
**SERVICE
INSTRUCTIONS**
8200-1624-01

 **KALLER**[®]
The Safer Choice

Die Separation (DS) gas spring

DS 3000

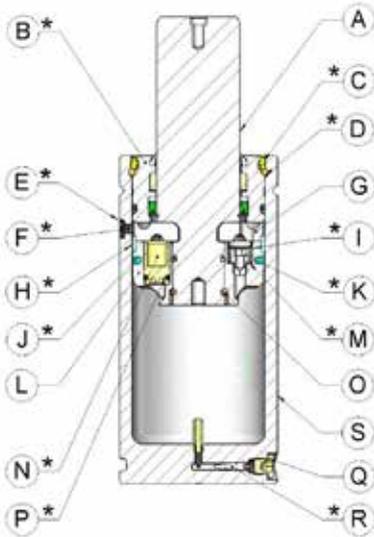
DS 5000

DS 7500



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SERVICE INSTRUCTIONS



- A Piston rod
- B) Guide
- C) Dirt protection ring
- D) Lock ring
- E) Warning tape
- F) M6 Service plug
- G) Piston halves
- H) Guide ring
- I) Mesh filter plug
- J) Piston seal
- K) Restrictor
- L) DS Piston
- M) Sealing washer
- N) Check valve
- O) Locking ring halves
- P) Piston O-ring
- Q) G 1/8 Cover screw
- R) Valve

* = Parts included in the repair kit

Warnings

- Always read the permanently marked information on the side of the tube before servicing to make sure you use the correct Repair kit.
- Failure to exhaust all gas pressure prior to disassembling could result in serious personal injury.
- The maximum charging pressure is 150 bar (2,175 psi).
- Use only pure nitrogen gas N_2 for charging.
- Always wear safety glasses, when servicing the gas spring.
- Only specially trained personnel with a good product knowledge should carry out the maintenance.
- Once the cover screw is removed, never lean directly over the valve.

Always direct the valveport away from yourself and others.

- Never use extreme force on the gas spring.
- Charged gas springs are under high internal pressure and should be protected against damage.
- Always use protective jaws when clamping the spring in a vice.
- To achieve maximum service life, keep the gas spring protected from dirt, drawing fluids, and grinding dust.
- **There are two scenarios for the discharging procedure:**
- In case of regular wear, follow scenario A.**
- In case of overheating, follow scenario B.**

SERVICE INSTRUCTIONS

Discharging gas pressure

Warning!

Follow procedure thoroughly!

1. Clamp the gas spring in a vice (fitted with protective jaws). Unscrew the G1/8" cover screw (Q) with a 5 mm Allen wrench.

Scenario A: The DS spring appears to be OK (meaning, the piston rod is fully extended):

2a. Release the pressure by screwing the threaded end of the valve tool into the G1/8" Charge Port until the valve needle opens.

The valve (R) must not be unscrewed until both upper and lower gas chambers are empty, allowing the piston rod to be pushed in using an appropriate T-handle. Observe that Restrictor will disable pushing the piston out immediately unless M6 Service plug is open.

As long as hand force is sufficient to push the piston, the gas spring is considered emptied.

Only then should you unscrew the valve with the opposite end of the valve tool and remove the valve using the needle nose pliers.

Scenario B: The DS spring is jammed (meaning, the piston rod is not fully extended):

2b. Remove the warning tape (E) from below the upper C-groove to reveal the M6 Service Plug (F) on the opposite side to the G1/8" Charge Port.

Unscrew the M6 Service Plug (F) no more than 1 (one) complete turn using a 3 mm Allen wrench to evacuate all gas pressure.

Note! Do not attempt to remove the M6 Service Plug, as it is under high internal pressure.

Be prepared for piston rod extension movement as a result of discharging.

Keep the M6 Service plug open.

When the gas is discharged (no leakage from service port) please proceed with discharging of lower chamber.

Release the pressure by screwing the threaded end of the valve tool into the G1/8" Charge port until the valve needle opens.

The valve (R) must **not** be unscrewed until both upper and lower gas chambers are empty, allowing the piston rod to be pushed in and out using an appropriate T-handle.

As long hand force is sufficient to push the piston in and out, spring considers emptied.

Only then should you unscrew the valve with the opposite end of the valve tool and remove the valve using the needle nose pliers.

Now the M6 Service plug can be removed.

Disassembly

3. Remove the dirt protection ring (C) then tap in the guide (B) into the tube, using a socket and mallet until the lock ring (D) is exposed.

Remove the lock ring with the lock ring tool.

⚠ Warning! The lock ring could fly out, be sure to wear safety goggles!

4. Pull out the piston rod (A), including the DS piston (L) and guide (B), using a T-handle and then pour out the remaining oil.

5. Remove the guide ring (H), the two piston halves (G) and the guide (B) from the piston rod.

6. With the piston halves (G) removed, the DS Piston (L) can be pushed upwards to expose the lock ring halves (O). They can now be removed.

7. Remove the DS Piston (L) from the piston rod to expose the Piston O-ring (P) on the end of the piston rod. Remove and discard the old Piston O-ring as a new one is contained in the repair kit.

With the DS Piston (L) on the workbench, carefully disassemble the Piston seal (J) (making sure not to damage the sealing groove in the piston), the Check valves (N) (noticing which way round they should sit), the Mesh filter plug (I) (noticing that the mesh can/must be punctured with a screwdriver in order to pull it out) and finally the Restrictor (K) with Sealing washer (M).

Once disassembled, these parts can be discarded as replacements are contained in the Repair kit.

8. Save the piston rod (A), the tube (S), DS piston (L) and the piston halves (G).

Inspection

9. Clean the tube, piston rod, the DS piston and piston halves.

10. Closely inspect the inside of the tube and the piston rod. There should be no scratches or dents on the inside surface of the tube, the piston rod or the lock ring groove.

If these parts are scratched or damaged in any way, they should be replaced.



Assembly

11. Unpack the repair kit. Check to make sure that all parts are contained in the kit by comparing the contents to the picture in this Service instructions. Discard all parts that are to be replaced with new ones from the Repair kit.

12. Lightly lubricate and fit the Piston O-ring (P) onto the piston rod (A).

13. Assemble the Piston seal (J), the Check valves (N), the Restrictor (K) with Sealing washer (M) (using 10 Nm of torque) and the Mesh filter plug (I). The mesh should sit flush with the upper surface of the DS Piston. Observe correct orientation of the check valves! These valves must be assembled with O-ring end side as per previous illustration. Make sure the lock ring groove on the rod is fully exposed.

14. Fit the lock ring halves (O) onto the piston rod, then slide the DS Piston (L) downwards against the lock ring.

15. Fit the piston halves (G) and the guide ring (H) onto the piston rod.

16. Lightly lubricate the seals and the flex ring within the guide (B).

17. Fit the guide (B) onto the piston rod, making sure the piston rod scraper faces upwards towards the threaded hole end of the piston rod.

18. Lubricate the inside of the upper tube end to prevent damage to the guide O-ring.

19. Fill the tube with the appropriate amount of lubrication oil (see table below).

Model	Oil
DS 3000	20 ml
DS 5000	30 ml
DS 7500	40 ml

20. Insert the piston rod, guide and DS piston assembly into the tube. Tap down the guide (B) using a socket and rubber mallet until the lock ring groove is exposed.

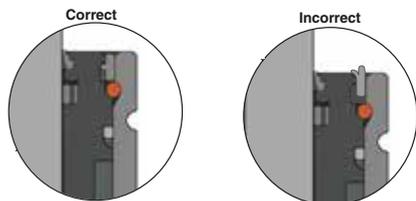
21. Fit the lock ring (D) into the groove in the tube by pushing one of the lock ring ends into the groove, steadying it with your thumb and then hit the ring inwards until it snaps into the groove. You can hear a clicking sound when the ring snaps into position.

22. Pull out the piston rod (A) and the guide (B) using the T-handle. Pull until the guide is flush with the tube end.

23. Fit a new DS Service Plug (F) into the side of the tube opposite the gas charge port using a 3 mm Allen key, tighten with 2 Nm torque.

24. Using the valve tool, fit the valve (R) in the charge port. Finger strength is enough to tighten the valve.

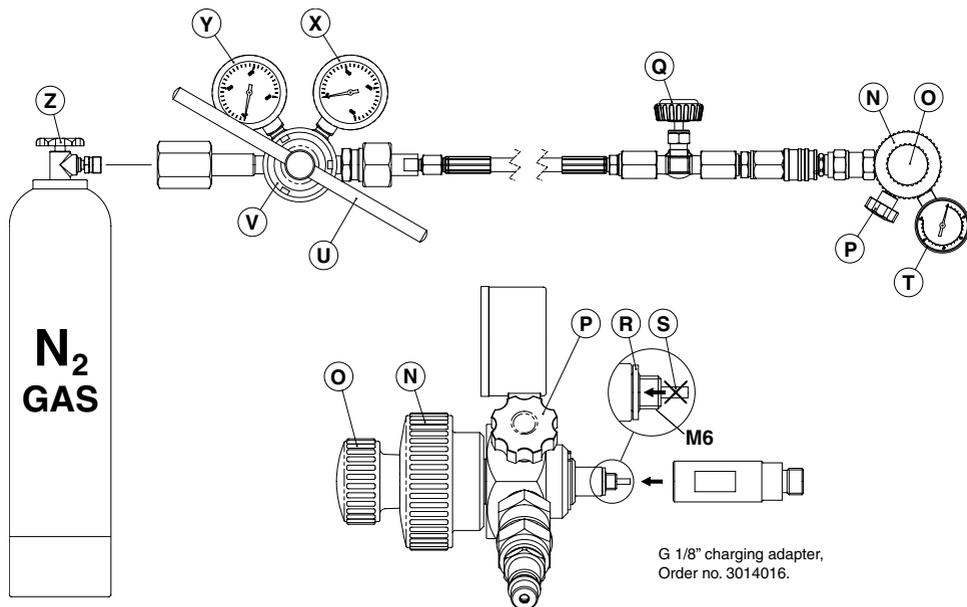
25. Oil and fit the dirt protection ring (C) so it is in contact with the lock ring (see picture below).



SERVICE INSTRUCTIONS

Charging gas

We recommend using a replenishing armature with pressure regulator.
(Order No. 3021298-0120).



26. Check that the evacuating valve (P) and the shut-off valve (Q) are closed (turn in a clockwise direction). The release pin (S) should be inside the M6 thread on the armature (turn knob (O) in a counter-clockwise direction).

27. Check that the M6 thread at the end of the armature is equipped with the sealing washer (R). Connect the G 1/8" charging adapter (3014016) to the replenishing armature.

28. Connect the replenishing armature to the gas spring, by means of knob (N), turned in a clockwise direction.

29. Open the nitrogen bottle using knob (Z). Regulate to the desired charging pressure with handle (U) on the regulator (V).

Note! Maximum charging pressure is 150 bar (2,175 psi).

The manometer (X) shows the charging pressure and manometer (Y) shows the bottle pressure.

30. Open the shut-off valve (Q) slowly on the armature and charge as slowly as possible. After charging, the manometer (T) shows the pressure supplied to the gas spring.

31. After charging, empty the gas inside the armature by first closing the shut-off valve (Q) and opening the bleed valve (P) until the gas is released.

32. Unscrew the armature fully using knob (N). Check to make sure that the valve does not leak. If the valve is leaking, it must be replaced. For safety, never lean over the valve!

33. Fit the cover screw (Q) on the gas spring, tighten with 5 Nm for G1/8" cover screw. Note that it has a sealing function and must always be fitted and tightened.

34. When finished with the armature, empty the gas inside the armature and hose by closing the nitrogen bottle using knob (Z) and opening bleed valve (P) and shut-off valve (Q) until all gas is released.