

# Installation Manual



## AIR SUSPENSION KIT

Ford F150 (2WD/4WD)\*

*Heavy Loads*

*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.*

\* See application guide for proper fitment.

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**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.**


## IMPORTANT

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 exceed a maximum of 100PSI in the air springs. Staying under the pressure limit will ensure maximum air spring life. **Failure in doing so may result in damage to your vehicle and/or a void warranty.**

## SAFETY WARNINGS!

- ❗ Please read and abide 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.

 **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.

## BEFORE STARTING THE INSTALLATION

- Ensure the application information is correct for the make, model and year of the vehicle you are installing the kit on.
  - 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.
  - It is recommended to use a good quality anti-seize on all fasteners. This will reduce the chance of corrosion on the fasteners and will help facilitate removal, if required at a later date.
- ❗ **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 the hose cutter provided in this kit, or a sharp utility knife. **Failure to do so may void the warranty.**



**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](http://www.P65Warnings.ca.gov)

## KIT CONTENTS

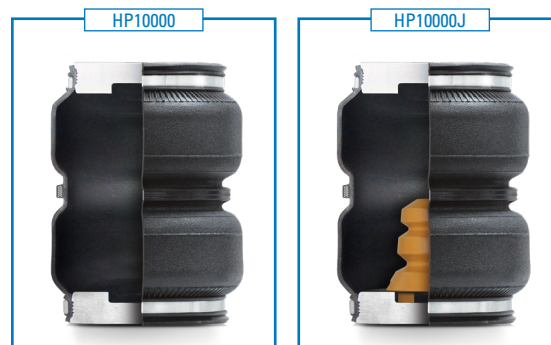
Please confirm the items below are provided in your kit before starting the installation.

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 #
Upper Bracket (Driver Side)	1	HP0018
Upper Bracket (Passenger Side)	1	HP0019
Lower Bracket	2	HP0017
4x4 Bracket	2	HP0020
Roll Plates	4	HP10054
Heat Shield	1	HP0012
3/8" -16 Nylock Nut	12	HP1000
3/8" -16 x 1" Hex Head Bolt	4	C18005
3/8" -16 x 51/2" Carriage Bolts	4	HP1022
3/8" -16 U-Bolts	2	HP1015
3/8" -24 x 7/8"	8	HP1002
3/8" Flat Washer	20	C653
3/8" Lock Washer	8	C18007
10mm x 30mm Flat Head Allen Bolt	2	HP1023
Gear Clamp	2	HP1023
Axel Strap	2	HP0016
Air Line/Valve Assembly	1	HP1344
Tie Strap	6	C11618
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)

## INSTALLATION INSTRUCTIONS

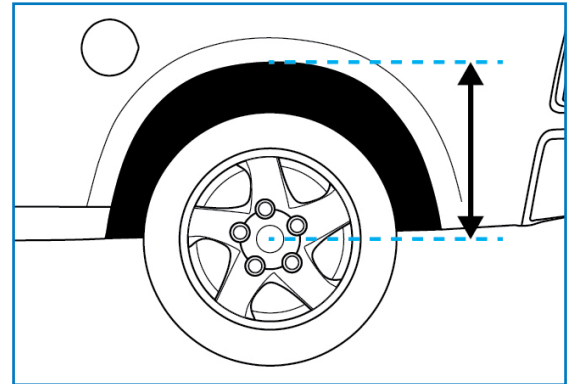
### 1 MEASURE STOCK RIDE HEIGHT & CLEARANCE

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.



1A

### 2 REMOVE REAR WHEELS

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

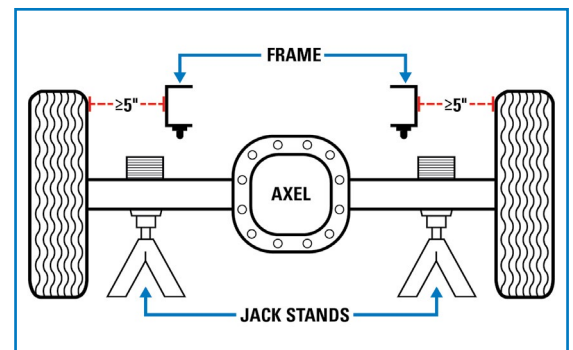
Place wheel chocks in front of and behind both front wheels.

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.



1B

### 3 REMOVE JOUNCE BUMPER

Remove the jounce bumpers on both sides and discard.

### 4 LOWER ROLL PLATE

Install the roll plate (with the rounded end towards the air spring) on to the bottom of the air spring. The bottom being the end without the air inlet port.

Align the two holes in the roll plate with those in the air spring (as shown in Figure 4).

**Repeat on the other air spring.**



4



## 5 LOWER BRACKET

Install the two carriage bolts supplied through the two holes in the lower mounting bracket.

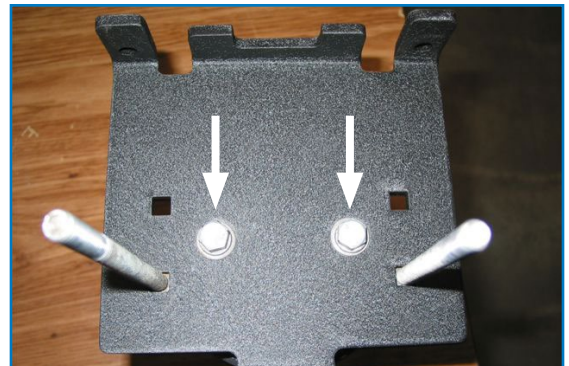
Position the lower mounting bracket on top of the air spring and the roll plate.

- ⊕ *Make sure the air inlet port is on the opposite end of the air spring and is positioned towards the same side as the carriage bolts.*

Install the capscrews, lock and flat washers.

Torque all the fasteners to 27 N•m (20 lbs.ft.)

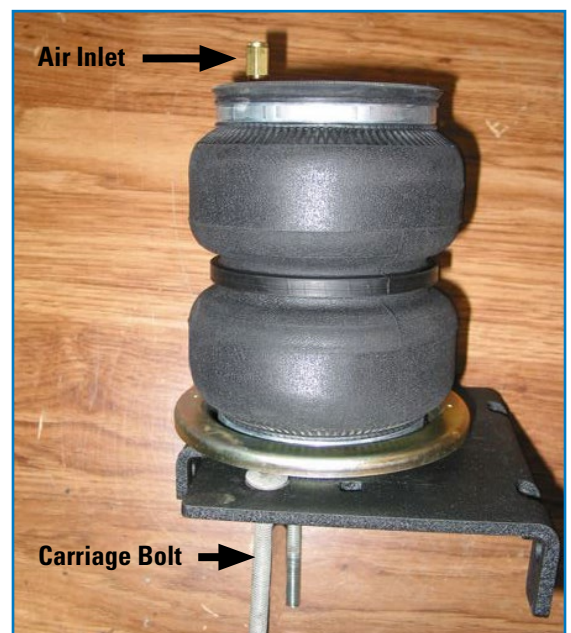
**Repeat on the other air spring.**



5

## 6 INSTALL AIRLINE FITTINGS

Using thread sealant to prevent air leaks, install the airline fittings provided into the top air inlet ports on the top of each air spring.



6

## 7 INSTALL UPPER BRACKET

- ⚠ **PLEASE NOTE:** *The upper mounting brackets are identified by HP0018 (for Driver Side) & HP0019 (for Passenger Side). The brackets are designed to be a tight fit on the frame. Vehicles with a thick layer of undercoating may require the brackets to be installed with a rubber mallet.*

Using the countersink fasteners supplied, install the correctly identified upper air spring mounting bracket (reference above **Note**) to the frame through the jounce bumper mounting hole (as shown in Figure 7).

- ⚠ *Ensure that the air spring mounting flange is facing towards the center of the vehicle.*

**Repeat on the other side.**



7

## 8 DRIVER SIDE AIR SPRING ASSEMBLY

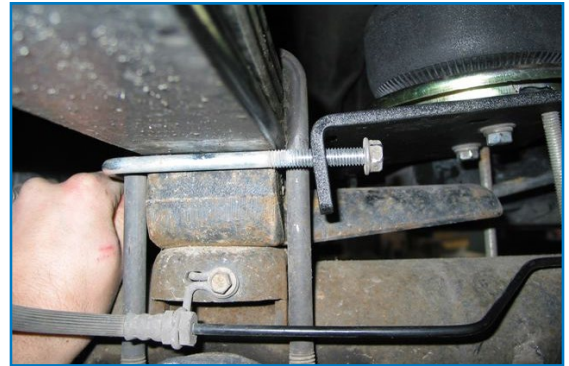
**!** *Install the drivers side air spring assembly first.*

Insert the air spring assembly over the axle tube with one carriage bolt on either side of the axle tube.

Align the lower bracket cutouts with the factory leaf spring U bolts (as shown in Figure 8).

Loosely install the U bolt provided around the leaf spring pack, then through the two holes in the lower air spring bracket.

**+** *Do not tighten the U bolt at this time.*



8

## 9 UPPER ROLL PLATE

Install the upper roll plate (with the rounded side towards the top of the air spring) over the air inlet fitting. Align the two mounting holes and using the capscrews, lock and flat washers provided, secure the air spring to the upper mounting bracket (shown with an arrow in Figure 9).

Torque the capscrews to 27 N•m (20 lbs.ft.)



9

## 10 INSTALL AXEL STRAP

Loosely install the axle strap included in the kit to the two carriage bolts previously installed in Step 4 & 5, with the nylock nuts provided.

**!** *4X4 Models Only - Loosely install the support bracket to the lower air spring mounting bracket (as shown by the arrow in Figure 10).*

*Install the bracket with the rounded cut out against the axle tube using the 3/8" fasteners provided.*



10

## 11 LOWER BRACKET ALIGNMENT

Evenly tighten the U bolt around the leaf spring pack. This will align the lower bracket, torque to 41 N•m (30 lbs.ft.)

**!** *4X4 Models Only - Adjust the support brackets to attain full contact against the axle tube.*

*Torque the support bracket fasteners to 41 N•m (30 lbs.ft.)*

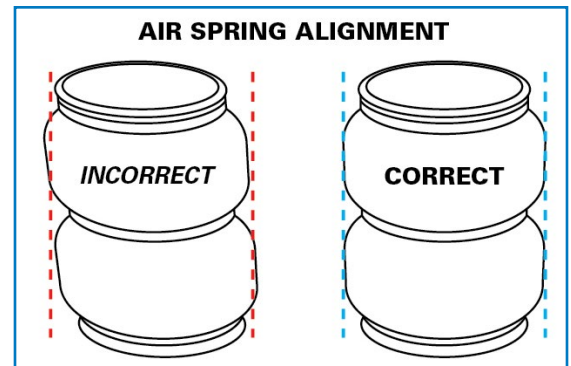


11

## 12 AIR SPRING ALIGNMENT

(Using Figure 12 as reference) check the alignment from the top to the bottom of the air spring.

If necessary, loosen the capscrews on the mounting bracket and adjust the air spring to achieve the best possible correct alignment (as shown in Figure 12).



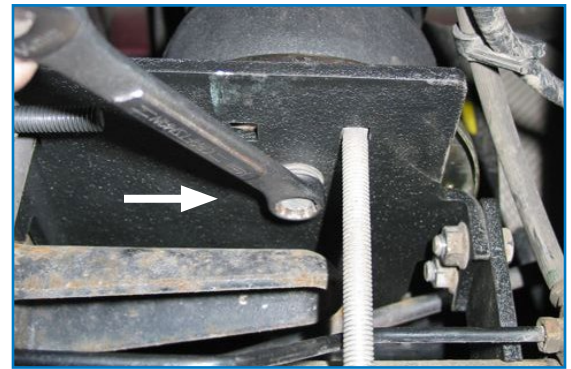
12

## 13 TIGHTEN AXLE STRAP

Evenly tighten the axle strap bracket nuts to 41 N•m (30 lbs.ft.) (shown in Figure 13).

## 14 PASSENGER SIDE AIR SPRING ASSEMBLY

*Repeat Steps 8-13 for the Passenger side of the vehicle.*



13

## 15 INSTALL HEAT SHIELD

Bend tabs on the heat shield so the required ½" of dead space exists between the heat shield and exhaust when attached.

Attach the heat shield to the exhaust pipe on passenger side using two ring clamps (shown in Figure 15).

Each hose clamp holds a tab against exhaust pipe.



15



## 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

Inflate both air springs to 90 psi (60 psi for in-coil bags), 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).

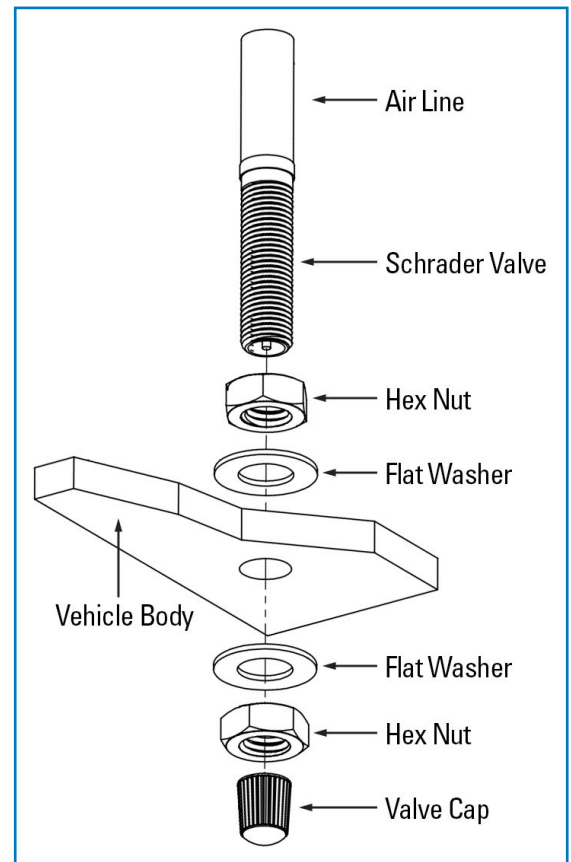
**Repair as necessary and retest.**

Inflate air springs to a predetermined value and on following day recheck pressure. If one or both of air springs have lost pressure, an air leak is present.

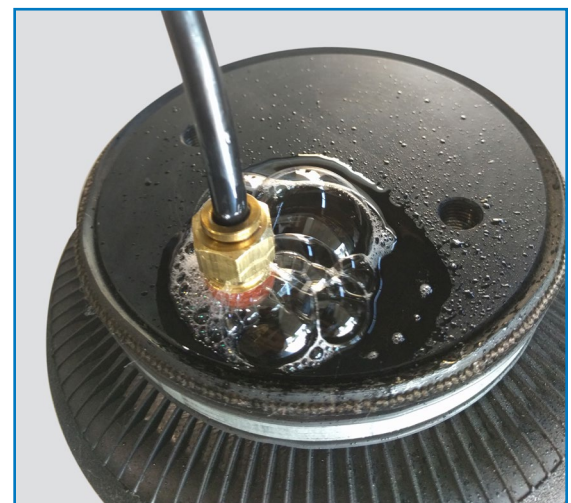
**⚠ Leak must be repaired, and then retested until no leaks exist.**

**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 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.
- If removed, re-install the wheels and torque fasteners to the manufacturer's specifications. Re-torque all fasteners after the first 500 miles of driving.

## OPERATING YOUR VEHICLE WITH AIR SUSPENSION

Air springs have minimum and maximum recommended pressure requirements:

PART #	SPRING STYLE	SPRING TYPE	MIN PSI	MAX PSI
HP10189	In-Coil	STANDARD DUTY	5 PSI	70 PSI
HP10560		STANDARD DUTY		
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

For safe and proper operation, never operate the vehicle over the maximum listed PSI in the air springs. Staying under the pressure limit will ensure maximum air spring life. **Failure in doing so may result in damage to your vehicle and/or a void warranty.**

**! It is recommended to check the air pressure in your air springs daily for first couple of 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

When lifting the vehicle with a floor jack or hoist on the frame, never allow the air spring to limit the travel of the axle. Try to always jack the vehicle on the axle. Suspending the axle with the air spring limiting the axle travel will damage the air spring and void the air spring warranty.

## WARRANTY

**See additional warranty included with this kit for details.**