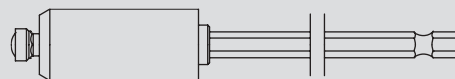
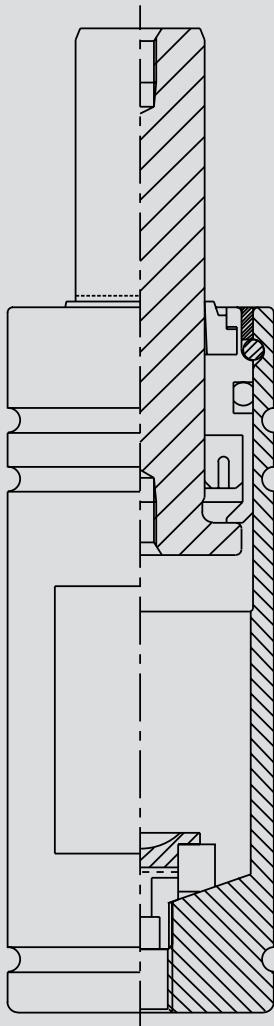


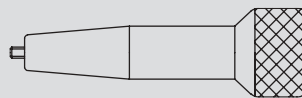
KALLER[®]

Service & maintenance instruction for gas spring models:

M2, MM2, MC2



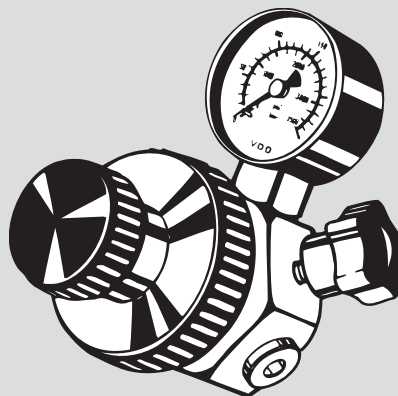
Valve tool



Removal tool



Lock ring tool



Charging armature

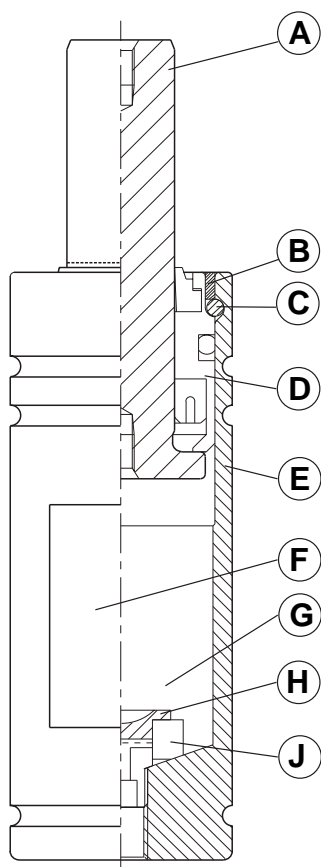


Charging adapter

 **STRÖMSHOLMEN AB**

Box 216, SE-573 23 Tranås, Sweden, Tel +46 140 571 00, Telefax +46-140-571 99

SERVICE INSTRUCTION



- A) Piston Rod
- B) * Colour coded ring
- C) * Lock ring
- D) * Guide
- E) Tube
- F) * Label
- G) * Oil
- H) * Charging screw
- J) * Charging ring

* = Parts included in the repair kit

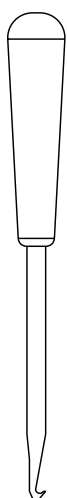


Fig. 1
Order No.
4014689

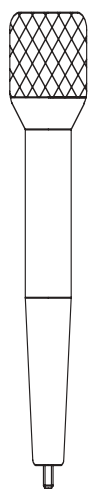


Fig. 2
Order No.
4017910

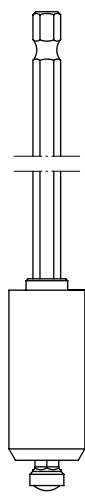


Fig. 3
Order No.
4V16854

Disassembly

Note: Always use protective jaws when clamping the spring in a vice.

- 1) Clamp the gas spring with the piston rod facing downwards and clamp it around the piston end of the tube as this is where the tube has the greatest wall thickness, and will prevent permanent distortion of the tube.
- 2) Using a 3 mm Allen key, unscrew the charging screw (H) in the clockwise direction until the gas begins to escape.

Note! Do not turn the screw more than 3½ turns in the clockwise direction. If the screw is turned more than 3 ½ revolutions it may loosen, fall into the spring, and prevent further disassembly.
- 3) Make sure all the gas is exhausted.

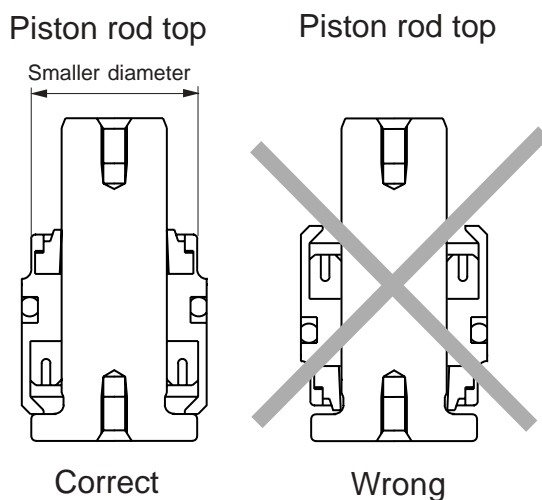
Note! To be sure that all pressure has been exhausted, it should be possible to tap the piston rod inside the tube. If not, do not proceed with the disassembly, restart at Step 2.
- 4) Reposition the spring in the vice so the piston rod (A) points upward. Note: Oil will drain from the bottom of the spring. Using a rubber mallet and the appropriate sleeve from the tool kit, tap the guide (D) into the tube until the lock ring (C) is exposed.
- 5) Remove the colour coded ring (B).
- 6) Remove the lock ring (C) using the lock ring tool (see Fig. 1). Bend the locking upwards and inwards.
- 7) Using the piston rod removal tool from the tool kit (see Fig. 2), screw in the tool in the end of the piston rod (A) and pull out the rod / guide assembly.
- 8) Remove the tool from the piston rod (A). Remove the guide (D) from the piston rod, by pulling the guide upwards.
- 9) Unscrew the charging screw (H) and remove it together with the charging ring (J).
- 10) Save the piston rod (A) and the cylinder tube (E).

Inspection

- 11) Clean the cylinder tube (E) and the piston rod (A).
- 12) Visually inspect the piston rod (A) and the inside of the tube (E). There should be no scratches or dents on the inside surface of the tube, the piston rod, or the lock ring groove. If you are in doubt, replace the parts.

Assembly

- 13) Clamp the tube (E) in a vice with the opening upwards.
- 14) Unpack the repair kit for M2 - MM2 - MC2.
- 15) Fit the charging ring (J) on the charging screw (H). Note: The charging ring is symmetric and works in any orientation.
- 16) From inside the tube (E) using the special tool from the tool kit (see Fig. 3) or use a standard blade screwdriver and thread the screw / ring assembly into the valve port.
Turn the charging screw in a clockwise direction until it reaches the bottom of the tube.
- 17) Fit the guide (D) on the piston rod (A) so that the smaller diameter side is facing the top of the piston rod (see fig. below).



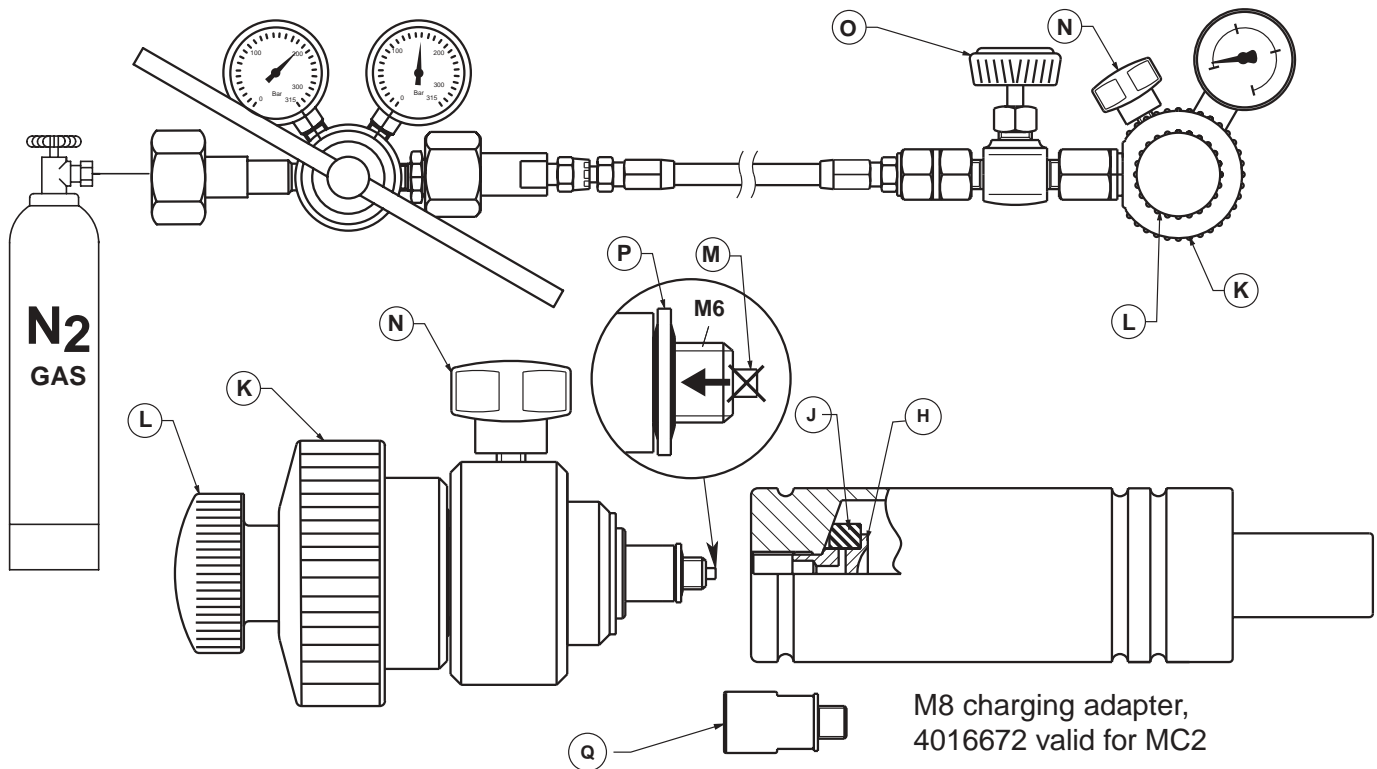
- 18) Fill the spring with 2 ml of lubrication oil.
- 19) Lightly oil the inside diameter of the upper part of the tube to prevent damage on the o-ring on the guide.
- 20) Lightly oil the seal, bearing, and o-ring on the guide. Note! Be careful not to apply too much oil since that may lead to high gas pressure increase.

- 21) Insert the guide with piston rod into the tube. Tap down the guide until the lock ring groove is exposed.
If the guide will not stay down, there is pressure inside the spring. Evacuate this pressure by temporarily opening the charging screw (H). (See step 2 in Disassembly)
Note! Ensure that the lubrication oil does not leak out.
- 22) Fit the lock ring (C) into the lock ring groove by pushing one of the ends into the groove and then press or hit the other end until it snaps into the groove. You can hear a clicking sound when it falls into position.
- 23) Screw in the special tool (see. fig 2) in the piston rod top and pull up the piston rod and guide.
If the guide not will stay up, there is vaccum inside the gas spring. Eliminate this vaccum by temporarily opening the charging screw (H).
Note! Ensure that the lubrication oil does not leak out.
Note! Check to make sure the top edge of the guide is flush with the upper edge of the tube. If it is not flush, the guide is fitted incorrectly.
Note! Gas must not be charged in the spring until the guide is in its correct position, that is, guide and tube are flush.
- 24) Tighten the charging screw (H) by turning it counter-clockwise until it bottoms out.
- 25) Fit the color coded ring (B) inside the tube so that it is in line with the end of the tube.
- 26) Attach the label onto the tube.
- 27) Charge the spring with nitrogen gas (N₂). Note: Maximum charge pressure is 180 bar (2610 psi) for this model.

SERVICE INSTRUCTION

Charging gas

We recommend that a replenishing armature with pressure regulator is used (Order No. 3415075-2000).



Note! When replenishing smaller models with little gas volume, it is difficult to obtain the desired pressure. We therefore recommend that the replenishing armature is connected to a gas bottle with pressure regulator to prevent over-charging.

- 28) Check that the shut off valve (O) and knob (N) are closed (turn in a clockwise direction). The release pin (M) should be inside the M6 thread on the armature (turn knob L in a counter-clockwise direction).
- 29) Check that the M6 thread on the armature is equipped with the sealing washer (P). Connect the replenishing armature to the bottom of the gas spring, by means of knob (K), turn in a clockwise direction. When replenishing M2 and MM2 use the replenishing armature **without** any adapter. When replenishing MC2 use the replenishing armature **with** adapter Q.
- 30) Adjust the pressure regulator on the nitrogen bottle for the pressure that should be used, + 5 bar (72 psi).
- 31) In case a pressure of less than 90 bar is desired, we recommend loosening the charging screw (H) slightly by turning it clockwise. This is done to lower the charging ring's (J) resistance to low pressure and thus insure that the spring's internal pressure is correctly set. **Note!** Do not turn the screw more than 3½ turns in the clockwise direction. After charging with nitrogen close the charge screw according to step 24.
- 32) Open the shut off valve (O) slowly on the armature and replenish as slowly as possible. If a pressure regulator is used, let the spring settle for a few minutes before proceeding. (This will allow a more accurate charge pressure).
- 33) Empty the gas inside the armature by closing the stop valve (O) and opening evacuation valve (N) until the gas is released.
- 34) To verify the spring force, measure the initial force using a test bench.
- 35) When finished with the armature, empty the gas inside the armature and hose by closing the nitrogen bottle and opening evacuation valve (N) until all gas is released. Make sure that the shut off valve (O) on the armature is open.
- 36) To ensure that the spring is not leaking cover the spring in a suitable fluid and check for streams of bubbles emerging from the seals or charge screw. (Note: if bubbles appear the spring may be assembled incorrectly! Refer to step 1).