

# Installation Manual



## AIR SUSPENSION KIT

International CV Class 4/5 Trucks\*

**Will not fit** 2WD models with suspension option codes **14SCG** or **14SAE** (see Page 3 for details):

**Will not fit** models with factory air suspension (IROS suspension system)

Chevrolet Silverado 4500HD/5500HD/6500HD (2WD/4WD)  
Chassis Cab\*

**Will not fit** 2WD models with suspension option codes **GR4** or **FU7** (see Page 3 for details):

**Will not fit** models with factory air suspension (IROS suspension system)

*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<sup>+</sup>, 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.**


## 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 the maximum listed PSI in the air springs (*found on the final page of the manual*). 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. Please reference the **KIT COMPATIBILITY** on the following page to ensure this kit will work on your vehicle.
- ❗ 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 may 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, as it can lead to premature failure and **may void the warranty**.
- ⊕ 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.

 **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 COMPATIBILITY

The distance between the rear axle and the vehicle frame is dependent on the drive type (4WD/2WD) and the configuration of rear leaf springs installed in the vehicle. This kit's fitment is not compatible with certain vehicle option combinations that do not provide a design envelope large enough for effective aftermarket air suspension travel.

The below outlines the procedure to verify if a **2WD** GM 4500HD/5500HD/6500 HD Chassis Cab or International CV Class 4/5 vehicle is compatible with this air suspension kit.

This kit is **NOT** compatible with **2WD** vehicles associated with any of the following suspension option codes:

*Table 1. Suspension Options, When Combined with a 2WD Vehicle, that are Incompatible with this Kit*

GM Regular Production Option (RPO) Code	International Truck Code	Suspension Description
 <b>FU7</b>	 <b>14SCG</b>	Vari-Rate Steel Rear Suspension, Multi-Leaf Configuration 15 500 lb
 <b>GR4</b>	 <b>14SAE</b>	Vari-Rate Steel Rear Suspension, Multi-Leaf Configuration 13 500 lb

\*4WD vehicles with the above codes are compatible with this air suspension kit.

\*A vehicle associated with any one of the codes list in Table 1 is incompatible with this kit.

## CHECKING THE VEHICLE'S OPTION CODE (GM & INTERNATIONAL VEHICLES)

A list of option codes can be found in multiple locations.

**Location 1:** On the certification label on the driver's side door jamb. This is the most common location for newer vehicles (2018+ MY). Scan the QR code on the certification label. The QR code contains the VIN, model year, and option codes for the vehicle.

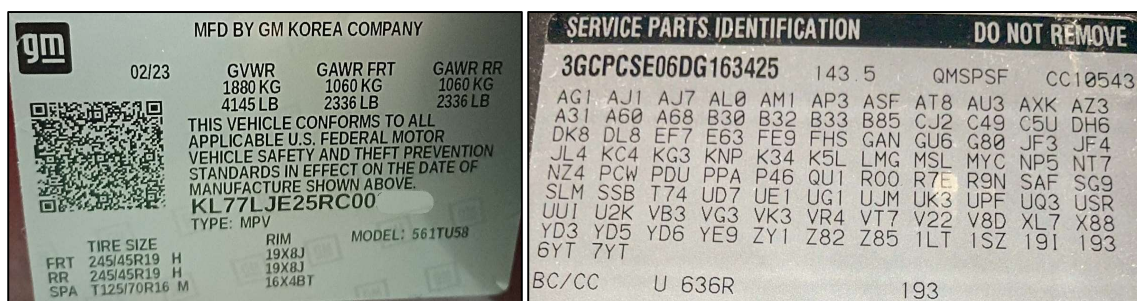


Figure 1. Exemplary GM Certification Label (Left), Exemplary Service Parts Identification Sticker (Right)

**Location 2:** A service parts Identification sticker may be present on the driver's side door jamb OR in the glovebox. This sticker lists the option codes of the vehicle directly.

**Location 3:** If neither a certification label nor a service parts identification sticker can be located on the vehicle, or if the sticker is too worn to read, contact a local GM or International truck dealer. When provided with a VIN, the dealer will be able to provide the option codes associated with the vehicle.

## KIT CONTENTS

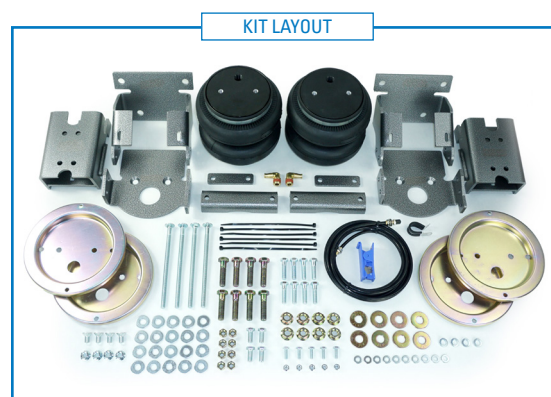
Please confirm the items below are provided in your kit before starting the installation. Reference the kit explosion diagram on the following page for part assembly.

XTREME DUTY KITS		QTY	PART #
<b>A*</b>	Double Convoluted Spring	2	HP10438

XTREME DUTY JOUNCE BUMPER KITS		QTY	PART #
<b>A*</b>	Double Convoluted Spring w/ Jounce Bumper	2	HP10438J

.....

KIT CONTENTS		QTY	PART #
<b>B</b>	Roll Plate	4	HP10069
<b>C</b>	Bracket, Upper Frame	2	HP1661
<b>D</b>	Bracket, Upper Support	2	HP1660
<b>E</b>	Bracket, Lower	2	HP1658
<b>F</b>	Axle Strap	2	HP1406
<b>G</b>	Bracket, Brake Line Relocation	2	HP1662
<b>H</b>	¾" Adel Clamp	1	C10807
<b>I</b>	Bolt, ¼" – 20 X 0.75" Hex Head	5	C10455
<b>J</b>	Bolt, 3/8" – 24 X 7/8" Hex Head	4	HP1002
<b>K</b>	Bolt, 3/8" – 24 X 3/4" Countersunk	4	HP1008
<b>L</b>	Bolt, 3/8" – 16 X 1.5" Hex Head	8	C18018
<b>M</b>	Bolt, 3/8" – 16 X 7" Carriage	4	HP1409
<b>N</b>	Bolt, ½" – 13 X 2" Hex Head	8	HP1459
<b>O</b>	Washer, ¼" Flat	10	P02190
<b>P</b>	Washer, 3/8" Flat	20	C18006
<b>Q</b>	Washer, 3/8" Split Lock	4	C18007
<b>R</b>	Washer, ½" Flat	8	HP1368
<b>S</b>	Nut, ¼" Nylon Lock	5	HP1072
<b>T</b>	Nut, 3/8" Nylon Lock	8	HP1000
<b>U</b>	Nut, 3/8" Serrated Flange	4	HP1338
<b>V</b>	Nut, ½" Serrated Flange	8	HP1370
<b>W</b>	Fitting, 90° Brass Air	2	HP1245
<b>X</b>	Airline Hose Assembly (not shown)	1	HP1344
<b>Y</b>	Tie Strap (not shown)	6	C11618

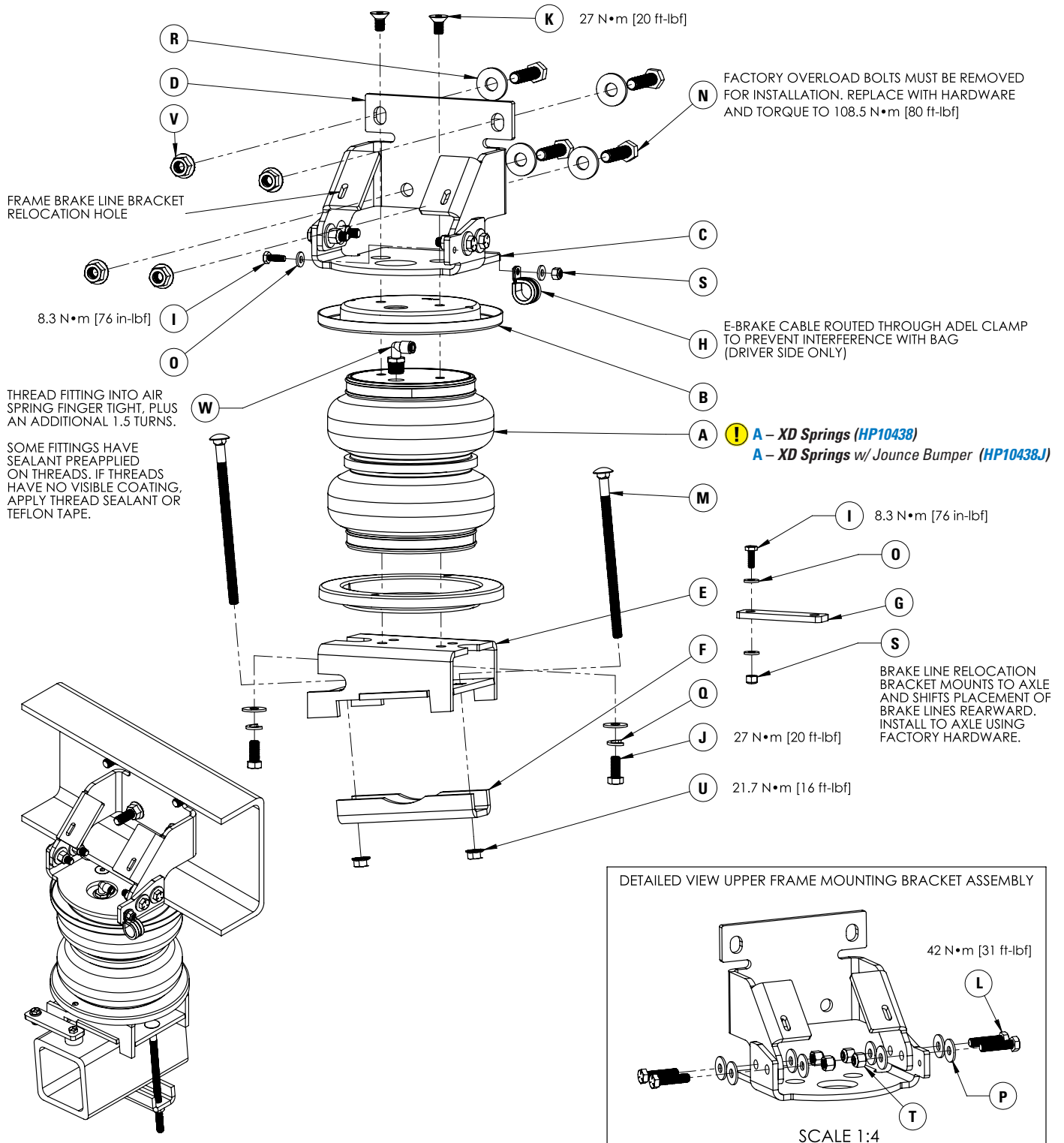


## REQUIRED TOOLS

- 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

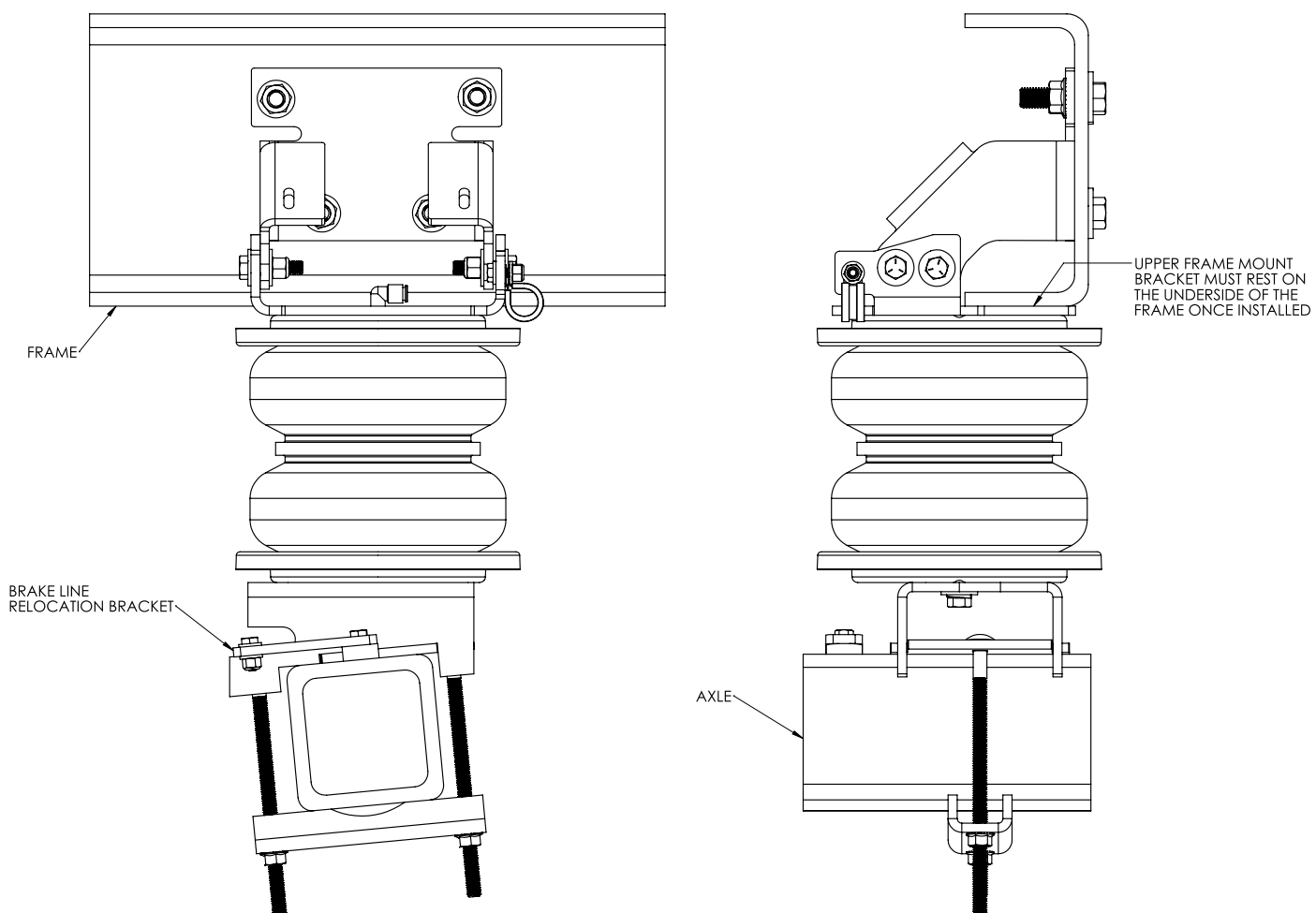
**DRIVER SIDE ASSEMBLY SHOWN**



**KIT EXPLOSION DIAGRAM****DRIVER SIDE ASSEMBLY SHOWN**

**!** Assembled onto simplified frame and axle for representation

.....





## INSTALLATION INSTRUCTIONS

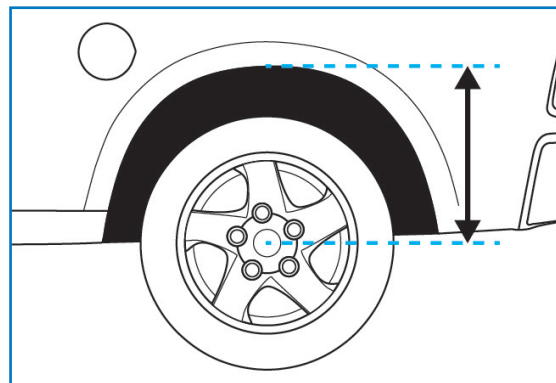
### 1 MEASURE STOCK RIDE HEIGHT & CLEARANCE

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

### 2 REMOVE REAR WHEELS

**+ PLEASE NOTE:** This step is optional for this installation but will make the install easier to complete.

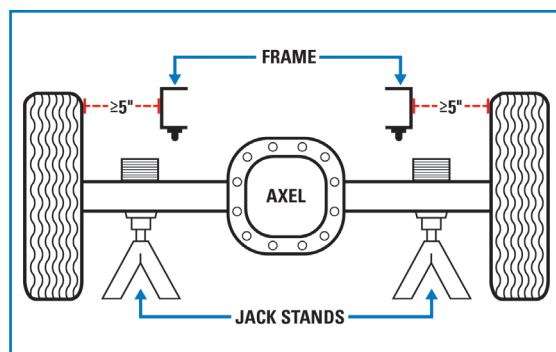
Place wheel chocks in front of and behind both front wheels.

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.



1B

### 3 PRE-ASSEMBLE SPRING AND FRAME BRACKET

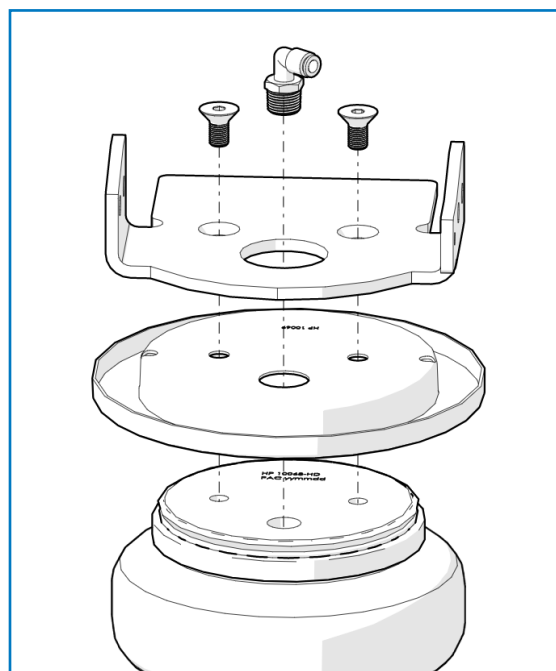
Install the air fitting into the port on the top of the air spring.

Tighten the fitting finger tight plus an additional 1.5 turns. The use of Teflon tape or thread sealant is recommended.

Set a roll plate and the upper frame bracket on the top surface of the air spring.

Ensure all holes are aligned and install two 3/8" – 24 x 3/4" countersunk bolts.

Torque bolts to 20 ft-lbs (27 N•m)



3

#### 4 PRE-ASSEMBLE SPRINGS AND LOWER BRACKETS

Insert two 3/8" – 16 x 7" carriage bolts through the square holes in the lower bracket.

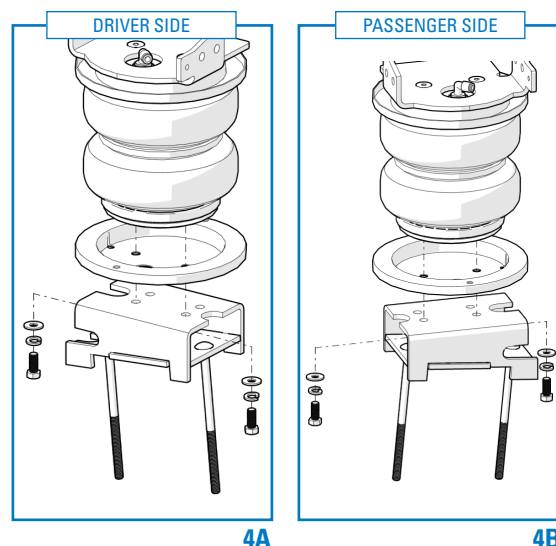
Place a roll plate on the bottom surface of the air spring, followed by the bracket with carriage bolts.

Align the holes in the air spring and roll plate with the pair of holes in the lower bracket (See Figure 4A & 4B for reference).

**!** *Take note of the bracket orientations as this defines which assembly is for the driver and passenger side.*

Secure with two 3/8" -16 x 7/8" hex head bolts, two 3/8" flat washers and two 3/8" lock washers

Torque bolts to 20 ft-lbs (27 N•m)



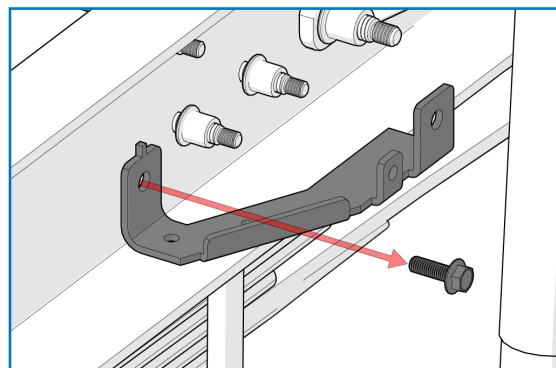
#### 5 UNBOLT FRAME BRAKE LINE BRACKETS

Remove the bolt securing the upper brake line bracket to the frame.

Gently pull the brake lines away from the frame to allow clearance for upper bracket installation.

**+** *Brake lines omitted for clarity in images*

**Repeat on the other side of the vehicle**



#### 6 RELOCATE AXLE BRAKE LINES

Remove the bolt securing the brake lines to the axle and gently pull the brake lines rearward and away from the mounting hole.

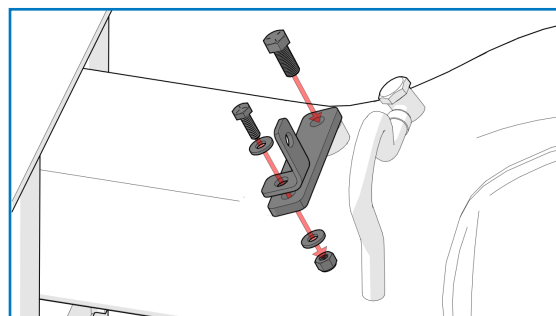
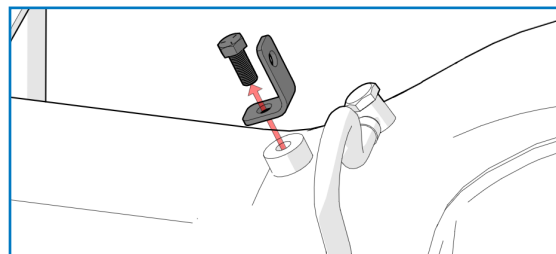
Secure the brake line relocation bracket to the axle as shown using the previously removed bolt.

**+** *Brake lines omitted for clarity in images*

Attach the axle brake line bracket to the brake line relocation bracket using a 1/4" – 20 x 0.75" bolt, two 1/4" flat washers and a 1/4" nylon lock nut.

Torque hardware to 76 in-lbs (8.6 N•m)

**Repeat on the other side of the vehicle**



5

6A

6B



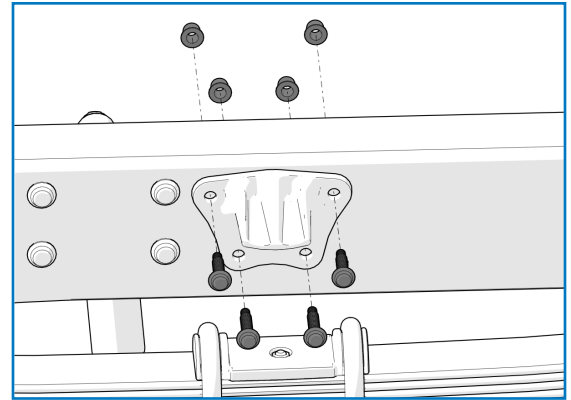
## 7 REMOVE FACTORY STRIKE BLOCK BOLTS

Remove the four bolts and retaining nuts securing the factory strike block to the frame.

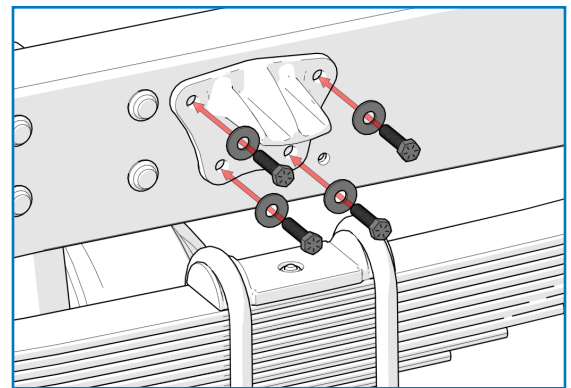
As each bolt is removed, replace it with a  $\frac{1}{2}$ " – 13 x 2" bolt and  $\frac{1}{2}$ " flat washer (as shown in Figures 7A & 7B).

Discard the removed hardware.

***Repeat on the other side of the vehicle***



7A



7B

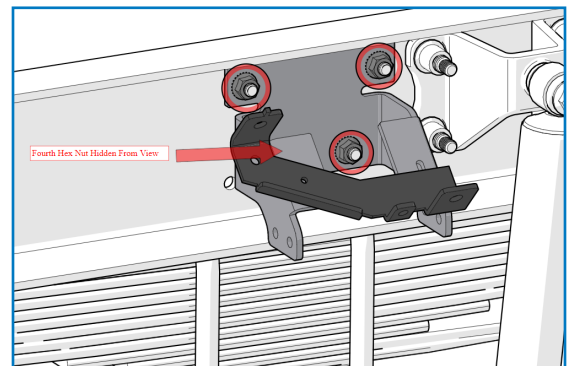
## 8 INSTALL FRAME SUPPORT BRACKET

Install the upper support bracket into the vehicle (as shown in Figure 8 on the following page) by placing the bracket onto the previously inserted strike block bolts.

Ensure the upper brake line bracket sits above the installed bracket and no brake lines are pinched or under the frame support bracket.

**+ Brake lines omitted for clarity in images**

Secure the bracket with four  $\frac{1}{2}$ " serrated nuts. Thread the nuts until they contact the bracket. Do NOT fully tighten at this time.



8

***Repeat on the other side of the vehicle***

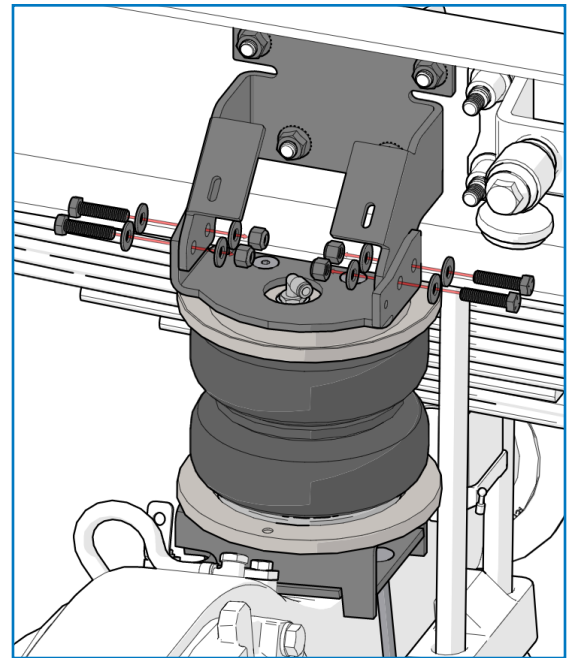
## 9 INSTALL SPRING ASSEMBLY

Place the previously assembled air spring in the vehicle (as shown in Figure 9).

Secure the spring assembly to the frame support bracket with four 3/8" – 16 x 1.5" bolts, eight 3/8" flat washers and four 3/8" nylon lock nuts.

Do NOT fully tighten at this time.

**Repeat on the other side of the vehicle**



9

## 10 TORQUE SPRING INSTALLATION HARDWARE

Adjust the spring assembly to place the upper frame bracket plate flat against the underside of the vehicle frame.

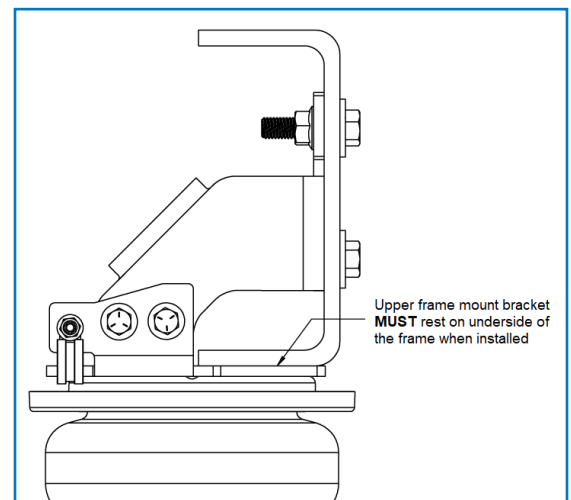
It may be necessary to raise the axle or lower the vehicle frame to achieve the required placement.

**⚠ PLEASE NOTE:** The upper frame bracket **MUST** rest flat against the underside of the vehicle frame (as shown in Figure 10) before torquing any hardware. Not resting the bracket flat may result in kit failure or vehicle damage during use.

When proper bracket placement is achieved, torque hardware as follows:

- Torque the four 1/2" – 13 x 2" bolts to 80 ft-lbs (108.5 N•m).
- Torque the four 3/8" – 16 x 1.5" bolts to 31 ft-lbs (42 N•m).

**Repeat on the other side of the vehicle**



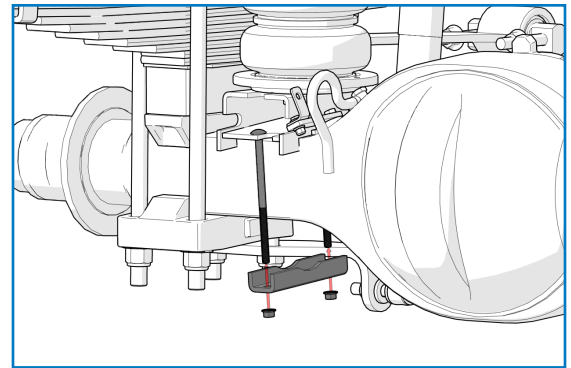
10

## 11 INSTALL AXLE STRAP

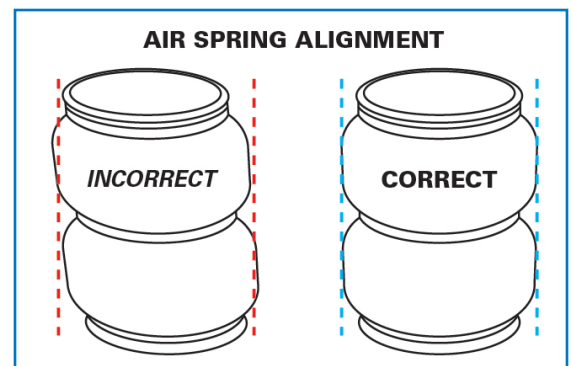
Secure the spring assembly to the vehicle axle with an axle strap and two 3/8" serrated flange nuts (see Figure 11A on following page).

Adjust the lower bracket on the axle to achieve the proper spring alignment (as per Figure 11B on the following page).

Torque the serrated flange nuts to 16 ft-lbs (21.7 N•m)



11A



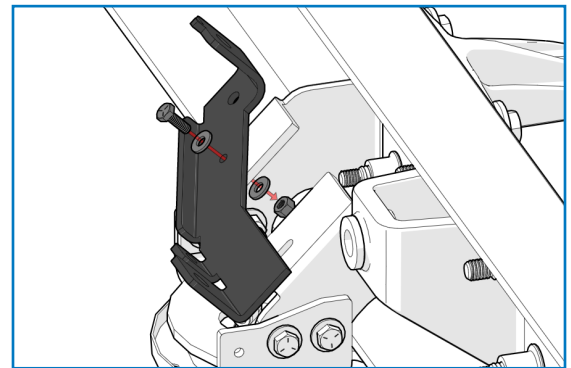
11B

## 12 SECURE UPPER BRAKE LINE BRACKET

Attach the upper brake line bracket to the frame support bracket (as shown in Figure 12).

Secure the bracket using a 1/4" – 20 x .75" bolt, two 1/4" flat washers and a 1/4" nylon lock nut.

Torque hardware to 76 in-lbs (8.6 N•m)



12

**Repeat on the other side of the vehicle**

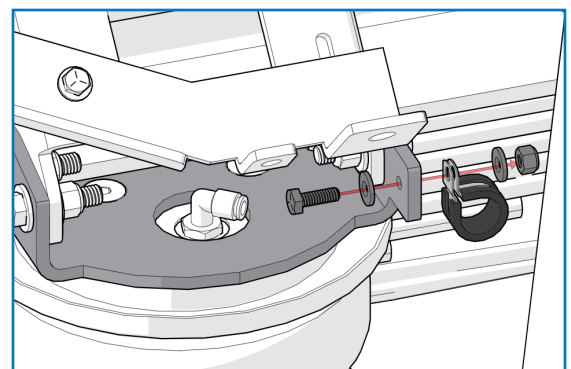
## 13 SECURE EMERGENCY BRAKE LINE

**On the driver's side of the vehicle**, the E-brake cable must be relocated to prevent interference with the air spring.

Attach the E-brake cable to the upper bracket using an adel clamp (as shown in Figure 13).

Secure the cable and clamp using a 1/4" – 20 x .75" bolt, two 1/4" flat washers and a 1/4" nylon lock nut.

Torque hardware to 76 in-lbs (8.6 N•m)



13

## 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

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).

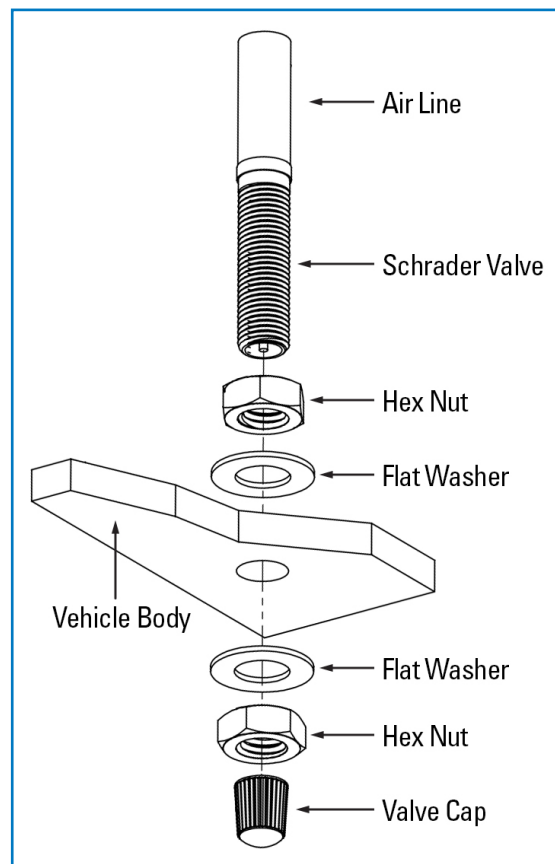
**Repair as necessary and retest.**

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.

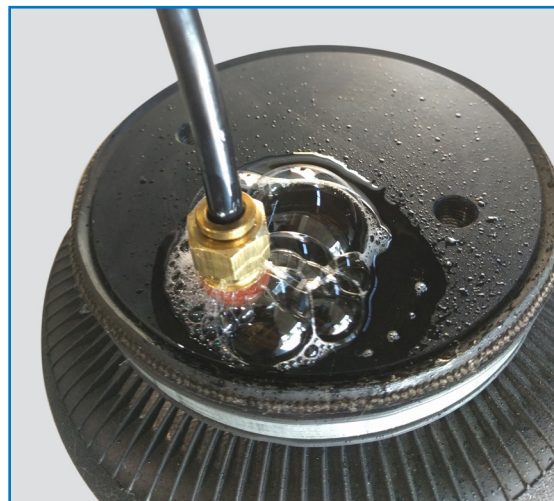
**⚠ Leak must be repaired, and then retested until no leaks exist.**

**CONGRATULATIONS! You have completed the install**

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



A



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

B

**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
HP10687	In-Coil	STANDARD DUTY	5 PSI	50 PSI
HP10189		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 Convolved	HEAVY DUTY	5 PSI	100 PSI
HP10083J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10000	Double Convolved	HEAVY DUTY	5 PSI	100 PSI
HP10000J		HEAVY DUTY with JOUNCE BUMPER	0 PSI* / 5 PSI	100 PSI
HP10068	Large Double Convolved	HEAVY DUTY	5 PSI	100 PSI
HP10438	Double Convolved	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.**