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 a few parts.

After reviewing this maintenance guide, if you require any additional training or have any questions please contact DADCO for assistance.
CAUTION: Always wear safety goggles when performing any maintenance work.

FCL Series Gas Repair Instructions

I. Exhausting Pressure

1. When exhausting pressure position the gas spring horizontally with the port up for safety.
2. Remove the Port Plug (90.307.115), located at the base of the spring. Replace parts for use during reassembly.
3. Keep the face and handle clear of the port, use the Valve Blush Tool (90.305.6), or Port Servicing Tool (90.320.6), to depress the valve flents. (90.380). Cover the port with a cloth to absorb discharge.
4. After all of the gas pressure is exhausted, be sure that the piston end will freely retract into the tube manually. If not, try depressing the valve again. If still unresponsive STOP and contact DADCO.

II. Port Maintenance

1. Generally the valve does not need replacing. Only if the valve appears damaged, a looking pressure or sticking proceed to step 2. Otherwise leave the valve undisturbed and proceed to “II. C-Ring Removal”.
2. Remove the Compact Valve (90.430.1), by loosening it with a screwdriver. Remove the DADCO C-Ring and the Compact Valve assembly.
3. Thread a new Compact Valve (90.380), into the port using the Valve Blush Tool (90.320.6). Avoid over torquing the valve.

III. C-Ring Removal

1. Stand the gas assembly upright. Place a Removal Sleeve (90.364.6) larger than the stroke over the rod. Make sure to use the proper removal sleeve for the cylinder. Tap the sleeve into the DADCO Collar (90.245.x.x) if loosened. Remove the Dust Cover and discard.
2. Reposition the DADCO Removal Sleeves and only continue tapping until the rod and the carriage assembly is tightly against the retaining ring groove. The bore of the Tube Assembly is designed to stop the cartridge in the position. DO NOT force the bottle into the Tube Assembly.
3. Retain the Cartridge Assembly (90.320.1 or 90.320.2), into the port using the Valve Blush Tool (90.320.6) and cushion assembly into the Tube Assembly using your fingers.
4. Check the hooked end of the tool is firmly seated below the c-ring, begin pushing it toward the outside of the gas spring tubing. The handle 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 #10310A.
5. Install the Retaining Ring (90.320.8) or (90.340.x), located at the port, using a C-Ring Removal Tool (90.220). Position the hooked end of the tool above the c-ring. For best results locate the tool near either end of the c-ring.
6. Insert the DADCO C-Style Retaining Ring (90.607.110) or (90.360.4), into the rod end of the tool below the c-ring. Use a soft mallet until the top of the Dust Cover is fully seated in the retaining ring groove.
7. Thread the T-Handle (90.320.1 or 90.330.1), into the end of the rod. Pull up on the T-Handle until the top of the cartridge is completely past the c-ring. The rod must break the cartridge assembly fully before charging. The cartridge should be flush with the end of the cylinder. Make sure the rod is extended to the bottom of the tube. Any interference will force the needle valve to fail and not extend fully.
8. Insert the Cartridge Replacement Kit (90.351.x) onto the T-Handle. Make sure all movement is easy. When the valve is in place and the cartridge is seated, on the tool below the c-ring. Be sure the C-Style Retaining Ring is fully seated in the retaining ring groove.
9. While holding the cartridge assembly fully, depress the valve again. If the seal is rolled or damaged, remove the cartridge, cushion and assembly into the tube. DO NOT force the cartridge down further into the tube.

IV. Rod & Cartridge Removal

1. To remove the Rod with Cartridge Assembly and Cushion Assembly, thread a T-Handle (90.320.1 or 90.330.1), into the rod end. Remove the Retaining Ring, (90.351.x), located at the port, using the Valve Blush Tool (90.320.6) or Port Servicing Tool (90.320.6), to depress the valve flents. (90.380). Cover the port with a cloth to absorb discharge.
2. Once the cartridge, cushion and rod are removed from the Tube Assembly slide the cartridge off the rod and discard. The rod will have the Retaining Ring attached to the Cushion Collar Assembly installed.
3. Turn the rod over to access the Cushion Collar Assembly. Remove the Retaining Ring (90.321/13 or UC413114), using a small screwdriver. When the ring falls using a clean cloth and retain for reassembly.
4. Remove the Cartridge Replacement Key (90.310.040) and proceed to “III. C-Ring Replacement & Reassembly”.
5. Remove the two halves of the Cushion Collar Replacement (90.360.4) or (90.320.8), from the port. Clean the retaining haun using a soft cloth and retain for reassembly.
6. Slide the Cushion Collar Assembly (90.360.4) or (90.320.8) into the port using the Valve Blush Tool (90.320.6) and cushion assembly into the Tube Assembly using your fingers. The tool will sit on top of the Cushion Collar Replacement.
7. Lubricate the inside wall of the tube with the DADCO Assembly Oil.
8. Place the rod with cartridge and cushion assembly into the tube assembly. Depress the needle valve to release any back pressure. Position the top of the cartridge just below the charging ring groove. Therefore, the valve must be in the proper orientation. While holding the cartridge assembly fully, depress the valve again. If still unsuccessful STOP and contact DADCO.

V. Cleaning & Inspection

1. Lightly polish the tube surface with an emery cloth (90.360). Inspect the bore of the rod for 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 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 malleable thoroughly.

VI. Cartridge Replacement & Reassembly

1. Choose the appropriate repair kit. The repair kit needed is dependent on the model of the Tube Assembly. NOTE: Repair kits are not interchangeable among models.
2. Position the new Cushion Collar Assembly (90.360.4) or (90.320.8) onto the end of the rod, making sure that the key remains the DADCO. Make sure that the assembly is in the correct orientation. While holding the rod vertically, slide the assembly down the rod into position.
3. Install the two halves of the Cushion Collar Replacement (90.360.4) or (90.320.8), onto the Cushion Collar Assembly.
4. Slide the Cushion Collar Replacement Key (90.310.040) or UC413114) onto the Cushion Collar Assembly. The key will sit in top of the Cushion Collar Replacement.
5. Insert the C-Style Retaining Ring (90.607.110) into the Cushion Collar Assembly. To hold the Cushion Collar Replacement in place. It may be necessary to rotate the port end with the handle to the Cushion Collar Assembly. The key will sit in the Cushion Collar Replacement Assembly.
6. Place the rod with cartridge and cushion assembly into the tube assembly. Depress the needle valve to release any back pressure. Position the top of the cartridge just below the charging ring groove. Therefore, the valve must be in the proper orientation. While holding the cartridge assembly fully, depress the valve again. If still unsuccessful STOP and contact DADCO.

VII. Charging

Quick Disconnect Filling Method

1. Thread the Needle Valve (90.340.x) into the Quick Disconnect Filler Valve (90.250.742), into the port of the gas spring. Connect the female end of the Quick Connect (90.320.040) or (90.210.044), to the charging port. The DADCO Pressure Analyzer (90.320.5), can also be used for charging, discharging and gauging pressure.
2. Open the main valve on the nitrogen tank.
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.

Quick Disconnect Charging Assembly

1. Open the main valve on the nitrogen tank.
2. Thread the Needle Valve (90.340.x) into the Quick Disconnect Filler Valve (90.250.742), into the port of the gas spring. Connect the female end of the Quick Connect (90.320.040) or (90.210.044), to the charging port. The DADCO Pressure Analyzer (90.320.5), can also be used for charging, discharging and gauging pressure.
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 close the main valve on the nitrogen tank.

VIII. Adjusting Gas Spring Pressure

1. To increase the spring pressure, thread the Quick Disconnect Valve (90.210.040) or (90.210.044), into the port, or the regulator to the desired pressure and fit. The DADCO Pressure Analyzer (90.320.5), may also be used to adjust pressure.
2. To decrease the gas spring pressure, depress the valve again using a DADCO Valve Blush Tool (90.320.6).