

**CAUTION: Always wear safety goggles when performing any maintenance work.**

**NOTE: Before starting the reassembly process, be sure the repair area is clean. It is imperative that the gas spring be free of all contaminants upon reassembly. If this precaution is not taken it may lead to contamination and premature gas spring failure.**

## L and LJ Series Gas Spring Repair Instructions

### I. Exhausting Pressure

#### Self-Contained Mode



1. When exhausting pressure, position the gas spring horizontally with the port up for safety.



2. Remove the Port Plug, (90.607.110), located at the base of the spring. Retain parts for use during reassembly.



3. Keeping face and hands clear of the port, use the Valve Bleed Tool, (90.360.4), or Port Servicing Tool, (90.320.8), to depress the valve stem, (90.250) or (90.260). Cover the port with a cloth to absorb discharge.



4. After all of the gas pressure is exhausted, be sure that the piston rod will freely retract into the tube manually. If not, try depressing the valve again. If still unsuccessful **stop** and contact DADCO.

#### Open Flow Mode



1. Exhaust nitrogen gas by opening the bleed valve on the control panel.



2. Verify that all pressure is relieved by manually retracting the piston rod into the tube. If the rod will not fully retract release the remaining pressure. If still unsuccessful **stop** and contact DADCO.



3. Unthread the service fitting and wipe with a clean cloth. Proceed to "II. Port Maintenance" Open Flow Mode, Step 1.

### II. Port Maintenance

#### Self-Contained



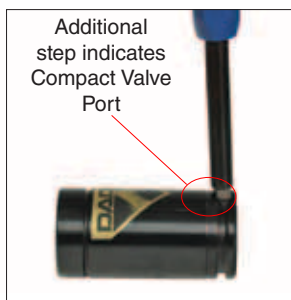
1. Generally the valve does not need replacing. Only if the valve appears damaged, is leaking pressure or sticking proceed to step 2, otherwise leave the valve undisturbed and proceed to "III. C-Ring Removal."

#### Determine Valve Style



2. For the U Series proceed to Compact Valve Port, Step 3A. For the L or LJ Series springs, examine the outside of the tube. An additional step in the tube indicates a Compact Valve port, proceed to Compact Valve Port, Step 3A. If there is no additional step in the tube then proceed to Tire Valve Port, Step 3B.

#### Compact Valve Port

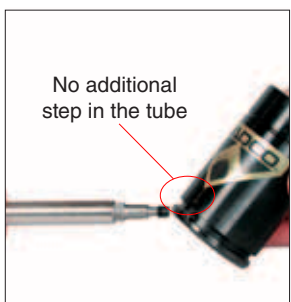


3A. Remove the Compact Valve, (90.260), by unthreading it with the Port Servicing Tool, (90.320.8).



4A. Thread a new Compact Valve, (90.260), into the port until it fits snugly on the seat. Avoid over torquing the valve.

#### Tire Valve Port



3B. Remove the Valve Retaining Screw, (90.251), to allow access to the Needle Valve. Save the retaining screw for reassembly. Remove the needle valve, (90.250), by unthreading it with the Port Servicing Tool (90.320.8).



4B. Thread a new Needle Valve, (90.250), into the port until it fits snugly on the seat. Avoid over torquing the valve.



5B. Retrieve and replace the Valve Retaining Screw, (90.251). Proceed to step "III. C-Ring Removal."

#### Open-Flow Mode



1. Check the port for deposits or burrs and clean thoroughly. Inspect the service fitting and replace if it shows signs of damage. Lubricate threads and seals on the fitting and thread the service fitting into the gas spring port.

### III. C-Ring Removal



1. Stand the gas spring upright. Place a Removal Sleeve (90.340.x), longer than the stroke over the rod. Make sure to use the proper removal sleeve for the cylinder. Tap the sleeve until the Dust Cover, (90.246.x.x), is loosened. Remove the Dust Cover and discard.



2. Reposition the DADCO Removal Sleeve and only continue tapping until the rod, cartridge assembly is slightly below the retaining ring groove. The bore of the Tube Assembly is designed to stop the cartridge in this position. **DO NOT force the cartridge down further into the Tube Assembly.**



3. Remove the C-style Retaining Ring, (90.285.x.x), using a C-Ring Removal Tool, (90.355). Position the hooked end of the tool below the c-ring. For best results locate the tool near either end of the c-ring. (Use the Port Servicing Tool to pry out C-style Retaining Rings found in 13 mm stroke or shorter models.)



4. Once the hooked end of the tool is firmly seated below the c-ring, begin pushing it toward the outside of the gas spring tube. The handles will close naturally, and the c-ring will be extracted as you complete this motion. For a detailed explanation of c-ring removal see bulletin #B13113A.

### IV. Rod & Cartridge Removal



1. To remove the Rod and Cartridge Assembly thread a T-Handle, (90.320.7 or 90.320.2), into the rod end. Pull the entire assembly out of the tube. The spring body can be held in a vise (with soft jaws) while pulling out the assembly.



2. Once the cartridge and rod are removed from the Tube Assembly slide the cartridge off the rod and discard. Retain the rod for inspection and reuse.

### V. Cleaning & Inspection



1. Lightly polish the rod surface with an emery cloth (600 grit). Inspect the finish of the rod for any scratches or gouges. If the rod is damaged it must be replaced.



2. Inspect the Tube Assembly for any damage, especially around the mouth of the Tube Assembly. Lightly polish out any scratches at the mouth of the Tube Assembly to avoid damaging seals during the reassembly process. If damage to the Tube Assembly is severe it must be replaced. Wash, clean and dry the inside thoroughly.

### VI. Cartridge Replacement and Reassembly



1. Choose the appropriate repair kit. The repair kit number needed is laser marked on the back of the Tube Assembly. **NOTE:** Repair kits are not interchangeable among models.



2. Position the new Cartridge Assembly over the rod, making sure that the wiper end marked "TOP" is facing up. While holding the cartridge vertically, slide the cartridge down the rod to the rod retainer. **NOTE:** For proper installation DADCO recommends using an arbor press to press the rod into the housing for the LJ and U Series.



3. Be careful not to force the cartridge at an angle during assembly as the seal may get damaged. Once the Cartridge Assembly is installed, verify that the seal is properly aligned to the rod. **NOTE:** If the seal is rolled or damaged stop and contact DADCO. DO NOT continue installation.



4. Lubricate the inside wall of the tube with the DADCO Assembly Oil.



5. Place the rod and cartridge into the Tube Assembly. Depress the needle valve to release any back pressure. Position the top of the cartridge just below the retaining ring groove. The bore of the cartridge assembly is designed to stop the cartridge in this position. **DO NOT force the cartridge down further into the tube.**



6. Insert the C-Style Retaining Ring in the retaining ring groove using a DADCO C-Ring Installation Tool, (90.351.x or 90.352). Be sure the C-Style Retaining Ring is fully seated in the retaining ring groove. For a detailed explanation of how to use the 90.352 C-Ring Installation Tool refer to bulletin #B01101D.



7. Thread the T-Handle, (90.320.7) or (90.320.2), into the end of the piston rod. Pull up on the T-Handle until the top of the cartridge is completely past the c-ring. The rod must seat the cartridge assembly fully before charging. The cartridge should be flush with the end of the cylinder. Make sure the rod is extended to its proper stroke length. (Depress the needle valve to facilitate full rod extension.)

### VII. Charging

**Note:** For best results, use the DADCO Charging Assembly which includes a shut off valve and Quick Disconnect Adapter at the end of the hose.

#### Quick Disconnect Filling Method



1. Thread the M6 end of the Quick Disconnect Filler Valve, (90.310.143), into the port of the gas spring. Connect the female end of the charging assembly to the charging nipple. The DADCO Pressure Analyzer, (90.315.5), can also be used for charging, discharging and gauging pressure.

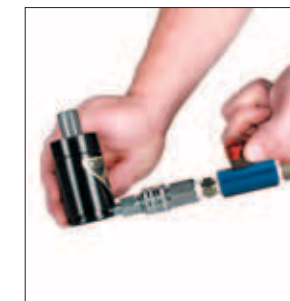


2. Open the main valve on the nitrogen tank.

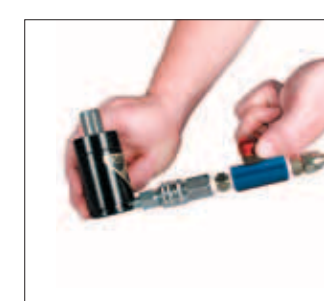
**CAUTION! Verify rod is extended and cartridge is fully seated before charging.**



3. Set the desired charging pressure on the regulator. DADCO recommends charging the spring to the maximum charging pressure of 150 bar (2175 psi).



4. Slowly open the shut-off valve at the end of the charging hose and allow the gas spring to reach the desired charging pressure. You may also use the 90.310.044.



5. Turn the Shut-off Valve until it aligns with the CLOSE AND VENTED position located on the lower black knob. If using the Standard Charging Assembly (90.310.040), the small amount of nitrogen trapped between the shut-off valve and filler valve will escape as you disconnect from the spring.



6. After all the springs in the system have been charged to the desired pressure, CLOSE THE HOSE SHUT-OFF VALVE AND TANK SHUT-OFF VALVE.



7. Check for leaks at the top of the tube around the rod and at the base around the valve compartment using mineral oil or water. Verify the pressure with a DADCO Load Cell using a DADCO Portable Test Stand, (90.305.3). **NOTE: If spring is open-flow, the filler valve (90.310.143) must remain in place during testing.**



8. Install the new Dust Cover, (90.246.x.x). Tap with a soft mallet until the top of the Dust Cover rests flush with the top of the Tube Assembly. The rod wiper should be visible.

9. Thread the Port Plug (90.607.110) into the port.

### VIII. Adjusting Gas Spring Pressure



1. To increase the spring pressure, thread the Quick Disconnect Filler Valve, (90.310.143), into the port, set the regulator to the desired pressure and fill. The 90.315.5 may also be used to adjust pressure.



2. To decrease the gas spring pressure, depress the valve stem using a DADCO Valve Bleed Tool, (90.360.4).

### IX. Linked Systems

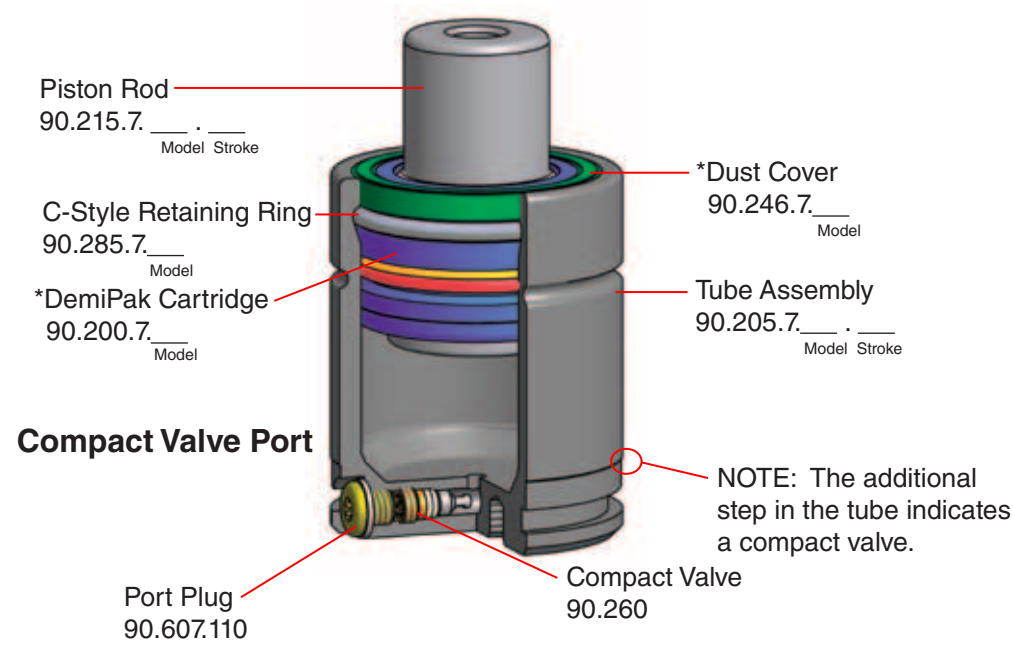
After testing all springs for leaks, the open-flow springs are ready to be re-linked in the system. If possible, once the springs are all linked back to the control panel, leave the system to sit fully charged overnight. If pressure has dropped indicating a leak verify that each connection is tight and test each fitting for a leak.

For information on converting a self-contained DADCO Mini Nitrogen Gas Spring to an open flow spring please contact DADCO.

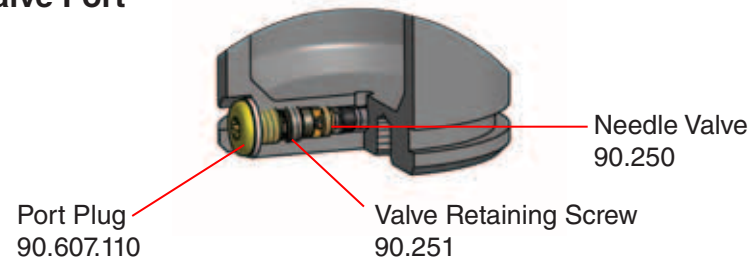
**CAUTION! DADCO Mini Nitrogen Gas Springs should not be linked with the valve installed.**



## LJ Series Parts List



### Tire Valve Port



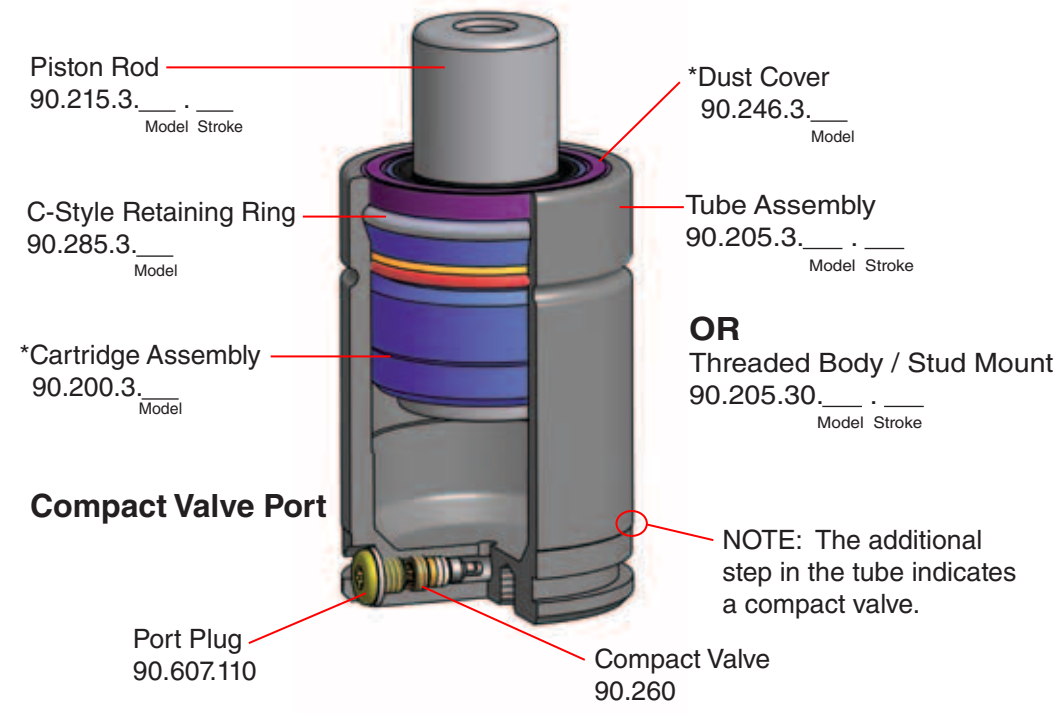
### LJ Series Repair Kit

90.107.00300  
90.107.00500  
90.107.00750

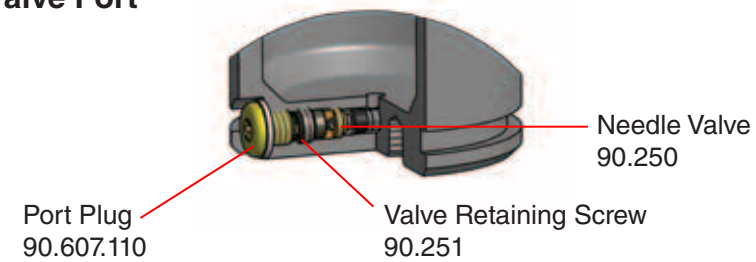
\* LJ Series Repair Kit includes a fully assembled DemiPak cartridge, dust cover, a bottle of assembly oil and a maintenance manual.



## L Series Parts List



### Tire Valve Port



### L Series Repair Kit

90.103.00300  
90.103.00500  
90.103.00750

\* L Series Repair Kit includes a fully assembled cartridge assembly, dust cover, a bottle of assembly oil and a maintenance manual.



## Repair Tools

### C-Ring Removal Tool 90.355

To remove the C-style retaining ring safely in a single controlled motion.



### C-Ring Installation Tool 90.351.00300 (for use with L/LJ.0300) 90.351.00500 (for use with L/LJ.0500) 90.351.00750 (for use with L/LJ.0750)

To insert the C-style retaining ring into the retaining ring groove.



### Removal Sleeve 90.340.00300 (for use with L/LJ.0300) 90.340.00500 (for use with L/LJ.0500) 90.340.00750 (for use with L/LJ.0750)

To position the cartridge assembly below the C-ring groove when assembling or disassembling a gas spring.



### Port Servicing Tool 90.320.8

To perform all necessary servicing to the valve compartment.



### Standard Load Cell 90.300.0300 (for use with L/LJ.0300) 90.300.0500 (for use with L/LJ.0500) 90.300.0750 (for use with L/LJ.0750)

When used with a Portable Test Stand, the Standard Load Cell gives precise measurement of gas spring charging pressure. For more information contact DADCO.



### Mini Test Stand 90.305.2 90.305.2D

Use the Portable Test Stand in conjunction with a Standard Load Cell for precise measurement of gas spring force on contact. For more information request bulletin B08108B.



### Valve Bleed Tool 90.360.4

Use the DADCO Valve Bleed Tool to slowly discharge a spring to the desired pressure.



### Quick Disconnect Filler Valve 90.310.143

Use the DADCO Quick Disconnect Filler Valve to charge the Mini and U Series Gas Springs. For more information contact DADCO.



### Quick Disconnect Charging Assembly 90.310.040 - Standard Option 90.310.044 - Self-Venting Capable

Use the DADCO Quick Disconnect Charging Assembly with the Filler Valve or Pressure Analyzer to charge self-contained gas springs, or with a DADCO Control Panel for charging linked systems.



Bulletin No. B19113

## Comprehensive Guide

This service manual is a simple step-by-step maintenance guide for DADCO Nitrogen Gas Spring models including L and LJ.

Proper repair requires careful examination of all component parts and replacement of any that are worn or damaged. All DADCO replacement parts are available from factory stock.

Typically, DADCO Nitrogen Gas Springs can be rebuilt in less than ten minutes by replacing only one part, the factory pre-assembled cartridge assembly.

After reviewing this maintenance guide, if you require any additional training or have any questions please contact DADCO for assistance.

*Note: Nitrogen Gas Spring repair varies slightly from model to model, and by mode of operation (self-contained or open-flow). As you proceed through the basic steps outlined in this bulletin, take care to follow the instructions pertaining to your model. All DADCO gas springs are permanently marked with model and serial number. Please refer to these numbers for corresponding repair kits and when ordering replacement parts.*

All DADCO bulletins and catalogs are available for download from our web site, [www.dadco.net](http://www.dadco.net).

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## Nitrogen Gas Spring Maintenance Instructions L / LJ Series



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