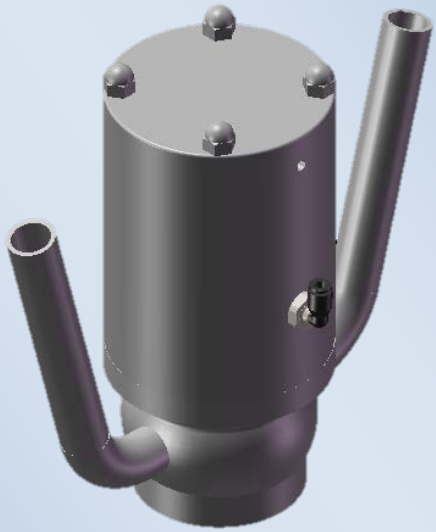
Sampling valve

PEMC



Instruction manual

Reference: PEMC_NOT_EN

Version B

SERVINOX

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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*** and offers products compliant with the following applicable standards and directives:

- Directive on Pressure Equipment ***(DESP) 2014/68/EU***
- European Directive relative to materials installed in an Explosive Atmosphere Explosive ***(ATEX) 2014/34/EU***
- 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

It has been designed to meet your sampling requirements for high viscosity samples or samples with solid particles on your tank and liquid process line installations.

This sampling valve must be used on circuits carrying group 2 clear or viscous liquids (compliant with §4.3 of European directive 2014/68/EU).

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
	Useful information or application recommendations
	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 authorised **general use and maintenance operations**.
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, maintenance 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 supporting documents, make sure that the equipment has been selected for the intended use.

Operation overview

The PEA manual or automatic sampling valve is used to take a sample of liquid from a tank in order to carry out quality and/or bacterial controls.

Valve sealing is obtained by a hung-type membrane on the drive head.

There are 2 versions:

- Manual: the valve head opens and closes by screwing
- Pneumatic: the head is controlled by a cylinder.

The standard PEA is supplied with one input or two smooth sampling outlets to weld; it is washable by CIP passage.

The valve chamber can be kept sterilized.

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:

PARAMETERS	LIMITS
Maximum permitted pressure (depending on DN)	6 bar
Admissible fluid temperature	120°C

2.4. Analysis of the generic risks

DANGER / RISK			
	Hot fluid	Very hot surfaces	Aggressive fluid
DAMAGE	Burns	Burns	Burns
PREVENTION			
	Suitable clothing, glasses, gloves	Suitable gloves	Suitable gloves, glasses, mask

3 TECHNICAL SPECIFICATIONS

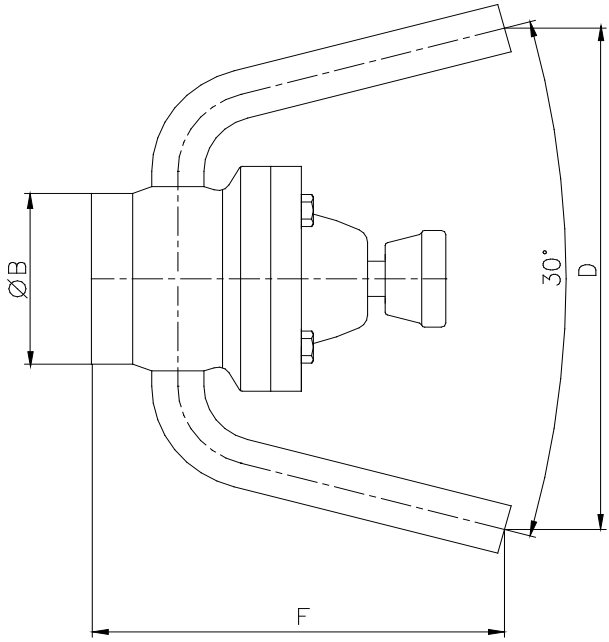
3.1. Standard version

Specifications

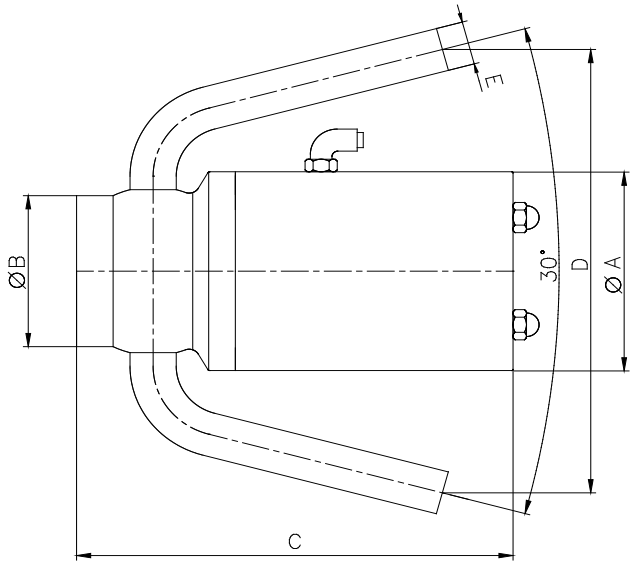
SPECIFICATIONS	SERVINOX OFFER
Service pressure	Mini: vacuum Max.: 6 bar
Service temperature	1°C to 120°C
Materials: Parts in contact with the product • Other parts • Membrane	 1.4404 (316L) stainless steel 1.4304 or 1.4307 (304L) stainless steel NBR, EPDM, VITON
Connection	To weld, clamp, flange, male, female
One size	DN15

Dimensions

Manual version

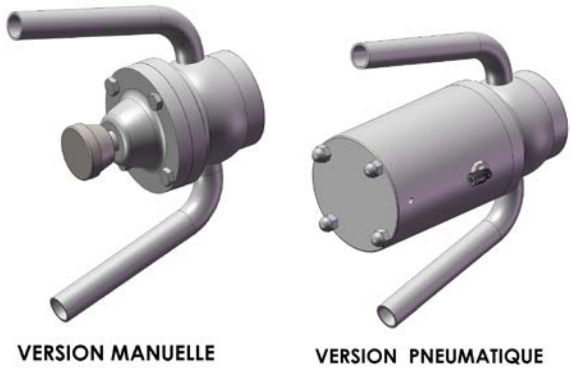


Pneumatic version



SIZES	A	B	C	D	E	F
DN15	79	59.5	163	181	17.2X1.6	136

Equipment view



[Manual version / Pneumatic version]

ATEX options

Version ATEX ***2014/34/EU*** , zones 1 & 21, gas and dust.

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 PEML type sampling valve, compliant with ATEX zones 1 and 21, bears a Servinox sticker like the model below:

The “ATEX” equipment retains the same technical characteristics as the standard version.

4 CUT-IN

4.1. Transport/ Delivery acceptance/ Handling

On delivery receipt, check:

- 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

4.3. Installation

General observations

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.

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.

Connection welding

The sampling valve drive head must be dismounted in open position before welding the body on its support in order not to damage the membrane

Plan for a compressed air supply of 6 bars minimum to open the PEA.

The equipment must be welded on installation by qualified personnel as per the prevailing directives in the country of installation. There must be no impurities in the weld and 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.

Outlet connection

The outlet tubing connection must have an internal and external diameter identical to the sampling valve.

Pneumatic connection

The pneumatic connection of the cylinder is intended for a 6mm polyamide tube on push-in fittings

5 OPERATION

5.1. Checking the operation

- Check that there are no leaks
- Check the correct assembly of the equipment on the installation
- Make sure that there is no difficulty in hand-operating the sampling valve (manual version)
- Check the operation of the control and detection cylinder if present (pneumatic version)
- Check the drive head tightening

5.2. Adjustment

Adjustments are reserved for the manufacturer of the documented equipment.

Please contact Servinox or, where appropriate, your distributor.

5.3. Sterile utilisation

For sampling valves with one output ***before sampling***, we recommend flame sterilising (butane torch type) of the output tube for 1 minute.

For sampling valves with 2 outputs, the second output allows for CIP and/or sterilising liquid intake outside the sampling, the other evacuation duct is the sampling output.

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.

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.

6.2. Inspections and servicing

The following elements at least must be inspected:

- Traces of corrosion
- Tightening of the drive head
- Absence of leaks

Mandatory servicing periods:

Annually:

- Change the membrane, seals (Ref.10 and 11, pneumatic version)

We recommend you check the membrane material before replacing to avoid any chemical compatibility problems.

Every 6 months:

- Internal washing of the equipment

(ATEX option: Reduce the period between cleaning operations to avoid dust accumulation which could form an explosive zone.)

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			
			Other (describe)
CHECKING THE CORRECT OPERATION AND GOOD CONDITION			

Material required

Medium thread lock

1 complete set of spanners

1 multi-grip pliers

The operators

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

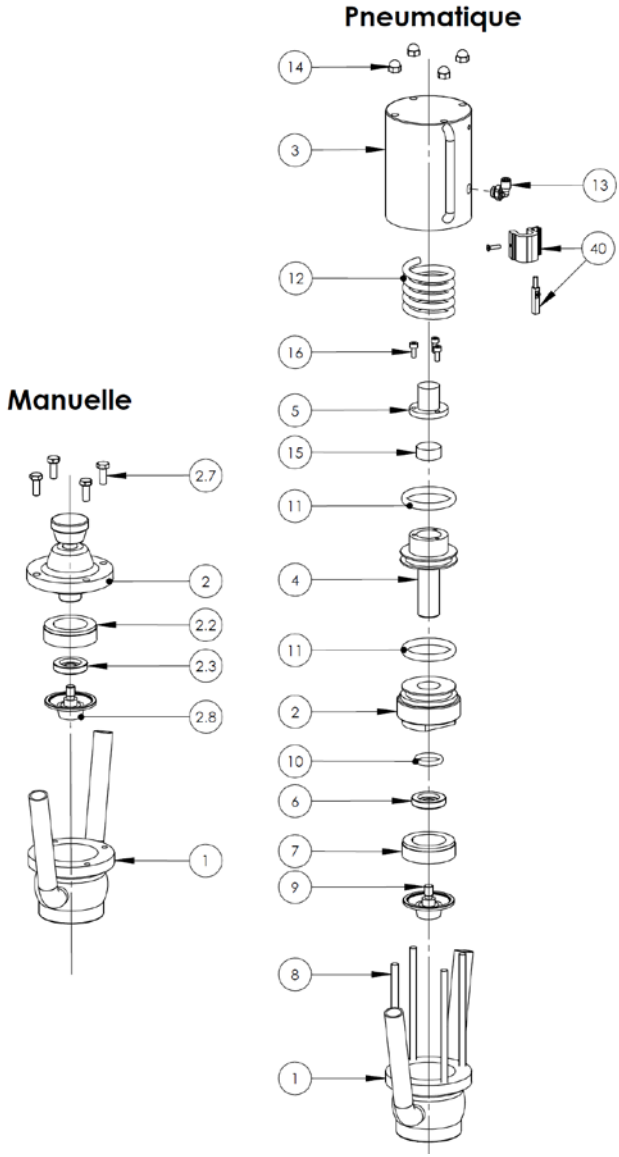
The personnel must be equipped with gloves, safety helmets and safety boots.

6.3. Replacing worn parts

To change worn parts, contact Servinox to guarantee a standard replacement.

The use of parts other than those supplied by SERVINOX may result in cancellation of the guarantee.

Equipment exploded view
(Standard/Pneumatic)



Equipment parts list

Manual version

REFERENCE	DESCRIPTION
1	Body
2	Drive head
2.2	Membrane press
2.3	Plunger
2.7	Screw
2.8	Membrane

Pneumatic version

REFERENCE	DESCRIPTION
1	Body
2	Cylinder nose
3	Cylinder body
4	Piston
5	Stop for magnet
6	Plunger
7	Membrane press
8	Brace
9	Membrane
10	Seal
11	Seal
12	Spring
13	1/8'' angle connection
14	Cap nut
15	Magnetic wafer
16	Screw
40	Support + magneto inductive sensor

Manual sampling valve disassembly

To disassemble the sampling valve, proceed as follows:

Completely unscrew the drive head screw (Ref.2) before any disassembly of the equipment

1) Unscrew the control screw (Ref.2) so that the membrane is no longer in contact with the seat.
2) Disassemble the screws (Ref.2.7), the drive head (Ref.2) is then separated.
3) Unscrew the membrane (Ref.2.8) from its drive head (Ref.2)
4) Extract the membrane press (Ref.2.2) and the plunger (Ref.2.3)
5) Clean all the parts of the disassembled equipment

Pneumatic sampling valve disassembly

To disassemble the sampling valve, proceed as follows:

Disconnect the detector electric wires (Ref.40) if it is present.
Put the cylinder under pressure to open the sampling valve.

1) Loosen the nuts (Ref.14).
2) Remove the “Pneumatic drive head” unit from the body by sliding it along the tie bars (Ref.8).

Reduce the pressure in the cylinder

3) Unscrew the membrane (Ref.9) on the piston (Ref.4).
4) Remove the plunger (Ref.6) and the membrane press (Ref.7).
5) Unscrew the cylinder nose (Ref.2) while holding the cylinder tube (Ref.3) in a vice.

CAUTION spring under pressure

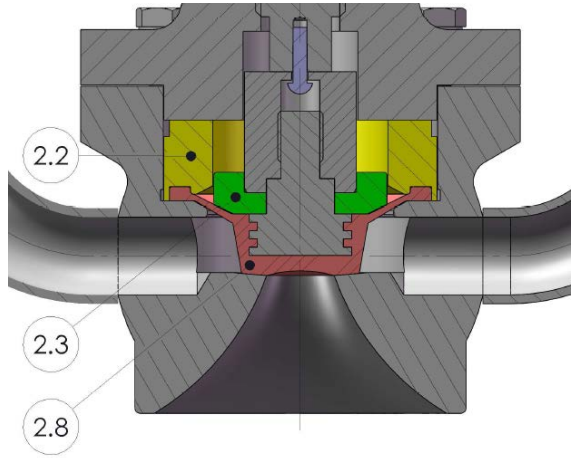
6) Remove the cylinder nose (Ref.2), piston (Ref.4) and the spring (Ref.12).
7) Remove the seals (Ref.10 and 11) from their grooves.
8) Clean all the parts of the disassembled equipment

Manual sampling valve re-assembly

To re-assemble the sampling valve, proceed as follows:

1) Screw down the drive head (Ref.2)

2) Position the membrane press (Ref.2.2) and plunger (Ref.2.3) on the drive head. ***PAY CAREFUL ATTENTION TO THE CORRECT ASSEMBLY SEQUENCE***



3) Screw the new membrane (Ref.2.8) on the drive head, having ***applied thread lock (medium) on the threaded part of the membrane***

4) ***Completely unscrew the drive head (Ref.2)*** and insert it, in open position, in the body (Ref.1) and tighten the screws (Ref.2.7).

5) Close the sampling valve by tightening the control screw (Ref.2).

Remounting the automatic sampling valve

To re-assemble the sampling valve, proceed as follows:

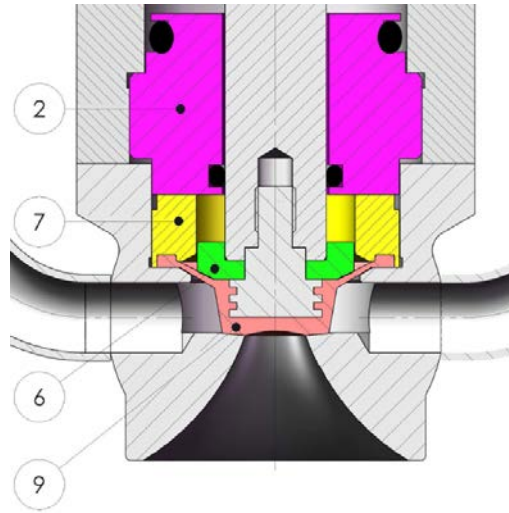
1) Replace the seals (Ref.10 and 11)

2) Fit the spring (Ref.12) onto the piston (Ref.4).

3) Insert this unit into the cylinder body (Ref.3).

4) Screw the cylinder nose (Ref.2) in the cylinder tube (Ref.3).

5) Install the membrane press (Ref.7) and the plunger (Ref.6). ***PAY CAREFUL ATTENTION TO THE CORRECT ASSEMBLY SEQUENCE***



6) Screw the membrane (Ref.9) on the piston, having ***applied thread lock (medium) on the threaded part of the membrane***

Put the cylinder under pressure to open the sampling valve.

7) Fit the "Pneumatic drive head" unit, in open position, in the body by sliding it along the tie bars (Ref.8).

8) Tighten the nuts (Ref.14).

Reduce the pressure in the cylinder (closed position)
Then connect the detector electric wires (Ref.40) if it is present.

Notes

7 DIAGNOSTIC ASSISTANCE

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

INCIDENT	POSSIBLE CAUSE	SOLUTION
Fluid leak	- Connection welding broken (poor welding on installation, corrosion, etc.)	> Repair the welding by qualified persons
	- Membrane worn out	> Replace the worn out membrane > Adapt the membrane material to the fluid
	- Blocking of the cylinder in open position	> Lever blocked by the surrounding installation or a foreign object. > Replace the cylinder spring
	- Incorrect tightening of the assemblies	> Tighten the drive head screws or cap nuts
	- Membrane dripping	> Check the membrane assembly

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