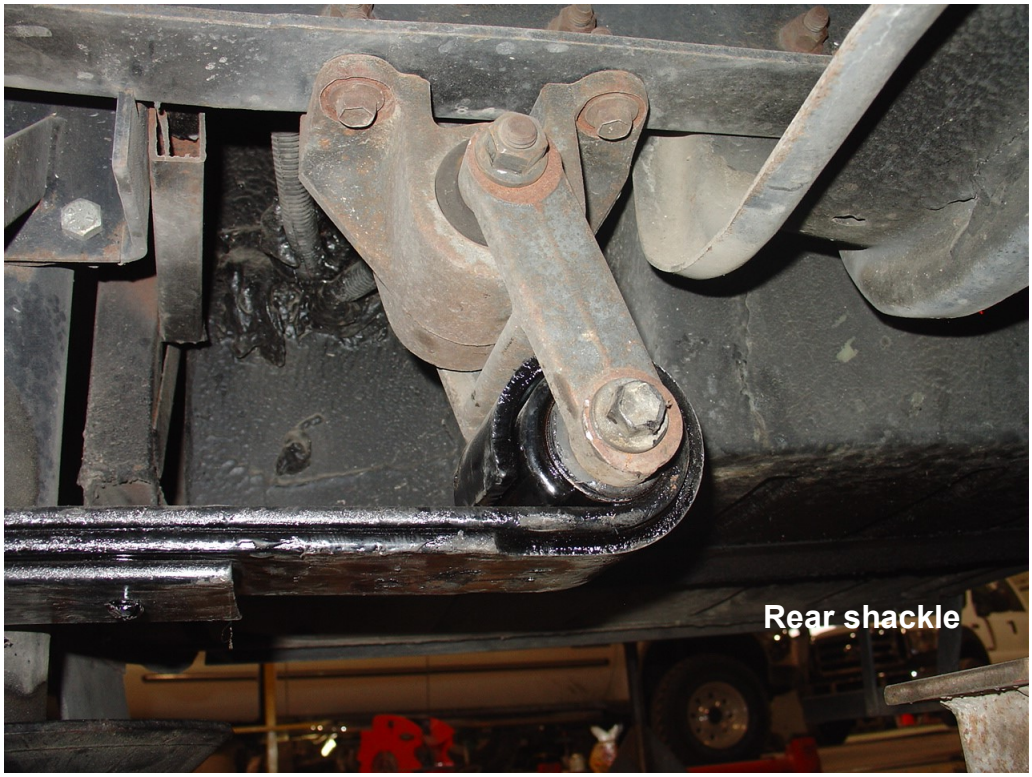




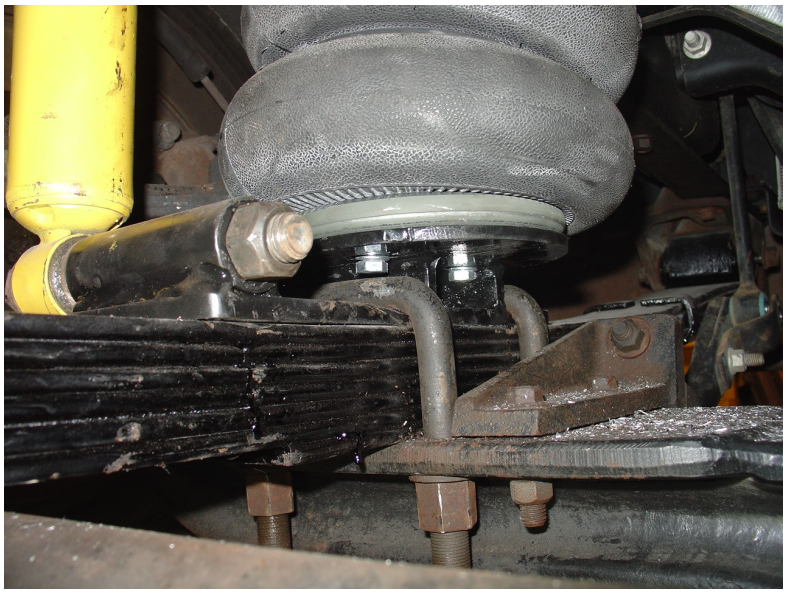
Inner wall of the frame needs to be trimmed so the air fitting doesn't interfere

5. Once the old leaf spring is removed, locate the new leaf spring and connect the front end into the factory location and connect rear end to the shackle. Locate the air bag and insert the brass air line fitting in the top of the bag. Next, locate the lower air bag mount and fasten the air bag to the bracket using the 3/8” x 1” bolts. Center up the bolt in the slot. Make sure the air inlet of the air bag goes towards the inside of the vehicle and the shock mount goes towards the rear of the vehicle.

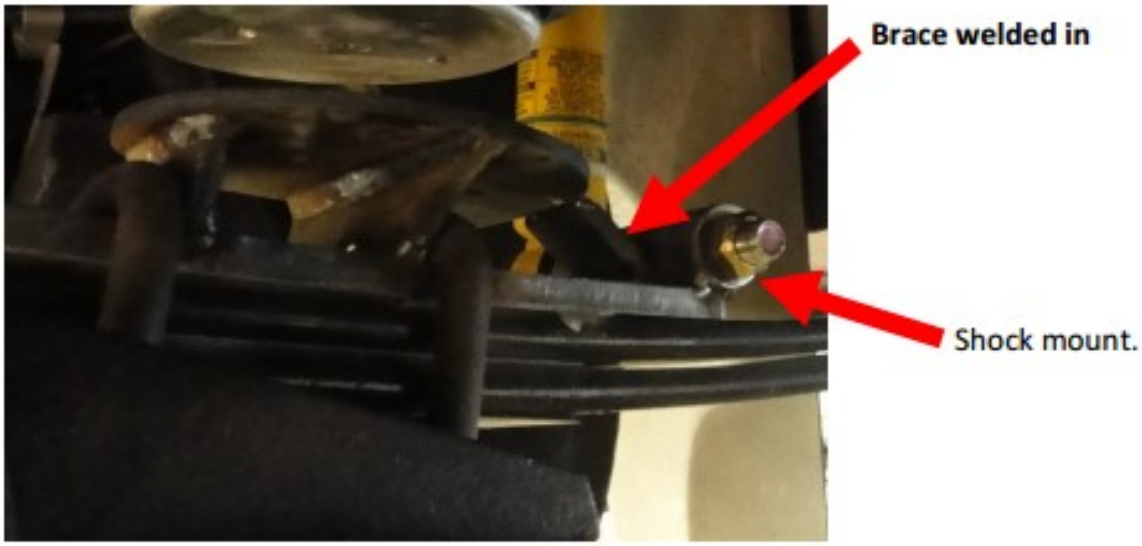

Front shackle


Rear shackle

6. Place the lower air bag mount on the top of the leaf spring (the shock mount goes towards the rear of the coach). Slide the U-bolts under the lower air bag plate and fasten assembly back in place. Go ahead and torque the nuts on the U-bolts to 150 lb. / ft. Reattach the bottom shock bolt.



7.) Weld the supplied brace in between the shock mount and the bag.



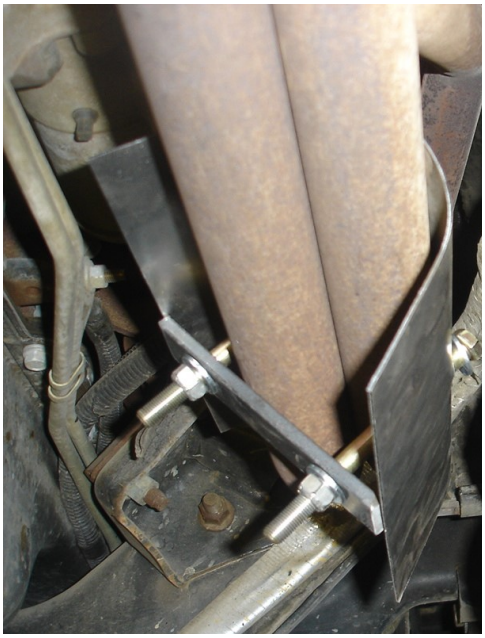
NOTE: There are two additional parts included that are used if the coach has a Banks aftermarket header system. The curved shield included for the kit is a heat shield only used on banks headers on the passenger side. It will keep the heat off the air bag. The factory exhaust is far enough away and does not need a shield.

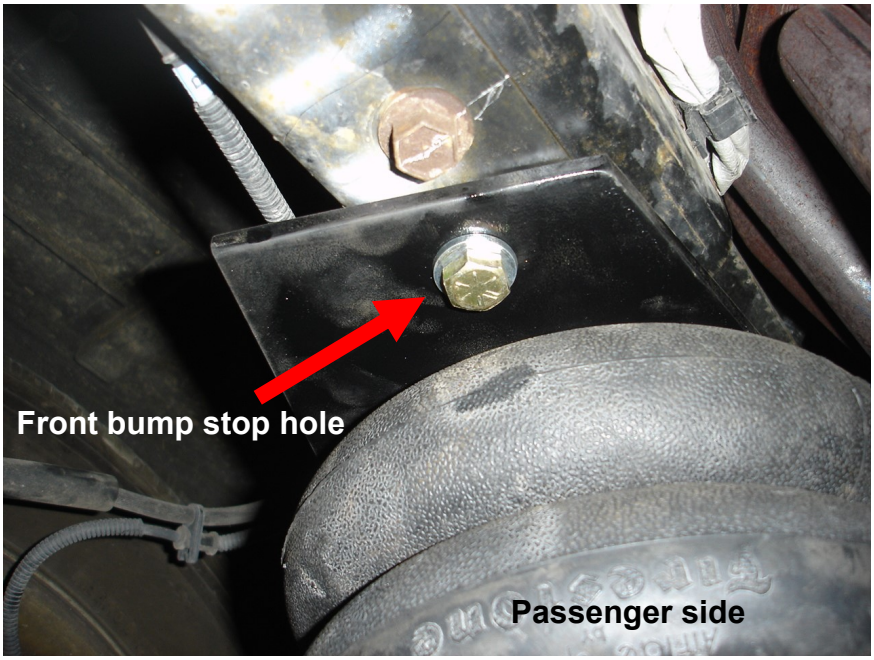
BANKS HEADER ADAPTOR Passenger side only

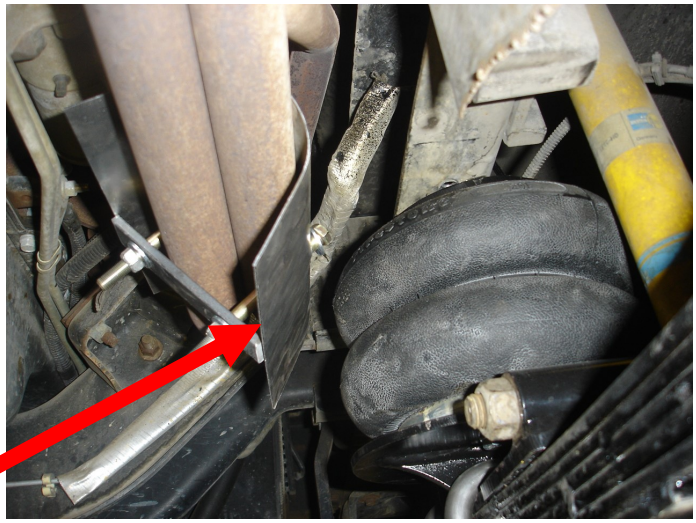
The other flat plate (circle with a hole in it) is used for an upper air bag mount on the passenger side for a banks header equipped unit. This rotates the air bag out away from the exhaust header.

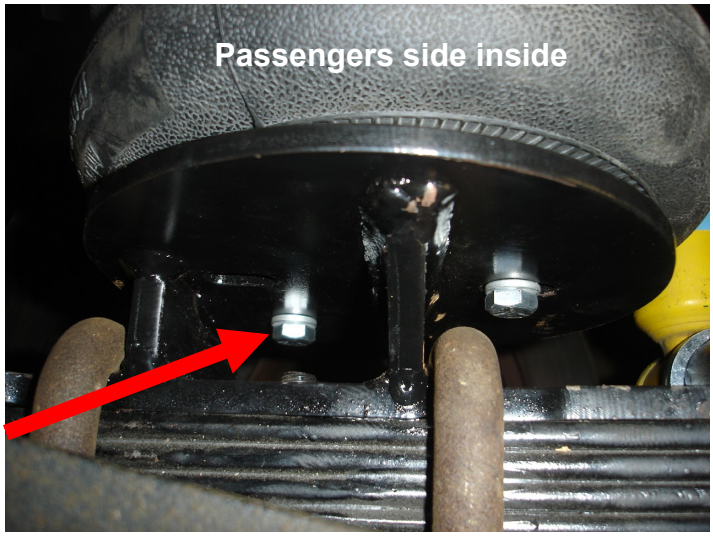
If you have a banks header package installed, you will need to use the adaptor plate to get the air bag away from the header. Locate the front bump stop hole and drill it out for a 1/2” bolt.

Place the air bag adaptor against the frame with the front hole lined up with the hole you just drilled. Use a center punch to locate where to drill the back hole. Drill this hole out for a 1/2” bolt. Fasten the bracket in place with the 1/2x2” bolts. The bottom of the air bag will fasten to the lower air bag bracket with the 3/8” bolts. You will use the rear hole and the front right hole to fasten the bottom of the rear bag.




Front bump stop hole
Passenger side

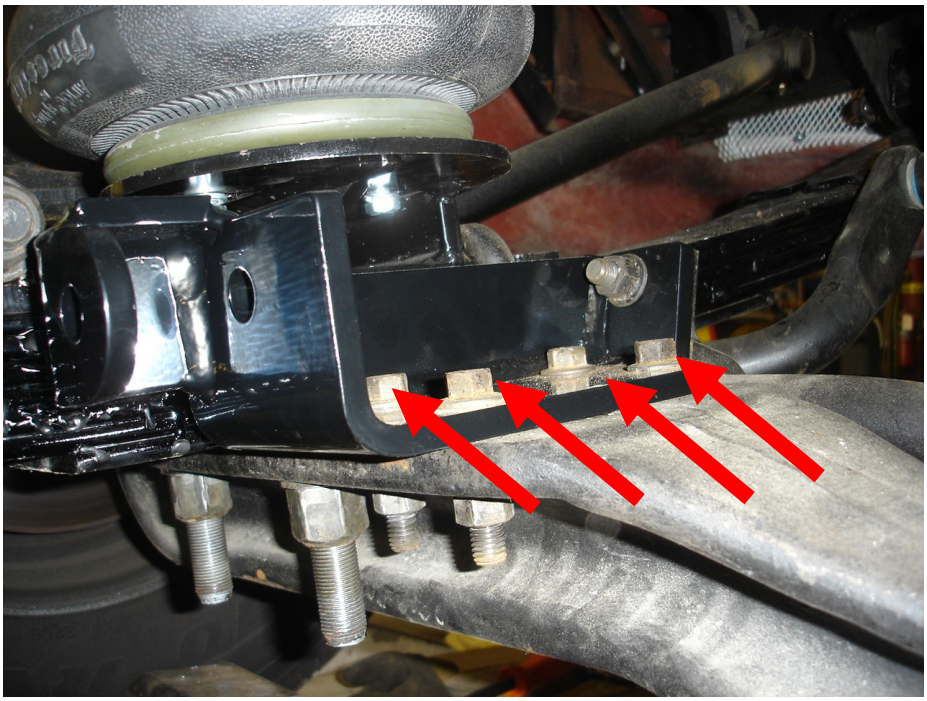

Heat shield


Passengers side inside
Front outside bolt

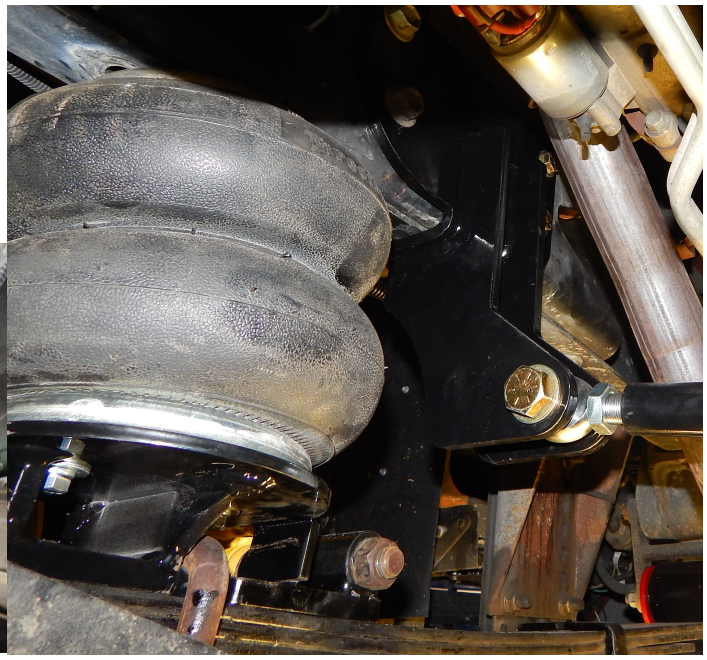
7. Repeat Steps 3-6 on the opposite side.

If motorhome doesn't come equipped with a track bar, then follow next steps to install track bar/panhard bar. If already from factory skip to step 12.

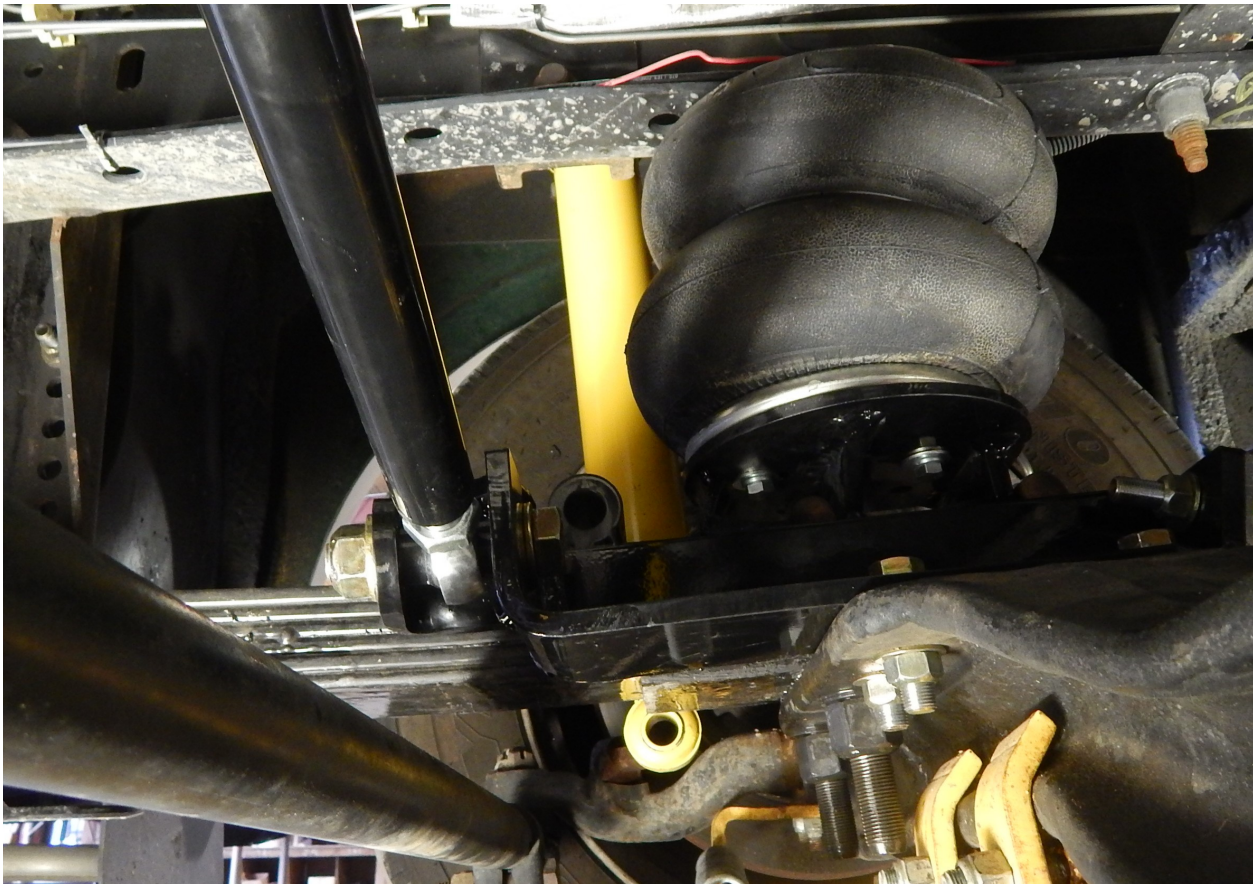
8. Locate the driver's side trac bar mount that fastens to the axle. Attach this bracket to the axle with the factory bolts that held the original bracket in place .



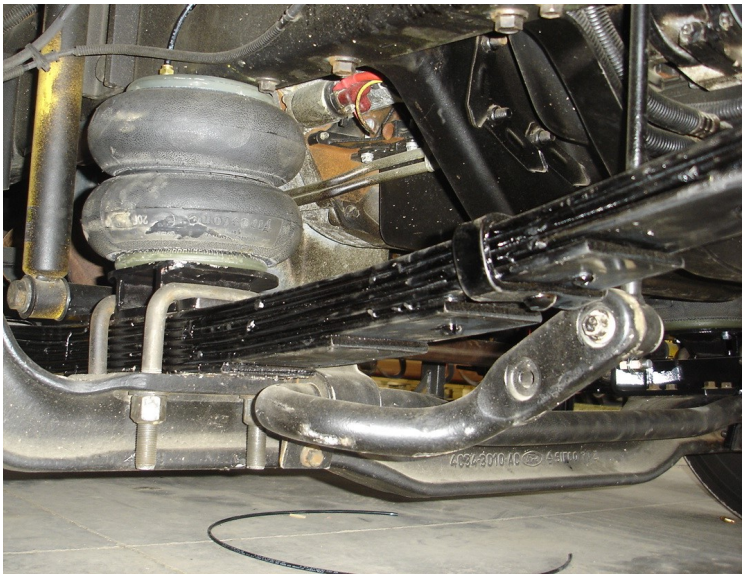
9. Locate the upper passenger's side pan hard bar mount and fasten to the frame.



10. Locate the track bar. Use the 5/8” x 4” bolts and fasten both end to the pan hard bar mounts. ***NOTE:*** Newer models will have a straight adjustable pan hard bar

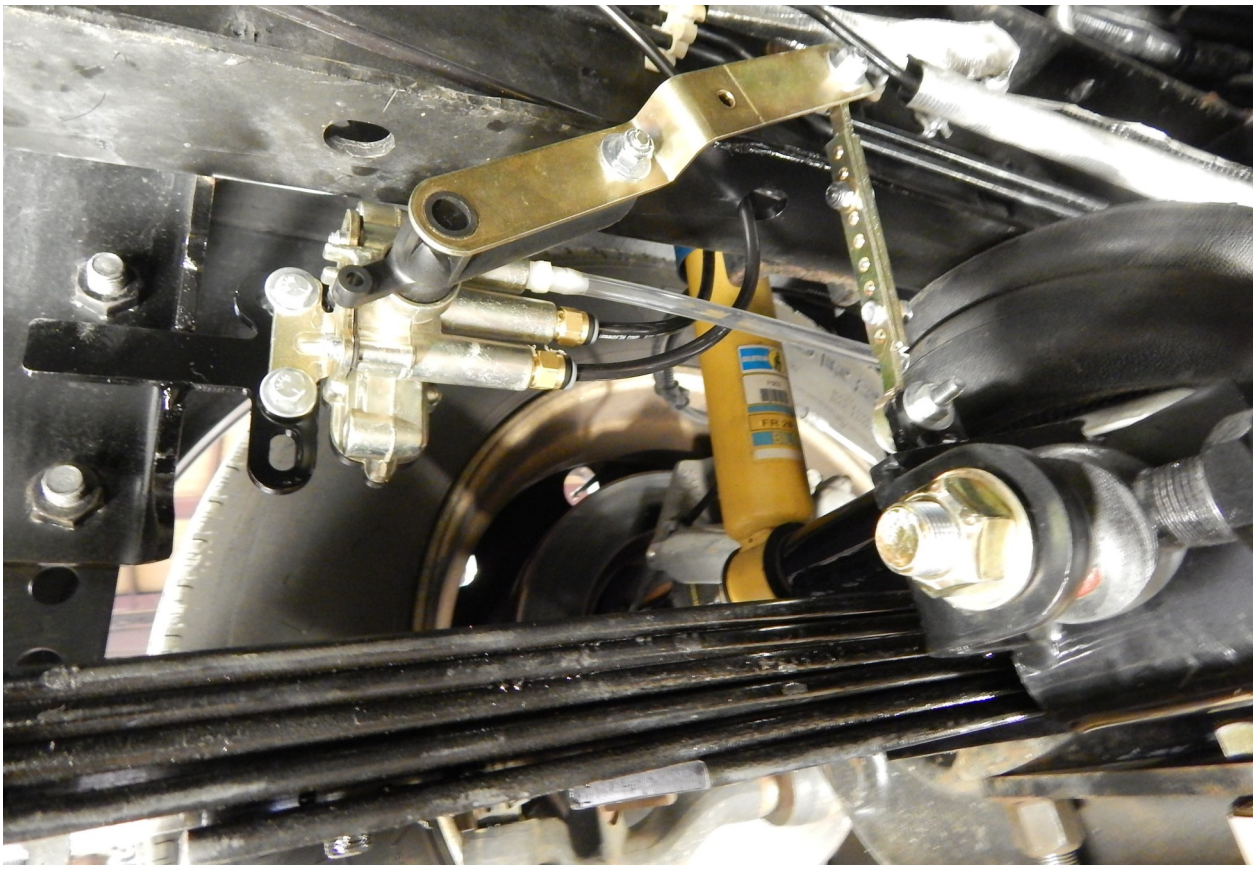


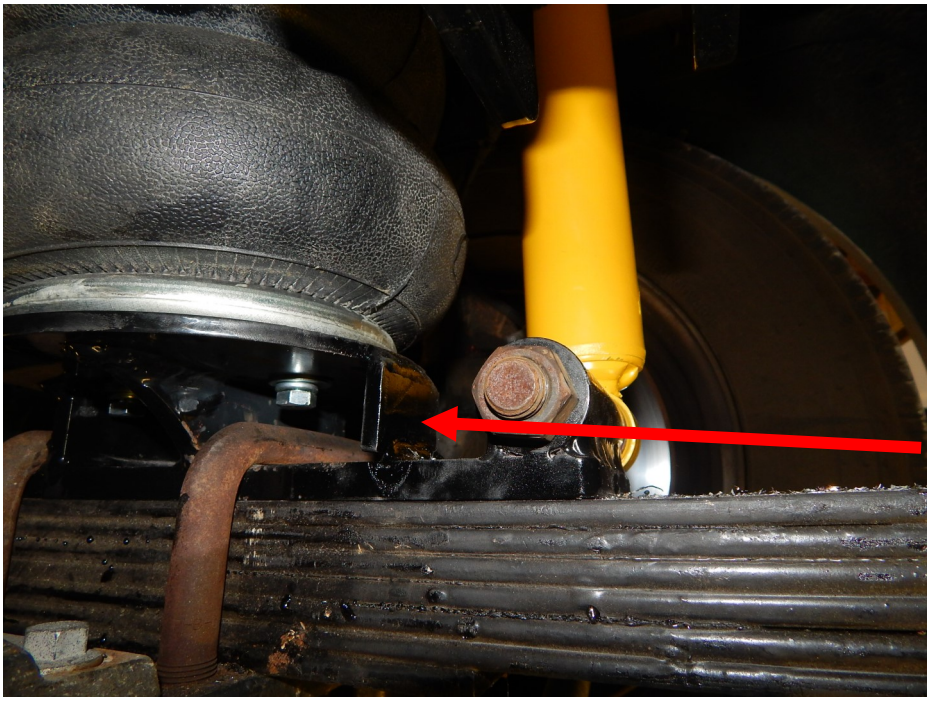
11. Reattach factory sway bar. Using the factory bolts, the sway bar will be fastened to the front side of the panhard bar mount (driver's side). On the passenger's side, the sway bar will be fastened to the factory mount



12. If the optional height control valves were purchased, locate the mounting brackets. If not purchased, go on to step 13. They will be welded to the jack mounting pads coming off the frame. Locate the height control valve and rotate the arm clockwise and counter clockwise 6 times each way. This will get the lubrication in the internal parts ready for use. Now attach the height control valve with the 1/4x1" bolts. Next you will need to weld the tab to the shock mount so that it is straight in line with the end of the height control valve. Now the end links will need to be trimmed so the height control arm is straight out when the bags are at 7.5"

The height control pictured below is shown with no air in the bags. The height control valve arm will be straight out at ride height (air bags at 7.5”).

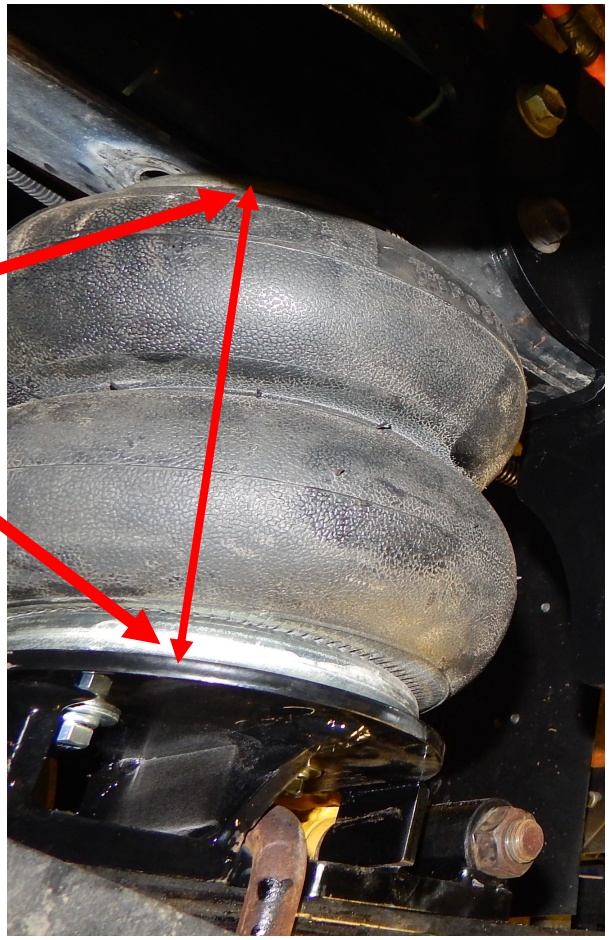




Once the install is done, locate the 2” x 1.5” flat steel. It gets welded here. Failure to install this gusset may cause your shock mount to fatigue over time and crack.

13. Whether you do mechanical height control valves or the manual fill kit, the best ride on the vehicle will be with the air bags at the 7.5” range. You measure the air bags from the bottom of the frame to the top of the mounting bracket. Do not be alarmed if the air pressure is 10-20 psi different on the gauges. These motor coaches do not weigh the same on each side.

Operate the system with the air bags at 7.5” measure from the bottom of the frame to the top of the lower air bag mount



14.) Remove the jack stands and lower the coach 3-4” so that the air bag studs go up through the holes that were drilled. Use the 1/2” nuts and washers to fasten the top of the bag in place. Torque the nuts to 25 lb / ft.

15.) If you are running the system as a manual fill, mount the Schrader valve in a convenient location under the hood. Run an airline between the Schrader valve and the air bag making sure to keep the line away from the exhaust and sharp objects. Use some zip ties to fasten the air line away from any sharp components and anything that gets hot. If you are using in-cab controls, use the instructions provided with the kit to plumb up the system.

16.) Inflate each bag. When inflating, alternate inflating the right bag to the left bag until you get the coach to the measurement you recorded in Step 1. If you don’t have this measurement, a good starting point is to inflate the air bag to 7.5”.

17.) Record the air pressure measurements and write them down. One side will usually record a higher pressure than the other. This is because one side of the coach is heavier that the other. If one side of the coach was leaning, you will be able to level up the coach by increasing the pressure in the side that was leaning.

18.) The best ride of coach will be running the bags at 7.5” tall. Once the kit is installed and aired up to the ride height desired, measure the bags to se that you are in the 7.5” range. You can get by running the bag as low as 6 1/2” and as high as 8”, but if you go lower or higher than these recommendations, the ride will not be as smooth.

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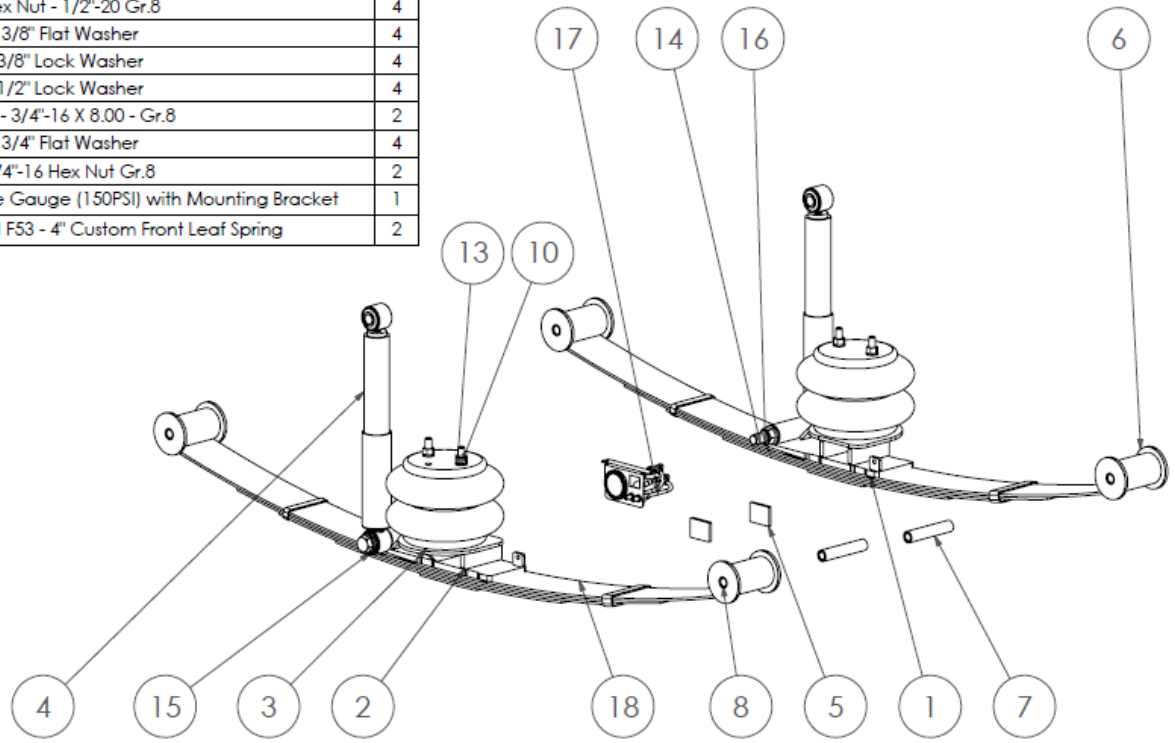
AIR SUSPENSION SYSTEMS

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	16255	(PS) Lower Bag Mount	1
2	16287	Weldment - (DS) Lower Bag Mount	1
3	80012-6905	Firestone 6905	2
4	80327	Shock - Koni FSD (Ext: 28.82" - Comp: 17.48") Eyelet Mount - 8805-1018	2
5	30105	Plate - 1/4" - Weld-On Gusset	2
6	80149	Red Hat Bushing	8
7	18530	35/64" (Small Hole) Press-in Bushing	2
8	15244	39/64" (Large Hole) Press-in Bushing	4
9	12210	Bolt - 3/8"-16 X 1.00 - Gr.5	4
10	13164	Hex Nut - 1/2"-20 Gr.8	4
11	13022	3/8" Flat Washer	4
12	13046	3/8" Lock Washer	4
13	13050	1/2" Lock Washer	4
14	12561	Bolt - 3/4"-16 X 8.00 - Gr.8	2
15	13028	3/4" Flat Washer	4
16	13168	3/4"-16 Hex Nut Gr.8	2
17	80326	Assembly - Dual Needle Gauge (150PSI) with Mounting Bracket	1
18	80160	Purchased - Ford F53 - 4" Custom Front Leaf Spring	2



Fits:
8000lb Front Axle - 4" Wide, 2 Leaf, Leaf Spring - 16,000 GVWR
Equipped with OE PHB

REV	ECN	CHANGE DESCRIPTION	CHANGE BY	DATE

3RD ANGLE PROJECTION

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

A | DO NOT SCALE DRAWING | 1:20 | Approximate Weight = **144.95 lbs**

MATL SPECS:

DESCRIPTION: **Kit - 2-Stage Front - Deaver Leaf Springs - No PHB**

PROJECT: **2006-2019 Ford F53 - Chassis - 8000lb Axle - 4" Leaf Spring**

PART NUMBER: **KLM-16288**

DESIGN BY: **ZB16** DATE: **5/9/2022**

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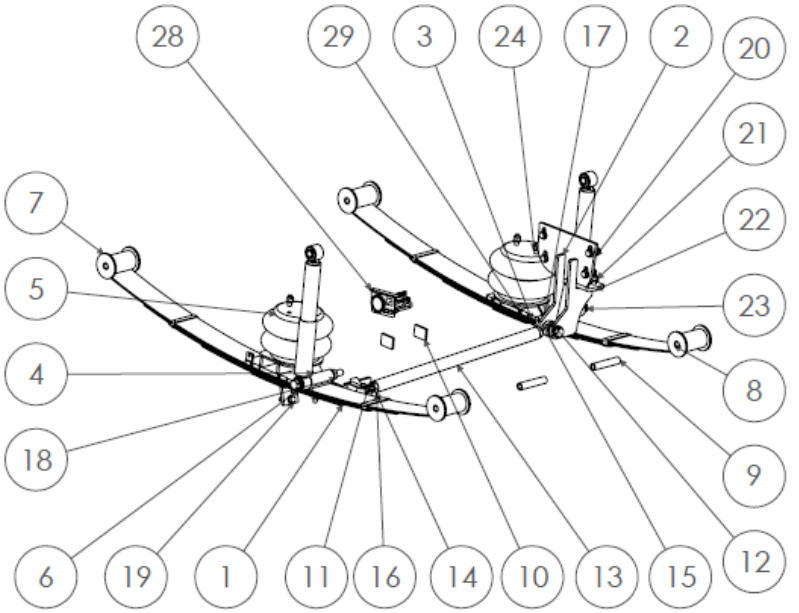
SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	70692	Lower (PHB)/Axle Mounting Bracket	1
2	15993	(PS) (PHB) Frame Mounting Bracket	1
3	16255	(PS) Lower Bag Mount	1
4	16287	Weldment - (DS) Lower Bag Mount	1
5	80012-6905	Firestone 6905	2
6	80327	Shock - Koni FSD (Ext: 28.82" - Comp: 17.48") Eyelet Mount - 8805-1018	2
7	80149	Red Hat Bushing	8
8	15244	39/64" (Large Hole) Press-in Bushing	4
9	18530	35/64" (Small Hole) Press-in Bushing	2
10	30105	Plate - 1/4" - Weld-On Gusset	2
11	80111	7/8"-14" Right-Hand Male Shank, 3/4" Ball ID, 1 7/8" Long Thread	1
12	80112	7/8"-14 Left-Hand Male Shank, 3/4" Ball ID, 1-7/8" Long Thread	1
13	70689	Pan Hard Bar 26.5"	1
14	13210	7/8"-14 (RHT) Hex Jam Nut	2
15	10199	CRR - 1" OD x .752" ID x .440" Thick - Spacer - 3/4" Bolt	4
16	12529	Bolt - 3/4"-16 x 4" Gr.8	2
17	13028	3/4" Flat Washer	8
18	13168	3/4"-16 Hex Nut Gr.8	4
19	12011	Bolt - 1/2"-20 X 2" Gr.8	6
20	13024	Flat Washer SAE - 1/2" - GR8 - YZ	24
21	13164	Hex Nut - 1/2"-20 Gr.8	16
22	12009	BOLT - 1/2"-20 X 1 3/4"	6
23	12561	Bolt - 3/4"-16 X 8.00 - Gr.8	2
24	13050	1/2" Lock Washer	4
25	12210	Bolt - 3/8"-16 X 1.00 - Gr.5	4
26	13022	3/8" Flat Washer	4
27	13046	3/8" Lock Washer	4
28	80326	Assembly - Dual Needle Gauge (150PSI) with Mounting Bracket	1
29	80160	Purchased - Ford F53 - 4" Custom Front Leaf Spring	2



Fits:
8000lb Front Axle - 4" Wide, 2 Leaf, Leaf Spring
16,000 - 18,000 - 20,500 - 22,000 lb GVRW

REV	ECN	CHANGE DESCRIPTION	CHANGE BY	DATE

3RD ANGLE PROJECTION

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

A | DO NOT SCALE DRAWING | 1:20 | Approximate Weight = **184.92 lbs**

MATL SPECS:

DESCRIPTION: **Kit - 2-Stage Front - Deaver Leaf Springs - PHB**

PROJECT: **2006-2019 Ford F53 - Chassis - 8000lb Axle - 4" Leaf Spring**

PART NUMBER: **KLM-53000**

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DESIGN BY: **ZB19** DATE: **5/9/2022**

SHEET 1 OF 1

OWNER GUIDELINES

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 done on the air system be sure to drain all air from the system. Serious injury could occur if components are removed while the 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 the particular Kelderman Mfg. instructions available by product model, except as specified 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. No manual intervention to control air pressure is needed during the course of operation.
- On a mechanical control system the compressor switch must be on the for the compressor to operate. During the 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 the preset low point of the pressure switch and turns the compressor off when the tank pressure reaches the preset high point of the pressure switch.
- On a mechanical control system the low pressure warning light indicates a severe drop in the 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.**
- It is important release any moisture contained within the air tank on a regular basis. This is done by pulling on the attached release cable for approximately 5 seconds. Not releasing the moisture on a regular basis could cause the system to operate properly.
- On an electronic control system it is vital that you remove the main fuse located by the battery during any jump starting of the battery or replacement of parts.

CHECK AT EVERY VEHICLE SERVICE INTERVAL:

Check ride height to ensure that it is within 1/4”.
Check for air leaks around fittings.

CHECK AFTER THE FIRST 1000 MILES:

Recheck and tighten any loose fasteners.
Check for any loose or worn components.