

# Installation Manual



## AIR SPRING KIT

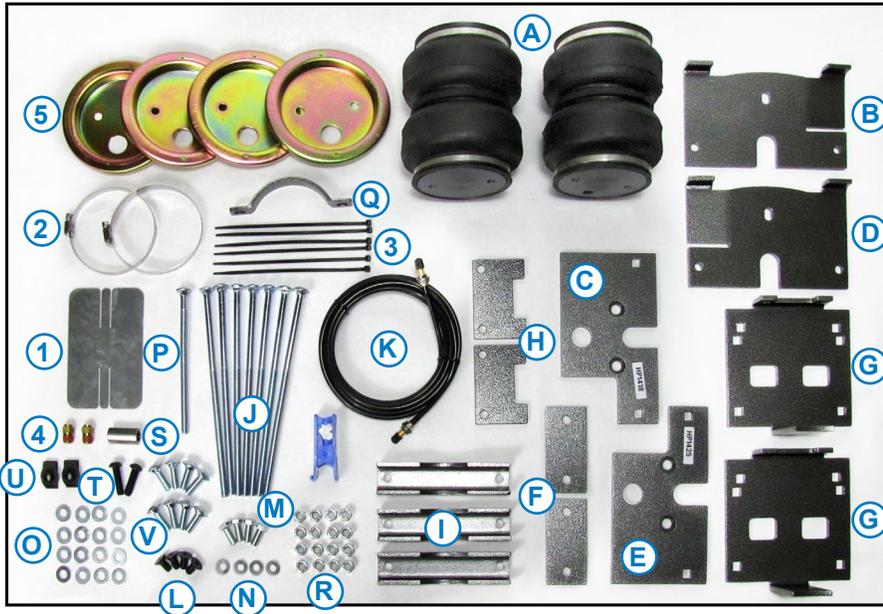
Ford F-150 (4WD)\*

*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.

L6335\_REV6\_02.15.2023

**KIT CONTENT**



**Make sure all the items shown in the photo are provided in your kit before starting the installation.**

**KIT CONTENTS**

<b>A</b>	Air Springs	(2)	HP1000D
<b>B</b>	Driver Side Frame Upper Bracket	(1)	HP1417
<b>C</b>	Driver Side Air Spring Upper Bracket	(1)	HP1418
<b>D</b>	Passenger Side Frame Upper Bracket	(1)	HP1424
<b>E</b>	Passenger Side Air Spring Upper Bracket	(1)	HP1425
<b>F</b>	Adjustment Plate	(2)	HP1423
<b>G</b>	Lower Bracket	(2)	HP1419
<b>H</b>	Lower Bracket Extension	(2)	HP1426
<b>I</b>	Large Axle Strap	(3)	HP1383
<b>J</b>	3/8" – 16 x 10" Carriage Bolt	(7)	HP1329
<b>K</b>	Air Line Assembly	(1)	HP1344
<b>SUB-GROUP A:</b>			
<b>L</b>	3/8" – 24 X 1/2" Flat Head Cap Screw	(4)	HP1008
<b>M</b>	3/8" – 24 X 1.0" Hex Head Cap Screw	(4)	HP1183
<b>N</b>	3/8" Lock Washer	(4)	C18007
<b>O</b>	3/8" Flat Washer	(16)	C653
<b>P</b>	3/8" – 16 x 7" Carriage Bolt	(1)	HP1409
<b>Q</b>	Small Axle Strap	(1)	HP0009
<b>R</b>	3/8" – 16 Nyloc Nut	(16)	HP1000
<b>S</b>	Sleeve Spacer	(1)	HP1422
<b>T</b>	M10 – 1.5 x 35 Button Head Screw	(2)	HP1420
<b>U</b>	M10 – 1.5 Universal Nut	(2)	HP1421
<b>V</b>	3/8" – 16 x 1.25" Carriage Bolt	(8)	HP1149
<b>SUB-GROUP B:</b>			
<b>1</b>	Heat Shield	(1)	HP0012
<b>2</b>	Hose Clamp	(2)	HP1001
<b>SUB-GROUP C:</b>			
<b>3</b>	Tie Strap	(6)	C11618
<b>4</b>	Straight Air Fitting	(2)	HP1099
<b>5</b>	Roll Plate	(4)	HP10054

**REQUIRED TOOLS**

- 7/16", 1/2" and 9/16" Open End or Box Wrenches
- Adjustable Wrench
- Torque Wrench
- 9/16" and 13 mm Deep Sockets
- 8 mm Allen Socket
- Pipe Thread Sealant
- Air Compressor / Compressed Air Source
- Hoist or Floor Jack
- Safety Stands
- Safety Glasses
- Spray Bottle with Dish Soap/Water



**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)*

Thank you and congratulations on the purchase of an air suspension kit. Please read the entire installation manual prior to starting the installation to ensure you can complete the installation once started.

### IMPORTANT:

This air suspension kit will not increase the GVWR (Gross Vehicle Weight Rating), as the GVWR is determined by the axle rating. Do not exceed the maximum capacity listed by the vehicle manufacturer.

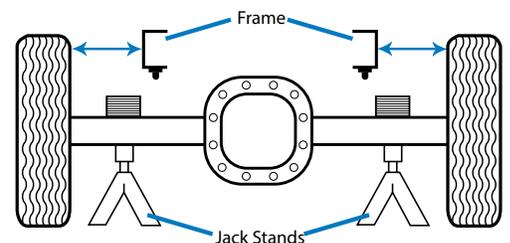
### BEFORE YOU START:

**NOTE:** 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.

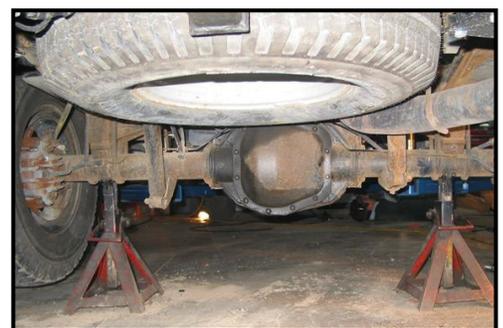
1. Ensure the application information is correct for the make, model and year of the vehicle you are installing the kit on.
2. It is recommended to use a good quality anti-seize on all fasteners. This will reduce the chance of corrosion on the fasteners and will help facilitate removal, if required at a later date

## 1 RAISE THE REAR AXLE

- Remove any unnecessary weight from the vehicle to attain normal ride height. This is important for correct initial air spring setup and adjustment.
- Park the vehicle on a level surface.
- Record the vehicle's normal ride height, which is the distance between the center of the axle and the horizontal wheel well flange. Ensure both sides are the same before raising the vehicle.
- Raise the rear axle high enough to remove both rear wheels and attain a comfortable working height.
- Place two jack stands under the axle, as shown (see photo 1A-1B)
- Lower the floor jack until the vehicle axle is supported by the jack stands.
- Ensure the normal ride height measurement recorded earlier is the same. Adjust if necessary before proceeding.
- Once the rear axle is raised correctly, remove the rear wheels.



1A



1B

## 2 REMOVE THE JOUNCE BUMPERS

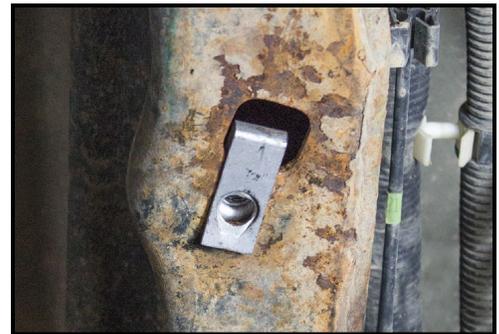
- Remove the jounce bumpers (see photo 2A) from both sides using a 13 mm socket and an extension.
- 2004-2008 model vehicles will have universal nuts that hold the jounce bumpers in place. Once the jounce bumper has been removed, these nuts will have to be replaced by the ones supplied with the kit. (See photo 2B-2C)



2A



2B



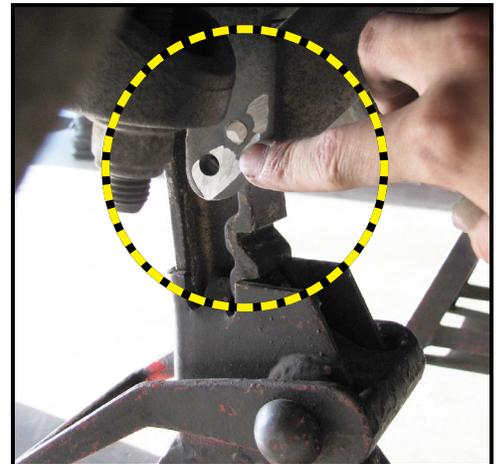
2C

## 3 CUT OFF EXCESS EMERGENCY BRAKE CABLE HOLDER BOLT

- This preparatory step encompasses all model years compatible with this kit.
- An emergency brake cable holder (photo 3B) will be found on the passenger side. Cut off the excess part of the bolt that sticks out from behind this holder to ensure a flush surface as shown in the photo. This is necessary to make room for an axle clamp that comes in at a later step.



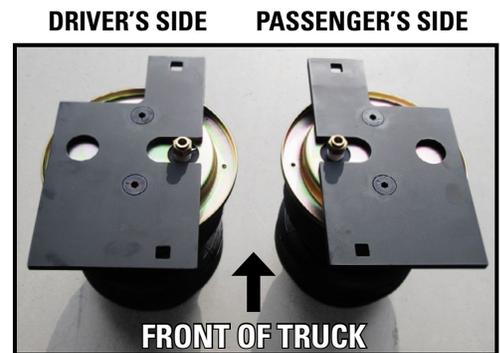
3A



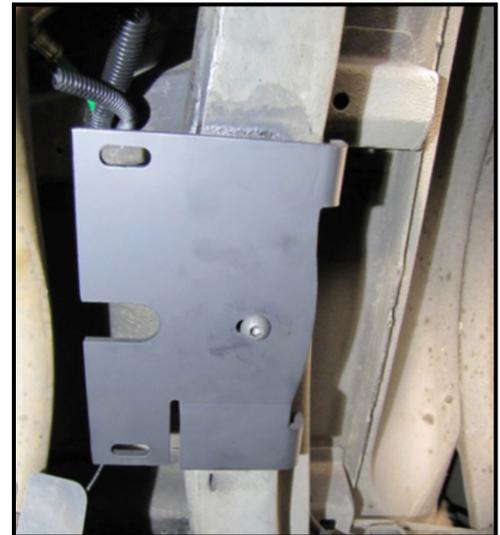
3B

## 4 ATTACH THE UPPER BRACKET

- Set both air springs upright on a work bench, so that the ¼ NPT port is facing up and set a roll plate on each of them, aligning each corresponding hole.
- Apply thread sealant to the supplied air fitting and thread into the top of the air spring. Hand tighten plus one and a half more turns. It is recommended to install the fitting **before** the upper bracket. Access to the fitting will be limited once the upper bracket is installed on the air spring.
- Install the upper air spring bracket onto the air spring with the supplied ⅜"-24 X 7/8" flat head screws.
- Refer to photo 4A to determine which assembly is for the driver or the passenger side. Torque to 20 ft-lbs.
- As mentioned earlier, the universal nuts that held the jounce bumpers on the frame (only applicable to 2004-2008 vehicles) have to be replaced with the universal nuts supplied in the kit.
- Take an upper frame bracket and attach it to the appropriate side. Refer to photo 4B to determine the correct side for each upper frame bracket.
- Once the correct bracket has been determined, attach each upper frame bracket onto the frame with the two bent tabs on the outside, facing up. For 2004-2008 vehicles, the upper frame bracket will bolt onto the universal nuts previously attached using the supplied M10-1.5 x 35 button head screw. The newer model 2009-2014 vehicles do not require the universal nut as the screw will thread straight into the frame. Torque to 38 ft-lbs (52 N•m).



4A



4B

- 5** Attach the left and right hand assemblies to the frame brackets using the carriage bolts, the flat washers and the nylon lock nuts. (See photos 5A-5B)

Torque to 31 ft-lbs.

**NOTE:** The air fitting should be on the inside of the frame.



5A



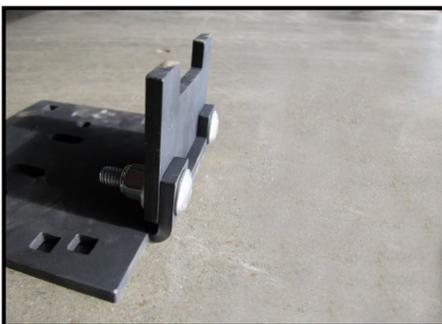
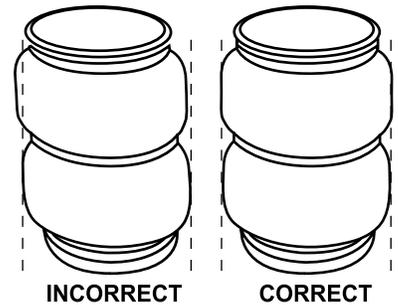
5B

## 6 ATTACH THE LOWER BRACKET TO THE AXLE

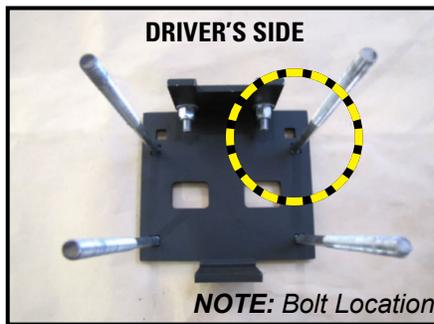
- The lower brackets are the same and are not specific to each side. Take one and set it on the axle as shown.
- The shorter tab on the lower bracket has to sit in between the stock u-bolts that hold the leaf spring on the axle. They should sit on the jounce bumper strike plate on 2004-2008 vehicles. 2009-2014 vehicles do not have this strike plate and therefore an extension must be bolted onto the short tab of the lower bracket using the supplied  $\frac{3}{8}$ "-16 x 1.25" carriage bolts,  $\frac{3}{8}$ "-16 nyloc nuts, and  $\frac{3}{8}$ " flat washers. Torque to 20 ft-lbs (27.1 N•m).  
(See photo 6A for mounting position)
- For the driver side, use two large axle clamps, four  $\frac{3}{8}$ "-16 x 10" carriage bolts,  $\frac{3}{8}$ "-16 nyloc nuts, and  $\frac{3}{8}$ " flat washers to clamp the lower bracket onto the axle. The passenger side will require one large and one small axle clamp, one 7" carriage bolt, 3-10" carriage bolts and the supplied sleeve spacer must be added to the front side of the small axle clamp (see photo 6F). Torque to 10 ft-lbs (13.5 N•m).

**NOTE:** To distinguish the different sides refer to photos 6B to 6E.

### AIR SPRING ALIGNMENT



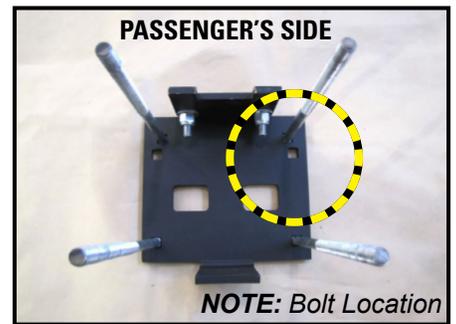
6A



DRIVER'S SIDE

NOTE: Bolt Location

6B



PASSENGER'S SIDE

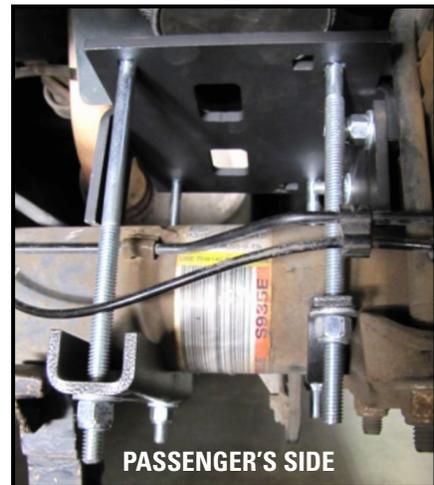
NOTE: Bolt Location

6C



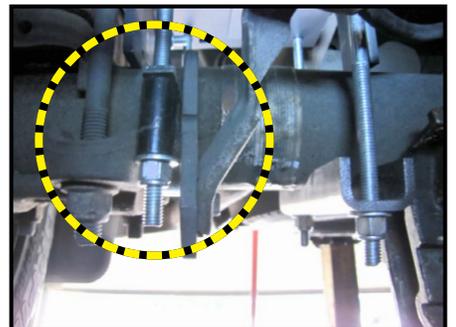
DRIVER'S SIDE

6D



PASSENGER'S SIDE

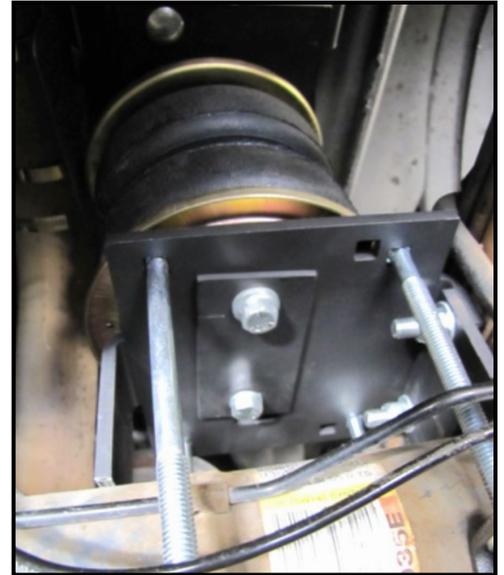
6E



6F

## 7 ATTACH THE LOWER BRACKET TO THE AIR SPRING:

- Take a roll plate and set it below the air spring, making sure that the holes match on each part.
- Using the supplied adjustment plates (see kit item F), the air spring must be bolted onto the lower bracket with two  $\frac{3}{8}$ " - 24 x 1.0" hex head cap screws, two  $\frac{3}{8}$ " flat washers, and two  $\frac{3}{8}$ " lock washers.
- Torque to 20 ft-lbs (27.1 N•m)
- The axle will need to be raised up accordingly to attach the lower bracket to the air bag. (See photo 7)



7

## 8 INSTALL THE HEAT SHIELD

- Bend the tabs on the heat shield so there will be the necessary  $\frac{1}{2}$ " dead space between the heat shield and the muffler when the heat shield is attached.
- Attach the heat shield to the exhaust pipe on the passenger side using two hose clamps. Each hose clamp holds a tab against the exhaust pipe. Make sure the heat shield is facing toward the air spring (see photo 8).



8

## 9 INSTALL THE AIR LINE

- Provided in the basic air spring kit are two fill valves. The most common place to install them is to replace the license plate fasteners with the fill valves (see photo 9A). Alternatively, two holes can be drilled in a convenient location. Install one airline provided, route the nylon hose to an air spring fitting, cut the hose and connect to the air spring fitting. Repeat with the other fill valve.
- Secure airlines with the tie-straps provided away from moving items and heat sources.
- If an in cab inflation kit is being installed, follow the instructions provided with it.



9A

**NOTE:** This kit contains push to connect fittings, using scissors or wire cutters to cut the nylon airline will distort the line and cause the connection to leak. **THE AIRLINE MUST BE CUT OFF SQUARELY WITH A SHARP RAZOR KNIFE OR THE NYLON HOSE CUTTER PROVIDED IN THE KIT.**

- Moisten the end of the airline prior to inserting it into the fitting and push it in until it stops.
- After the air line is cut, insert one end into the air line fitting, as shown in (see photo 9B), and the other into the fill valve. Moisten the end of the air line with liquid soap prior to inserting it, and then push it in until it stops.



9B

## 10 CHECK SYSTEM FOR LEAKS

- Inflate both air springs to 90 PSI, and then use a mixture of dish soap and water on all air line connections to detect any air leaks. Repair as necessary and retest (see photo 10).
- Inflate the air springs to a predetermined value, and on the following day recheck the pressure. If one or both the air springs have lost pressure, an air leak is present. The leak must be repaired, and then retested until no leaks exist.



10

## 11 AFTER THE INSTALLATION IS COMPLETED, PLEASE REMEMBER:

- Install wheels and torque fasteners to manufacturer's specifications.
- Re-torque all fasteners after first 500 miles of driving.
- For safe and proper operation, never operate the vehicle under minimum of 10 psi or over maximum of 100 psi in air springs. Staying within pressure limit will ensure maximum air spring life. Failure in doing so may result in a void warranty (see **Note** below).

**Do not exceed maximum vehicle payload. Failure to do so may result in failure of the air suspension kit and/or damage to your vehicle.**

***Thank you again, and congratulations on the installation of the air suspension kit.***

**OPTIONAL ACCESSORIES**

Optional dual needle air gauges are available to monitor pressure in each spring from vehicle cab, as well as a full line of air compressors, air tanks, and solenoids built to work with and control your air spring system.

**OPERATING YOUR VEHICLE WITH AIR SUSPENSION**

Air springs have minimum and maximum pressure requirements. Never operate your vehicle with less than 10 psi in air spring and never inflate air springs over 100 psi. Damage to air springs will result.

Check air pressure in air springs daily for first couple of days to ensure a leak has not developed. Air springs are designed to maintain the vehicles 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**

***The owner's warranty will be void if air springs are run with less than the minimum of 10 psi. See additional warranty for details.***

