Safety valve

Hygenic Pressure

SHP

Instructions

Reference: SHP_NOT_EN

Version B

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1 INTRODUCTION

1.1. The manufacturer

SERVINOX is a specialist, making process equipment for the brewing, food, cosmetic and chemical industries.

Skill and knowledge about process equipment:
In areas such as the protection of tanks, sampling, injection of gas in liquids, scouring or cleaning pipes with patented products.

SERVINOX is certified ***ISO 9001: 2008*** and makes products complying with the following applicable standards and directives:

- Pressure Equipment Directive ***(PED)*** **2014/68/EU**
- European Directive concerning Devices for Use in Explosive Atmospheres ***(ATEX) 2014/34/EC***
- Hygienic standard for manufacturers US 3A

We are an active member of the association ***EHEDG France*** (hygienic standard for European manufacturers).

1.2. Instructions

To ensure the integrity of the device and the safety of people, you should be aware of the information contained in these instructions before installation and utilisation.

Depending on the installation and the fluid, the specific directives and regulations apply, and should be complied with.

In addition to these instructions, the general instructions for safety at work and protection should be applied. The regulations concerning the protection of the environment must also be followed.

1.3. About the equipment

The hygenic pressure valve type SHP provides protection against overpressure in your installations.

The SHP safety valves are ***completely autonomous devices***, not requiring any external control for their operation.

It is intended to evacuate at a known pressure rate. Its use is intended for ***steam, and gases of groups 1 and 2, up to 0.5 bar***

Fluid of group 1: explosive fluids, flammable, easily flammable, extremely flammable, very toxic, toxic, oxidising

Fluid of group 2: all the other fluids

Made in ***stainless steel type 1.4404 (316L)***, with sealing ***suitable for the conditions of use***.

The opening pressure is created by a stainless-steel spring. The escape is collected.

The valves are designed to function, in basic version, at a ***maximum admissible pressure (PS) of 8 bars, and a maximum temperature of 200°C (depending on the materials of the seals).***

The ***elastomers and plastomers*** used are compliant with US FDA.

1.4. Signs

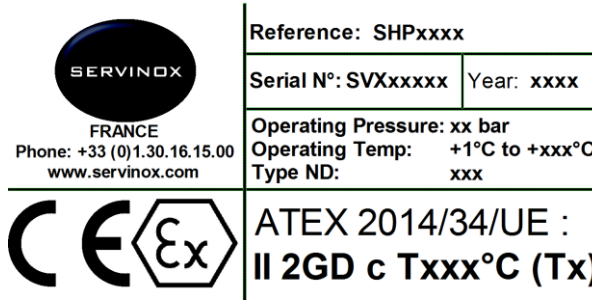
This device has a sticker  , the SERVINOX reference of the product and an SVX trigram accompanied by a production number. The 6-figure number that follows the trigram is the manufacturing order.

If you have difficulties these instructions cannot resolve, you should ask for further information from the manufacturer or from the equipment distributor.

It is essential to mention the SERVINOX order and/or the serial/production order number, beginning with SVX, for all special requests (spare parts, etc).

EC stamp

This valve of type SHP is suitable for ATEX areas 1 and 21. It has a sign on a metal plate, fixed to the clamp collar, following the model below.



2 SAFETY INSTRUCTIONS

This technical manual contains basic instructions that should be followed. It is therefore essential to read it before installation and commissioning.

2.1. Indications and symbols

The following pictograms are designed to draw your attention to important points relating to the safety of people and the integrity of the device:

SYMBOL	DEFINITION
	Direct danger for people
	Possible damage to the product or its environment
	Useful information and application guidelines
	Minimum number required for certain operations. (The number of characters in the pictogram indicates the minimum number of persons).
	Minimum technical skill level. (the number in red indicates the minimum level required).

Some jobs require special technical skills and qualifications, such as for maintenance repairs or work on electrical equipment.

Three levels specify the required technical skill (knowledge of the equipment concerned, experience, training, etc):

	WORKER'S PROFILE	QUALIFICATIONS
Level 1	**End user** with no technical knowledge	**Default level** if the skill pictogram is not present. Permits only **ordinary use and routine maintenance**.
Level 2	**Experienced professional**	**Trained and experienced - knowing the equipment and the technologies used**.
Level 3	**The manufacturer's personnel** / expert of the product	**Work reserved for the manufacturer** of the documented device.

2.2. Safety of workers

Installation, test, adjustment, maintenance and replacement should be performed:

- By qualified persons
- Following the recommendations and guidelines given in these instructions
- Complying with the arrangements for safety at work, procedures and resources of the fitter, and the legal notifications for the prevention of accidents.

Not following these safety instructions can result in the loss of all right to claim damages.

2.3. *Intended use*

Correct utilisation

In the certification documents, associated with the order, check that the device chosen is right for its intended use.

The safety valves are available with various options.

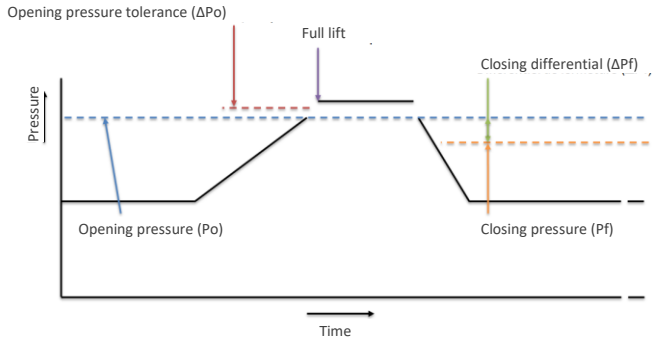
A safety valve is designed to function with a maximum rate and fixed opening pressure.

The end user or operator must verify the compatibility of the materials of the equipment (metals and alloys, seals, etc), with the fluids in contact. And that these fluids never harm the mechanical or physical properties of the components.

How it works

The functional tolerances are:

CRITERIA	TOLERANCE
Opening pressure < 0.5 bar	±10%
Overpressure	Maximum 10% of the opening pressure
Drop of pressure on closing	Maximum 50% of the opening pressure



Incorrect utilisation

The device must not be used for any other purpose other than its intended use. The manufacturer cannot be held responsible in case of incorrect utilisation.

The sealing must not be damaged or removed. If this is done, the warranty will be void.
The manufacturer permits no modification to the valve.

Modifications can affect the functioning of the safety valve. The safety valves, especially the valve's shaft should be completely free.

The levers must not be used to suspend objects. The position of a lever must not be modified. No extra weight should be applied on the levers.

The equipment should not be used beyond the following operating limits:

PARAMETER	LIMITS
Maximum admissible pressure	0,5 bar
Maximum utilisation temperature	
• Sealing in VMQ or FKM or FFKM	+1 / +200°C
• Sealing in HNBR	+1 / +140°C
• Sealing in EPDM or NBR	+1 / +120°C

2.4. Breakdown of the risks

DANGER / RISK			
	Hot fluid	**Very hot surface**	**Aggressive fluid**
HARM	Burns	Burns	Burns
PREVENTION			
	Garments, goggles, suitable gloves	Suitable gloves	Gloves, goggles, suitable mask

3 TECHNICAL SPECIFICATIONS

3.1. Standard version

Specifications

SPECIFICATIONS	SERVINOX PROPOSAL
Nominal diameter	08 / 13 / 20 / 25 / 32 / 40
Fluids	Group 1 and 2 Gas / Steam
Nominal pressure	0.49 bar to 0,5 bar
Service temperature	1° (excluding freezing) to 200°C
Connection	Clamp
Materials in contact with the product • Body • Seating • Valve • Sealing	 Stainless-steel 1.4404 and 1.4409 Stainless-steel 1.4404 Stainless-steel 1.4404 VMQ, FKM, FFKM, HNBR, EPDM, NBR
Materials of the components excluding contact	Stainless-steel 1.4306 or 1.4307

Options

- ATEX option
- Forced or manual opening with lever ***(as from the DN20).***
- Inductive opening detector ***(as from the DN20)***

View of the device

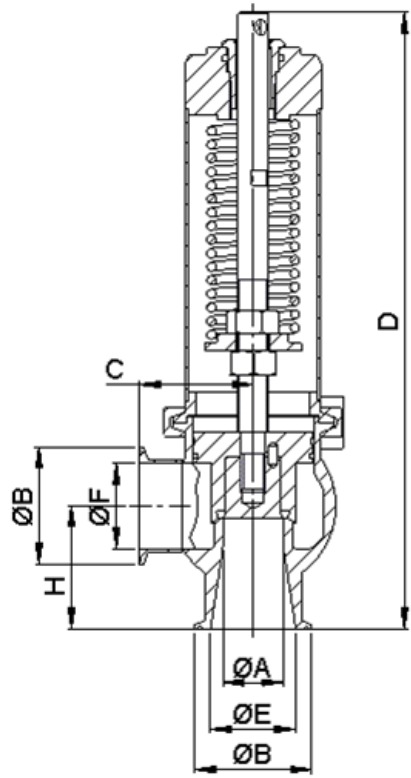
Model: **SHP08, SHP13**

With button for forced manual opening

Model: **SHP13, SHP20, SHP25, SHP32, SHP40**

Without lever for forced opening

Dimensions of the device



Cotes / DN	A	B	C	D	E standard	F standard	E possibles	F possibles	H
8	8	25	43	132	9,4 (OD 15)	14 (ISO10)	15,8 (OD 20)	15,8 (OD 20)	35
							11,5 (ISO 08)	14 (ISO 10)	
							14 (ISO 10)	14 (ISO 10)	
13	13	50,5	60	174	18,1 (ISO 15)	18,1 (ISO 15)	22,1 (OD 25)	22,1 (OD 25)	40
							22,6 (SMS 25)	22,6 (SMS 25)	
							26 (DIN25)	26 (DIN25)	
							23,7 (ISO 20)	23,7 (ISO 20)	
20	20	50,5	62	250,5	29,7 (ISO 25)	29,7 (ISO 25)	34,8 (OD 38)	34,8 (OD 38)	47
							35,6 (SMS 38)	35,6 (SMS 38)	
							32 (DIN 32)	32 (DIN 32)	
							38 (DIN 40)	38 (DIN 40)	
							38,4 (ISO 32)	38,4 (ISO 32)	
25	25	50,5	57	290	34,8 (OD38)	34,8 (OD38)	34,8 (OD 38)	34,8 (OD 38)	49
							35,6 (SMS 38)	35,6 (SMS 38)	
							38 (DIN 40)	38 (DIN 40)	
							38,4 (ISO 32)	38,4 (ISO 32)	
32	32	64	65	308	44,3 (ISO 40)	44,3 (ISO 40)	47,5 (OD 50)	47,5 (OD 50)	62
							48,6 (SMS 51)	48,6 (SMS 51)	
							50 (DIN 50)	50 (DIN 50)	
40	40	77,5	83	406	56,3 (ISO 50)	56,3 (ISO 50)	60,2 (OD 63)	60,2 (OD 63)	81
							60,3 (SMS 63)	60,3 (SMS 63)	

3.2. *Forced opening option*

View of the device

This option concerns the models: **SHP13, SHP20, SHP25, SHP32, SHP40**

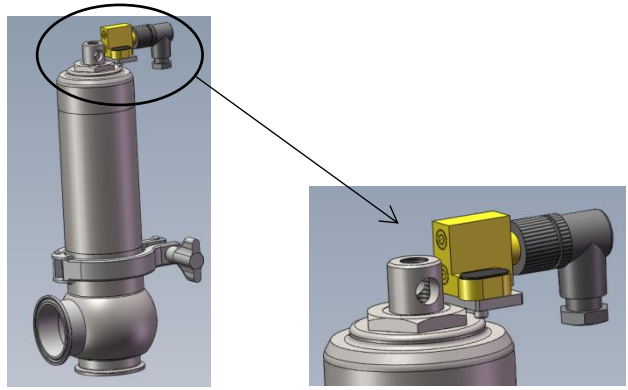
With lever for forced manual opening

3.3. *Detection option*

The detection of escape opening option is relayed by an inductive detector fitted at the top of the valve. The detector is available in standard version or ATEX.

View of the device

This option concerns the models: SHP20, SHP25, SHP32, SHP40



With opening detector

3.4. ATEX option

General

ATEX version 2014/34/EC  ***, areas 1 & 21, gas and dust.***

Under no circumstances, does the ATEX version of the product modify the specifications of the product and its components.

This device is intended for use in surface installations (group II).

The protection level of category 2 is suitable for normal use and frequently occurring disturbances for which malfunctions are normally taken into account.

This equipment is for use in areas in which explosive atmospheres caused by mixtures of air and gas (G), vapours, mist or mixtures of air with dust (D), are likely to occur.

The maximum surface temperature is the temperature of the fluid.

4 COMMISSIONING

4.1. Transport /Reception /Handling

Upon receipt, check:

- That ***the package is in good condition***
- That the device ***is delivered as ordered***
- That the device ***has not been damaged***

If the device is damaged, it must not be fitted on the installation. Contact the manufacturer or equipment distributor.

4.2. Storage

If the device is not fitted immediately after delivery, it should be stored carefully.

It should be stored in its original packaging, in a covered area, with protection against dirt, rain, snow, insects and away from shock.

The safe storage temperature is between 5°C and 40°C, with relative humidity of the air < 50%.

If the device is stored at negative temperatures, the resistance of the materials to cold should be taken into account (e.g.: the seals).

If storage is for longer than one year, the seals need to be replaced before commissioning

4.3. Installation

General

Before any utilisation of the equipment, the user must visually verify good condition: absence of corrosion, bits of packaging.

If the fluid is harmful, inflammable, toxic, etc, fit the installation with discharge pipes going into a safe place.

Also, you are advised to check the compatibility of these products with the seals and materials before using them.

Before fitting this valve, you should check that the maximum PS of the equipment to protect, is higher or equal to the opening pressure of the valve.

If the installation is outside in low temperature, you should take into account the risk of jamming of the valve by freezing and obstruction of the outlet by snow.

To ensure drainage, the valve outlet pipes should be installed so that it has a slope up to the drain orifice situated at its lowest point.

The outlet pipe must not be directed upwards immediately after the valve. It should be sufficiently sized for ease of access and capable of being inspected regularly.

The fluids flowing out should be recovered (e.g.: by drains, systems of collectors or filters).

The outlet orifice of the safety valve should be protected so that no mould or dirt can enter the valve.

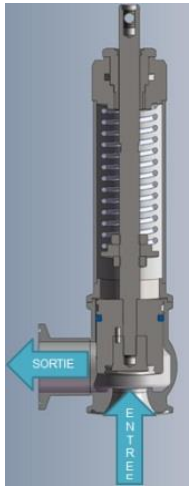
The safety valves should be fitted so that the dynamic vibrations of the installation cannot be transmitted to the safety valves.

Fit the safety valves so that no static and thermic stress, of an inadmissible level, and coming from the upstream and downstream pipes can be transmitted to the valve.

Also, take into account, when fitting, the forces of reaction which occur when opening and any dilatation due to the temperature during use. Systems preventing this dilatation should be fitted.

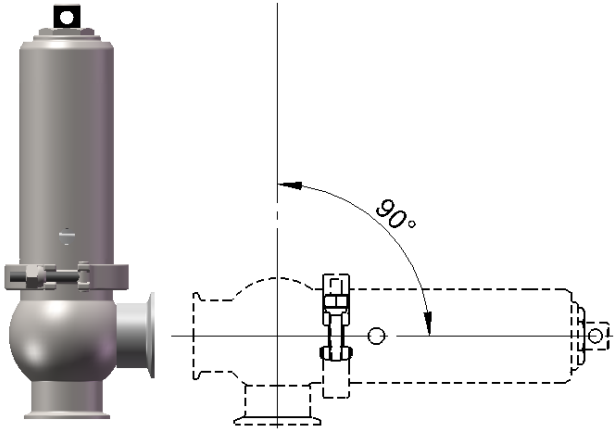
Do not place blocking devices before the safety valve.

SORTIE = Escape
ENTREE = Equipment to be protected



Do not place plugging devices in front of pressure relief valve.

The pressure relief valve must be mounted between the perpendicular and horizontal axes (90° max). The drainage valve must always face downwards to ensure proper drainage.



The workers

The work described below should be carried out by qualified and experienced persons.

The personnel must be fitted with gloves, helmet, and safety shoes.

Fitting

Place the entry of the valve on the clamp connector side, tank or pipes, inserting a suitable clamp seal and tighten the clamp collar.

The connections should be made complying with the standards in force.

Dismantling

Drain the supply pressure from the equipment protected by the valve and unlock the clamp collar linking your installation to the valve.

Inlet pipe

The inlet pipes must be as short as possible, to ensure cleaning the seating.

Outlet pipe

The pipes must not exert stress on the valve.

Fit valve outlet pipes in a design favouring flow. The outlet pipes should be designed according to each condition of utilisation. There is a difference between systems of evacuation for steam or gas.

The valve outlet pipes functioning on steam and gas should be designed to ensure a discharge from the valve safely, and no loss of charge at the outlet (at the rate of evacuation of the valve).
Collecting the evacuation must not generate a back-pressure with escape at the rate planned.

5 USE

5.1. Functional checks

During use, check the functioning of the safety valve every 6 months.

To make sure that the valve is functional, you are advised to perform a flush. This flush can only be done if the service pressure is at least equal to 75% of the opening pressure.

Without lifting system

Create a brief and controlled overpressure, compared with the calibration of the valve. If this starts at the calibrated pressure (± statutory tolerance), the functioning is normal.

With manual lifting system

In order to verify the correct functioning of the valve, use the manual lifting system of the valve. Hold the handle and carry out a ¼ turn, around the shaft linking the system to the central shaft. If the rise occurs without any particular problem, this means that the O-ring providing the seal between the outside and the inside of the valve body, is in good condition and therefore that there is no problem.

Verification of the good closing of the valve under-pressure.

However, depending on the calibration of the valve, it can be more or less hard to lift the valve manually.

5.2. Adjustment

The work described below should be carried out by qualified and experienced persons.

This ***safety valve is governed by the directive of Device Under Pressure, and lead-sealed***. Because of this, adjustment is reserved for the manufacturer of the documented device.

Contact SERVINOX or your distributor.

5.3. Adjustment

If the tank overflows into the pressure relief valve:

SHUTDOWN PRODUCTION. It is critical to manually clean the inside of the pressure relief valve and the seals. If the pressure relief valve is clogged, it no longer protects the facility against negative pressure or overpressure

THIS CAN DESTROY THE TANK

6 SERVICING AND MAINTENANCE

6.1. General

The equipment requires maintenance to make sure it functions correctly.

An inspection must be carried out at regular intervals. An initial inspection interval of 6 months is recommended.

Certain properties of fluids (corrosive, aggressive, abrasive, residues, viscosity, etc) and certain environmental conditions (climate, pollution, etc) may require a reduction of these inspection intervals.

SERVINOX supplies the spare parts for proper maintenance and the warranty on the equipment.

We keep a store of sachets of wear parts (seals, etc) and we recommend that you keep a few sachets in stock for quick jobs.

The high performance pressure relief valve (SHP) can be delivered and assembled with HSV negative pressure relief valve equipment only (pressure ≤ 0.5 bar).

In this case, see the HSV_NOT instructions supplied with the equipment.

Inspections and servicing

The minimum points to inspect are:

INSPECTION	DIAGNOSTIC POSITIVE?	REACTION
Traces of corrosion?	**The valve must not be used**	Contact the manufacturer
Deterioration of the seating and/or the valve of the valve?		Contact the manufacturer
Pronounced wear of the seals?		Contact the manufacturer
Presence of impurities in the valve and/or between the seating surfaces?		Remove the impurities and perform a test of functioning
Loosening of the assemblies		Tighten and perform a test of functioning
Poor functioning of the valve		Contact the manufacturer

The equipment is set to a pressure of less than 0.5 bar and is therefore not subject to DESP 2014/68/EU.

The setpoint is adjusted and checked by SERVINOX, which guarantees the correct setpoint at equipment delivery. SERVINOX declines all responsibility if the setpoint is readjusted after valve reception.

To modify the setpoint, contact SERVINOX, or your reseller if applicable.

6.2. *Inspections and maintenance*

Mandatory maintenance frequency:

- ***Every 6 months***:
  - Check correct operation of check valve (item 2).
  - Check that the inside of the pressure relief valve is clean so that it does not contain impurities.
  - Check that the assemblies are properly tightened.
- ***Every year***:
  - Replace the check valve pressure seal (item 13).

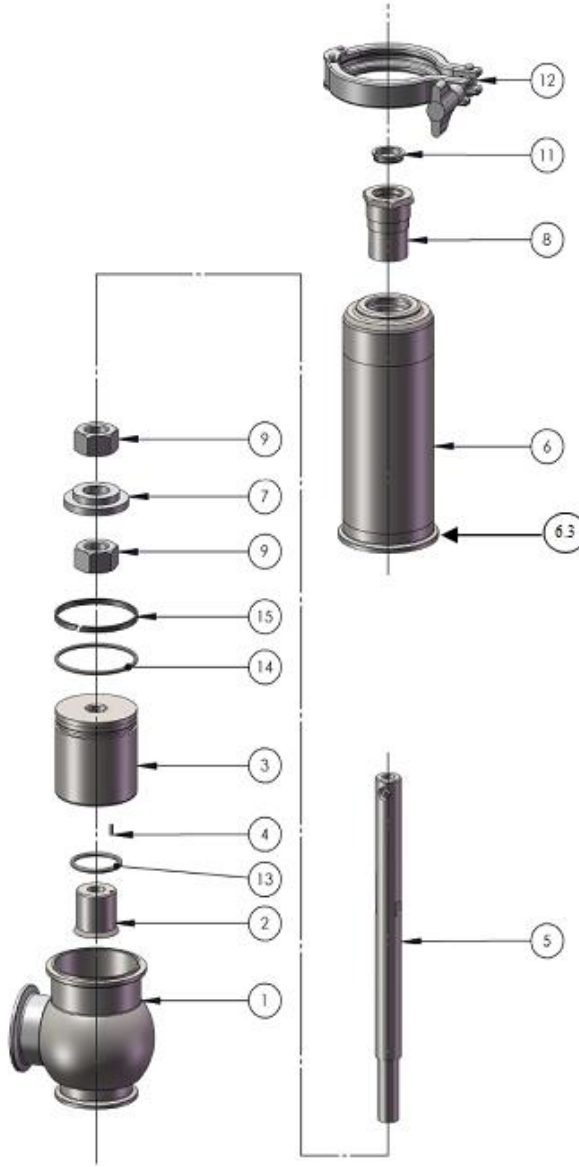
Also, you are advised to check the compatibility of these products with the materials (metals, alloys, seals, etc) before using them.

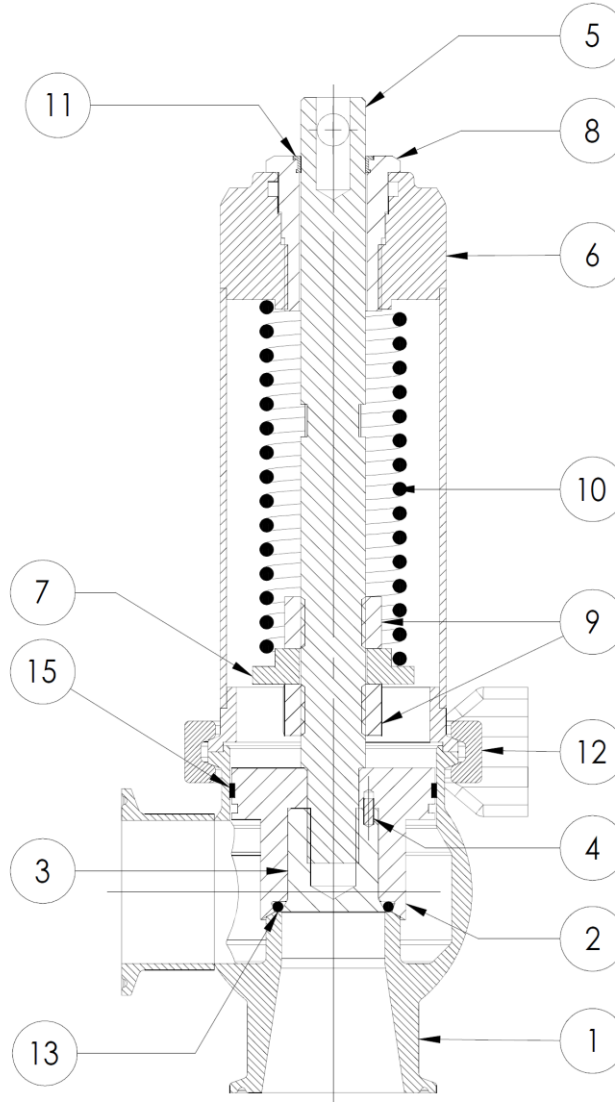
Check that the seal between the valve and the seating is not stuck by rapidly opening the valve using the various systems available.

We advise you to enter all the maintenance and test operations carried out on the installation in a form of this type:

Date	Company	Name of the worker	Signature
PREVENTIVE MAINTENANCE			
Operations		**Other, Comments**	
CHECKS ON CORRECT FUNCTIONING AND GOOD CONDITION			
Operations		**Other, Comments**	

Parts list of the components of the SHP valve

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REF	DESCRIPTION
1	Valve body
2	Valve
3	Piston
4	Shaft
5	Shaft of valve
6	Cap
6.3	Bottom cap
7	Spring guide
8	Screw
9	Nut
10	Stainless-steel spring
11	Clips bracket
12	Clamp collar
13	Seal
14	Seal
15	Guiding band

IMPORTANT: Compressed spring

To disassemble the pressure relief valve, follow these instructions:

1) Unscrew and remove the screw (item 8).

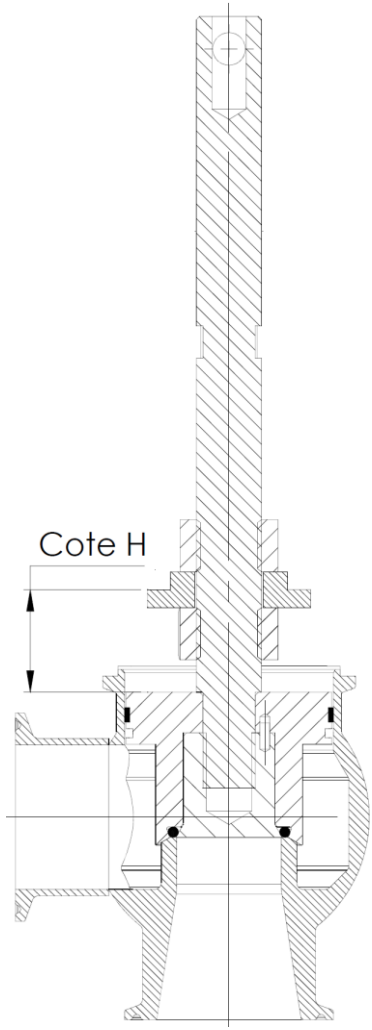
2) Immobilize the pressure relief valve in a press in order to remove the bonnet (item 6).

3) Remove the clamp collar (item 12).

4) Slowly raise the press head, then remove the bonnet (item 6) and the spring (item 10).

Do not modify the spring guide (item 7) position setting on the disc hinge pin (item 5). MEASURE DIMENSION H

5) ***Measure height H before continuing the disassembly operation.***



6) Remove the check valve assembly from the body (item 1) and the strip guide (item 15), then remove the seal (item 14).

7) Hold the check valve (item 2) in soft jaws, then unscrew the disc hinge pin (item 5).

8) Remove the piston (item 3), then the seal (item 13) and the pin (item 4).

9) Clean the body and the equipment components thoroughly.

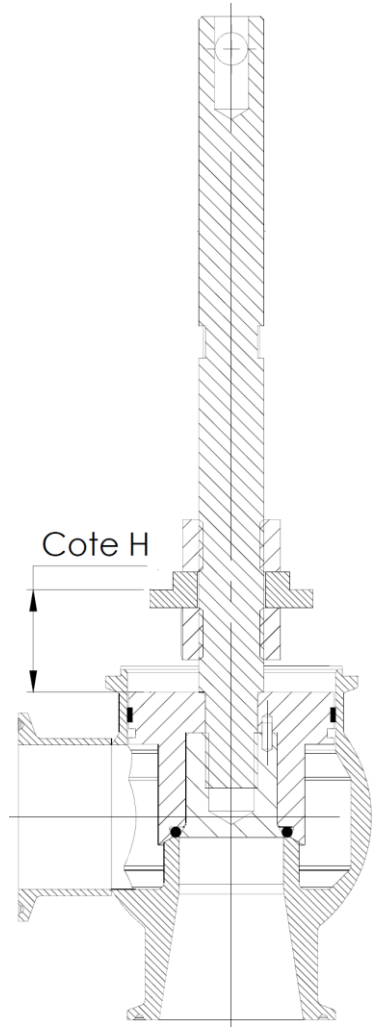
Equipment reassembly

To reassemble the pressure relief valve, follow these instructions:

1) Position the pin (item 4) and then the seal (item 13) and piston (item 3) in the check valve (item 2).

2) Hold the check valve (item 2) in soft jaws, then screw in the disc hinge pin (item 5).

3) ***Check that dimension H has not be modified.***



4) Mount the check valve (item 2) in the body (item 1) with its strip guide (item 15).

5) Position the spring (item 10) on the spring guide (item 7), and then the bonnet (item 6).

6) Immobilize the pressure relieve valve with a press in order to compress the spring and position the bonnet (item 6).

7) Mount the clamp collar (item 12) and remove the pressure relief valve from the press.

8) Check the condition of the clip bearing (item 11) and replace if necessary.

9) Screw in the screw (item 8) using a medium-strength thread-locking agent.

10) Check that the pressure relief valve check valve slides properly. To do this, maneuver the disc hinge pin (item 5).

7 DIAGNOSTIC AID

The table below is a diagnostic aid and is intended to help you remedy simple functional problems.

INCIDENT	POSSIBLE CAUSE	SOLUTION
The pressure relief valve does not open at the expected opening pressure	- The rod is blocked by an external obstacle - Setpoint misadjusted	> Do not impede the free movement of the rod, both inward and outward ***> Contact the manufacturer, or the equipment reseller if applicable.***
The pressure relief valve stays open	An obstacle is blocking the rod's path	Do not limit rod's inward or outward travel
The pressure relief valve is not watertight	There are impurities between the seal surfaces	Clean the seal surface and replace the seal (item 13) if required.

8 WARRANTY

Unless otherwise stated in the proposal, the device is guaranteed ***12 months as from the date of delivery***.

After an examination in our factory, the parts considered as defective will be replaced at our expense.

All replacement of the device's components (wear parts, seal, etc) must be replaced by SERVINOX original parts

The warranty does not cover damage due to:

- Poor fitting, inappropriate or abusive utilisation
- An accident or incorrect installation
- Modification of the equipment
- Leaks following the passage of impurities will not be taken into account
- Required maintenance not performed

The warranty on our products covers the free repair of parts returned when proved that they have become unusable prematurely, following a manufacturing or material fault.

We are not bound to any compensation or any other obligation of this kind.

This equipment has been inspected before leaving the factory.

This equipment has been certified as having been inspected and authorised for sale

Notes

solutions
engineered for you
dprozesse: Proces
lösungen fluid
für Ihre dise
de solu
vendung adaptada
indu

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