

Air Lift™
PERFORMANCE

Kits 75546 and 75547

**BMW E46 (M Series & non-M)
Front Application**



INSTALLATION GUIDE

For maximum effectiveness and safety, please read these instructions completely before proceeding with installation.

Failure to read these instructions can result in an incorrect installation.

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Introduction

The purpose of this publication is to assist with the installation, maintenance and troubleshooting of this BMW E46 Performance kit.

It is important to read and understand the entire installation guide before beginning installation or performing any maintenance, service or repair. The information includes a hardware list, tool list, step-by-step installation information, maintenance tips, safety information and a troubleshooting guide.

Air Lift Company reserves the right to make changes and improvements to its products and publications at any time. For the latest version of this manual, contact Air Lift Company at (800) 248-0892 or visit our website at www.airliftcompany.com.

NOTATION EXPLANATION

Hazard notations appear in various locations in this publication. Information which is highlighted by one of these notations must be observed to help minimize risk of personal injury or possible improper installation which may render the vehicle unsafe. Notes are used to help emphasize areas of procedural importance and provide helpful suggestions. The following definitions explain the use of these notations as they appear throughout this guide.

 DANGER

INDICATES IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH.

 WARNING

INDICATES HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH.

 CAUTION

INDICATES HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN DAMAGE TO THE MACHINE OR MINOR PERSONAL INJURY.

NOTE

Indicates a procedure, practice or hint which is important to highlight.

IMPORTANT SAFETY NOTICES

The installation of this kit does not alter the Gross Vehicle Weight Rating (GVWR) or payload of the vehicle. Check your vehicle's owner's manual and do not exceed the maximum load listed for your vehicle.

Gross Vehicle Weight Rating: The maximum allowable weight of the fully loaded vehicle (including passengers and cargo). This number — along with other weight limits, as well as tire, rim size and inflation pressure data — is shown on the vehicle's Safety Compliance Certification Label.

Payload: The combined, maximum allowable weight of cargo and passengers that the vehicle is designed to carry. Payload is GVWR minus the Base Curb Weight.

 WARNING

DO NOT INFLATE AIR SPRINGS WHILE OFF OF THE VEHICLE. DAMAGE TO ASSEMBLY MAY RESULT AND VOID WARRANTY.

 CAUTION

DO NOT WELD TO, OR MODIFY PERFORMANCE STRUTS/SOCKS IN ANY WAY. DAMAGE TO UNIT MAY OCCUR AND WILL VOID WARRANTY.

Installation Diagram

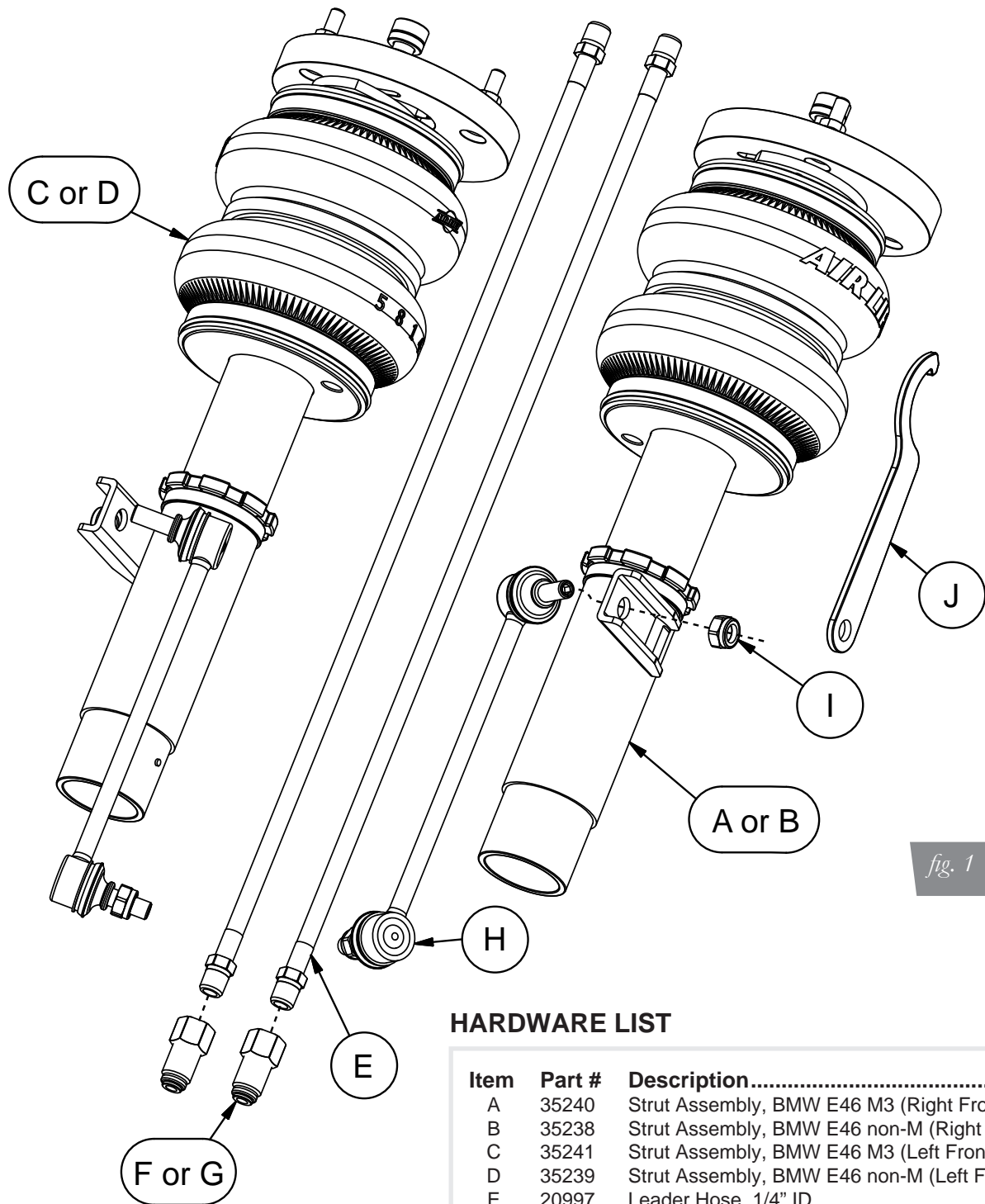


fig. 1

HARDWARE LIST

Item	Part #	Description.....	Qty
A	35240	Strut Assembly, BMW E46 M3 (Right Front).....	1
B	35238	Strut Assembly, BMW E46 non-M (Right Front)....	1
C	35241	Strut Assembly, BMW E46 M3 (Left Front)	1
D	35239	Strut Assembly, BMW E46 non-M (Left Front)	1
E	20997	Leader Hose, 1/4" ID	2
F	21810	Union, 1/4"FNPT X 1/4" PTC, DOT	2
G	21987	Union, 1/4"FNPT X 3/8" PTC, DOT	2
H		End Link (215mm)	2
I		M10 X 1,25" Nyloc Nut	4
J		Spanner Wrench.....	1



Missing or damaged parts? Call Air Lift customer service at (800) 248-0892 for a replacement part.

Installing the Air Suspension

PREPARING THE VEHICLE

1. Support the vehicle with jack stands or a hoist at approved lifting points.
2. Remove the front wheels (fig. 2). Support the hub assembly before beginning work.



fig. 2

3. Disconnect the headlight alignment sensor linkage from the lower control arm.

STOCK SUSPENSION REMOVAL

1. Detach the brake line and sensor wires from the supporting bracket (fig. 3).
2. Disconnect the stabilizer link from the strut body. Also disconnect the stabilizer end link from the stabilizer bar, removing from the vehicle (fig. 4).

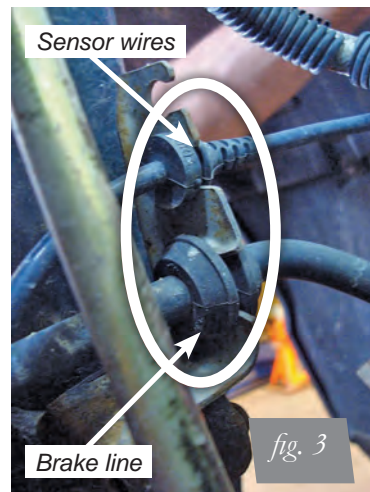


fig. 3

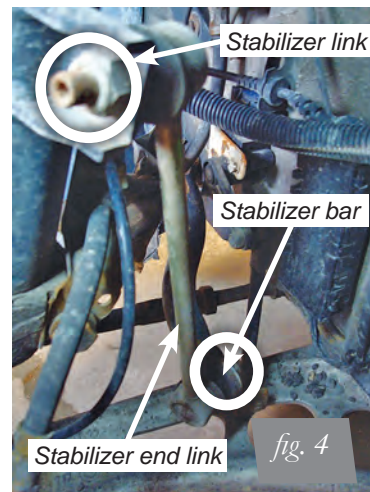


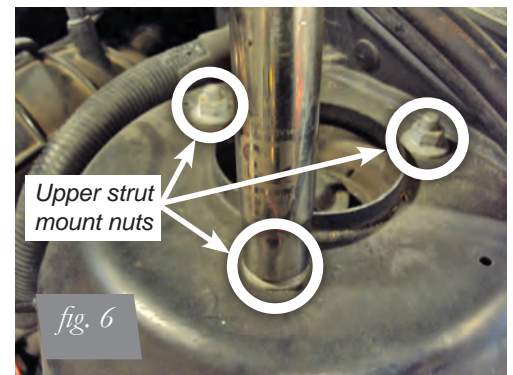
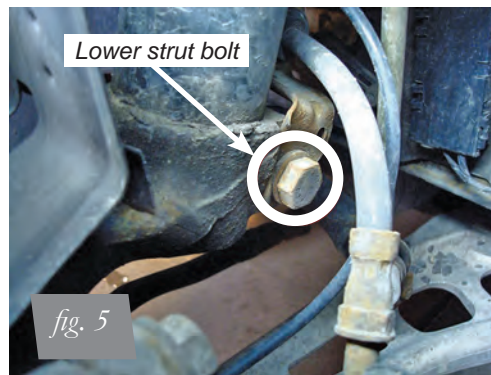
fig. 4

3. Remove the lower strut bolt (fig. 5). Spread the strut mounting knuckle and slide the knuckle off of the strut.

CAUTION

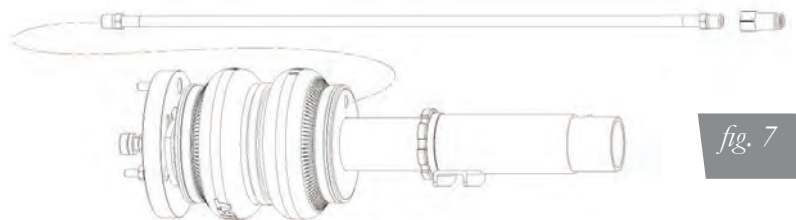
DO NOT ALLOW THE HUB ASSEMBLY TO HANG FROM THE BRAKE LINE.

4. Remove the three upper strut mount nuts (fig. 6) and remove the strut from the vehicle.



AIR SUSPENSION INSTALLATION

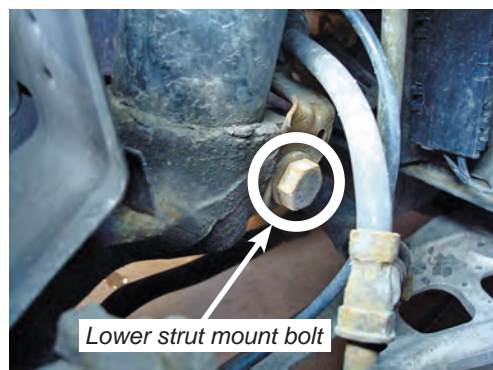
1. Apply thread sealant to the threads of the leader hose and install into the lower end cap 1 and 3/4 turns beyond hand tight. Install the appropriate fitting to the leader hose 1 and 3/4 turns beyond hand tight (fig. 7).



2. Attach the strut to the vehicle chassis (fig. 8) and torque upper bracket bolts to 24Nm (18lb-ft).



3. Raise the knuckle up to the strut lower mount and slide the mount into the knuckle. Re-install the lower strut mount bolt along with the brake line/sensor wire supporting bracket (fig. 9). Torque the lower strut mount bolt to 81Nm (60lb-ft).



- Clip the sensor wires and brake line onto the supporting bracket (fig. 10).

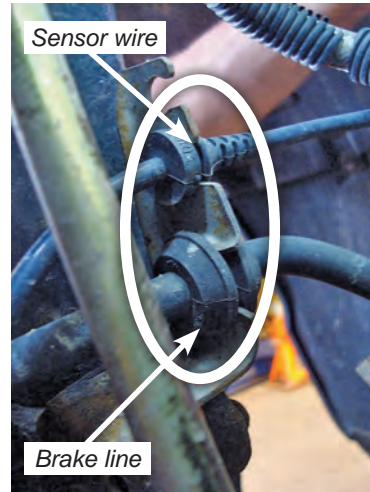


fig. 10

- Install the supplied stabilizer end link to the strut cartridge and stabilizer bar (figs. 11 & 12). Torque nuts to 65Nm (48lb-ft).

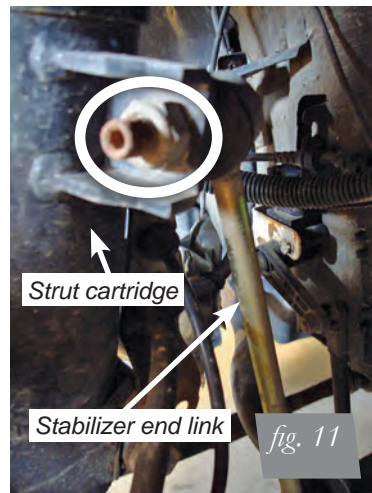


fig. 11

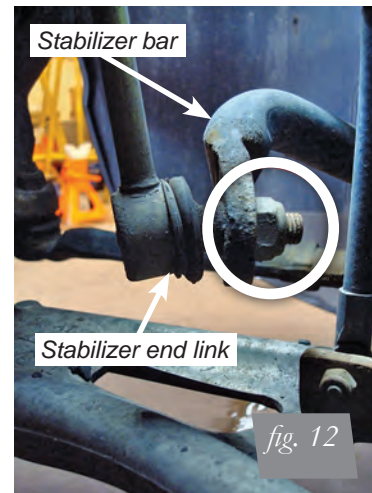


fig. 12

- Route the leader hose in a way that will not rub or kink as the suspension cycles and steers. Routing along the path of brake lines is generally a good place to start.
- With the suspension fully compressed, take a measurement from the fender to some reference point, typically the center of the axle. Record this as Max Compression (MC). Cycle the suspension to Max Extension (ME) and record the measurement from the same reference points. Take the difference between the two numbers and divide by two. Add that value to the Max Compression number and then set the suspension to that point (fig. 13). This position gives 50% stroke in either direction and is a great starting point for ride height. At this position torque the lower clevis bolt, lower control arm bolts to manufacturer's specifications (Table 1).

Formula for calculating ride height:

Step 1:	Step 2:	Step 3:	Answer:
$\frac{ME - MC}{X}$	$\frac{X}{2} = Y$	$\frac{Y + MC}{Z}$	$Z = \text{DESIGN HEIGHT}$

fig. 13

Table 1

Torque Specifications		
Location	Nm	Lb-ft
Leader hose to air spring and fitting	1 and 3/4 turns beyond hand tight	
Upper strut mount to chassis	24	18
Lower strut mount to clevis bolt	81	60
Stablizer end link nut	65	48
Wheels	120	89

- Reinstall wheels; retake the Max Compression and Extension measurements from the fender to lower wheel lip. Recalculate the ride height at 50% stroke and set the vehicle to that height. Enjoy the new look and handling!

DAMPING ADJUSTMENT

The struts in this kit have 30 settings “clicks” of adjustable compression and rebound damping characteristics. Damping is changed through the strut rod using the supplied adjuster or a 3mm allen wrench. Turn the adjuster clockwise and the damping settings are hardened. Turn the adjuster counterclockwise and the damping is softened. Each strut is preset to “-20 clicks”. This means that the strut is adjusted 20 clicks away from full stiff. Counting down from full stiff is the preferred method of keeping track/setting of damping. This setting was developed on a 2004 BMW 325i sedan and may need to be adjusted to the different vehicles and driving characteristics.



fig. 14



fig. 15

ADJUSTING EXTENDED OR DROP HEIGHT USING LOWER MOUNT

Your struts have been pre-set at the factory to provide maximum drop height while maintaining adequate tire clearance to the air spring. If you wish to gain more extended height (lift), which is the same as reducing drop height, or want to lower the chassis further and there is still adjustment available at the lower mount, please use the following procedure:

- Support the vehicle with jack stands or a hoist at approved lifting points.
- Remove the wheel.
- Using the supplied spanner wrench, loosen the lower locking collar. (fig. 16)

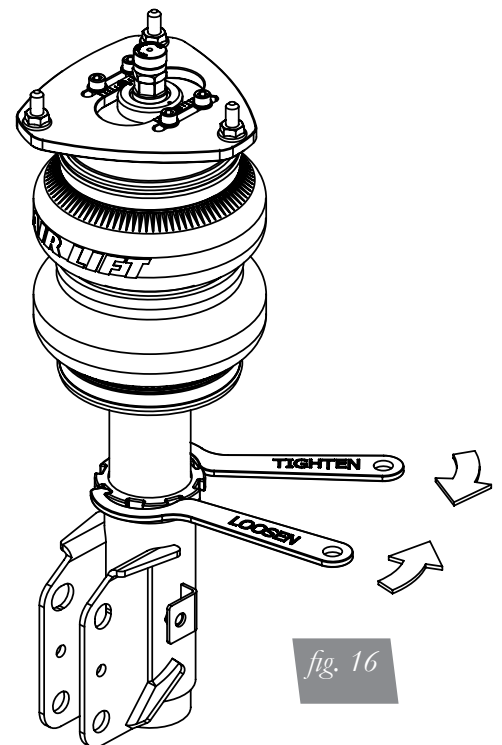


fig. 16

Before Operating

 CAUTION

MAKE SURE THE FRONT WHEELS ARE STRAIGHT WHEN DEFLATING AND REINFLATING AIR BAGS.

1. Inflate and deflate the system (do not exceed 125 PSI) to check for clearance or binding issues. With the air springs deflated, check clearances on everything so as not to pinch brake lines, vent tubes, etc. Clear lines if necessary.
2. Inflate the air springs to 75 PSI - 90 PSI and check all connections for leaks.
3. Air Lift part #27669 or #27671, AutoPilot V2 Air Management System, is highly recommended for this product.
4. Please familiarize yourself further with this product by reading the Product Use, Maintenance and Servicing section.

INSTALLATION CHECKLIST

- Clearance test** — Inflate the air springs to 55-90 PSI and make sure there is at least ½” clearance from anything that might rub against each sleeve. Be sure to check the tire, brake drum, frame, shock absorbers and brake cables.

- Leak test before road test** — Inflate the air springs to 55 PSI - 90 PSI and check all connections for leaks. All leaks must be eliminated before the vehicle is road tested.

- 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 Air Lift customer service at (800) 248-0892.

- Fastener test** — Recheck all bolts for proper torque.

- Road test** — The vehicle should be road tested after the preceding tests. Inflate the springs to recommended driving pressures. Drive the vehicle 10 miles and recheck for clearance, loose fasteners and air leaks.

- Operating instructions** — If professionally installed, the installer should review the operating instructions with the owner. Be sure to provide the owner with all of the paperwork that came with the kit.

Technician's Signature _____

Date _____

POST-INSTALLATION CHECKLIST

- Overnight leak down test** — Recheck air pressure after the vehicle has been used for 24 hours. If the pressure has dropped more than 5 PSI, then there is a leak that must be fixed. Either fix the leak yourself or return to the installer for service.

- Air pressure requirements** — Regardless of load, the air pressure should always be adjusted to maintain adequate ride height at all times while driving.

- Thirty day or 500 mile test** — 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.

Product Use, Maintenance and Servicing

Suggested Driving Air Pressure	Maximum Air Pressure
38 PSI	125 PSI
FAILURE TO MAINTAIN ADEQUATE MINIMUM PRESSURE (OR PRESSURE PROPORTIONAL TO LOAD) WILL RESULT IN BOTTOMING OUT, OVER-EXTENSION OR RUBBING AGAINST ANOTHER COMPONENT AND WILL VOID THE WARRANTY .	

MAINTENANCE GUIDELINES

NOTE

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

1. Check the air pressure before driving.
2. Never inflate beyond 125 PSI.
3. If you develop an air leak in the system, use a soapy water solution to check all air line connections, before deflating and removing the spring.
4. When increasing load, always adjust the air pressure to maintain 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.

CAUTION

FOR YOUR SAFETY AND TO PREVENT 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 125 PSI, THE AIR PRESSURE ACTUALLY NEEDED IS DEPENDENT ON YOUR LOAD.

5. Always add air to the springs in small quantities, checking the pressure frequently. Sleeves require less air volume than a tire and inflate quickly.
6. Should it become necessary to raise the vehicle by the frame, make sure the control system is turned off before lifting.

Troubleshooting Guide

1. Leak test the air line connections, the threaded connection into the air spring, and all fittings in the control system.
2. Inspect the air lines to be sure none are pinched. Tie straps may be too tight. Loosen or replace the strap and replace leaking components.
3. Inspect the air line for holes and cracks. Replace as needed.
4. Look for a kink or fold in the air line. Reroute as needed.

If the preceding steps do not solve the problem, it is possibly caused by a failed air spring — either a factory defect or an operating problem. Please call Air Lift at (800) 248-0892 for assistance.

Frequently Asked Questions

Q. Will installing air springs increase the weight ratings of a vehicle?

No. Adding air springs will not change the weight ratings (GAWR, GCWR and/or GVWR) of a vehicle. Exceeding the GVWR is dangerous and voids the Air Lift warranty.

Q. How long should air springs last?

If the air springs are properly installed and maintained they can last indefinitely.

Q. Will raising the vehicle on a hoist for service work damage the air springs?

No. The vehicle can be lifted on a hoist for short-term service work such as tire rotation or oil changes. However, if the vehicle will be on the hoist for a prolonged period of time, support the axle with jack stands in order to take the tension off of the air springs.

Tuning the Air Pressure

Pressure determination comes down to three things — level vehicle, ride comfort, and stability.

1. Level vehicle

If the vehicle's headlights are shining into the trees or the vehicle is leaning to one side, then it is not level. Raise the air pressure to correct either of these problems and level the vehicle.

2. Ride comfort

If the vehicle has a rough or harsh ride it may be due to either too much pressure or not enough. Try different pressures to determine the best ride comfort. See Air Lift suggested driving air pressure.

3. Stability

Stability translates into safety and should be the priority, meaning the driver may need to sacrifice a perfectly level and comfortable ride. Stability issues include roll control, bounce, dive during braking and sponginess. Tuning out these problems usually requires additional air pressure, strut damping, or both.

Checking for leaks

1. Inflate the air spring to 80 PSI.
2. Spray all connections and the inflation valves with a solution of 1/5 liquid dish soap and 4/5 water. 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 system to normal ride height.
4. Check the air pressure again after 24 hours. A 2 - 4 PSI loss after initial installation is normal. Retest for leaks if the loss is more than 5 PSI.

Fixing Leaks

1. If there is a problem with a 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 (see fig. 17). Reinsert the air line into the push-to-connect fitting.
 - b. Check the threaded connection by tightening the swivel fitting another ½ 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 and then use a wrench for an additional two turns.
2. If the preceding steps have not resolved the problem, call Air Lift customer service at (800) 248-0892.

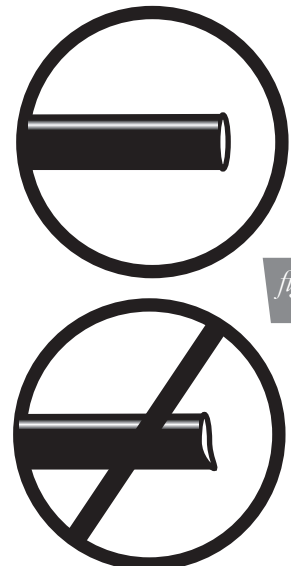


fig. 17

Warranty and Returns Policy

Air Lift Company warrants its performance products for one year to the original purchaser against manufacturing defects one year from the date of purchase when used on cars and trucks as specified under normal operating conditions. The warranty does not apply to products that have been improperly applied, improperly installed, or which have not been maintained in accordance with installation instructions furnished with all products. The consumer will be responsible for removing (labor charges) the defective product from the vehicle and returning it, transportation costs prepaid, to the dealer from which it was purchased or to Air Lift Company for verification.

Air Lift will repair or replace, at its option, defective products or components. A minimum \$10.00 shipping and handling charge will apply to all warranty claims. Before returning any defective product, you must call Air Lift at (800) 248-0892 in the U.S. and Canada (elsewhere, (517) 322-2144) for a Returned Materials Authorization (RMA) number. Returns to Air Lift can be sent to: Air Lift Company • 2727 Snow Road • Lansing, MI • 48917.

Product failures resulting from abnormal use or misuse are excluded from this warranty. The loss of use of the product, loss of time, inconvenience, commercial loss or consequential damages is not covered. The consumer is responsible for installation/reinstallation (labor charges) of the product. Air Lift Company reserves the right to change the design of any product without assuming any obligation to modify any product previously manufactured.

This warranty gives you specific legal rights and you may also have other rights that may vary from state-to-state. Some states do not allow limitations on how long an implied warranty lasts or allow the exclusion or limitation of incidental or consequential damages. The above limitation or exclusion may not apply to you. There are no warranties, expressed or implied including any implied warranties of merchantability and fitness, which extend beyond this warranty period. There are no warranties that extend beyond the description on the face hereof. Seller disclaims the implied warranty of merchantability. (Dated proof of purchase required.)

Replacement Information

If you need replacement parts, contact the local dealer or call Air Lift customer service at (800) 248-0892. Most parts are immediately available and can be shipped the same day.

Contact Air Lift Company customer service at (800) 248-0892 first if:

- Parts are missing from the kit.
- Need technical assistance on installation or operation.
- Broken or defective parts in the kit.
- Wrong parts in the kit.
- Have a warranty claim or question.

Contact the retailer where the kit was purchased:

- If it is necessary to return or exchange the kit for any reason.
- If there is a problem with shipping if shipped from the retailer.
- If there is a problem with the price.

Contact Information

If you have any questions, comments or need technical assistance contact our customer service department by calling (800) 248-0892, Monday through Friday. For calls from outside the USA or Canada, our local number is (517) 322-2144. You may also contact customer service anytime by e-mail at techsupport@airliftperformance.com.

For inquiries by mail, our address is PO Box 80167, Lansing, MI 48908-0167. Our shipping address for returns is 2727 Snow Road, Lansing, MI 48917.

You may also contact our sales team anytime by e-mail at sales@airliftperformance.com or on the web at www.airliftperformance.com.

Notes

Need Help?

Contact our customer service department by calling (800) 248-0892, Monday through Friday. For calls from outside the USA or Canada, our local number is (517) 322-2144.



Thank you for purchasing Air Lift Performance products!

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