Installation Manual

AIR SUSPENSION KIT

Ford E450 Cab-Chassis & Class C Motorhome*

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.*

L6503_REV6_02.19.2025 ECN 1-3012

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*

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	**Double Convoluted Spring**	2	**HP10000**

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

KIT CONTENTS		QTY	PART #
C	Roll Plate	4	HP10054
D	90° Swivel Fitting	2	HP1100
E	Lower Bracket Assembly	2	HP1635
F	Bracket, Upper Driver	1	HP1639
G	Bracket, Upper Passenger	1	HP1640
H	Bracket, Upper Driver Support	1	HP1641
I	Bracket, Upper Passenger Support	1	HP1642
J	Axle Strap	2	HP1406
K	U-Bolt	2	HP1486
L	3/8" – 24 x 7/8" Hex Head Bolt	4	HP1002
M	3/8" – 24 x 3/4" Countersunk Bolt	4	HP1008
N	3/8" – 16 x 1.25" Hex Head Bolt	8	C10464
O	3/8" – 16 x 1.75" Hex Head Bolt	2	HP1227
P	3/8" – 16 x 7" Carriage Bolt	4	HP1409
Q	5/16" – 18 x 1" Flange Bolt	2	C11819
R	5/16" Flat Washer	2	C11944
S	3/8" Flat Washer	30	C653
T	3/8" Lock Washer	4	C18007
U	5/16" Nylon Lock Nut	2	C11943
V	3/8" Nylon Lock Nut	16	HP1000
W	3/8" Serrated Flange Nut	2	HP1338
X	Heat Shield	1	HP0012
Y	Worm Gear Ring Clamp	2	HP1001

PLEASE NOTE:

This kit includes side-specific upper frame brackets.

F – Driver Side (HP1639) G – Passenger Side (HP1640)

As well as side-specific upper support brackets.

H – Driver Side (HP1641) I – Passenger Side (HP1642)

HP10000

HP10000J

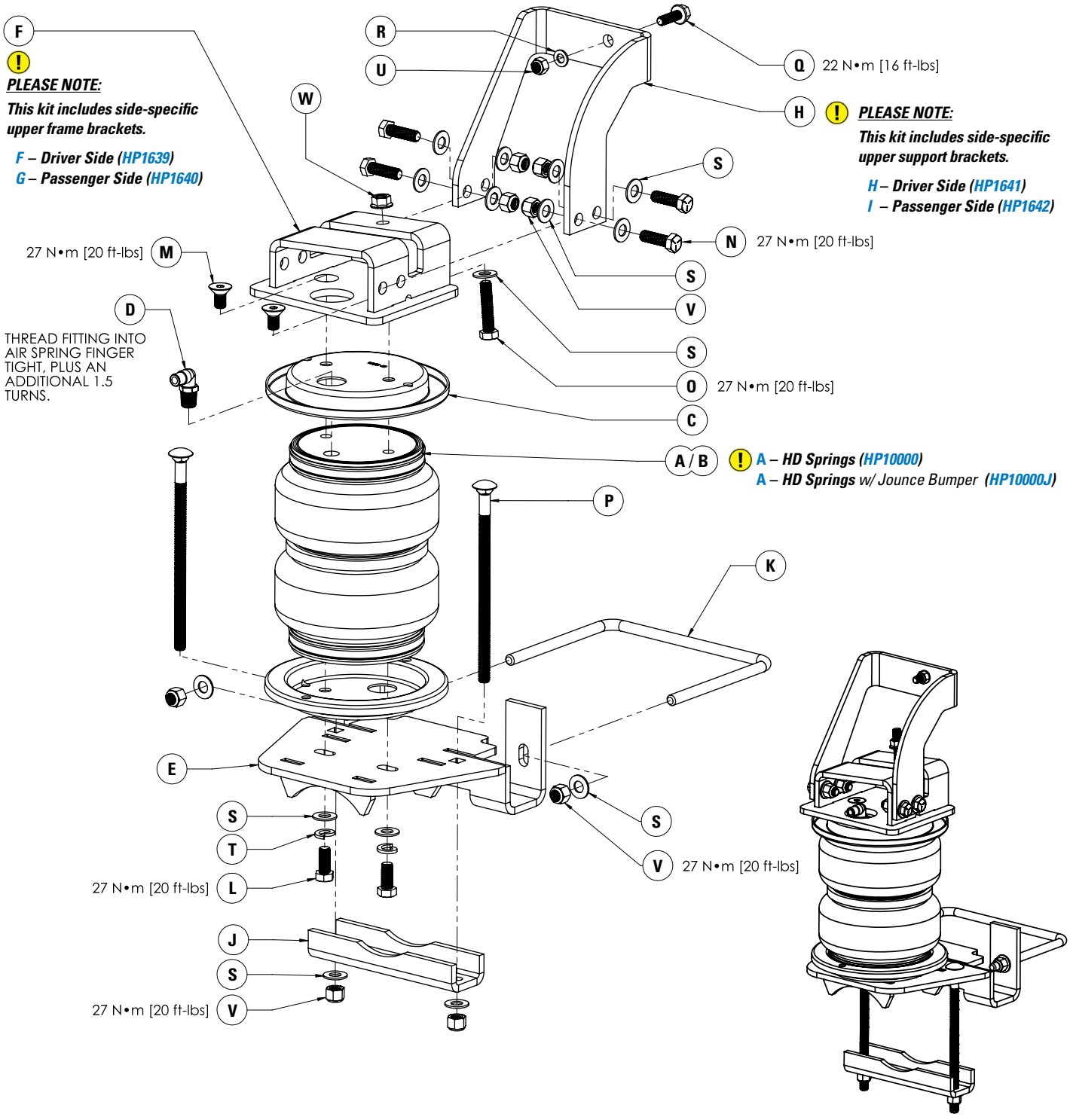
KIT LAYOUT

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)

KIT EXPLOSION DIAGRAM

DRIVER SIDE ASSEMBLY SHOWN (Passenger side assembly is mirrored)



INSTALLATION INSTRUCTIONS

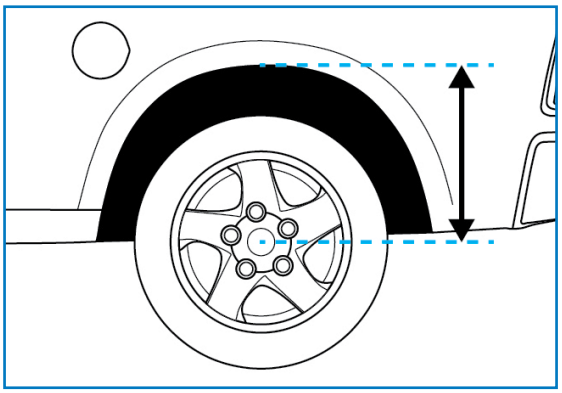
1 MEASURE STOCK RIDE HEIGHT & CLEARANCE

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

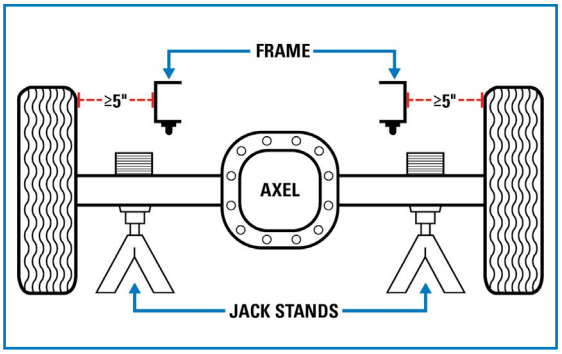
Using a measuring tape, measure the distance between the center of the wheel hub and the bottom of the fender well (see Figure 1A for reference) this will give you your stock Normal Ride Height.

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.

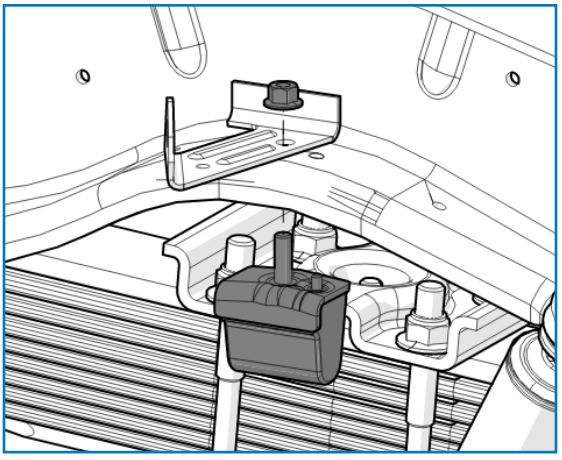
Remove rear wheels.

3 REMOVE JOUNCE BUMPER

Remove the flange nut securing the jounce bumper to frame rail using a 17 mm socket.

Remove the jounce bumpers (as shown in Figure 3)

Discard the nuts as they will not be reused in this installation.



3

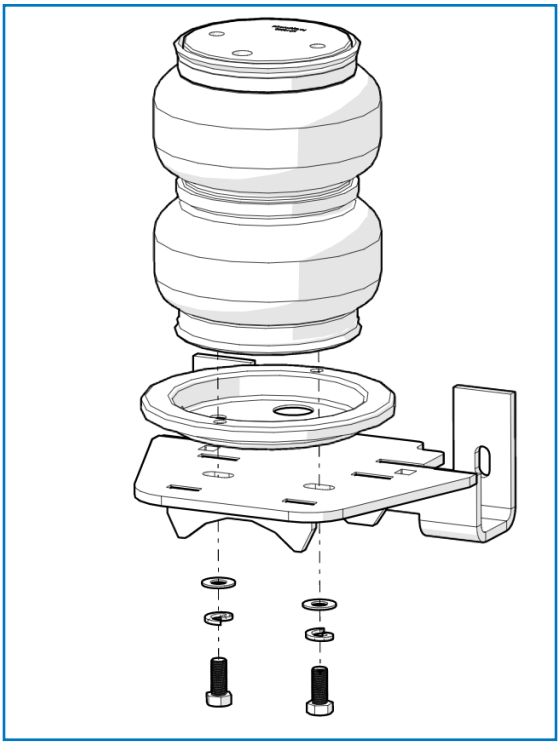
4 ATTACH LOWER BRACKETS

Using Figure 4 as reference: place roll plate on bottom of air spring.

Set lower bracket on roll plate with bent flanges positioned opposite of air inlet hole.

Secure using two 3/8" – 24 x 7/8" Hex Head Bolts, two 3/8" lock washers and two 3/8" flat washers

Do not fully tighten to allow air spring alignment in Step 9.



4

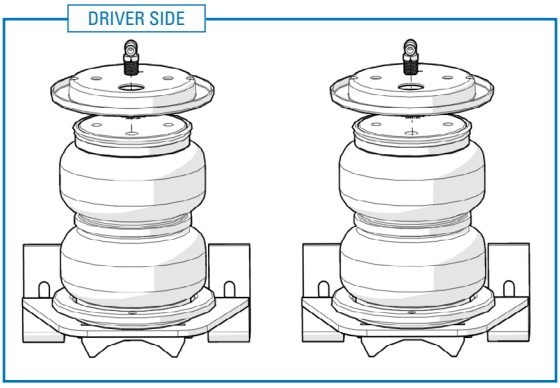
5 INSTALL UPPER ROLL PLATE & AIR FITTING

Set roll plate on top of air spring.

Install 90° swivel fitting into air spring (as shown in Figure 5).

Thread swivel fitting finger tight plus an additional 1.5 turns.

Use of thread sealant or Teflon tape is recommended.



5

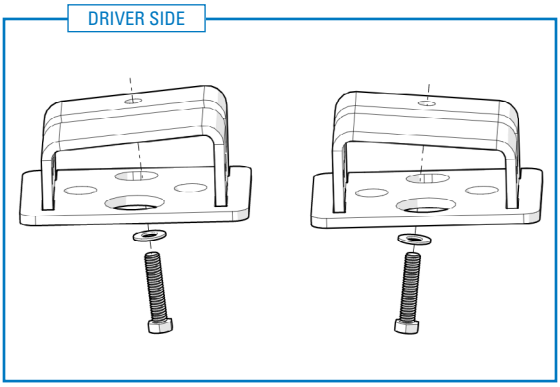
6 ATTACH UPPER BRACKETS

Install a 3/8" – 16 x 1.75" Hex Head Bolt and 3/8" flat washer in each upper bracket (as shown in Figure 6A).

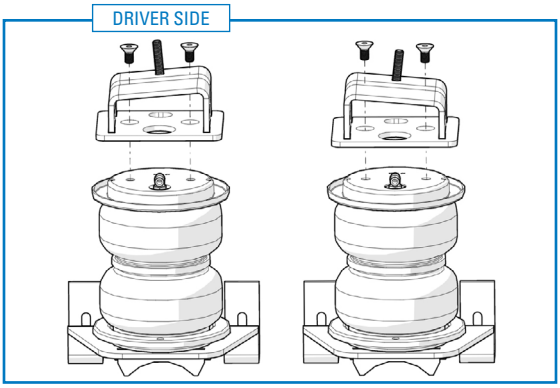
Set upper bracket on roll plate and secure to airbag with two 3/8"- 24 x 3/4" Countersunk Bolts (as shown in Figure 6B on the following page).

Torque bolts to 27 N•m (20 ft-lbs).

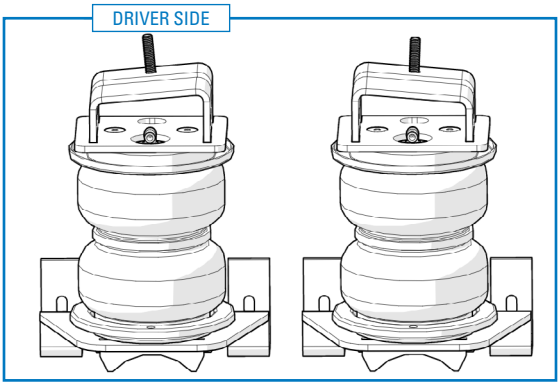
Refer to Figure 6C (on the following page) and note the orientations of the upper brackets as these determine which side of the vehicle the assembly must be installed on.



6A



6B



6C

7 INSTALL AIR SPRING ASSEMBLIES

Install the air spring assembly in the vehicle (as shown in Figure 7).

The lower bracket will sit on the axle and the upper bracket will sit with the rectangular slot cradling the downward bent flange of the frame above the axle.

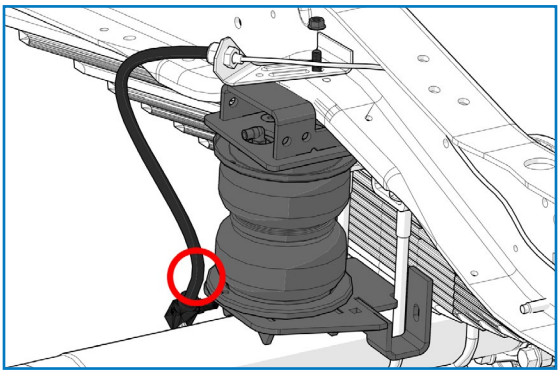
On the driver side of the vehicle, ensure the lower bracket sits in a way that does not interfere with the axle vent line (circled in red in Figure 7).

Insert the 3/8" – 16 x 1.75" bolt, installed earlier, though the hole previously used by the jounce bumper.

On the driver side, ensure the bolt also passes through the brake line bracket secured with the jounce bumper.

Secure upper bracket using a 3/8" Serrated Flange Nut.

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



7

8 INSTALL UPPER SUPPORT BRACKETS

On the driver's side, install the driver-side specific support bracket (as shown in Figure 8A).

The bracket must sit as follows:

- The **rearward** flange must be **under** all brake, fuel and electrical lines
- The **forward** flange must be **over** all brake, fuel and electrical lines, except for the line supported by the brake line bracket

It is recommended to hook the rear flange under the lines in the position indicated by the red arrow, then slide and twist the bracket into place.

On the passenger side, there are no interfering lines.

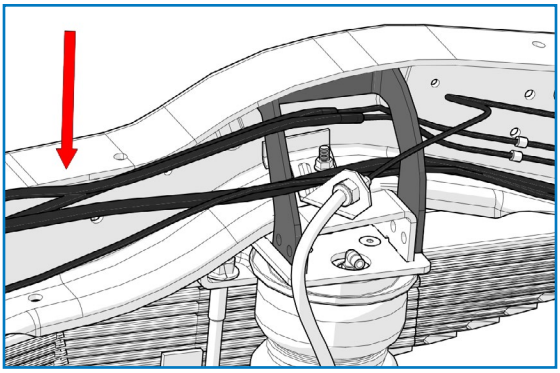
Set the passenger-side specific support bracket in place on the frame.

Secure both support brackets to the upper brackets (as shown in Figure 8B) using four 3/8" – 16 x 1.25" Hex Head Bolts, four 3/8" nylon lock nuts and eight 3/8" flat washers.

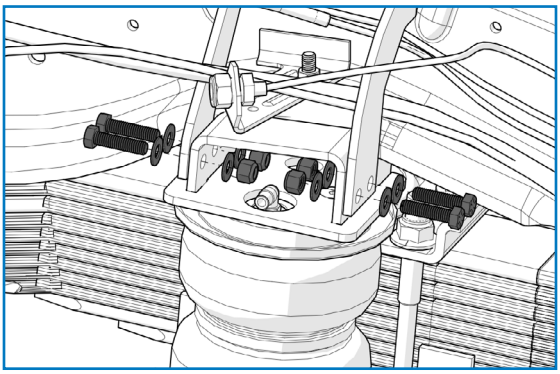
Torque hardware to 27 N•m (20 ft-lbs)

Secure both support brackets to the frame using a 5/16" – 18 x 1" Flange Bolt, 5/16" flat washer and 5/16" nylon lock nut.

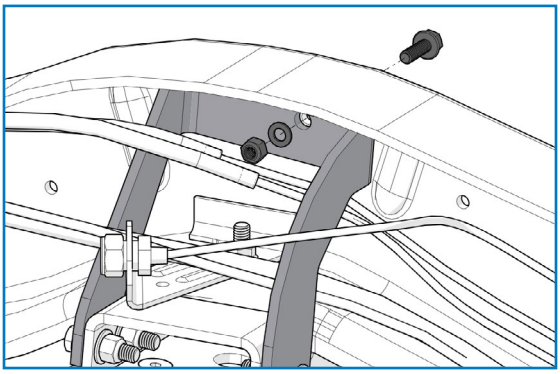
Torque hardware to 22 N•m (16 ft-lbs)



8A



8B

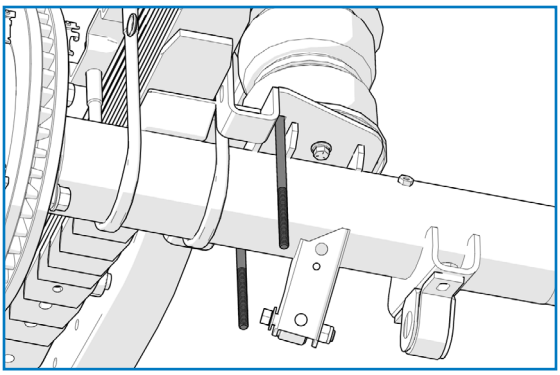


8C

9 SECURE LOWER BRACKET

Insert two 3/8" – 16 x 7" carriage bolts through the square holes in the lower bracket (as shown in Figure 9A).

Attach an axle strap to the carriage bolts (as shown in Figure 9B) using two 3/8" flat washers and two 3/8" nylon lock nuts but do not fully tighten yet.



9A

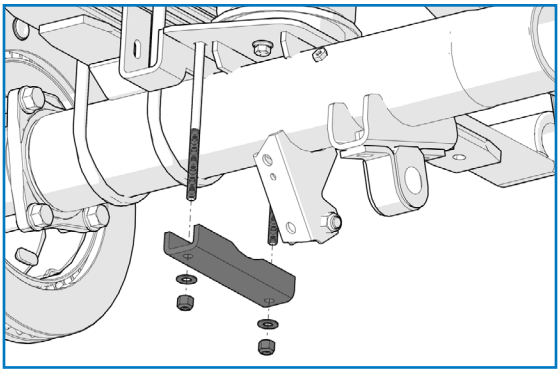
Install the U-bolt around the leaf pack and into the lower bracket (as shown in 9C). Secure with two 3/8" flat washers and two 3/8" nylon lock nuts.

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

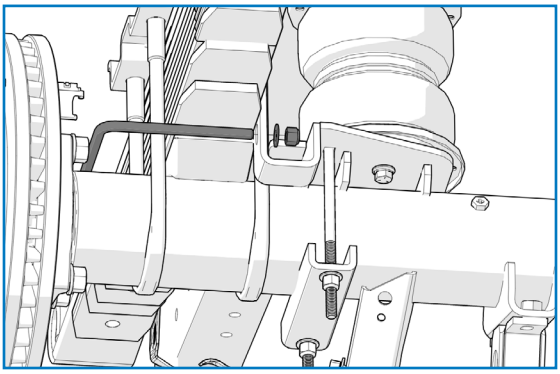
Torque the U-Bolt lock nuts to 27 N•m (20 ft-lbs)

Position the airbag on the lower bracket to achieve the best vertical alignment (see Figure 9D for correct air spring alignment).

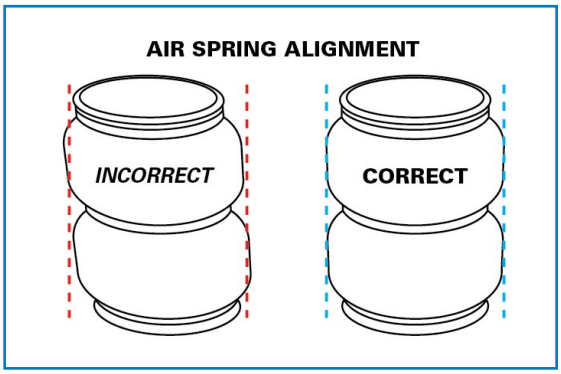
Torque the air bag bolts to 27 N•m (20 ft-lbs)



9B



9C



9D

10 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 10).

Each hose clamp holds a tab against exhaust pipe.

10

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.

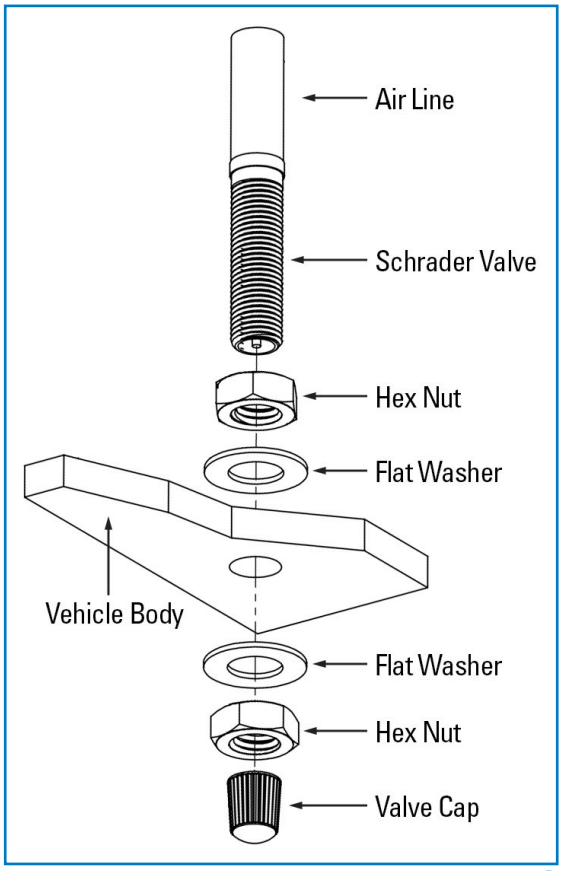
***PLEASE NOTE: This kit contains push-to-connect fittings**; using scissors or wire cutters to cut the nylon air line will distort the line and cause the connection to leak. The air line must be cut off squarely with a hose cutter or a sharp utility knife.*

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

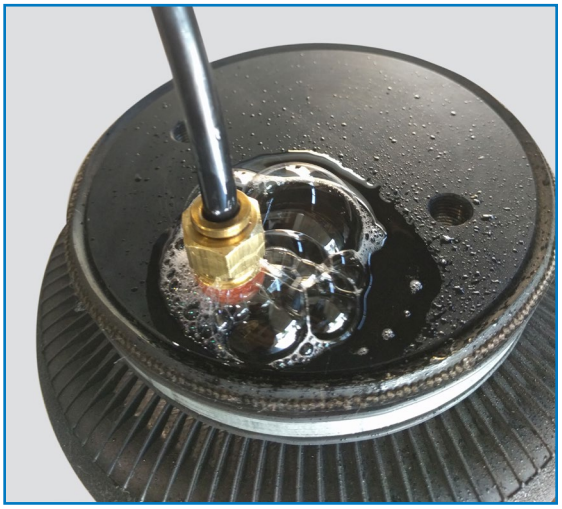
CHECK SYSTEM FOR LEAKS

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.



**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 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 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*

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.