

Installation Manual



AIR SUSPENSION KIT

Ford F-450 Super Duty (2WD/4WD)*

Will fit vehicles with 5th wheel/in-bed hitches.

Will not fit Chassis Cab vehicles.

Use the most advanced air springs on the market to eliminate your vehicle's sag, sway and bottoming out. This heavy duty air suspension kit levels your truck's stance while providing added support for an overall smooth and safe ride.

Thank you and congratulations on the purchase of an Air Suspension kit.

Please read the entire manual prior to starting the installation to ensure you can complete it once started. If you are unsure whether you are qualified to install the Air Suspension kit, consult a qualified service professional before beginning the installation.

SAFETY WARNINGS!

You must read and abide by the instructions found in this manual, paying close attention to the helpful (+), cautionary (!) or dangerous (!) warning icons highlighting important safety recommendations and maintenance suggestions throughout this manual. **Failure to abide by all instructions in this manual will void the warranty.**



HELPFUL INSTALL TIP
Additional information that could potentially make the job a little easier.



PLEASE USE CAUTION
Unsafe practices could result in damage to you or your vehicle, or others.



DANGER WARNING
Hazards which could result in severe personal injury or death.

-  **Serious personal injury or death may result from an air spring failure** or accident due to improper installation or air spring pressure operation or maintenance.
-  **Inflating an unsecured air spring is dangerous.** If it bursts, it could be hurled into the air with explosive force resulting in serious personal injury or death. Never inflate an air spring unless it is secured to the vehicle.
-  **Removing and replacing air springs can be dangerous.** This is only a job for a qualified service professional. Never perform air spring service procedures without proper training, tools, and equipment.
-  **An air suspension kit will not increase the GVWR (Gross Vehicle Weight Rating), as the GVWR is determined by the vehicle manufacturer. Do not exceed the maximum capacity listed by the vehicle manufacturer.**

-  For safe and proper operation of the vehicle, never operate the vehicle under the minimum or over the maximum listed PSI in the air spring(s), (see: *MIN/MAX PSI* chart on the final page of this manual). Staying within the pressure limits will ensure a reasonable duration of the air springs. **Failure in doing so may result in damage to your vehicle and will void the warranty.**

BEFORE STARTING THE INSTALLATION

-  **Always read your vehicle owner's manual and follow all instructions and warnings therein prior to modifying your vehicle.**
-  Ensure the application information is correct for the make, model and year of the vehicle you are installing the kit on.
-  It is recommended to always jack the vehicle on the axle. If lifting the vehicle with a floor jack or hoist on the frame, never allow the air spring to limit the travel of the axle. Suspending the axle with the air spring limiting the axle travel **will damage the air spring and void the warranty.** (This warning does not apply to In-Coil Springs)
-  The air spring must have clearance between itself and the surrounding components to prevent any contact when the air spring is inflated or compressed. Trimming off excess bolt length may also be required to ensure no contact with the spring or other suspension components can be made once installed. **Failure to do so will void the warranty.**
-  Some vehicles are equipped with a rear wheel brake proportioning valve. Check with the manufacturer before installing the air spring kit, as it may affect braking performance.
-  This kit contains push-to-connect fittings; using scissors or wire cutters to cut the nylon air line will distort the line and cause the connection to leak. The air line must be cut off squarely with the hose cutter provided in this kit, or a sharp utility knife. **Failure to do so will void the warranty.**
-  It is recommended to use additional thread sealant or Teflon tape on fittings during the installation for a proper seal.
-  Always ensure the bolts are not over-torqued; especially when a torque value is provided, failing to use the provided torque value(s) can lead to **premature failure and will void the warranty.**
-  It is recommended to use a good quality anti-seize on all fasteners to reduce the chance of corrosion and help facilitate removal, if required at a later date.

KIT CONTENTS

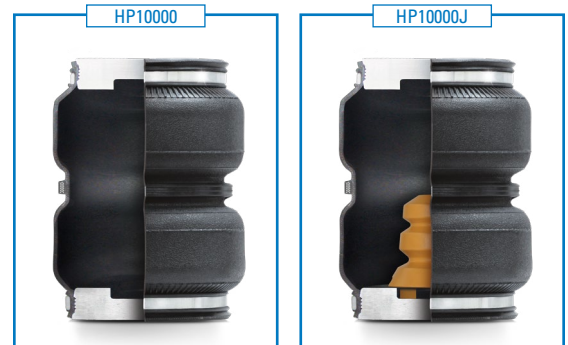
Please confirm the items below are provided in your kit before starting the installation. Reference the kit explosion diagram on the following page for part assembly.

HEAVY DUTY KITS	QTY	PART #
Double Convolved Spring	2	HP10000

HEAVY DUTY JOUNCE BUMPER KITS	QTY	PART #
Double Convolved Spring w/ Jounce Bumper	2	HP10000J

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KIT CONTENTS	QTY	PART #
Air Line/Valve Assembly	1	HP1344
Upper Bracket	2	HP1400
Lower Bracket	2	HP1403
Roll Plate	4	HP10054
Axle Clamp Bar	2	HP1406
3/8"-24 x 3/8" Hex Head Cap Screw	8	HP1002
3/8" Flat Washer	14	C653
3/8" Lock Washer	8	C18007
3/8" Nyloc Nut	6	HP1000
3/8"-16 x 1 1/2" Carriage Bolt	2	HP1408
3/8"-16 x 7" Carriage Bolt	4	HP1409
Heat Shield	1	HP0012
Hose Clamp	2	HP1377
Tie Strap	6	C11618
90° Swivel Air Fitting	2	HP1100



REQUIRED TOOLS

- Hoist or Floor Jack
- Safety Stands
- Safety Glasses
- Torque Wrench
- Standard Combination Wrenches
- 7/32" Hex Allen Wrench
- Ratchet
- Metric & Standard Sockets
- Hose Cutter (included) or Sharp Utility Knife
- Pipe Thread Sealant
- Spray Bottle with Dish Soap/Water
- Air Compressor/Compressed Air Source (to test/fill air springs)



WARNING: This product can expose you to the chemical Hexavalent Chromate, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

INSTALLATION INSTRUCTIONS

1 MEASURE STOCK RIDE HEIGHT & CLEARANCE

Park the vehicle on a level surface and remove any unnecessary weight from the vehicle to attain a "Normal Ride Height".

Using a measuring tape, measure the distance between the center of the wheel hub and the bottom of the fender well (see Figure 1A for reference) this will give you your stock Normal Ride Height.

Note the ride height for all four tires.

Check the clearance between the outside of the frame and the inside of the rear tires (as shown in red in Figure 1B), a minimum of 5" is required for adequate air spring clearance.

REMOVE REAR WHEELS

+ PLEASE NOTE: This step is optional for this installation but will make the install easier to complete.

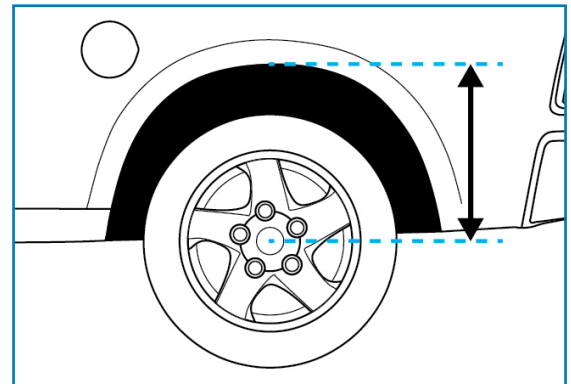
Place wheel chocks in front of and behind both front wheels.

Raise the rear of the truck high enough to remove both wheels and attain a comfortable working height.

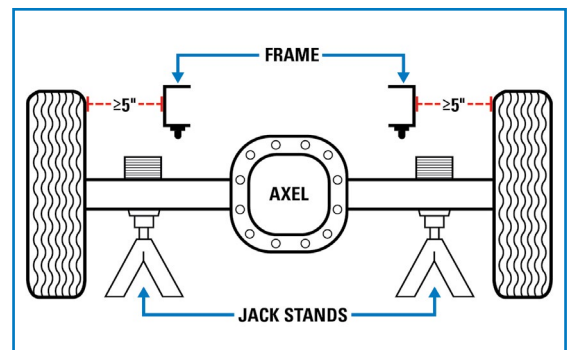
Place two jack stands under rear axle (as shown in Figure 1B).

Lower the vehicle until the axle is supported by the jack stands.

Remove rear wheels.



1A



1B

PLEASE NOTE: Photos shown in this manual are of the passenger's side (unless otherwise noted)

2 DISASSEMBLY

Remove the stock jounce bumper (highlighted with a black arrow in Figure 2), by removing the nut on the inside of the frame by using a 13mm socket.



2

3 UPPER BRACKET ASSEMBLY

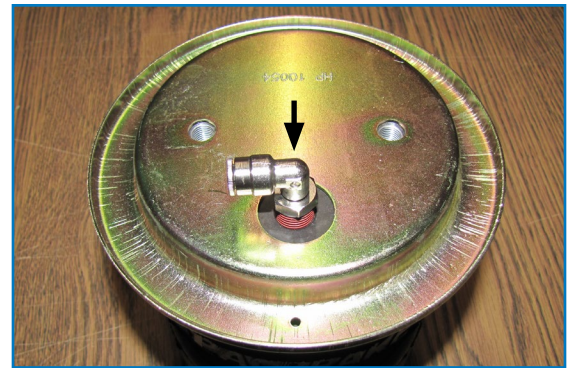
Set the roll plate on the top of the air spring, lining up the three holes.

Apply thread sealant to the 90° air line fitting and thread into the top of the air spring (shown with an arrow in Figure 3A).

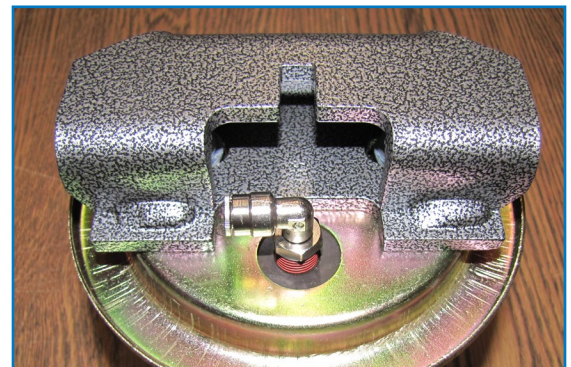
+ *It is recommended to install the fitting before the bracket, once the bracket is installed your access to the fitting is limited.*

Loosely attach the upper bracket on top of the air spring roll plate using the 3/8"-24 x 7/8" cap screws, flat and lock washers.

Make sure the fitting is faced parallel to the bracket (as shown in Figure 3B) so it nestles under the frame unobstructed when installing the air line in Step 9.



3A



3B

4 ADJUST THE UPPER BRACKET FOR EACH SIDE

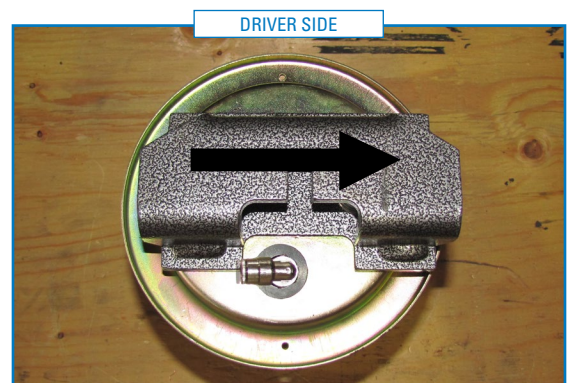
! *The upper bracket must be slid either left or right depending on which side of the vehicle you are mounting the air spring on (see Figures 4A & 4B for details):*

With the air line fitting side nearest you (as shown in the photos):

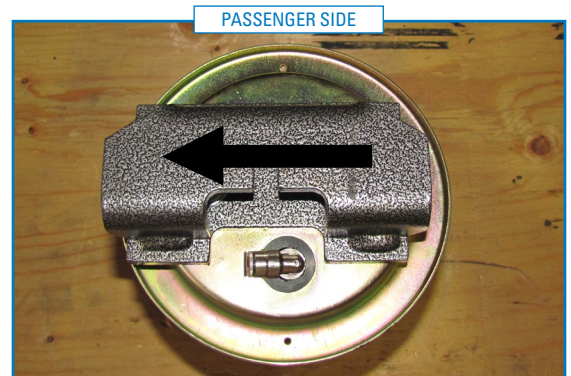
Slide the bracket all the way to the RIGHT for the **DRIVER SIDE**

Slide the bracket all the way to the LEFT for the **PASSENGER SIDE**

Using a 9/16" crows foot wrench, torque the cap screws to 27 N•m (20 ft-lbs).



4A



4B

5 FASTEN THE UPPER BRACKET TO FRAME

Insert a 3/8"-16 x 1 1/2" carriage bolt into the slot in the middle of the upper bracket (as shown in Figures 5A & 5B).

You will need to hold it in place while installing the air spring assembly into the vehicle.

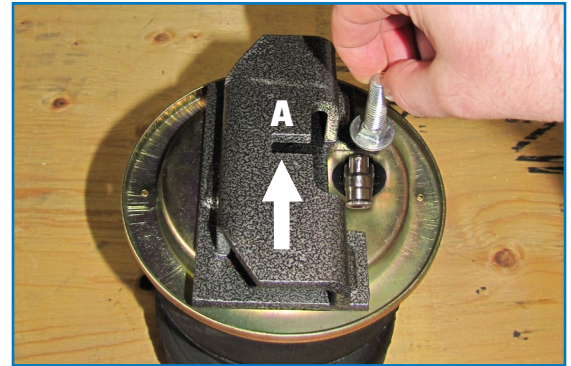
Position the assembly under the frame and insert the carriage bolt through the existing jounce bumper hole in the frame (as shown in Figure 5C with a white arrow).

The air fitting will be towards the inboard side of the frame.

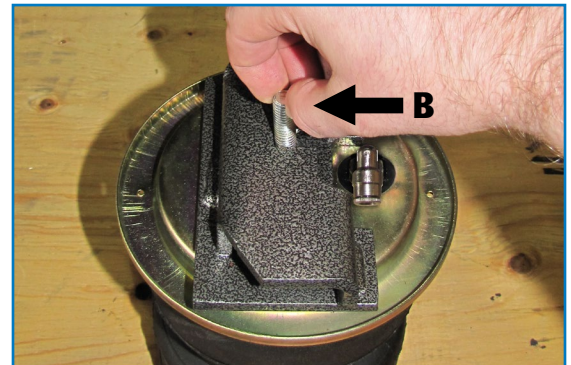
- ⊕ *The direction of the air fittings are pointing to the left for both side assemblies. The passenger side points towards the front of the vehicle so as not to be too close to the exhaust pipe one installed.*

The upper bracket should sit flush with the bottom of the frame (as shown in Figure 5D).

Fasten the assembly to the frame using the 3/8"-16 Nyloc nut and flat washer, torque to 27 N•m (20ft-lbs).



5A



5B



5C



5D

6 LOWER BRACKET ASSEMBLY

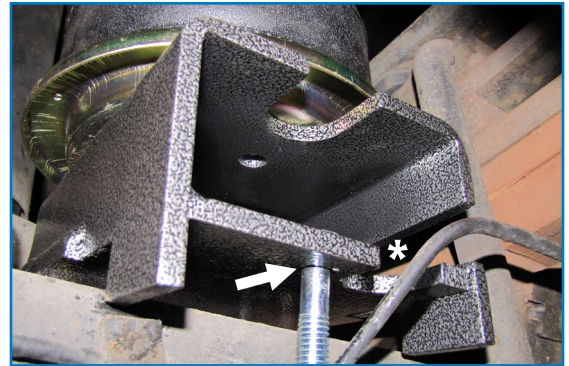
Insert two 3/8"-16 x 7" carriage bolts into either side of the lower bracket (as shown in Figure 6A with a white arrow) and position it onto the axle under the air spring.

! *These brackets have slots (marked in the photo an *) that correspond with the brake line. Be sure these are facing the rear of the vehicle on both sides.*

DRIVER SIDE ONLY The brake line may need to be moved or adjusted slightly in order to install the lower bracket on the driver's side axle.

Install the Clamp bar onto the carriage bolts using the 3/8" flat washer and nyloc nut (Figure 6B).

Leave loose for now.



6A

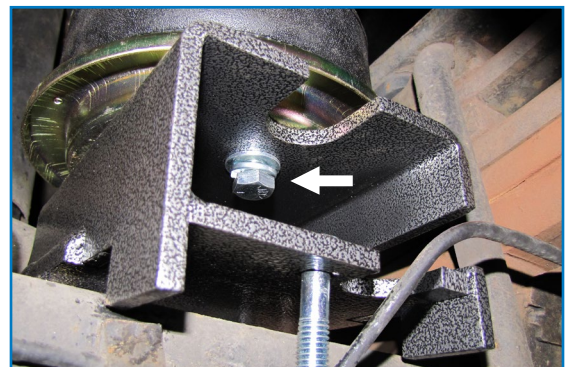


6B

7 FASTEN LOWER BRACKET

With the clamp bar still loose, align the holes in the air spring and roll plate with the holes in the lower bracket.

Attach the lower bracket to the air spring using two 3/8"-24 x 7/8" (shown in Figure 7).



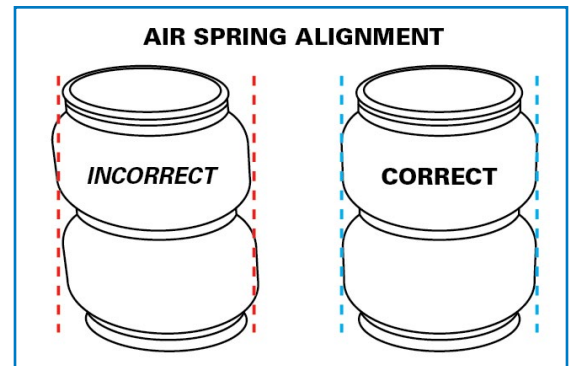
7

8 ADJUST THE AIR SPRING

Adjust the air spring assembly by moving the lower bracket on the axle tube to ensure the air spring is correctly aligned, (as shown in the Figure 8A: Air Spring Alignment diagram).

Once everything is in the correct alignment, torque the clamp bar nuts to 21.7 N•m (16 ft-lbs).

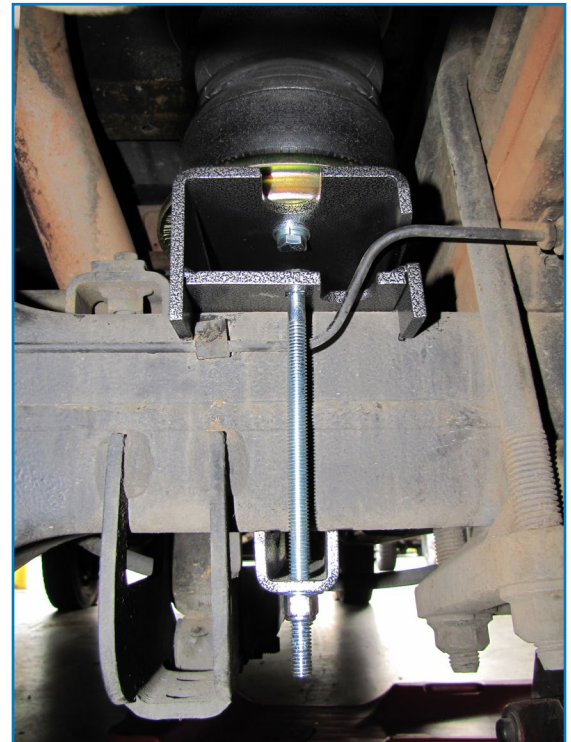
The final assembly should look like the photo shown here.



8A

REPEAT STEPS 5-8 on the driver side of the vehicle

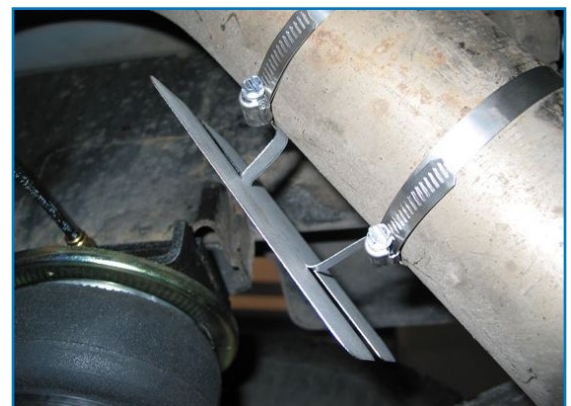
DRIVER SIDE ONLY Reattach the brake line (if moved/adjusted in Step 5) and tighten securely once final air spring alignment has been completed.



8B

9 INSTALL THE HEAT SHIELD

Bend the two center tabs of the heat shield and attach it to the exhaust pipe with the supplied gear clamps.



9

INSTALL AIR LINE

Two fill valves are provided in this kit. The most common place to install them is in place of the license plate fasteners. Alternatively, two 5/16" holes can be drilled in a location of your choosing.

Cut the air line assembly into two equal lengths with the hose cutter provided in this kit or a sharp utility knife.

⚠ PLEASE NOTE: This kit contains push-to-connect fittings; using scissors or wire cutters to cut the nylon air line will distort the line and cause the connection to leak. The air line must be cut off squarely with a hose cutter or a sharp utility knife.

Install one air line at a time starting at the fill valve location. Place a 5/16" nut on the air valve. Leave enough of the inflation valve in front of the nut to extend through the hole, install a flat washer, and 5/16" nut and cap (reference Figure A for assembly). There should be enough valve exposed after installation – approximately 1/2" – to easily apply a pressure gauge or an air chuck.

Route the air line back to the NPT fitting on the air spring, then cut the hose to length. Moisten the end of the air line prior to inserting it into the fitting and push it in until it stops.

Repeat with the other fill valve.

Secure the air lines using the provided tie-straps, away from any moving items and heat sources.

CHECK SYSTEM FOR LEAKS

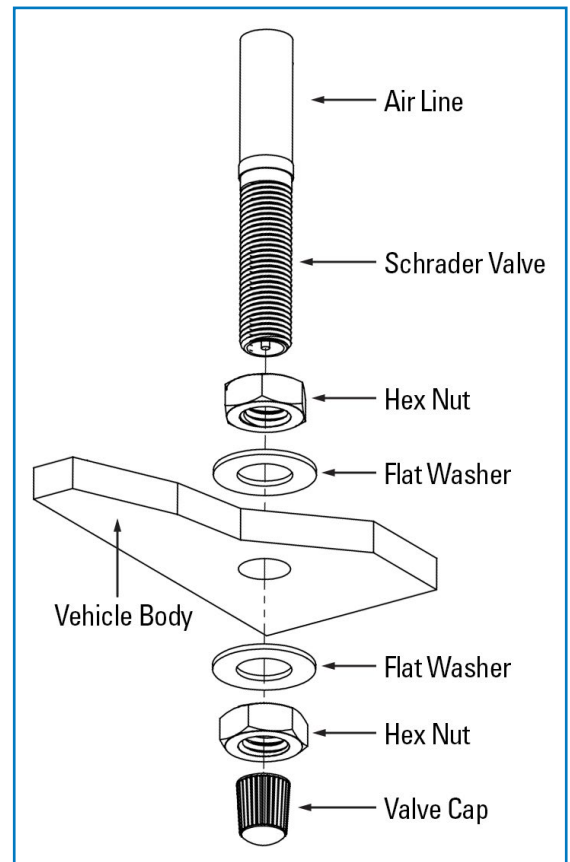
Using the *MIN/MAX PSI* chart on the following page; inflate both air springs to 10 psi less than the maximum recommended pressure for the air spring part number included in this kit; then use a mixture of dish soap and water on all air line connections to detect any air leaks. Large, expanding bubbles indicate a leak (as shown in Figure B).

⚠ Leak must be repaired, and then retested until no leaks exist.

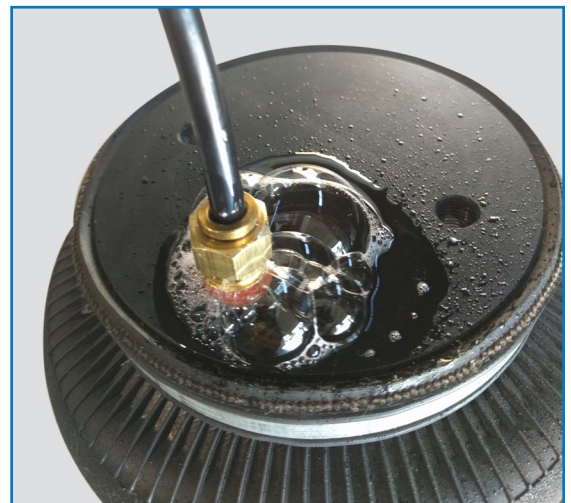
Recheck the pressure on the following day. If one or both of air springs have lost pressure, an air leak is present and must be repaired.

CONGRATULATIONS! You have completed the install

After Installation continues on the following page.



A



*Air Spring & NPT Air Fitting may differ between kits

B

Thank you again, and congratulations on the installation of your Air Suspension kit.

AFTER COMPLETING THE INSTALLATION

- ❗ The air spring must have clearance between itself and the surrounding components to prevent any contact when the air spring is inflated or compressed. Trimming off excess bolt length may also be required to ensure no contact with the spring or other suspension components can be made once installed. **Failure to do so will void the warranty.**
- ❗ If the vehicle's tires were removed during the installation; re-install and torque all wheel fasteners (lug nuts) to the manufacturer's specifications. Re-torque all wheel fasteners after the first 500 miles of driving.
- ❗ **Review your vehicle owner's manual and adhere to all instructions and post-installation requirements related to vehicle modifications.**

OPERATING YOUR VEHICLE WITH AIR SUSPENSION

Air springs have minimum and maximum recommended pressure requirements:

MIN / MAX PSI: REQUIREMENTS FOR YOUR AIR SPRING(S)				
PART #	SPRING STYLE	SPRING TYPE	MIN PSI	MAX PSI
HP10687	In-Coil	STANDARD DUTY	5 PSI	50 PSI
HP10560		STANDARD DUTY	5 PSI	70 PSI
HP10001	Sleeve Style	STANDARD DUTY	10 PSI	100 PSI
HP10173		STANDARD DUTY		
HP10199		STANDARD DUTY		
HP10083	Single Convolute	HEAVY DUTY	5 PSI	100 PSI
HP10083J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10000	Double Convolute	HEAVY DUTY	5 PSI	100 PSI
HP10000J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10068	Large Double Convolute	HEAVY DUTY	5 PSI	100 PSI
HP10438	Double Convolute	EXTREME DUTY	5 PSI	100 PSI
HP10438J		EXTREME DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI

**Springs with a jounce bumper can be run at zero PSI when vehicle is unloaded only*

Never operate the vehicle under the minimum or over the maximum listed PSI in the air spring(s). Staying within the pressure limits will ensure maximum air spring life. **Failure in doing so may result in damage to your vehicle and void the warranty.**

- ❗ **It is recommended to check the air pressure in your air springs daily, for the first 5 days, to ensure a leak has not developed.**

Air springs are designed to maintain the vehicle's stock ride height with a load. Do not use the air springs as a means to lift vehicle with no load. This will result in a harsh ride.

SERVICING YOUR VEHICLE WITH AIR SUSPENSION

It is recommended to always jack the vehicle on the axle. If lifting the vehicle with a floor jack or hoist on the frame, never allow the air spring to limit the travel of the axle. Suspending the axle with the air spring limiting the axle travel **will damage the air spring and void the warranty.** (This warning does not apply to In-Coil Springs)

WARRANTY

See accompanying limited warranty included with this kit for details.