

# Installation Manual



## AIR SUSPENSION KIT

RAM 1500 (2WD/4WD)\*

*\*Will not fit TRX models, RHO models, or 650DC models*

*\*Will not fit vehicles with factory air suspension*

*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 #
A*	Single Convoluted Spring	2	HP10083

HEAVY DUTY JOUNCE BUMPER KITS		QTY	PART #
A*	Single Convoluted Spring w/ Jounce Bumper	2	HP10083J



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KIT CONTENTS		QTY	PART #
B	Roll Plates	4	HP10054
C	Upper Bracket	2	HP1559
D	Lower Bracket (Driver Side)	1	HP0147
E	Lower Bracket (Passenger Side)	1	HP0148
F	Lower Bracket Adjustment Plate	2	HP1423
G	Jounce Bumper Strap	2	HP1560
H	Clamp Plate	2	HP1561
I	Clamp Spacer	2	HP1562
J	U-Bolt, 3/8" - 16 x 3.375" I.D. x 5.25" LG.	2	HP1555
K	Bolt, 3/8" - 24 x 3/4" Flat Countersunk	8	HP1008
L	Carriage Bolt, 3/8" - 16 x 1.25"	8	HP1149
M	Flange Nut, 3/8" - 16	12	HP1338
N	90° Swivel Air Fitting, 1/4" Hose to 1/4" NPT	2	HP1100
O	Heat Shield	1	HP0012
P	Worm Gear Ring Clamp (2.5" to 3.5" I.D.)	2	HP1001
Q	Worm Gear Ring Clamp (1.81" to 2.75" I.D.)	2	C3916



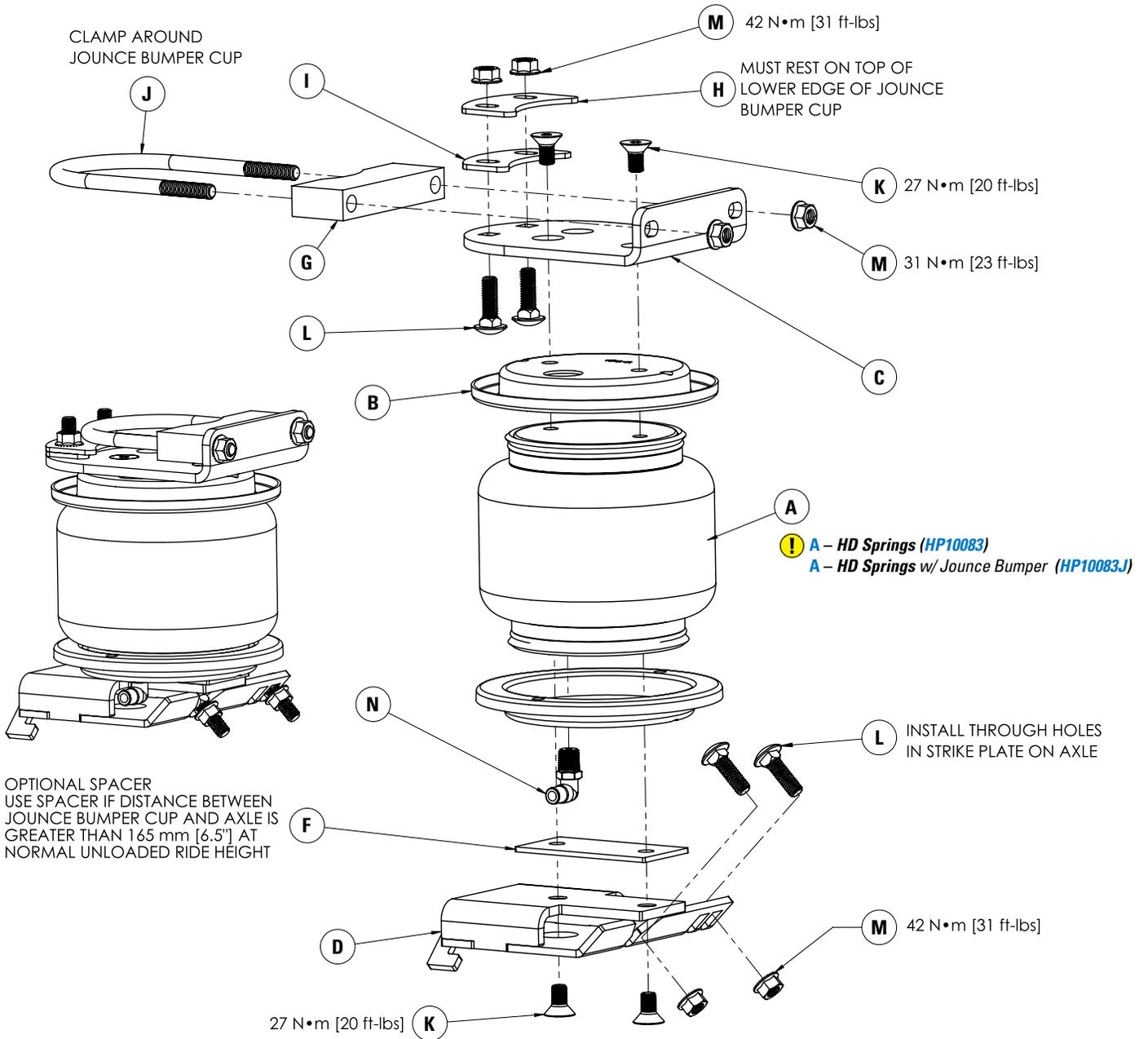
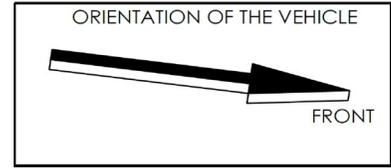
**REQUIRED TOOLS**

- Hoist or Floor Jack
- Safety Stands
- Safety Glasses
- Torque Wrench
- Standard Combination Wrenches
- 7/32" Hex Allen Wrench
- 9/16" Crow Foot 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)**



## INSTALLATION INSTRUCTIONS

### 1 RAISE THE VEHICLE

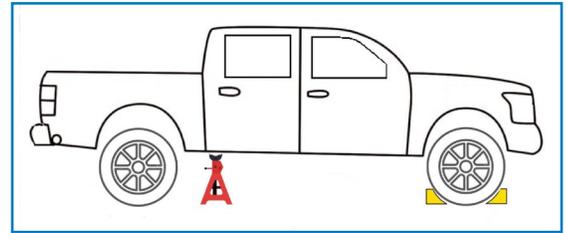
Park the vehicle on a level surface.

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

Raise the rear of the truck high enough to attain a comfortable working height.

Place two jack stands under the frame.

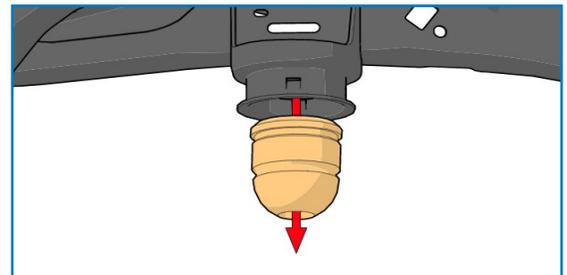
Lower the vehicle until the frame is supported by the jack stands.



1

### 2 REMOVE JOUNCE BUMPERS

Twist while pulling to remove the jounce bumpers from the mounting cups (as shown in Figure 2).



2

### 3 ASSEMBLE AIR SPRINGS: LOWER BRACKET

Place a roll plate on top of each air spring, ensuring that each hole lines up.

Thread a 90° air fitting into the largest of the 3 holes, finger tight, then tighten an additional one and a half turns using a 9/16" wrench.

- ⊕ *Some fittings have sealant pre-applied on the threads. If the threads have no visible coating, it is recommended to apply thread sealant or teflon tape (not included).*

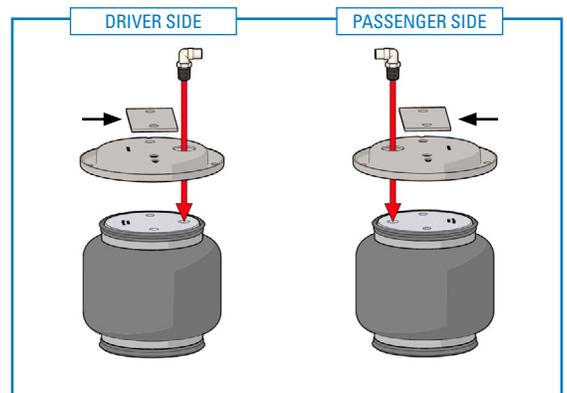
Place the lower bracket adjustment plates (shown with black arrows in Figure 3A) on top of each roll plate, ensuring the holes line up.

- ⚠ **PLEASE NOTE: this kit includes Driver Side (HP0147) & Passenger Side (HP0148) brackets. Using Figure 3B, note the correct orientation for each lower bracket:**

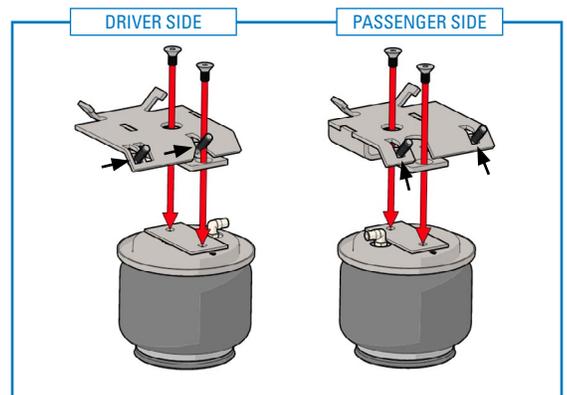
Insert carriage bolts into the two slotted holes of each lower bracket (as shown with black arrows in Figure 3B).

Attach the lower brackets using two 3/8" - 24 x 3/4" flat countersunk cap screws, using a 7/32" socket.

Torque to 27 N•m [20 ft-lbs].



3A



3B

#### 4 ASSEMBLE AIR SPRINGS: UPPER BRACKET

Turn over both air spring assemblies so the end without the bracket and air fitting faces upwards and the carriage bolts in the lower bracket are pointing away from you (See Figure 4 for reference).

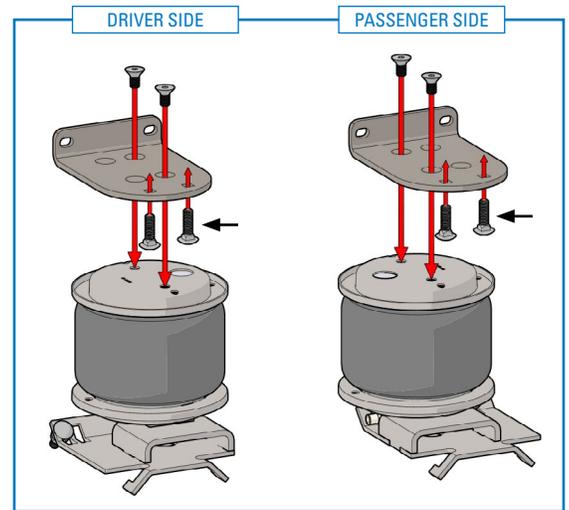
Set the remaining two roll plates on top of the air springs, making sure that each of the holes line up.

**!** Use Figure 4 to note the lower and upper bracket orientation, and the correct holes to use for attaching each upper bracket to the correct air spring assembly.

Insert carriage bolts into each of the square holes of both upper brackets (2 in each assembly - shown with black arrows in Figure 4) and then install the bracket on to each air spring using two 3/8"-24 x 3/4" flat countersunk cap screws.

**+ PLEASE NOTE:** Carriage bolts cannot be inserted in the square holes after the bracket is attached to air spring.

Torque to 27 N•m [20 ft-lbs].



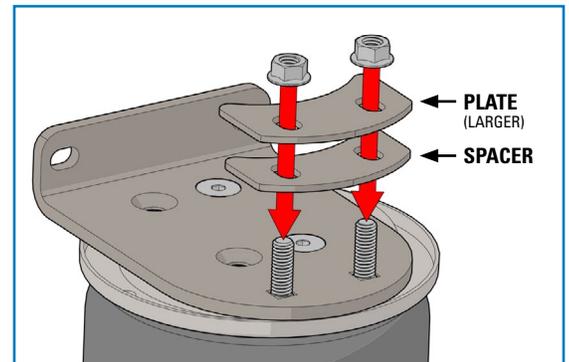
4

#### 5 UPPER BRACKET ASSEMBLY: MOUNTING CUP CLAMP

Place the clamp spacer and then clamp plate over two previously installed carriage bolts (see Figure 5 for correct assembly).

**!** PLEASE NOTE: The clamp "plate" is slightly larger than the clamp "spacer" in size and must be placed on top.

Thread flange nut onto each carriage bolt. Leave both nuts very loose (1/4" gap to clamp plate).



5

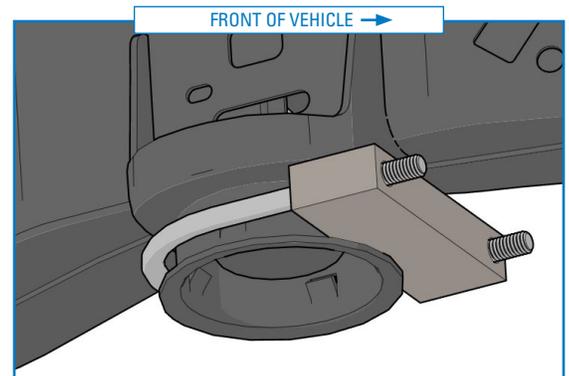
**REPEAT STEPS 3-5 for the opposite side**

#### 6 ASSEMBLE JOUNCE BUMPER STRAP

Place U-bolt around jounce bumper mounting cup and slide the jounce bumper strap over the legs of U-bolt (as shown in Figure 6).

The legs of the U-bolts should be pointing towards the front of the vehicle.

Allow the jounce bumper strap to rest on lip of the mounting cup.



6

## 7 INSTALL AIR SPRING ASSEMBLY

Hold the air spring assembly on an angle and hook the clamp plate over the lip of mounting cup (shown circled in Figure 7A).

Ensure the clamp spacer does not sit under the lip. The upper bracket must be able to sit flush with underside of mounting cup.

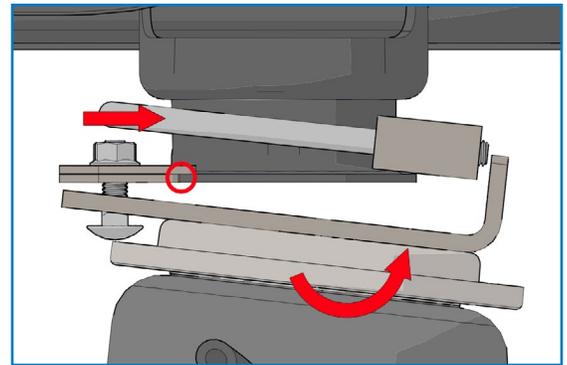
Rotate the assembly to bring the flat face of the upper bracket in contact with underside of mounting cup (circled in Figure 7B).

Adjust the previously installed U-bolt and strap until they sit as shown in Figure 7B.

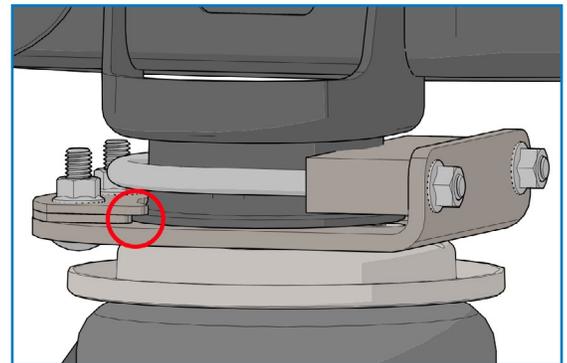
**!** *PLEASE NOTE: It is imperative to ensure the top face of the upper bracket sits flush against the underside of mounting cup.*

Thread flange nut onto each leg of U-bolt and tighten to finger tight.

Tighten the nuts on carriage bolts securing clamp plate to the mounting cup finger tight.



7A



7B

## 8 ATTACH AIR SPRING ASSEMBLY TO AXLE

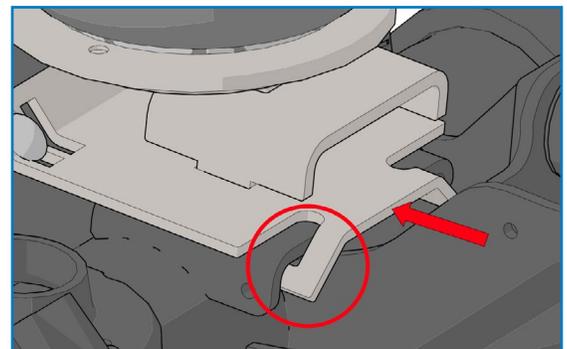
Compress air spring by hand and position the hooks of lower bracket under the jounce bumper strike plate (as shown circled in Figure 8A)

Guide the forward-facing carriage bolts through the holes of the jounce bumper strike plate (circled in Figure 8B).

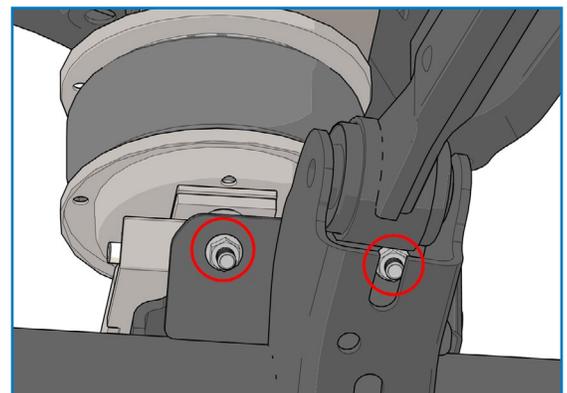
Thread a flange nut onto each carriage bolt.

**+** *PLEASE NOTE: if you use a 1/4 extension with a 9/16" hex socket it will increase your workspace. You can also twist the air bag assembly until the nut catches the threads of the carriage bolt.*

Torque flange nuts to 42 N•m [31 ft-lbs]



8A



8B

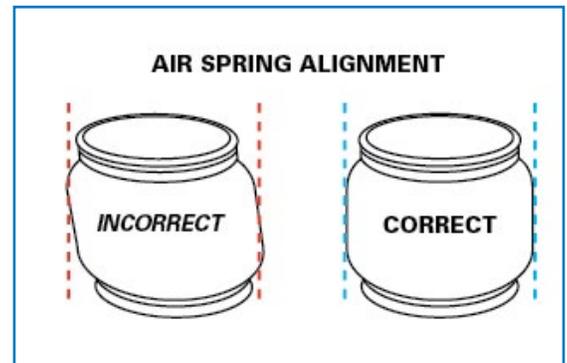
## 9 ALIGN & TIGHTEN AIR SPRING ASSEMBLY

Slide the upper bracket left and right to align air spring top and bottom vertically as best as possible (as seen in Figure 9). Some misalignment is acceptable.

Torque clamp plate nuts to 42 N•m [31 ft-lbs] (*crow foot needed*).

If unable to access with torque wrench, fully tighten nuts to a similar level as carriage bolts securing assembly to axle.

Torque U-bolt nuts to 31 N•m [23 ft-lbs].



9

**REPEAT STEPS 6-9 for the opposite side**

## 10 INSTALL HEAT SHIELD

Bend tabs on heat shield so there will be 1/4" dead space between heat shield and exhaust when heat shield is attached.

Bend heat shield to form a wide "V" as shown in Figure 10A.

Attach the heat shield to the exhaust pipe on the passenger side of the vehicle using two worm gear clamps:

- **For factory dual exhaust**  
use smaller worm gear clamps.
- **For factory single or any larger aftermarket exhausts**  
use large worm gear clamps.

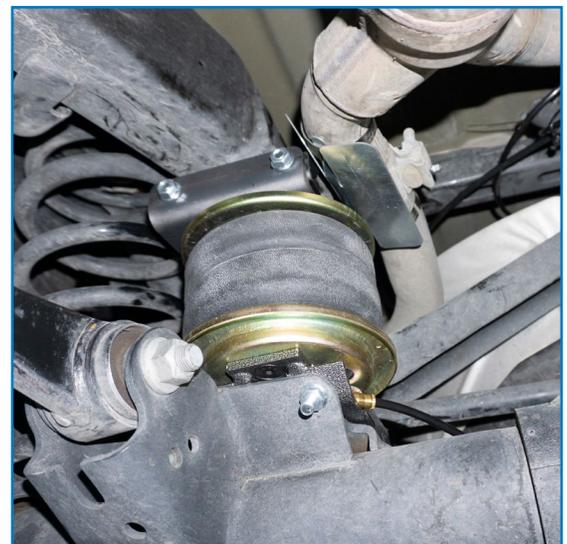
Each hose clamp holds a tab against exhaust pipe.

Make sure the heat shield is facing toward air spring (with the inner "V" positioned towards the pipe as shown in Figure 10B).

**Installation continues on the following page.**



10A



10B

### 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.**

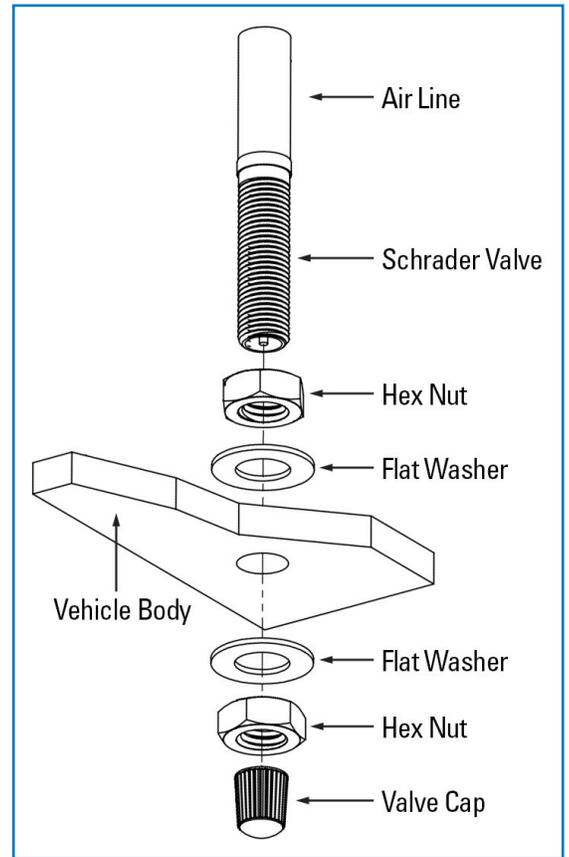
Secure the air lines using the provided tie-straps, away from any moving items and heat sources.

### CHECK SYSTEM FOR LEAKS

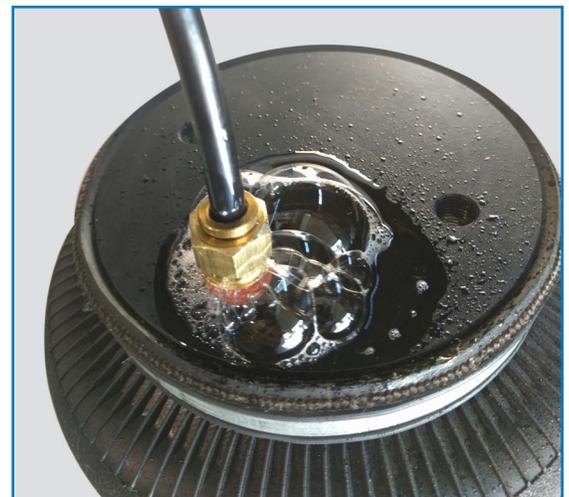
Using the MIN/MAX PSI chart on the following page; inflate both air springs to 10 psi less than the maximum recommended pressure for the air spring part number included in this kit; then use a mixture of dish soap and water on all air line connections to detect any air leaks. Large, expanding bubbles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