I. Exhausting Pressure

**Self-Contained Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

**Linked Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

II. Port Maintenance

**Self-Contained Mode**

1. Generally, the valve does not need to be replaced if it is clear and free of dirt. If the valve appears damaged, proceed to step 2.

2. Remove valve using the Port Service Tool (90.350.4).

3. Interchange the valve by removing the valve from the valve seat and replace it

**Linked Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

III. C-Ring Removal

**Self-Contained Mode**

1. Sandblast the gas spring using the Sandblasting Kit (90.360.1).

2. To replace the C-style Retaining Ring (90.285.x) with the service fitting into the gas spring port.

**Linked Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

IV. Rod & Cartridge Removal

**Self-Contained Mode**

1. To remove the Cartridge Assembly, thread a Tri-Handle (90.200.2) into the end of the piston rod.

2. Pull the assembly out of the tube. Depress the valve to relieve any back pressure.

3. Remove the Retainer Wear Ring (90.242.s) from the Rod Retainer and Retainer Wear Ring, set aside for reassembly.

**Linked Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

**Cleaning & Inspection**

1. Lightly polish the rod surface with an emery cloth (500). Inspect the finish of the rod for any scratches or gouges. If the rod is damaged it may be replaced. If present, the Rod Sleeve Retainer should remain in place.

2. Inspect the Tube Assembly for any damage, especially around the mouth of the Tube Assembly. Polish out any scuff marks at the base of the tube assembly. Check for any damage to the Tube Assembly. Replace if any damage is found.

3. Wash, clean, and dry the inside of the Tube Assembly thoroughly.

**Adjusting Gas Spring Pressure**

**Self-Contained Mode**

1. To increase spring pressure, thread the Quick Disconnect Charging Nipple (90.310.111) into the port, set the required reassembly to the desired pressure and 90.200.100. (90.340.x) onto the rod retainer above the retaining ring.

2. Slowly open the shut-off valve and allow gas spring to reach the desired charging pressure. After the desired pressure is reached, close the shut-off valve and set the pressure to the desired pressure. Close the (90.340.x) onto the rod retainer.

3. Make sure valve is in place and thread Port Plug (90.201.DS.x) into the valve port.

**Linked Mode**

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

2. Remove the Port Plug (90.201.DS.x) located at the base of the spring. Place in a safe place for use during reassembly.

3. Loosen the thread and handle the port to ensure that the valve is securely in place.

4. After all of the air pressure is exhausted from the base of the spring, pressure residual can also be used to adjust pressure.

5. Tap or slide Cushion Sleeve (90.320.2) to remove the Cartridge Assembly from the base of the spring.

6. Place the rod into the tube and discard. Place the port in the position it was originally.

7. Check for leaks at the base of the tube around the rod and also make sure that there is a high pressure compartment using mineral oil.

8. Verify the pressure with a DADCO Pressure Analyzer into the gas spring port.

9. Make sure valve is in place and thread Port Plug (90.201.DS.x) into the valve port.

10. Install the new Dust Cover. Tag with a soft marker until the dust cover retainer (90.201.DS.x) is fully seated and the valve is fully inserted. The rod should be bidon long to prevent any leaks.
**CAUTION**
- Slow return stroke: may take 3 minutes for full rod extension.
- DO NOT attempt maintenance on spring until internal pressure is exhausted.
- Exhaust pressure at base port first.
- Release any remaining pressure from secondary port to verify complete exhaust.

### 90.10 DS Series Parts List

- **Piston Rod** 90.215.10DS
- **Dust Cover** 90.246.10DS
- **C-Style Retaining Ring** 90.285
- **O-ring**
- **O-ring Backup Ring**
- **Cartridge Assembly** 90.230.10DS
- **Cushion Collar Assembly** Model
- **Rod Retainer** 90.204A
- **Compact Valve** 90.280

#### Repair Tools

- **Cartridge Starter Kit** 90.335. (03000, 05000, 07500)
- **Removal Sleeve** 90.340. (03000, 05000, 07500)
- **C-Ring Removal Tool** 90.356
- **RD Disconnect Charging Assembly** 90.315.5
- **Valve Bled Tool** 90.360.4
- **DADCO Pressure Analyzer** 90.315.5
- **Port Servicing Tool** 90.320.8
- **Quick Disconnect Charging Nipple** 90.310.11H (G 1/8)
- **Standard Load Cell** 90.305, (03000, 05000, 07500)
- **Portable Test Stand** 90.305.3

### 90.10 DS Repair Kits

<table>
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<th>Model</th>
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<tr>
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### Nitrogen Gas Spring Maintenance Instructions 90.10 DS Series

#### Comprehensive Guide

This service manual is a simple step-by-step maintenance guide for DADCO’s 90.10 DS Series Nitrogen Gas Springs.

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.

**Buliton No. B14117**

Please Note: Nitrogen Gas Spring repair varies slightly from model to model and by mode of operation (self-contained or linked). 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 when performing repair work and when ordering replacement parts.

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