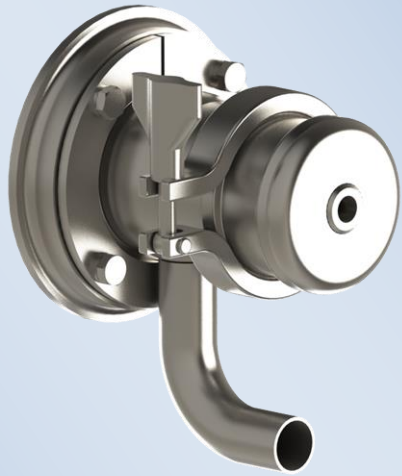
Retractable washing valve

LRA



Instruction manual

Reference: LRA_NOT_FR

Version A

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1 GENERAL PRESENTATION

1.1. The manufacturer

SERVINOX specialises in process equipment for the brewing, food processing, cosmetics and chemical industries.

Expertise in process equipment:
In areas such as tank protection, sampling, gas injection into liquids, pipe pigging or cleaning with patented products.

SERVINOX is certified ***ISO 9001*** and ***14001*** 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 potentially explosive atmospheres ***(ATEX) 2014/34/EC.***
- US ***3A*** manufacturer's sanitary standard.

We are an active member of ***EHEDG France*** (European Hygienic Engineering and Design Group).

1.2. Instruction manual

To ensure equipment integrity and personal safety, it is necessary to review the information contained in this manual before installing and using the equipment.

Depending on the installation and the medium, specific guidelines and regulations apply, and must be complied with.

In addition to the instructions in this manual, the general occupational safety and protection regulations must be observed. Environmental protection regulations must also be complied with.

1.3. Presentation of the equipment

SERVINOX washing valves are designed to thoroughly clean the components inside a tank during CIP cycles

This valve is a piping device which complies with Article 4, Paragraph 3 of European Directive 2014/68/EU.

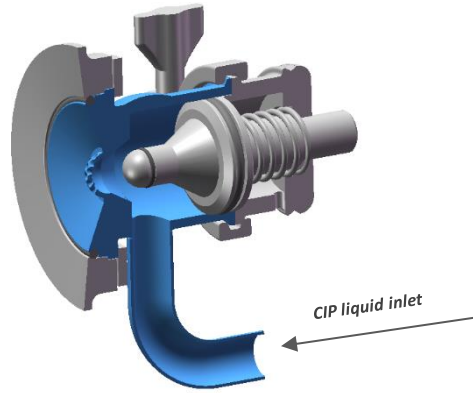
This valve should be used circuit conveying clear or viscous Group 2 liquid products (as per Article 13 of European Directive 2014/68/EU).

Functional description

This valve consists of a spring chamber that allows the check valve to open, releasing the cleaning product through holes drilled in the body.

It opens under the pressure of the cleaning solution and closes again under the effect of the spring.

The spray holes are positioned on half a sphere, allowing the cleaning solution to be sprayed onto a 115° cone.



The CIP inlet ***must be located at the bottom*** and the type of connection must either be a smooth welding connection or a clamp connection.

1.4. Marking

If the user encounters difficulties that cannot be resolved with the information in these operating instructions, the user should request additional information from the manufacturer or, if applicable, the distributor of the equipment.

It is imperative to mention the SERVINOX order and/or the serial number/batch number starting with SVX for any particular request (spare parts, etc.).

2 SAFETY INSTRUCTIONS

The technical manual contains fundamental instructions that must be followed. It is, therefore, essential to read it before installation and commissioning.

2.1. Indications and symbols

The following pictograms will help to draw your attention to important points concerning the safety of people and the integrity of the equipment:

SYMBOL	DEFINITION
	Direct hazard to people
	Possible damage to the product or its environment
	Lock-out is mandatory
	Minimum staffing requirements for certain operations. (The number of characters in the pictogram indicates this minimum number).
	Minimum technical proficiency level. (the red number indicates the minimum level required).

Some operations require specific technical skills and authorisations, such as corrective maintenance work or work on electrical equipment.

3 levels specify the technical capacity required (knowledge of the equipment concerned, experience, training, etc.):

	OPERATOR PROFILE	SPECIFICATIONS
Level 1	**End user** with no technical knowledge.	**Default level** if the capacity pictogram is not present. Authorises only **routine use and maintenance operations**.
Level 2	Experienced **professional**.	Trained and **experienced**. **Knows the equipment and technologies** used.
Level 3	**Manufacturer's staff** / product expert	**Work reserved for the manufacturer** of the documented equipment.

2.2. Operator safety

The installation, inspection, adjustment, maintenance and replacement operations must be performed:

- By qualified personnel.
- In accordance with the recommendations and instructions given in this manual.
- By integrating the provisions ensuring work safety, the procedures and means specific to the installer, and the legal requirements regarding accident prevention, particularly regarding electrical installations.

Failure to comply with the safety instructions may result in the loss of all claims for damages.

2.3. Intended use

Proper use

Check with the certification documents whether the equipment has been selected for the intended use.

Contrary use

The equipment must not be used contrary to its intended purpose. The manufacturer's liability cannot be engaged in the event of misuse.

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

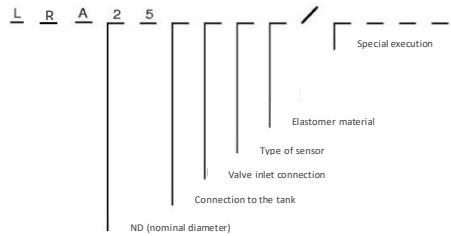
PARAMETER	LIMITS
Maximum permissible TANK pressure	6 bar
Minimum/maximum temperature	+1°C / 150°C

3 TECHNICAL FEATURES

3.1. Features

FEATURES	SERVINOX OFFER
Connection	*IMPERIAL CIP CONNECTION (OD) 1':* Welding, clamp *TANK CONNECTION:* Flange
Operating temperature	MIN.: +1°C MAX.: +150°C
Wash flow rate	2.7 m^3/h to 1.2 bar
Pressure	*TANK*: 6 bar max Resistance to vacuum *START OF OPENING CIP SIDE:* 0.6 bar *START OF OPENING ON THE INSIDE OF THE TANK:* 4 bar
Materials	*PARTS IN CONTACT WITH THE PRODUCT:* Stainless steel 1.4404 (316L) *OTHER PARTS:* Stainless steel 1.4307 (304L) *SEALS*: EPDM, FKM, SILICONE

Equipment reference



Connection to the tank

Code	Type of connection
F	Welding flange (not provided)

Type of sensor

Code	No detection
1	1 sensor
2	2 sensors

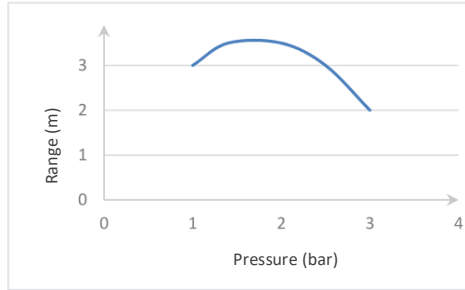
Valve inlet connection

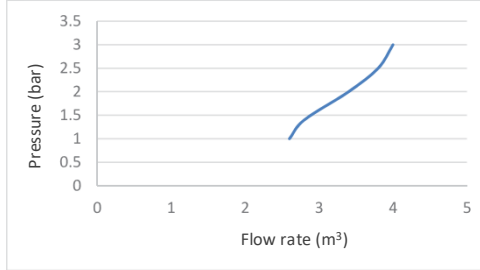
Code	Type of connection
W	Welded
C	Clamp

Elastomer material

Code	Elastomer
E	EPDM
V	FKM (Viton)

Washing flow rate





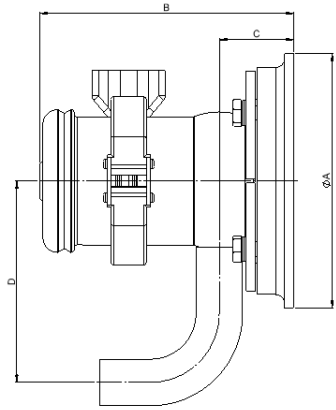
Recommended operating point (2.7 m³/h to 1.2 bar).

3.2. Option

- Magneto-inductive detection valve

3.3. Dimensions

Standard model



DIMENSIONS (mm)			
ØA	B	C	D
139	139	41	110

4 COMMISSIONING

4.1. Transport/ Receipt/ Handling

During transport, protect against all external hazards (knocks, blows, vibrations, etc.)

On receipt, check:

- that ***the packaging is in good condition.***
- that the equipment ***delivered is compliant with the order.***
- that the equipment ***has not been damaged.***

If the equipment is damaged, it should not be mounted on the installation. Contact the manufacturer, or distributor, if applicable.

4.2. Storage

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

It must be stored in its original packaging, in a covered area, protected from dirt, rain, snow and insects and protected from jolts.

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

If the equipment is stored at sub-zero temperatures, the resistance of the materials to cold (e.g. seals) must be considered.

If the storage period exceeds one year, the seals must be replaced before commissioning

4.3. Installation

General information

Before using the equipment, the user must visually inspect it to ensure that it is in apparent good condition: without corrosion or packaging residue.

If the fluid is harmful, flammable, toxic, etc., equip the piping installation with a discharge pipe, leading to a safe location.

However, it is recommended to check the compatibility of these products with the seals and materials before use.

The equipment should only be installed on a locked out and inert installation (no pressure and risk of fluid transfer).

Operators

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

Personnel must be equipped with personal protective equipment against the risks associated with the exhaust or contact with the fluid (burns, noise, splashes, etc.)

Connection to the tank

The equipment must be welded by qualified personnel in compliance with the directives in force in the country where it is installed. The weld must be free of impurities and must be done in a hygienic fashion.

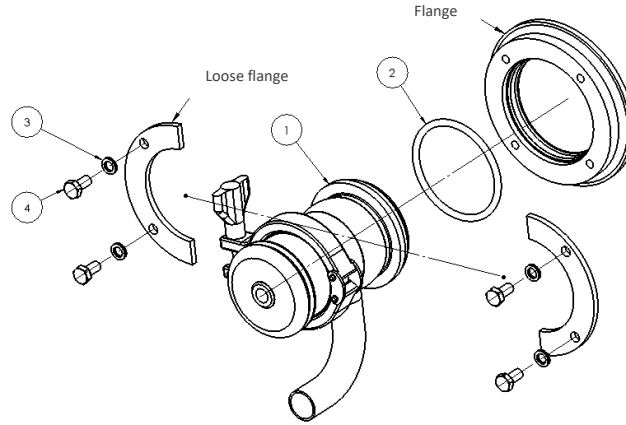
After any welding and/or polishing work, the equipment must be cleaned of all residues, dust, etc.

- ***Preparing the tank***:

The tank must be drilled to the exact outside diameter of the flange without any play.

- ***Preparing the flange***:

It is imperative to disassemble the entire valve including the body (item 1) with the 2 rotating flanges and their screws (item 4) + washers (item 3).



Check and make a note of the internal dimensions of the flange on all diameters in order to check them again after welding.

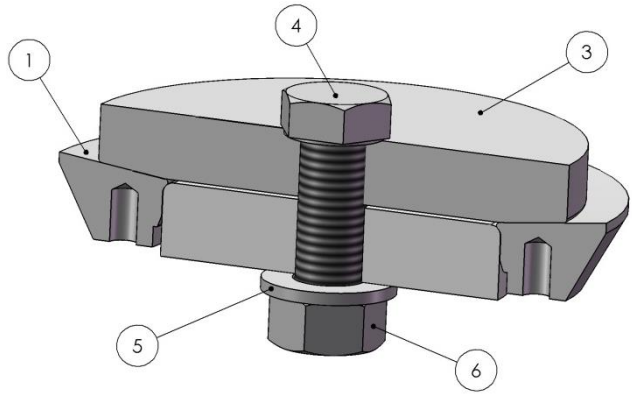
- ***Preparing for flange welding***:

1) The flanges must be installed in the correct positions to ensure correct flow.

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

3) In all cases, the flanges must be fitted so that they are flush with the inside of the wall.

It is imperative to use the SERVINOX welding pad (item 3 and item 5) which must be ordered with the flange (item 1) in order to avoid significant deformation during welding.



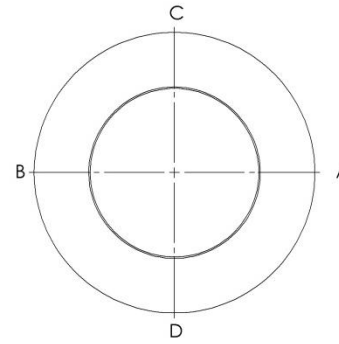
4) ***Insert a pad inside the flange to prevent deformation during welding.***

- ***Welding the flange***:

1) Position the flange in line with the inside of the tank.

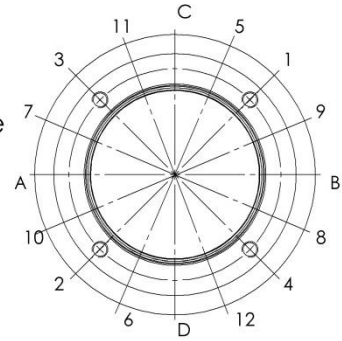
2) ***Spot weld to the inside*** of the tank as follows: A, B then correct if necessary and spot weld C and D.

Vue intérieure
View from inside

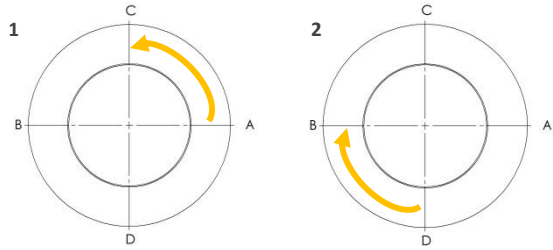


3) ***Spot weld the flange from the outside*** in 12 points, with inerting on the inside: follow the welding plan below from 1 to 12.

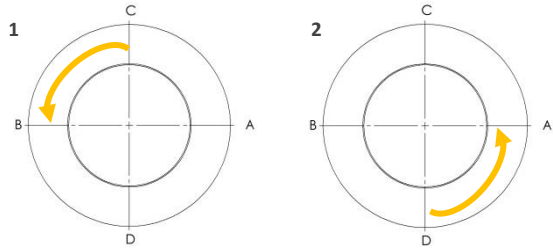
Vue extérieure
View from outside



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



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



6) Apply a finishing coat to the inside of the tank as described above.

The welding pad must not be removed until it has cooled naturally.

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

1) Wait for the flange to cool naturally.
2) Remove the welding pad.
3) ***Check all internal diameters to ensure there has been no variation.***
4) ***Polish the inside of the tank to the desired Ra without ever touching the seal surface.***
5) ***Make sure there are no particles of any kind.***
6) Reassemble the [body / cylinder / valve], ensuring the seal is in place (Item 2).

- ***Preparing and welding piping***:

1) Provide a removable connection upstream if the outlet connection is a smooth welding connection, to facilitate maintenance work on the valve.

2) ***The CIP liquid inlet elbow must be oriented downwards (unless otherwise specified) to allow drainage from the valve.***

3) Disconnect the cylinder from the valve body (refer to "Maintenance" chapter)

4) Weld the smooth outlet and clean the inside of the body.

5) Install the cylinder with the valve body (see "Maintenance" chapter).

Position sensor

Adjust and test the sensors supplied.

5 OPERATION

5.1. Pre-commissioning check

- Check that there are no tank fluid leaks around the weld flange connection.
- Feed CIP fluid to the valve and check that there are no leaks from the fluid inlet connection. Also, the CIP fluid should not leak inside the tank, as the valve should be in the normally closed position.
- Check the washing flow rate.
- Check that the washer nozzles are correctly oriented.

5.2. Adjustment

Adjustment is reserved for the manufacturer of the documented equipment.

Please contact SERVINOX or your distributor, as appropriate.

5.3. Operation

End of CIP product supply: stop product supply (stop CIP pump).

6 SERVICING AND MAINTENANCE

6.1. General information

The equipment requires maintenance to ensure that it functions properly.

Inspections should be carried out at regular intervals. An initial inspection interval of 6 months should be complied with.

However, certain fluid properties (corrosive, aggressive, abrasive, residues, viscosity, etc.) and environmental conditions (climate, pollution, etc.) may require shorter inspection intervals.

SERVINOX provides spare parts for proper maintenance and equipment warranty. Specify the production number and the product reference for all orders.

We can provide you with wear part kits (seals, etc.) and we recommend that you keep a few kits in stock for quick repairs.

You can contact SERVINOX for advice on equipment maintenance.

Maintenance precautions

<u>Comply the following points before any repair work:</u>

- Lockout Tagout the equipment.
- Depressurise the system.
- The system must be drained.
- The fluid must be cooled to room temperature.
- Ventilate the pipe system, if the fluid is corrosive and aggressive.

Operators

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

Staff must wear gloves, safety hats and safety shoes.

6.2. Inspection and maintenance

Mandatory periodic maintenance:

Every 2 months during 6 months after commissioning

- No traces of corrosion.
- No CIP fluid leaks.
- Tightness of fittings.
- Valve operating correctly.
- No bare electrical wires.

Every 6 months:

- Inspect and clean the valve internally.
- Check the condition of the seals (Item 2),(Item 5) and (Item 7).

Every year:

- Replace all the seals: (Item 2), (Item 5) and (Item 7).

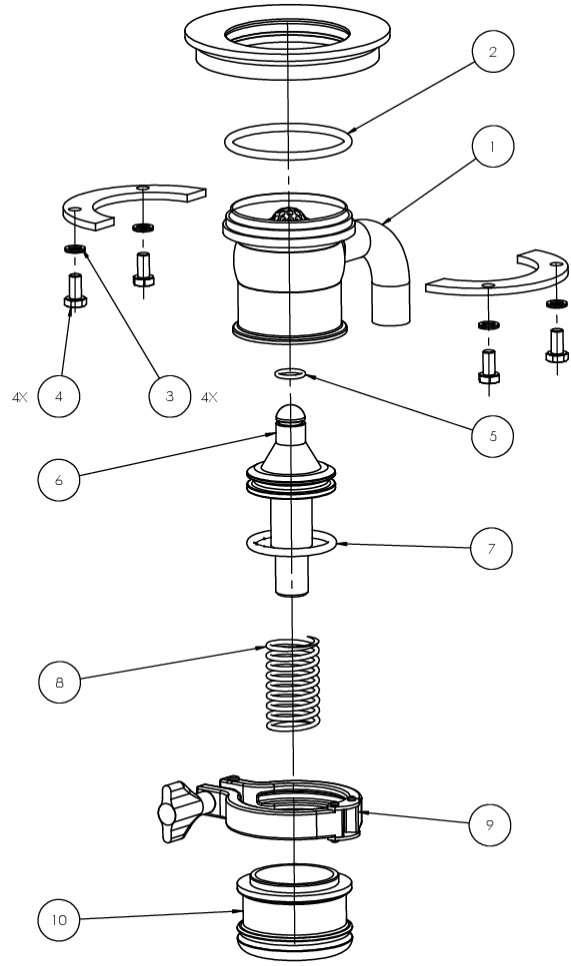
It is recommended to check the compatibility of your products with the seals and materials before use

We recommend that all maintenance and control operations carried out on the installation be recorded in a table of this type:

Date	Company	Name of the operator	Signature
PREVENTIVE MAINTENANCE			
Operations		**Other, Remarks**	
PERFORMANCE AND CONDITION CHECKS			
Operations		**Other, Remarks**	

6.3. Maintenance operations

Exploded view



Parts list

ITEM	DESCRIPTION	QUANTITY
1	Body	1
2	Tank seal	1
3	Self-lock washer	4
4	Flange screw	4
5	Seal	1
6	Retractable piston	1
7	Piston seal	1
8	Spring	1
9	Collar	1
10	Rear cover	1

Disassembling the valve

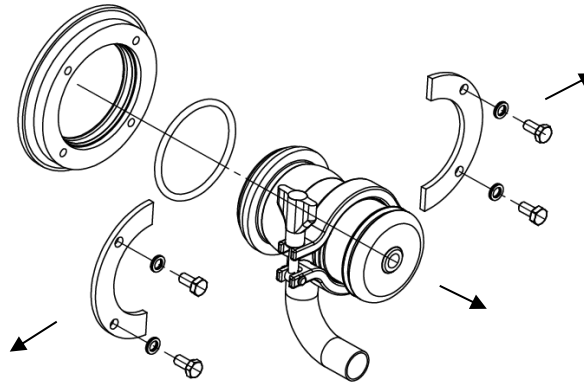
Before any intervention, disconnect electrical wires from the proximity sensors, if applicable.

Check that there is no pressure or fluid inside the tank.

Never clamp the rear cover in a vice.

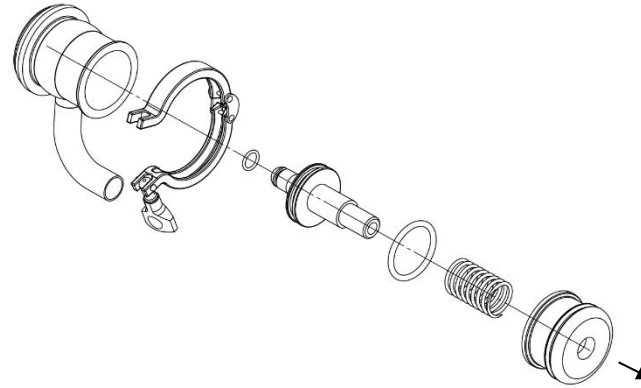
The following steps should be followed when disassembling the valve:

1)



Extreme care must be taken when loosening the spring.

2)



Replace the seals supplied by SERVINOX on all the equipment according to the maintenance schedule.

If necessary, replace other damaged parts.

Reassembling the valve

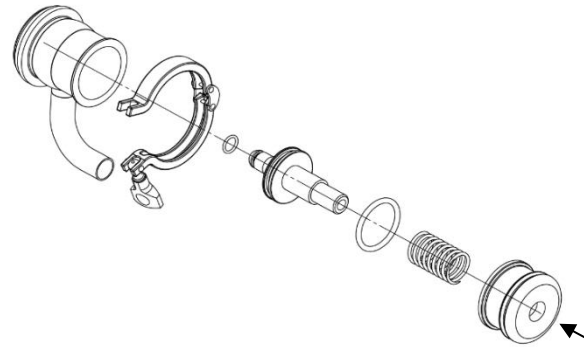
BEFORE REASSEMBLY:

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

- The spring will be changed if necessary and will also be coated with a protective layer of grease.

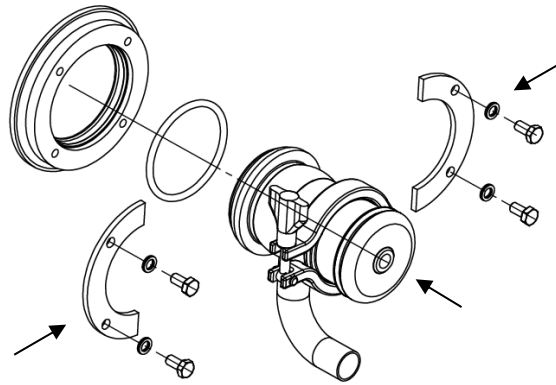
The following steps should be followed when reassembling the valve:

1)



Extreme care must be taken when tightening the spring.

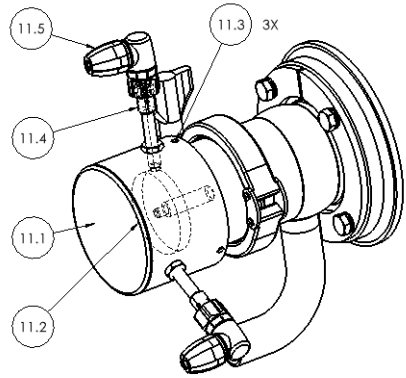
2)



Connect the electrical wires of proximity sensors, if applicable.

Check that there are no pressure or fluid leaks inside or outside the tank.

Inductive detection option



ITEM	DESCRIPTION	QUANTITY
11.1	Sensor support cover	**1**
11.2	Sensor washer	**1**
11.3	Retaining screws	**3**
11.4	Inductive sensor	**2**
11.5	Wirable connector	**2**

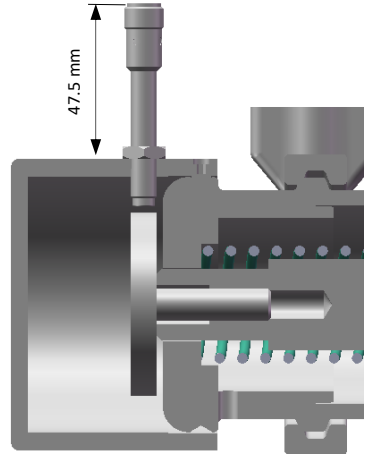
Disassembling the sensors:

The following instructions should be followed when disassembling the sensors:

1) Unplug the wirable connectors (Item 11.5).
2) Unscrew the retaining screws (Item 11.3) then remove the cover (Item 11.1) from the rest of the valve.
3) Unscrew the sensors (Item 11.4).

Proceed in reverse order to reassemble the sensors.

When reassembling the inductive sensors, please observe the following installation dimensions:



7 DIAGNOSTIC ASSISTANCE

The following table is provided as a troubleshooting guide to help you address simple operating incidents.

INCIDENT	POSSIBLE CAUSE	SOLUTION
CIP fluid leak	> Worn seals.	Check the condition of the seals and valve body, and replace the seals if necessary.
	> Seals not suitable for the fluid.	Contact SERVINOX to select the appropriate seal material.
	> Loose fittings.	Check the tightness of the flange and clamp connection.
Valve locked in open position	> Spring defect.	Check the spring and replace the spring if necessary.
	> Worn seals.	Check the condition of the valve seals.
Poor spraying during washing	> Impurities in the valve body.	Clean the valve
	> CIP fluid pressure incorrect.	Check the pressure admitted at the valve inlet.

8 WARRANTY

Unless otherwise stated on the offer, the ***equipment is guaranteed for 12 months from the date of delivery***.

Parts found to be defective further to survey in our factory will be replaced at our expense.

Any equipment components (wear parts, seals, etc.) must be replaced with original SERVINOX parts

The warranty does not cover damage resulting from:

- incorrect assembly, inappropriate or abusive use,
- accident or improper installation,
- modification of the equipment,
- leakage due to the passage of impurities will not be taken into account,
- Mandatory maintenance not performed.

The warranty offered on our products covers the free repair of returned parts that have shown to be prematurely unusable due to a manufacturing or material defect.

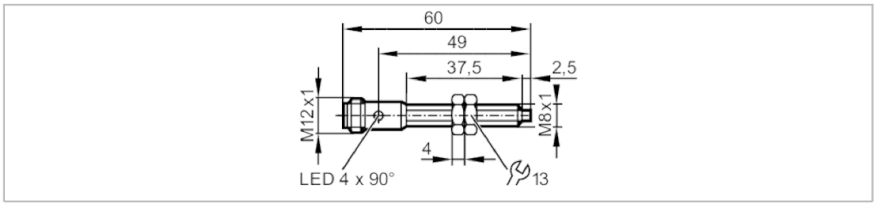
We are not obliged to provide any compensation or other obligations of this nature.

The equipment has been inspected before leaving the factory.

This equipment is certified to have been inspected and authorised for sale

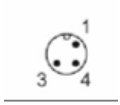
9 APPENDIX

9.1. Inductive sensor

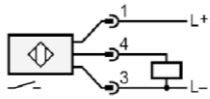


Product features	
Technology	PNP
Output function	Normally open
Range [mm]	4
Housing	Threaded housing
Dimensions [mm]	M8 x 1 / L = 60
Application	
Specific features	Increased range
Electrical data	
Supply voltage [V]	10...30 DC
Power consumption [mA]	< 10
Protection class	III
Reverse polarity protection	Yes
Outputs	
Technology	PNP
Output function	Normally open
Max. voltage drop, DC switching output [V]	2.5
Output current (hold) of the DC switching output [mA]	100
Switching frequency DC [Hz]	300
Short-circuit protection	Yes
Overload protection	Yes
Detection zones	
Range [mm]	4
Effective Sr range [mm]	4 ± 10%
Working range [mm]	0...3.25
Increased range	Yes
Accuracy / deviations	
Correction factor	Steel: 1 / stainless steel: 0.7 / brass: 0.5 / aluminium: 0.5 / copper: 0.4
Hysteresis [Sr %]	1...20
Switching point drift [Sr %]	-10...10

Terms of use		
Ambient temperature [C°]	-25…70	
Protection class	IP 67	
Tests / approvals		
EMC	EN 610000-4-2 ESD	4kV CD / 8 kV AD
	EN 610000-4-3 HF radiation	3 V/m
	EN 610000-4-4 Burst	2 kV
	EN 610000-4-6 RF interference conducted through the cable	3 V
	EN 55011	class B
MTTF [Years]	1376	
UL approval	Ambient temperature	-25…70°C
	Enclosure type	Type 1
	voltage supply	Limited Voltage/Current
	UL approval no.	A028
	UL file no.	E174191
Mechanical data		
Weight [g]	22.8	
Housing	Threaded housing	
Type of mounting	Non-recessed	
Dimensions [mm]	M8 x 1 / L = 60	
Thread description	M8 x 1	
Materials	White bronze-coated brass; active face: black LCP; LED window: PEI; retaining nuts: white bronze-coated brass	
Tightening torque [Nm]	A = 5 mm: 1.5 Nm; B: 2 Nm	
All-metal housing	No	
Displays / service elements		
indication	Switching status	4 x 90° LED, yellow
Accessories		
Supply	Retaining nuts: 2	
Remarks		
Packaging unit	1 piece	
Electrical connection– connector		
Connector: 1 x M12; encoding: A		



Connection



Notes

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