

Air Lift™ **PERFORMANCE**

Kits 78610 & 78609

BMW E8X/E9X
Non M series

Rear Application



PERFORMANCE SUSPENSION PARTS

IMPORTANT: WHEN PURCHASING KIT 78609 WITHOUT REAR SHOCKS, YOU MUST ACQUIRE BMW E9X M3 SHOCKS. E8X/E9X REAR SHOCKS WILL NOT WORK WITH THIS KIT.

AIR LIFT™
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.




Introduction

The purpose of this publication is to assist with the installation, maintenance and troubleshooting of this BMW E8X/E9X 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.

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

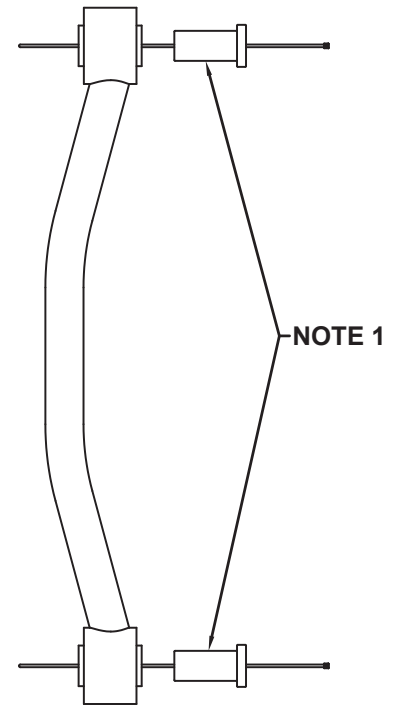
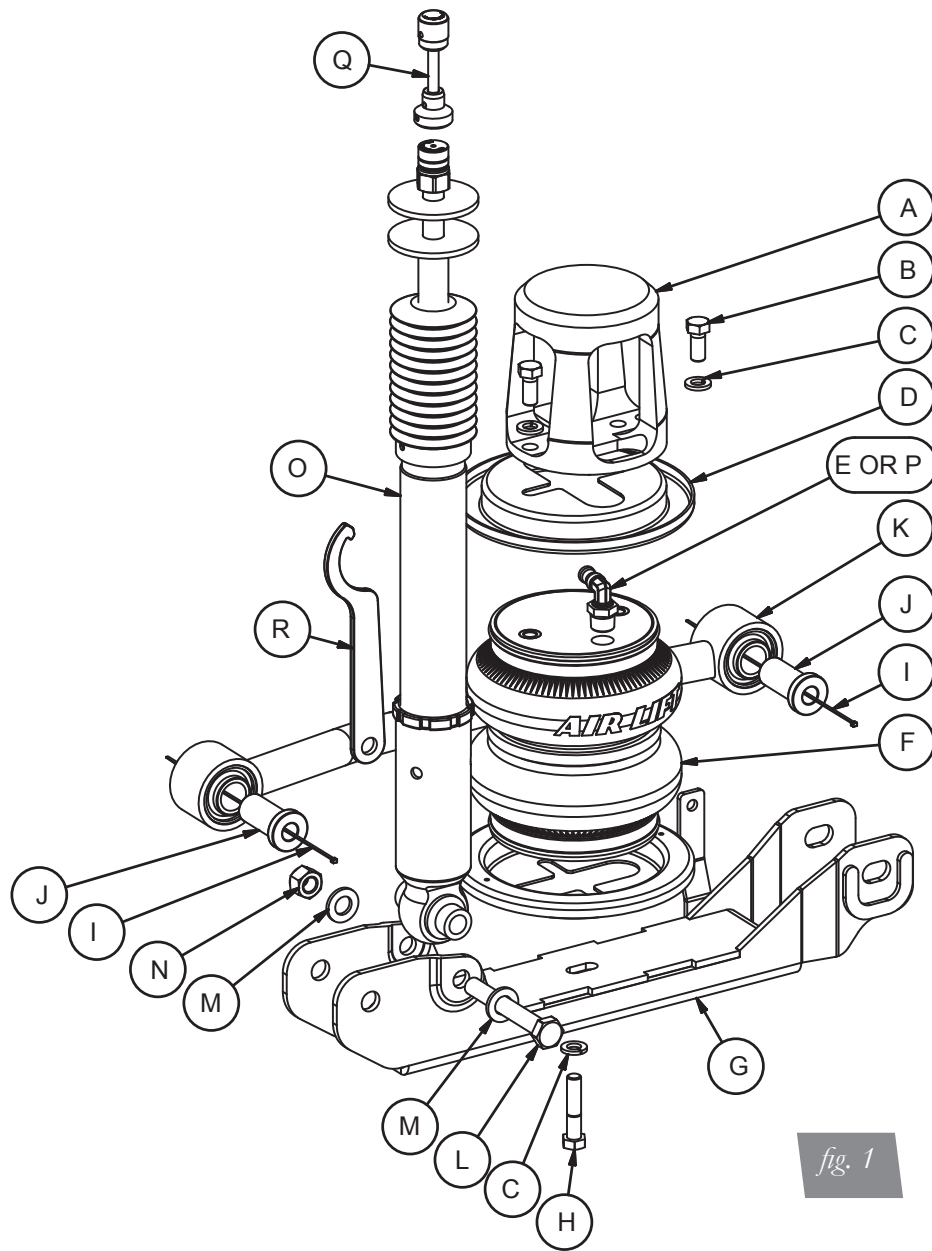
The installation of this kit does not alter the Gross Vehicle Weight Rating (GVWR) or payload of the vehicle. Check your vehicle's owner's manual and do not exceed the maximum load listed for your vehicle.

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



NOTE:

- 1) Remove the zip ties that hold the bushing spacers into the toe link before installation. The shoulder of the spacer is to be opposite the bend for air spring clearance purposes.
- 2) Shock, adjuster extension and wrench may not be included depending on the kit purchased.

fig. 1

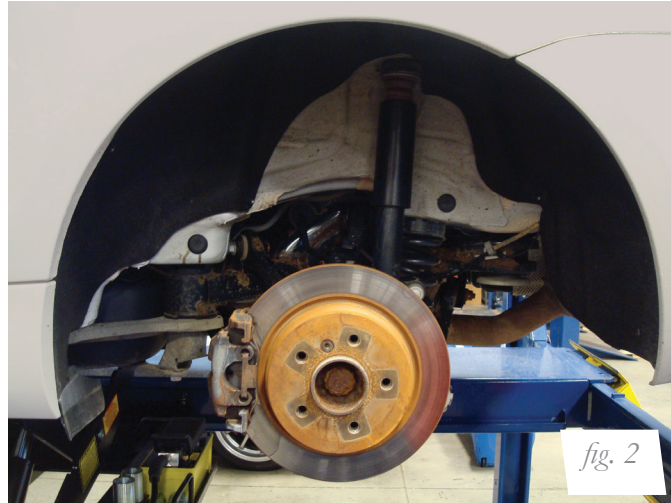
HARDWARE LIST

Item	Part #	Description	Qty	Item	Part #	Description	Qty
A	13314	Rear Upper Bracket	2	J	13988	Bushing, 20mm	4
B	17203	3/8"-24 X 7/8" Hex Bolt	4	K	11127	Toe Link	2
C	18427	3/8" Lock Washer	6	L	17488	M12-1.75 X 90 Hex Cap Screw	2
D	11801	Roll Plate	4	M	18547	Flat Washer	4
E	21846	3/8"MNPT X 1/4"PTC, 90°	2	N	18546	Nyloc Nut	2
F	58530	Air Spring	2	O	26749	Rear Shock, BMW E8X/E9X	2
G	11126	Control Arm, Rear	2	P	21867	3/8"MNPT X 3/8"PTC	1
H	17484	3/8-24 X 1.75" Hex Cap Screw	2	Q		Flex Adjuster Extension	2
I	10466	8" Zip Tie	4	R		Spanner Wrench	1

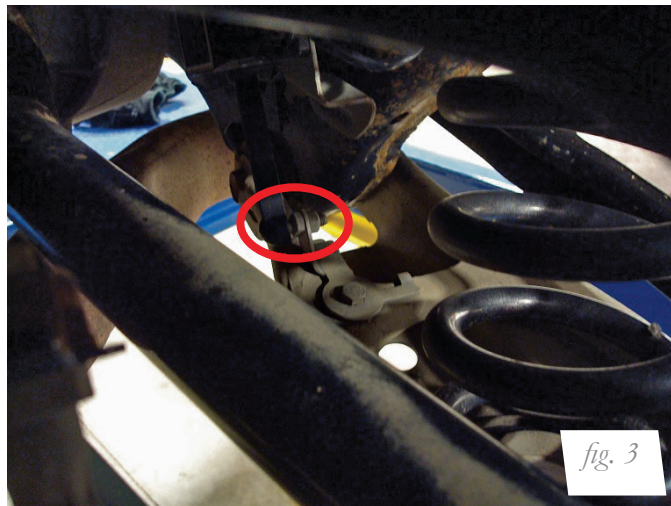
Installing the Air Suspension

PREPARING THE VEHICLE

1. Elevate and support the vehicle with a hoist or jack stands.
2. Remove the rear tire and support the hub assembly (fig. 2).



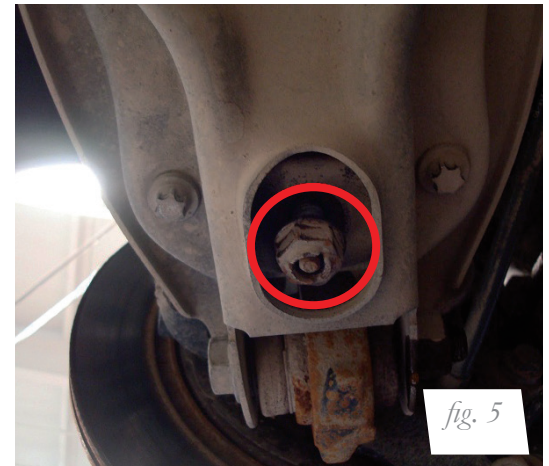
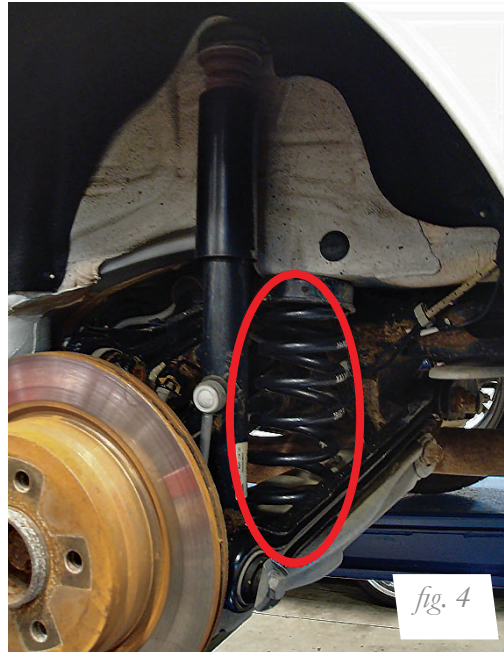
3. Disconnect the headlight alignment linkage from the lower control arm bracket (if equipped) (fig. 3).



REMOVING THE REAR SUSPENSION

1. Remove the coil spring and rubber spring isolator from the top spring seat (fig. 4).
COIL SPRING UNDER COMPRESSION. COIL SPRINGS SHOULD BE REMOVED USING FACTORY PRESCRIBED GUIDELINES.

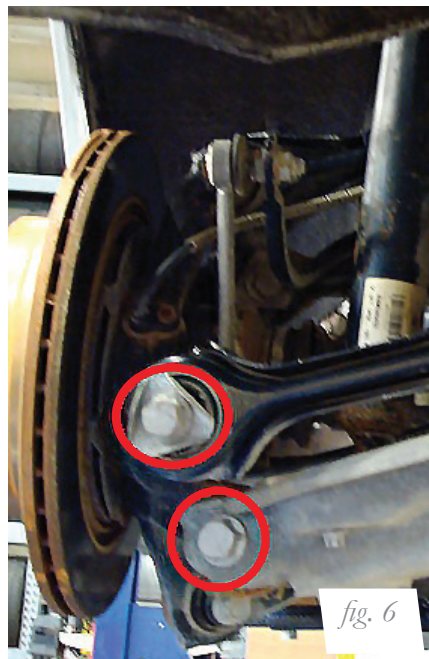
 CAUTION



2. Disconnect the lower shock nut from the isolated mount (fig. 5).
3. Support the lower control arm and unbolt the lower control arm from the hub assembly and sub-frame (fig. 6). Remove the lower control arm.

NOTE

Some factory exhaust pieces may need to be removed or lowered to remove the cam bolt that attaches the lower control arm to the sub-frame.



4. Unbolt and remove the toe link from the hub and sub-frame (fig. 7).

5. Within the trunk, remove the shock rod nut and remove the shock from the vehicle (fig. 8). Retain the lower isolator and rubber gasket that the shock rod passes through within the wheel housing (fig. 9).



6. If installing the kit without rear shocks, proceed to the “Assembling the Air Spring Upper Bracket and Air Fitting” section. With the rod nut removed (fig. 10), peel the micro cellular isolator from the rod nut washer and retain this isolator for future use (figs. 11 and 12). Take care not to damage the isolator during the removal process. The nut and washer will not be used when installing Air Lift rear shocks.



ASSEMBLING THE AIR SPRING UPPER BRACKET AND AIR FITTING

1. Apply thread sealant to the chosen air fitting threads and install into the air spring port. Torque 1 and 3/4 turns beyond hand tight.
2. Place the roll plate over the air spring followed by the upper mount spacer (fig. 13). Attach with two bolts and lock washers. Torque to 27 Nm (20 ft-lbs.) There are two mounting positions for the upper spacer to mount to the air spring. Best practice is to have the air fitting located on the forward side the vehicle, with the air line outlet facing rearward. This helps protect the air line connection. Mount the air spring so that it is positioned away from the wheel, toward the cross-member (fig. 14).



fig. 13

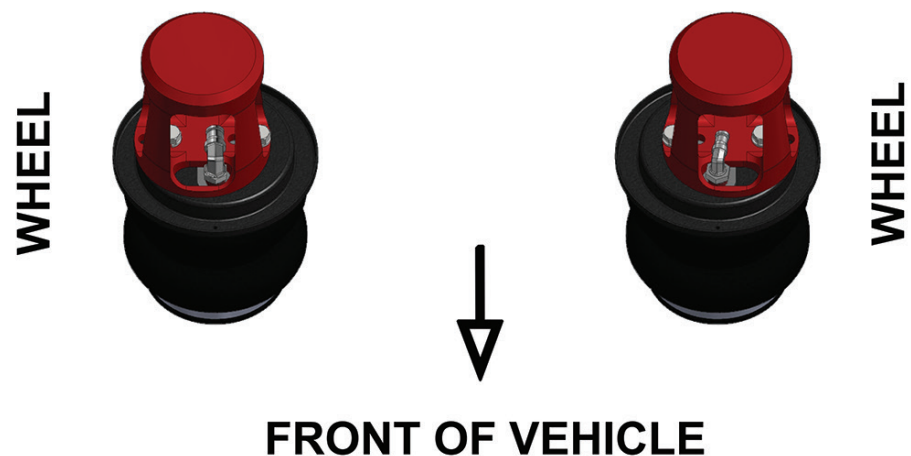


fig. 14

INSTALLING THE AIR SUSPENSION

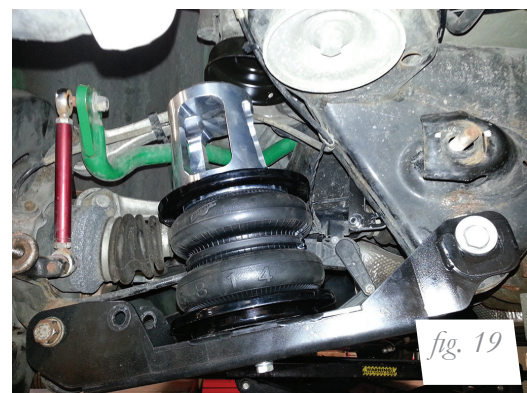
1. Attach the supplied lower control arm to the hub assembly and the sub-frame (figs. 15 and 16). Do not torque bolts at this time.



2. Attach the headlight alignment linkage to the control arm (fig. 17).



3. Place the air spring assembly with the remaining roll plate on the lower control arm (fig. 18). Bolt the air spring in place by assembling a lock washer and bolt (H) through the control arm. Torque to 27 Nm (20 ft-lbs.) The upper mount is offset to properly position the air spring in the chassis (fig. 19). Align the assembly so the air spring is closest to the sub-frame. The air spring must be positioned furthest inboard away from the shock and wheel. Then insert the air spring spacer into the coil spring perch.



CAUTION

4. Snip the zip ties from the toe link. The toe link bushing spacers must be installed opposite the bend of the link (fig. 20). Attach the link to the hub assembly and sub-frame with the bend rearward and directed downward (figs. 21 and 22). Do not torque bolts at this time.

IF THE BEND IS DIRECTED UPWARD, CONTACT WITH THE SUB-FRAME AND TOE LINK WILL OCCUR. IF THE BEND IS FORWARD OR IF THE BUSHING SPACERS ARE INSTALLED INCORRECTLY, AIR SPRING CONTACT WITH THE TOE LINK WILL OCCUR. THIS CONTACT WILL CAUSE DEGRADATION OF THE AIR SPRING AND VOID THE WARRANTY.

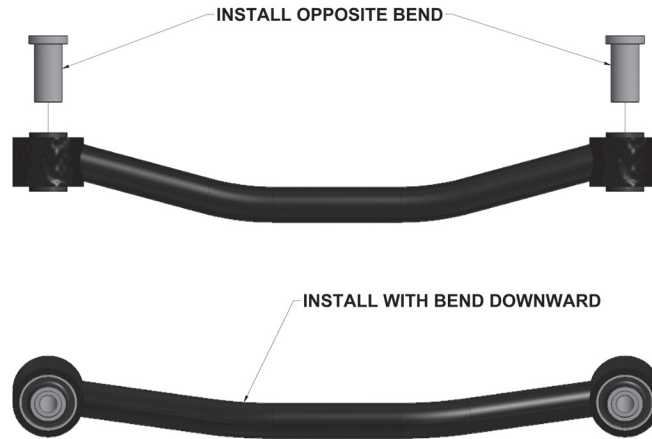


fig. 20



fig. 21



fig. 22

INSTALLING SHOCKS

NOTE

When purchasing kit 78609 without rear shocks, you must acquire BMW E9X M3 shocks because of the way the shock mounts to the lower control arm. Standard E8X/E9X rear shocks will not work with this kit.

1. Insert the shock rod with large washer through the lower isolator and gasket (fig. 23). Install through the upper shock mount (fig. 24). Within the trunk, apply the upper isolator (fig. 25) followed by the second large flat washer (fig. 26) and nyloc nut (fig. 27). Torque the nyloc nut to 27Nm (20lbs ft).



2. Align the lower shock eye with the control arm shock mount and install the supplied bolt and washer (fig. 28). Apply another washer, and nyloc nut to the other side (fig. 29). Do not torque at this time.



3. Fully compress the suspension using a jack. With the suspension compressed, review the best routing for the air line 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. Check clearances to all other components.

4. 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.
5. Cycle the suspension to Max Extension and record the measurement from the same reference points.
6. 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. 30).

Formula for Calculating Ride Height

$$(ME+MC) \div 2 = \text{MID STROKE}$$

fig. 30

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

Torque Specifications			
Location	Nm	lb-ft	lb-in
Toe Link to Sub Frame	100	74	
Toe Link to Hub	100	74	
Lower Control Arm to Sub Frame	165	122	
Lower Control Arm to Hub	165	122	
Trailing Arm to Sub Frame	100	74	
Trailing Arm to Hub	100 + 90°	74 + 90°	
Wishbone to Sub Frame	100	74	
Wishbone to Hub	100 + 90°	74 + 90°	
Shock Rod Nyloc Nut	27	20	
Shock Eye Nut/Bolt	132	97	
Headlight Alignment Nut	5		44
Air spring bolts	27	20	
Wheels	120	89	
Air Fitting (with sealant)	1.5-3.0 turns beyond hand tight		

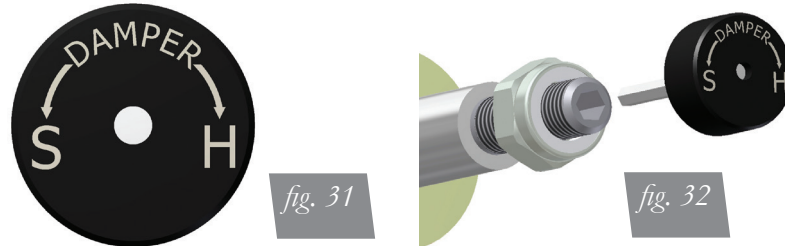
Table 1

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. 31 & 32) 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 BMW 135i and may need to be adjusted to different vehicles and driving characteristics.



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.

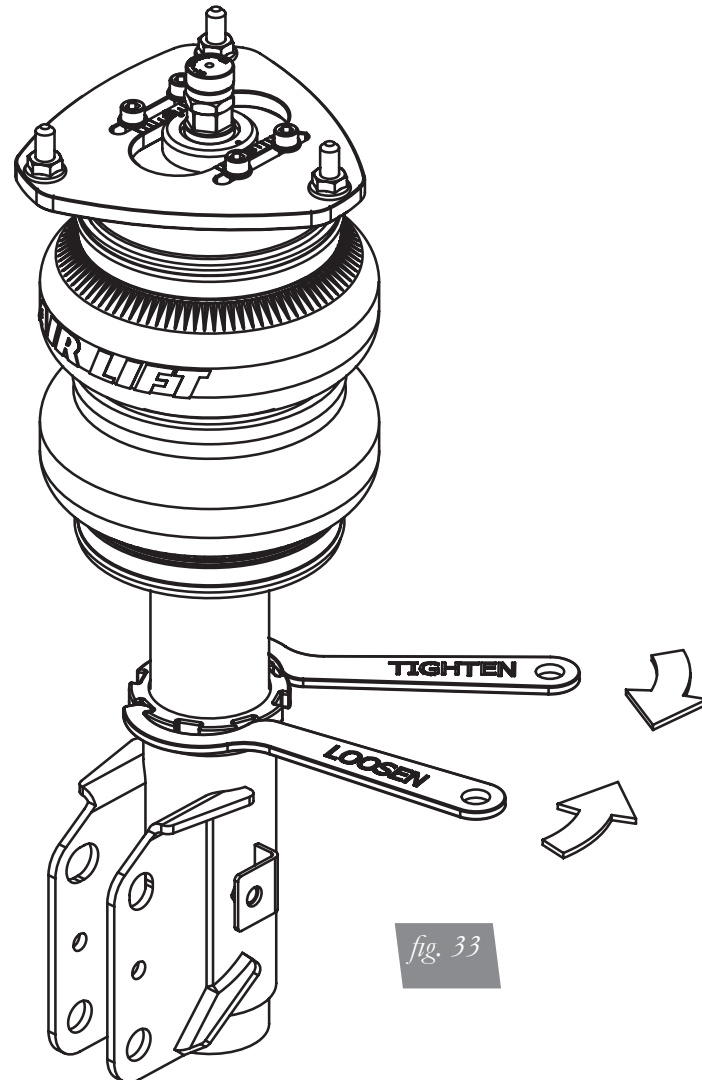
NOTE

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 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. 33).



4. Deflate the air spring to 0 PSI on the corner you are adjusting.
5. Disconnect lower mount from suspension.
6. Spin the lower mount to the desired location.

NOTE

Not all models will have further drop height available.

7. Re-install lower mount to suspension and torque fasteners.
8. Tighten the lower locking collar to the lower mount using significant force.

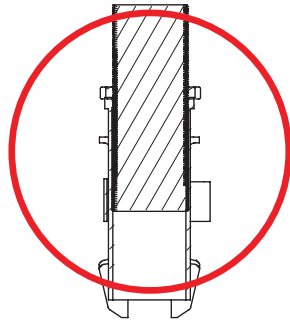
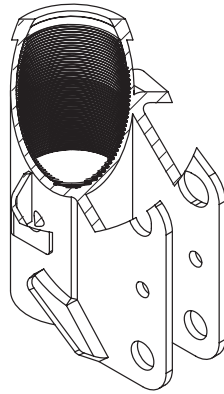
CAUTION

WHEN ADJUSTING HEIGHT UPWARDS, MAKE SURE THAT THE STRUT BODY ENGAGES ALL THE THREADS OF THE LOWER MOUNT (FIG. 34). 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:

