# Installation Manual

# AIR SUSPENSION KIT

RAM 2500/3500 (4WD)*
RAM Mega Cab 2500/3500 (4WD)*

***Will fit** vehicles with the 3349 and 3319 superglide 5th wheel rail kits (4WD)*

*Eliminate your vehicle's sag, sway and bottoming out while providing added support for an overall smooth and safe ride with this extreme duty air suspension kit. Rated for up to 7500 lbs of load-leveling capacity+, this kit is ideally suited for those towing/hauling big loads on a regular basis.*

* *See application guide for proper fitment.*
*+ Applications vary. Never exceed manufacturer's recommended Gross Vehicle Weight Rating*

***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 diagrams on the following pages for part assembly.

| XTREME DUTY KITS | | QTY | PART # |
|---|---|---|---|
| A | **Double Convoluted Spring** | 2 | **HP10438** |

| XTREME DUTY JOUNCE BUMPER KITS | | QTY | PART # |
|---|---|---|---|
| B | **Double Convoluted Spring** w/ Jounce Bumper | 2 | **HP10438J** |

| KIT CONTENTS | | QTY | PART # |
|---|---|---|---|
| C | Roll Plate | 4 | HP10069 |
| D | Fitting, 90° Brass | 2 | HP1245 |
| E | Upper Frame Bracket | 2 | HP1647 |
| F | Upper Air Bag Bracket | 2 | HP1648 |
| G | Lower Bracket | 2 | HP1795 |
| H | Axle Strap | 2 | HP1383 |
| I | U-Bolt, 6.5" x 5.5" Square | 2 | HP1015 |
| J | Bolt, 3/8" – 24 x 7/8" Hex Head | 8 | HP1002 |
| K | Bolt, 3/8" – 16 x 1.25" Carriage | 4 | HP1149 |
| L | Bolt, 3/8" – 16 x 7" Carriage | 4 | HP1409 |
| M | Bolt, M10 x 1.5 x 35 mm Hex Head | 4 | HP1134 |
| N | Washer, 3/8" Flat | 16 | C653 |
| O | Washer, 3/8" Split Lock | 4 | C18007 |
| P | Nut, 3/8" Nylon Lock | 12 | HP1000 |
| Q | Heat Shield | 1 | HP0012 |
| R | Worm Gear Ring Clamp | 2 | HP1001 |
| S | Airline Hose Assembly | 1 | HP1344 |
| T | Tie Strap | 6 | C11618 |

HP10438

HP10438J

KIT LAYOUT

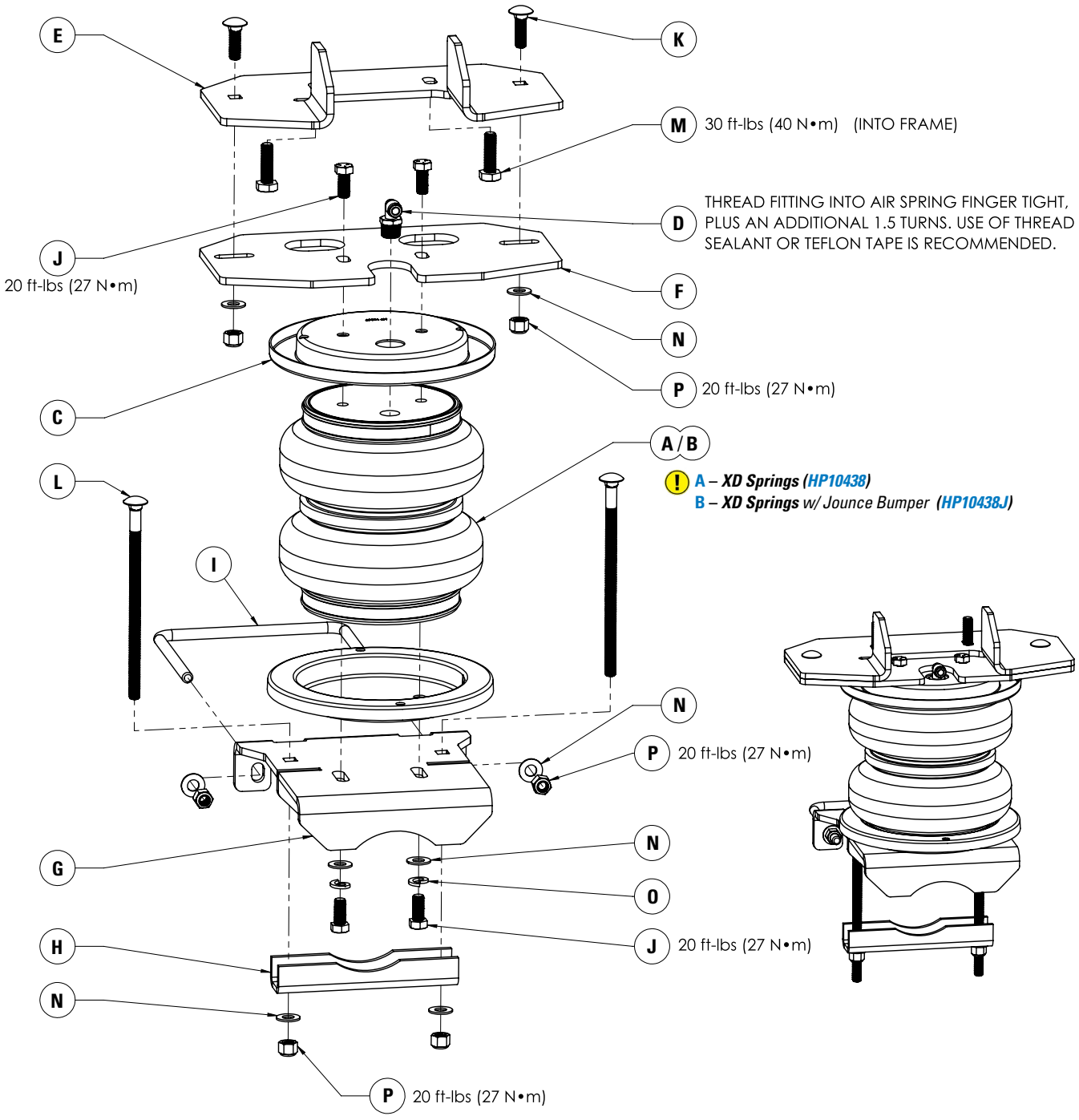
## REQUIRED TOOLS

- 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*

## KIT EXPLOSION DIAGRAM

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




***NOTE:*** ***Ensure there is a minimum 15mm of clearance around the air spring when it is installed at free height with no inflation pressure to prevent contacting surrounding items when fully pressurized.***

## INSTALLATION INSTRUCTIONS

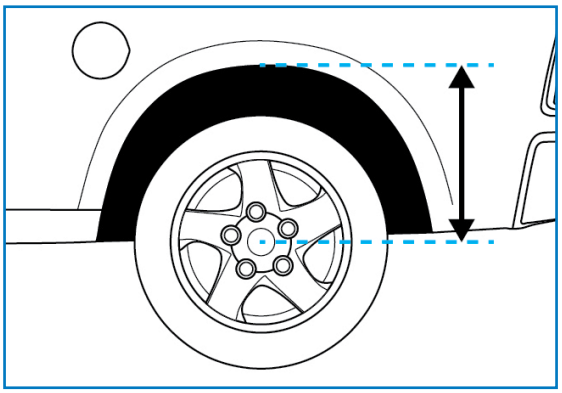
### 1 MEASURE STOCK RIDE HEIGHT & CLEARANCE

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

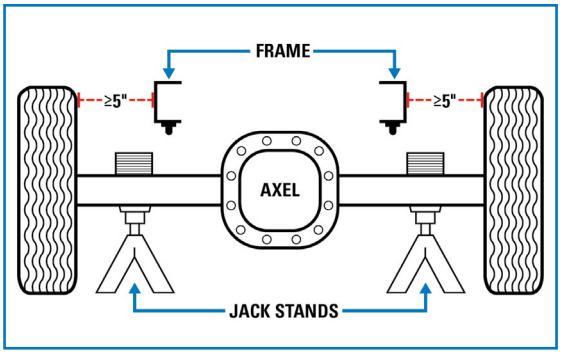
Using a measuring tape, measure the distance between the center of the wheel hub and the bottom of the fender well (see Figure 1A for reference) this will give you your stock Normal Ride Height.

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




1B

### 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).

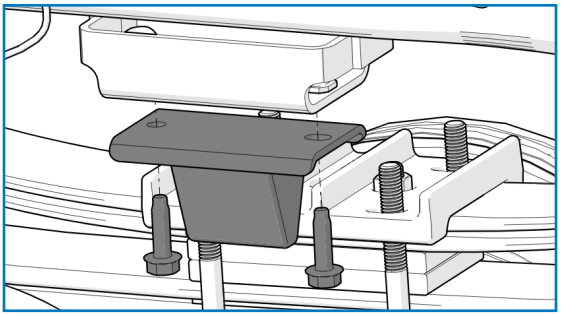
Lower the vehicle until the axle is supported by the jack stands.

Remove rear wheels.

### 3 REMOVE JOUNCE BUMPER

Remove the two bolts securing jounce bumper to frame rail on both sides of the vehicle (see Figure 3).

*Discard the hardware as it will not be reused in this installation.*



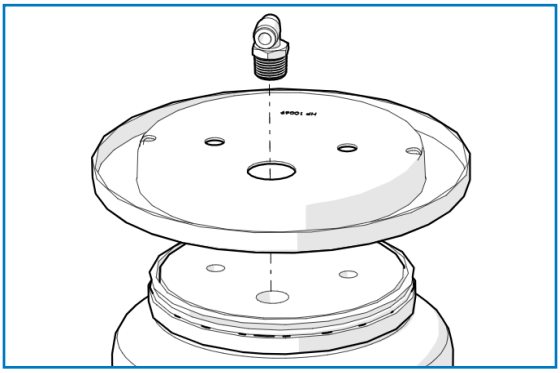
3

## 4 INSTALL AIR FITTINGS

Set a roll plate over the top surface of each air spring (as shown in Figure 4).

Insert the air fitting into the large threaded hole and tighten finger tight plus an additional 1.5 turns.

*The use of thread sealant or Teflon tape is recommended.*



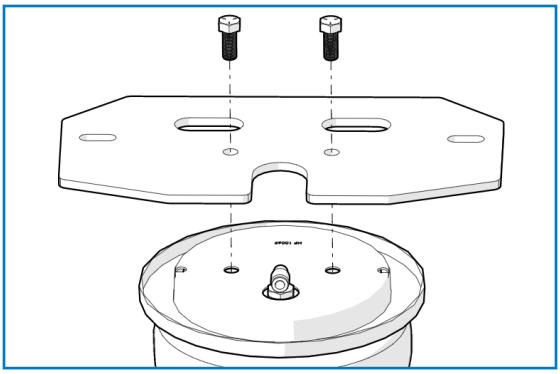
4

## 5 ATTACH UPPER BAG PLATES

Place the upper bag plate on the roll plate, ensuring the holes in the air bag, roll plate and bracket all align.

Attach the bag plate to the air bag using two 3/8" – 24 x 7/8" bolts.

Torque bolts to 27 N•m (20 ft-lbs).



5

## 6 ATTACH LOWER BRACKET

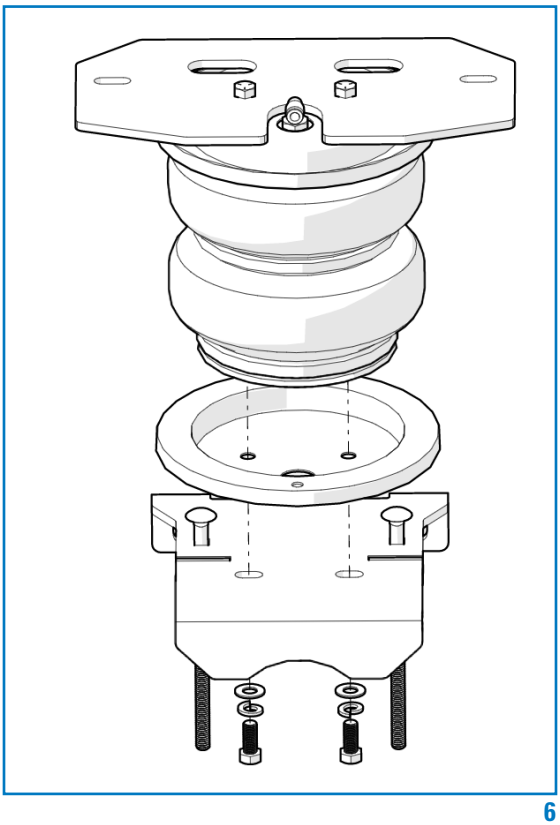
Insert two 3/8"– 16 x 7" carriage bolts (as shown in Figure 5) through the square holes in the lower bracket.

*Carriage bolts must be inserted before attaching the lower bracket to the air bag as the roll plate will cover the carriage bolt holes.*

Place a roll plate and the lower bracket on the bottom surface of the air bag with the U-Bolt mounting flange opposite the air fitting.

Ensure all mounting holes are aligned and secure with two 3/8" – 24 x 7/8" bolts, two 3/8" lock washers and two 3/8" flat washers.

Do not fully tighten yet to allow for adjustment during installation.



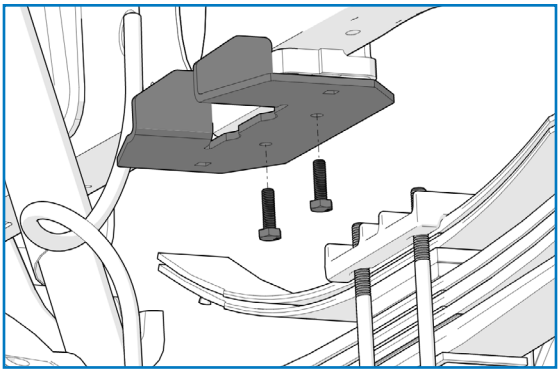
6

## 7 INSTALL UPPER FRAME BRACKET

Place the upper frame bracket on the jounce bumper mounting plate (as shown in Figure 7) with the vertical flanges resting on the inside surface of the frame.

Attach the bracket by installing two M10 x 1.5 x 35 mm hex head bolts through the bracket into the holes previously occupied by the jounce bumper hardware.

Torque the bolts to 40 N•m (30 ft-lbs)



7

## 8 INSTALL AIR SPRING ASSEMBLIES

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

Set the driver's side spring assembly in the vehicle (as shown in Figures 8A & 8B).

Ensure the rearward lower carriage bolt does not contact the brake lines when the assembly is fully seated on the axle. For some models, the carriage bolt may sit outside the brake lines in order to achieve this.

Attach the assembly to the upper frame bracket with two 3/8"– 16 x 1.25" carriage bolts, two 3/8" flat washers and two 3/8" nylon lock nuts. (See Figure 8B)

Slide the upper frame bracket and the airbag on the lower plate to achieve the best vertical spring alignment as per Figure 8C.

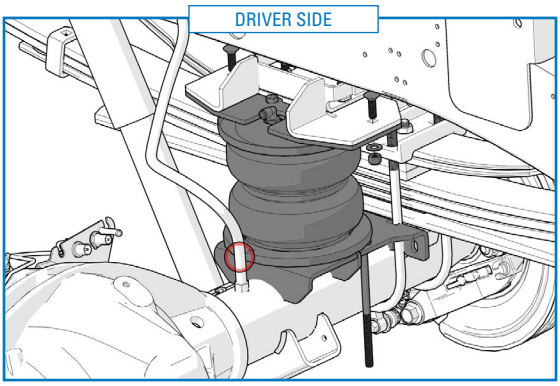
⚠ ***Ensure there is a minimum 15mm of clearance around the air spring when it is installed at free height with no inflation pressure to prevent contacting surrounding items when fully pressurized.***

Torque the carriage bolt lock nuts to 27 N•m (20 ft-lbs)

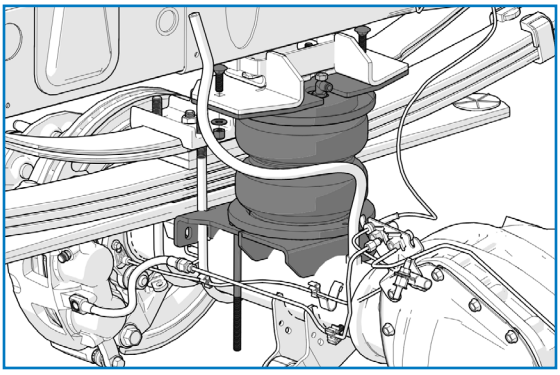
Torque the lower airbag bolts to 27 N•m (20 ft-lbs)

**Repeat for passenger side assembly.**

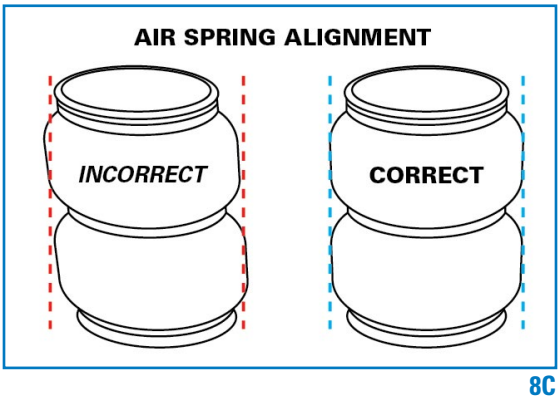
⊕ *On some models, it may be necessary to cut a small notch in the lower roll plate on the driver's side if there is interference with the axle vent tube (Circled in red in Figure 8A)*




8A



8B

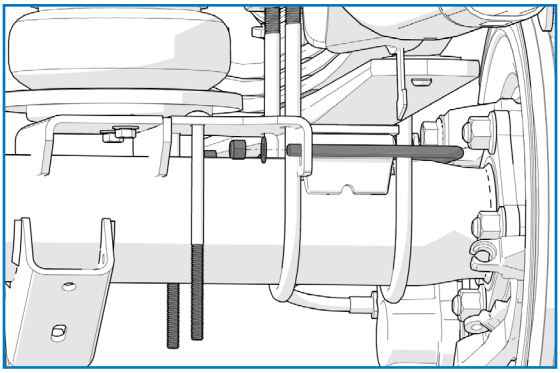



8C

## 9 SECURE LOWER BRACKET TO LEAF PACK

Install the U-Bolt around the leaf pack and into the lower bracket slotted holes (as shown in Figure 9). Secure with two 3/8" flat washers and two 3/8" nylon lock nuts.

Torque lock nuts to 27 N•m (20 ft-lbs)

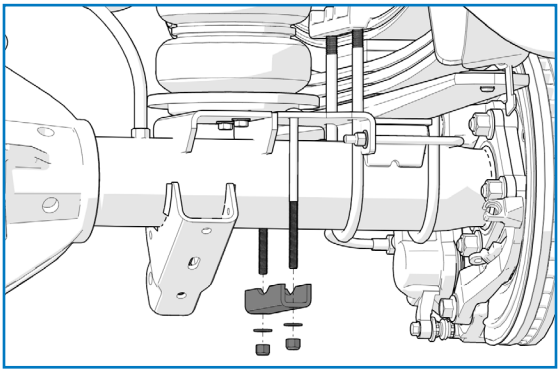


9

## 10 ATTACH AXLE STRAP

Place the axle strap on the two carriage bolts (as shown in Figure 10) and secure with two 3/8" flat washers and two 3/8" nylon lock nuts.

Torque the lock nuts to 27 N•m (20 ft-lbs)



10

## 11 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 11).

Each hose clamp holds a tab against exhaust pipe.

11

## 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.

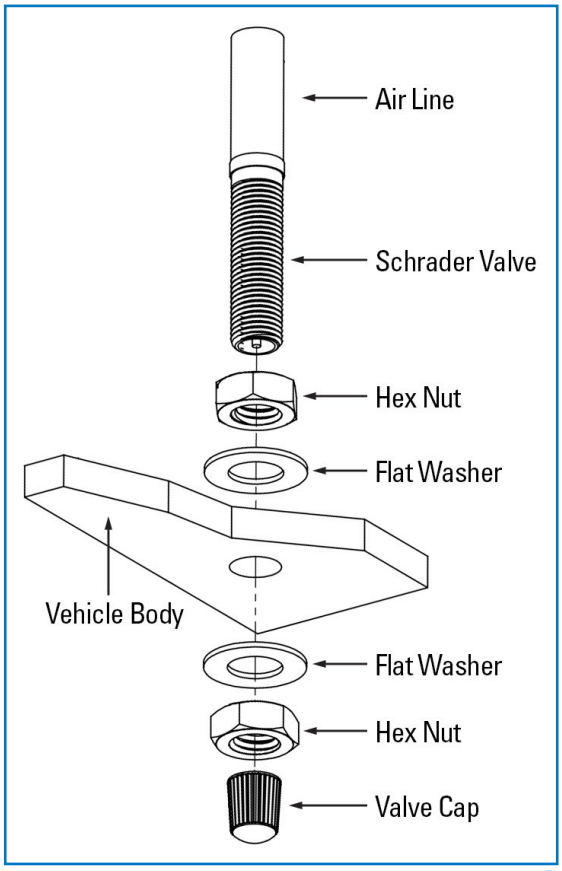
***PLEASE NOTE: This kit contains push-to-connect fittings**; using scissors or wire cutters to cut the nylon air line will distort the line and cause the connection to leak. The air line must be cut off squarely with a hose cutter or a sharp utility knife.*

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 ½" – 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.



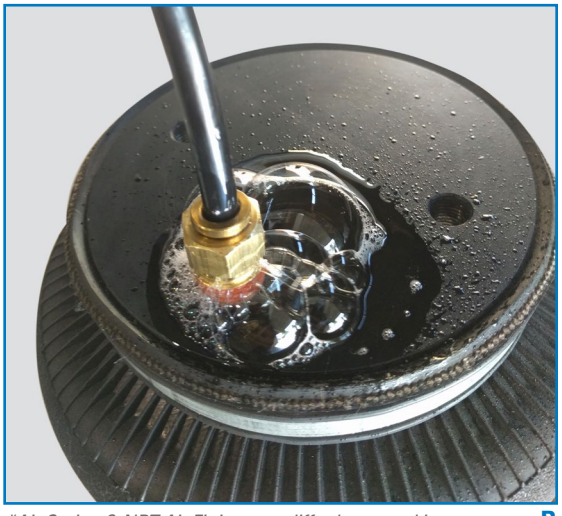

A

## 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.



**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.***