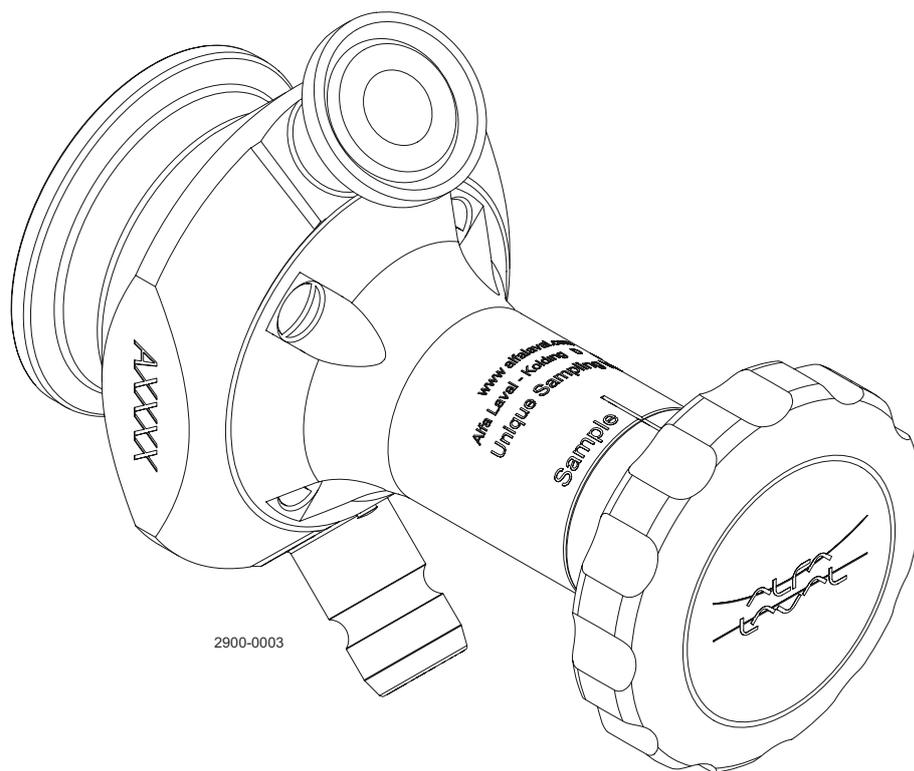


Unique Sampling Valve - type M - manually operated

Sampling valves



Lit. Code

200008016-1-EN-GB

Instruction manual

Published by
Alfa Laval Kolding A/S
Albuen 31
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The original instructions are in English

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1 Safety

Read this first



This Instruction Manual is designed for operators and service engineers working with the supplied Alfa Laval product.

Operators must read and understand the **Safety, Installation and Operating** instructions of the supplied Alfa Laval product before carrying out any work or before you put the supplied Alfa Laval product into service!

Not following the instructions can result in serious accidents.

This documentation describes the authorized way to use the supplied Alfa Laval product. Alfa Laval will take no responsibility for injury or damage if the equipment is used in any other way.

This Instruction Manual is designed to provide the user with the information to perform tasks safely for all phases in the lifetime of the supplied Alfa Laval product.

The operator shall always read the chapter **Safety** first. Hereafter the operator can skip to the relevant section for the task to be carried out or for the information needed.

Always read the chapter **Technical Data** thoroughly.

This is the complete Instruction Manual for the supplied Alfa Laval product.

NOTE

The illustrations and specifications in this Instruction Manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify the Instruction Manual without prior notice or any obligation.

The English version of the Instruction Manual is the original manual. Alfa Laval cannot be held responsible for incorrect translations. In case of doubt, the English version applies.

1.1 Safety Signs

Mandatory Action Signs

	General mandatory action sign.
	Refer to instruction manual.
	Use eye protection - safety glasses.
	Use protective hand wear - safety gloves.
	Wear protective equipment - safety helmet.
	Use ear protection in noisy environments - noise protector.
	Wear protective equipment - safety shoes.

Warning Signs

	General warning.
	Transportation with forklift truck or other industrial vehicles if heavy.
	Hot surface and Burn Hazard.
	Cutting danger.
	Corrosive substance.
	Crushing of hands.

1.2 Safety Precautions

All warnings in the Instruction Manual are summarised on these pages. Pay special attention to the instructions below so that severe personal injury and/or damage to the supplied Alfa Laval product is avoided.

General

	<p>To prevent unexpected start and contact with electrical live and moving parts.</p> <p>Always disconnect the power supply safely:</p> <ul style="list-style-type: none"> • The power supply disconnecting device must be disconnected (in off position) and locked.
---	---

Transportation and Lifting

  	<p>Never lift or elevate in any way other than described in this manual.</p> <p>Always use the original packaging or similar during transportation.</p> <p>Always ensure that personnel must have experience with lifting operations.</p> <p>Always ensure that all connections are disconnected before attempting to remove the valve from the installation.</p> <p>Always ensure that no leakage of lubricants can occur.</p> <p>Always drain liquid out of the valves before transportation.</p> <p>Always ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available, it must be used.</p> <p>Always ensure that compressed air is released.</p>
 	<p>Always use designated lifting points if defined. Ensure that the lifting equipment is suitable for the supplied Alfa Laval product.</p> <p>Always ensure that the unit is securely fixed during transportation.</p> <p>Always ensure the lifting point to be in line with center of gravity. Adjust lifting point if necessary.</p> <p>Always use suitable transport device ie. forklift or pallet lifter.</p> <p>Always use appropriate lifting equipment for heavy parts when relevant. Use lifting logs when available.</p> <p>Always keep an eye on the load and stay clear during the lifting operation.</p>

Installation

	<p>If the local safety regulations prescribe that the installation has to be inspected and approved by responsible authorities before the valve is put into service, consult with such authorities before installing the equipment and have the projected installation approved by them.</p> <p>Always assemble the valve completely before startup and make sure everything is in place and correctly tightened.</p>
  	<p>Never work on the valve or touch moving parts if the actuator is supplied with compressed air.</p> <p>Always ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before installation, inspection, assembly, or dismantling of the valve.</p> <p>Never touch the valve or the pipelines when processing hot liquids or when sterilising.</p>

Operation

	<p>Always read Technical Data thoroughly.</p> <p>Never operate the valve unless a correct installation has been verified.</p> <p>Never dismantle the valve during operation or when pressurized.</p>
	<p>Never touch the valve or pipelines when hot.</p> <p>Never touch the valve or the pipelines when processing hot liquids or when sterilising.</p>
	<p>Always rinse well with clean water after cleaning.</p> <p>Always handle lye and acid with great care.</p> <p>Always follow the instructions in the safety data sheets from the suppliers of cleaning agents, detergents, oils etc.</p>
	<p>Never touch moving parts of the valve during operation.</p> <p>Always release compressed air after use.</p> <p>Never touch the moving parts if the actuator is supplied with compressed air.</p>

Maintenance

	<p>In order to optimise the operation of the supplied Alfa Laval product and to minimize the down time due repair activities, the maintenance includes:</p> <ul style="list-style-type: none"> • Inspection and maintenance of the supplied Alfa Laval product: strictly follow the technical documentation • Preventive maintenance: visual inspection of the supplied Alfa Laval product followed by necessary adjustments and planned periodic replacement of wear and tear parts • Repairs: unscheduled break down of a component, often causing the system to stop. Damaged components must be replaced • Stock of Alfa Laval genuine spare parts: Alfa Laval recommend keeping a stock of genuine spare parts facilitating preventive maintenance and reducing downtime in case of unplanned break downs
 	<p>Always release compressed air after use.</p> <p>Always ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before dismantling the valve.</p> <p>Never stick your fingers through the valve ports if the actuator is supplied with compressed air.</p> <p>Never work on the valve or touch moving parts if the actuator is supplied with compressed air.</p>

Storage

	<p>Alfa Laval recommend:</p> <ul style="list-style-type: none"> • Store the supplied Alfa Laval product as supplied in original packaging • Port opening(s) should be protected against any ingress • Store in a clean, dry place without direct sunlight or UV light • Temperature range -5 °C to +40 °C (23 °F - 104 °F) • Relative humidity less than 60% • No exposure to corrosive substances (including contained air)
---	---

Noise

	<p>Under certain operating conditions, the supplied Alfa Laval product and/or the systems in which they are installed can produce high sound pressure levels. Appropriate noise protection measures should be taken when necessary and in accordance with local legislation.</p>
---	--

Hazards

 	<p>Burn Hazard</p> <ul style="list-style-type: none"> • Lubrication oil, machine parts and various machine surfaces can be hot and cause burns. Wear protective gloves
--	--

**Corrosive Hazard**

- Always handle cleaning liquids, lye and acid with great care and in accordance with separate instructions for those fluids
- When using chemical cleaning agents and lubricants, make sure you follow the general rules and suppliers recommendation regarding ventilation, personnel protection etc.

**Cut Hazard**

- Sharp edges, especially on threads, can cause cuts. Wear protective gloves

**Crushing Hazard**

- Avoid placing hands into valve orifice pinch points

1.3 Warning Signs in Text

Pay attention to the safety instructions in this Instruction Manual.

Below are definitions of the four grades of warning signs used in the text where there is a risk for injury to personnel or damage to the supplied Alfa Laval product.

 **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate damage to the supplied Alfa Laval product.

 **NOTE**

Indicates important information to simplify or clarify procedures.

1.4 Requirements of Personnel

Operators

The operators shall read and understand this Instruction Manual.

Maintenance personnel

The maintenance personnel shall read and understand this Instruction Manual. The maintenance personnel or technicians shall be skilled within the field required to carry out the maintenance work safely.

Trainees

Trainees can perform tasks under the supervision of an experienced employee.

People in general

The public shall not have access to the supplied Alfa Laval product.

In some cases, specially skilled personnel may need to be hired (i.e. electricians, welders). In some cases the personnel has to be certified according to local regulations with experience of similar types of work.

1.5 Recycling Information

Unpacking

Packing material may consist of wood, plastics, cardboard boxes and in some cases metal straps.



- Wood and cardboard boxes can be reused, recycled or used for energy recovery
- Plastics should be recycled or burnt at a licensed waste incineration plant
- Metal straps should be sent for material recycling

Maintenance

During maintenance, oil (if used) and wear parts in the supplied Alfa Laval product should be replaced.

- Oil and all non-metal wear parts must be disposed of in accordance with local regulations
- Rubber and plastics should be burnt at a licensed waste incineration plant. If not available they should be disposed of in accordance with local regulations
- Bearings and other metal parts should be sent to a licensed handler for material recycling
- Seal rings and friction linings should be disposed of to a licensed land fill site. Check your local regulations
- All metal parts should be sent for material recycling
- Worn out or defected electronic parts should be sent to a licensed handler for material recycling

Scrapping

At end of use, the equipment must be recycled in accordance with the relevant local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information directly.

2 Installation

2.1 Unpacking/delivery

NOTE

This instruction manual is part of the delivery.
Study the instructions thoroughly.
The items refer to *Parts Lists and Exploded Views* on page 37.

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

- 1 Check the delivery for:
 - Valve body
 - Actuator
 - Membrane
 - Plug
- 2 Remove possible packing materials from the valve/valve parts.
- 3 Inspect the valve/valve parts for visible transport damage.
Avoid damaging the valve/valve parts.

2.2 General installation

NOTE

Study the instructions thoroughly and pay special attention to the warnings!
The valve has welding ends as standard but can also be supplied with fittings.
Always read *Technical data* on page 33 thoroughly.

WARNING

Always release compressed air after use.

CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

2.3 Valve body installation

NOTE

- Study the instructions thoroughly.
- The valve is supplied as separate parts to facilitate welding.
- The items refer to *Parts Lists and Exploded Views* on page 37.
- Check the valve for smooth operation after welding.

Fitting of valve body

The valve body can be integrated into a tank, fitted on pipes or mounted with a clamp connection.

The valve must always be fitted so that the connections are placed vertically to each other.

If the valve is fitted otherwise, the valve will not function properly.

Tank

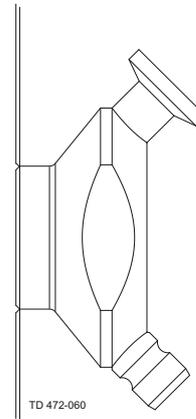
When integrated into a tank, the valve is welded from the inside of the tank.

For a size 4 valve, a hole of $\varnothing 29$ mm is made in the tank.

For a size 10 valve, a hole of $\varnothing 38$ mm is made in the tank.

The connections are fitted so that they are placed vertically.

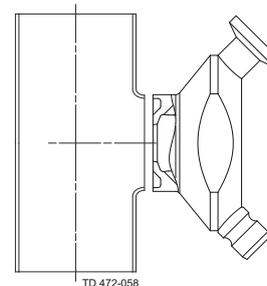
The body flushes with the inner side of the tank.



Pipes

Standard

The valve is delivered with a machined collar, which makes it possible to fit it onto a collar on a pipe.



Clamp

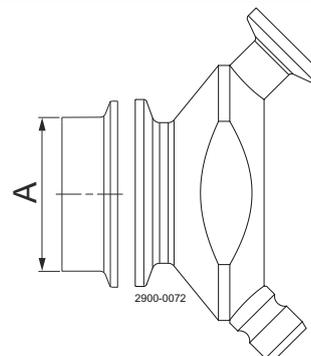
The valve can also be mounted using a clamp connection.

Seal ring (EPDM)

Size 25 mm (A): 9611-99-1358

Size 38 mm (A): 9611-99-1359

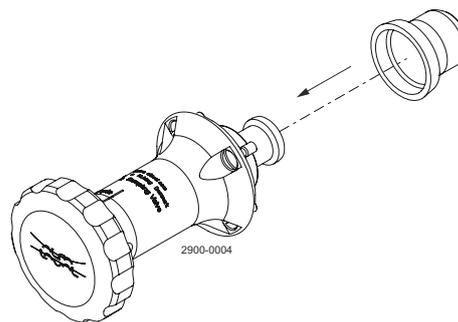
Clamp ring: 211053



2.4 Fitting of actuator

1

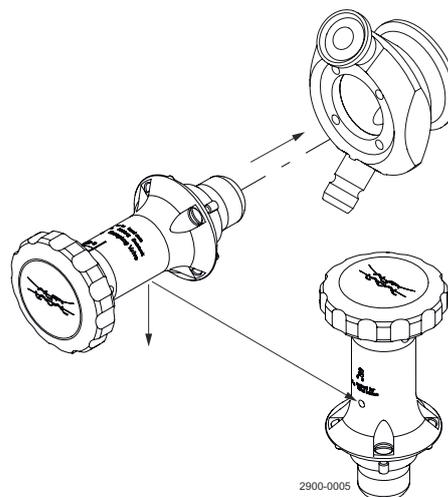
Fit the membrane on the actuator.

**2**

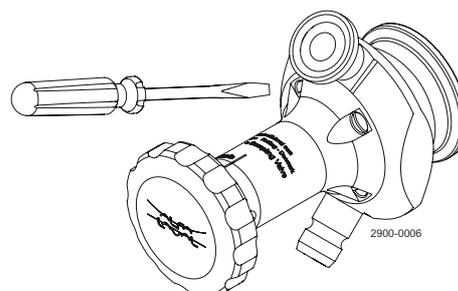
Fit the actuator on the valve body.

CAUTION

Make sure that the $\varnothing 2.4$ mm leak detection hole is facing downwards.

**3**

Tighten screws with a torque of 2-3 Nm.



This page is intentionally left blank.

3 Operation

3.1 Operation

NOTE

Study the instructions thoroughly and pay special attention to the warnings!

Ensure that the valve operates smoothly.

The items refer to *Parts Lists and Exploded Views* on page 37.

Always read *Technical data* on page 33 thoroughly.

WARNING

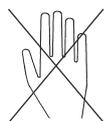
Always release compressed air after use.

CAUTION

Alfa Laval cannot be held responsible for incorrect operation.

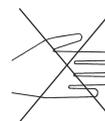
WARNING **Danger of burns!**

Never touch the valve or the pipelines when processing hot liquids or when sterilising.



WARNING **Moving parts!**

Never touch the moving parts if the actuator is supplied with compressed air.



3.2 Sterilisation - single seat valve

NOTE

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 37.

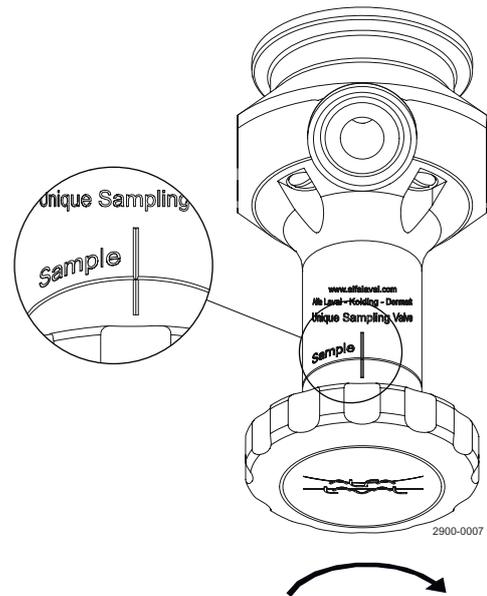
Handle scrap correctly.

WARNING

Always sterilise the valve before taking a sample.

1 Sterilisation procedure:

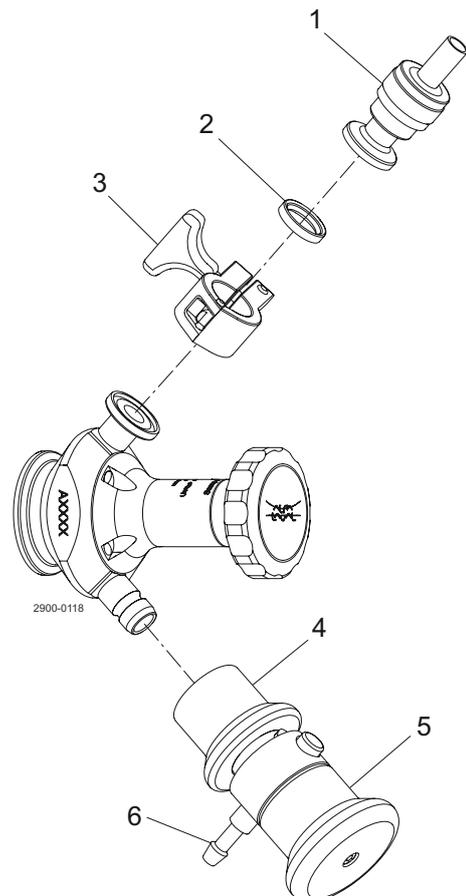
Make sure that the valve is in the closed position before sterilisation.



2

- a) Connect steam to the upper connection. It is advisable to use a non-return valve (1) on the upper connection. This enables steaming and sampling without removal of the steam line or using an unsterile blind cap
- b) Steam the valve for 2 minutes, at a constant steam pressure of 2.5-3.5 [bar]. A pressure relief valve (4) is required. Release the enclosed steam by pulling the quick release handle before removing the pressure relief valve from the sampling valve
- c) The valve is now ready to take a representative and sterile sample

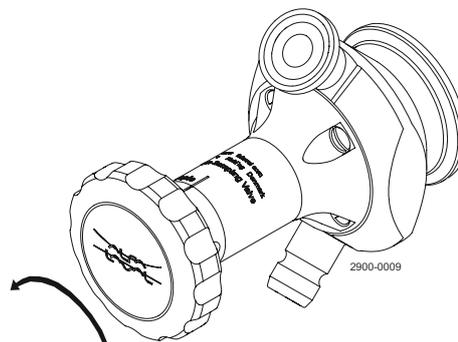
1. Non-return valve
2. Seal ring (article no. 290273) not included
3. Clamp ring (article no. 211290) not included
4. Pressure relief valve
5. Handle for quick release of steam
6. Steam outlet - be careful!



3.3 Sampling - single seat valve

1 Taking a sample

Turn the handle anticlockwise until the desired product flow is obtained.



2

Once the required sample amount has been taken, close the valve by turning the handle clockwise until the handle is in the centre closed position.

WARNING

Important! Sterilise the valve after each sample.

It is very important that the valve is properly cleaned and sterilised after a sample has been taken.

This reduces the possibility of cross contamination in the next sample.

Therefore, repeat the sterilisation procedure each time the valve has been used.

3.4 Sterilisation - double seat valve

NOTE

Study the instructions thoroughly.

The items refer to [Parts Lists and Exploded Views](#) on page 37.

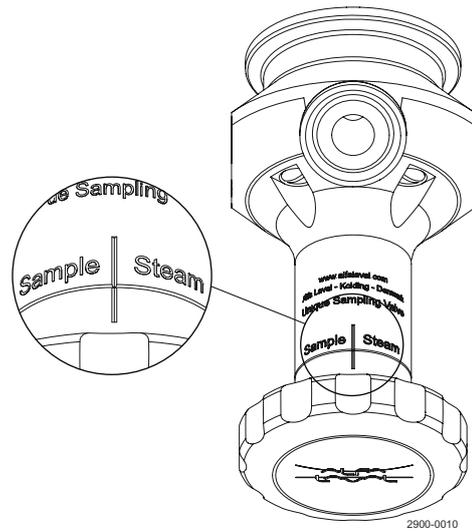
Handle scrap correctly.

WARNING

Always sterilise the valve before taking a sample.

1 Sterilisation procedure:

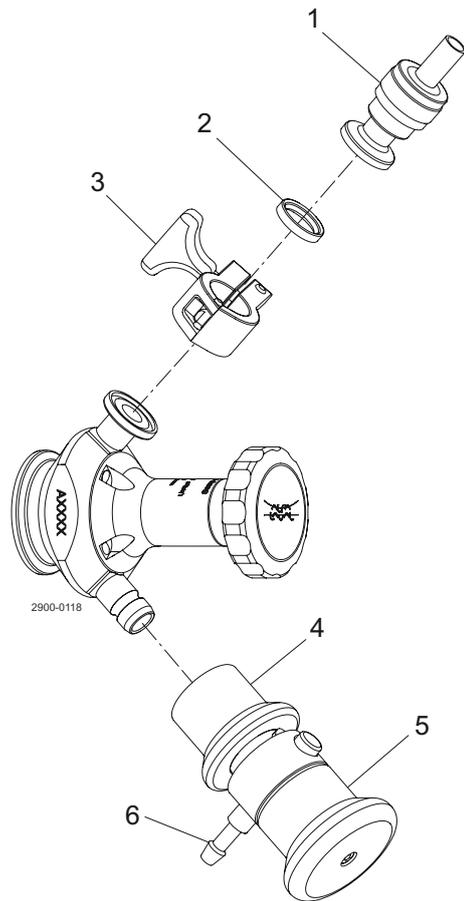
Make sure that the valve is in the closed position before sterilisation.



2

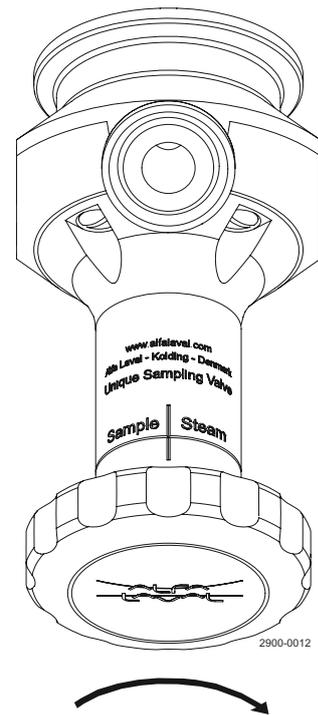
Connect steam to the upper connection. It is advisable to use a non-return valve (1) on the upper connection. This enables steaming and sampling without removal of the steam line or using an unsterile blind cap.

1. Non-return valve
2. Seal ring (article no. 290273) not included
3. Clamp ring (article no. 211290) not included
4. Pressure relief valve
5. Handle for quick release of steam
6. Steam outlet - be careful!



3

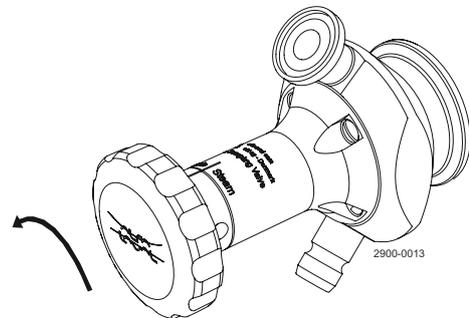
- a) Turn the handle clockwise to steam/cleaning position
- b) Steam the valve for 2 minutes, at a constant steam pressure of 2.5-3.5 [bar]. A pressure relief valve (4) is required. Release the enclosed steam by pulling quick release handle before removing the pressure relief valve from the sampling valve
- c) The valve is now ready to take a representative and sterile sample



3.5 Sampling - double seat valve

1 Taking a sample

Turn the handle anticlockwise until the desired product flow is obtained.



2

Once the required sample amount has been taken, close the valve by turning the handle clockwise until the valve is in the centre closed position.

 **WARNING**

Important! Sterilise the valve after each sample.

It is very important that the valve is properly cleaned and sterilised after a sample is taken.

This reduces the possibility of cross contamination in the next sample.

Therefore, repeat the sterilisation procedure each time the valve has been used.

3.6 Troubleshooting

 **NOTE**

Pay attention to possible faults.

Study the instructions thoroughly.

The items refer to [Parts Lists and Exploded Views](#) on page 37.

Study the maintenance instructions thoroughly before replacing worn parts.

Problem	Cause	Repair
External product leakage	Worn membrane	Replace the membrane
	Product pressure exceeds valve specification	Reduce the product pressure
The valve does not open/close	Product pressure exceeds actuator specification	Reduce product pressure
	Actuator is worn or damaged	Replace worn or damaged parts (Remember to lubricate)

3.7 Recommended Cleaning

NOTE

The supplied product is designed for cleaning in place (CIP).

NaOH = Caustic soda.

HNO₃ = Nitric acid.

The cleaning agents must be stored/disposed of in accordance with current regulations/directives.

CAUTION

Never touch the supplied product or the pipelines when sterilizing.

Always handle lye and acid with great care.

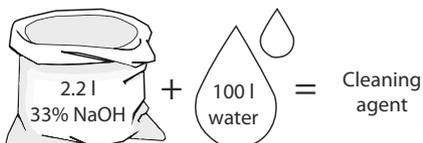
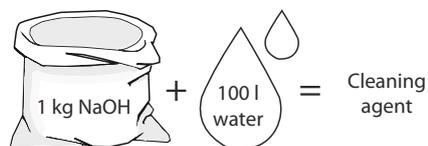


Examples of cleaning agents

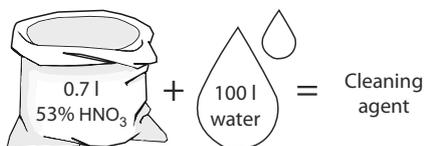
Use clean water free from chlorides

Metric System

1. 1% by weight NaOH at 70°C

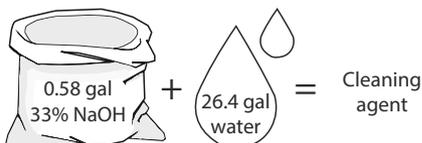
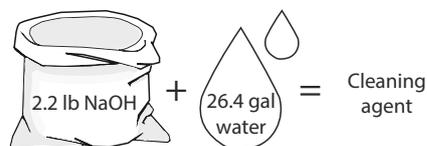


2. 0.5% by weight HNO₃ at 70°C

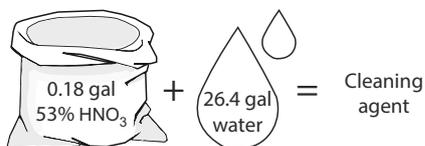


Imperial System

1. 1% by weight NaOH at 158°F



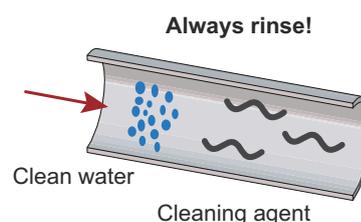
2. 0.5% by weight HNO₃ at 158°F



1. Avoid excessive concentration of the cleaning agent ⇒ **Dose gradually!**
2. Adjust the cleaning flow to the process
Milk sterilization/viscous liquids ⇒ Increase the cleaning flow!

CAUTION

Always rinse well with clean water after the cleaning.



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4 Maintenance

4.1 General maintenance

NOTE

Maintain the valve regularly.

Study the instructions thoroughly and pay special attention to the warnings!

Always keep spare rubber seals and lip seals in stock.

Check the valve for smooth operation after service.

Always read *Technical data* on page 33 thoroughly.

WARNING

Always release compressed air after use.

CAUTION

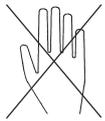
All scrap must be stored/disposed of in accordance with current regulations.

WARNING **Danger of burns!**

Never service the valve when it is hot.

Never service the valve with the valve and pipelines under pressure.

Atmospheric pressure required!



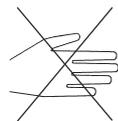
WARNING **Cutting danger!**

Never stick your fingers through the valve ports if the actuator is supplied with compressed air.



WARNING **Moving parts!**

Never touch the moving parts if the actuator is supplied with compressed air.



In the following table are some guidelines for maintenance and lubrication intervals. Please note that the guidelines are for normal working conditions in one shift.

	Membrane	Actuator
Preventive maintenance	Replace after 500-1000 samples (depending on working conditions)	Disassemble, clean and lubricate the actuator every 5 years (depending on working conditions)
Maintenance after leakage (leakage normally starts slowly)	Replace at the end of the day	Disassemble, clean and lubricate the actuator when possible
Planned maintenance	<ul style="list-style-type: none"> • Regular inspection for leakage and smooth operation • Keep a record of the valve • Use the statistics for inspection planning Replace after leakage	<ul style="list-style-type: none"> • Regular inspection for leakage and smooth operation • Keep a record of the actuator • Use the statistics for inspection planning
Lubrication	None	Before fitting Alfa Laval Silicone based Food-grade Lubricant

Pre-use check:

Open and close the valve several times to ensure that it operates smoothly.

Pay special attention to the warnings!**Recommended spare parts:**

See [Parts Lists and Exploded Views](#) on page 37.

4.2 Dismantling the valve

NOTE

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 37.

Handle scrap correctly.

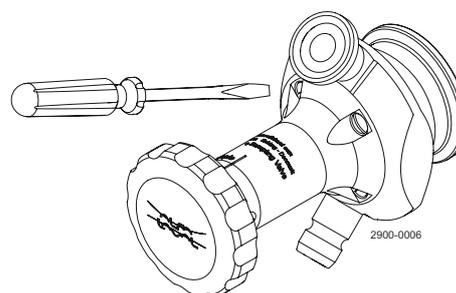
NC = Normally closed.

NO = Normally open.

A/A = Air/air activated.

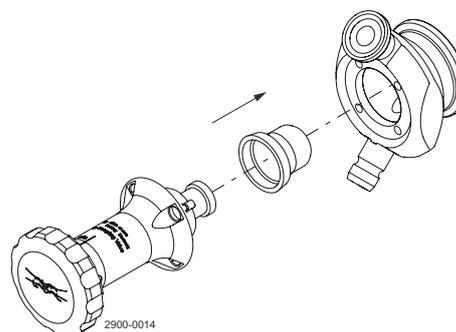
1

Undo screws



2

- a) Pull actuator from valve body
- b) Remove membrane



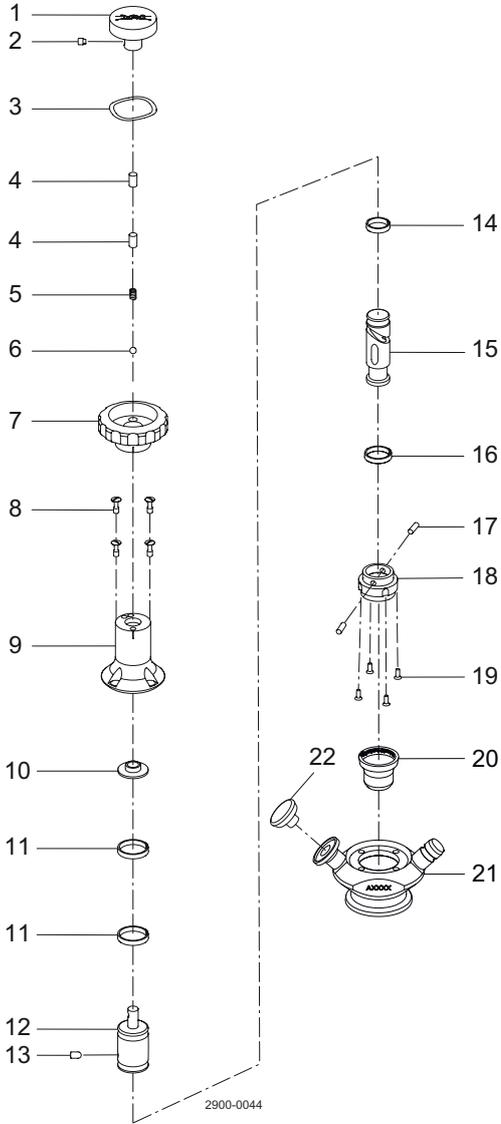
4.3 Valve assembly

Follow the reverse order of *Dismantling the valve* on page 29.

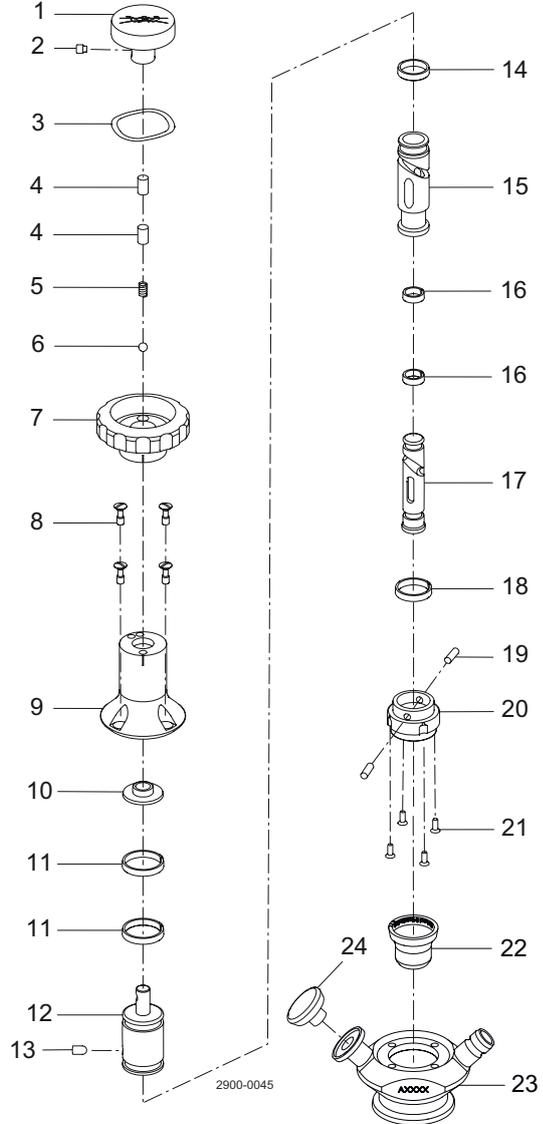
4.4 Dismantling the actuator

If the actuator has to be dismantled due to membrane leakage or maintenance, use the drawing below for reference. Both the single and double seat actuator can be maintained using standard tools.

Single seat actuator



Double seat actuator



4.5 Assembly of actuator

Use the drawing in the previous section to support the assembly. Don't forget to lubricate the actuator when assembling.

! NOTE

After the actuator has been assembled, it is important to measure the spindle position to ensure correct valve function.

Single seat actuator

Closed position



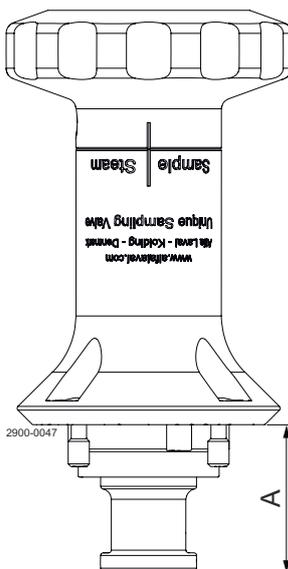
A:

Size 4: 19.1 - 19.3 mm

Size 10: 27.95 - 28.2 mm

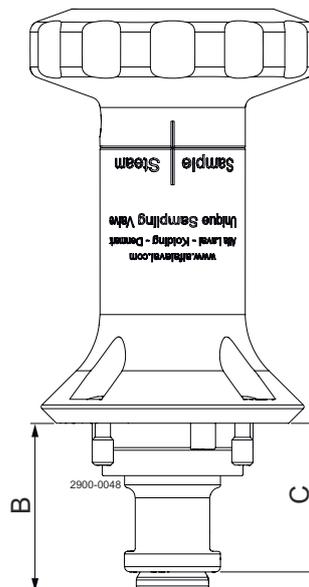
Double seat actuator

Closed position



Double seat actuator

Steam position



A:

Size 4: 19.1 - 19.3 mm

Size 10: 27.95 - 28.2 mm

B:

Size 4: 21 - 21.2 mm

Size 10: 29.9 - 30.1 mm

C:

Size 4: 17.4 - 17.6 mm

Size 10: 25.95 - 26.2 mm

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5 Technical Data

! NOTE

Technical data must be observed during installation, operation and maintenance.
All personnel should be informed about the technical data.

5.1 Technical data

Data - valve/actuator

Max product pressure	600 kPa (6 bar) / 87 psi	
Max working temperature	130°C (2 bar) / 266°F (29 psi)	
Max working torque	10 Nm	
Weight:	- Size 4:	0.7 kg
	- Size 10:	1.1 kg

Materials - valve/actuator

Product wetted steel parts	1.4404 (316L) (internal Ra < 0.8 µm)
Other steel parts	304, aluminium bronze
Membrane seal	EPDM
Optional product wetted seals	Q



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6 Spare Parts

For every delivered Alfa Laval Product, a spare part list is available.

This spare part list contains a range of the most common wear parts for the machinery. If any component not mentioned is required, please contact your local Alfa Laval representative for availability.

You can find our spare part catalogue at <https://hygienicfluidhandling-catalogue.alfalaval.com>.

Always use Alfa Laval genuine spare parts. The warranty of Alfa Laval products is dependent on use of Alfa Laval genuine spare parts.

6.1 Ordering Spare Parts

When ordering spare parts, please always state:

1. Serial number (if available)
2. Item number/spare part number (if available)
3. Capacity or other relevant identification

6.2 Alfa Laval Service

Alfa Laval is represented in all larger countries of the world.

Do not hesitate to contact your local Alfa Laval representative, with any questions or requirement of spare parts for Alfa Laval equipment.

6.3 Warranty - Definition



The rules of Intended use are absolute. Use of the supplied Alfa Laval product is allowed only when in compliance with the technical data supplied with the Intended use.

Differing utilisation, other than agreed with Alfa Laval Kolding A/S, exclude any liability and warranty.

No modification or alteration of the supplied Alfa Laval product is allowed, unless explicit permission is granted by Alfa Laval Kolding A/S.



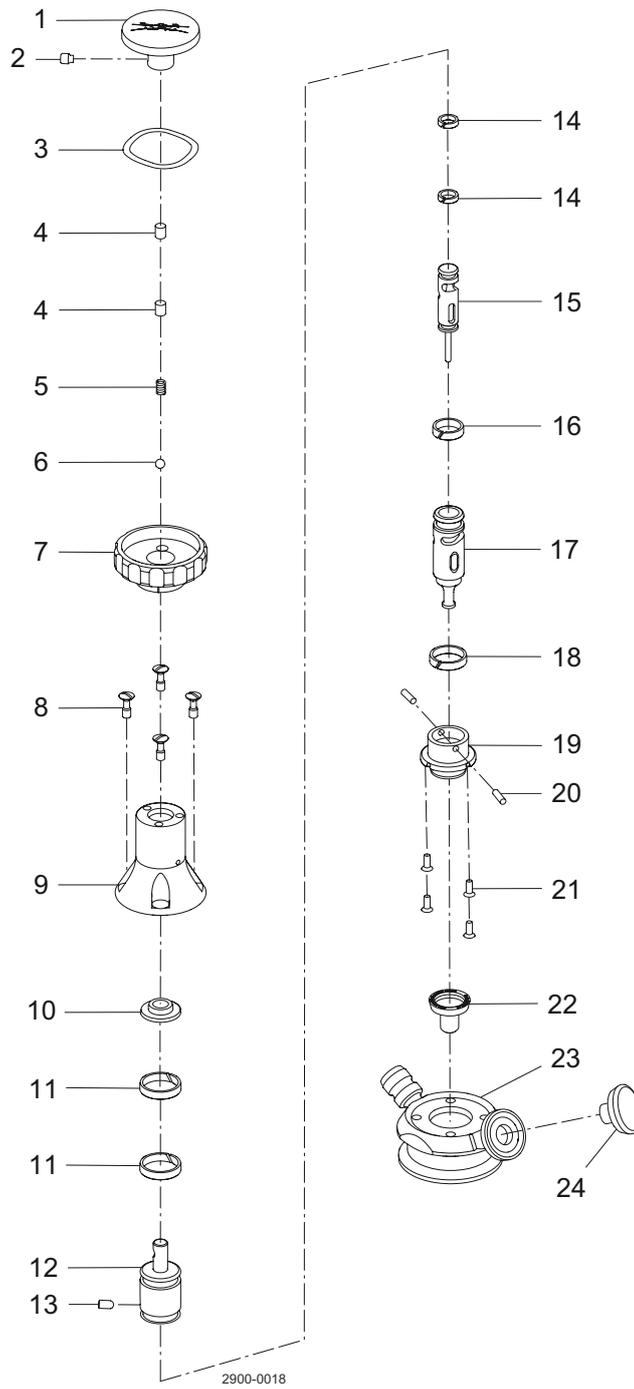
Liability and warranty are excluded:

- If advice and instruction of operating instructions are ignored
- For incorrect operation or for insufficient maintenance of the supplied Alfa Laval product
- For any kind of change of function of the supplied Alfa Laval product without prior written agreement by Alfa Laval Kolding A/S
- If supplied Alfa Laval product is modified by non-authorized persons
- If using the supplied Alfa Laval product without attention of appropriate safety regulations, (see [Safety](#) on page 5)
- If protection equipment is not used and vessel process / ancillary equipment is not brought to a standstill
- If the supplied Alfa Laval product and ancillary parts are not properly maintained (to be executed in intervals and including fitting of prescribed replacement parts)

When exchanging parts, only original replacement parts, released from the manufacturer, must be used.

7 Parts Lists and Exploded Views

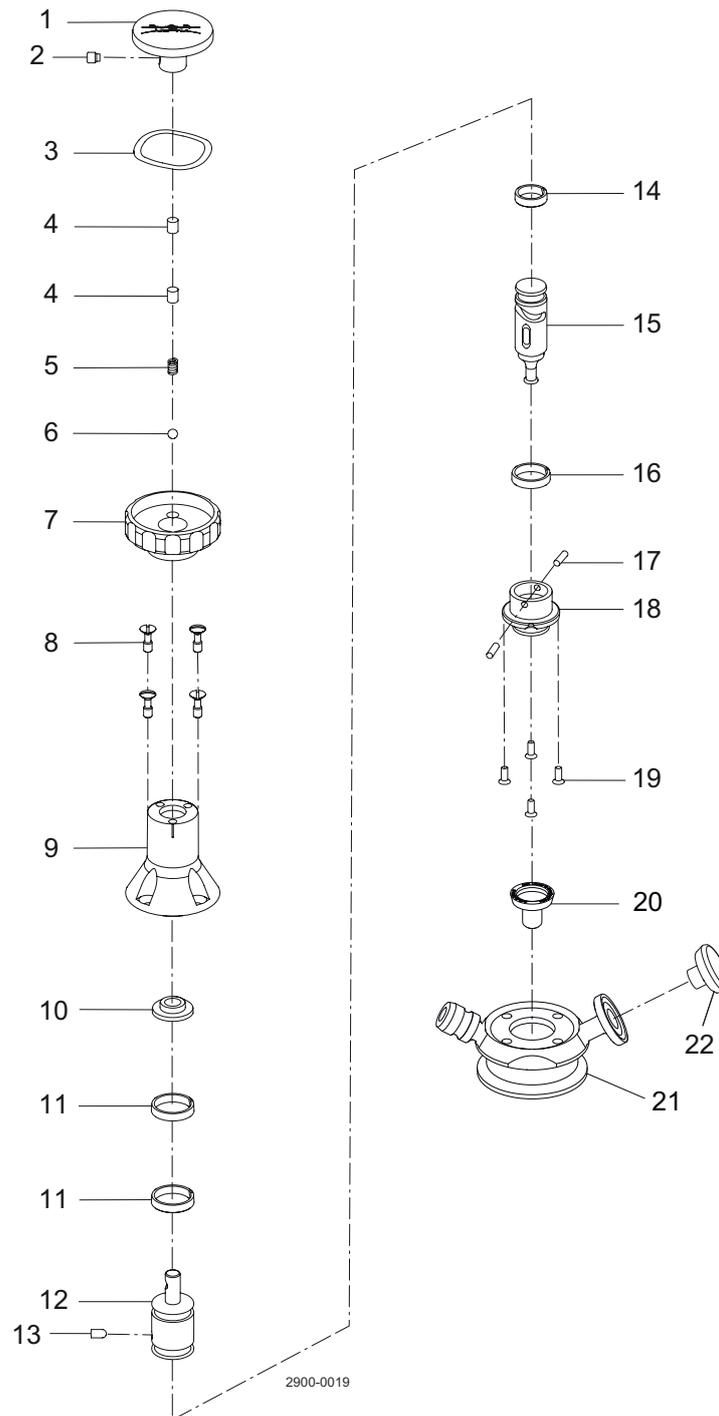
7.1 Manual handle for USV size 4 double seat



Pos.	Qty.	Denomination
		Actuator
1	1	Drive handle
2	1	Pin screw
3	1	Wave spring
4	2	Pin
5	1	Spring
6	1	Ball
7	1	Handle
8	1	Mounting screw, set of 4 pcs.
9	1	Actuator body
10	1	Spacer
11	2	Guide ring
12	1	Piston drive

Pos.	Qty.	Denomination
13	1	Guide pin
14	2	Guide ring
15	1	Inner piston
16	1	Guide ring
17	1	Outer piston
18	1	Guide ring
19	1	Actuator bottom
20	2	Pin
21	4	Screws
22	10	Membrane seal
23	1	Valve body
24	1	Plug for upper connection

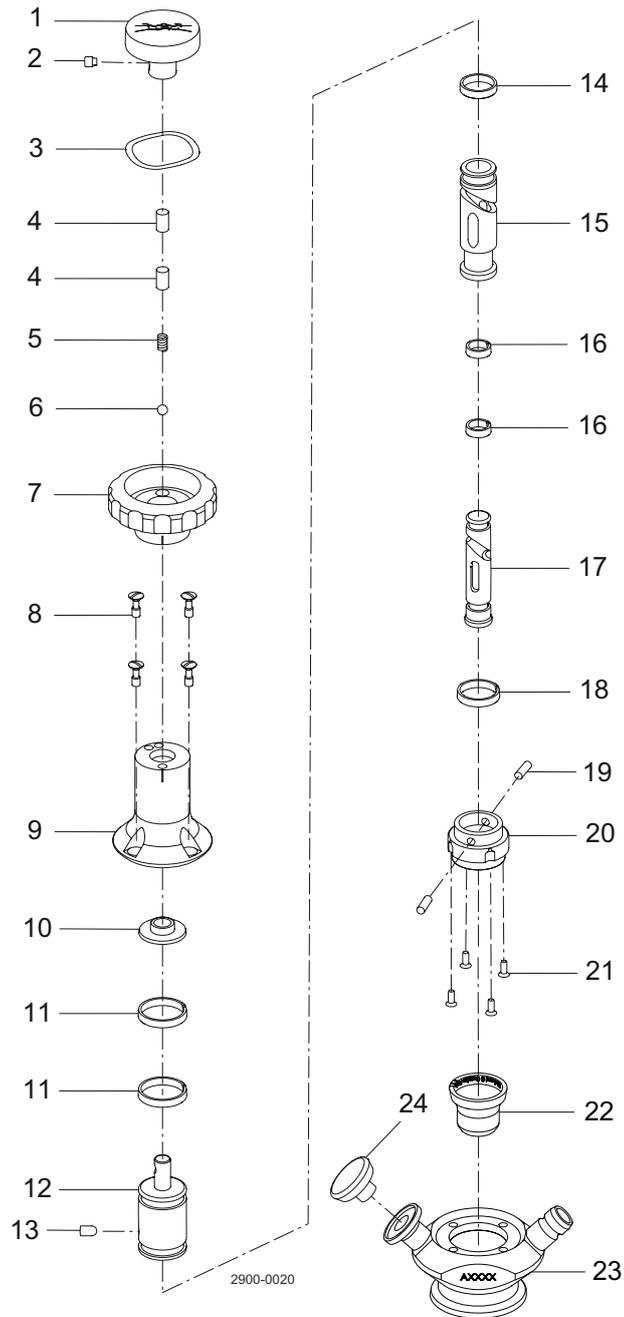
7.2 Manual handle for USV size 4 single seat



Pos.	Qty.	Denomination
		Actuator
1	1	Drive handle
2	1	Pin screw
3	1	Wave spring
4	2	Pin
5	1	Spring
6	1	Ball
7	1	Handle
8	1	Mounting screw, set of 4 pcs.
9	1	Actuator body
10	1	Spacer
11	2	Guide ring

Pos.	Qty.	Denomination
12	1	Piston drive
13	1	Guide pin
14	1	Guide ring
15	1	Piston
16	1	Guide ring
17	2	Pin
18	1	Actuator bottom
19	4	Screws
20	10	Membrane seal
21	1	Valve body
22	1	Plug for upper connection

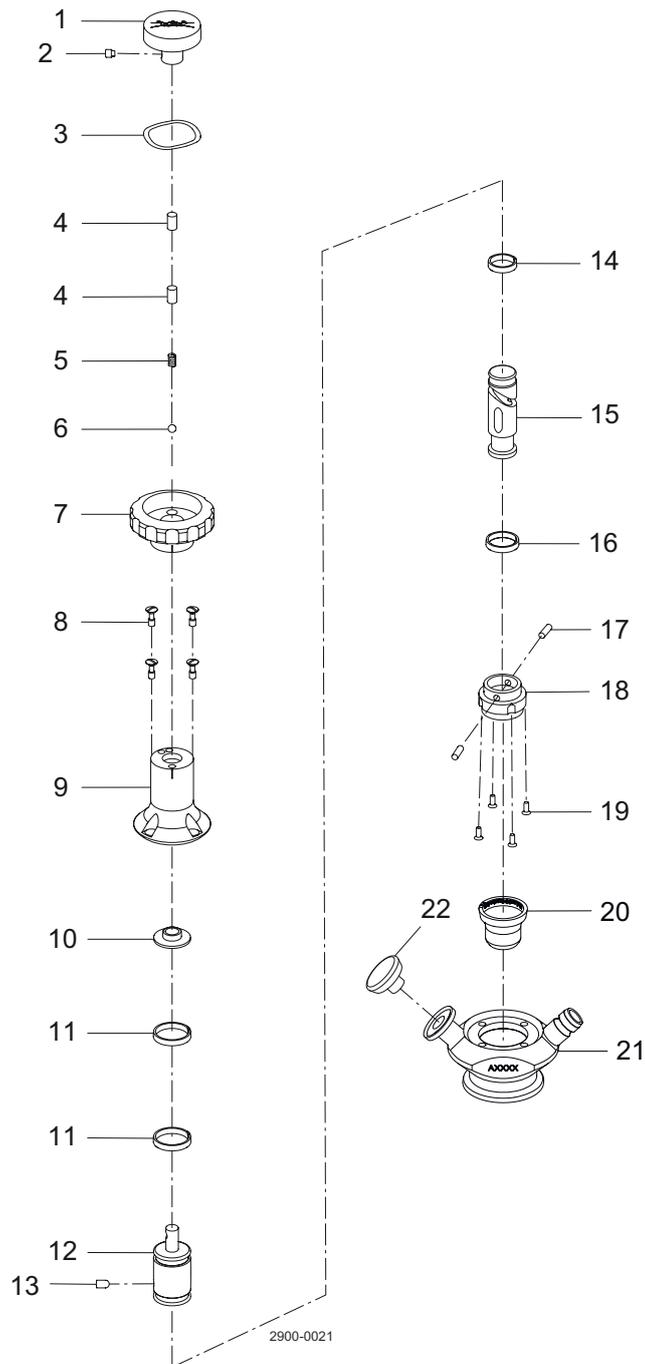
7.3 Manual handle for USV size 10 double seat



Pos.	Qty.	Denomination
		Actuator
1	1	Drive handle
2	1	Pin screw
3	1	Wave spring
4	2	Pin
5	1	Spring
6	1	Ball
7	1	Handle
8	1	Mounting screw, set of 4 pcs.
9	1	Actuator body
10	1	Spacer
11	2	Guide ring
12	1	Piston drive

Pos.	Qty.	Denomination
13	1	Guide pin
14	1	Guide ring
15	1	Outer piston
16	2	Guide ring
17	1	Inner piston
18	1	Guide ring
19	2	Pin
20	1	Actuator bottom
21	4	Screws
22	10	Membrane seal
23	1	Valve body
24	1	Plug for upper connection

7.4 Manual handle for USV size 10 single seat



Pos.	Qty.	Denomination
		Actuator
1	1	Drive handle
2	1	Pin screw
3	1	Wave spring
4	2	Pin
5	1	Spring
6	1	Ball
7	1	Handle
8	1	Mounting screw, set of 4 pcs.
9	1	Actuator body
10	1	Spacer
11	2	Guide ring

Pos.	Qty.	Denomination
12	1	Piston drive
13	1	Guide pin
14	1	Guide ring
15	1	Piston
16	1	Guide ring
17	2	Pin
18	1	Actuator bottom
19	4	Screws
20	10	Membrane seal
21	1	Valve body
22	1	Plug for upper connection