Air Lift™
PERFORMANCE

# Kit 75573

BMW E30
(excludes AWD and M3)

***Front Application***

AIRLIFT PERFORMANCE®

# 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.*

MN-888 • (011406) • ERN 7645

# TABLE OF CONTENTS


**Introduction . . . . . 2**
Notation Explanation . . . . . 2
Important Safety Notices . . . . . 2

**Installation Diagram . . . . . 3**
Hardware List . . . . . 3

**Installing the Air Suspension . . . . . 4**
Preparing the Vehicle . . . . . 4
Removing the Front Suspension . . . . . 4
Preparing the Hub . . . . . 6
Assembling the Strut to the Hub . . . . . 7
Air Suspension Installation . . . . . 10
Damping Adjustment . . . . . 13
Aligning the Vehicle . . . . . 13
Adjusting Extended or Drop Height Using Lower Mount . . . . . 14

**Before Operating . . . . . 16**
Installation Checklist . . . . . 16

**Product Use, Maintenance and Servicing . . . . . 17**
Suggested Driving and Maximum Air Pressures . . . . . 17
Maintenance Guidelines . . . . . 17

**Troubleshooting Guide . . . . . 17**

**Frequently Asked Questions . . . . . 17**

**Tuning the Air Pressure . . . . . 18**

**Checking for Leaks . . . . . 18**

**Fixing Leaks . . . . . 18**

**Warranty & Return Policy . . . . . 19**

**Replacement Information . . . . . 19**

**Contact Information . . . . . 19**

# Introduction

The purpose of this publication is to assist with the installation, maintenance and troubleshooting of this BMW E30 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, step-by-step installation information, maintenance tips, safety information and a troubleshooting guide.

Air Lift Performance 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 Performance at (800) 248-0892 or visit our website at www.airliftperformance.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/SHOCKS IN ANY WAY. DAMAGE TO UNIT MAY OCCUR AND WILL VOID WARRANTY.

# Installation Diagram

## HARDWARE LIST

| Item | Part # | Description | Qty |
|---|---|---|---|
| A | 35255 | Strut Assembly, BMW E30 Front | 2 |
| B | 20997 | Leader Hose, 1/4” ID | 2 |
| C | 21810 | Union, 1/4”FNPT X 1/4” PTC, DOT | 2 |
| D | 21987 | Union, 1/4”FNPT X 3/8” PTC, DOT | 2 |
| E | | Spanner Wrench | 1 |

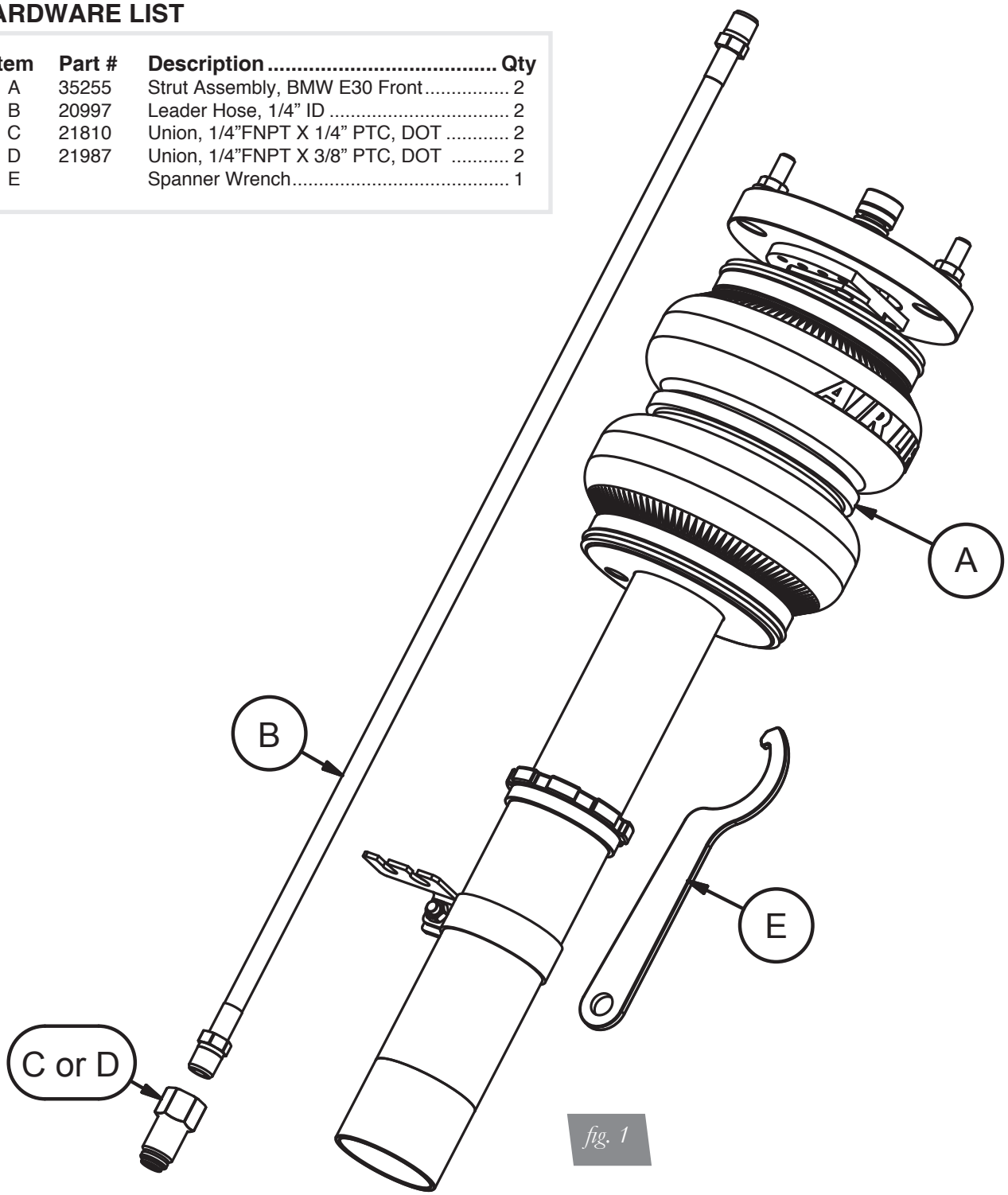



*fig. 1*

**STOP!** 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. Elevate and support the vehicle with a hoist or jack stands.
2. Remove the front wheel and support the hub assembly.

## REMOVING THE FRONT SUSPENSION

1. Disconnect the sensor wires from the strut (fig. 2).

*fig. 2*

2. Unbolt the wheel speed sensor from hub assembly (fig. 3).

*fig. 3*

3. Unbolt and remove caliper bracket from the hub assembly (fig. 4). Do not hang the caliper from the brake hose (fig. 5).

fig. 4

fig. 5

4. Disconnect the stabilizer bar end link from the lower control arm (fig. 6).

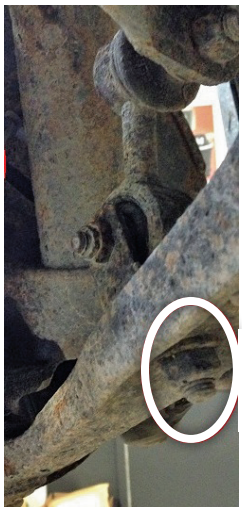


fig. 6

5. Unbolt the tie rod from the hub (fig. 7).

fig. 7

6. Unbolt and remove the lower control arm ball joint from the hub (fig. 8).

*fig. 8*

7. Within the engine compartment, unthread the three upper mount nuts (fig. 9) and remove the strut assembly from the vehicle (fig. 10).

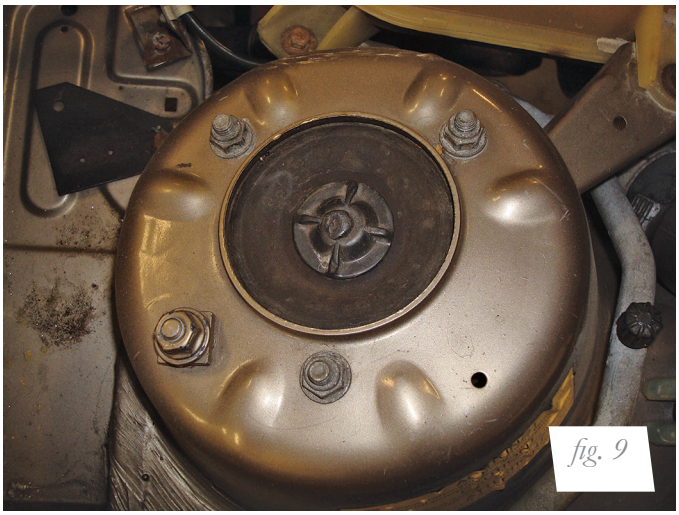


*fig. 9*

*fig. 10*

## PREPARING THE HUB

1. Clean the rust and debris from the hub to strut tube.
2. Scribe a line at 50mm from the hub to strut tube joint (fig. 11).

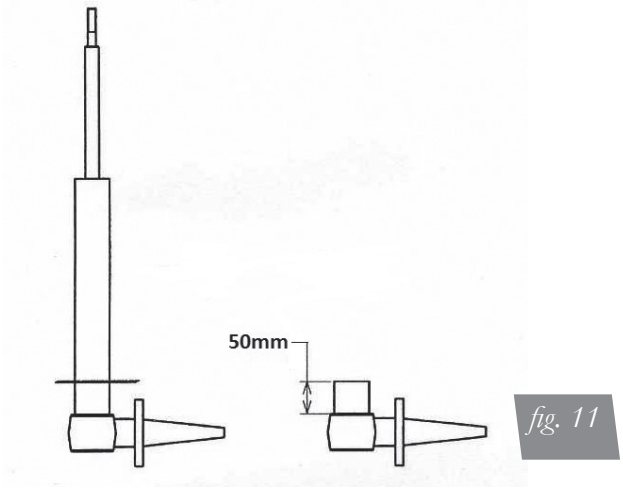



*fig. 11*

**⚠ CAUTION**

3. Cut squarely around the tube at this 50mm mark. You need only to cut through the outer tube material.

CUTTING DEEPER WILL RESULT IN DAMAGE TO THE DAMPER CARTRIDGE WITHIN.

4. Remove the strut housing with damper from the hub (fig. 12). Remove the burrs, sharp edges, debris and rust (fig. 13).

*fig. 12*

*fig. 13*

## ASSEMBLING THE STRUT TO THE HUB

1. Loosen the lower locking collar and remove the lower mount from the new strut assembly (fig. 14). Do not lose the wave spring between the locking collar and adapter tube.

*fig. 14*

2. Remove the finish from the lower half inch of the mount.

3. Slide the lower mount over the stub of the strut tube making sure it bottoms on the knuckle (fig. 15).

**⚠ WARNING** A QUALIFIED WELDER IS RECOMMENDED TO PERFORM THE FOLLOWING WELDS. PROPER WELD PENETRATION IS ESSENTIAL TO CREATING A STRONG ASSEMBLY. THIS IS NOT A GOOD OPPORTUNITY TO LEARN TO WELD!

4. Weld the outside perimeter of the lower mount to the hub (fig. 16).

5. Thread the damper into the lower mount. Measure from the bottom side of the locking collar to the underside of the air spring. Set to 125mm +/-2 mm (each full rotation of the cartridge is 1.5mm) (fig. 17). This is a good, initial setting that allows maximum drop and proper tire clearance but may need to be adjusted for different vehicles or wheels. Orient the air spring air-port furthest away from the hub. Torque the locking collar against the lower mount 45 degrees beyond hand tight.

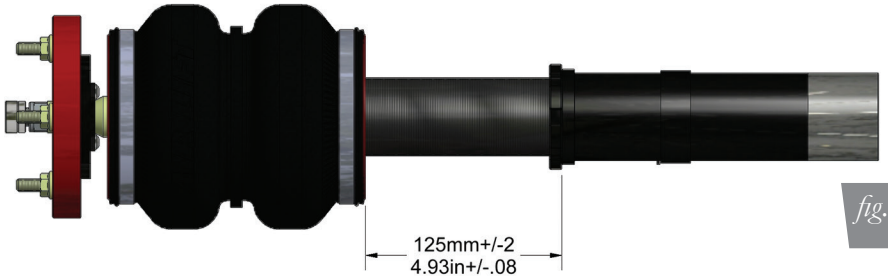



fig. 17

6. Install the braided air line into the air spring with thread sealant, torque 1 3/4 turns beyond hand tight. Attach the desired air fitting to the braided air line with thread sealant, torque 1 3/4 turns beyond hand tight (figs. 18 and 19).

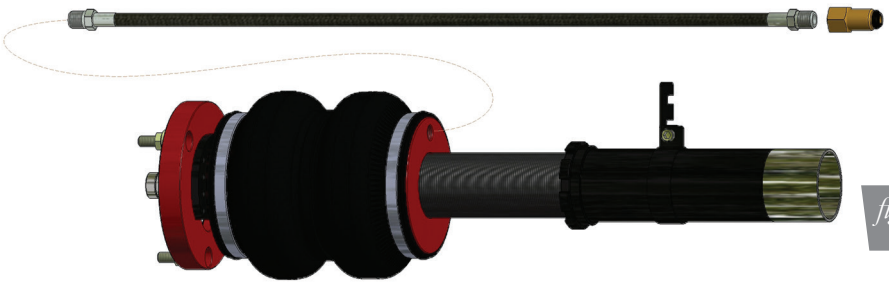


fig. 18

fig. 19

## AIR SUSPENSION INSTALLATION

1. Attach the camber plate to the chassis with the supplied nuts (fig. 20). Torque to 22Nm (16lb-ft).

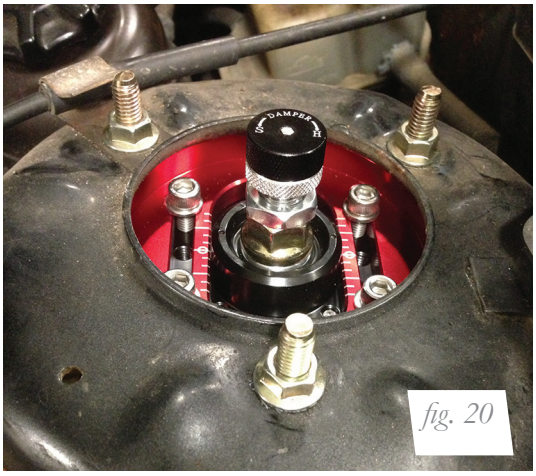


fig. 20

2. Reattach the lower control arm ball joint to the hub assembly (fig. 21). Torque to 65Nm (47lb-ft).

fig. 21

3. Insert and seat the tie rod ball joint to the hub (fig. 22). Torque 65Nm (47lb-ft).

fig. 22

4. Reinstall the caliper bracket to the hub (fig. 23). Toque to 65Nm (47lb-ft).

fig. 23

5. Reattach the wheel speed sensor to the hub (fig. 24). Torque to 5Nm (44lb-in).

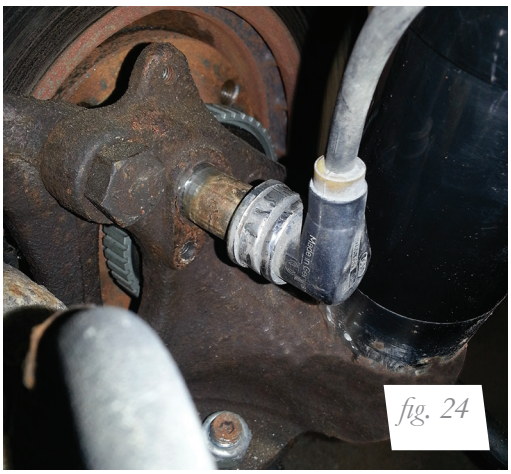


fig. 24

6. Clip the sensor wires to the lower mount tab (fig. 25).

**NOTE** *Tab can be moved up, down or rotated to better accommodate sensor wires.*

fig. 25

7. Reattach the stabilizer bar end link to the lower control arm (fig. 26). Torque to 22Nm (16lb-ft).

*fig. 26*

8. Fully compress the suspension using a jack. With the suspension compressed, review the best routing for the leader hose that is clear of all suspension components and axle. Routing should also allow for the suspension to extend without kinking or pulling the line tight or rubbing on other components. Following the brake line routing is often a good place to start. Check clearances to all other components.
9. With the suspension fully compressed, take a measurement from the fender to some reference point – typically the center of the axle. Record this measurement as Max Compression.
10. Cycle the suspension to Max Extension and record the measurement from the same reference points.
11. Add ME and MC then divide by 2. Set the suspension to this point. This position will give 50% stroke in either direction and is a starting point for ride height (fig. 27).

| Formula for Calculating Ride Height |
| --- |
| **(ME+MC)÷2=MID STROKE** |

*fig. 27*

12. With the suspension at this position, loosen, then re-torque the lower control arm bolts to manufacturer's specifications (Table 1).

*Table 1*

| Torque Specifications | | | |
| --- | --- | --- | --- |
| Location | Nm | lb-ft | lb-in |
| Brake caliper bracket bolts | 86-110 | 63-81 | |
| Stabilizer bar end link | 22 | 16 | |
| Tie rod to spindle | 65 | 47 | |
| Control arm to spindle | 65 | 47 | |
| Camber plate to chassis | 22 | 16 | |
| Wheel speed sensor bolt | 5 | - | 44 |
| Wheel bolts | 120+/-10 | 89+/-1 | |
| Strut rod nut (with blue loctite) | 34 | 25 | |

## DAMPING ADJUSTMENT

The struts in this kit have 30 settings, or “clicks”, of adjustable compression and rebound damping characteristics. Damping is changed through the strut rod using the supplied adjuster (figs. 28 & 29) 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 shock is preset to “-20 clicks”. This means that the shock is adjusted 20 clicks away from full stiff. Counting down from full stiff is the preferred method of keeping track of, or setting, damping. This setting was developed on a 1986 BMW 325ES and may need to be adjusted to different vehicles and driving characteristics.

*fig. 28*

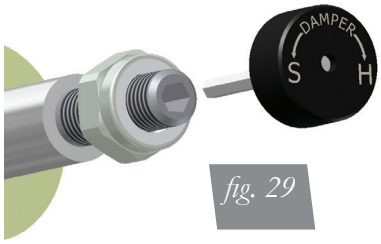



*fig. 29*

## ALIGNING THE VEHICLE

1. Using the control system, set the vehicle height to the new custom ride height.
2. If the custom ride height is lower than stock, we recommend loosening all pivot points (bolts, nuts) on any control arm, strut arm or radius rod that contains bushings. Once they have been loosened, re-torque to stock specifications.

**NOTE**

*It may be necessary to cycle the suspension to loosen the bushing up from its mount. This will help re-orient the bushing at its new position and increase life of bushings based on the custom ride height.*

## 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:

1. Support the vehicle with jack stands or a hoist at approved lifting points.
2. Remove the wheel.
3. Using the supplied spanner wrench, loosen the lower locking collar (fig. 30).

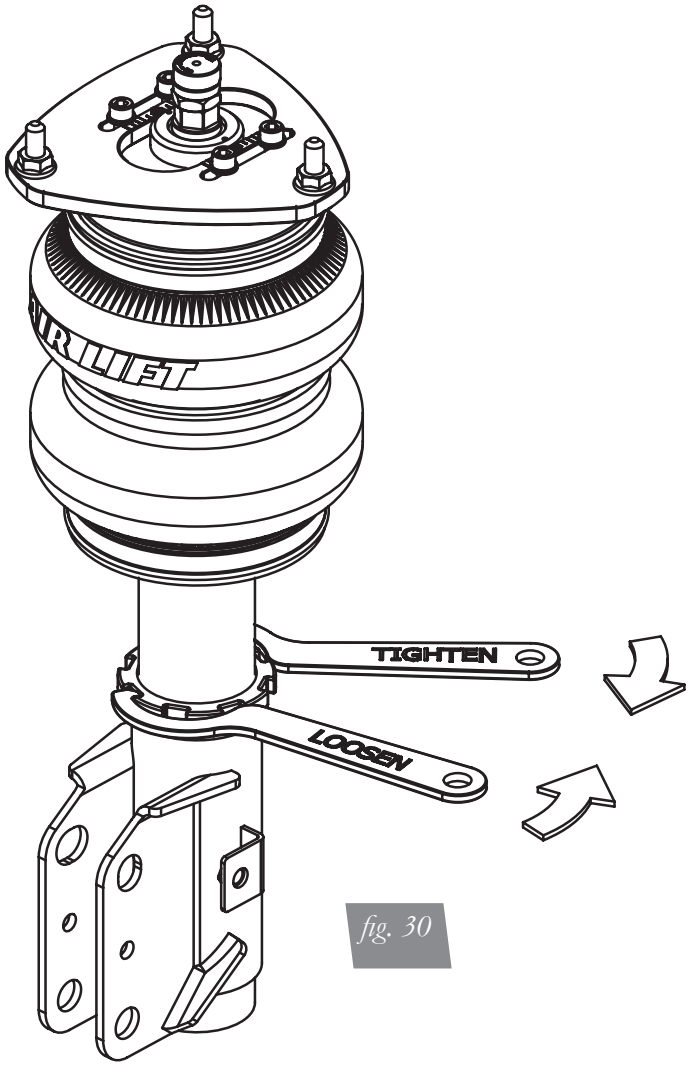



*fig. 30*

4. Deflate the air spring to 0 PSI on the corner you are adjusting and unlock the air line from the leader line fitting.
5. Spin the assembly to the desired height and air port location. **TIP:** If the assembly does not spin freely, loosen the rod nut and then adjust the damper height. Be certain to re-torque the rod nut to 34Nm (25lbs-ft) with application of Blue Loctite to the mating threads.

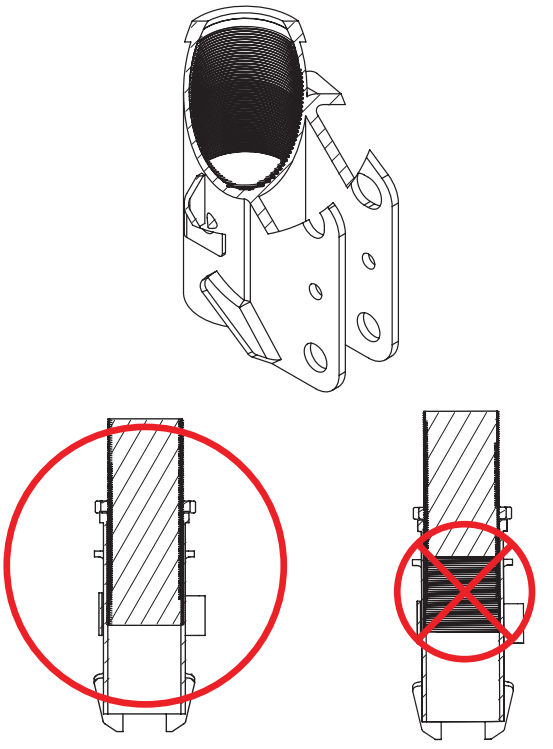
**NOTE** *Not all models will have further drop height available.*

6. Tighten the lower locking collar to the lower mount using significant force.
7. Re-torque the strut rod nut if necessary to 34Nm (25lb-ft).

**⚠ CAUTION** WHEN ADJUSTING HEIGHT UPWARDS, MAKE SURE THAT THE STRUT BODY ENGAGES ALL THE THREADS OF THE LOWER MOUNT (FIG. 31). WHEN ADJUSTING DOWNWARDS, MAKE SURE THERE IS ADEQUATE AIR SPRING CLEARANCE TO THE TIRE/WHEEL ASSEMBLY. CLEARANCE MUST BE CHECKED WITH SYSTEM FULLY DEFLATED AS WELL AS FULLY INFLATED TO ENSURE THAT NO RUBBING OCCURS. FAILURE TO MAINTAIN ADEQUATE CLEARANCE CAN RESULT IN AIR SPRING FAILURE AND WILL NOT BE COVERED UNDER WARRANTY.

**⚠ CAUTION** DO NOT ADJUST HEIGHT BY SPINNING AIR SPRING ON STRUT! DOING SO MAY CAUSE AN AIR LEAK AND COMPROMISE THE ASSEMBLY.

***FOR STRUTS:***



*OK, no threads showing.*

*Not OK, threads are showing.*

***FOR SHOCKS:***

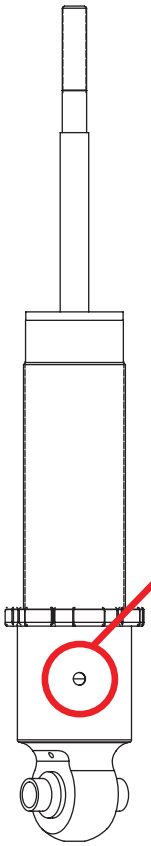



*fig. 31*

# 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 75-90 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 75-90 PSI and make sure there is at least 1/2" 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 75-90 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 |
|---|---|
| 35 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. 32). 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.

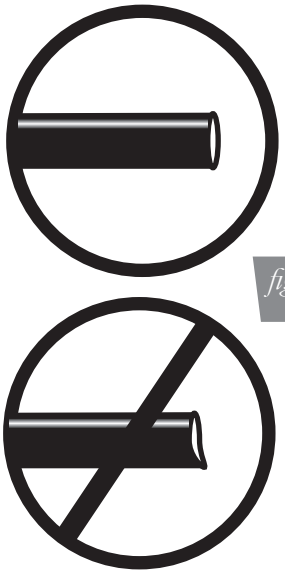


*fig. 32*

# Warranty and Returns Policy

Air Lift Performance 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 Performance 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 Performance • 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 Performance 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 Performance 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. 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

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*Thank you for purchasing Air Lift Performance products!*

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