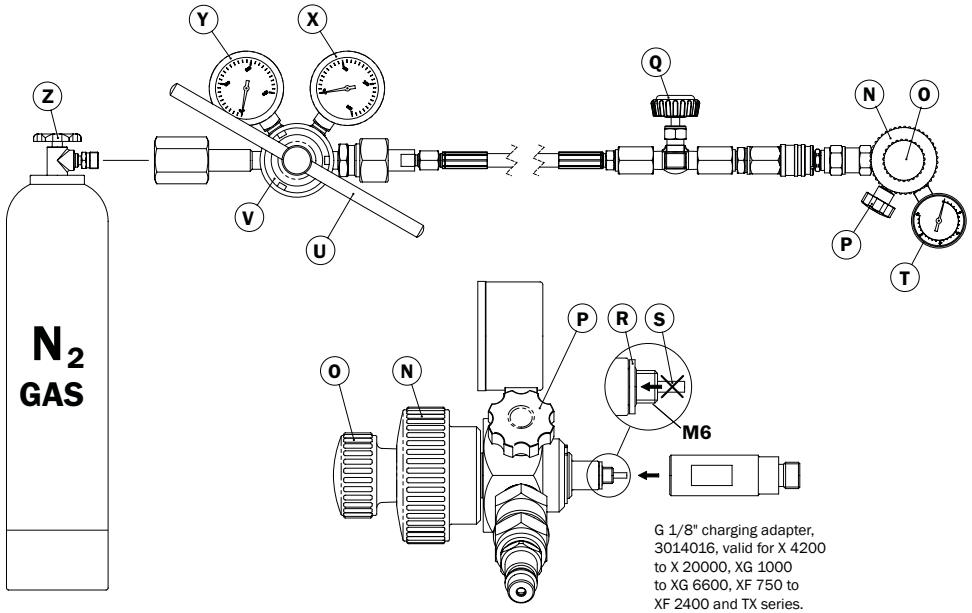
Charging gas

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



G 1/8" charging adapter, 3014016, valid for X 4200 to X 20000, XG 1000 to XG 6600, XF 750 to XF 2400 and TX series.

22) 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).

23) Check that the M6 thread at the end of the armature is equipped with the sealing washer (R). For G 1/8" port: connect G 1/8" adapter 3014016 to the replenishing armature.

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

25) 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 (2175 psi) for all models except X/XG 350 which has a maximum of 180 bar (2610 psi).

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

26) Open the shut off valve (Q) slowly on the armature and charge as slowly as possible.

Never lean over the gas spring during the charging.

After charging, the manometer (T) shows the pressure supplied to the gas spring.

27) 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.

28) 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!

29) Fit the cover screw (G) on the gas spring, tighten with a torque of 2 Nm (for M6 cover screw) and 15-18 Nm (for G1/8" cover screw). Note that it has a sealing function and must always be fitted and tightened.

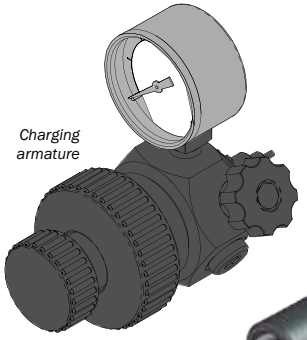
30) When finished with the armature, empty the gas inside the armature and hose by closing the nitrogen bottle using knob (Z) and opening bleed valve (P) and shut off valve (Q) until all gas is released.

SERVICE
INSTRUCTIONS
8100-2013-11

KALLER®
The Safer Choice

Gas spring models

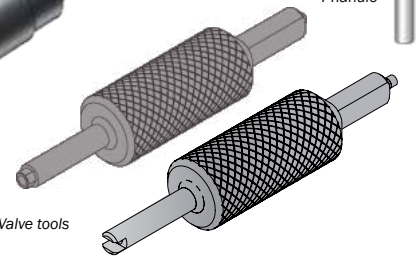
X/XG 350, X/XG 500,
X/XG/XF 750, TX 750,
X/XG/XF 1000, XMS 1000,
TX 1000, X/XG/XF 1500,
TX 1500, X/XG/XF 2400,
TX 2400, X/XG 4200,
TX 4200, X/XG 6600,
TX 6600, X 9500,TX 9500,
X 20000, TX 20000
MT 300 - MT 1000



Charging armature

M6 and G 1/8 charging adapters

T-handle



Valve tools

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Please Note!
Actual gas spring design may appear different from that shown here.

A) Piston rod
B)* Dirt protection ring
C)* Lock ring
D)* Guide
E) Tube
F)* Oil
G)* Cover screw
H)* Valve
J)* Wear Ring (TX-models only)
K)**Grease

* = Parts included in the repair kit
** = included only for repair kit models:
X/XG/TX 4200, X/XG/TX 6600, X/TX 9500, X/TX 20000 TX 750, TX 1000, TX 1500 and TX 2400.

⚠ Warning!

- Failure to exhaust all gas pressure prior to disassembling could result in serious injury.
- Maximum charging pressure :
  X/XG 350 = 180 bar (2610 psi)
  X/XG/XF 500 to 20000 = 150 bar (2175 psi)
  TX 750 to 20000 = 150 bar (2175 psi)
  MT 300 to 1000 = 150 bar (2175 psi)
- Use only pure nitrogen gas (N_2) for charging.
- Once the cover screw is removed, never lean directly over the valve. Always direct the valve port 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.
- Always wear protective equipment incl. safety goggles and rubber glooves, whilst servicing the gas spring in a well ventilated area. Avoid direct contact with gas spring lubricants and inhilation of any exhausting gases.
- Only specially trained personnel with good knowledge of the products should carry out the maintenance.
- The X/XG/XF 2400-016 and X/XG/XF 2400-019 springs are not recommended to be repaired as the lock ring is difficult to remove.

Disassembling

1) To obtain an easy working position, clamp the spring in a vice (use protective jaws). Clamp the gas spring in a leaning position (about 30°) with the piston rod upwards.
2) Unscrew the cover screw (G) on the tube using a 3 (M6) or 5 (G1/8") mm Allen key respectively. *Note: The XG 350, XG/XF/TX 750 and TX 1500 has a special M6 - G1/8" adapter, only to be removed when using a hose system with G1/8" adapters.*
3) Empty all gas from the spring. Release it by screwing the threaded end of the valve tool into the gas port until the valve opens.

⚠ **Warning! The valve (H) must not be unscrewed until the piston rod can be pushed down by hand or with a rubber mallet.**
Once the gas is released use the opposite end of the valve tool to unscrew the valve. Pull the valve from the port with a pair of needle nose pliers.

4) Tap the guide (D) into the tube, using a socket and rubber mallet, until the lock ring (C) is exposed. Remove the dirt protection ring (B) which becomes loose during the procedure.
5) Remove the lock ring (C) using the lock ring tool.

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

6) Pull out the piston rod (A) and the guide (D), using the T-handle.
7) Remove the guide (D) from the piston rod.
8) Remove the wear ring (J) from the piston rod (TX models only).
9) Save the piston rod (A) and the tube (E).

Inspection

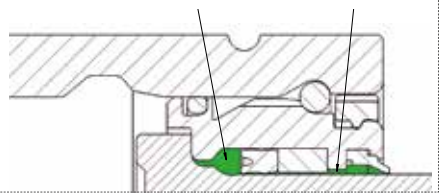
10) Thoroughly clean the tube and the piston rod.
11) Closely inspect the piston rod and the cylinder tube. There should be no scratches or dents on the inside surface of the tube, the piston rod or the lock ring grooves. If these parts are scratched or damaged in any way, then they should be replaced.

Assembly

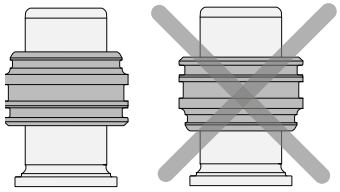
⚠ **Warning! As a precaution before you begin to assemble the gas spring, gently place the piston rod into the tube. Be careful not to damage the safety plug in the bottom of the gas spring.**

- **If the gas spring is equipped with a safety plug the piston rod top should be raised 1-2 mm from the tube´s top surface.**
- **If there is no safety plug the piston rod should be flush with the top of the tube.**

12) Unpack the repair kit. Make sure the correct repair kit is being used.
13) **For all model sizes 350 to 20000:** lightly lubricate the guide's (D) dynamic seal, guide ring(s), rod scraper and static o-ring seal with oil (F).
For all TX sizes and all X/XG 4200 to 20000: lightly lubricate the guide's (D) static o-ring seal with oil (F). Then fill the internal cavities of the guide (D) with grease (K) as shown in the picture below.



14) Fit the guide (D) on the piston rod (A) so that the small diameter of the guide, is positioned toward the top of the piston rod (see picture below).



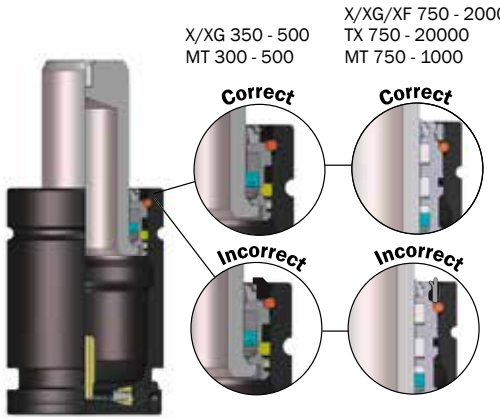
Correct **Incorrect**

Model	Oil	Grease
X/XG 350, MT 300; stroke 10 - 16 mm	2 ml	N/A
X/XG 350, MT 300; stroke 19 - 38 mm	3 ml	N/A
X/XG 350, MT 300; stroke 50 - 125 mm	4 ml	N/A
X/XG/MT 500; stroke 10 - 16 mm	2 ml	N/A
X/XG/MT 500; stroke 19 - 38 mm	3 ml	N/A
X/XG/MT 500; stroke 50 - 125 mm	4 ml	N/A
X/XG/XF/MT 750, all stroke lengths	5 ml	N/A
TX 750, all stroke lengths	8 ml	YES
X/XG/XF/MT 1000, all stroke lengths	7 ml	N/A
XMS 1000, all stroke lengths	7 ml	N/A
TX 1000, all stroke lengths	10 ml	YES
X/XG/XF 1500, stroke 13 - 25 mm	15 ml	N/A
X/XG/XF 1500, stroke 32 - 125 mm	20 ml	N/A
TX 1500, all stroke lengths	25 ml	YES
X/XG/XF 2400, stroke 16 - 38 mm	20 ml	N/A
X/XG/XF 2400, stroke 50 - 125 mm	25 ml	N/A
TX 2400, all stroke lengths	45 ml	YES
X/XG 4200, all stroke lengths	30 ml	YES
TX 4200, all stroke lengths	50 ml	YES
X/XG 6600, all stroke lengths	60 ml	YES
TX 6600, all stroke lengths	70 ml	YES
X 9500, all stroke lengths	80 ml	YES
TX 9500, all stroke lengths	80 ml	YES
X 20000, all stroke lengths	120 ml	YES
TX 20000, all stroke lengths	80 ml	YES

15) Oil around the inside of the upper end of the tube to prevent damage to the O-ring on the guide.
16) Fill the spring with the appropriate amount of oil (see table below left). Before the oil is poured into the tube, clamp the gas spring in a leaning position (about 30°) with the opening facing upwards.
17) Insert the piston rod and guide into the tube. Tap down the guide (D) straight in to the tube, using a socket and rubber mallet until the lock ring groove is exposed.
18) Fit the lock ring (C) into the groove in the tube by first pushing one end of the lock ring ends into the groove. Hold down the rest of the lock ring flat to the tube's upper surface. Lastly hit the exposed end of the lock ring inwards using a rubber mallet until it snaps into the groove. You can hear a clicking sound when the ring snaps into position.
19) Pull out the piston rod (A) and the guide (D) using the T-handle. Pull until the guide is in line with the tube end.

⚠ **Warning! If the top of the guide is not in line with the top of the cylinder tube, the assembly is incorrect. DO NOT charge the spring. Charging an incorrectly assembled spring could result in serious injury.**

20) Using the valve tool, fit the valve (H) into the charging port. Finger strength is enough to tighten the valve.
21) Oil and fit the dirt protection ring (B) so that it makes contact with the lock ring (see picture below).



The function of the dirt protection ring is to prevent dirt from penetrating into the gas spring and also prevent the guide from falling into the tube when the spring is uncharged.