Valve for powder introduction

RT/VDD

Instruction manual

Reference: RT_VDD_NOT_FR

Version A

34-36 Avenue Roger Hennequin
78197 Trappes cedex - France
Tel.: + 33 (0)1 30 16 15 00
Fax: +33 (0)1 30 16 15 01
Home page: http://www.servinox.com

1 OVERVIEW

1.1. The manufacturer

SERVINOX is a specialist in process equipment for the brewing, food, cosmetology and chemical sectors.

Process equipment expertise:
In the areas of tank protection, sampling, gas injection in liquids, pigging systems or cleaning with patented products.

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

- Directive on Pressure Equipment ***(DESP) 2014/68/UE***
- European Directive relative to materials installed in an Explosive Atmosphere Explosive ***(ATEX) 2014/34/CE***
- 3A US manufacturers' hygienic standard

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

1.2. Instruction manual

To ensure equipment integrity and the safety of personnel, you must familiarise yourself with the information contained in this manual before proceeding with installation and use of the equipment.

Depending on the installation and the fluid, precise directives and rulings apply. These must be complied with.

In addition to the recommendations contained in this instruction manual, the general recommendations concerning safety at work and protection must be applied. Regulations relative to the protection of the environment must also be respected.

1.3. Presentation of the equipment

SERVINOX valves for powder introduction are used for vacuum injection of all types of powder via the vacuum maintained tank bottom.

This valve is a ducting accessory compliant with §3.3 of European directive 2014/68/EU.

This valve must be used on circuits carrying group 2 dry products, clear or viscous liquids (compliant with article 9 of European directive 2014/68/EU).

Description of the operation

This valve comprises a 3 position cylinder activated by compressed air allowing the opening of the check valve for ***pressurized dry product (powder) intake*** in a vacuum maintained tank. CIP product can be passed in the valve.

The actuator comprises a closing counter spring which means that the valve is maintained closed without air pressure and valve closing speed is improved. The design of the valve is available on option for use on equipment in an ATEX environment (category 2).

1.4. Marking

If the user encounters difficulties that cannot be resolved by these service instructions, additional information can be requested from the manufacturer or, where appropriate, the equipment distributor.

You must indicate the SERVINOX order and/or series/manufacturing order number starting with SVX for any specific request (spare parts, etc.).

2 SAFETY RECOMMENDATIONS

The technical manual contains fundamental recommendations that must be respected. You must read this technical manual before assembly and cut-in.

2.1. Indications and symbols

The following pictograms are used to call your attention to important points relative to the safety of personnel and the integrity of the equipment:

SYMBOL	DEFINITION
	Direct danger for persons
	Possible deterioration of the product or its environment
	Mandatory recommendation
	Minimum number of persons required for certain operations. (The number of persons shown in the pictogram indicates this minimum number).
	Minimum technical capacity level. (the figure in red indicates the minimum level required).

Certain interventions demand technical abilities and special authorisations, such as unscheduled maintenance work or work on electrical equipment.

3 levels indicate the required technical ability (knowledge of the material in question, experience, training, etc.).

	PROFILE OF PERSONS INVOLVED	DETAILS
Level 1	**End user** with no technical knowledge.	**Default level** if the ability pictogram is not present. Only **general use and servicing operations** are authorised.
Level 2	Experienced **professional**.	Trained and **experienced**. **Knows the equipment and technologies** used.

Level 3	**Manufacturer's personnel** / product expert	**Work reserved for the manufacturer** of the documented equipment.

2.2. Operator safety

The installation, control, adjustment, servicing and replacement operations must be carried out:

- By qualified personnel,
- In accordance with the recommendations indicated in this manual,
- By integrating the measures ensuring safety at work, the procedures and specific means of the installer and the legal obligations relative to the prevention of accidents, in particular regarding the electrical installations.

Non-compliance with the safety recommendations may result in the loss of all claims to damages.

2.3. Planned usage

Compliant utilisation

Using the certification documents, make sure that the equipment has been selected for the intended use.

Inappropriate use

The equipment must not be used except for the usage for which it is intended. The manufacturer declines all responsibility in the event of contrary and inappropriate use.

The equipment must not be used over and above the following operating limits:

PARAMETER	LIMITS
Maximum permitted pressure:	6 bar
Min./max. temperature	+10°C / 120°C

3 TECHNICAL SPECIFICATIONS

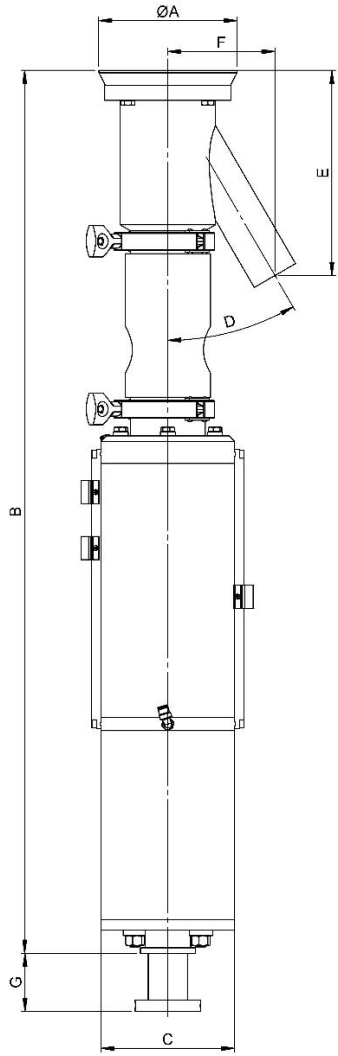
3.1. Specifications

SPECIFICATIONS	SERVINOX OFFER
Connection	*POWDER INTAKE CONNECTION ** To weld, male, female, clamp *TANK CONNECTION *:* SERVINOX Flange to weld
Service temperature	MIN.: +10°C MAX.: +120°C
Pressure	TANK: -1 bar to 3 bar MAX (single acting actuator) -1 bar to 6 bar MAX (dual acting actuator) *PRODUCT*: 6 bars MAX. *ACTUATOR AIR CONTROL*: 3 bars MIN. / 8 bars MAX.
Materials	*PARTS IN CONTACT WITH THE PRODUCT*: 1.4404 (316L) stainless steel *OTHER PARTS*: 1.4307 (304L) stainless steel *SEALS IN CONTACT WITH THE PRODUCT*: EPDM, VITON, PU, PEEK, PTFE *OTHER SEALS*: EPDM, NITRILE

* For special requirements please contact us.

3.2. Dimensions

RT50 valves



ØA	B	ØC	D	E	F	G
148 mm	947 mm	143 mm	30°	220 mm	115 mm	15 min 130 max

3.3. ATEX option

General

ATEX 94/9/CE version , zones 1 & 21, gas and dust.

The ATEX version of the product does not modify the characteristics of the product and its components in any way.

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

Category 2 protection level is suitable for normal operation and malfunctions occurring frequently and for which the operating defects are usually taken into account.

This equipment is intended for an environment where explosive atmospheres are due to mixes of air and gas (G), vapours, mist or where mixes of air with dust (D) are likely to occur.

The maximum surface temperature is the temperature of the fluid.

This RT equipment, compliant with ATEX zones 1 and 21, bears a Servinox sticker like the model below:

SERVINOX FRANCE Phone: +33 (0)1.30.16.15.00 www.servinox.com	**Reference: XXXXXXXXXX** **Serial N°: SVXXXXXX** Year: **XXXX** **Maxi allowable pressure: XXX bar** **TS: +1°C to +XX°C** **Type ND: xx**
CE	ATEX 2014/34/UE : **II 2GD c T120°C (T4)**

4 CUT-IN

4.1. Transport/ Delivery acceptance/ Handling

During transport, protect against any external hazard (knocks, bangs, vibration, etc.).

On receipt, check that:

- that ***the packaging is in good condition***,
- that the mixer ***delivered is conform to the order***,
- that the equipment ***has not been damaged***.

If the equipment is damaged, it must not be mounted on the installation. Contact the manufacturer or, where appropriate, your distributor.

4.2. Storage

If the equipment is not installed immediately after delivery, it should be ***stored according to accepted practice***.

It must be stored in its original packaging, in a covered area and protected from dirt, rain, snow, insects and not subject to shocks or vibrations.

The risk-free storage temperature is between 5°C and 40°C, with a relative air humidity of < 50%.

If the equipment is stored in negative temperature conditions, you must take into account the materials' cold resistance (example: the seals).

If the storage period is above one year, the seals must be replaced before cut-in

4.4. Installation

General

Before using the equipment, users must carry out a visual inspection to check the condition: no corrosion or packaging residue.

If the fluid is harmful, inflammable, toxic, etc., equip the installation with a discharge pipe leading to a secure place.

However, we recommend that you check the compatibility of these products with the seals and materials before use.

Equipment installation must only be carried out on a consigned and inert installation (no pressure or risk of fluid transfer)

The operators

The tasks detailed below must be carried out by persons who are qualified and experienced.

The personnel must be equipped with equipment ensuring individual protection against the risks associated with escaping fluid or contact with the fluid (burns, noise, spattering, etc.)

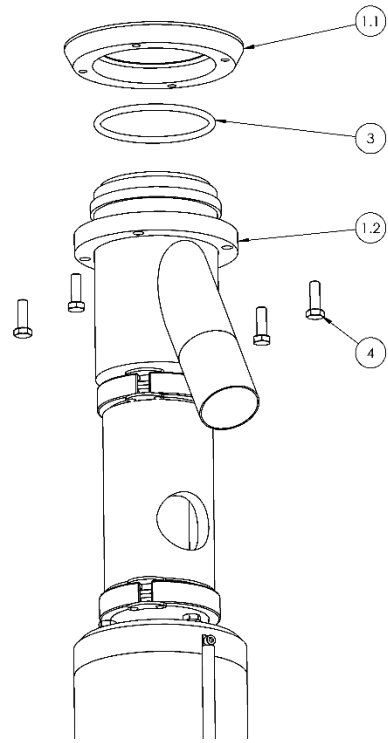
Connection to the tank

- ***<u>Tank preparation</u>***:

The size of the hole drilled in the tank must correspond precisely to the external diameter of the flange and be play-free.

RT50 powder valve

The RT valve must be dismounted on the flange to weld (Ref.1.1) with the 2 half-flanges (Ref.1.2) and their screws (Ref.4). Remove the seal (Ref.3).



Check and note the flange inside dimensions on all the diameters in order to control them again after welding.

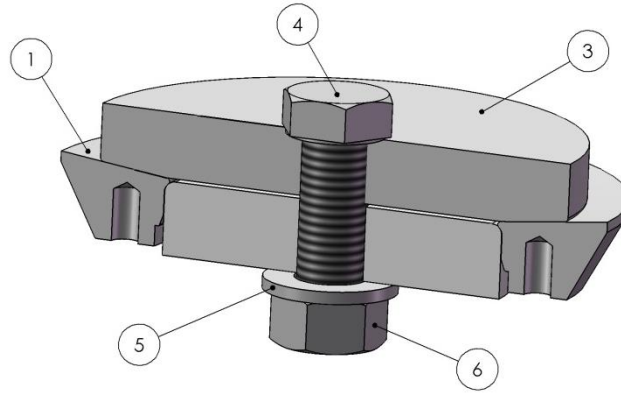
- ***Flange welding preparation***:

1) The flanges must be installed in the designated positions so that the flow can take place correctly.

2) ***Check and carefully locate the position of the tapped holes*** for equipment mounting.

3) In all cases, flange mounting must be done so that it is flush with the interior of the wall.

You must use the SERVINOX solder plug (Ref.3 and ref.5) which must be ordered with the flange (Ref.1) to avoid any significant deformation during the welding.



4) ***Insert a solder plug inside the flange to avoid any welding deformation.***

- ***Weld the flange***:

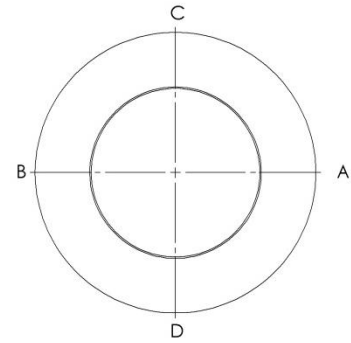
The equipment must be welded by qualified personnel as per the prevailing directives in the country of installation. There must be no impurities in the weld and the welding must be done in a hygienic manner.

After any welding and/or polishing work, the equipment must be cleaned to remove all residue, dust, etc.

1) Position the aligned flange with the inside of the tank.

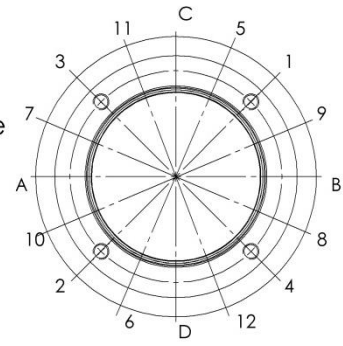
2) ***Tack the flange inside the*** tank by following: A, B then correct where necessary and tack C and D.

Vue intérieure
View from inside

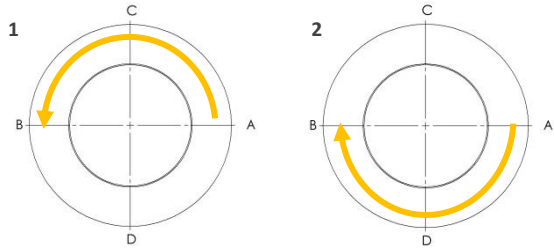


3) ***Tack the flange from the outside*** in 12 spot with inside inerting: follow the welding plan below from 1 to 12.

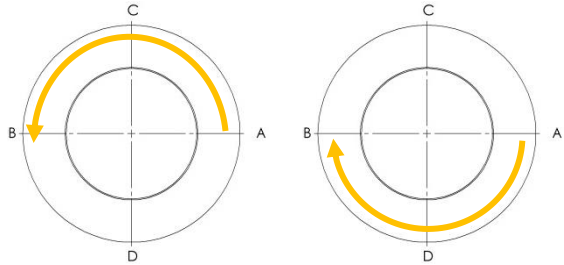
Vue extérieure
View from outside



4) ***Weld*** (lowest possible amperage) from the outside between A, C and B then between A, D and B.



5) Do a final finish inside the tank between A, C and B then between A, D and B.



Do not dismount the solder plug until it has completely cooled naturally.

- ***<u>After welding</u>***:

1) Wait until the flange has cooled down naturally
2) Dismount the solder plug
3) ***Check all the internal diameters to make sure there has been no variation.***
4) ***Polish the interior of the tank in line with the required Ra making sure you never touch the seal surface.***
5) ***Make sure there are no particles left over.***
6) Re-assemble the RT valve taking care to install the sealing (Ref.3).

- ***Ducting preparation and welding***:

The equipment must be welded by qualified personnel as per the prevailing directives in the country of installation. There must be no impurities in the weld and the welding must be done in a hygienic manner.

After any welding and/or polishing work, the equipment must be cleaned to remove all residue, dust, etc.

1) Plan for a detachable connection upstream in the case of a smooth output connection to weld, in order to facilitate maintenance operations on the valve.
2) ***The valve intake must be directed downward (excepting specific requests).***
3) Uncouple the actuator from the valve body (See "Servicing and maintenance" chapter)
4) Weld the smooth output and clean the inside of the body
5) Mount the actuator on the valve body (See "Servicing and maintenance" chapter)

Actuator cylinder position detection

The actuator cylinder has a magnetic insert to detect the 3 positions (fully open/partially open/closed) of the valve. When starting the equipment, the following points must be checked:

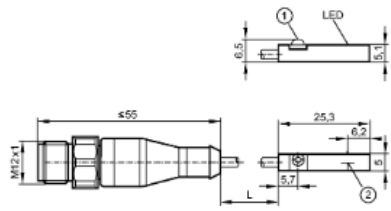
- Electrical connection of the sensors as per the prevailing standards and wiring indications detailed in the detector manuals (below).
- ***ATEX option***:
  - The RT valve must be earthed using a braiding connected to the valve body.
  - The user or installer must check the equipotential bonding of all the elements making up the valve before cut-in.
- RT valve open and closed positions adjustment.

efector120

MK5111

MKT3028BBPKG/G/0.3M/-H/US

Magnetic sensors, cylinder sensors

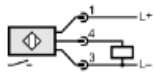


1: Fastening clamp
2: sensing face

Product characteristics		
Cylinder sensor with GMR cell		
Plastic housing for T-slot cylinders		
Cable with connector		
[f] flush mountable		
Magnetic sensitivity 2.8 mT		
Travel speed > 10 m/s		
Electrical data		
Electrical design		DC PNP
Operating voltage	[V]	10...30 DC; cULus - Class 2 source required
Current consumption	[mA]	< 10
Protection class		III
Reverse polarity protection		yes
Outputs		
Output function		normally open
Voltage drop	[V]	< 2.5
Current rating	[mA]	100
Short-circuit protection		yes
Overload protection		yes
Switching frequency	[Hz]	10000
Monitoring range		
Magnetic sensitivity	[mT]	2.8
Travel speed	[m/s]	> 10
Accuracy / deviations		
Hysteresis	[mm]	1.5
Repeatability	[mm]	< 0.2
Reaction times		
Power-on delay time	[ms]	< 30
Environment		
Ambient temperature	[°C]	-25...85
Protection		IP 65 / IP 67 / IP 69K
Tests / approvals		
EMC		EN 61000-4-2 ESD: - CD / 8 kV AD

		EN 61000-4-3 HF radiated: 10 V/m EN 61000-4-4 Burst: 2 kV EN 61000-4-6 HF conducted: 10 V EN 55011: class B
MTTF	[Years]	2373
UL approval number		C003
Mechanical data		
Mounting		flush mountable
Housing materials		housing: PA (polyamide); Fastening clamp: stainless steel
Weight	[kg]	0.021
Displays / operating elements		
Output status indication	LED	yellow
Electrical connection		
Connection		PVC cable / 0.3 m; with M12 connector, with rotatable stainless steel hexagon nut

Wiring



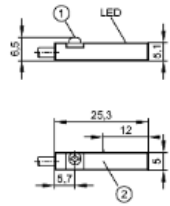
Accessories		
Accessories (included)		rubber placeholder; cable clip
Remarks		
Remarks		Clamping screw with combined slot/hexagon socket head AF 1.5
Pack quantity	[piece]	1

efector120

MK502A

MKT2020-N/--/A/6.0M/-H/1G/1D

Magnetic sensors, cylinder sensors

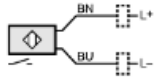


1: Fastening clamp
2: sensing face

Product characteristics		
cylinder sensor with AMR cell		
Plastic housing for T-slot cylinders		
Cable		
ATEX approval		
Group II, category 1D/1G		
[f] flush mountable		
Magnetic sensitivity 2 mT		
Travel speed > 10 m/s		
Electrical data		
Electrical design		Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW
Nominal voltage	[V]	8.2 DC
Current consumption	[mA]	≤ 1 / ≥ 2.2 Target not detected / Target detected
Protection class		III
Outputs		
Output function		normally open
Switching frequency	[Hz]	2000
Monitoring range		
Magnetic sensitivity	[mT]	2
Travel speed	[m/s]	> 10
Accuracy / deviations		
Hysteresis	[mm]	1
Repeatability	[mm]	< 0.2
Environment		
Ambient temperature	[°C]	-25...70
Protection		IP 65 / IP 67
Tests / approvals		
Approval		BVS 09 ATEX E164 IECEx BVS 09.0065
Marking of the unit		Ex II 1G Ex ia IIC T4 Ga Ex II 1D Ex ia IIIC T135°C Da
EMC		EN 61000-4-2 ESD: - kV CD / 8 kV AD EN 61000-4-3 HF radiated: 10 V/m

		EN 61000-4-4 Burst: 2 kV EN 61000-4-6 HF conducted: 10 V EN 55011 (Emission): class B
MTTF	[Years]	2142
Safety classification		
Internal capacitance	[nF]	140
Internal inductance	[µH]	400
Mechanical data		
Mounting		flush mountable
Housing materials		housing: PA (polyamide); Fastening clamp: stainless steel
Weight	[kg]	0.086
Displays / operating elements		
Output status indication	LED	yellow
Electrical connection		
Connection		PVC cable / 6 m; 2 x 0.14 mm²

Wiring
Core colors
BN brown
BU blue



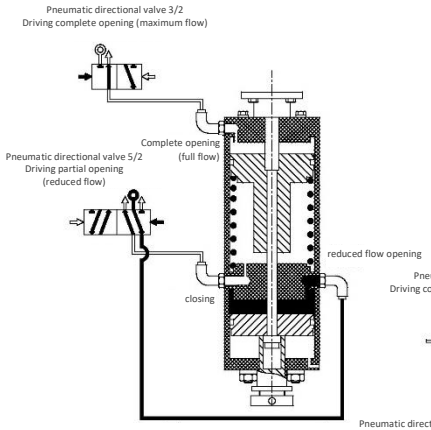
Accessories		
Accessories (included)		rubber placeholder; cable clip
Remarks		
Remarks		Clamping screw with combined slot/hexagon socket head AF 1.5
Pack quantity	[piece]	1

Pneumatic connection of the actuator

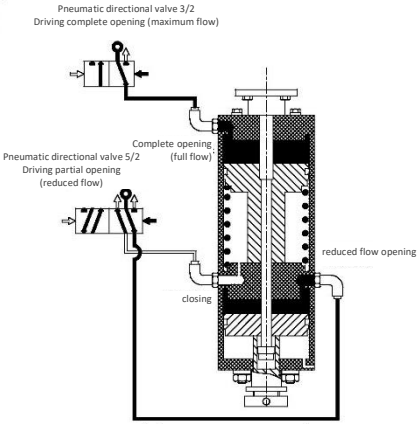
The pneumatic connection of the cylinder is intended for a 6 mm polyamide tube on 1/4" and 1/8"right-angled push-in fittings. Plan for sufficient air supply pressure/flow of 3 bars MINI./ 8 bars MAX.

The RT valve must be dual controlled for faster closing of the valve.

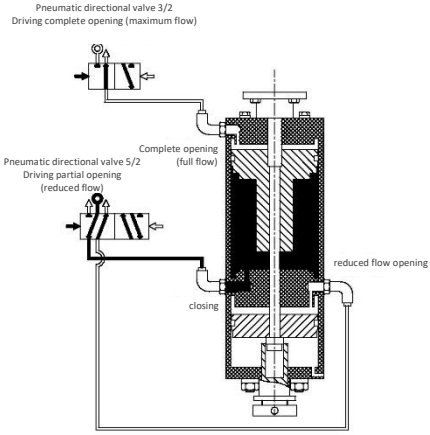
The following schematic indicates the pneumatic connection of the valve:



valve is partially open
reduced flow



valve is completely open
maximum flow



valve is closed

5 OPERATION

5.1. Verification before cut-in

- ***RT50 valve***: Check the state of the seals (Ref.5.15) and (Ref.5.14), they must not have been subjected to shocks or cuts. The seal (Ref.5.15) must be mounted tight around the piston rod (Ref.5.1.2).
- Check there is no tank fluid on the flange connection to weld
- Check that there is no actuator pneumatic leak
- Test the control of the cylinder (open/closed detection)

5.2. Adjustment

Adjustments are reserved for the manufacturer of the documented equipment.

Please contact SERVINOX or, where appropriate, your distributor.

6 SERVICING AND MAINTENANCE

6.1. General

The equipment requires periodic servicing to ensure correct operation.

An inspection must be carried out at regular intervals. You must comply with an initial 6 month inspection period.

Certain fluid properties (corrosive, aggressive, abrasive, residual, viscosity, etc.) and certain environmental conditions (climate, pollution, etc.) may require the periods between the inspections to be shortened.

SERVINOX provides spare parts for the correct maintenance and equipment guarantee. Indicate the manufacturing number and the product reference for any order.

We can provide you with replacement packs for worn parts (seals, etc.) and we recommend that you keep a few packs in stock for quick repairs.

You can also contact SERVINOX for all matters regarding the maintenance of the equipment.

Maintenance precautions

<u>Comply with the following points before any intervention:</u>

- Switch off and secure the equipment
- Depressurize the system
- The installation must be emptied
- The fluid must be cooled to ambient temperature
- Ventilate the duct network if the fluid is corrosive and aggressive.

The operators

The tasks detailed below must be carried out by persons who are qualified and experienced.

The personnel must be equipped with gloves, safety helmets and safety boots.

6.2. Inspections and servicing

Mandatory periodic servicing:

Once per month:

- Carry out internal cleaning of the valve body to avoid dust accumulation which could form an explosive zone.
- Make sure there is no leaking of liquid or compressed air
- Check the tightening of the assemblies
- ***RT50 valve***: check the state of the scraper seal (Ref.5.15) and seal (Ref.5.14)

Annually:

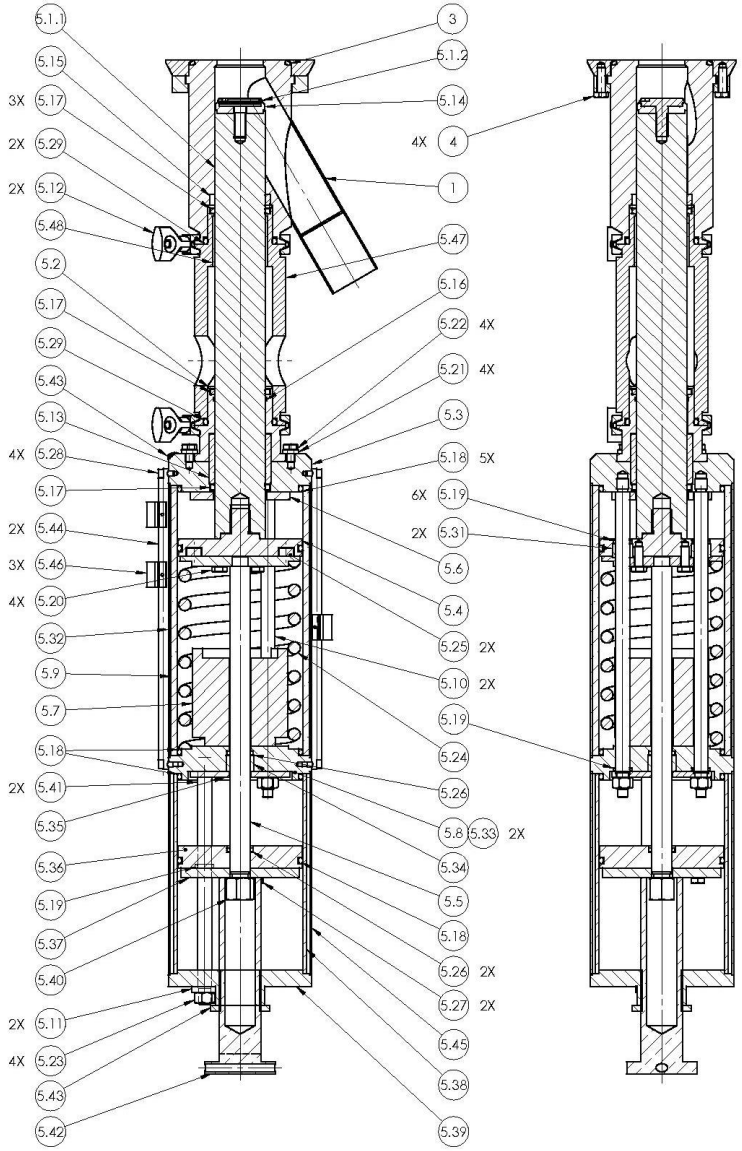
- ***RT50 valve:***
  - Replace all the seals: (Ref. 3), (Ref. 5.15) , (Ref.5.17), (Ref.5.18), (Ref.5.19), (Ref.5.26) and (Ref.5.29) + the guiding band (Ref.5.16)
  - Check the wear of the bearings (Ref.5.13), (Ref. 5.31), (Ref. 5.34) and (Ref. 5.48), replace if necessary.

We recommend that you check the compatibility of your products with the seals and materials before use.

We recommend noting all the servicing and inspection operations carried out on the installation in a table of the following type:

Date	Company	Name of the operator	Signature
PREVENTIVE MAINTENANCE			
Operations		**Others, Observations**	
CHECKING THE CORRECT OPERATION AND GOOD CONDITION			
Operations		**Others, Observations**	

6.3. RT50 maintenance operations



Disassembly of the RT50 valve

Before any maintenance on the equipment:
- Unplug the air intakes
- Disconnect the electrical wires from the detectors
- No pressure and fluid inside the tank
- Dismount the valve intake connection

To dismantle the valve, proceed as follows:

1) Dismount the side channel connection.
2) Loosen the screws (Ref.4) and remove the RT valve unit from the flange to weld.
3) Remove the sealing (Ref.3).
4) Place the assembly on a workbench.

Never tighten the cylinder barrel in a vice

5) Mount a compressed air blow pipe on the connection located in the top part (Ref. 5.43), apply compressed air so that the check valve (Ref. 5.1.2) is no longer under pressurized.
6) Dismount the upper clamp (Ref. 5.12) to uncouple the cylinder from the body (Ref. 1).
7) Remove the compressed air (pay attention to check valve movement).
8) Take the control cylinder and remove it relative to the body.
9) Place the control cylinder on a workbench.
10) Remove the upper gasket (Ref. 5.29).
11) Using an open-end wrench, loosen the check valve (Ref. 5.1.2) and dismount it.
12) Remove the gasket (Ref. 5.14).
13) Dismount the lower clamp (Ref. 5.12) and remove the frame (Ref. 5.47) with the scraper seal (Ref. 5.15), the upper lip seal (Ref. 5.17), the lower gasket (Ref. 5.29) and the bearing (Ref. 5.48).
14) Loosen the control screw (Ref 5.42).
15) Then remove the locknut (Ref. 5.43).
16) Next, remove the nuts (Ref. 5.23) and the washers (Ref. 5.11) in the lower part.
17) Remove the top plate (Ref. 5.39).
18) Remove the upper shell (Ref. 5.45).
19) Remove the upper cylinder barrel (Ref. 5.38).
20) Loosen the nut (Ref. 5.40) and remove the upper piston (Ref. 5.36).

21) Remove the screws (Ref. 5.27).

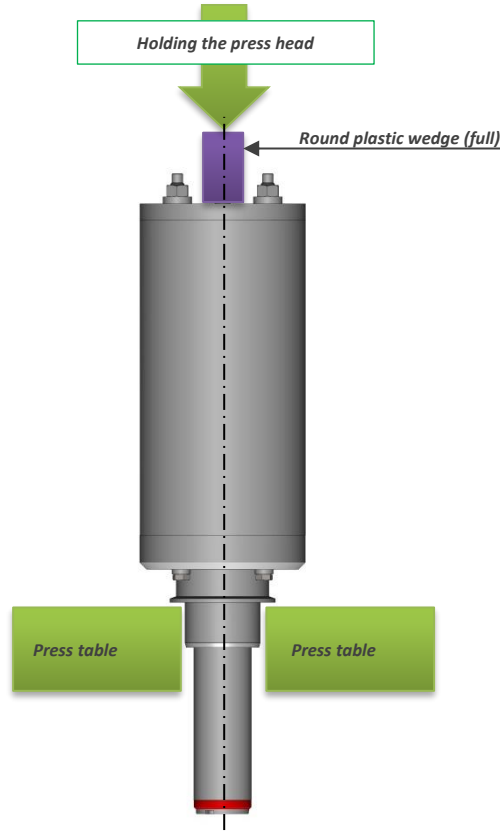
22) Remove the holding flange (Ref. 5.37) and remove the gaskets (Ref. 5.18), (Ref. 5.26) and (Ref. 5.19).

23) Unscrew the guide tie bars (Ref. 5.41).

The spring release operation must be done with the utmost care.

24) Spring release:

- Carry out the assembly (below) using a hydraulic or pneumatic (recommended) press :



- Maintain a low pressure against the lower plate (Ref.5.8) using the press.

25) Hold the motor cylinder of the press in a vice, tightening it in the lower part of the bracket (Ref. 5.2).

26) Next, remove the nuts (Ref. 5.23) mounted on the holding flange (Ref. 5.35). The loosen the tooling nuts until they are no longer in contact with the upper flange of the tooling. The spring is then slack.

27) On the workbench remove the tooling and proceed with the disassembly of all the components.

28) Remove the intermediary plate (Ref. 5.8) and remove the gaskets (Ref. 5.18).

29) Remove the holding flange (Ref. 5.35) and remove the gaskets (Ref. 5.19) and (Ref. 5.26).

30) Remove the lower shell (Ref. 5.32).

31) Remove the spring (Ref. 5.24) and the stop (Ref. 5.7).

32) Remove the unit [piston (Ref. 5.4) / piston rod (Ref. 5.1.1) / rear rod (Ref. 5.5)] from the cylinder barrel by pulling on the rear rod (Ref. 5.5) while holding the cylinder barrel (Ref. 5.9).

33) Remove the screws (Ref. 5.20) and remove the gaskets (Ref. 5.18) and (Ref. 5.19).

34) Remove the cylinder barrel (Ref. 5.9).

35) Remove the guide tie bars (Ref. 5.10) and the front stop (Ref. 5.6).

36) Remove the gasket (Ref. 5.18) from the lower plate (Ref. 5.3).

37) Remove the gaskets (Ref. 5.17) and the guiding band (Ref. 5.16) from the bracket guide (Ref. 5.2).

BEFORE RE-ASSEMBLY:

- Clean all the parts, taking care to avoid introducing any impurities that might damage the seals.

- All the dismounted seals must be replaced on re-assembly and the spring changed where necessary.

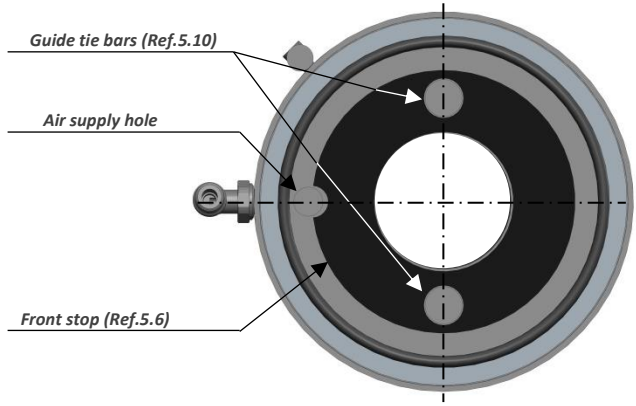
- Grease the cylinder barrel (Ref.5.9) and apply a protective coat of grease on the spring (Ref.5.24) using nutrient fat only.

To re-assemble the valve, proceed as follows:

1) Install the gaskets (Ref. 5.17) with the bearing (Ref. 5.13) in the bracket guide (Ref. 5.2) and in the lower plate (Ref. 5.3). Fix everything using the screws (Ref. 5.22) and washers (Ref. 5.21). The seals are mounted by the rod passage and installed using your finger.

2) Install the guide tie bars (Ref. 5.10) and the front stop (Ref. 5.6).

Pay careful attention to the front stop mounting direction (Ref.5.6) along the tie bars (Ref.5.10), in relation to the front flange air supply hole (Ref.5.3).



3) Install the seal (Ref. 5.18) on the piston (Ref. 5.4).

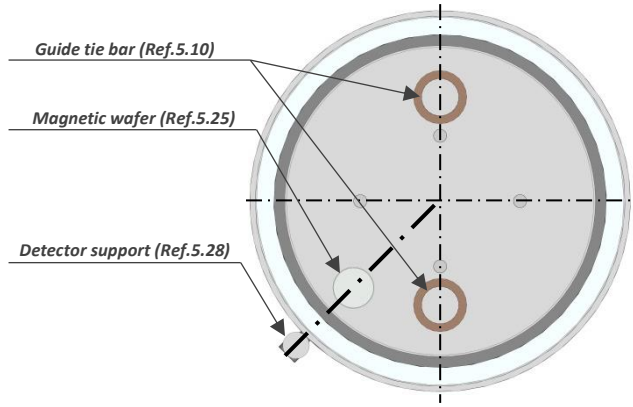
4) Install the gaskets (Ref. 5.19) with the bearings (Ref. 5.31) in the piston (Ref. 5.4). They are mounted by the rod passage and installed using your finger.

5) Install the rear rod (Ref. 5.5) on the piston unit (Ref. 5.4) screwed on the piston rod (Ref. 5.1.1) using the screws (Ref. 5.20). Do not forget to mount the magnets (Ref. 5.25).

6) Install the seal (Ref. 5.18) on the lower plate (Ref. 5.3).

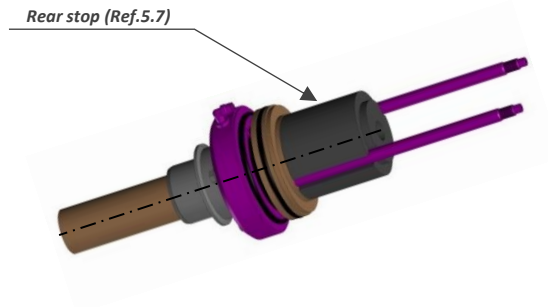
7) Fit the unit [piston (Ref. 5.4) / piston rod (Ref. 5.1.1) / rear rod (Ref. 5.5)] in the bracket guide (Ref. 5.2) along the guide tie bars (Ref.5.10).

Pay careful attention to the piston mounting direction (Ref.5.4) along the tie bars (Ref.5.10), in relation to the position of the magnetic wafer (Ref.5.25)



8) Install the spring (Ref. 5.24) and the rear stop (Ref. 5.7) along the guide tie bars (Ref. 5.10).

Pay careful attention to the rear stop mounting direction (Ref.5.7) along the tie bars (Ref.5.10).



9) Fit the cylinder barrel (Ref. 5.9) around the piston and position against the lower plate (Ref. 5.3).

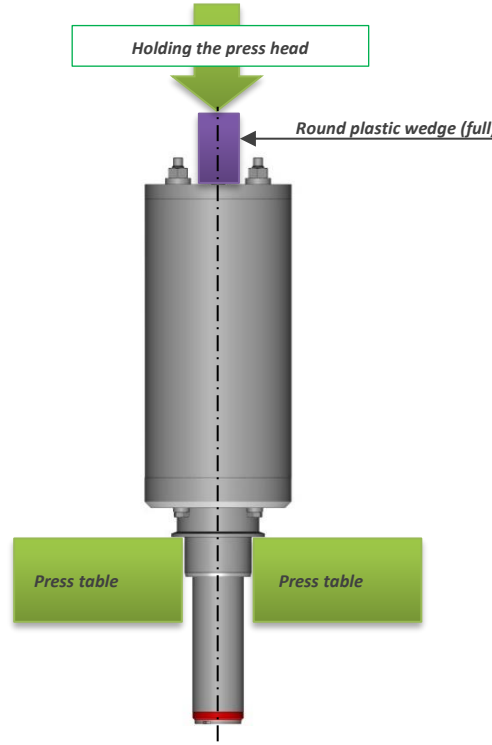
10) Mount the stainless steel shell (Ref.5.32) around the cylinder barrel (Ref. 5.9).

Pay careful attention to the mounting direction of the intermediary plate (Ref. 5.8) along the tie bars (Ref. 5.10), in relation to the alignment of the tapped holes for the detection tie bars (Ref. 5.44).

The spring tensing operation must be done with the utmost care.

11) Tensing the spring (Ref. 5.24):

- Carry out the assembly (below) using a hydraulic or pneumatic (recommended) press :



<u>Pay careful attention during the compression:</u>
- Compress very slowly and manually.
- Check that the cylinder barrel (Ref. 5.9) is centred around the seals (Ref. 5.18)
- Check that the shell (Ref. 5.32) is centred in relation to the lower plate (Ref. 5.3) and intermediary plate (Ref. 5.8).

12) Install the gaskets (Ref. 5.18) and (Ref. 5.26) and the bearing (Ref. 5.34) on the intermediary plate (Ref. 5.8).

13) Gently compress the intermediary plate (Ref. 5.8) along the guide tie bars (Ref. 5.10) until it rests against the stainless steel shell (Ref. 5.32).

14) Install the seals (Ref.5.19) on the rear flange (Ref.5.8) around the tie bars (Ref.5.10).

15) Remount the holding flange (Ref. 5.35) and tighten the nuts (Ref. 5.23).

16) Dismount the pneumatic tooling.

17) Install the cylinder barrel (Ref. 5. 38). The latter fits on the seal (Ref. 5.18).

18) Install the gaskets (Ref. 5.18), (Ref. 5.19) and (Ref. 5.26) on the upper piston (Ref. 5.36) and remount the holding flange (Ref. 5.37) with the screws (Ref. 5.27).

19) Fit this onto the rear rod (Ref. 5.5).

20) Install the upper shall (Ref. 5.45).

21) Install the upper plate (Ref. 5.39).

22) Install the special tooling again and compress the spring.

23) Install the washers (Ref. 5.11) and tighten the nuts (Ref. 5.23).

24) Tighten the screw (Ref. 5.40).

25) Tighten the control screw (Ref. 5.42) and the locknut (Ref. 5.43).

26) Dismount the tools.

27) Install the lower gasket (Ref. 5.29) in the bracket guide (Ref. 5.2)

28) Mount the cylinder in the frame (Ref. 5.47) with its upper gasket (Ref. 5.17) and the guiding ring (Ref. 5.48).

29) Assemble everything with the lower clamp (Ref. 5.12).

30) Install the scraper seal (Ref. 5.15)

31) Install the seal (Ref. 5.14). Using the open-end wrench, tighten and block the check valve (Ref. 5.1.2) paying attention during the tightening that the seal (Ref. 5.14) is correctly positioned.

32) Install the upper gasket (Ref. 5.29) on the frame (Ref. 5.47).

33) Mount a compressed air blow pipe on the connection located in the top part (Ref. 5.43), apply compressed air so that the piston rod (Ref. 5.1.1) fits into the control cylinder.

34) Fit the cylinder into the body (Ref. 1).

35) Install and tighten the upper clamp (Ref.5.12).

36) Release the piston from its position by expelling the compressed air.

37) Fit the valve on the ducting.

38) Remount the side channel and lower channel connectors.

7 DIAGNOSTIC ASSISTANCE

The table below provides assistance in troubleshooting and is intended to help you resolve simple operating incidents.

INCIDENT	POSSIBLE CAUSE	SOLUTION
Blocking of the valve in closed position	> No pneumatic or electrical power	Check the compressed air and electrical supplies where appropriate
	> Upstream control system defective	Check the correct positioning and operation of the detectors
	> Valve external pneumatic leak or internal leak via the valve body (worn seals).	Check the state of the connections, dismount the valve body and check the cylinder seals.
	> Product solidifying on the piston rod	Dismount the body of the valve (Ref.1) then clean the inside of the piston rod, seals and the inside of the valve body. The valve can be dismounted if there is any product that enters the cylinder.
Pneumatic leak	> Holes in the cylinder supply pipe	Replace the ∅6 pipe
	> Connection leaks	Check the state of the pneumatic connections and their tightening
	> Cylinder leak	Check the correct tightening of the cylinder assemblies. Check the state of the cylinder seals.
Tank product leaking via the valve	> Worn seals	Check the state of the upper piston seals, the valve body and the cylinder. Where appropriate, change the seals
	> Seals not adapted for the product	Contact SERVINOX to select the appropriate seal material.
	> Assemblies not sufficiently tightened	Check flange and relief valve tightening
	> Slack cylinder spring (lack of valve reactivity)	Change the spring
	> Cylinder air supply too low	Adjust the cylinder supply to the required pressure as indicated in the manual.

INCIDENT	POSSIBLE CAUSE	SOLUTION
Blocking of the valve in open position	Upstream control system defective	Check the correct positioning and operation of the detectors Check the cylinder air supply
	Valve external pneumatic leak or internal leak via the valve body (worn seals).	Check the state of the connections, dismount the valve body and check the cylinder seals.
	Body or relief valve obstructed by a foreign body	Clean the body and the valve relief valve seat

8 GUARANTEE

Unless stipulated otherwise in the offer, the ***equipment is guaranteed for 12 months as of the date of delivery***.

Parts deemed defective following expertise in our factory shall be replaced at no cost.

If any of the equipment components (worn parts, seal, etc.) need to be replaced, they must be replaced by SERVINOX original parts

The guarantee does not cover damage resulting from:

- incorrect assembly, inappropriate or abusive use,
- an accident or installation that is not conform,
- equipment modification,
- a leak following a passage of impurities shall not be taken into account,
- Mandatory servicing not carried out.

The guarantee covering our products provides for free repairs on parts returned to us where it is proved that they have become unusable prematurely due to a manufacturing or material fault.

We shall not be held responsible for any damages due or any other obligation of this type.

The equipment has been checked prior to leaving the factory.

This equipment is certified inspected and authorised for sale

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

34-36 Avenue Roger Hennequin
78197 Trappes cedex - France
Tel.: + 33 (0)1 30 16 15 00
Fax: +33 (0)1 30 16 15 01
Home page: http://www.servinox.com