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2008 Ford F-450/F-550 Chassis Cab 4-Link Rear Installation Instructions



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INTRODUCTION

IMPORTANT!

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

PRODUCT INSTALLER RESPONSIBILITIES

Installer is responsible for installing the 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 operations.

Installer is responsible for advising the owner of proper use, service, and maintenance required by the product and for supplying maintenance and other instruction as readily available from Kelderman Mfg., Inc.

WARNING!

A correct installation must result in the suspension and axle being “loaded” within the range specified by axle and suspension manufacturers. Please check vehicle specifications and intended usage to insure axle will be within Gross Weight Rating (GAWR). No alteration of any suspension component is permitted.

DEFINITION OF TERMS

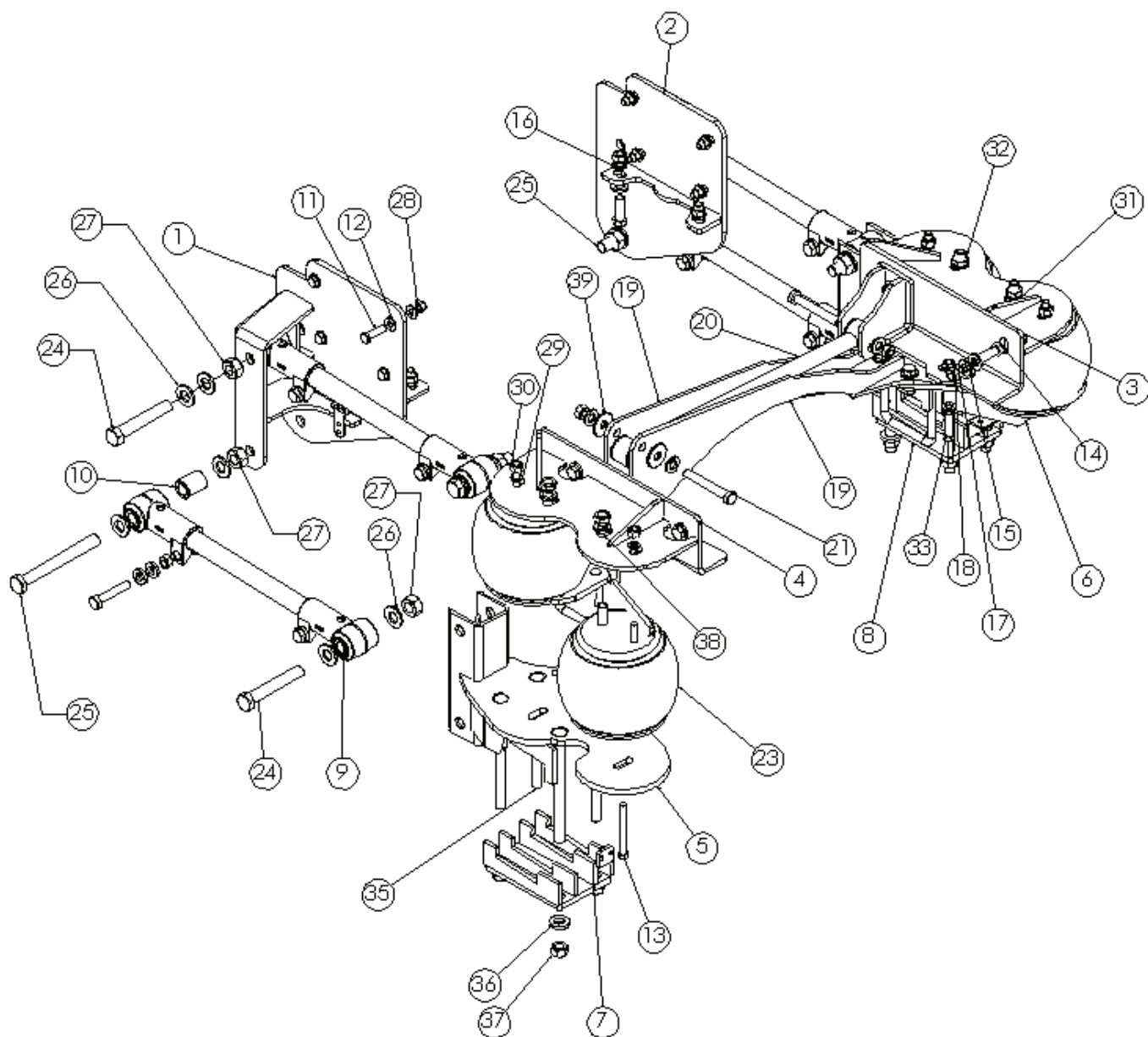
WARNING –indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION –a potential hazardous situation may result in property damage.

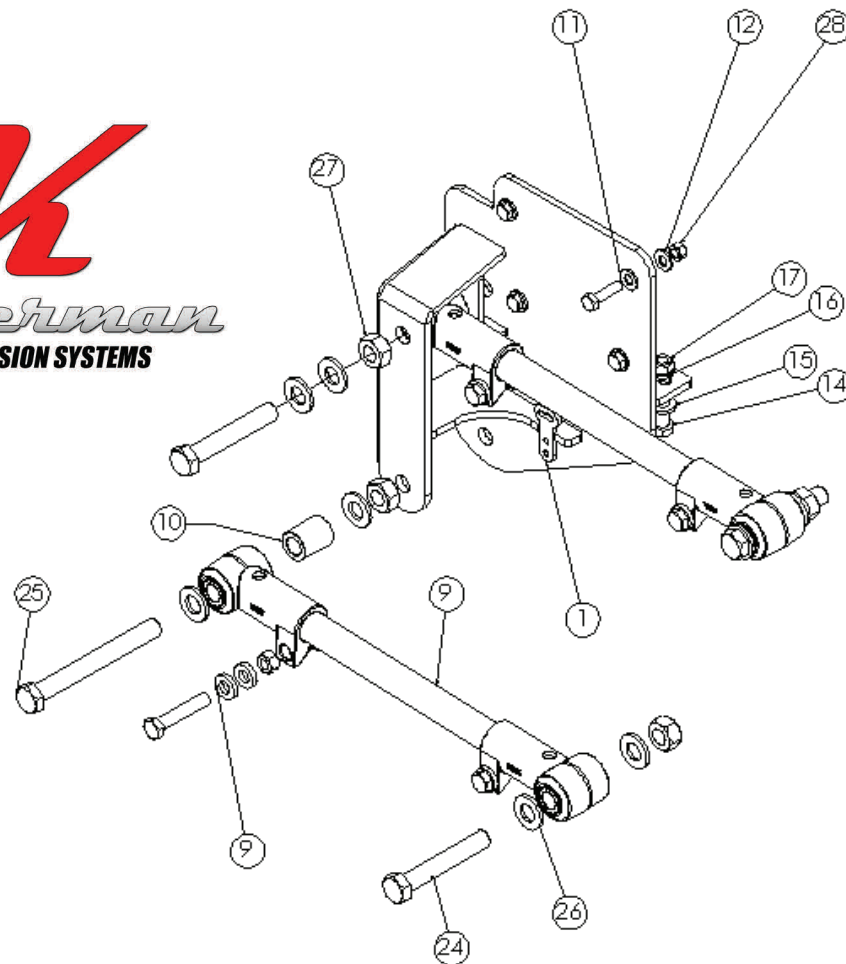
NOTE –provide information or suggestions that help you correctly perform a task.

TORQUE –the italicized torque alerts you to tighten fasteners to a specified torque value.

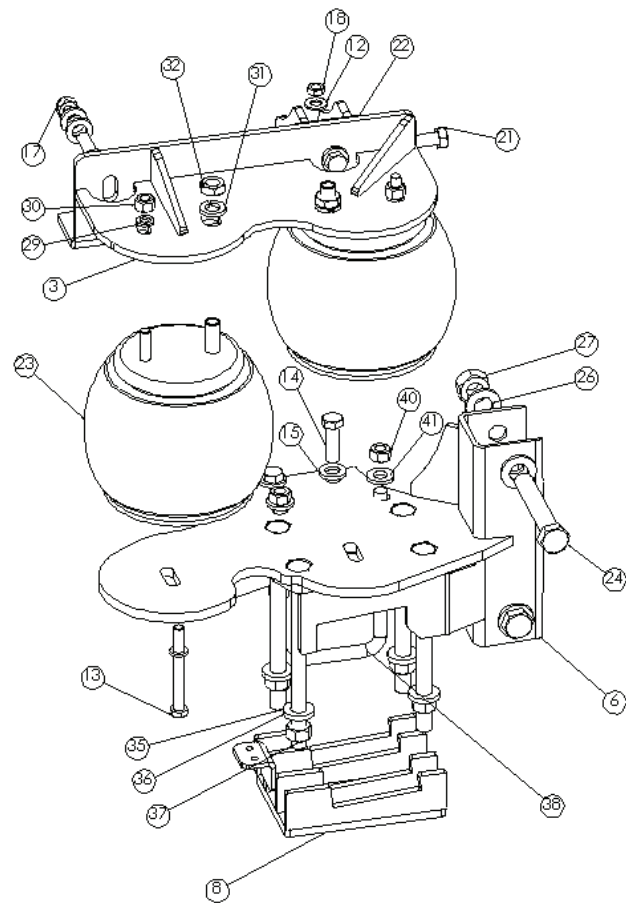




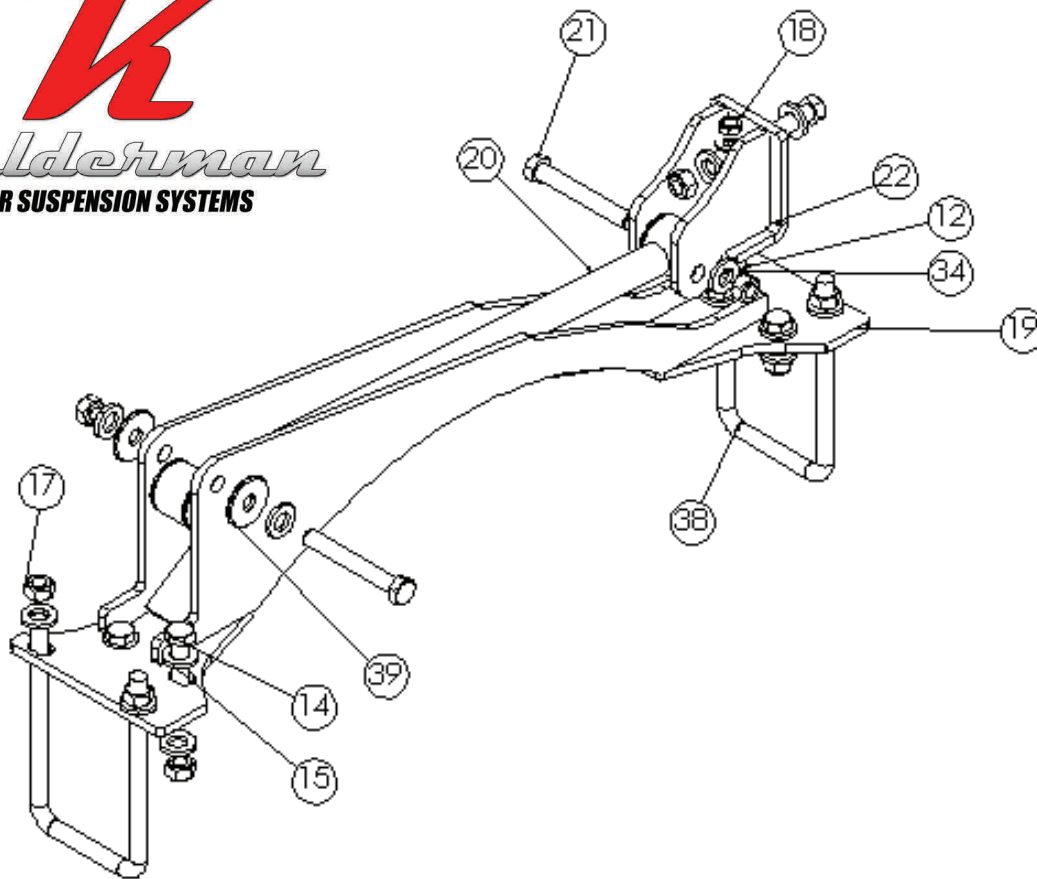
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15684	LEFTSIDE 4-LINK SIDE PLATE	1
2	15685	RIGHT SIDE 4-LINK SIDE PLATE	1
3	15674	RIGHTSIDE BAG MOUNT	1
4	15673	LEFTSIDE BAG PLATE	1
5	17559	LEFTSIDE LOWER BAG MOUNTING PLATE	1
6	17558	RIGHT SIDE LOWER BAG MOUNTING PLATE	1
7	15519	LOWER AXLE CLAMP	1
8	17557	LOWER AXLE CLAMP	1
9	14891	Trailing Arms 20"	4
10	14577	7/8" TUBE SPACER - 29/32" ID X 1 1/2" OD X 1 29/32" THK	2
11	12009	BOLT - 1/2"-20 X 1 3/4" GR8	8
12	13004	1/2" FLATWASHER - 17/32" ID X 1 1/16" OD X 7/64" THK	24
13	12033	BOLT - 1/2"-20 X 4 1/2" GR8	4
14	12409	BOLT - 5/8"-18 X 2" GR8	12
15	13026	5/8" FLATWASHER - 25/32" ID X 1 5/16" OD X 11/64" THK	28
16	13054	5/8" LOCK WASHER - 5/16" ID X 17/32" OD X 5/32" THK	4
17	13166	HEX NUT - 5/8"-18 GR8	18
18	13164	HEX NUT - 1/2"-20 GR8	4
19	17556	CROSS MEMBER	1
20	17553	PHB 24 3/4"	1
21	12431	BOLT-5/8"-18X 4 1/2"- GR8	2
22	15540	UPPER PHB MOUNT	1
23	10019-X	FIRESTONE AIR BAG - 5323 (7 1/2" HT X 9.1" WD)	4
24	12631	BOLT - 7/8"-14 X 5 1/2" GR8	6
25	12641	BOLT - 7/8"-14 X 8" GR8	2
26	13030	7/8" FLATWASHER - 29/32" ID X 1 3/4" OD X 11/64" THK	16
27	13130	HEX LOCK NUT - 7/8"-14 GR8	8
28	13124	HEX LOCK NUT - 1/2"-20 GR8	8
29	13050	1/2" LOCK WASHER - 17/32" ID X 7/8" OD X 1/8" THK	4
30	13204	HEX JAM NUT - 1/2"-20 GR2	4
31	13056	3/4" LOCK WASHER - 49/64" ID X 1 17/64" OD X 3/16" THK	4
32	13208	HEX JAM NUT - 3/4"-16 GR8	4
33	12011	BOLT - 1/2"-20 X 2" GR8	3
34	12017	BOLT - 1/2"-20 X 2 1/2" GR8	1
35	12573	BOLT - 3/4"-16 X 9 1/2" GR8	8
36	13008	3/4" FLAT WASHER - 25/32 ID X 1 1/2" OD X 1/4" THK	8
37	13128	HEX LOCK NUT - 3/4"-16 GR8	8
38	13808	U-BOLT-5/8"-13 X 4 1/2"- 8 1/2" GR8 U-BOLT-1/2"-13-4 1/2" X 8 1/2"	2
39	16955	PHB SPACER 2"X 3/16"-D 5/8"	2
40	13126	HEX NUT - 5/8"-18 GR8	2
41	13006	5/8" FLAT WASHER - 11/16" ID X 1 5/16" OD X 3/16" THK	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	15684	LEFT SIDE 4-LINK SIDE PLATE	1
9	14891	Trailing Arms 20"	2
10	14577	7/8" TUBE SPACER - 29/32" ID X 1 1/2" OD X 1 29/32" THK	1
11	12009	BOLT - 1/2"-20 X 1 3/4" GR8	4
12	13004	1/2" FLAT WASHER - 17/32" ID X 1 1/16" OD X 7/64" THK	8
14	12409	BOLT - 5/8"-18 X 2" GR8	2
15	13026	5/8" FLAT WASHER - 25/32" ID X 1 5/16" OD X 11/64" THK	2
16	13054	5/8" LOCK WASHER - 5/16" ID X 17/32" OD X 5/32" THK	2
17	13166	HEX NUT - 5/8"-18 GR8	2
24	12631	BOLT - 7/8"-14 X 5 1/2" GR8	3
25	12641	BOLT - 7/8"-14 X 8" GR8	1
26	13030	7/8" FLAT WASHER - 29/32" ID X 1 3/4" OD X 11/64" THK	8
27	13130	HEX LOCK NUT - 7/8"-14 GR8	4
28	13124	HEX LOCK NUT - 1/2"-20 GR8	4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	15674	RIGHT SIDE BAG MOUNT	1
6	17558	RIGHT SIDE LOWER BAG MOUNTING PLATE	1
8	17557	LOWER AXLE CLAMP	1
13	12033	BOLT - 1/2"-20 X 4 1/2" GR8	2
14	12409	BOLT - 5/8"-18 X 2" GR8	4
15	13026	5/8" FLAT WASHER - 25/32" ID X 1 5/16" OD X 11/64" THK	10
18	13164	HEX NUT - 1/2"-20 GR8	2
17	13166	HEX NUT - 5/8"-18 GR8	5
21	12431	BOLT-5/8"-18 X 4 1/2"-GR8	1
22	15540	UPPER PHB MOUNT	1
23	10019-X	FIRESTONE AIR BAG - 5323 (7 1/2" HT X 9.1" WD)	2
24	12631	BOLT - 7/8"-14 X 5 1/2" GR8	2
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34	12017	BOLT -1/2"-20 X 2 1/2" GR8	1
35	12573	BOLT - 3/4"-16 X 9 1/2" GR8	4
36	13008	3/4" FLAT WASHER - 25/32 ID X 1 1/2" OD X 1/4" THK	4
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38	13808	U-BOLT-5/8"-13 X 4 1/2" 8 1/2" GR8 U-BOLT-1/2"-13-4 1/2" X 8 1/2"	1
40	13126	HEX NUT - 5/8"-18 GR8	2
41	13006	5/8" FLAT WASHER - 11/16" ID X 1 5/16" OD X 3/16" THK	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
14	12409	BOLT - 5/8"-18 X 2" GR8	5
15	13026	5/8" FLAT WASHER - 25/32" ID X 1 5/16" OD X 11/64" THK	18
18	13164	HEX NUT - 1/2"-20 GR8	1
17	13166	HEX NUT - 5/8"-18 GR8	11
19	17556	CROSSMEMBER	1
20	17553	PHB 24 3/4"	1
21	12431	BOLT-5/8"-18X 4 1/2"- GR8	2
22	15540	UPPER PHB MOUNT	1
34	12017	BOLT -1/2"-20 X 2 1/2" GR8	1
12	13004	1/2" FLAT WASHER - 17/32" ID X 1 1/16" OD X 7/64" THK	2
38	13808	U-BOLT-5/8"-13 X 4 1/2"- 8 1/2" GR8 U-BOLT-1/2"-13-4 1/2" X 8 1/2"	2
39	16955	PHB SPACER 2"X 3/16"-D 5/8"	2

PRE-INSTALLATION CHECKLIST

Check the vehicle wheel alignment prior to installation to insure no precondition already exists; record the information for verification.

Measure and record the wheelbase and centering dimensions before beginning installation.

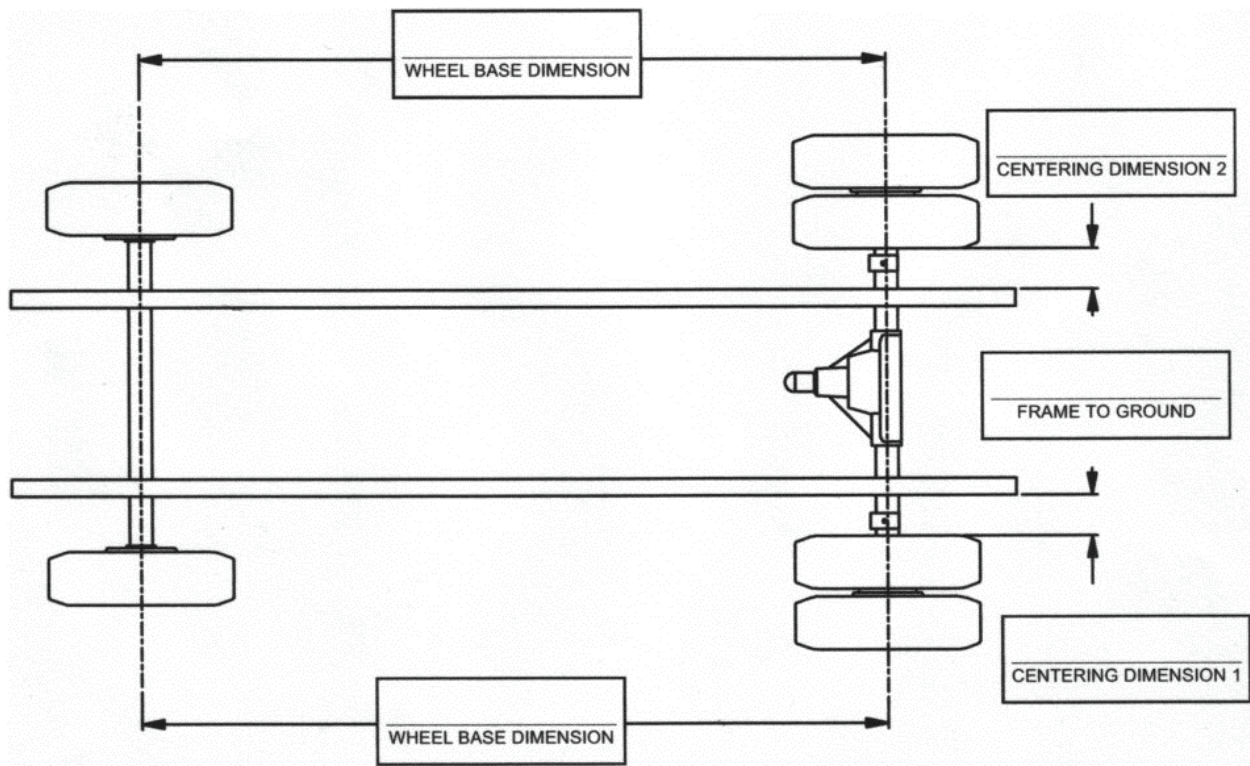
Measure and record the height from the ground up to the rear of the frame.

Measure and record the pinion angle. *See page 5 for specific instructions.*

Remove the attached body, if applicable. Remember to disconnect all electrical connections and fuel filler tube, before removing the body. The installation can also be completed using a lift to raise the vehicle. If using a lift, chassis body removal may not be necessary but removal of rear wheels will aid in installation.

If not using a lift, block the front wheels so the vehicle cannot roll.

Jack up the rear frame of the truck in order to unload the rear leaf springs. Do not lift the wheels off the ground (if not using a lift to install the suspension). Do not jack on the axle itself.



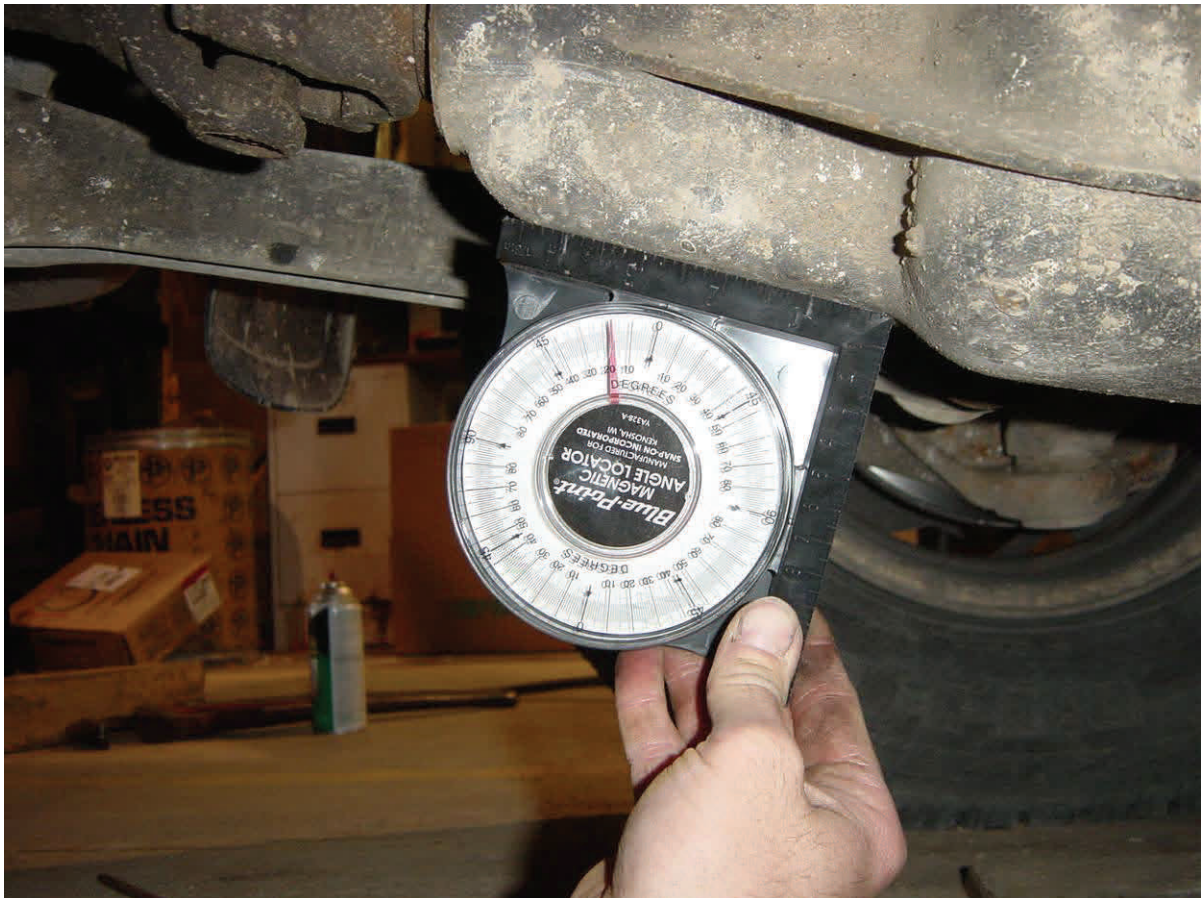
DETERMINING PINION ANGLE

The pinion angle is critical in the correct installation of your Kelderman Air Ride Suspension System. The pinion angle can be easily determined with the use of a magnetic angle gauge.

To measure the angle, find a flat surface to attach angle gauge. Mark the location of your gauge with a marking pen or scribe. Record the angle on the gauge for future reference.

Note: It may be necessary to remove gauge. Marking the position of the gauge is critical to ensure accurate angle readings during adjustment steps of the assembly of your Kelderman Air Suspension System.

Pinion Angle: _____°



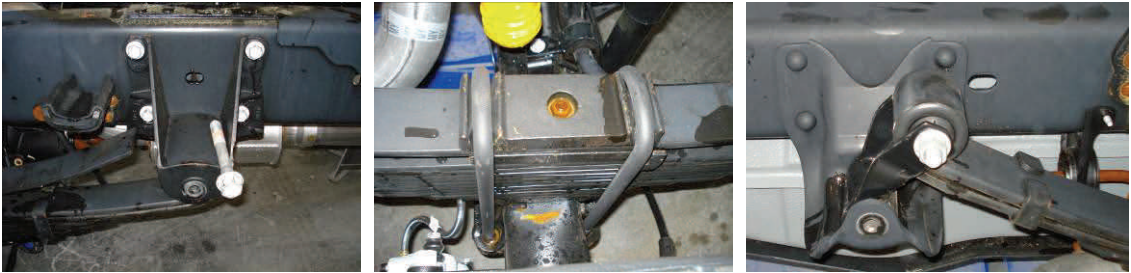
DISASSEMBLY

1. With weight taken off the rear springs, as noted in pre-installation checklist, remove the mount bolts from the front leaf spring hanger bracket. Remove the U-Bolts that mount the spring to the axle.

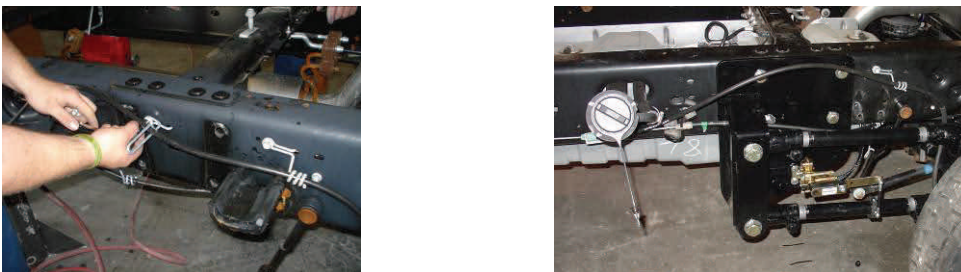
CAUTION: Be careful that the leaf spring does not spring out of its hanger, or off the frame.

Remove the bolt from the rear spring hanger. Now remove the spring pack from the vehicle and discard. **DO NOT** re-use the fasteners that mount the hanger bracket, or the leaf spring itself. New fasteners are provided, and must be used to achieve proper clamp load on the hanger.

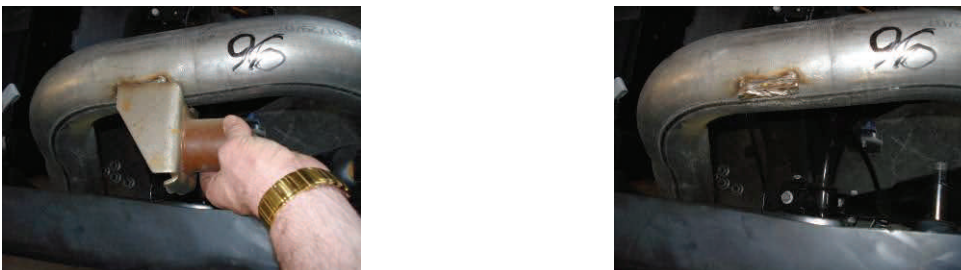
2. Remove the rivets from the forward overload spring pads and discard.
3. Remove the yellow jounce bumper and discard.



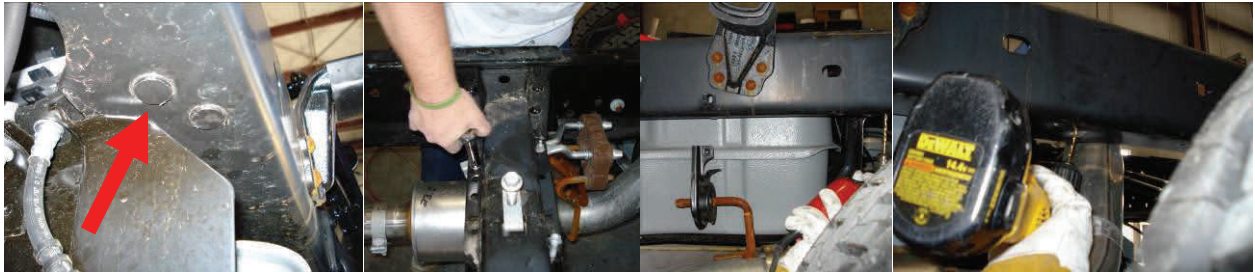
4. Remove the three E-Brake cable guides from the frame **DO NOT DISCARD** they will be reused later in the installation. Disconnect the passenger side E-Brake cable at the point just forward of the driver side forward spring perch and remove it from its frame mount. You will have to route it through the Kelderman forward mounting bracket in a later step as shown in the photo below.



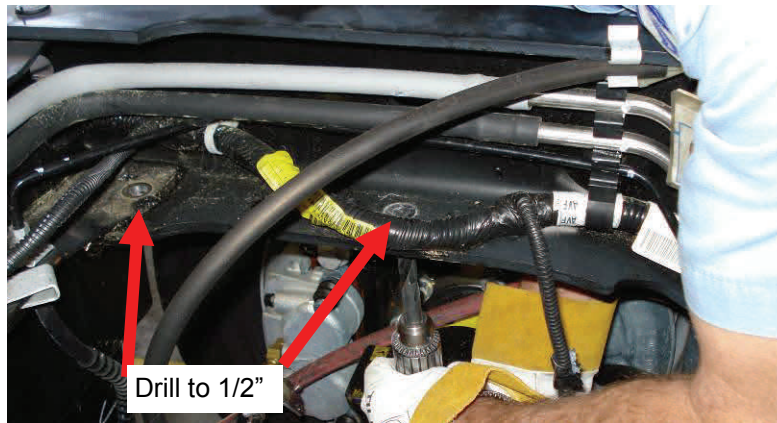
5. Remove the exhaust vibration dampener.



6. Remove 1 rivet per side that connects the forward fuel tank cross-member to the frame. This is the forward inboard rivet viewing from the bottom side of the frame. It can be removed by drilling, or air chiseling the head off the factory-installed rivet. By lowering the exhaust brackets this will aid in removing the passenger side rivet. Once rivets are removed, drill hole to 1/2" diameter.



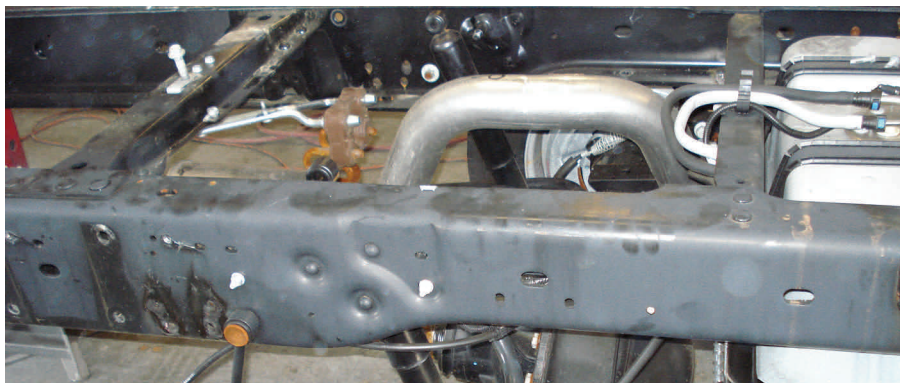
7. Drill out the jounce bumper mounting hole previously removed in step 3, too 1/2" diameter. Photo below showing the jounce mounting hole and the fuel tank forward crewmember rivet holes from a top view.



8. Remove Upper shock mount nuts and pull the upper shocks off their mounting studs to aid in assembly latter in the instructions. Retain hardware for installation latter.
9. Remove the bolts that retain the brake line brackets. They are located on the back side of the spring pads mounted on the axel.

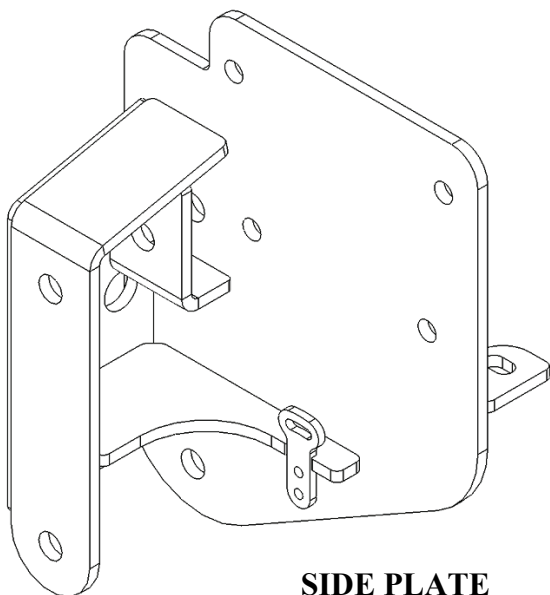


DISASSEMBLED VIEW



INSTALLATION

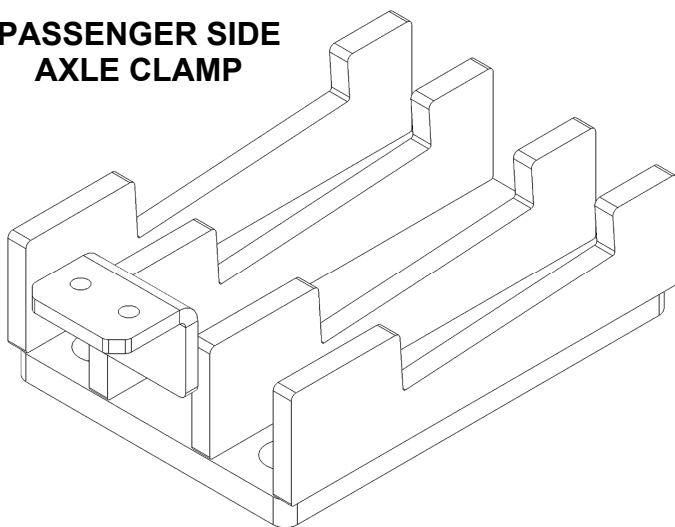
1. Locate the 4-link side plates (part # 15684 DS and 15685 PS). These mount to the frame in the factory mounting holes. Place the mount against the frame and use four 5/8" x 2" bolts, flat washers and top lock nuts to fasten the mount to the side and two 1/2" x 2" bolts, flat washers and top lock nuts to fasten to the bottom of the frame. Face the 5/8" bolts towards the outer edge of the frame. Once you have all the bolts started, **torque the 1/2" bolts to 85 lb/ft and the 5/8" bolts to 150 lb/ft.**



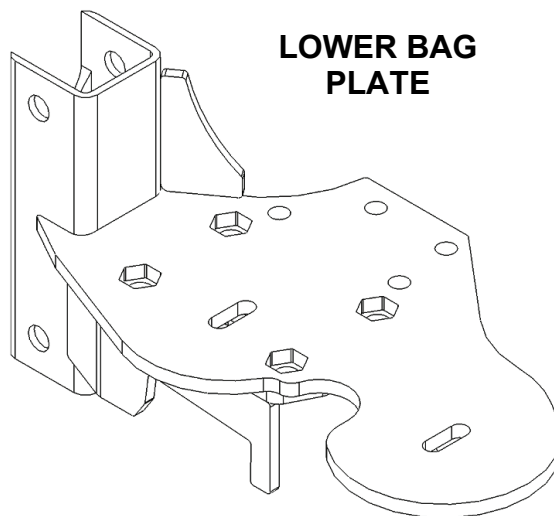
SIDE PLATE

2. Locate the lower bag plate (part # 17559 DS), the four air bags (part # 10019-X-4) and the eight 3/4" x 9 1/2" bolts. Insert the 3/4" bolts through the lower bag mounts locking the heads into the cutouts, then install the air bags over the bolts using 1/2" x 4 1/2" bolts, flat and lock washers. Be sure to align the top of the air bag mounting studs so that the fill ports face to the center, and lay parallel to the frame. **Torque air bag bolts to 35 lb/ft.** The driver's side mount is the one with the pan hard bar ears. Place these mounts over the axle leaf spring perch and lock in the dowel pin. Now fasten to the axle using the lower axle clamps (part # 15519 DS and 15372 PS), 3/4" flat washers and lock nuts. **Note: check the orientation of the lower axel clamps. The brake tabs will face to the rear and the Passenger side axel clamp brake tab will be welded in the middle position.** Do not tighten the bolts until the pan hard bar mounts and pan hard bar have been installed (STEP 5-6). **Then you can torque the 3/4" bolts to 175 lb/ft.**

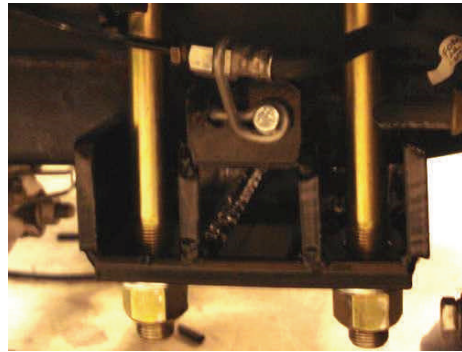
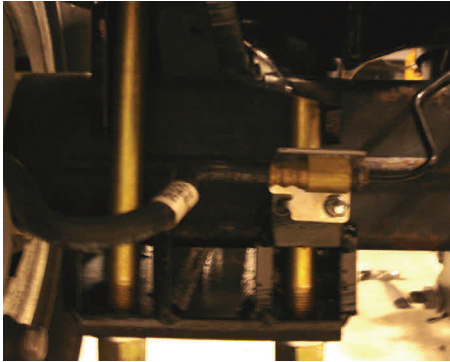
**PASSENGER SIDE
AXLE CLAMP**



**LOWER BAG
PLATE**

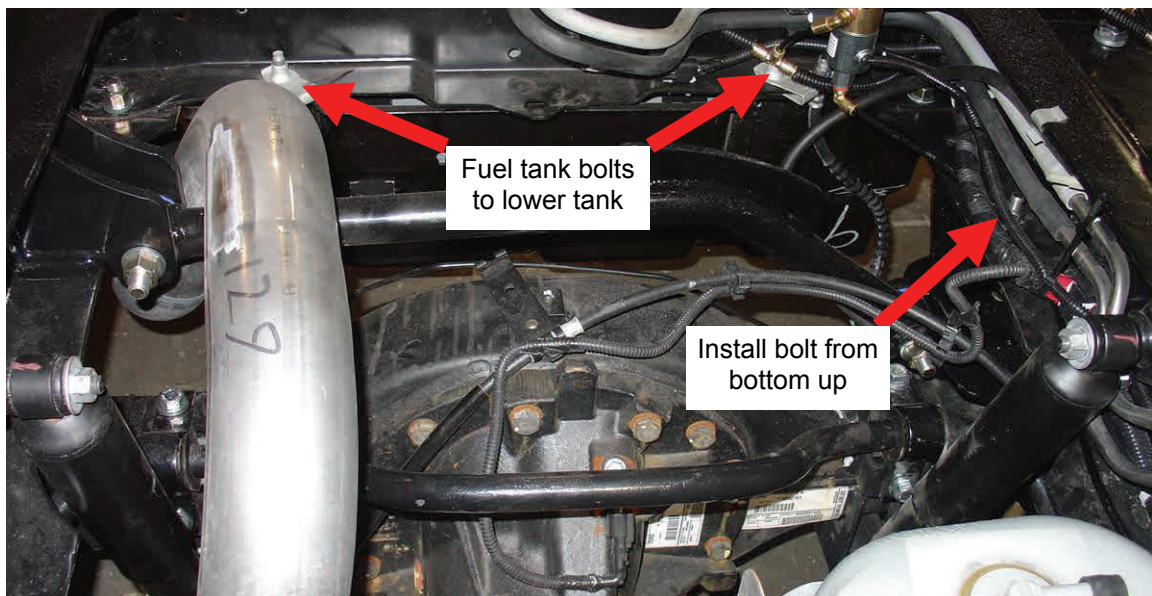


3. Relocate brake line mount to the lower axel clamps (previously removed in disassembly step 9) and secure with a 1/4" x 1" bolt, flat washers and nut. **Torque bolts to 60 lb/in.**



NOTE: Read the next two pages when installing the upper bag mounts. These pages describe the design change.

4. Locate the upper bag mounts (part # 15673 DS and 15674 PS). Also locate the fuel tank cross-member reinforcement kit. Install the driver's side mount first (part # 15673) **Note: to install the driver side upper bag mount you must lower the front of the fuel tank. This will allow sufficient clearance for the upper bag mount to slide between the frame rail and the fuel tank shroud re-torque the fuel tank bolts once the mount is in place.** Place the bag mount against the frame and over the airbags and fasten to the bottom of the frame using two 1/2" x 2" bolts, flat washers and top lock nuts. **Note: ensure the forward 1/2" bolt is installed from the bottom up and the 5/8" bolts are installed from the inside out.** Use two 5/8" x 2" bolts, flat washers and top lock nuts to fasten the air bag mount to the side of the frame. Once all bolts are installed and snug, **torque 1/2" bolts to 85 lb/ft. torque 5/8" bolts to 150 lb/ft.** Fasten the top of the air bags to the air bag mount using the 1/2" and 3/4" nuts and lock washers. **Torque these nuts to 35 lb/ft.**



5.

The new style upper bag mounts (replacements for 15673 DS and 15674 PS) fasten to the truck frame the same way the old upper bag mounts did with the addition of six bolts. Tighten the two 1/2" bolts in the bottom of the upper bag mount. Next, tighten the 5/8" bolts. Once these bolts are tight, you can drill the factory holes for the additional 1/2" bolts using the upper bag mount as a guide. Make sure not to drill into any fuel lines or wires! Once the holes are drilled, install the bolts inside of frame out. Next, torque the 1/2" bolts to 85 ft/lbs and the 5/8" bolts to 150 ft/lbs. Do not be concerned if there is a gap between the upper and lower flange and the frame. It is designed for a small gap. Make sure to look at the following page and install the fuel tank cross-member reinforcement kit while installing the upper bag mounts.

UPPER BAG PLATE

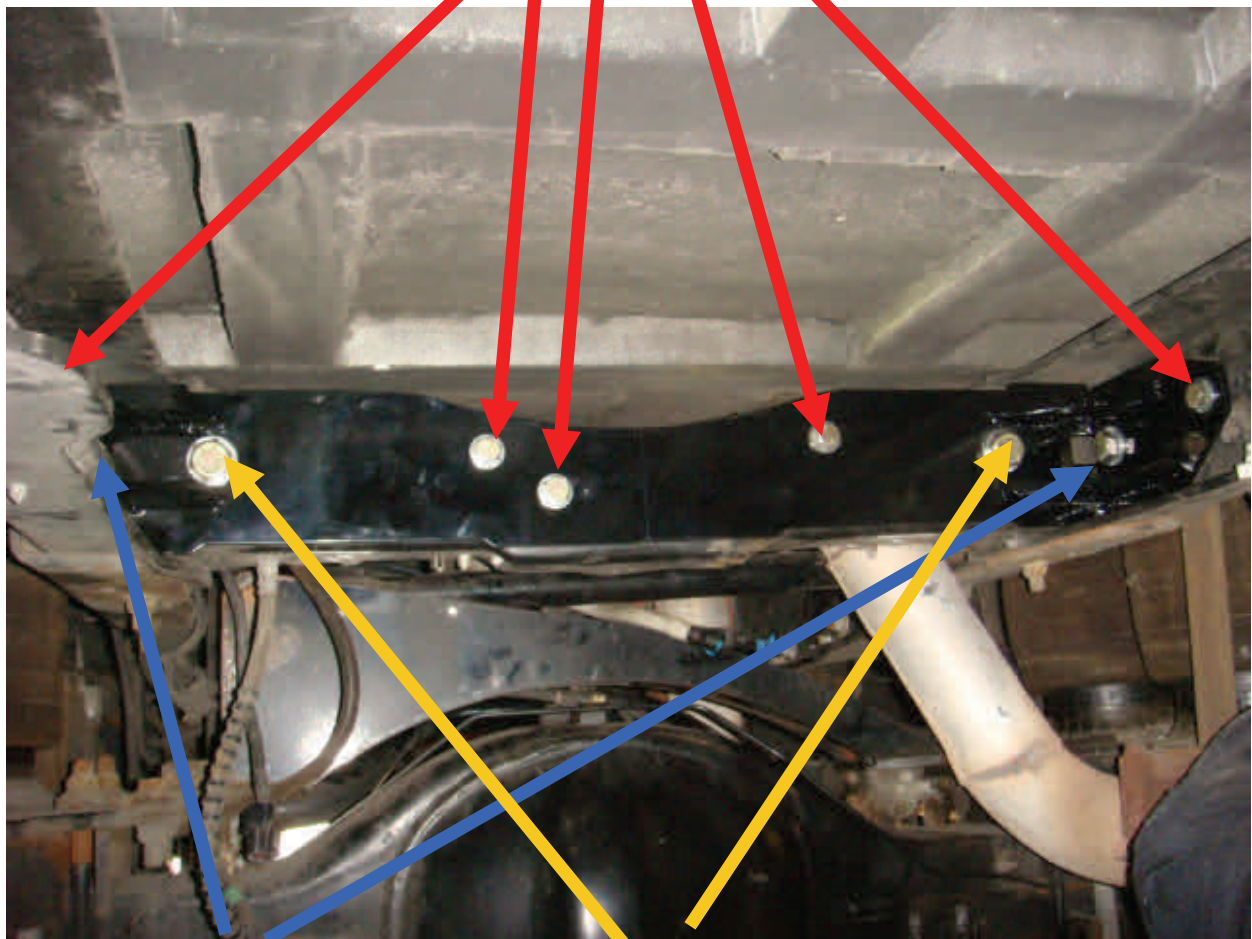


Ford F-450 fuel tank cross member support bracket

NOTE: ALL BOLTS NEED TO HAVE THREADS/NUT SIDE AWAY FROM FUEL TANK OR THE BOLTS MAY PUNCTURE FUEL TANK.

NOTE: The fuel needs to be removed if the truck has a body built on it.
1/2x2" bolts, the factory holes need to be opened up for 1/2" bolts.

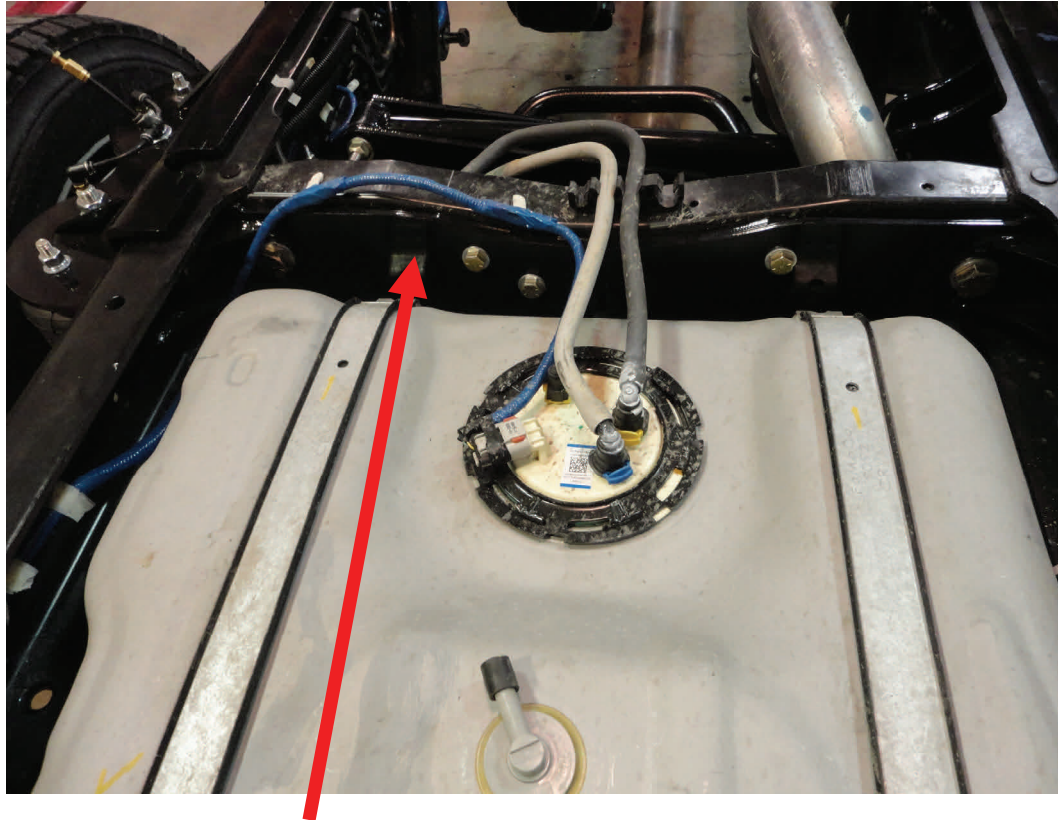
1/2x2" bolts,



5/8x2 1/2" bolts

3/4x2" bolts

picture is shown with
fuel tank removed.



Fuel tank cross member kit installed

Route emergency brake cables
through loop

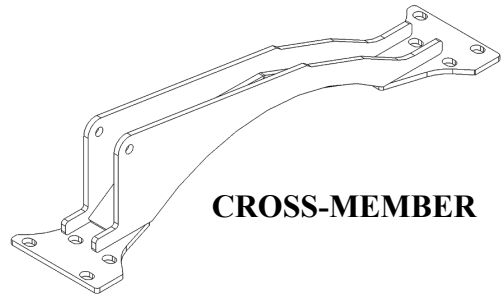
Emergency brake cable holders



Locate the passenger's side upper bag mount (part # 15674) and the pan hard bar mount (part # 15540). The 5/8" x 2 1/2" bolt is used to fasten the upper bag mount to the side of the frame and the pan hard bar on the inside of the frame. Use the 1/2" x 2 1/2" bolt to fasten the pan hard bar mount and bag mount to the bottom of the frame. Next, use the 1/2" x 2" bolt in the bottom rear hole and use the 5/8" x 2" bolt in the rear hole in the side of the frame.

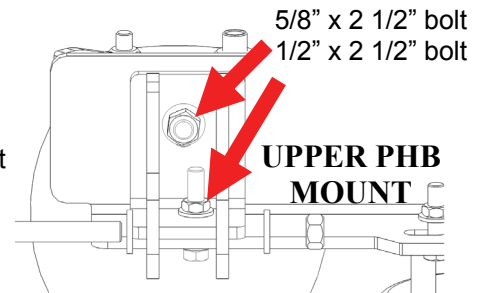
Torque the 1/2" bolts to 85 lb/ft and 5/8" bolt to 150 lb/ft. Lastly, use the 1/2" and 3/4" nuts and lock washers to fasten the top of the bags to the upper bag mounts.

Torque these nuts to 35 lb/ft.



CROSS-MEMBER

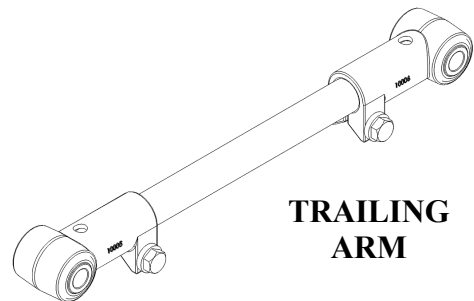
6. Locate the lower pan hard bar mount (cross-member). It attaches to the lower air bag mounts with the two 5/8x 8 1/2" U-bolts and four 5/8x 2 1/2" bolts. The hump on the mount goes on the drivers side. Once you have the nuts started, **torque these bolts to 150 ft/lbs.** Next tighten and **torque the axle clamp bolts to 250 ft/lbs.**



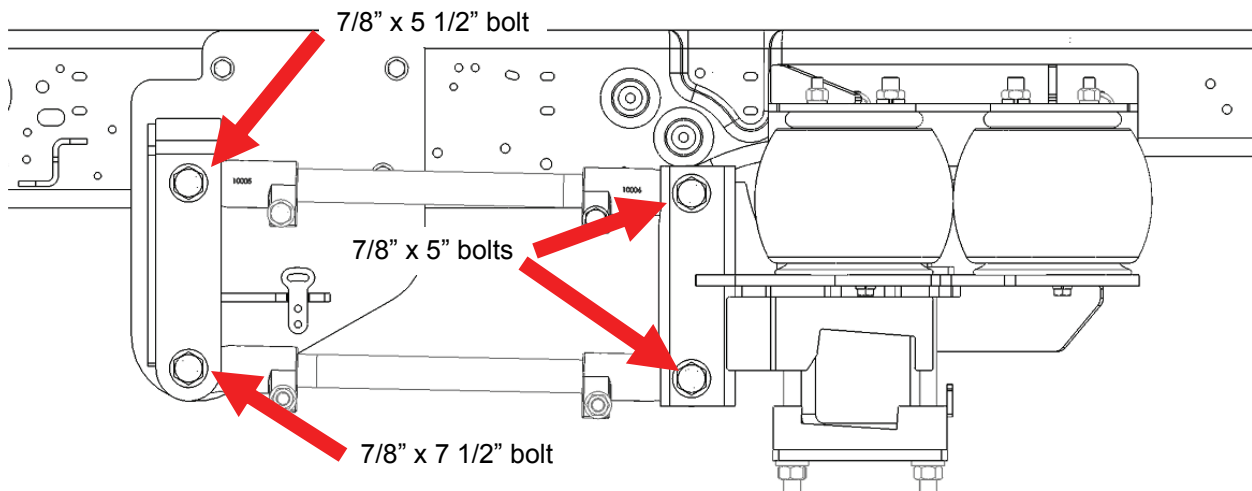
UPPER PHB MOUNT

7. Locate the four trailing arms (part # 14891). Fasten the front of the upper trailing arms into the front 4-link side plate using the 7/8" x 5 1/2" bolts, flat washers and top lock nuts. Use the 7/8" x 5" bolt to fasten the other end of the trailing arms to the lower air bag mounting brackets. **Note: Make sure that the that the upper 7/8" x 5" bolts are inserted from the inside out. This will allow for proper frame clearance.**

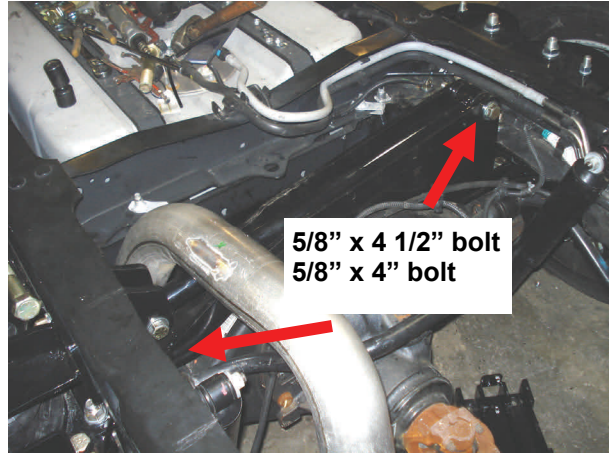
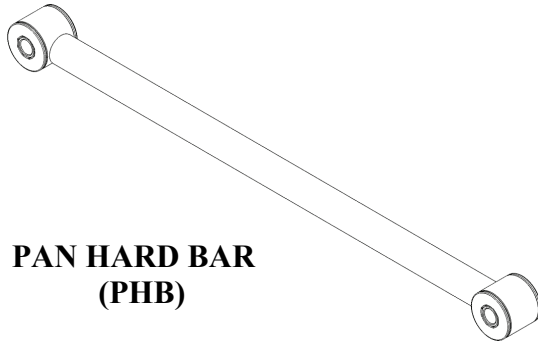
8. Fasten the front of the lower trailing arms into the front 4-link side plate using the 7/8" x 7 1/2" bolts. Make sure to use one 2" spacer (part # 14577) on the inside of the arm and mounting bracket for the lower trailing arm. On the other end of the trailing arms, use the 7/8" x 5" bolts. **Note: Make sure that the 7/8" x 5" bolts are inserted from the inside out. This will allow for proper frame clearance.** Do not tighten the 7/8" bolts until Step 14. **Also install the emergency brake cable holders at this time.**



TRAILING ARM



9. Locate the pan hard bar (part # 17553) . On the drivers side, fasten into place with the two 5/8" x 4 1/2" bolts, flat washers and top lock nuts. Make sure to use the 1/8" spacers on each side of the bushing. The passengers side uses a 5/8x4"

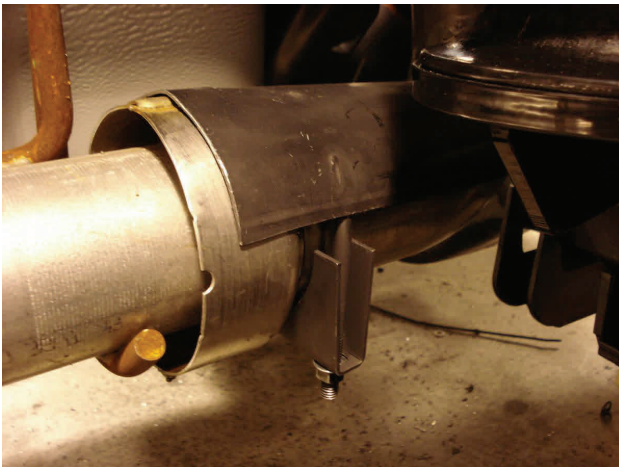
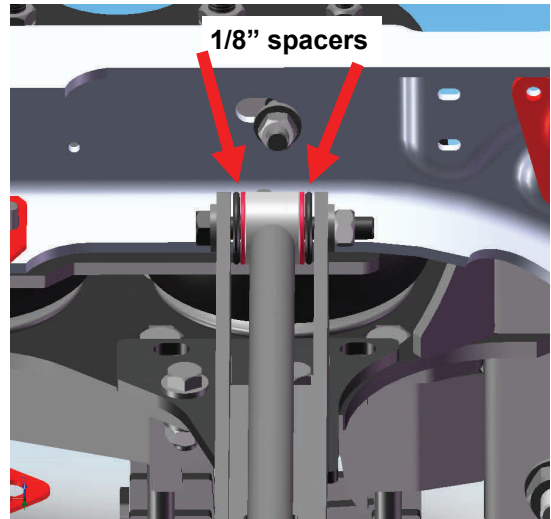


bolt. **Torque these bolts to 75 lb/ft.**

ALIGNMENT

1. Once all the brackets are installed and tightened, adjust the jack stands that are holding up the rear of the frame so that the distance between the upper and lower air bag mounting brackets is 8". Once this height is set, refer to the original measurements taken in preinstall checklist. After the adjustments are made.

2. Check wheelbase measurement on vehicle: To adjust wheelbase, turn either both left or both right trailing arms as a set. This will prevent the trailing arms from binding. Keep checking measurement and adjusting until your wheelbase measurement is the same on both sides within 1/8".



3. Check pinion angle with angle gauge. It is important to place gauge in exact position used to take measurement in the beginning. To adjust pinion angle, adjust either both top or both bottom trailing arms. Always turn them the same direction and only 1/2 turn at a time. Keep checking measurements and adjusting until your pinion angle is the same as your initial measurement.

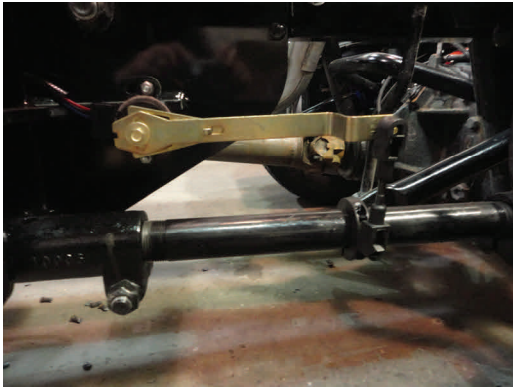
1. Torque 7/8" bolts to 275 lb/ft and 5/8" pinch bolts to 150 lb/ft.

AIR CONTROL SYSTEM mechanical

1. Plumbing of the system. Insert the fittings in the top of the four air bags. Locate the Hadley height control valve and use the 1/4" x 1 1/4" bolts to fasten the height control valve to the front trailing arm bracket on the driver's side. Mount the ball to the end of the height control valve, fasten the lock collar to the lower control arm and connect the linkage between them.
2. Locate the compressor box. Mount the box somewhere on the frame, preferably on the driver's side frame rail. Use the wiring diagram provided at the end of the instruction packet to wire up the system. Also provided is an air line diagram.
3. Locate the air tank. Find an area on the frame to mount it. Make sure the drain plug is facing straight down.
4. Once you have the compressor wired up, the air line going to the air tank, run an air line from the air tank to the bottom port of the height control valve. Locate the clear line and plastic fitting supplied with the height control valve and install it in the top port. This is the exhaust. Next locate the three brass "T" fittings. Connect the two air bags on each side with a "T" fitting. Next, connect the right side and left sides together with another "T" fitting. Connect this "T" fitting to the CYL port on the dump valve. Last, connect an air line from supply port to middle port on the height control valve.

NOTE: USE THE HADLEY INSTRUCTIONS FOR INSTALLING ELECTRONIC AIR MANAGEMENT SYSTEM.

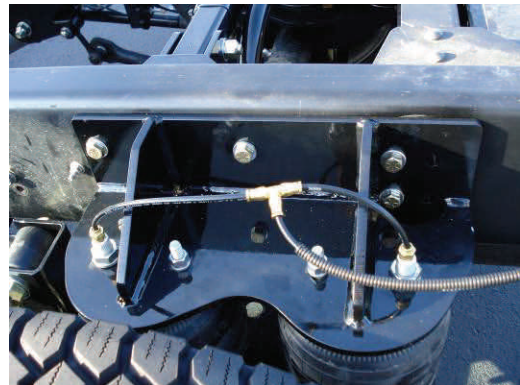
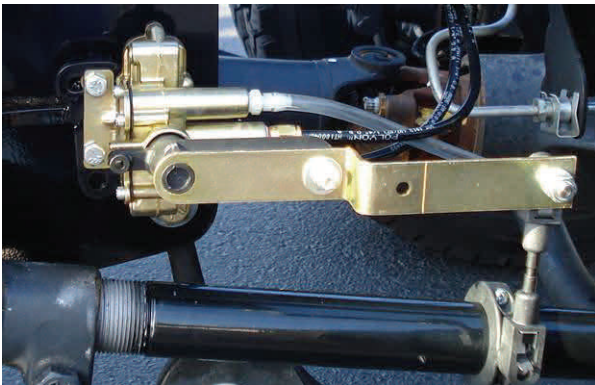




Hadley electronic height control sensor



Haldex mechanical height control valve



****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, next 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 Figure below). To adjust the ride height, complete the following steps (see Figure below). 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 dims on final dimension sheet.
11. Reinstall the chassis body (if applicable).

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 and then 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. Now, utilizing a modified 3/4" wrench, the forward air bag lower mounting bolt can be loosened. Then, rotate the air bag counter-clockwise off the lower mounting bolt. Now remove air bag. To install, reverse process.

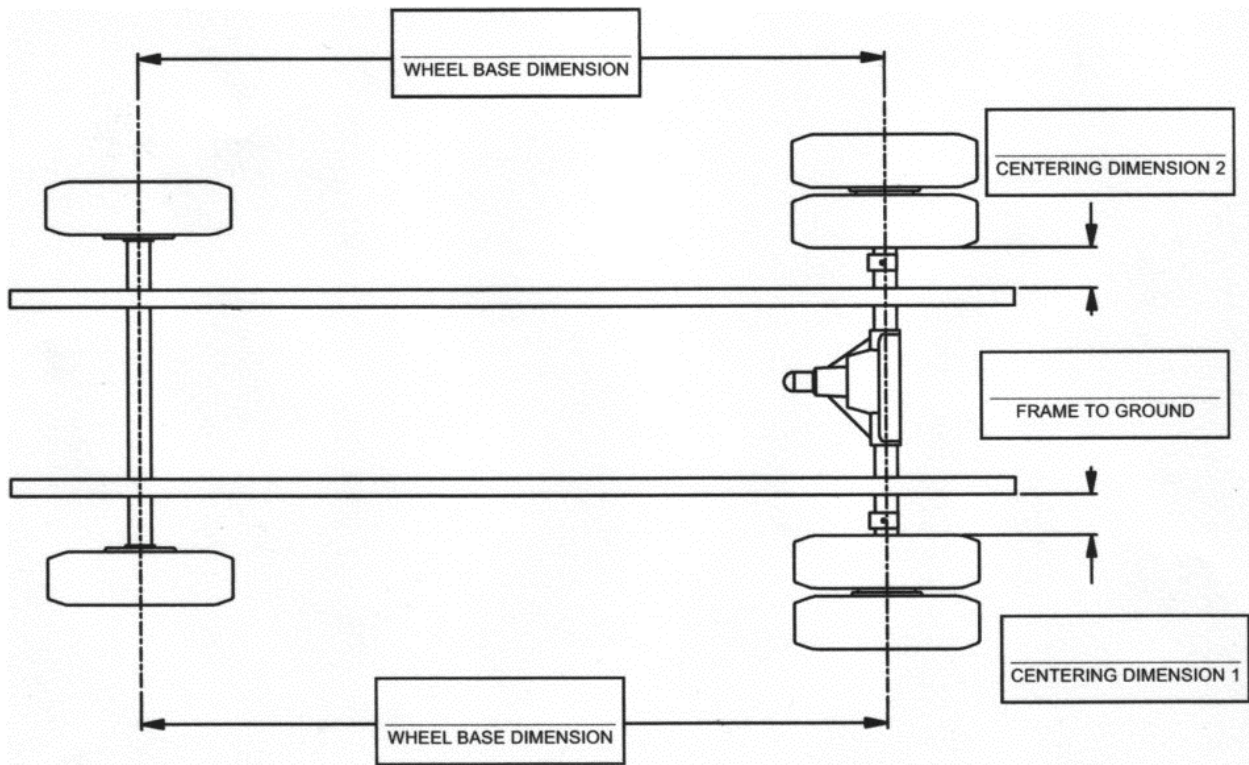
SERVICE & MAINTENANCE CHECKLIST

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.

TORQUE TABLE

Location	Fastener	Torque
Front trailing arm mounts	1/2" UNF Nuts	85 LB/FT
Front trailing arm mounts	5/8" UNF Nuts	150 LB/FT
Lower bag mounts	3/4" UNF Nuts	175 LB/FT
Upper bag mounts	1/2" UNF Nuts	85 LB/FT
Upper bag mounts	5/8" UNF Nuts	150 LB/FT
Air bags	1/2" UNC Nuts	35 LB/FT
Air bags	1/2" UNC Bolts	35 LB/FT
Air bags	3/4" UNF Nuts	35 LB/FT
Pan hard bar	5/8" UNF Nuts	75 LB/FT
Pan hard bar mount	1/2" UNF Nuts	85 LB/FT
Trailing arms (pinch bolts)	5/8" UNC Nuts	150 LB/FT
Trailing arms	7/8" UNC Nuts	275 LB/FT
D bushing for sway bar	12mm bolts	75 LB/FT
Pan hard bar mount	1/2" UNF Nuts	85 LB/FT
Pan hard bar mount	5/8" UNF Nuts	150 LB/FT

FINAL DIMENSION SHEET



FORD F450/550 OWNERS 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 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. 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.
- 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. Not releasing the moisture on a regular basis will cause the drain valve to not operate properly.

CHECK AT EVERY VEHICLE SERVICE INTERVAL:

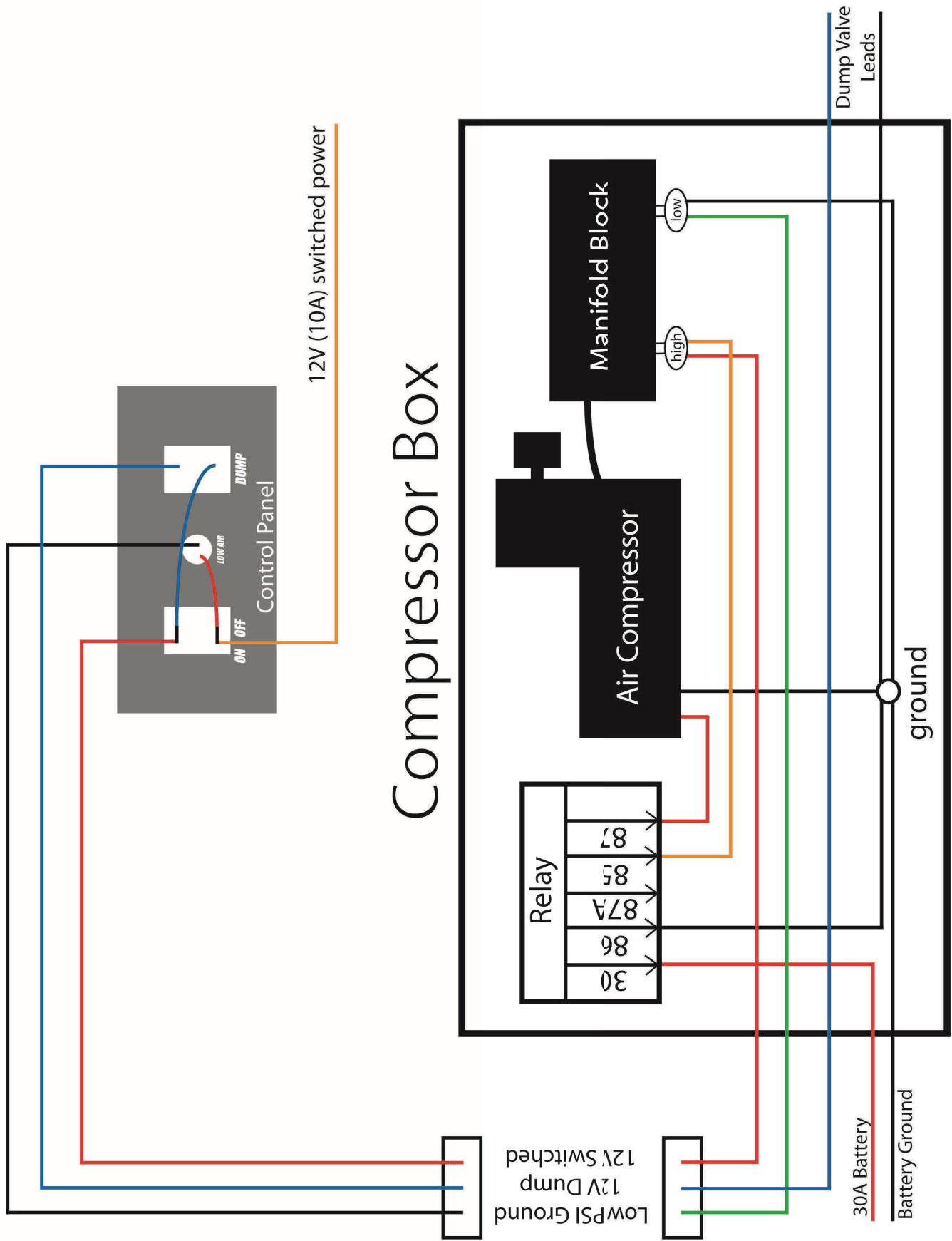
Check Ride Height $\pm 1/4$ "
Check for air leaks around fittings.

CHECK AFTER THE FIRST 1000 MILES:

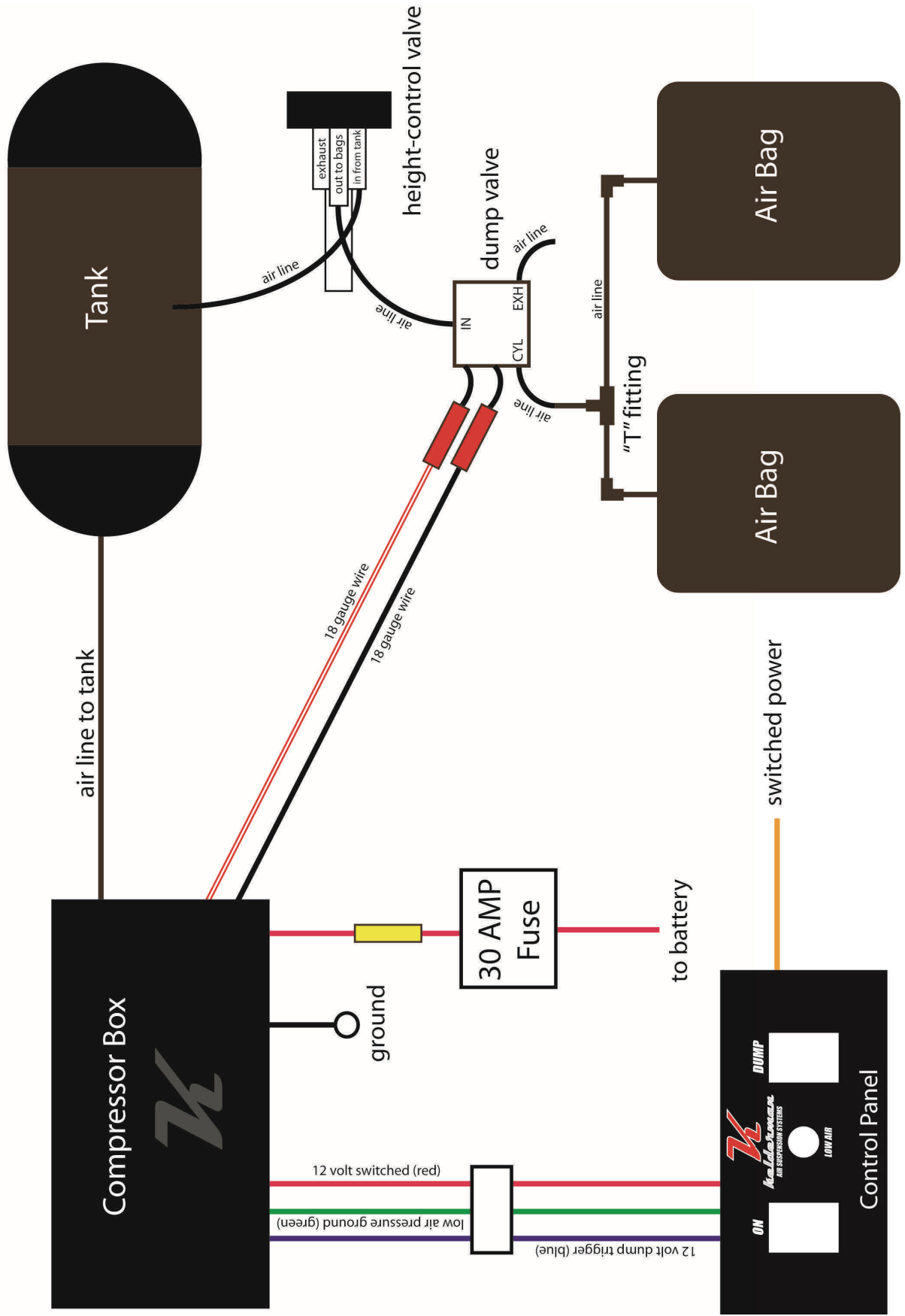
Recheck & tighten any loose fasteners.
Check for any loose or worn components.

CHECK AFTER EVERY 30,000 MILES:

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



Compressor Box Self-Leveling Kit Wiring Diagram (shown with optional dump valve)



TROUBLE SHOOTING GUIDE

<u>COMPONENT</u>	<u>POSSIBLE PROBLEM</u>	<u>CORRECTIVE ACTION</u>
Air lines	Air leaks	Replace air line.
Fittings	Air leaks	Remove fitting and apply fresh joint compound. Reinstall fitting, but Do Not Over Tighten. Do not use Teflon tape.
Air Bags	A. Improper height B. Air leakage	A. Adjust valve linkage to maintain proper air spring height. B. Replace air bag.
Panhard Bar	A. Loose nuts on lateral control rod bolts. B. Worn bushings	A. Tighten securely. B. Replace lateral control rod.





Hadley height control sensor

