Air Lift Spring Installation

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Last May I did a write-up on installing Air Lift springs on my ’87 Grand Wagoneer. This spring, I added on-board in-cab air control to make using them more convenient. Since Air Lift recommends installing the air springs first and then adding the on-board air, I’m making this a two part write-up that describes my experiences. However, as sort of a teaser for Part 2, adding the on-board system was a snap.

Part 1 - Air Lift Spring Installation

If you regularly haul heavy loads or pull a trailer with a lot of tongue weight like I do, you might want to consider installation of supplemental air helper springs to get rid of the rear-end droop. There were some complications along the way, but the end results made it worth the trouble. Here’s what worked for me.

My ’87 Grand Wagoneer had already received an additional leaf in each of the rear springs which solved the saggy stock springs problem and gave it kind of a slight rake. But the tongue weight from my car trailer still made the rear end droop and the headlights aim for the sky. This did not make for pleasant night-time towing. I probably could have beefed up the springs to compensate for this but it would have destroyed the ride qualities when not towing. I wanted something adjustable.

When I checked into air shocks, I found out they’re not recommended for towing heavy loads. I then looked at Firestone Air Ride springs and found out they didn’t list an application for any FSJ. However, Air Lift (who make their own springs or buy them from Goodyear) did list a kit for the big Wagoneer, so I ordered one. The Air Lift application guide lists RIDE CONTROL Kit # 59501 as applicable to the Grand Wagoneer. The kit consists of two sets of upper and lower brackets, two inflatable air sleeves, some high pressure ¼" air hose, and two fill valves. The sleeves that come with this kit are # 58175. For installation, you jack up the car, support the axle on jack stands, and pull the rear wheels. The lower brackets clamp onto the leaf springs near the axle and the upper brackets bolt to the frame via four 3/8" holes you have to drill. (Since I did my original installation last year, Air Lift has added a handy fixture that makes locating the upper bracket mounting holes much easier.) Although they say you can mount them either ahead of or behind the axle, the fuel tank gets in the way on the driver’s side so you have to mount that side behind the axle. Next, you snap the air lines into fittings on the tops of the sleeves and run them to wherever you want to mount the fill valves. I mounted mine on a piece of aluminum angle bolted to the frame to right of the trailer hitch. Then you pump them up and check for leaks. So far, this has taken me about 3 hours because I go real slowly when I have to drill holes in my car.

Now comes the cool part. Put in more air, the back end goes up! Put in lots of air (up to 100 PSI), and the back end goes WAY up! This is WAY COOL according to my daughter. Now, install the rear wheels. Whoops, tires are rubbing on the sleeves. This is NOT cool. Go back and read the fine print. It says, (actually in large bold face type) "REQUIRES MINIMUM CLEARANCE OF 6.0" BETWEEN THE TIRE AND FRAME". I measure my clearance and get a paltry 5.5". How can this be? My Jeep is stock and the application guide said this kit would fit. Next, I buy some aluminum wheel spacers that are 5/16" thick. Now the tires will install but there is less than 1/4" clearance between the tire and the sleeve. Since the sleeves expand to 5.6" at maximum pressure, I can predict trouble every time I hit a bump and compress the sleeve. It was now time to call the Air Lift toll-free technical assistance number: (800) 248-0892.

The friendly engineer and Jeep expert there is a lady named Robin. After setting me straight about referring to them as "sleeves", not "bladders", Robin says "That kit won't fit. Didn't you measure first?" Well, we all know the answer to that one! However, all was not lost. Air Lift also makes a line of kits called SLAMAIR. The sleeve used with these kits is #58185. Uninflated, it's the same size as the other sleeve, but at 100 PSI it's only 4.6" in diameter instead of 5.6" like the original sleeve. This is because the side walls seem to be about twice as thick. There is a difference in leveling capacity of 2,500 lb. vs. 2000 lb., but that's still plenty for my application.

My friendly local 4X4 parts dealer and Air Lift agree to swap out the sleeves for me, I install the new ones, hook up my car trailer, and put in 70 PSI to level things out. Then we set off for a car show in Redding, which makes for about a 500 mile round trip. Towing works out great with level, comfortable ride and headlights pointing where they should.

I've made a couple of additional changes since my initial successful voyage. First, I had a friend with a machine shop make some aluminum wheel spacers for me out of 3/8" stock that are custom sized to my wheels and brake drums (all stock). He saved the CNC program for these and has agreed to make additional pairs if anyone wants them for $25 plus shipping. If you want a set, let me know.

Since adding the spacers means you lose 3/8" of wheel lug nut/bolt engagement, I also replaced the stock wheel lug bolts with ones that are ½" longer. I got these at my local Pep Boys. They are an exact match for the factory wheel studs except for the increased length and are part number 28070 from Wheel Tite Motormite Mfg. They're $1.35 each, but if you buy a dozen you can probably get a discount. A little penetrating oil makes driving the stock lug bolts out with a hammer and punch pretty easy. A key word here is "little', since oiling the brake shoes is not recommended! It's a little tedious to thread the longer lug bolts through the holes in the end plates on the axles, but, with some coaxing and turning with pliers, they will fit. Before you put the wheels back on, use a lug nut and some washers or a socket as a spacer and pull the lug bolt heads up flush against inside surface of the axle end plates.

Using a torque wrench, I found it took about 100 foot-pounds to seat them properly. You can definitely feel when this happens. This phase of the installation adds about a half-hour per wheel, and I highly recommend using a torque wrench when you install the wheels.

The bottom line on all this is, if you have 6" clearance between frame and tire and about $200, adding Air Lift RIDE CONTROL kit # 59501 is an easy 3 hour or less installation. If you have less than 6" of clearance, you must use the Air Lift SLAMAIR kit #59507, some wheel spacers, and longer wheel lug bolts. Installation of this kit and longer wheel lug bolts will take about 5 hours. In either case, the results make for a much more controllable and better-riding tow rig.

Part 2 - On-Board Air Controller Addition

You need a source of compressed air to use Air Lift springs. Since I have a compressor at home, I could pump up the springs before I left with a load attached. Then, when I got where I was going and removed the load, I could bleed down the springs and make the Jeep ride level again. But when it was time to load back up and head for home, I needed to add air to level things out again. I tried carrying a portable compressed air tank I made out of an empty propane tank, but it always seemed to have leaked down before I needed it. (Then there were the times I forgot to fill or bring it!) I knew there had to be a better way, and there is. It's the Load Controller II from Air Lift.

This kit is an add-on accessory for existing Air Lift spring installations that includes 3 major parts:

a small (2"x 3") control panel with pressure gauge, momentary on-switch, and an air bleed-down valve,
a 10 PSI low pressure limit sensor, and
a small (3"x8"x6") electric air compressor.

The kit also includes two pre-assembled wiring and air line harnesses and all the related hardware, fittings, and additional air line required to connect everything together. Although there is no specific list of parts, the diagrams clearly show all the components and their locations and everything required was included.

Just like the air springs themselves, the installation instructions for this add-on kit are very clear and well illustrated. The air and wiring harnesses are pre-fabricated so you don't have to do any trimming or crimping to get everything hooked up. The first step is to mount the control panel inside the vehicle where it's convenient to reach. The factory air conditioning ducting provided an ideal location directly over the transmission hump. There is a small filler panel screwed to the bottom of the ducting that's held on by 2 self-tapping screws. I removed this panel and used the screws that came with the kit to install the controller panel, then I reinstalled the filler panel to the duct.

This is a very inconspicuous location that is out of the way but still easy to see and reach from the driver's seat.

Next I looked for a location for the compressor. Air Lift includes a diagram of recommended locations for over 60 vehicles including the Grand Wagoneer. Their suggested location was "Driver side, floor pan under driver seat". This didn't work for me, which makes me think their Grand Wagoneer recommendation may be for the down-sized Cherokee version, not the Full Size Jeep. The compressor is small enough that it can be mounted in numerous locations under the full-size Jeep, and the prefabricated harnesses are long enough to accommodate any location all the way back to the rear of the vehicle. I mounted it on the side of the box section frame under the driver seat with the self-tapping screws provided, and it fit with plenty of room to spare without decreasing ground clearance at all. The ground connection for the compressor motor is completed by running one of the motor's wires under one of the 4 mounting screws.

The next step was to connect the first wire and air line harness to the back of the control panel. All connections were direct "push on". This harness contains the minimum pressure switch that keeps the air springs pressurized to 10 PSI to prevent any unloaded condition damage to the springs. The electrical power lead wire should remain unconnected at this point.

The second harness goes from the compressor, up through the firewall, to connect with the first harness. I couldn't force any more wires through any of the existing firewall grommets, so I drilled a new 5/8" hole below the fuse block and ran the harness through that. Air Lift includes a split grommet that's easy to insert in the hole to protect the air line and electrical wire from contacting the sharp metal edge. The harnesses are made so you don't have to do any cutting or crimping to complete the installation. I had about 10' excess length in the second harness even after leaving a small service loop at each end, so I decided to cut off the excess length and crimp on another spade connector. This resulted in a much cleaner installation and was very easy to do. At this point I decided to call it a night. Total time spent thus far was about 2 hours, but anyone could it in much less time if they wanted to. I just prefer to complete these projects slowly.

The next morning I worked on the previously installed air lines connected to the air springs at the rear of the Jeep. A Craftsman tubing cutter (like I would recommend for replacing vacuum lines) works very well for cutting the plastic air lines, but just about any sharp cutting device would work. Each existing air line was cut and a T connection supplied with the kit was inserted in each one. These are all direct snap-in fittings that go together very easily. Then the two new T's get connected and the connecting line is cut to add another T. An air line is added from this T up to the compressor where it's connected to (you guessed it!) another T. So, all together, 4 T's are added and interconnected with air lines. Although this may sound complicated, if you saw the installation diagrams you would realize it's very simple and straight forward.

The last connection is the hot electrical lead to the fuse block. Since I had rewired my radio long ago so it was hot all the time, I had an open connection on the fuse block labeled RADIO that I used. Any 15 amp terminal that's live only when the ignition switch is on would be OK. Once again, I chose to trim this wire to length, crimped on a spade lug, and plugged it into the fuse block. Then, when the key was turned to ON or ACC, the compressor would start up, pressurize the springs to 10 PSI, and shut off. When you press on the rocker switch on the control panel, the compressor comes on and continues to pressurize the springs. Air Lift recommends pumping the springs up to 20 PSI and then letting it stand over night to check for leaks. Just like the initial spring-only installation, I had no leaks. The compressor provided is a low volume high pressure unit so it takes it a while to pump up the springs. I tow my heaviest load with 70 PSI in the springs and it takes about 1 minute 40 seconds to get there from 10 PSI. With the on-board air control I was able to easily level the Jeep when I unexpectedly hauled some heavy tools home one evening. It's very convenient to be able to pump up or bleed down the air springs from inside the vehicle.

I spent about an hour on the last stage of installation so my total time invested was about 3 hours. Installing this kit was a snap and Air Lift has made it easy and just about fool-proof. The accompanying documentation was clear and well illustrated. If you have any questions about this project you can send me email at the address shown below and I'll help if I can. I'm very pleased with this kit and have found the improvements in convenience and utility make it well worth the effort.

Mike Ahlmann, '87 Grand Wagoneer
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