SUPERDUTY
ADJUSTABLE AIR SPRING SUSPENSION

by AIR LIFT

MN-509
(03608)
ECR 5594

Kit No. 57342

Please read these instructions completely before proceeding with installation

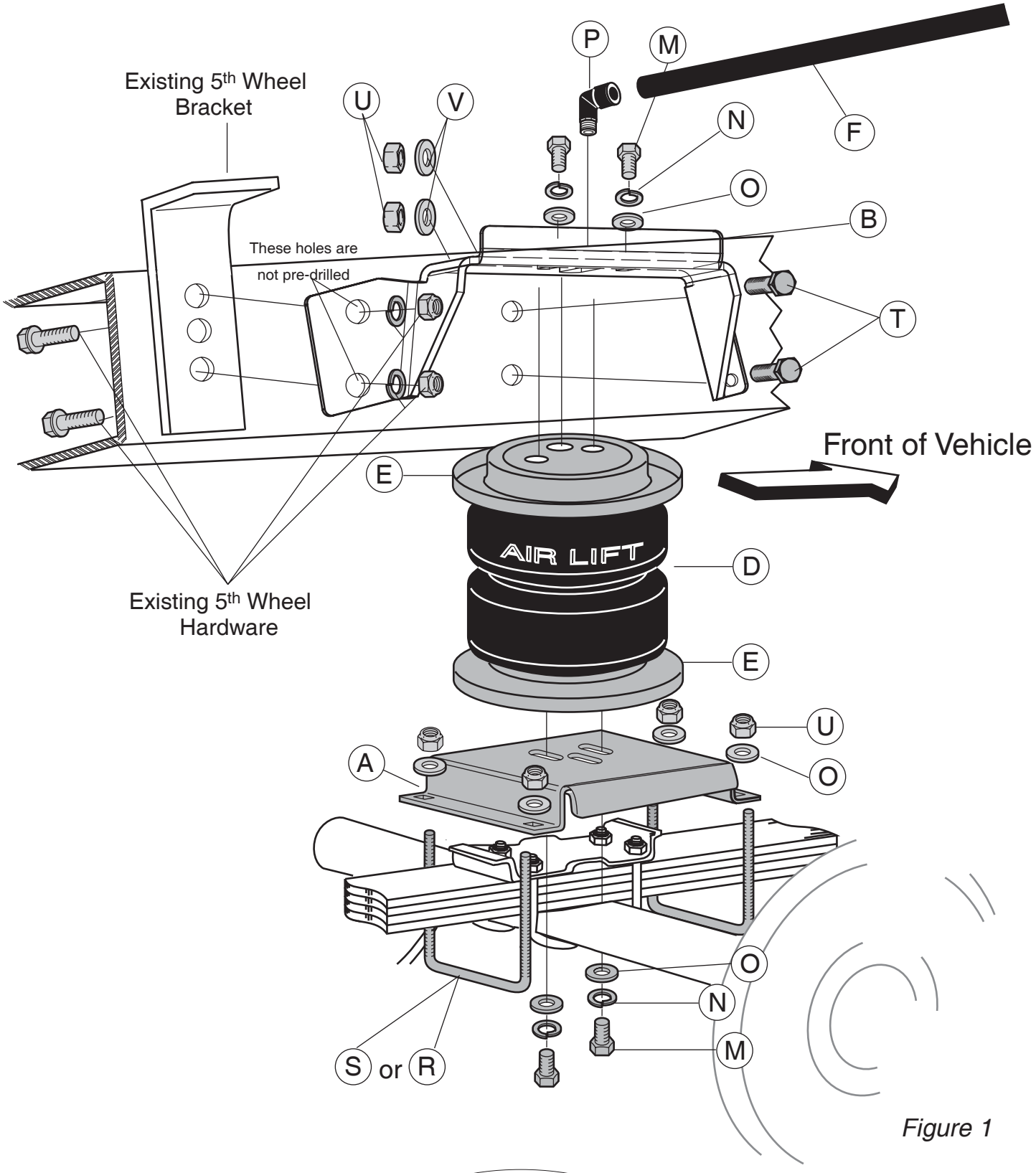

Figure 1

Parts Included

_Item	P/N	Description	Quantity	_Item	P/N	Description	Quantity
A	03102	Lower Bracket	2	L	21234	Rubber Washer	2
B	07478	Upper Bracket Right	1	M	17203	3/8"-24 x 7/8" Bolt GD 2	8
C	07479	Upper Bracket Left	1	N	18427	3/8" Lockwasher	8
D	58437	Bellows 2B6 1/8" Port	2	O	18444	3/8" Flat Washer	16
E	11951	Roll Plate	4	P	21837	1/8" MNPT x 1/4" Fitting	2
F	20086	Hose Sub-Assembly	1	Q	01525	Optional Spacer	4
G	10466	Short Strap	6	R	10583	U-Bolt 4 1/2"	4
H	18405	5/16" x 5/8" Flat Washer	2	S	10594	U-Bolt 2"	4
I	18411	5/16" Ext. Tooth Lockwasher	2	T	17159	3/8"-16 x 1.5 Bolt	4
J	21230	Poly Cap	2	U	18435	3/8" Nylock Nut	12
K	21233	Hex Nut	4	V	18447	3/8" Large Flat Washer	4

Tools Needed

Open-end or box wrenches
Crescent Wrench
Ratchet with deep well sockets
1/2", 3/8" and 5/16" drill bits (very sharp)
Heavy Duty Drill
Torque Wrench
Hose Cutter, Razor Blade, or Sharp Knife
Hoist or Floor Jacks
Safety Stands
Safety Glasses
Air Compressor, or Compressed Air Source
Spray Bottle with Dish Soap/Water Solution

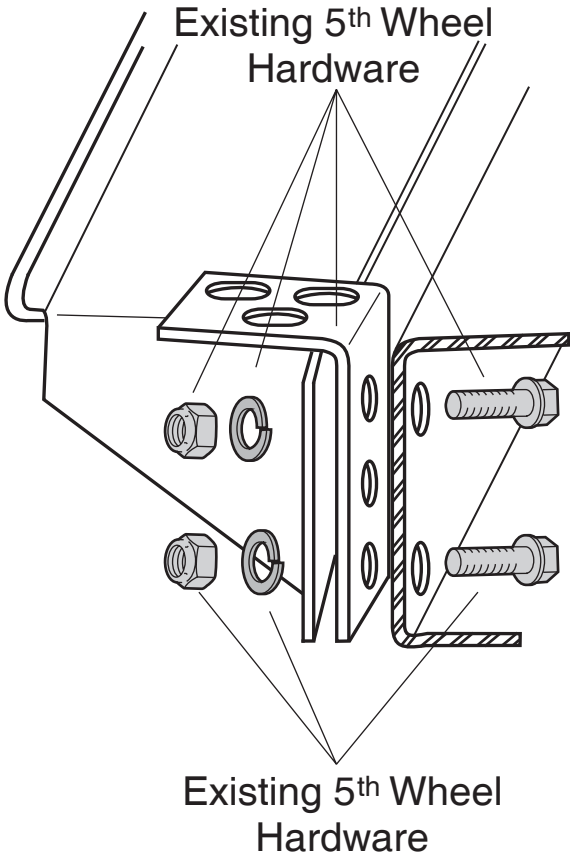

Figure 2

IMPORTANT: The air springs will last much longer if they are not limiting the suspension in either compression or extension. The air spring compresses to 2.8" and extends to 9.1". Regardless of load, the air pressure should always be adjusted so that the Normal Ride Height is maintained at all times. The shock absorber is usually the limiter on extension. If this is not the case, the use of limiting straps should be considered, especially for those vehicles that are used off-road.

IMPORTANT: Your vehicle may be equipped with a rear brake proportioning valve. Any type of load assist product could affect brake performance. We recommend that you check with your dealer before installing this type of product. If your vehicle DOES NOT have a rear brake proportioning valve or is equipped with an anti-lock type brake system, installation of a load assist product will have NO EFFECT ON BRAKE SYSTEM PERFORMANCE.

DANGER: Compressed air can cause injury and damage to the vehicle and parts if it is not handled properly. For your safety, do not try to inflate the air springs until they have been properly secured to the vehicle.

I. Getting Started

1. Determine the Normal Ride Height. The Normal Ride Height is the distance between the bottom edge of the wheel-well and the center of the hub with the vehicle in the "as delivered" condition. In some cases, Normal Ride Height is not perfectly level.

   a. Remove unusual loads and examine your vehicle from the side to ensure it is on a level surface.

   b. If necessary (in cases where your leaf springs are sagging badly), use a jack to raise the rear end so that the vehicle achieves the original "as delivered" ride height.

2. Measure the distance between the center of the hub and the bottom edge of the wheel well (Figure 3). This is the Normal Ride Height. Enter the measurement below:

   NORMAL
   RIDE HEIGHT: _____ inches

3. Measure the distance between the frame and the tire. This kit requires a minimum of 8" of clearance for a fully inflated air spring (Figure 4).

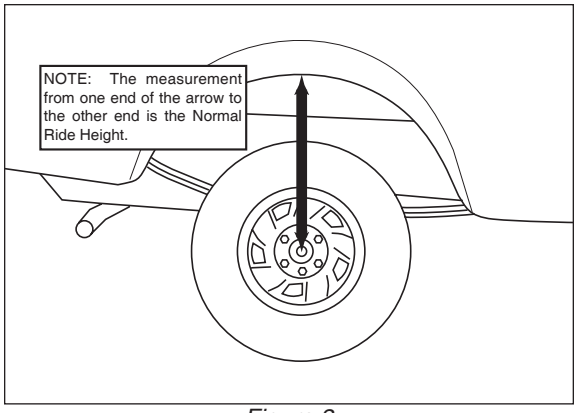

Figure 3

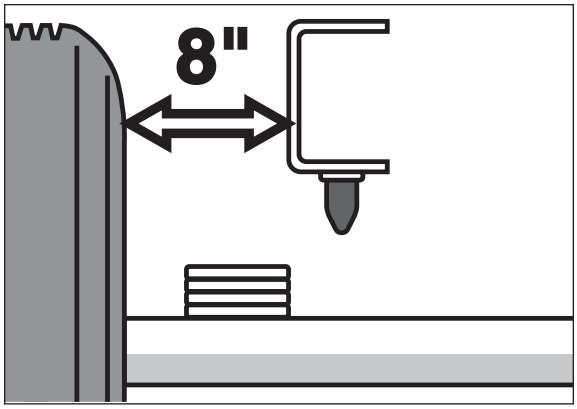

Figure 4

II. Raising the Vehicle

1. Raise the vehicle and remove the wheels.

2. Check the distance between the center of the hub and the bottom edge of the wheel to ensure that it is at the normal ride height previously recorded. If not, raise the frame or lower the axle as necessary to restore the original distance.

   a. If the vehicle is raised with an axle contact hoist, then place axle stands under the frame and lower the axle as needed.

   b. If the vehicle is raised with a frame contact hoist, then place axle stands under the axle and raise or lower the frame as needed.

   c. If the vehicle is raise with a jack and supported with axle stands on the frame, then use a floor jack to lower the axle.

III. Assembling the Air Spring Unit

1. Set a roll plate (E) on both ends of the air spring (D). The radiused (rounded) edge of the roll plate will be towards the air spring, so that the air spring is seated in both roll plates (Figure 1).

2. Install a 90° swivel air fitting (P) finger tight plus 1 $^1/_2$ turns (Figure 1). Use a $^7/_{16}$" open end wrench being careful to tighten on the metal hex nut only. *Do not overtighten.* This fitting is precoated with sealant.

3. Place the upper bracket (B,C) onto the top of the bellow and hat with the legs facing down. Guide the swivel fitting through the large slotted hole in the center (Figure 1).

4. Place the lower bracket (A) on the air spring so that the flat edge of the lower bracket mounts toward the legs of the upper bracket (inboard) (Figure 1).

5. Loosely attach the upper bracket to the assembly using flat washers (O), lockwashers (N), and hex head bolts (M) (Figure 1). NOTE: Remember that the legs face down.

6. Loosely attach the lower bracket to the assembly using flat washers (O), lockwashers (N), and hex head bolts (M) (Figure 1).

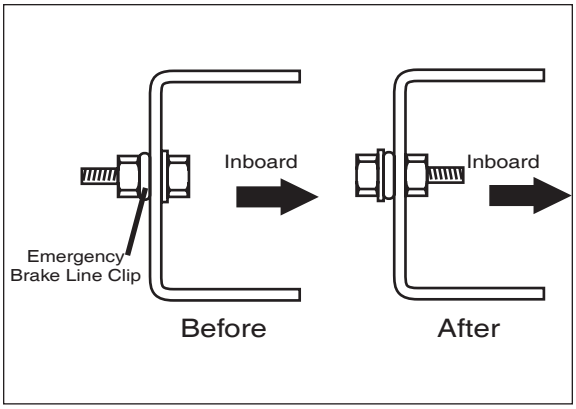

Figure 5

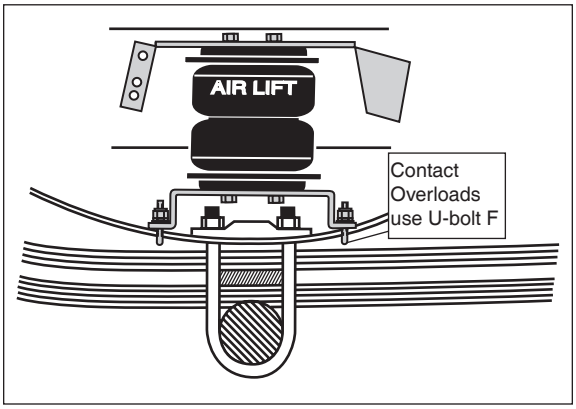

Figure 6

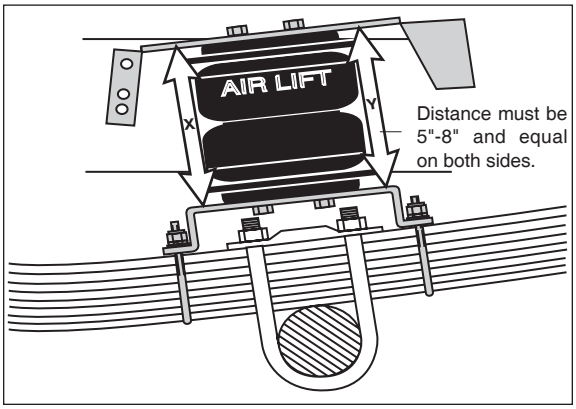

Figure 7

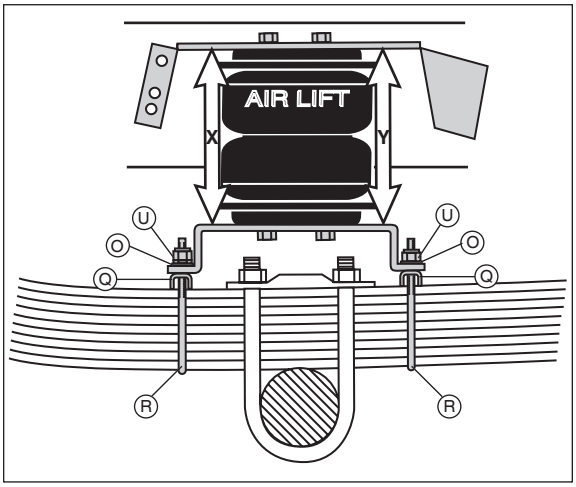

Figure 8

IV. Special Application Instructions

1. For 1999 and later Super Duty F-250 and F-350 trucks, remove the bolt holding the emergency brake cable to the outside of the frame rail. Reinstall the bolt in the reverse order, with the nut on the inside of the frame rail to prevent rubbing against the air spring (Figure 5).

2. Frame Contact Overload Springs:

   a. If the vehicle is equipped with factory frame contact overload springs, the lower bracket should be attached using the short U-Bolts (S) provided in this kit (Figure 6).

   b. If an unusually harsh ride is experienced, even at the minimum required pressure (5 p.s.i.), then it may be helpful to remove the overload springs. This will not reduce carrying capacity. The difference will be made up by running the air spring at a higher pressure. It may be necessary to purchase different U-Bolts or reuse the block spacer to hold the main leaf spring stack tight to the axle housing.

V. Positioning the Brackets

1. Remove ther rear 5th wheel hitch bolts that go through the web of the frame (Figure 2). Keep for later use.

2. The air spring must be installed between 5” and 8” from the upper bracket to the lower bracket (Figure 7). It is best to position the upper bracket as high as possible, the taller the better.

3. Set the air spring assembly on the leaf spring over the axle (Figure 1).

   NOTE: This kit can only be mounted with the upper bracket in a legs down position and with the upper bracket reinforcement lip up.

4. Position the upper bracket so that the two forward bolt holes will be on the flat section of the frame rail. Keep the edge of drilled holes no closer than 3/4” from the top or bottom radius of the frame rail.

5. In some cases it may be necessary to use the optional spacers (Q) to achieve the 5”-8” space (Figure 8). For example, if only the top hole makes contact above the lower radius edge of the frame rail, it may be necessary to use the optional spacers (Q) under the lower bracket to achieve mounting height.

6. Push the upper bracket against the frame and 5th wheel bracket. Mark the existing holes, used to hold the 5th wheel brackets to the frame, on the flat flange of the upper air spring bracket (B,C).

7. Remove the assembly and drill two 1/2” holes through the upper bracket where the holes were marked.

8. Set the assembly back on the leaf spring.

VI. Attaching the Lower Bracket

1. If the spacer is not used, then attach the lower bracket securely using the provided U-Bolts (R), flat washers (O), and lock nuts (U) (Figures 6 and 8).

   NOTE: Use shorter U-Bolts (S) when attaching to frame contact overload springs.

2. If the spacer is used, then place the spacers (Q) legs down on the leaf spring and attach the lower bracket securely using the provided U-Bolts (R), flat washers (O), and lock nuts (U) (Figure 8).

3. Be sure to align holes in upper bracket that were drilled to existing holes in the 5th wheel bracket. Torque U-bolt to 16 ft/lbs.

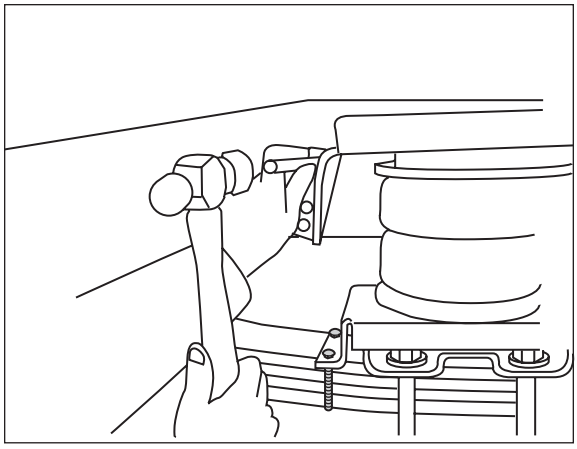

Figure 9

VII. Attaching the Upper Bracket

1. There must be sufficient clearance between the air spring, the frame, the tire, and the brake drum when the air spring is at the maximum inflated diameter of 7.0".

2. Insert the 5th wheel hitch bolts (previously removed) and attach the upper bracket with the existing hardware. Torque to 85 ft/lbs.

3. Using the upper bracket as a template, center punch and drill both 3/8" holes through the frame (Figure 9). Use the widest bolt hole pattern possible.

4. Install a washer head frame bolt (T), oversized flat washer (V), and lock nut (U) (Figure 1). Torque 3/8" frame bolts to 44 ft/lbs.

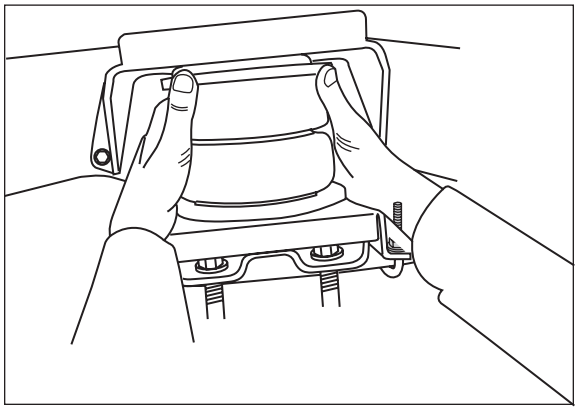

Figure 10

VIII. Checking the Air Spring Alignment

1. With the air spring still loose in the upper and lower brackets, align the air spring, both inboard and outboard using the slotted holes in the bracket so that it is uniformly positioned between the brackets (Figure 10).

2. Maintain at least a thumbs width of clearance between the air spring and the frame (uninflated).

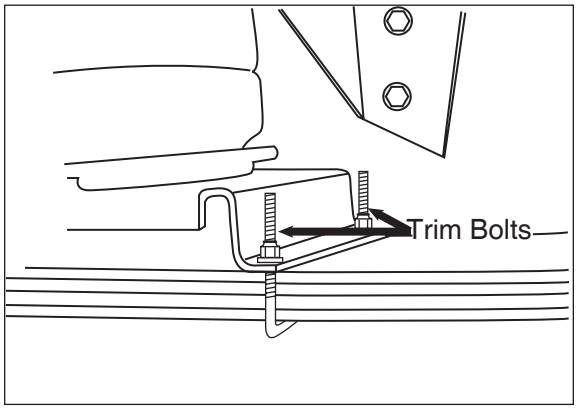

Figure 11

IX. Securing the Air Spring to the Brackets

1. Secure the air spring to the upper and lower brackets using an open ended 9/16" wrench by tightening the two bolts on the top and the two bolts on the bottom of the spring assembly.

2. Depending on the thickness of the leaf spring stack, it may be necessary to trim the U-Bolts to prevent them from contacting

the upper bracket in full jounce (Figure 11).

X. Installing the Other Side

1. One side of the installation is now complete. Repeat entire installation procedure for remaining side.

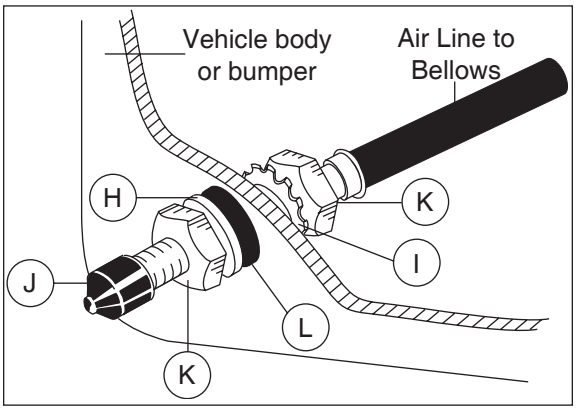

Figure 12

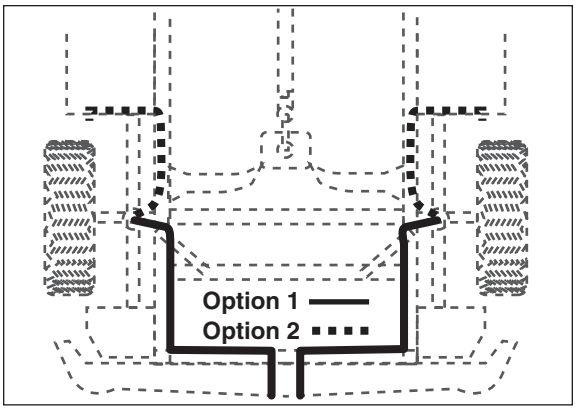

Figure 13

XI. Installing the Air Lines

1. Choose a convenient location for mounting the inflation valves. Popular locations for the inflation valve are:

   a. The wheel well flanges.
   b. License plate recess in bumper.
   c. Under the gas cap access door.
   d. Through the license plate itself.

   NOTE: Whatever the chosen location is, make sure there is enough clearance around the inflation valves for an air chuck.

2. Drill a $^{5}/_{16}$" hole to install the inflation valves.

3. Cut the air line assembly (F) in two equal lengths.

   CAUTION: When cutting or trimming the air line, use a hose cutter, a razor blade or a sharp knife. A clean, square cut will ensure against leaks. Do not use wire cutters or scissors to cut the air line. These tools may flatten or crimp the air line, causing it to leak around the O-ring seal inside the elbow fitting.

4. Place a $^{5}/_{16}$" nut (K) and a star washer (I) on the air valve. Leave enough of the inflation valve in front of the nut to extend through the hole and have room for the rubber washer (L), flat washer (H), and $^{5}/_{16}$" nut (K) and cap (J). There should be enough valve exposed after installation - approximately $^{1}/_{2}$" - to easily apply a pressure gauge or an air chuck (Figure 12).

5. Push the inflation valve through the hole and use the rubber washer (L), flat washer (H), and another $^{5}/_{16}$" nut (K) to secure it in place. Tighten the nuts to secure the assembly in place (Figure 12).

6. Route the air line along the frame to the air fitting on the air spring (Figure 13). Keep at least 6" of clearance between the air line and heat sources, such as the exhaust pipes, muffler, or catalytic converter. Avoid sharp bends and edges. Use the plastic tie straps (G) to secure the air line to fixed, non-moving points along the chassis. Be sure that the tie straps are tight, but do not pinch the air line. Leave at least 2" of slack to allow for any movement that might pull on the air line.

7. Cut off air line leaving approximately 12" of extra air line. A clean square cut will ensure against leaks. Insert the air line into the air fitting. This is a push to connect fitting. Simply push the air line into the 90° swivel fitting until it bottoms out ($^{9}/_{16}$" of air line should be in the fitting).

8. Install the minimum/maximum air pressure decal in a highly visible location. We suggest placing it on the driver side window just above the door handle.

2. When both sides are installed, check all hardware to ensure that all is secure.

XII. Checking for Leaks

1. Inflate the air spring to 30 p.s.i.

2. Spray all connections and the inflation valves with a solution of 1/5 liquid dish soap and 4/5 water to check for leaks. You should be able to spot leaks easily by looking for bubbles in the soapy water.

3. After the test, deflate the springs to the minimum pressure required to restore the Normal Ride Height, but not less than 5 p.s.i.

4. *IMPORTANT:* Check the air pressure again after 24 hours. A 2 to 4 p.s.i. loss after initial installation is normal. Retest for leaks if the loss is more than 5 lbs.

XIII. Fixing Leaks

1. If there is a problem with the swivel fitting,

   a. Check the air line connection by deflating the spring and removing the line by pulling the collar against the fitting and pulling firmly on the air line. Trim 1" off the end of the air line. Be sure the cut is clean and square. Reinsert the air line into the push-to-connect fitting.

   b. Check the threaded connection by tightening the swivel fitting another 1/2 turn. If it still leaks, deflate the air spring, remove the fitting, and re-coat the threads with thread sealant. Reinstall by hand tightening as much as possible, then use a wrench for an additional two turns.

2. If there is a problem with the inflation valve,

   a. Check the valve core by tightening it with a valve core tool.

   b. Check the air line connection by removing the air line from the barbed type fitting. *CAUTION: Do not cut it off. As this will usually nick the barb and render the fitting useless.* Cut air line off a few inches in front of the fitting and use a pair of pliers or vice-grips to pull/twist the air line off the fitting.

3. If the preceding steps have not resolved the problem, call Air Lift Technical Service at 1-800-248-0892 for assistance.

XIV. Troubleshooting Guide

Problems maintaining air pressure, without on-board compressor.

1. Leak test the air line connections and threaded connection of the elbow into the air spring. See Section XIII for repair instructions.

2. Leak test the inflation valve for leaks at the air line connection or dirt or debris in the valve core. See Section XIII for repair instructions.

3. Inspect air lines to be sure it is not pinched. Tie straps may be too tight. Loosen or replace strap. Replace leaking components.

4. Inspect air line for holes and cracks. Replace as needed.

5. Look for kinks or folds in the air line. If any are detected, reroute as needed.

You have now tested for all of the most probable leak conditions that can be easily fixed. At this point the problem is most likely a failed air spring - either a factory defect or an operating problem. Please call Air Lift at 1-800-248-0892 for

XV. Checklist

You can protect your warranty on this product and prevent unnecessary wear by ensuring the following checks have been made:

Section I – Installation (To be completed by the installer):

☐ 1. Clearance Test - Inflate the air springs to 60 p.s.i. and ensure there is at least 1/2 " clearance around each sleeve from anything that might rub against them. Be sure to check the tire, brake drum, frame, shock absorbers and brake cables.

☐ 2. Leak Test Before Road Test – Inflate the air springs to 60 p.s.i., check all connections for leaks with a soapy water solution. See pages 8 and 9 of the manual for tips on how to spot leaks. All leaks must be eliminated before the vehicle is road tested.

☐ 3. Heat Test – Be sure there is sufficient clearance from heat sources - at least 6" for air springs and air lines. If a heat shield was included in the kit - install it. If there is no heat shield, but one is required, call 1-800-248-0892.

☐ 4. Fastener Test – Recheck all bolts for proper torque.

Torque Guide:

3/8 " Frame Bolts	44 ft–lbs
U-bolt Lock Nuts	16 ft–lbs

☐ 5. Road Test – The vehicle should be road tested after the preceding tests. Inflate the springs to 25 p.s.i. (50 p.s.i. if vehicle is loaded). Drive the vehicle 10 miles and recheck for clearance, loose fasteners and/or air leaks.

☐ 6. Operating Instructions – If professionally installed, the installer should review the operating instructions on page 9 with the owner. Be sure to provide the owner with all of the paperwork that came with the kit.

Section II - Post Installation Checklist (To be completed by the owner):

☐ 1. Overnight Leakdown Test – Recheck air pressure after vehicle has been used for 24 hours. If pressure has dropped more than 5 p.s.i. then, you have a leak that must be fixed. Either fix the leak yourself (see page 7) or return to the installer for service.

☐ 2. Air Pressure Requirements – I understand that the air pressure requirements of my air spring system are as follows:

Minimum _____ Maximum _____

I also understand that I must inflate the air springs until the Ride Height measurement that was recorded on page 3 has been restored. Regardless of load, the air pressure should always be adjusted so that the Ride Height is maintained at all times.

☐ 3. Thirty Day or 500 Mile Test. I understand that I must recheck the air spring system after 30 days or 500 miles, whichever comes first. If any part shows signs of rubbing or abrasion, the source should be identified and moved, if possible. If it is not possible to relocate the cause of the abrasion, the air spring may need to be remounted. If professionally installed, the installer should be consulted. Check all fasteners for tightness.

XVI. Maintenance and Operation

Minimum Air Pressure	Maximum Air Pressure
5 p.s.i.	100 p.s.i.

Failure to maintain correct minimum pressure (or pressure proportional to load), bottoming out, over-extension, or rubbing against another component will void the warranty.

By following these steps, vehicle owners will obtain the longest life and best results from their air springs.

1. Check the air pressure weekly.

2. Always maintain Normal Ride Height. Never inflate beyond 100 p.s.i.

3. If you develop an air leak in the system, use a soapy water solution to check all air line connections and the inflation valve core before deflating and removing the air spring.

4. *IMPORTANT*: For your safety and to prevent possible damage to your vehicle, *do not exceed maximum Gross Vehicle Weight Rating (GVWR), as indicated by the vehicle manufacturer.* Although your air springs are rated at a maximum inflation pressure of 100 p.s.i. The air pressure actually needed is dependant on your load and GVWR, which may be less than 100 p.s.i. Check your vehicle owners manual and do not exceed the maximum load listed for your vehicle.

5. Loaded vehicles require at least 25 p.s.i. or more. A “loaded vehicle” refers to a vehicle with a heavy bed load, a trailer, or both. As discussed above, never exceed the GVWR, regardless of air spring, air pressure, or other load assist. The springs in this kit will support approximately 40 pounds of load (combined for both springs) for each 1 p.s.i. of air pressure. The following chart can be used as a guideline for operating air pressure:

Load	Air Pressure
1000 lbs	25-35 p.s.i.
2000 lbs	45-55 p.s.i.
3000 lbs	70-80 p.s.i.
4000 lbs	90-100 p.s.i.

   Again, the above chart is a general guideline only. Use enough pressure to level the vehicle to the normal ride height recorded on page 2 of this manual. The required air pressure will vary depending on the state of the original suspension. Operating the vehicle below the minimum air spring pressure will void the Air Lift Limited Warranty.

6. When increasing load, always adjust the air pressure to maintain the Normal Ride Height. Increase or decrease pressure from the system as necessary to attain Normal Ride Height for optimal ride and handling. Remember that loads carried behind the axle (including tongue loads) require more leveling force (pressure) than those carried directly over the axle.

7. Always add air to springs in small quantities, checking the pressure frequently. Air springs require less air volume than a tire and inflate quickly.

8. *Should it become necessary to raise the vehicle by the frame, make sure the system is at minimum pressure (10 p.s.i.) to reduce the tension on the suspension/brake components. Use of on–board leveling systems do not require deflation or disconnection.*

9. Periodically check all of the air spring system fasteners for tightness. Also, check the air springs for any signs or rubbing. Realign if necessary.

10. On occasion, give the air springs a hard spray with a garden hose in order to remove mud, sand, gravel, or other abrasive debris.

Thank you for purchasing Air Lift Products

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