

# INSTALLATION AND MAINTENANCE INSTRUCTIONS

## SRV8 – SAFETY RELIEF VALVES

### GENERAL

- These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.
- The installation procedure is a critical stage in the valve life time and care should be taken to avoid damage to the valve or equipment.
- Safety valves are designed to protect pressurized systems from overpressure. They give their maximum performance only when the equipment associated with them is correctly sized and installed in accordance with our recommendations.

### Note:

- Current regional safety regulations should be taken in to account and followed, while doing the installation and maintenance work.
- Handling, installation and maintenance work must be carried out by trained personnel. A supervisor must follow and check all activities.
- For the problems that cannot be solve with the help of this instructions, please contact the supplier or the manufacturer.
- The manufacturer reserves the right to change the design and material of this product without notice.
- If necessary to perform hydrostatic test on the equipment/installation be aware of the limits according to the table below. The internal mechanism cannot be subject to the hydrostatic test of the body.



CE MARKING (PED – European Directive)	
Sizes	Category
All sizes	4

**CE Marking:** This product has been designed for use on liquids, steam, air and other gases which are in Group 2 and 1 (only oxygen, others under request) of the European PED-Pressure Equipment Directive in use and it complies with those requirements.

LIMITING CONDITIONS	
Valve model	SRV8
Body design conditions	PN16
Maximum upstream pressure	16 bar @ 180 °C
Minimum operating temperature	- 40 °C
Maximum overpressure	10 %
Maximum blowdown (liquids)	20 %
Maximum blowdown (gas/steam)	15 %

Higher and lower limits on request.





#### ATTENTION

- At start up, the presence of small particles in the fluid (dirt, scale, weld splatters, etc) may cause an imperfect closure of the seat. If this occurs, proceed to an accurate cleaning.
- Do not touch the equipment without appropriate protection during working operation because it may conduct heat if the used fluid is at high temperature.
- Before starting maintenance be sure that the equipment is not pressurized or hot. Even if upstream and downstream isolating valves have been closed care should be taken since fluid under pressure may be trapped between them.
- The equipments must be used within the working temperature and pressure limits laid down for them, otherwise they may fail (refer to nameplate and/or IS- Information Sheet).
- Manual handling of products may present a risk of injury. You are advised to assess the risks taking into account the task, the individual, the load and the working environment.
- Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine ADCA replacement parts.
- Do not remove the nameplate attached to the equipment. Serial number and other useful information is stamped on it.
- Do not apply the valve for oxygen service, if it hasn't been specifically manufactured for that purpose.
- During the assembly work, apply protective measures against dirt.
- The equipment should be carefully handled, to prevent any damage on the machined surfaces.
- Correct installation of the equipment is full responsibility of the contractor
- Valves are designed to be applied in places protected from exposure to weather.
- We recommend special constructions or protective measures for applications on the outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapors, etc).
- Valves with faults that may compromise safety must be reported immediately.
- Never size the valve according to the pipe diameter in which it has to be fitted but according to the required actual flow and set pressure.

#### CLEANING AND PACKING

- This equipment is packed by a proper machine with a special film used by food industry according to EC No 1935/2004.
- These equipments are degreased and cleaned ultrasonically.
- Special degreasing is performed under request for oxygen applications.

#### TRANSPORT AND STORAGE



#### ATTENTION

- Handling and lifting of materials should be made with adequate equipments.
- The valves and equipments should be protected from impacts and forces during transportation and storage.
- The manufacturer doesn't assume the responsibility of damaged equipments due to inappropriate handling during the transportation and storage.

## INSTALLATION



### ATTENTION

- Account for over pressure conditions, according with the local laws or standards.
- Valve mountings such as actuators, handwheels, hoods must not be used with other purpose than the one they were built for (e.g. climbing aids or as connecting points for lifting gear)
- The valve installation above the food area machinery or near unsealed food may not be allowed therefore applicable standards and regulations must be complied.
- Take care with any hazards and precautions to be considered based on the system medium involved, that may represent a health, safety or environmental risk.
- The manufacturer doesn't assume the responsibility for damaged valves due to welding activities during installation that may compromise the valve behavior and design characteristics.
- For the problems that cannot be solve with the help of this instructions, please contact the supplier or the manufacturer.

### Installation area requirements:

- The installation area should have easy access and provide enough space for maintenance and removing operations.
- The installation area should have the necessary firing system to prevent damage of the equipment due to over temperature/pressure caused by fire.

### Supply and blow-off lines

- We recommend the safety valve supply line to be as short and straight as possible, with a diameter not smaller than the valve inlet, self-draining and with rounded edges at the entrance to avoid turbulence.
- These cares should contribute to fulfill the recommended criteria of a pressure loss not higher than 3% of the set pressure or one third of the blowdown, whichever is the less, in the valve inlet.
- The valve should be installed preferably where the flow is more stable and turbulence free.
- The blow off line should designed in order to assure a build-up back pressure as low as possible preventing it to exceed the recommended limits.
- To achieve this the blow off line should be as short as possible, with a diameter equal or higher than the valve outlet, with proper drainage, be made of proper materials to prevent fractures due to freezing while discharging and properly supported and free from strain and vibrations.
- If condensation can occur, the blow-off line must have a slope to a drainage connection (at the lowest point) assuring a proper drainage.
- The discharged fluids should be directed in such a way to avoid risk to humans, animals and equipments/ infrastructures. Generally, vapours and gases are conducted to rise and liquids to drain through a slope into draining lines properly dimensioned and designed.
- The safety valves discharge of dangerous/ contaminating fluids that may represent a risk to humans, animals and the environment, should be done into containing systems, according to applicable standards and regulations assuring safety. Blow-off lines should be designed in order to comply.

### Bursting discs in combination with safety valves

- If the safety valve is installed in combination with a bursting disc, care should be taken to assure it won't cause the safety valve to be ineffective.
- The bursting disc must comply with safety requirements.
- Bursting discs must be fragment free in case of rupture.
- Any space existing between the bursting disc and the safety valve inlet, must be depressurized or monitored.

## Procedure:

- Prior to install check that the product is suitable for the intended application: materials and pressure/temperature ratings.
- Before installing remove, plastic covers placed on flanges or connection ends. The equipment has an arrow or Inlet/Outlet designations. Be sure that it will be installed on the appropriate direction.
- Take care with jointing material to ensure that none may be permitted to block or enter the valve.
- In case of using Teflon tape (for screwed connections), avoid rolling it till the edge, because it can get cut and migrate to the valve interior, blocking or causing a defective sealing.
- Safety valves are recommended to be fitted with the center line of the valve in a vertical position to ensure that the best results are obtained.
- The valve is designed for sanitary service and it is assumed that the fluid is clean and filtrated. If not, a protection strainer should be used upstream of the valve.
- Do not over-tighten clamps because that can damage the gasket.
- External stresses that may be induced by the system due to pipe expansion, etc, can affect this product. The necessary precautions are recommended during the systems design and equipment assembly.
- The valve pipework should be properly supported and free from strain and it should not be subjected to undue surges of pressure.
- Assure the safety valve is installed in a vibration free system, otherwise protective measures should be applied.
- For steam installations we strongly recommend that the safety valve is positioned where condensation is unable to collect or that, alternatively, separators and steam traps are fitted so that the pipework drains correctly. The start-up condition should be considered.
- Flush the system to assure there are no impurities or foreign particles that migrate to the safety valve.

## START UP



- Current regional safety regulations should be taken in to account and followed.
- Protective insulation and warning notice may be required.
- Until the startup of an existing or a new plant, the following must be checked:
  - All works are completed.
  - The valve is correctly installed.
  - All the necessary safety devices have been installed.
- **At start up, the presence of small particles in the fluid (dirt, scale, weld splatters, joint particles, remains of Teflon tape, etc) may cause an imperfect closure of the seat. If this occurs, proceed to an accurate cleaning.**
- **Protection varnishes from pipes and flanges, fats, leftover paint, graphite, etc, should also be carefully clean, because they can be dissolved in the fluids (like steam) blocking the regulation elements after the first service stop.**
- During operation high flow noises can be heard.

## Procedure:

1. Make sure the safety valve outlet is clear.
2. Start the system slowly and increase the pressure gradually till the working pressure (below set pressure).
3. Let the system stabilize and readjust if required.
4. Carefully check the system connections and the safety valve for any leaks.
5. The valve is ready.

### Periodical checking:

- 24 hours after the start up, it is recommended to check pipe connections and the valve for leaks and retighten the connections if necessary.

### INSPECTION/ MAINTENANCE



- Current regional safety regulations should be taken in to account and followed.
- Maintenance work should only be performed by authorized personal and is fully responsibility of the contractor and it must assure all personal are aware of the dangerous and risks involved.
- During safety valves blow-off high flow noises can be heard. Protective measures should be applied.
- Take care with any hazards and precautions to be considered based on the system medium involved, that may represent a health, safety or environmental risk
- Lubrication must be avoided for oxygen service. When it's necessary, only the lubricants recommended by the manufacture should be used.

### Procedure:

- We recommend safety valves to be serviced as necessary according to applicable regulations and standards.
- They should be checked periodically (for steam generators we recommend at least monthly), to verify if they are operating correctly by using the test gag (if applicable) to make them blow-off and check if the moving parts are working properly. A satisfactory reseating without leaks should also be verified.
- If there's any object, impurities or clog on the valve proceed as follows:
  1. Depressurize the system and wait till the temperature is atmospheric.
  2. Vent the safety valve.
  3. Drain the blow-off line (if applicable).
  4. Remove sanitary clamps or other type of connection used if necessary.
  5. Proceed to accurate cleaning operations removing the impurities and inspect the valve for any other visible faults.
  6. Replace and tighten the clamps (make sure that all gasket faces are clean and always use a new gasket).
  7. Consider the start-up conditions.

**Note:** Do not open the safety valve for repairs/ cleaning. Only the manufacturer or authorized technicians by the manufacturer can perform those tasks. If the valve needs to be disassembled for internals cleaning, comply with the internal cleaning procedure mentioned further ahead in these instructions.

- If the system fluid is sensible in such a way that an accurate cleaning must be performed every time the valve open or leaks (e.g. food fluids, pharmaceuticals, etc.), a more frequently inspection should be done with a time period according to the operators experience or specifications.
- In case of blow-off or leak, and depending on specifications, the cleaning could be an immediate demand or can be executed in the next programmed cleaning shift.
- Apart from these occasions, to maintain the demanded hygiene and disinfection status a cleaning must be done with a frequency and procedure according to relevant hygiene regulations/ standards or costumer specifications. The environmental conditions should also be considered.
- The cleaning products and disinfectants must be chosen considering the compatibility with the valve materials. In case of having any doubts please consult the manufacturer.
- For further information refer to the relevant SRV brochure or consult our Sales Office.

## INTERNAL CLEANING



### ATTENTION

- Current regional safety regulations should be taken in to account and followed.
- This work should only be performed by authorized personal and is fully responsibility of the contractor and it must assure all personal are aware of the dangerous and risks involved.
- Wear suitable protective equipment.
- During safety valves blow-off high flow noises can be heard. Protective measures should be applied.
- Secure the valve spindle to avoid twisting since can damage the sealing surfaces.
- Check and comply with the valve spring pressure range.
- Take care with any hazards and precautions to be considered based on the medium involved that may represent a health, safety or environmental risk
- When dismantling the valve care should be taken since the spring is under tension and may go off causing injuries.
- The cleaning utensils must not compromise the components integrity as well as the surface finish. They should also don't leave any fibers or residues behind. Always check if they are in proper conditions before use.
- The detergents and disinfectants should be compatible with the valve materials.

### Procedure:

1. Depressurize the system and vent the valve
2. Break the valve seal.
3. Disassemble the cap (n°22).
4. Secure the valve spindle (n°6) from twisting.
5. Release the spring tension by turning the adjusting screw (n°20) anti-clockwise.
6. Disassemble the clamps (n°23) and the bonnet (n°19).
7. Proceed to an accurate cleaning and disinfection of the clamp (n°23), if required, with special attention to screw connections.
8. Remove the spring plates (n°17), the split ring (n°16) and spring (n°18).
9. Remove the valve plug assembly, the valve seat (n°24) and inspect the valve seating surfaces and the bellows for any faults. If necessary proceed to an accurate cleaning, disinfection and sterilization. Special care should be taken to the bellows (n°9) spaces. Those can be cleaned with a soft brush, for example.
10. Clean both inside and outside remaining parts of the valve.
11. Once everything is dried, reassemble the valve plug assembly, the valve seat, and don't forget to change the o-rings (n°12) if required.
12. Reassemble the spring set in reverse order.
13. Reassemble the bonnet (n°19) and clamps (n°23).
14. Secure the valve spindle (n°6) from twisting.
15. Slowly pressurize the system while tuning the new desired set pressure by turning the adjusting screw (n°20) clockwise (increase set pressure) or anti-clockwise (decrease set pressure) while checking the measured pressure. Wait till the pressure stabilizes and readjust if necessary.  
**Attention:** while doing this procedure the valve may blow-off so care should be taken.
16. Once the set pressure is tuned install the cap (n°22).
17. An authorized entity must confirm the set pressure and reseal the safety valve.
18. The valve is ready!

## SETTING PRESSURE



- Current regional safety regulations should be taken in to account and followed.
- This work should only be performed by authorized personal and is fully responsibility of the contractor and it must assure all personal are aware of the dangerous and risks involved.
- During safety valves blow-off high flow noises can be heard. Protective measures should be applied.
- Secure the valve spindle to avoid twisting since can damage the sealing surfaces.
- Check and comply with the valves spring pressure range.

### Procedure:

1. Break the valve seal.
2. Disassemble the cap (n°22).
3. Secure the valve spindle (n°6) from twisting.
4. Set the new desired set pressure by turning the adjusting screw (n°20) clockwise (increase set pressure) or anti-clockwise (decrease set pressure) while checking the measured pressure. Wait till the pressure stabilizes and readjust if necessary.

**Attention:** while doing this procedure the valve may blow-off so care should be taken.

5. Once the set pressure is tuned assemble the cap (n°22).
6. An authorized entity must confirm the set pressure and reseal the safety valve.
7. The valve is ready!

## REPLACING THE SPRING



- Current regional safety regulations should be taken in to account and followed.
- This work should only be performed by authorized personal and is fully responsibility of the contractor and it must assure all personal are aware of the dangerous and risks involved.
- Wear suitable protective equipment.
- During safety valves blow-off high flow noises can be heard. Protective measures should be applied.
- Secure the valve spindle to avoid twisting since can damage the sealing surfaces.
- Check and comply with the valves spring pressure range.
- Take care with any hazards and precautions to be considered based on the medium involved that may represent a health, safety or environmental risk
- When dismantling the valve care should be taken since the spring is under tension and may go off causing injuries.

**Procedure:**

1. Depressurize the system and vent the valve
2. Break the valve seal.
3. Disassemble the cap (n°22).
4. Secure the valve spindle (n°6) from twisting.
5. Release the spring tension by turning the adjusting screw (n°20) anti-clockwise.
6. Disassemble the clamps (n°23) and bonnet (n°19).
7. Remove the spring plates (n°17), the split ring (n°16) and spring (n°18).
8. Take the chance to remove the valve plug assembly to inspect the valve seating surfaces and the bellows. If necessary proceed to an accurate cleaning according to the Internal cleaning procedure in these instructions. Carefully do the same with the valve seat (n°24).
9. Reassemble the valve seat and plug assembly (change the o-rings (n°12) if required).
10. Reassemble the spring set in reverse order installing the new spring.
11. Reassemble the bonnet (n°19) and clamps (n°23).
12. Secure the valve spindle (n°6) from twisting.
13. Slowly pressurize the system while tuning the new desired set pressure by turning the adjusting screw (n°20) clockwise (increase set pressure) or anti-clockwise (decrease set pressure) while checking the measured pressure. Wait till the pressure stabilizes and readjust if necessary.  
**Attention:** while doing this procedure the valve may blow-off so care should be taken.
14. Once the set pressure is tuned install the cap (n°22).
15. An authorized entity must confirm the set pressure and reseal the safety valve.
16. The valve is ready!

**TROUBLESHOOTING**



- If the malfunctions cannot be solved with the help of the following chart, please consult the manufacture.
- Some of these faults may only occur in some models.

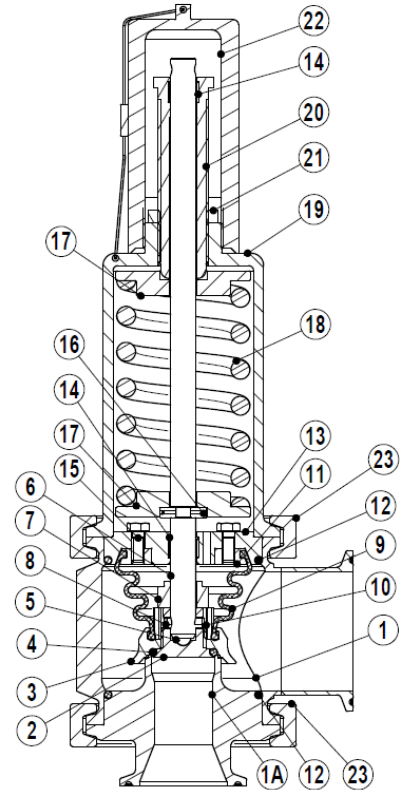
**TROUBLE SHOOTING CHART**

FAULT	POSSIBLE REASON	SOLUTION
Leakage from cover	Broken bellows	Replace
Valve seat leaking	Impurities stuck between the valve plug and seat surface	Blow-off the valve to remove impurities
	Seat sealing surface damaged	Contact the manufacturer for seat repair
	Soft plug sealing o-ring scored	Replace



## SPARE PARTS LIST

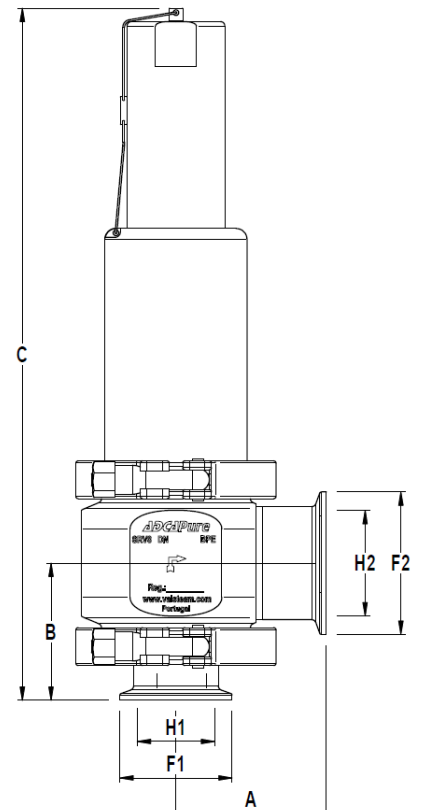
MATERIALS		
POS. Nº	DESIGNATION	MATERIAL
1	Valve body	AISI 316L / 1.4404
1A	Seat	AISI 316L / 1.4404
2	* Seat disc	AISI 316L / 1.4404
3	Lifting bell	AISI 316L / 1.4404
4	* O-ring	EPDM
5	Ball	AISI 316 / 1.4401
6	Spindle	AISI 316L / 1.4404
7	Lift stopper	AISI 316L / 1.4404
8	* Pin	AISI 301 / 1.4310
9	* Bellows	EPDM
10	Fixing nut	AISI 316L / 1.4404
11	Bellows fixing ring	AISI 316L / 1.4404
12	* O-ring	EPDM
13	Guide bushing	AISI 316L / 1.4404
14	Bushing	PTFE + 15% GF
15	Bolts	Stainless Steel A2 - 70
16	Split ring	AISI 316L / 1.4404
17	Spring plate	AISI 316L / 1.4404
18	* Spring	AISI 302HT / 1.4310
19	Bonnet	AISI 316L / 1.4404
20	Adjusting screw	AISI 316L / 1.4404
21	Lock nut	AISI 316L / 1.4404
22	Cap	AISI 316L / 1.4404
23	Clamp	AISI 316 / 1.4401



\*Available spare parts.

Remarks: FDA/USP Class VI seals certificate on request

All valves have a serial number. In case of non standard valves this number must be supplied if spare parts are ordered.



DIMENSIONS (mm) ASME BPE									
SIZE (Inlet x Outlet)	d0	A	B	C	F1	F2	H1	H2	WGT. (kg)
3/4" x 1"	10	62,5	49,5	279	25	50,5	15,8	22,1	4,3
1" x 1 1/2"	13	62,5	53,5	281	50,5	50,5	22,1	34,8	4,4
1 1/2" x 2"	23	67,5	61,5	311	50,5	64	34,8	47,5	5,3

## PRODUCTS RETURNING



### ATTENTION

- Information regarding any hazards and precautions to be considered because of contaminating fluids and residues or mechanical damage that may represent a health, safety or environmental risk, must be provided in writing by the distributors and customers when returning products to Valsteam ADCA engineering.
- Health and safety data sheets regarding substances identified as hazardous or potentially hazardous must be provided with the information mention above.



### ATTENTION

- **LOSS OF WARRANTY:** Total or partial disregard of above instructions involves loss of any right to warranty. Immediate loss of warranty occurs if the valve seal is removed.