

# Installation Manual



## AIR SUSPENSION KIT

FORD F-150 (2WD~4WD)\*†◇ Including Power Boost models

† Will not fit Raptor or Lightning models

- ① ~ Additional 2" spacer kit required for 2WD applications (sold separately – Part No: 10152)
- ① ◇ Additional passenger side height sensor relocation brackets are required for CCD equipped vehicles (sold separately – Part No: 10697-RH)

*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.  
**PLEASE BE AWARE:** An additional 2” spacer kit is required for all 2WD applications (sold separately – Part No: 10152)  
 Additional Passenger Side Height Sensor Relocation Brackets are required for CCD equipped vehicles (sold separately – Part No: 10697-RH)
- !** 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 #
<b>A</b>	Double Convoluted Spring	2	HP10000

HEAVY DUTY JOUNCE BUMPER KITS		QTY	PART #
<b>B</b>	Double Convoluted Spring w/ Jounce Bumper	2	HP10000J



KIT CONTENTS		QTY	PART #
<b>C</b>	Roll Plate	4	HP10054
<b>D</b>	90° Swivel Fitting	2	HP1100
<b>E</b>	Bracket, Upper Air Spring	2	HP1750
<b>F</b>	Bracket, Driver Frame	1	HP1751
<b>G</b>	Bracket, Passenger Frame	1	HP1752
<b>H</b>	Bracket, Driver Lower	1	HP1753
<b>I</b>	Bracket, Passenger Lower	1	HP1754
<b>J</b>	Bracket, Sensor Relocation Upper	1	HP1758
<b>K</b>	Bracket, Sensor Relocation Lower	1	HP1759
<b>L</b>	Carriage Bolt Plate	4	HP0123
<b>M</b>	Leaf Spring Clamp	4	HP1623
<b>N</b>	Bolt, 3/8" - 24 X 7/8" Hex Head	8	HP1002
<b>O</b>	Bolt, 3/8" - 16 X 1.25" Hex Head	8	C10464
<b>P</b>	Bolt, 3/8" - 16 X 1.5" Carriage	4	HP2160
<b>Q</b>	Bolt, 3/8" - 16 X 4" Carriage	8	HP1728
<b>R</b>	Bolt, M10 X 1.5 X 35mm Hex Head	2	HP1134
<b>S</b>	Washer, 3/8" Flat	16	C653
<b>T</b>	Washer, M10 Flat	2	HP1573
<b>U</b>	Washer, 3/8" Split Lock	8	C18007
<b>V</b>	Nut, 3/8" Nylon Lock	20	HP1975
<b>W</b>	Bolt Leader Tool	2	HP1440



**REQUIRED TOOLS**

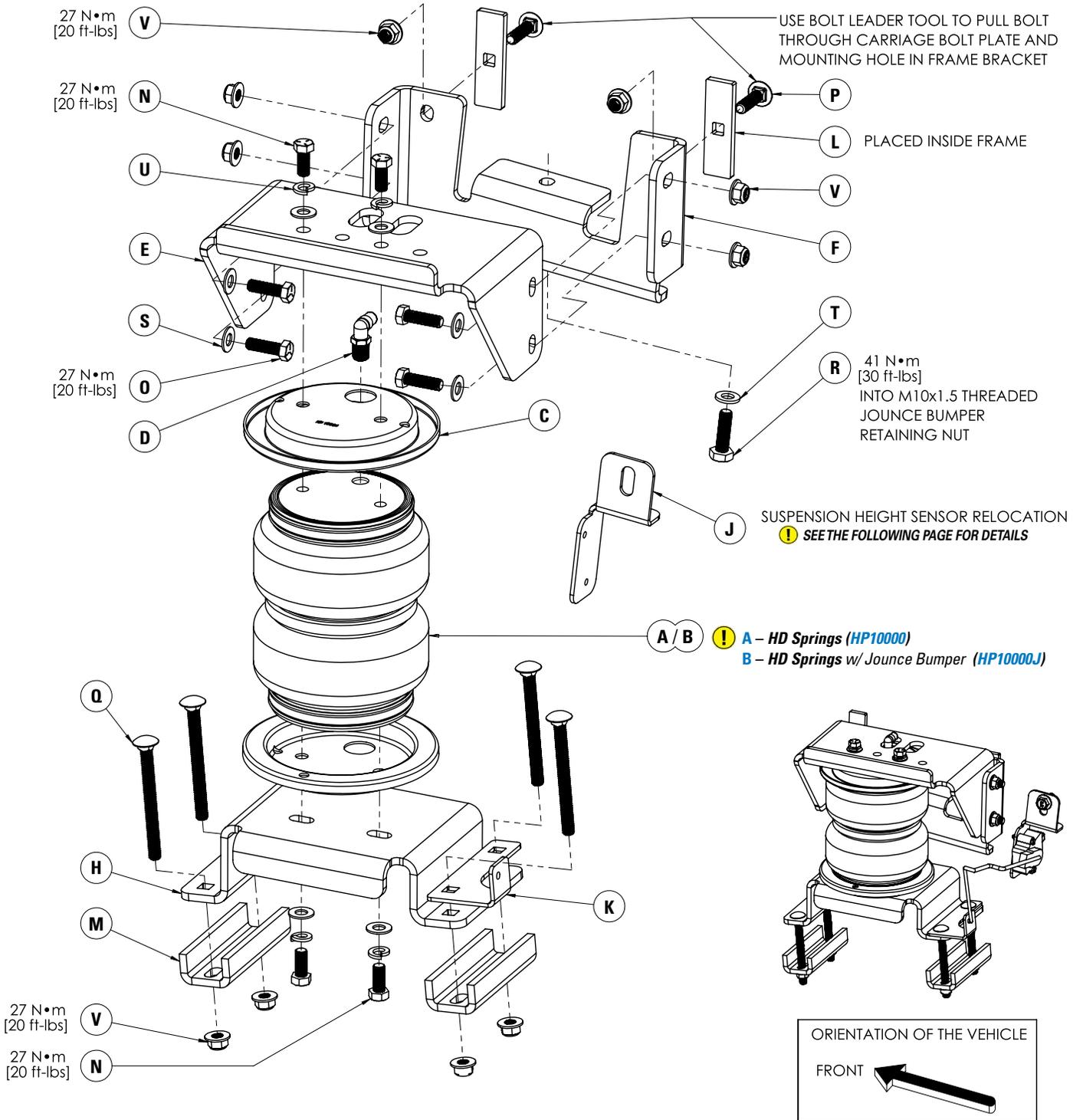
- Hoist or Floor Jack
- Safety Stands
- Safety Glasses
- Torque Wrench
- Standard Combination Wrenches
- 7/32" Hex Allen Wrench
- Ratchet
- Metric & Standard Sockets
- Hose Cutter (included) or Sharp Utility Knife
- Pipe Thread Sealant
- Spray Bottle with Dish Soap/Water
- Air Compressor/Compressed Air 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](http://www.P65Warnings.ca.gov)

**KIT EXPLOSION DIAGRAM**

**DRIVER SIDE ASSEMBLY SHOWN (Passenger side assembly is mirrored)**

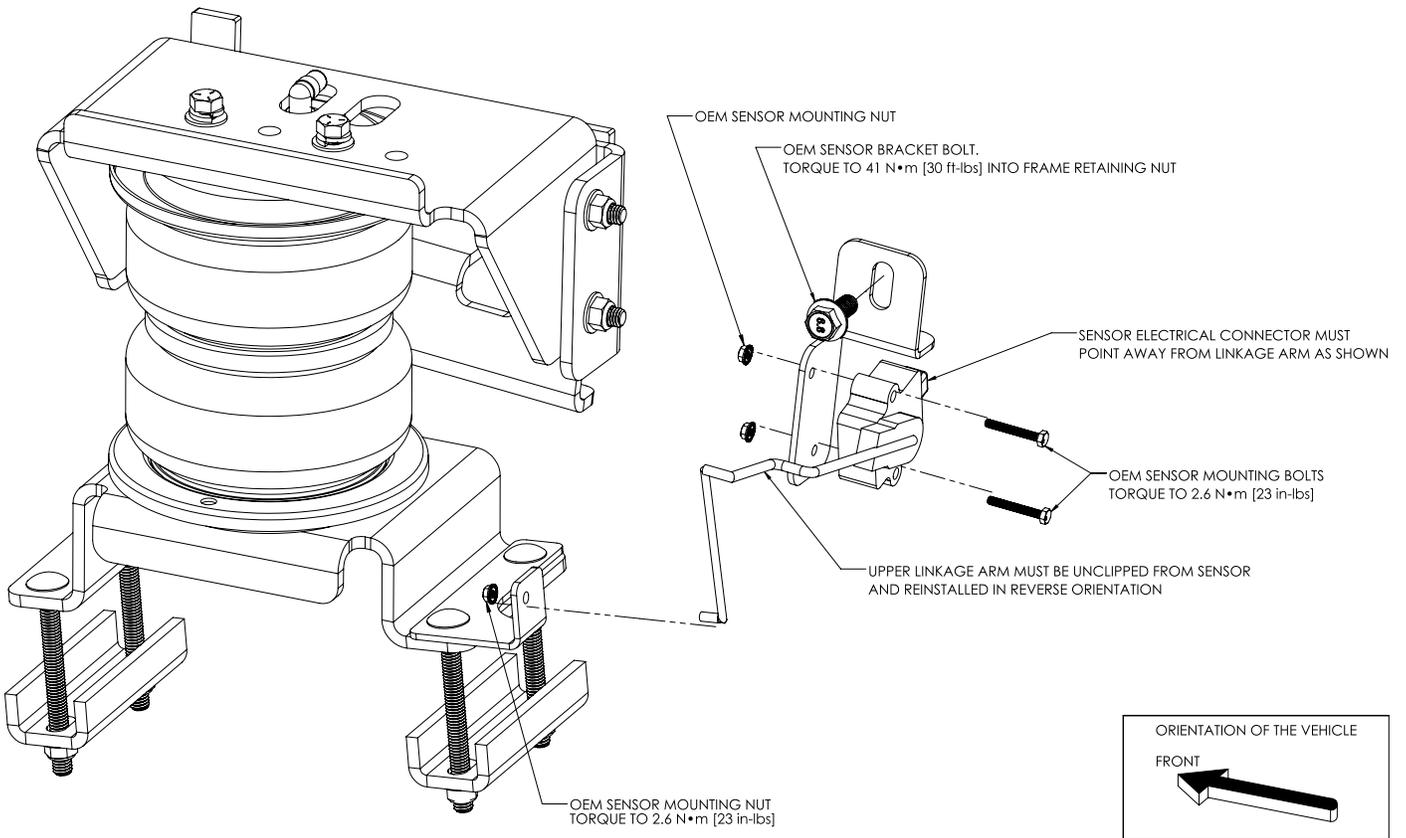


**RIDE HEIGHT SENSOR ASSEMBLY SHOWN:  
(FOR VEHICLES WITH RIDE HEIGHT SENSOR ONLY)**

Models equipped with rear suspension height sensors require sensor relocation using relocation brackets listed in the kit contents on Page 3.

**!** Relocation brackets are not to be installed if vehicle is not equipped with sensor

**!** **PLEASE NOTE:** Do not operate vehicle with sensor in relocated position with air springs removed. Sensors may be damaged under extreme suspension articulation.



## INSTALLATION INSTRUCTIONS

### 1 REMOVE REAR WHEELS

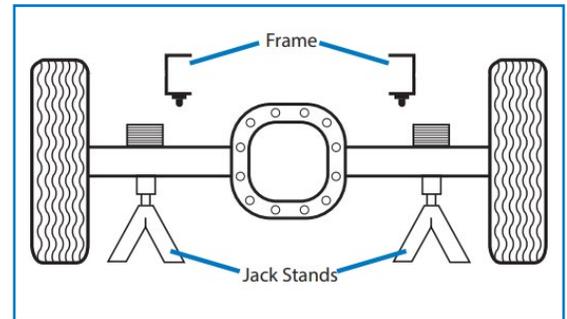
Park the vehicle on a level surface.

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 (shown in Figure 1). Lower the vehicle until the axle is supported by the jack stands.

Remove rear wheels.



1

### 2 RIDE HEIGHT SENSOR REMOVAL (IF VEHICLE HAS RIDE HEIGHT SENSOR)

**Remove Ride Height Sensor (use Figure 2A for reference):**

Disconnect the electrical harness connector from the ride height sensor. Remove the two factory bolts and two nuts holding the ride height sensor to the factory upper bracket (as shown in Figure 2A).

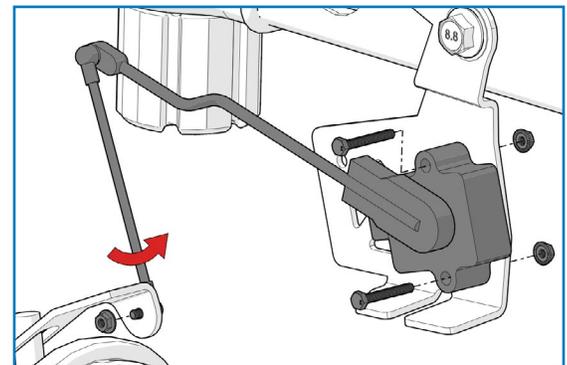
Remove the factory nut securing the lower linkage to the lower factory bracket (see Figure 2A for reference). Retain these parts.

**Remove Upper & Lower OEM Brackets (use Figure 2B for reference):**

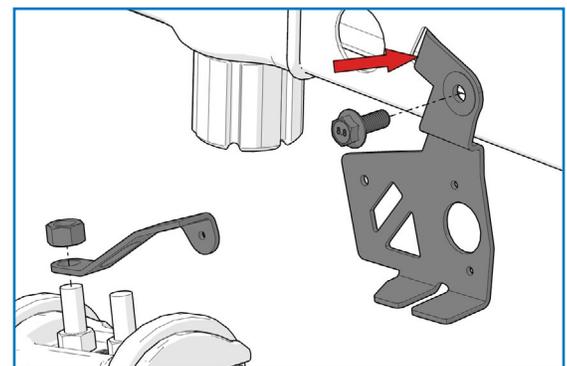
Remove the factory bolt securing factory upper bracket to the frame. Retain this bolt.

Remove upper bracket from square hole (indicated by arrow) and remove from vehicle. **Do NOT remove the bracket retaining nut from the frame.** This will be used during sensor relocation bracket installation.

Remove factory nut securing factory lower bracket to leaf spring pack and remove factory lower bracket.



2A

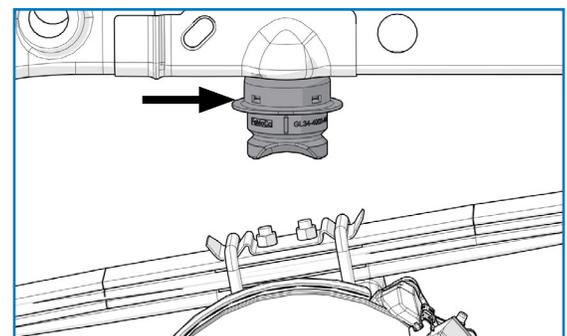


2B

### 3 REMOVE THE JOUNCE BUMPER

The jounce bumper assembly (as shown with an arrow in Figure 3) consists of a cup and a bumper. It is bolted to the frame with a single bolt running through the center of the jounce bumper.

Remove the bolt holding the jounce bumper to the frame with a 13mm socket. A socket extension may be required to reach the bolt.



3

#### 4 ATTACH THE UPPER BRACKET TO THE FRAME

Insert a 3/8" – 16 x 1.25" carriage bolt through the carriage bolt locking plate.

Thread the provided bolt leader tool onto the bolt (see Figure 4A for part assembly).

Insert the carriage bolt and lock plate into one of the side mounting holes in the frame for the upper frame bracket.

**Repeat process for second mounting hole** (as shown in Figure 4B).

Place the upper frame bracket on the frame rail and position by inserting the M10x1.5 x 35 mm bolt with M10 flat washer through the bottom locating hole into the jounce bumper bolt hole.

Insert the protruding wires of the bolt leader tools through the respective side mounting holes in the upper frame bracket (as shown in Figure 4C)

Tighten the M10 bolt to rigidly secure the frame bracket. Ensure vertical flanges rest flat against the frame and torque bolt to 41 N•m (30 ft-lbs)

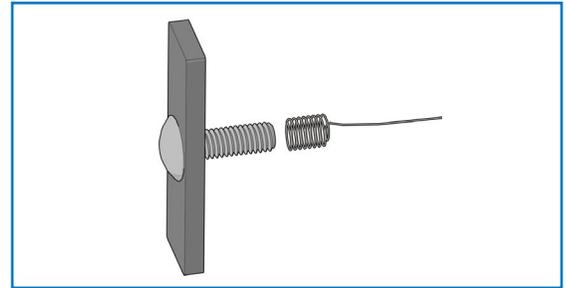
Pull the bolt leader tool to pull the carriage bolt through the mounting hole in the frame bracket. Carefully hold the protruding carriage bolt and remove the bolt leader tool.

Secure the bolt with lock plate using a 3/8"-16 nylon lock flange nut.

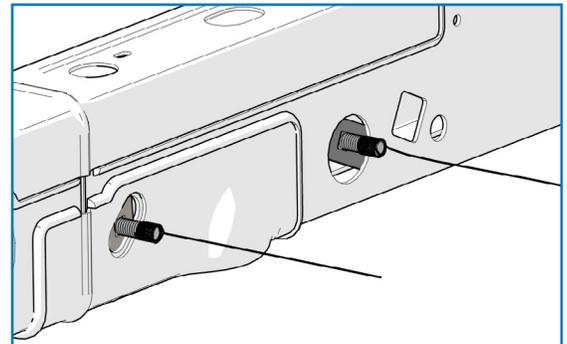
**Repeat for second bolt.**

Torque nylon lock flange nut to 27 N•m (20 ft-lbs).

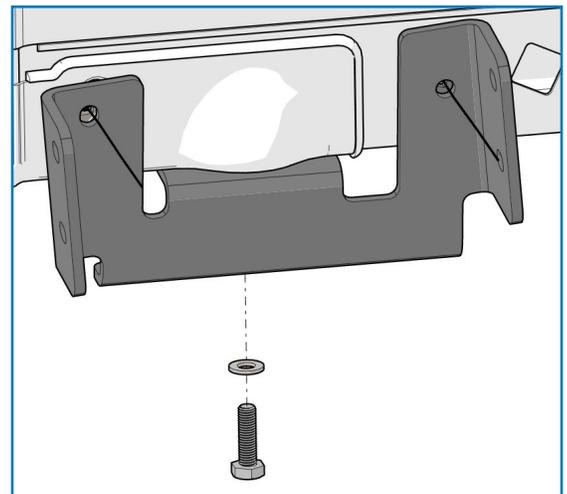
A correctly attached bracket will appear as shown in Figure 4D.



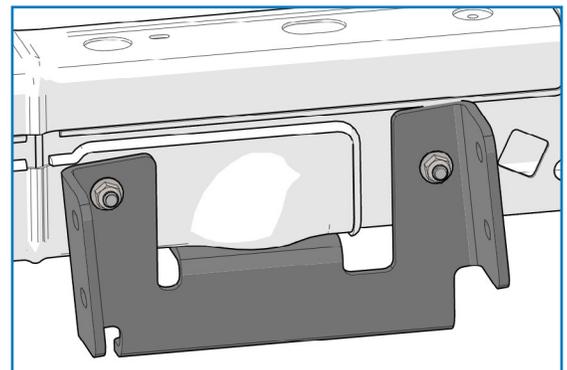
4A



4B



4C



4D

## 5 ASSEMBLE THE AIR SPRINGS AND BRACKETS

Using Figure 5 as an assembly reference; set the roll plate over the bottom of the air spring.

Set the lower spring bracket onto the air spring ensuring that the holes in the air spring, roll plate and lower bracket all line up.

Fasten the assembly together using two 3/8" – 24 x 7/8" hex cap bolt, two 3/8" lock washers and two 3/8" flat washers.

Torque the mounting hardware to 27 N•m [20 ft-lbs].

Turn the assembly over and set the roll plate over the top of the air spring.

Fasten the swivel fitting into the top of the air spring. It is recommended to use Teflon tape or some form of thread sealant to prevent air leaks.

Finger tighten the swivel fitting and turn an extra 1.5 turns to tighten.

Set the upper airbag bracket\* onto the air spring ensuring that the holes in the air spring, roll plate and bracket all line up.

**!** *\*PLEASE NOTE: Passenger side assembly uses alternate holes in the upper bracket*

Fasten the assembly together using two 3/8" – 24 x 7/8" hex cap bolt, two 3/8" lock washers and two 3/8" flat washers.

Torque the mounting hardware to 27 N•m [20 ft-lbs].

**Repeat for the other air spring.**

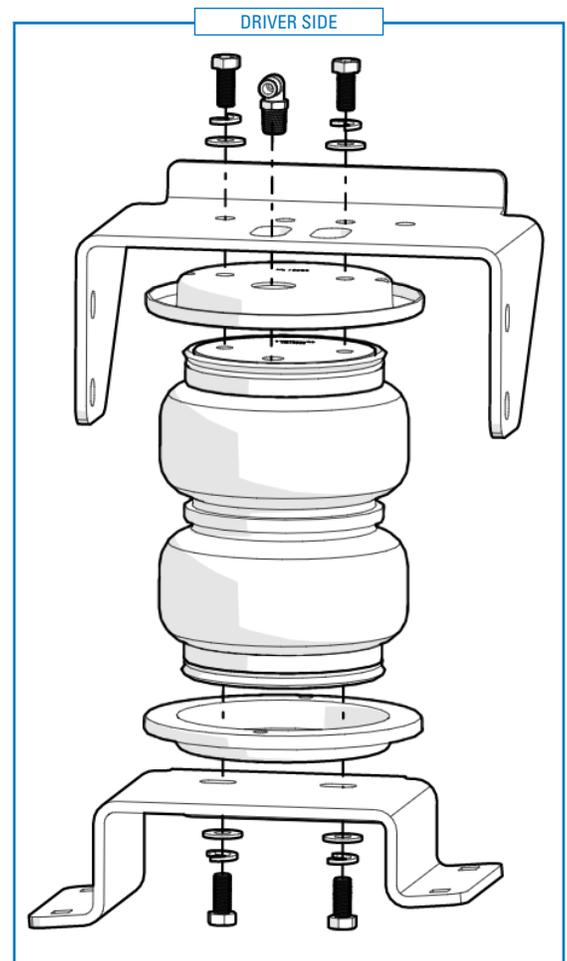
## 6 INSTALL THE AIR SPRING ASSEMBLIES

**+** *It may be necessary to raise the frame of the truck a few inches to allow more clearance to install the air spring assemblies.*

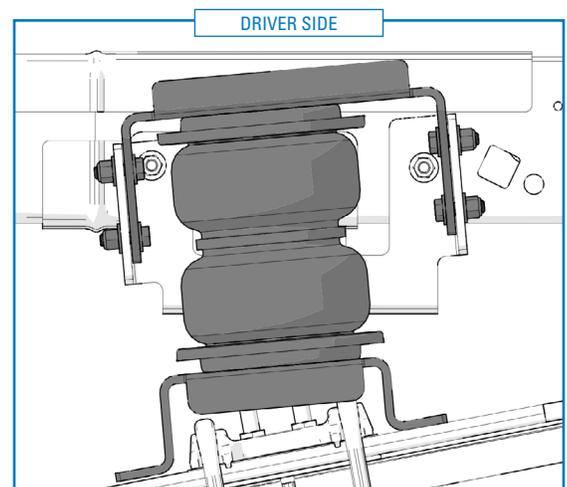
Place the air spring assembly onto the truck with the lower bracket sitting on the leaf spring and the upper airbag bracket between the extended arms of the upper frame bracket (shown in Figure 6).

Attach the upper airbag bracket to the upper frame bracket using four 3/8" – 16 x 1.25" hex bolts, eight 3/8" -16 nylon lock flange nut.

Torque the mounting hardware to 27 N•m [20 ft-lbs].



5



6

## 7 SECURE LOWER BRACKET

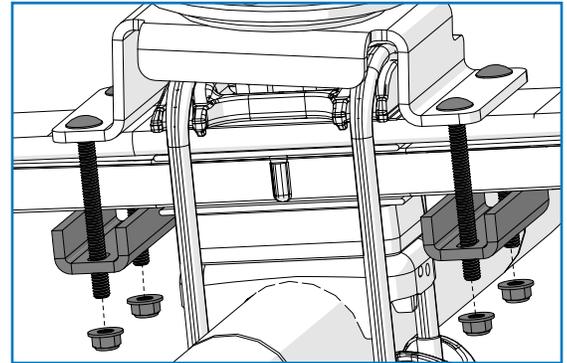
Insert four 3/8" – 16 x 4" carriage bolts into the mounting holes in the lower bracket (shown in Figure 7A)

### VEHICLES EQUIPPED WITH RIDE HEIGHT SENSOR

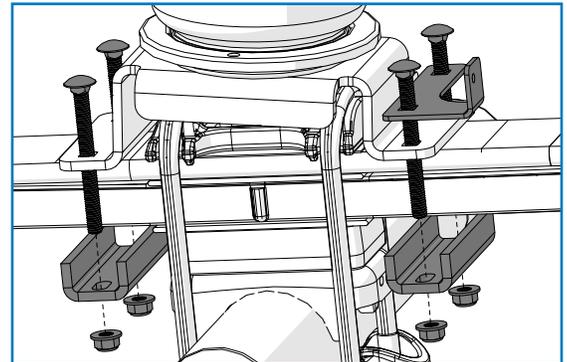
Place the lower sensor relocation bracket on the lower air spring bracket and insert carriage bolts through both brackets (shown in Figure 7B)

Clamp the lower bracket to the leaf spring using two leaf spring clamp bars. Secure using four 3/8" – 16 nylon lock flange nuts

Torque lock flange nuts to 27 N•m [20 ft-lbs]



7A



7B

## 8 RIDE HEIGHT SENSOR REINSTALL (IF VEHICLE HAS RIDE HEIGHT SENSOR)

### Install Sensor Upper Bracket (use Figure 8A for reference):

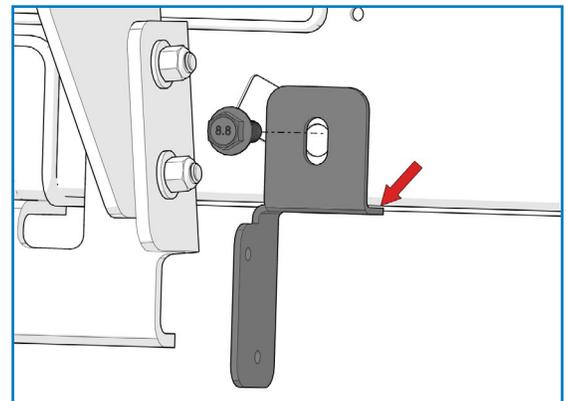
Place upper sensor bracket onto frame, ensuring that the base of the flange is level with the bottom of the frame (shown by arrow).

Secure using factory bolt, into the hole it previously occupied.

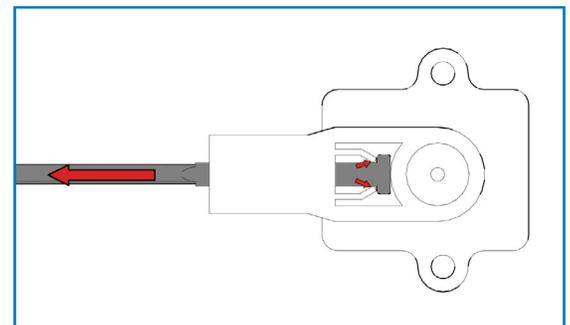
### Pull Linkage Out (use Figure 8B for reference):

Use a flat head screwdriver to ease apart tabs holding upper link in place, indicated by the small arrows in the image.

While these are pushed apart, the upper link can be pulled out of the ride height sensor as shown.



8A



8B

*Step continues on following page...*

**Flip Linkage And Reinstall (use Figure 8C for reference):**

Flip linkage assembly 180°, then insert back into ride height sensor.

Push to ensure that upper link is locked into place (tab mechanism)

**Install Sensor (use Figure 8D for reference):**

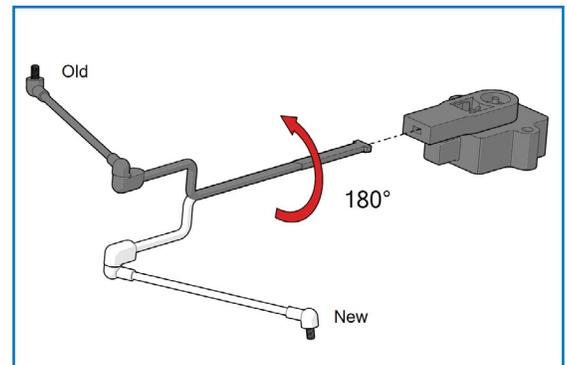
Install sensor utilizing the factory components that were previously removed.

Insert the two factory bolts through the sensor into the upper bracket, ensuring that the connector (indicated by arrow) points away from the linkage arm.

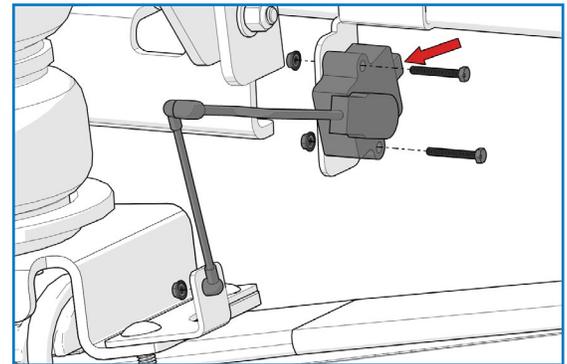
Secure with the two factory nuts. Use the third factory nut to secure the lower linkage to the lower bracket as shown.

Reconnect the factory harness electrical connector to the sensor. Ensure connector fully latches upon installation.

**Installation continues on the following page.**



8C



8D

**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.**

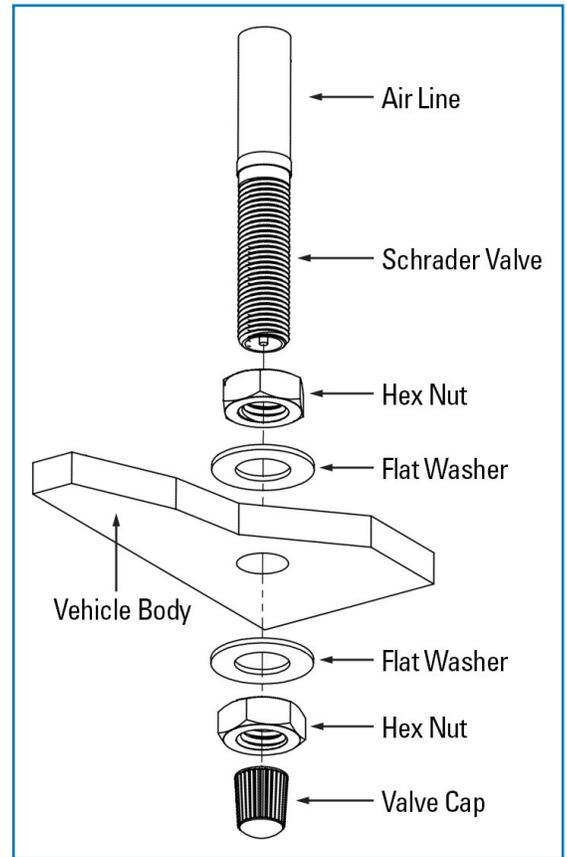
Secure the air lines using the provided tie-straps, away from any moving items and heat sources.

**CHECK SYSTEM FOR LEAKS**

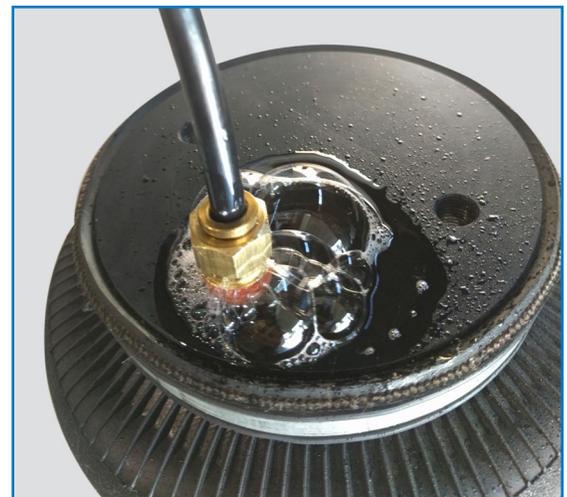
Using the *MIN/MAX PSI* chart on the following page; inflate both air springs to 10 psi less than the maximum recommended pressure for the air spring part number included in this kit; then use a mixture of dish soap and water on all air line connections to detect any air leaks. Large, expanding bubbles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



**A**



*\*Air Spring & NPT Air Fitting may differ between kits*

**B**

**CONGRATULATIONS! You have completed the install**

**After Installation continues on the following page.**

**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 Convoluted	HEAVY DUTY	5 PSI	100 PSI
HP10083J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10000	Double Convoluted	HEAVY DUTY	5 PSI	100 PSI
HP10000J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10068	Large Double Convoluted	HEAVY DUTY	5 PSI	100 PSI
HP10438	Double Convoluted	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.**