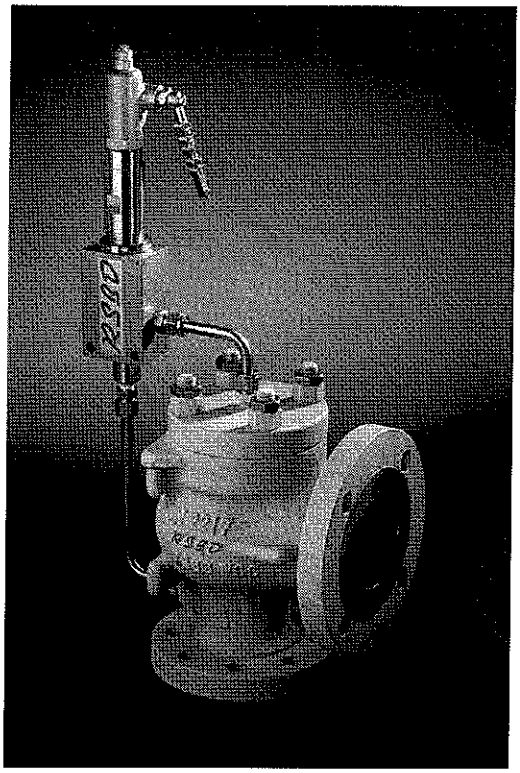
SARASIN-RSBD



78 SERIES SAFETY RELIEF VALVE

INSTALLATION & MAINTENANCE

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SAFETY RELIEF VALVES INSTALLATION & MAINTENANCE

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1. STORAGE

- It is recommended that valves be stored in a clean area and protected from weather, dust, sand or similar contamination sources; in their original packing whenever possible.
- Banks and plastic covers shall not be removed until actual assembly commences.
- Protect flange gasket seating and threads from damage by impact. Handle carefully.
- Before installation, **VERIFY THE ABSENCE OF CLAMP OR TEST GAG ON VALVE AND / OR PILOT**.

2. INSTALLATION INSTRUCTIONS

This chapter reminds briefly specifications from standard NF E 29-421 and API RP 520. In any case refer to those standards and to applicable regulation.

2.1. INLET PIPING

- It should be as short as possible. The safety valve must be installed as near as possible from the protected vessel.
- Never install a valve on a pipe with ND smaller than inlet ND.
- Valves should be protected from vibrations transmit by the installation
- **Built up pressure drop between flow source and the location of the valve should not exceed 3% of the valve set pressure. This pressure drop must be calculated under actual flow conditions.**

2.2. OUTLET PIPING

- Nominal diameter of the outlet pipe must be higher than the one of the valve outlet
- **THE VALVE SHOULD NOT SUPPORT THE OUTLET PIPE SYSTEM.** Any stress generated by the system can be a cause of leakage and troubles during operation.
- On liquids, the valve must discharge downwards.
- On gases and steam, the discharge should be upwards. In this case, it is essential that a drain be fitted at the lowest part of the elbow.
- The connecting bend to the vertical pipe should be fitted as close as possible to the valve outlet flange. Bolted to the valve, radius must be equal or higher than 2.5 D.
- Each safety valve should have its own individual outlet piping. Unless, the outlet manifold section should be not less than the total section of all valves outlet orifices. The sum of the built up backpressure shall be less than the lowest available backpressure.
- Contrary to spring loaded safety relief valves, the built up back pressure can be more than 10% of the set pressure with no influence on the functionning If it can exist a back pressure higher than the inlet pressure, the pilot operated valve must be equiped with a bacflow preventer.

2.3. GENERAL RECOMMENDATIONS

- Be sure that covers and protections have been taken off.
- Handle the valve carefully to not damage flange, tubing and accessories.
- Pipes and vessels containing the fluid, must be cleaned carefully to eliminate dust and metallic particles. Interposition of such particles between seat and disc will create strong damages Small leakage will cause a bad working and erosion of seat as fast as the pressure is high.
- The safety valve should be installed in a vertical position. Wearing of guide will be less then For low pressure valves this is peremptory.

- The valve must always be accessible and easily removable. Working space around is required.

3. VALVE MAINTENANCE

3.1. GENERAL PRESCRIPTION

VERY IMPORTANT :

- Before removing a safety valve from a pipe, circuit or tank, it is essential to check that no pressure remains by purging the system. A pressure gauge reading is not a sufficient check of absence of residual pressure
- After dismantling, check the state of seats (disc/nozzle) and eventually proceed to lapping
- Clean and degrease and dry with appropriate solvent.
- Use the appropriate torque value particularly for special gaskets.

3.2. DISASSEMBLING OF THE MAIN VALVE

- Unscrew the bolts item 12
- Remove the cover
- Pull the piston and guide using if necessary lifting eyes (M8)
- For elastomeric seats, remove washer and seat
- **If pilot maintenance is necessary, use appropriate notice.**

3.3. LAPPING (METAL / METAL SEATS ONLY)

- If a safety valve begins to leak after openings, it should be reconditioned by lapping disc and nozzle seats.
- This operation must be carried out by skilled labour. If this is not possible, the valve should be returned to us or to an approved repairing company (network QS for instance).
- **The disc must never be lapped on its seat (or nozzle).**
- Before lapping, check that the parts are free from pitting or burrs which may damage the hone or leave traces on completion of the lapping operation. Otherwise, repairing on lathe machine is necessary - (0,5 To 1 mm on each part stellited or not) in order To respect the profile and the perfect perpendicularly between tight surface and the main axis of the piece
- Parts must be strictly cleaned before lapping.

3.3.1. HAND LAPPING :

3.3.1.1. DISC :

- Spread a light coating of lapping paste on the hone. Make a rapid movement in the form of a figure 8, until you get a clean surface. Add lapping paste from time to time. The whole surface of the seating should have an even appearance with no trace of scoring. Clean the disc and the hone with a solvent. For finishing use a much finer grained paste. Proceed as above, but check aspect after 10 minutes. Repeat the operation (do not recoat the hone just spread the remainder of the paste with a finger) until you obtain an uniform and glazed seat. Clean the disc and the hone with a solvent and dry them

3.3.1.2. SEAT :

- Put the seat on a flat area, seat upward, and proceed as above

3.3.2. MACHINE LAPPING :

- Use lapping paste diluted in oil. Surface brightness can only be obtained by hand lapping. Machine lapping requires dismantling of SEAT and DISC

3.4. SPARE PARTS

- After an intensive use, according to working conditions, a safety valve can require reconditioning. This work should be done by us or by an qualified person.
- However, in order for the user to repair the safety valve as quickly as possible we recommend to order spare parts with the valves. Only original parts shall be used.

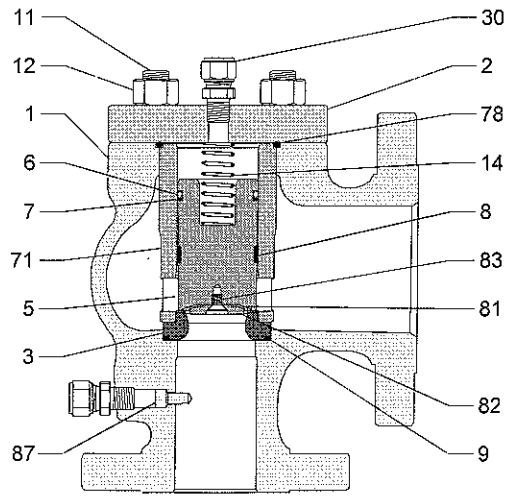
IMPORTANT : On the nameplate of the valve there is a serial number. You must give this references to order spare parts

3.5. REASSEMBLING OF THE VALVE

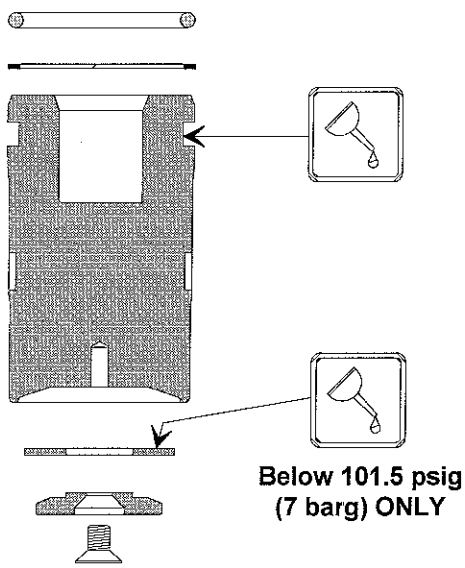
- Parts to be assembled should be absolutely clean, degreased and dried.
- We recommend to grease all thread and contact parts except guiding piston/guide and seat between nozzle and disc. Use grease according to service (oxygen, food ...)
- When using a soft good kits, change **every** possible parts : do not keep old parts if new are proposed
- Proceed in the opposite of dismantling (see following figures)
- Take care of gaskets with lips (spring in direction of pressure), piston rings, pipes and flexible.
- Grease all the O-rings.
- Up to 7 barg (101.5 psig) we recommend to slightly grease the upper part of the elastomeric seat (contact with the piston) but **not above.**
- **For Safety valves on steam, if buffer a buffer tank is present, it need to be feed (& dome) with demineralised water.**

3.5.1. Figures

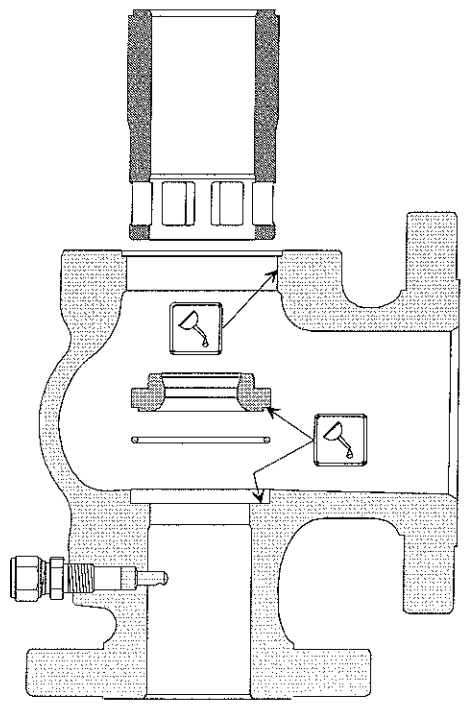
This symbol means that grease must be applied.



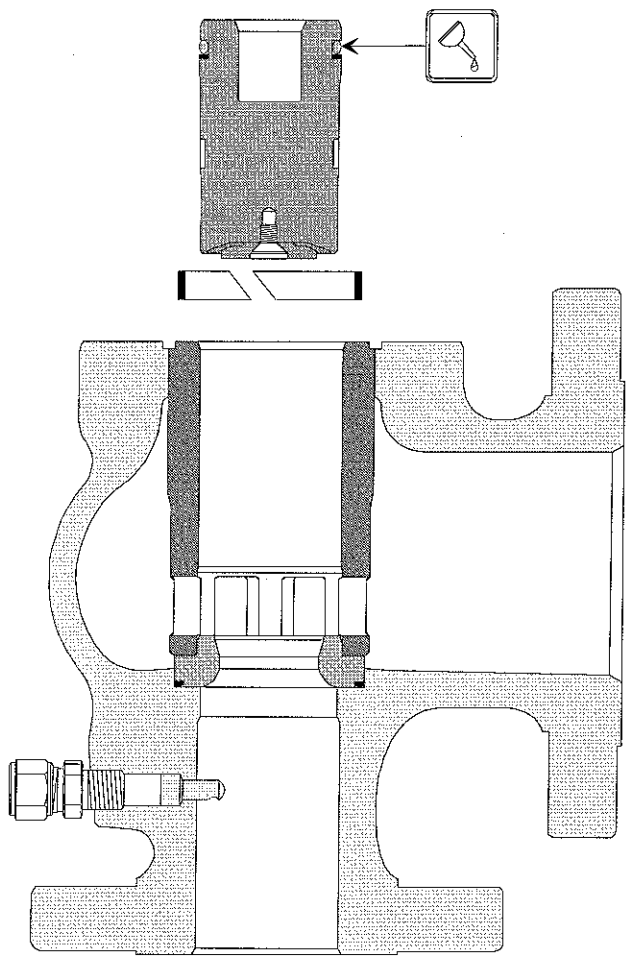
3.5.2. Assembling of the piston



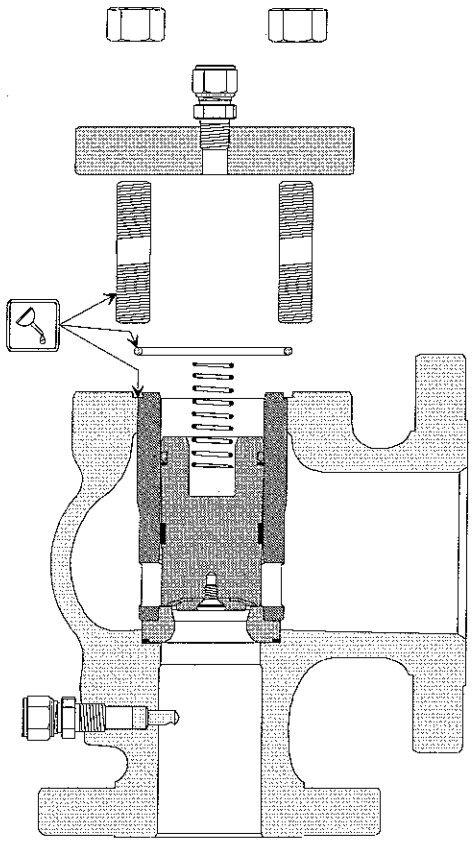
3.5.3. Mounting of the seat and guide



3.5.4. Placing of the piston



3.5.5. End of assembling



4. CHECKING OF THE SET PRESSURE

- Set first the pilot alone using the appropriate maintenance manual.
- Control the safety valve set pressure on a suitable test bench and with calibrated manometers.
- For safety valves on gases, use dry oil-free air or nitrogen.
- For safety valves on liquids, use water or air.
- SET PRESSURE :
  - In any case it is possible to modify within ±5% the original set pressure. For bigger modification, consult RSBD But we recommend to consult RSBD for all modifications of working conditions

IMPORTANT : To modify the set pressure, decrease the inlet pressure of more than 50%.

5. TIGHTNESS TEST

- This check is done according to standard API 527 or KELLOG M24.152.
- After 3 or 4 openings, reduce the pressure to 90% of the set pressure, close the outlet and measure the leakage according to the standard