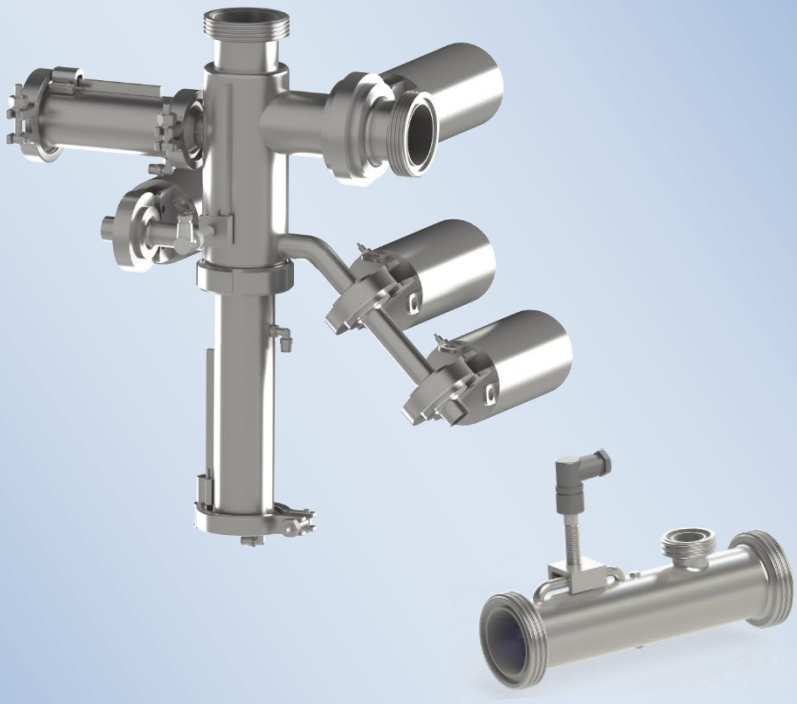
Pigging system

XSR



Instruction manual

Reference: XSR_NOT_EN

Version F

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1 OVERVIEW

1.1. The manufacturer

SERVINOX is a specialist in process equipment, designed for the brewery, food processing, cosmetics and chemical sectors.

Expertise in process equipment:
In fields such as the protection of tanks, sampling, gas injection in liquids, pipe pigging and cleaning using patented products.

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

- Pressure Equipment Directive ***(PED) 2014/68/EU***
- European Directive on equipment installed in an Explosive Atmosphere **(ATEX)** ***2014/34/EU***
- Manufacturers' Sanitary Standard US 3A

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

1.2. Instruction manual

In order to guarantee personal safety and integrity of the equipment, you must read and understand the information contained in this manual prior to installing and using the equipment.

Depending on the facility and fluid, specific directives and regulations may apply. These must be respected.

In addition to the instructions stated in this instruction manual, general workplace safety and protection recommendations must be applied. Regulations concerning the protection of the environment must also be respected.

1.3. Presentation of the equipment

SERVINOX pigging systems are intended to provide effective pigging on carried products in piping, as well as to recover the latter to minimise loss.

They must be used on a circuit carrying clear or viscous group 1 and 2 liquid products (Article 13 of European Directive 2014/68/EU).

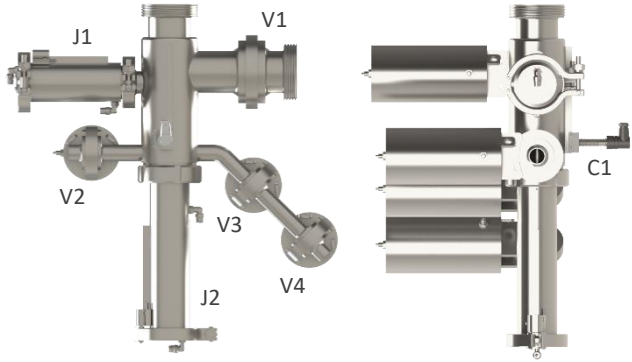
Description of operations

The pigging system is comprised of a horizontally- or vertically-mounted starting station, an arrival station and a pig.

The pig is stored in a body by-passing through the transfer line, as the volume of product in the body is very limited, even non-existent depending on the case.

The pig and transfer line are cleaned at the same time.

Starting station



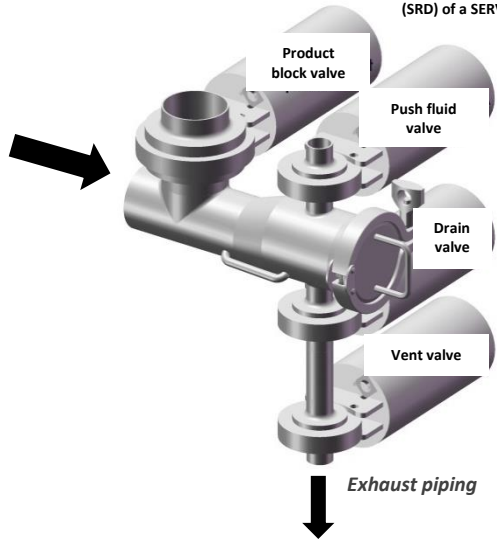
The starting station is comprised of a body to be connected to the transfer line, which enables storage of the pig. It is equipped with:

- A double-effect pneumatic cylinder holding the pig (J2) when necessary.
- A double-effect pneumatic cylinder for introducing the pig (J1) in the transfer line or a station-bottom plug for the manual versions.
- A magneto-inductive detection system.
- A transfer line block valve (V1). Reposition V1 on the image on the right
- An air valve (V2) for propelling the pig into the pigging phase.
- Two sewer (V3) and vent valves (V4).

The starting station has an integrated opening safety lock system under normal operating conditions.

Pig return phase

Example of the departure station (SRD) of a SERVINOX scraping system



In the phase when the pig returns to the starting station, the starting station valves are in the following positions:

- Product block valve = closed
- Push fluid valve = closed
- Sewer valve = open
- Vent valve (pierced) = closed

For normal and safe use of the pigging system, there must be a diaphragm at the level of the vent valve in order to limit the exhaust flow in the pig return phase.

The vent valve must be pierced in accordance with the instructions below.

PUSH FLUID RETURN: **AIR**

PIPING	DN25	DN40	DN50	DN65
Ø diaphragm	3 mm	3 mm	4 mm	4 mm

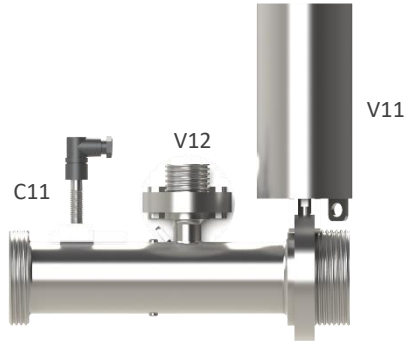
PIPING	DN80	DN100	DN125	DN150
Ø diaphragm	6 mm	6 mm	8 mm	8 mm

PUSH FLUID RETURN: **WATER**

PIPING	DN25	DN40	DN50	DN65
Pig speed	2 m/s	2 m/s	1.5 m/s	1.5 m/s
Ø diaphragm	6 mm	8 mm	8 mm	10 mm

PIPING	DN80	DN100	DN125	DN150
Pig speed	1 m/s	0.5 m/s	0.5 m/s	0.5 m/s
Ø diaphragm	14 mm	20 mm	24 mm	30 mm

Arrival station



The arrival station is comprised of a sleeve to be connected to the transfer line equipped with:

- A mechanical pig lock system.
- A magneto-inductive detection system.
- A transfer line block valve (V11).
- An air valve (V12) for sending the pig to its starting station.

Pig

The pig is designed to recover the residual mass of a product in piping. To do this, it is inserted into the transfer line ahead of the zone to be scraped, then propelled through the piping via a guided driving fluid (in general: air or water) using a push control system. The pig also, under certain conditions, enables the separation of two products successively carried in a single pipe section.

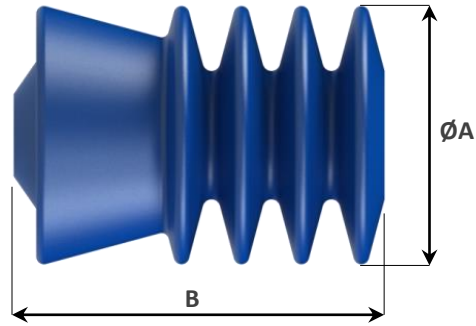
Sealing is via a series of elastomer disks adapted to the fluid being processed.

The pig can be equipped with a magnetic insert to enable detection inside the piping and in the starting and arrival stations.

Technical data

CHARACTERISTICS	SERVINOX OFFER
Materials	*PIG*: MVQ (blue), MVQ with PTFE (grey), EPDM (black), NBR, FKM *MAGNETIC INSERT*: Neodymium
Elastomer hardness	50 shore A
Service temperature	MIN: 1°C MAX: +120°C

Dimensions



The scrapper shuttle conform to the ISO 3302-1 category M2 standard for dimensional tolerances and their values for solid molded rubber products.

- ***Scraper shuttle DIN***

SIZES	ND 25	ND 40	ND 50	ND 65
Tubes	29 x 1.5	41 x 1,5	53 x 1,5	70 x 2
ØA	26.5 ±0,4	39.5 ±0,4	51 ±0,5	67.3 ±0,7
B	42 ±0,5	61,5 ±0,5	74,7 ±0,7	95,5 ±0,7

SIZES	ND 80	ND 100	ND 125	ND 150
Tubes	85 x 2	104 x 2	129 x 2	154 x 2
ØA	82.6 ±0,7	102 ±0,8	127.5 ±0,8	153 ±0,8
B	117 ±0,8	144,4 ±0,8	178,7 ±1,3	225 ±1,6

- ***Scraper shuttle SMS/OD***

SIZES	ND 25	ND 38	ND 51	ND 63.5
Tubes	25 x 1.2	38 x 1.2	51 x 1.2	63.5x1.5
ØA	23 ±0,35	36.7 ±0,4	49.6 ±0,5	61.7 ±0,5
B	40 ±0,4	62,7 ±0,5	71,7 ±0,7	91 ±0,7

SIZES	ND 76.1	ND 104
Tubes	76 x 1.6	104 x 2
ØA	74.3 ±0,7	102 ±0,8
B	107,5 ±0,8	144,4 ±0,8

- ***Scraper shuttle ISO***

SIZES	ND 25	ND 40	ND 50	ND 80
Tubes	33,7 x 1,6	48,3 x 1,6	60,3 x 2	88,9 x 2
ØA	31,1 ±0,4	46 ±0,5	57,4 ±0,5	86,7 ±0,7
B	47 ±0,5	66,4 ±0,7	84 ±0,7	124 ±0,8

SIZES	ND 100	ND 125	ND 150
Tubes	114,3 x 2	139,7 x 2	168,3 x 2
ØA	112,5 ±0,8	138,4 ±0,8	169 ±1,2
B	163 ±1,1	202,5 ±1,4	255 ±1,8

Precautions for use

You must check the chemical and temperature compatibility of the elastomer with the carried product.

The pig is bidirectional. It is asymmetrical in shape, to optimise operation when it is subjected to back pressure from the product to be pushed, giving it direction. The series of identical disks must be located in front of the pusher in the piping in the pigging phase.

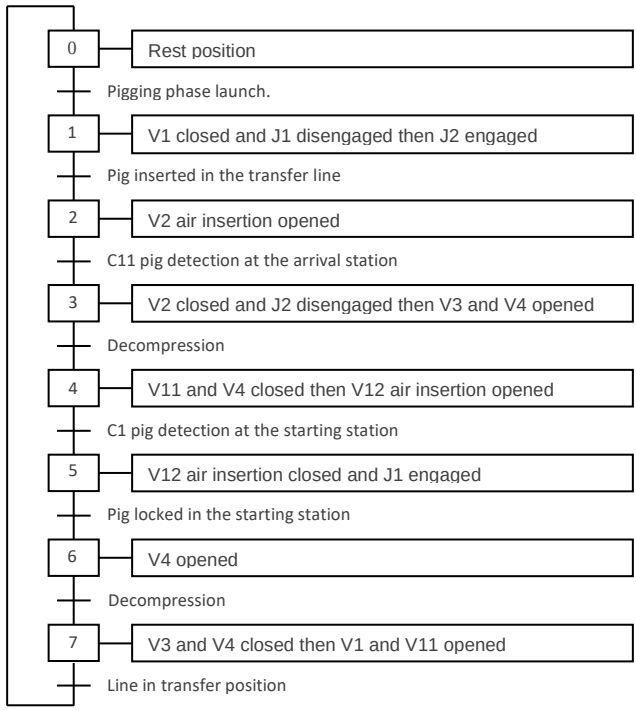
Concerning pig installation, storage, commissioning and maintenance recommendations, refer to the supplementary manual: JM_NOT_EN.

1.4. Sequential function chart (SFC)

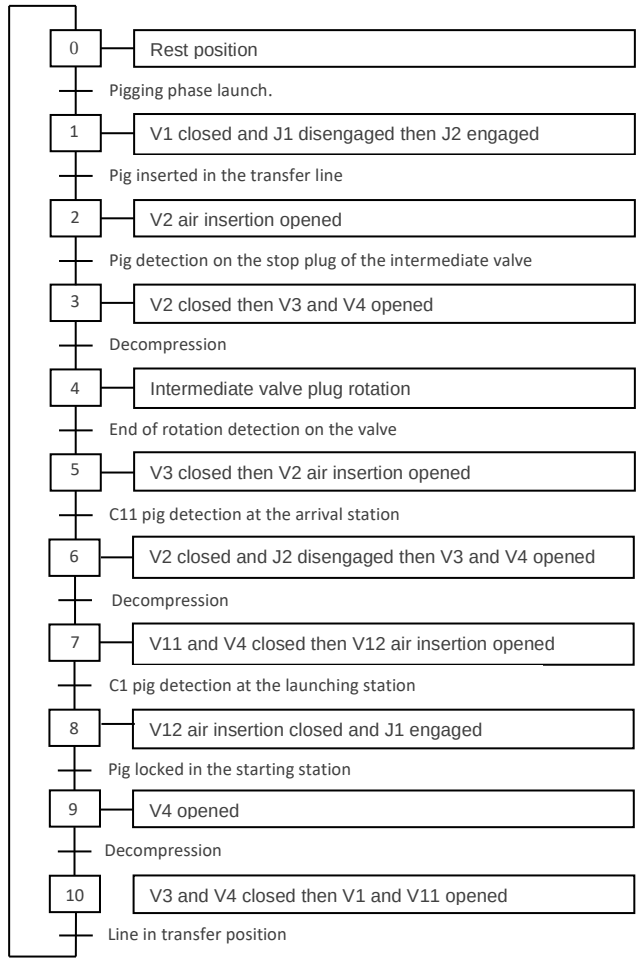
In rest state, the V1 and V11 valves are usually open, the J1 cylinder is extended and the J2 cylinder is retracted (*see references in paragraph 1.3 of this manual, in the section "Description of operation").*

Pigging

Pigging mode integrates the successive steps described in the SFC below:

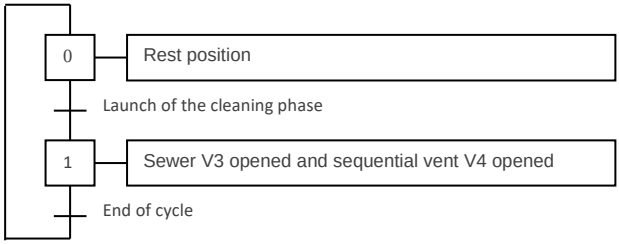


Pigging mode with intermediate receiving valve(s) integrates the successive steps described in the SFC below:



Cleaning

Cleaning mode is used to clean the pig in its station during a NEP cycle on the line and integrates the successive steps described in the SFC below.



Transfer

Transfer mode corresponds to a situation of waiting for the installation of the pigging system and therefore of the rest state; the block valves are open and the air valves and the purge valves are closed.

1.5. Marking

If the user encounters difficulties that these service instructions do not help resolve, the user must ask the equipment manufacturer or, if necessary, the distributor for additional information.

The SERVINOX order number and/or of the manufacturing serial/order number (beginning by SVX) must be cited when making any specific request (spare parts, etc.).

2 SAFETY RECOMMENDATIONS

The technical manual contains fundamental recommendations which must be respected. It must therefore be read prior to installation and commissioning.

2.1. Markings and symbols

The following symbols are intended to draw your attention to important points affecting personal safety and all of the equipment:

SYMBOL	DEFINITION
	Direct hazard for people
	Possible deterioration of the product or its environment
	Useful information or recommended application
	Minimum number of personnel required for certain operations. (The number of people present in the symbol indicates the minimum number of people required).
	Minimum level of technical capability. (The figure in red indicates the minimum level required).

Some work requires specific technical skills and qualifications, such as curative maintenance work and work on electrical equipment.

3 levels specify the required technical capability (knowledge of the target equipment, experience, training, etc):

	WORKER PROFILE	SPECIFIC POINTS
Level 1	**Final user** with no technical knowledge.	**Default level** if there is no capability symbol. Only authorised **usage and ongoing servicing operations**.
Level 2	**Experienced professional**.	Trained and **experienced. Knows the equipment and technologies** employed.
Level 3	**Manufacturer's personnel** / product expert	**Work reserved for the manufacturer** of the documented equipment.

2.2. Worker safety

Installation, inspection, adjustment, servicing and replacement operations must be performed:

- By qualified personnel,
- By following the recommendations and instructions in this manual,
- By integrating the provisions to ensure workplace safety, the installation procedures and means, and the legal requirements relating to the prevention of accidents, in particular with respect to electrical facilities.

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

2.3. Intended use

Compliant use

Check that the equipment has been selected for the intended use using the accompanying documents.

Improper use

The equipment must not be used other than for the intended use. The manufacturer cannot be held liable in the event of any improper use.

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

SETTINGS	LIMITS
MAX acceptable pressure	10 bar: Ø ≤ 80 8 bar = Ø100 6 bar = Ø125 4 bar = Ø150
Acceptable fluid temperature	+1°C / +120°C

2.4. Recommendations

The starting station must be isolated from the line in process phase, by a valve in the following situations:

- If the product viscosity > 5000 cP (centipoise); for example for mayonnaise, etc…
- When the pig cannot remain permanently immersed with which it is chemically incompatible
- When the product to be scraped is "charged" such as for example: rillettes, presence of small bits, etc… (risk of blocking the tagging)
- For a product that congeals at room temperature; when there is no double heating jacket (risk of blocking the tagging, such as with chocolate, for example)

2.5. Legend

DANGER / HAZARD			
	Hot fluid	Very hot surface	Aggressive fluid
DAMAGE	Burns	Burns	Burns
PREVENTION			
	Appropriate clothing, goggles, gloves	Appropriate gloves	Gloves, goggles, mask

3 TECHNICAL CHARACTERISTICS

3.1. Standard version

Characteristics

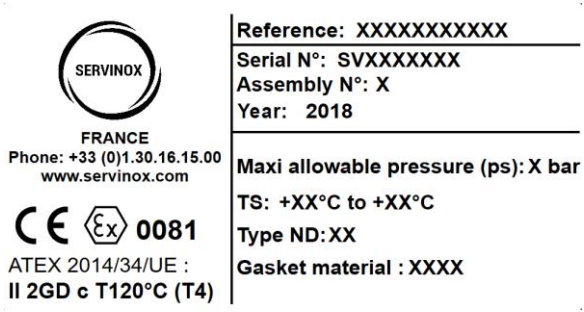
CHARACTERISTICS	SERVINOX OFFER
Maximum pressure	10 bar: Ø ≤ 80 8 bar = Ø100 6 bar = Ø125 4 bar = Ø150
Operating temperature	1°C to 120°C
Materials: • Parts in contact with the product • Other parts • Gaskets	 Stainless steel 1.4404 (316L) Stainless steel 1.4301 (304L) EPDM, NBR, FKM, MVQ.
Valve sizes: • SMS/OD • DIN (11850-2) • ISO	 25 mm (1"), 38mm (1.1/2"), 51 mm (2"), 63.5 mm (2.1/2"), 76.1 mm (3"), 101.6 mm (4") DN25, DN40, DN50, DN65, DN80, DN100, DN125, DN150 DN25, DN40, DN50, DN65, DN80, DN100, DN125, DN150
Connections	Welded, Clamped, Female, Male, Flange

3.2. Options

- Station opening detection system.
- Closing by lockout.
- Reinforced pressurisation system for opening the starting station
- Hinges to make it easier to handle the position cylinder.
- Mounting of electrical or pneumatic distributors for guiding the insertion cylinders and keeping the pig in position.
- Double heating jacket to maintain the product temperature.
- Flow regulation control panel to limit the speed of the pig.
- Manual line decompression tap.
- Manometer on a separator to indicate line pressure.

- Retractable pig stopping cylinder at the arrival station.
- Line mister (to lubricate a line process that is too dry).
- Version ATEX 2014/34/EU , zones 1 & 21, gas and dust.

  This equipment is designed to be used in surface assemblies (group II).
  The category 2 level of protection is adapted to normal operation and to frequently occurring disturbances for which the operating faults are usually taken into account. This equipment is designed for an environment in which explosive atmosphere is due to the mixture of air and gas (G), fumes and mist or the mixing of air with dust (D), which will probably occur.
  The maximum surface temperature is the temperature of the fluid.



4 COMMISSIONING

4.1. Transport / Reception / Handling

On reception, check:

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

If the equipment is damaged, it must not be mounted on the assembly. Contact the manufacturer, or if necessary, your distributor.

4.2. Storage

If the equipment is not installed immediately upon delivery, it must be ***securely and properly stored***.

It must be stored in its original packaging, in a covered location, with protection against dirt, rain, snow, insects and protected against shocks.

The temperature for minimising risk during storage between 5°C and 40°C, with relative humidity < 50%.

If the equipment is stored at sub-zero temperatures, the resistance of the equipment to cold must be taken into account (e.g.: the gaskets).

If it is stored for more than one year, the gaskets must be replaced prior to the commissioning

4.3. Installation

General points

The client is responsible for installing the system.

He must ensure that the gaskets are properly installed, that the pneumatic connections for the locking and positioning cylinders are correctly completed, and that the main piping is connected using standardised connections. He must also check the gaskets in the equipment prior to its commissioning.

The system must not be subjected to shocks, blows or falls, which could damage it.

Prior to any use of the equipment, the user must perform a visual inspection to ensure it is in good visible condition: absence of corrosion, packaging residue.

If the fluid is harmful, inflammable, toxic, etc…, equip the assembly with discharge piping that leads to a safe outlet location.

It is nonetheless recommended that you check the compatibility of these products with the gaskets and materials prior to use.

Workers

The work described hereafter must be performed by qualified and experienced personnel.

Personnel must be equipped with gloves, a helmet, and safety shoes or boots.

Precautions prior to installation

Before installing the stations:

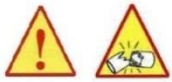
1) Plan on having retention for the installation of the stations for models DN50 to DN150.
2) ***Stations requiring welding***: **plan on having dismountable piping for equipment maintenance.**
3) The parallelism of the nozzle sides.
4) Proper alignment of the piping.
5) The quality of the nozzle range.
6) Determine the size of the stations by provisionally installing them on the piping.

Welded connections

The equipment must be welded to the assembly by qualified personnel in accordance with the directives applicable in the country in which it is installed. The welding must not contain any impurities and must be performed hygienically.

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

Before welding



You must dismantle the body of the stations prior to welding the body to its mount in order to avoid damaging the gaskets.

Position detection

Adjust and test the operation of the provided detectors in accordance with the manufacturer's manual.

Pneumatic connections of the cylinder

The cylinder is designed to be pneumatically connected with 6mm polyamide tube to the 1/4" square push-in connections. Plan on having sufficient air pressure/flow of at least 3 bar.

4.4. Before commissioning

<u>BEFORE THE FIRST USE OF THE PIGGING SYSTEM</u>:

You must clean the piping on which the pigging stations are installed in order to remove all impurities which might damage the sealing.

5 OPERATION

5.1. Checking the operation

After installation prior to using the pigging system or during maintenance work:

- Inspect the sealing of the connections on the body.

- Check that the installed actuators are operational. A "hard" can be observed during the very first operations.

- Check that the installed detectors and distributors are operational.

- After the first hours of operation, under pressure or temperature, you should inspect the tightening of the different parts.

5.2. Precautions

The pig must only be installed on locked, tagged and inert equipment (absence of pressure and no risk of fluid transfer)

- ***You must never perform dry pigging during testing;*** this can greatly damage the pig, and even destroy it. In addition, the speed can make it reach high temperatures, leading to a risk of burns.
- ***It is important to check the condition of the pig each time, prior to inserting it in piping***. You must check:
    - For the absence of unusual wear around the disks. To do this, check dimension A, (*see reference in paragraph 1.3 of this manual, in the section "Description of operation").*

If dimension A is less than the MIN tolerance, you must change the pig (*see tolerances in paragraph 1.3 of this manual, in the section "Description of operation"*).

- For the absence of deterioration linked to cracking of the surface of the elastomer and the absence of tearing and cutting.
- For the absence of missing material or equipment.
- For the absence of packaging residue.
- That the pig is clean.

- Remember that it is not easy to insert the pig in piping, ***as its external diameter is equal to 2% more than the internal diameter of the piping*** to ensure proper sealing.

NOTE: WHEN DISMANTLING THE PIG:

If there is residual pressure in the piping, the pig will be propelled violently from the station and might be propelled outwards, and a large quantity of air will escape, making a very loud noise.

5.3. Adjustments

Only the manufacturer may adjust the documented equipment.

Please contact Servinox, or, if necessary, your distributor.

5.4. Pigging cycle

It is particularly recommended to have a water or fluid push during the organic solvent, alcohol, sugary liquid, NEP solution push (in order to prevent a "dry push").

You must give the line time to decompress before operating the different actuators (time to be determined with Servinox during the tests and start-up).

In order to avoid excessive speed that might damage the pig, you should follow the Servinox recommendations when automating the pigging stations.

In addition, if necessary, Servinox can offer a self-regulating push system (RVO control panel).

5.5. Fluid supply

Lubricated compressed air is supplied to the position and locking cylinders at 6 bar, with maximum flow of: 110 L/min.

Push fluid supply:

The push fluid must be a neutral fluid if the fluid to be pigged is a group 1 fluid (according to the terms of Directive 2014/68/EU Article 13 §1) in order not to create an ATEX zone inside the piping; if the fluid to be pigged is group 2, you can use a gas or group 2 liquid as a push fluid.

You can use air as a push fluid in the following conditions:

Piping DN	25 -> 80	100	125	150
Maximum pressure (bar)	10	8	6	4

The push fluid supply flowrate must be set so that the speed of the pig never exceeds 2 m/s; see table below.

Piping DN	25	38/40	50/51	76/80	100	125	150
Maximum flowrate (m3/h)	2.8	6.8	12	30	56	88	127

5.6. Gasket corrosion

You must change the gaskets and check the cylinder bearings at least once per year in order to prevent any risk of fluid leaking out and the creation of an unacceptable exhaust temperature greater than that stated on the device.

When working on the gaskets, you must test the sealing prior to restarting the system.

6 SERVICING AND MAINTENANCE

6.1. General points

The equipment must be maintained in order to ensure it operates properly.

It must be inspected at regular intervals. The initial inspection must be performed after no more than 6 months.

Certain fluid properties (corrosive, aggressive, abrasive, residue, viscosity, etc.) and certain environmental conditions (climate, pollution, etc.) may reduce the time required between inspections.

For proper maintenance and to maintain the equipment warranty, SERVINOX will provide the spare parts. Please specify the manufacturing number and product reference for any order.

We have pouches of wear parts (gaskets, etc.) and recommend that you keep a few pouches on hand to enable quick repair and replacement work.

You can also contact SERVINOX for any advice regarding the equipment maintenance.

Maintenance precautions

<u>Respect the following points prior to all maintenance work:</u>

- Tag and lock the equipment
- Ensure the system is not under pressure
- The equipment must be emptied
- The fluid must be cooled to room temperature
- Air out the piping network, if the fluid is corrosive and aggressive

6.2. Inspections and servicing

The stations must be periodically serviced. The frequency of servicing depends on the operating conditions and must be determined for each particular case.

<u>The following minimum inspections must be performed</u>:

- Absence of leaks.
- Traces of corrosion.
- Tightening of assemblies.
- Proper operation of the automatic cylinders.

Mandatory periodic servicing:

Every year, change the station and connection gaskets.

It is nonetheless recommended that you check the compatibility of these products with the gaskets and materials prior to use.

We recommend logging all servicing and inspection operations performed on the equipment in a table of this type:

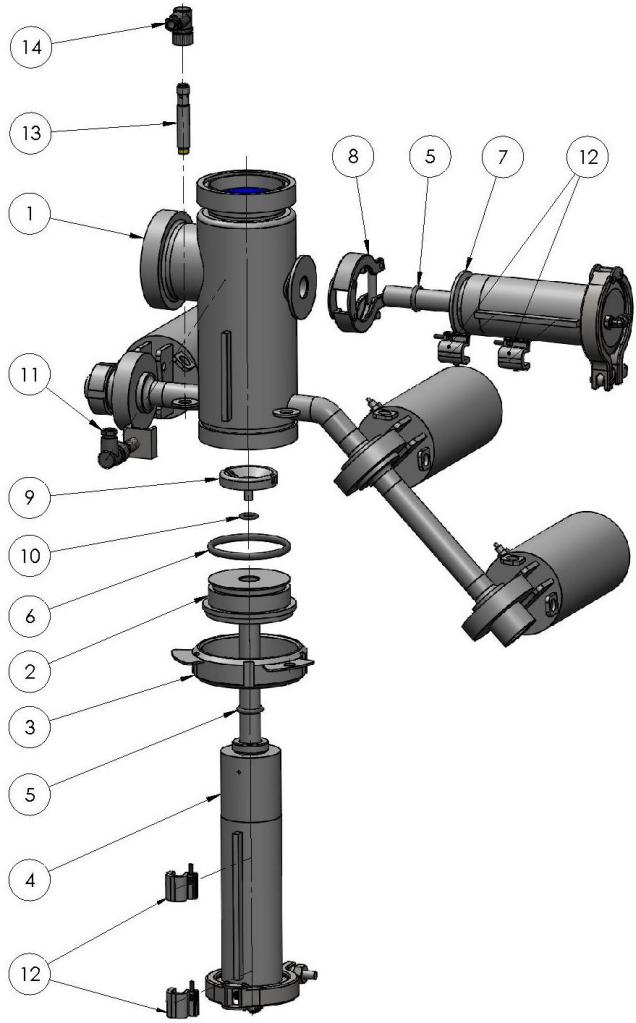
Date	Company	Name of worker	Signature
PREVENTIVE MAINTENANCE			
Operations		**Other, Comments**	
CHECKING PROPER OPERATION AND CONDITION			
Operations		**Other, Comments**	

Workers

The work described hereafter must be performed by qualified and experienced personnel.

Personnel must be equipped with gloves, a helmet, and safety shoes or boots.

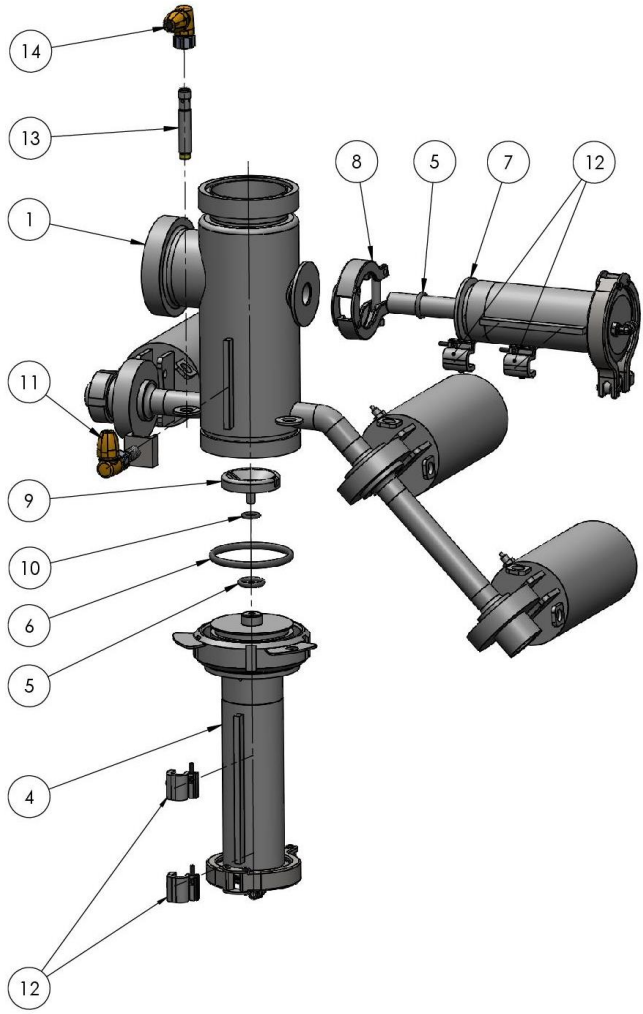
Exploded view of the starting station



Nomenclature

REFERENCE	NAME	QUANTITY
1	Body	1
2	Cylinder head	1
3	Lock nut	1
4	Position cylinder tube	1
5	Rod gasket	2
6	Head gasket	1
7	Holding cylinder tube	1
8	Clamp ring	1
9	Push nozzle	1
10	Push nozzle gasket	1
11	Pig position detector	1
12	Cylinder detectors	4
13	Station opening detector	1
14	Female connector	1

Exploded view of the starting Station (for hardening products)



Nomenclature
(for hardening products)

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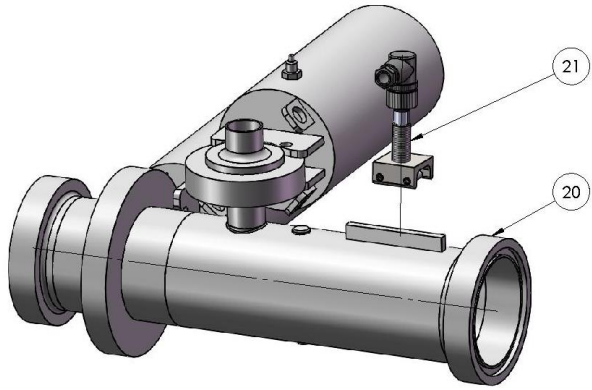
8	Clamp ring	1
9	Push nozzle	1
10	Push nozzle gasket	1
11	Pig position detector	1
12	Cylinder detectors	4
13	Station opening detectors	1
14	Female connector	1

Exploded view of arrival station



REFERENCE	NAME	QUANTITY
20	Body	1
21	Pig position detector	1

Dismantling the pigging system

To dismantle the pigging system, follow these instructions:

1) Disconnect the cylinder position detectors (Ref. 12) and stations (Ref. 11, 13 and 21) as well as all other electrical connectors.

2) Disconnect the pneumatic air inlets from all of the station components.

3) Disconnect the stations from the main line.

To dismantle the starting station, follow these instructions:

1) Dismantle the lock nut (Ref. 3) and the clamp ring (Ref. 8) and remove the pig holding and position cylinders.

2) Remove the pig from the station.

Remounting the pigging system

Remounting must be done after cleaning all of the parts, being careful to prevent introducing impurities which might damage the gaskets.

To remount the starting station, follow these instructions:

1) Before remounting the starting station, check that the holding (Ref. 7) and position cylinders tubes (Ref. 4) are operating properly.

2) You must make sure that no foreign body is inside the starting station.

3) You must clean the flange gaskets.

4) Remount the holding cylinder tube (Ref. 7) with the clamp ring (Ref. 8) and change the gasket (Ref. 5).

5) Remount the pig in the starting station.

6) Remount the positioning cylinder tube (Ref. 4) with the lock nut (Ref. 3) and change the gaskets (Ref. 5, 6 and 10).

To remount the pigging system, follow these instructions:

1) Remount the stations (Ref. 1 and 20) on the connection tips to the main line and change the gaskets.

2) Connect the position detectors and make sure they are operating properly.

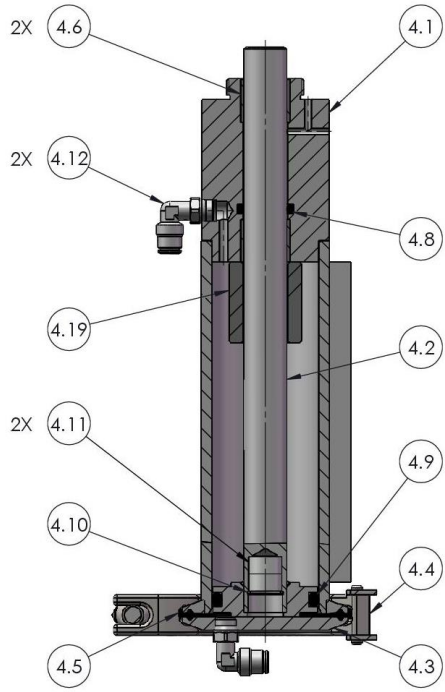
3) Connect the air and vent valves.

4) Connect the pneumatic inlets to all of the station components.

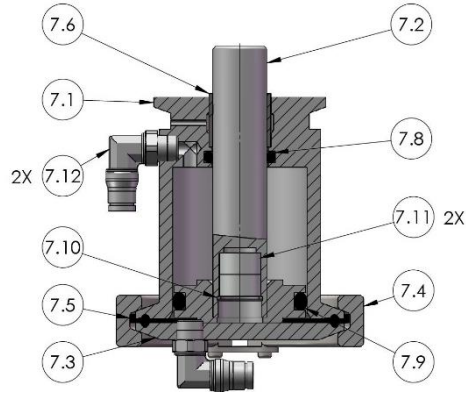
5) Check that all of the components are operating properly.

6) Perform a hydraulic sealing test in order to detect any leaks prior to restarting the assembly.

Position cylinder



Holding cylinder



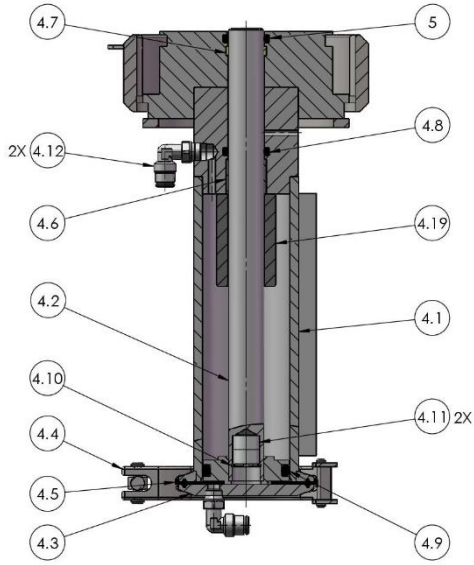
Position cylinder

REFERENCE	NAME	QUANTITY
4.1	Position cylinder tube	1
4.2	Cylinder rod	1
4.3	Clamp plug	1
4.4	Clamp ring	1
4.5	Clamp gasket	1
4.6	Guide bearing	2
4.8	Rod gasket	1
4.9	Piston gasket	1
4.10	Fastening ring	1
4.11	Magnet	2
4.12	Pneumatic bracket	2
4.19	Stop (when necessary)	1

Holding cylinder

REFERENCE	NAME	QUANTITY
7.1	Holding cylinder tube	1
7.2	Cylinder rod	1
7.3	Clamp plug	1
7.4	Clamp ring	1
7.5	Clamp gasket	1
7.6	Guide bearing	1
7.8	Rod gasket	1
7.9	Piston gasket	1
7.10	Fastening ring	1
7.11	Magnet	2
7.12	Pneumatic bracket	2

Position cylinder



REPERE	DESIGNATION	QUANTITE
4.1	Position cylinder tube	1
4.2	Cylinder rod	1
4.3	Clamp plug	1
4.4	Clamp ring	1
4.5	Clamp gasket	1
4.6	Guide bearing	1
4.7	Guide ring	1
4.8	Rod gasket	1
4.9	Piston gasket	1
4.10	Fastening ring	1
4.11	Magnet	2
4.12	Pneumatic bracket	2
4.19	Stop (when necessary)	1
5	Top rod gasket	1

Dismantling the station cylinders (STANDARD)

To dismantle the cylinders, follow these instructions:

1) You must dismantle the cylinders from the station body, air inlets and detectors disconnected.

2) Dismantle the clamp rings (Ref. 4.4 and 7.4).

3) Remove the rods (Ref. 4.2 and 7.2).

4) Change the gaskets (Ref. 4.8 ant 4.9 or Ref. 7.8 and 7.9).

5) Check the condition of the bearings (Ref. 4.6 or 7.6) and change them if necessary.

6) Check the condition of the gaskets (Ref. 4.5 or 7.5) and change them if necessary.

Remounting the station cylinders (STANDARD)

To remount the cylinders, follow these instructions:

1) You must check the condition of the gaskets (Ref. 4.8 and 4.9 or Ref. 7.8 and 7.9) and the bearings (Ref. 4.6 or 7.6), change them if necessary.

2) You must check that there is no dust and no foreign bodies in the cylinder.

3) Remount the rods (Ref. 4.2 or 7.2).

4) Remount the plugs (Ref. 4.3 or 7.3) and the clamp gaskets (Ref. 4.5 or 7.5).

5) Remount the clamp rings (Ref. 4.4 or 7.4).

6) Check that they are operating properly.

Dismantling the position cylinder (for hardening products)

To dismantle the cylinder, follow these instructions:

1) You must dismantle the cylinder from the station body, air inlets and detectors disconnected.

2) Dismantle the clamp ring (Ref. 4.4).

3) Remove the rod (Ref. 4.2).

4) Change the gaskets (Ref. 4.8, 4.9 and 5).

5) Check the condition of the guide bearing (Ref. 4.6) and the guide ring (Ref. 4.7) and change them if necessary.

6) Check the condition of the gasket (Ref. 4.5) and change him if necessary.

Remounting the position cylinder (for hardening products)

To remount the cylinder, follow these instructions:

1) You must check the condition of the gaskets (Ref. 4.8 and 4.9 and 5), the guide bearing (Ref. 4.6) and the guide ring (Ref. 4.7), change them if necessary.

2) You must check that there is no dust and no foreign bodies in the cylinder.

3) Remount the rod (Ref. 4.2).

4) Remount the plug (Ref. 4.3) and the clamp gasket (Ref. 4.5).

5) Remount the clamp ring (Ref. 4.4).

6) Check that they are operating properly.

7 TROUBLESHOOTING

The following table is intended to help you perform a diagnostic of the assembly and to resolve any simple operating problems.

INCIDENT	POSSIBLE CAUSE	REMEDY
Leaking stations	- Worn gaskets	> Replace the gaskets.
	- Premature deterioration of the gaskets	> Check the compatibility of the gaskets with the product or NEP solutions.
	- Excessive fluid pressure	> Adjust the pressure
Cylinder locking	- Absence of pneumatic supply	> Check the compressed air supply.
	- Defective upstream guidance system	> Check that the air supply solenoid valve is operating properly. Check that the magneto-inductive detectors are in the correct position and functioning properly
	- Pierced cylinder supply tubing	> Replace the tubing ∅6
	- Loose or leaking connectors (Ref. 4.12 or 7.12)	> Check the condition of the connectors and the condition of the cylinder gaskets
Pig blocking (lateral marking)	- Problem linked to a extending a locking cylinder (Starting station)	> Review the automation sequencing.
Destruction of the pig or the stations	- Pig speed too high when it reaches the station.	> Check to see if the vent valve in the starting station is properly pierced. Adjust the speed of the pig via a control panel.
Pig extraction impossible	- Difficulty unscrewing the starting station lock nut due to the station counter pressure.	> Purge the transfer line to return to atmospheric pressure.
Pig doesn't stop (arrival at station)	- Welding fault on the tip of the pig at the arrival station.	> Locate the faulty weld or welds. Then redo the weld or welds

8 WARRANTY:

Unless specifically stated otherwise in the offer, ***the equipment is guaranteed for 12 months starting from the delivery date.***

Parts that are acknowledged to be defective following expert analysis in our plant will be replaced at our expense.

All equipment components (wear parts, gaskets, etc.) must be replaced with original SERVINOX parts

The warranty does not cover damage as a result of:

Improper assembly, inappropriate or abusive use,

An accident or non-compliant installation

Modification of the equipment,

Leaks following the passage of impurities will not be taken into account,

Mandatory servicing or maintenance not performed.

The warranty that we provide for our products covers free repair of returned parts if is established that the parts became unusable prematurely, due to a manufacturing or material fault.

We cannot be held liable for any damages or any compensation of this nature.

The equipment is inspected before it leaves the plant.

THIS EQUIPMENT IS CERTIFIED TO HAVE BEEN INSPECTED AND IS AUTHORISED FOR SALE

Notes

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

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