I. Exhausting Pressure

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

2. Remove the Port Plug (90.027.10), located at the base of the cylinder. Place parts for use during reassembly.

3. Keeping face and handle clear of the port, use the Valve Bleed Tool (90.365.10) or Port Servicing Tool (90.332.10) to depress the valve seats. (90.025 or 90.026). 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 not freely retract into the tube manually. If not, try depressing the valve again. If still unsuccessful step and contact DADCO.

II. Port Maintenance

Self-Contained

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

2. For the U Series proceed to Compact Valve Port, Step 3A. For the LJ or 90.7 or U Series spring, 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 indentation on the outside of the tube, proceed to the Valve Port, Step 3B.

3. Remove the Compact Valve (90.364), by withdrawing it with the Port Servicing Tool (90.330.3).

4. Thread a new Compact Valve (90.364). In proceed to step 1Id. Port Maintenance” Open-Flow Mode step 1.

III. C-Ring Removal

Self-Contained

1. Spatter gas spring 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 freely release the remaining pressure, if all unsuccessful step and contact DADCO.

3. Unthread the service fitting wing screw with a wrench. Proceed to 1Id. Port Maintenance” Open-Flow Mode step 1.

4. Place the rod and cartridge into the Tube Assembly. Depress the end of the cartridge just before the C-Style 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.

5. Insert the C-Style Retaining Ring tool into the retaining ring groove using DADCO Retaining Ring Tool (90.331.10) or (90.332.5). Be sure the tool is properly seated into the retaining ring groove. For a detailed explanation of how to use the 90.332 C-Style Retaining Tool refer to bulletin 90.101D.

6. Thread off the tri-nipple, (90.313.0) or (90.320.3), into the end of the piston rod. Pull up on the tri-nipple until the top of the cartridge is seated in the retaining ring groove. The tri-nipple 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 rod extension.)

7. When the tri-nipple is seated, the cartridge is fully seated before charging.

8. The U Series may require more force to extract the cartridge. For a detailed explanation of how to remove see bulletin 90.129.

IV. Rod & Cartridge Removal

Self-Contained

1. Remove the Needle Valve by unscrewing the valve until it fits snugly on the seat.

2. Wash, clean and dry the inside of the cartridge. If there is severe it must be replaced. Any scratches or gouges. If the finish of the rod for safety.

3. Set the desired charging pressure on the regulator. DADCO recommends charging the gas spring to an open flow spring please contact DADCO.

4. To increase the spring pressure, thread the Quick Disconnect Filter Valve (90.315.5) into the port and regulator to the desired charging pressure. (90.315.5) may be charged to 180 bar (2600 psi). The DADCO Mini and Ultra Force models may be charged to 150 bar (2175 psi). Note: The Ultra Force model may be charged to 160 bar (2369 psi).

5. After all the springs in the system have been charged to the desired pressure, CLOSE THE HOSE VENT, STANDARD CHARGING VALVE. AVOID TANK OVER PRESSURE AND DRAIN SHUT-OFF VALVE.

6. To decrease the gas spring pressure, depress the valve stem using a DADCO Valve Bleed Tool (90.363.10).

7. For proper installation DADCO recommends using an air tool versus a valve seat to facilitate full rod extension.

8. Check for leaks at the top of the tube around the nozzle and at the base of the Tube Assembly Oil. The housing for the LJ and U Series is attached to the control panel necessitating the use of a leak detector. For a detailed explanation of how to use refer to bulletin 90.129.

9. Be careful not to force the cartridge or an angle during assembly as the valve may get damaged. Once the Cylinder Assembly is installed, verify that the seal is properly aligned to the rod.

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 important that the gas spring be free of all contaminants upon reassembly. If the precaution is not taken it may lead to contamination and premature gas spring failure.

VI. Cartridge Replacement and Reassembly

Self-Contained

1. Choose the appropriate repair kit. The repair kit number is based on the valve seat of the Tube Assembly. NOTE: Repair kits are not interchangeable among models.

2. Open the bleed valve on the control panel. With holding the cartridge vertically, slide the cartridge down the rod to the rod retaining ring groove. (CAUTION: Always wear safety goggles when performing any maintenance work.)

3. Ensure the tool near either end of the c-ring. For best results locate the hooked end of the tool below the c-ring. For a detailed explanation of how to use refer to bulletin 90.129.

4. Pull the cartridge out of the retaining ring groove. Position the tool as the c-ring will be extracted as you complete the process. If still unsuccessful step and contact DADCO.

5. For the U Series proceed to Compact Valve Port, proceed to step 2. If you can not extract the cartridge, proceed to step 2, otherwise leave the valve undisturbed and proceed to “III. C-Ring Replacement.”

6. More force than necessary to extract the cartridge. If not, try depressing the valve again. If still unsuccessful step and contact DADCO.

7. Install the Retaining Tool (90.317.16) into the port, self-contained and cartridge is fully seated before charging.

8. Using a mallet until the top of the cartridge is seated into the retaining groove. Retain parts (90.607.110) and proceed to step 2, otherwise leave the valve undisturbed and proceed to “III. C-Ring Replacement.”

9. The seal is properly aligned to the rod.

10. If the seal is rolled or damaged and contact DADCO. DO NOT continue installation.

VII. Charging

Quick Disconnect Filling Method

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

1. Thread the M6 end of the Quick Disconnect Adapter at the end of the hose.

2. Open the main valve on the hose and will fit loosely. As you complete the process. If still unsuccessful step and contact DADCO.

3. After all the springs in the system have been charged to the desired pressure, CLOSE THE HOSE VENT, STANDARD CHARGING VALVE. AVOID TANK OVER PRESSURE AND DRAIN SHUT-OFF VALVE.

4. To increase the spring pressure, thread the Quick Disconnect Filter Valve (90.315.5) into the port and regulator to the desired charging pressure. (90.315.5) may be charged to 180 bar (2600 psi). The DADCO Mini and Ultra Force models may be charged to 150 bar (2175 psi). Note: The Ultra Force model may be charged to 160 bar (2369 psi).

5. Open the bleed valve on the control panel. With holding the cartridge vertically, slide the cartridge down the rod to the rod retaining ring groove. (CAUTION: Always wear safety goggles when performing any maintenance work.)

6. To decrease the gas spring pressure, depress the valve stem using a DADCO Valve Bleed Tool (90.363.10).

7. For proper installation DADCO recommends using an air tool versus a valve seat to facilitate full rod extension.

8. Check for leaks at the top of the tube around the nozzle and at the base of the Tube Assembly Oil. The housing for the LJ and U Series is attached to the control panel necessitating the use of a leak detector. For a detailed explanation of how to use refer to bulletin 90.129.

IX. Linked Systems

After testing all springs for leaks, the open-flow springs are ready to be re-linked in sequence. After testing all springs for leaks, the open-flow springs are ready to be re-linked in sequence.
Repair Tools

C-Ring Removal Tool
90.352 (for use with LJ/LJ.0300 and LJ.0400)
90.355 (for use with LJ.0500 and LJ.0600)

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

C-Ring Installation Tool
90.352 (for use with LJ/LJ.0300 and LJ.0400)
90.355 (for use with LJ.0500 and LJ.0600)

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

Removal Sleeve
90.340.00300 (for use with LJ/LJ.0400)
90.340.00500 (for use with LJ/LJ.0500 and LJ/LJ.0600)
90.340.00600 (for use with LJ/LJ.0750 and LJ/LJ.0800)
90.340.00700 (for use with LJ/LJ.0750 and LJ/LJ.0800)
90.340.01200 (for use with LJ/LJ.1000 and LJ/LJ.1200)
90.340.01500 (for use with LJ/LJ.0400 and LJ/LJ.0500)

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

T-Handle
90.322.1 – M6 thread
90.322.2 – M8 thread

(for use with LJ/LJ.0300 and LJ/LJ.0400)

To remove the piston rod when disassembling and reassembly correctly when reassembling.

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. DADCO recommends using the 90.310.044 Charging Assembly to change the U.0400 nitrogen gas spring to maximum pressure.

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. For more information contact DADCO.

Standard Load Cell
90.305.0300 (for use with LJ/LJ.0300 and LJ.0400)
90.305.0500 (for use with LJ/LJ.0500 and LJ.0600)
90.305.0750 (for use with LJ/LJ.1000 and LJ.1200)
90.305.1000 (for use with LJ/LJ.1500 and LJ.1600)

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

DADCO Pressure Analyzer
90.315.5

Use the DADCO Pressure Analyzer to easily charge, discharge, and gauge the pressure in DADCO Gas Springs. This tool can take the place of the Valve Bleed Tool, Standard Load Cell, Quick Disconnect Filler Valve, and Portable Test Stand. For more information request bulletin B01133E.

BULLETIN No. B01133H

Comprehensive Guide

This service manual is a simple step-by-step maintenance guide for DADCO Nitrogen Gas Spring models including L, 90.3, LJ, 90.7 and U Series (U.0400 - U.1600).

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-face). 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.

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