

SC (98.80) Series Gas Spring Repair Instructions

Models: 00740, 01000, 01800, 03500, 04700, 07500, 11800 & 18300

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

This service manual is a simple step-by-step maintenance guide for DADCO Nitrogen Gas Spring SC Series (98.80) Models 00740, 01000, 01800, 03500, 04700, 07500, 11800 and 18300. Typically, SC / 98.80 Series Nitrogen Gas Springs can be rebuilt by simply replacing the piston rider and piston seal. After reviewing this maintenance guide, if you require any additional training or have any questions please contact DADCO for assistance. **NOTE:** To repair DADCO's SC models 01800-18300 a special Rear Head Tool (98.328) is required. To repair SC models 00740 and 01000 a special Seal Installation Tool (90.357D.00740 or 90.357D.01000) is required.

Note: The repair of DADCO's Super Compact Nitrogen Gas Springs is unlike standard gas spring repair. Please follow the instructions and illustrations carefully.

I. Exhausting Pressure

Self-Contained Mode



1. When exhausting pressure, position the gas spring upside down in a vise so that the cylinder is secured. Be sure to wrap the spring in cardboard to protect it from the vise.



2. Remove the port plug, and sealing washer, (90.505.110), located on the bottom of the spring with the Port Servicing Tool, (90.320.8). Retain parts for use during reassembly.



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



4. After all the gas pressure is exhausted remove the gas spring from the vise, 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. Remove the mount, if necessary, securing the cylinder to the plate. Unthread the service fitting and wipe with a clean cloth. Retain parts for use during reassembly.

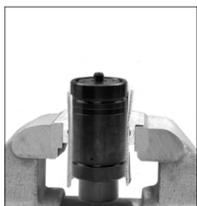
II. Remove Subplate (SCL Models Only)



1. Remove the cap screws with washers from the bottom of the subplate and keep for reassembly.



2. Remove the subplate from the Super Compact Spring by hand and keep the subplate for reassembly.



3. Position the gas spring upside down in a vise so that the cylinder is secured. Be sure to wrap the spring in cardboard to protect it from the vise.



4. Remove the piping adapter, (90.270), located on the bottom of the spring with an allen wrench and retain for reassembly.

III. C-Ring Removal from Base



1. Hold the discharged gas spring upside down. Using a rubber mallet gently tap the rear head down into the tube. It may be necessary to depress the valve stem again to release any back pressure.



2. Remove the C-Style Retaining Ring, (98.285.80.x), using the C-Ring Removal Tool, (90.355 or 90.356). Position the hooked end of the C-Ring Removal Tool below the c-ring. For best results locate the tool near either end of the c-ring.



3. Once the hooked end of the tool is firmly seated below the c-ring, begin pushing it toward the outside of the gas spring can. The handles will close naturally, and the c-ring will be extracted as you complete this motion. Request the C-Ring Removal Tool Bulletin for more information.

IV. Rod Assembly & Rear Head Removal



1. Wrap the cylinder in cardboard and place in a vise. With a soft rubber mallet, tap the rod down through the tube. This will push the rear head out at the same time. **Note:** You will need to guide the parts as they are pushed out. To avoid damaging the piston rod or bore do not let them drop onto a hard surface.



2. Remove the seal and piston rider. Pry the seal off the rod using the Port Servicing Tool, (90.320.8), be careful not to scratch the inside of the groove. Discard the seal and piston rider.



3. Using a small screwdriver, remove the O-Ring Backup, (98.249.80.x), and the O-Ring, (98.245.80.x), from the rear head, be careful not to scratch the inside of the groove. Discard both o-rings.

V. Cleaning and Inspection



1. Inspect the tube assembly for any damage. Polish out any burrs at the bottom of the tube assembly to avoid damaging seals during the reassembly process. If there are any severe scratches in the finish contact DADCO for repair.



2. Wipe the inside of the tube assembly with a clean, dry, lint-free cloth using a mild detergent if necessary.



3. Wipe the rod and rear head with a clean, dry, lint-free cloth.

(SCL Models Only)



4. For the SCL Models, inspect the 90.270 fitting. If there is any damage to the o-rings then the fitting needs to be replaced.

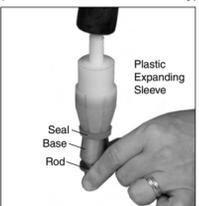
NOTE: Before starting the reassembly process, be sure the repair area is clean. It is imperative that the gas spring be free of all contaminants upon reassembly. If this precaution is not taken it may lead to contamination and premature gas spring failure.

VI. Seal Replacement and Reassembly

(SC.00740 and SC.01000 Only)



1. Choose the appropriate seal kit (98.801.D.x) by examining the laser mark on the tube for the seal kit number. If the laser mark does not have a D on the seal kit number, contact DADCO for repair. **Note:** Seal kits are not interchangeable among models. Proceed to 2A for the SC.00740 and SC.01000 models; proceed to 2B for all other models.



2A. It is necessary to use the Seal Installation Tool, (95.357D.00740 or 90.357D.01000 for the SC.00740 and SC.01000 models), to install the new seal. Place seal on base of tool and slide base over rod. Insert the plastic expanding sleeve over base. Using a soft rubber mallet tap the plastic sleeve until the seal is pushed down onto the rod.



2B. Press the new seal down evenly until it is positioned properly around the rod.



3. Once the new seal is pressed down evenly and positioned properly around the rod then snap the new piston rider around the rod. Lubricate the seal using the DADCO Assembly Oil and reinstall the rod assembly.



4. Place the rear head so the mounting holes are facing down. Install the O-Ring Backup, (98.249.80.x), and then the O-Ring, (98.245.80.x). The o-ring will be seated above the o-ring backup in the same groove. Verify that the o-ring backup and the o-ring do not twist when installing.



5. Reinstall the rear head into the tube. If necessary, depress the valve to release any back pressure.



6. Insert the C-Style Retaining Ring, (98.285.80.x), in the retaining ring groove using a DADCO C-Ring Installation Tool, (90.352), or standard bench tools. Refer to bulletin B01101D for detailed instructions on how to use the C-Ring installation Tool.



7. Thread DADCO's Rear Head Tool (90.320.1 or 98.328) into the port and pull out to seat the rear head against the c-ring.



8. Thread the T-Handle, (90.320.1 or 90.320.2), into the end of the piston rod. Pull up on the T-Handle until the rod is extended to its proper stroke length. It may be necessary to use the Valve Bleed Tool, (90.360.4), or the Port Servicing Tool, (90.320.8), to depress the valve to relieve pressure inside the gas spring. **DO NOT** charge the gas spring until the rod is fully extended and the rear head is seated against the c-ring.

DADCO®

**Nitrogen Gas Spring
Maintenance Instructions**

**SC Series Models:
00740, 01000, 01800, 03500,
04700, 07500, 11800 & 18300**

Bulletin No. B02103F

Comprehensive Guide

This service manual is a step-by-step maintenance guide for DADCO's Super Compact (SC) Nitrogen Gas Springs. The SC.00420 model may only be repaired at the factory.

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.

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

Note: DADCO Nitrogen Gas Springs are permanently marked with model number, serial number and repair kit number. Please refer to these when ordering replacement parts.

VII. Install Subplate (SCL Models Only)

- Position the gas spring upside down in a vise so that the cylinder is secured. Be sure to wrap the spring in cardboard to protect it from the vise.
- Oil the piping adapter, (90.270), then install into the bottom center port using an allen wrench. With a torque wrench, tighten the piping adapter to the appropriate torque value listed in the table.
- Align the subplate so that the piping adapter matches the hole in the subplate and the cap screw holes line up.
- Apply serviceable thread locker to the bottom three threads of the cap screws with lock washers.
- Fasten the subplate by installing the cap screws with lock washers. Tighten the cap screws by tightening each one a quarter turn at a time (like on a tire), to avoid pinching the o-ring on the piping adapter.
- With a torque wrench, tighten the screws to the appropriate torque value listed in the table.

Model	Subplate Kit	Cap Screw	Lock Washer	Qty.	Screw Torque		Piping Adapter Torque	
					in-lbs	Nm	in-lbs	Nm
SCL.01000	CSP.01000	UMA06100022	UMR06	2	103	11.6	36	4.1
SCL.01800	CSP.01800	UMA06100022	UMR06	2	103	11.6	84	9
SCL.04700	CSP.04700	UMA08125018	UMR08	3	252	27.9	84	9
SCL.07500	CSP.07500	UMA08125020	UMR08	3	252	27.9	84	9
SCL.11800	CSP.11800	UMA10150020	UMR10	3	492	55.5	84	9
SCL.18300	CSP.18300	UMA10150020	UMR10	4	492	55.5	84	9

VIII. Charging

- Thread the Quick Disconnect Charging Nipple, (90.310.143 or 90.310.111) into the port of the gas spring. Attach the female end of the Quick Disconnect Charging Assembly, (90.310.040). For open-flow mode use a DADCO Adjustable Pressure Analyzer, (90.315.5).
- Open the main valve on the nitrogen tank. Set the regulator to the lowest pressure setting 5 bar (90 psi).
- Slowly open the shut-off valve at the end of the charging hose and charge to a low pressure. Gradually increase the regulator setting to the desired pressure. Charging Pressure Range: 25-150 bar (350-2175 psi).
- After the spring has been charged to the desired pressure, CLOSE THE HOSE SHUT-OFF VALVE AND TANK SHUT-OFF VALVE. Disconnect the charging assembly. The small amount of nitrogen trapped between the shut-off valve and filler valve will bleed off as you disconnect the fitting.
- Check for leaks at the top of the tube around the rod and at the bottom around the valve compartment by using mineral oil. Do not use water. Verify the pressure with a DADCO Load Cell using a DADCO Portable Test Stand or an arbor press. **NOTE: If spring is open-flow, the DADCO Pressure Analyzer, (90.315.5), must remain in place during testing.**

Self-Contained Only

Open-Flow Only

IX. Adjusting Gas Spring Pressure

- To increase the spring pressure, thread the Quick Disconnect Charging Nipple, (90.310.143 or 90.310.111), into the port, set the regulator to the desired pressure and fill. DADCO's Pressure Analyzer, (90.315.5), may also be used to adjust pressure.
- To decrease the gas spring pressure, depress the valve stem using a DADCO Valve Bleed Tool, (90.360.4), or a DADCO Pressure Analyzer, (90.315.5).

REPAIR TOOLS

<p>Valve Bleed Tool 90.360.4</p> <p>Use the DADCO Valve Bleed Tool to slowly discharge a spring to the desired pressure.</p>	<p>Port Servicing Tool 90.320.8</p> <p>To perform all necessary servicing to the valve compartment.</p>	<p>C-Ring Removal Tool 90.355 (for use with 00740, 01000) 90.356 (for use with 01800-18300)</p> <p>To remove the C-style retaining ring safely in a single controlled motion. For more information request bulletins B13113A and B15127A.</p>	<p>C-Ring Installation Tool 90.352</p> <p>To insert the C-style retaining ring into the retaining ring groove. For more information request bulletin B01101D.</p>	<p>Quick Disconnect Charging Assembly 90.310.040</p> <p>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. For more information contact DADCO.</p>	
<p>T-Handle 90.320.1 (M6) 90.320.2 (M8)</p> <p>Use the T-Handle to remove the piston rod when disassembling and position correctly when reassembling.</p>	<p>Quick Disconnect Charging Nipple: Self Contained 90.310.143 (M6 Port) 90.310.111 (G 1/8 Port)</p> <p>Use the DADCO Quick Disconnect Charging Nipple to charge DADCO Nitrogen Gas Springs.</p>	<p>Rear Head Tool 90.328</p> <p>Use the Rear Head Tool to seat the rear head against the c-ring during reassembly.</p>	<p>Seal Installation Tool 90.357D. (00740, 01000)</p> <p>Use the Seal Installation Tool to install the new seal. Each model requires its specified tool.</p>	<p>Super Compact Load Cell 90.300. (01800, 03500, 04700, 07500, 11800, 18300)</p> <p>When used with a Portable Test Stand, the Load Cell gives precise measurement of gas spring charging pressure. Each model requires its specified load cell. For more information contact DADCO.</p>	<p>Portable Test Stand 90.305.3</p> <p>Use the Portable Test Stand in conjunction with a Super Compact Load Cell for precise measurement of gas spring force on contact. For more information contact DADCO.</p>

SC (98.80) SERIES PARTS LIST

Use this construction for the following models and stroke sizes:

Model	Stroke						
	6	10	16	25	32	40	50
00740	✓	✓	✓	✓	✓	✓	✓
01000	✓	✓					
01800	✓	✓					
03500		✓	✓	✓	✓	✓	✓
04700		✓					
07500		✓	✓				
11800		✓	✓				
18300		✓	✓				

Parts List:

- Piston Rod 98.215.80. Model Stroke
- * Rod Wiper
- **Piston Rider 98.227.80. Model
- * Tube Assembly
- **Piston Seal 98.246.80. Model
- Compact Valve 90.260
- **O-Ring 98.245.80. Model
- C-Style Retaining Ring 98.285.80. Model
- **O-Ring Backup 98.249.80. Model
- Rear Head 98.206. Model
- Sealing Washer 98.252
- Port Plug 90.607.110 (01000 model) 90.505.110 (01800-18300 models)

* These parts are not to be removed or replaced. ** These parts are included in the Seal Kit. Contact DADCO for assistance.

Use this construction for the following models and stroke sizes:

Model	Stroke						
	6	10	16	25	32	40	50
01000			✓	✓	✓	✓	✓
01800			✓	✓	✓	✓	✓
04700			✓	✓	✓	✓	✓
07500				✓	✓	✓	✓
11800				✓	✓	✓	✓
18300				✓	✓	✓	✓

Parts List:

- Piston Rod 98.215.80. Model Stroke
- * Rod Wiper
- * Set Screws (3)
- Housing
- **Piston Rider 98.227.80. Model
- * Tube Assembly
- **Piston Seal 98.246.80. Model
- **O-Ring 98.245.80. Model
- Compact Valve 90.260
- **O-Ring Backup 98.249.80. Model
- Sealing Washer 98.252
- C-Style Retaining Ring 98.285.80. Model
- Rear Head 98.206. Model
- Port Plug 90.607.110 (01000 model) 90.505.110 (01800-18300 models)

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