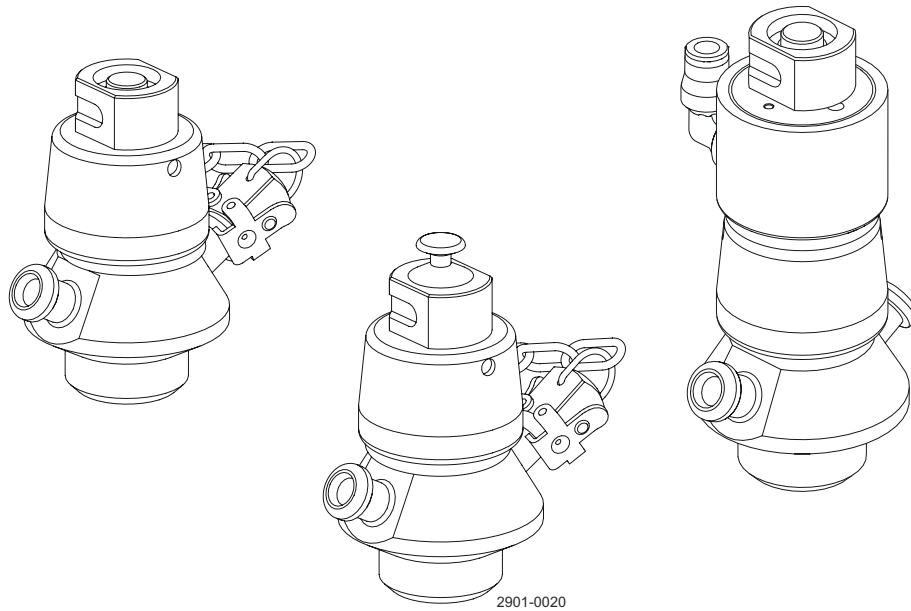


Alfa Laval SB Membrane Sampling Valve

Sampling valves



Lit. Code

200007936-1-EN-GB

Instruction Manual

Published by
Alfa Laval Kolding A/S
Albuen 31
DK-6000 Kolding, Denmark
+45 79 32 22 00

The original instructions are in English

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1 Declarations of Conformity

1.1 EU Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

SB Membrane Sample Valve

Type

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC

The person authorised to compile the technical file is the signer of this document.

Vice President BU Hygienic Fluid Handling
Head of Product Management

Title

Mikkel Nordkvist

Name

Kolding, Denmark

Place

2025-02-01

Date (YYYY-MM-DD)



Signature

DoC Revison_ 01_022025 / This Declaration of Conformity replaces Declaration of Conformity dated 2022-10-01



1.2 UK Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

SB Membrane Sample Valve

Type

is in conformity with the following directives with amendments:

- The Supply of Machinery (Safety) Regulations 2008

Signed on behalf of: Alfa Laval Kolding A/S.

Vice President BU Hygienic Fluid Handling
Head of Product Management

Title

Mikkel Nordkvist

Name

Kolding, Denmark

Place

2025-02-01

Date (YYYY-MM-DD)



Signature

DoC Revison_ 02_022025



2 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.



2.1 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 burning danger.
	Cutting danger.

	Corrosive substance.
	Crushing of hands.






2.2 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 release compressed air after use.</p> <p>Always assemble the valve completely before startup and make sure everything is in place and correctly tightened.</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>
	<p>Never work on the valve or touch moving parts if the actuator is supplied with compressed air.</p>


Operation

	<p>Always read Technical Data thoroughly.</p> <p>Never operate the valve unless a correct installation has been verified.</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>Never dismantle the valve during operation or when pressurized.</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)
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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>
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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
	<p>Corrosive Hazard</p> <ul style="list-style-type: none">• 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.
	<p>Cut Hazard</p> <ul style="list-style-type: none">• Sharp edges, especially on bowl discs and threads, can cause cuts. Wear protective gloves
	<p>Crushing Hazard</p> <ul style="list-style-type: none">• Avoid placing hands into valve orifice pinch points

Safety check



A visual inspection of any protective device (shield, guard, cover or other) on the supplied Alfa Laval product shall be carried out at least every 12 months. If the protective device is lost or damaged, especially when this leads to deterioration of safety performance, it shall be replaced. The fixing of the protective device should only be replaced with fixings of the same or an equivalent type.

Inspection acceptance criteria:

- It should not be possible to reach moving parts originally protected by a protective device
- The protective device must be securely mounted
- Ensure that screws for the protective device are securely tightened

Procedure in case of non-acceptance:

- Fix and/or replace the protective device

2.3 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.

2.4 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.

2.5 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.

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3 Introduction

The Alfa Laval SB Membrane Sampling Valve is a hygienic valve that enables representative sampling of products from tanks and pipework under sterile conditions. It provides the high accuracy, exceptional repeatability and excellent reliability required for high-quality, cost-effective sampling.

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4 Installation

4.1 Unpacking/delivery

NOTE

The instruction manual is part of delivery.

Study the instructions carefully.

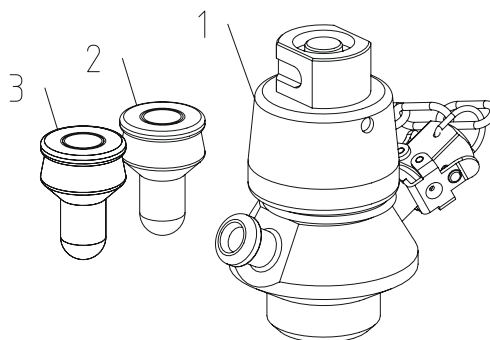
The items refer to *Parts Lists and Exploded Views* on page 39.

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

1. Complete valve, manual or pneumatic
2. Membrane EPDM (white)
3. Membrane Silicone (transparent)
4. Instruction manual
5. Material certificate 3.1 acc. EN10204



- 1 Remove any packing materials from the valve/valve parts.
- 2 Inspect the valve/valve parts for visible transport damage.
- 3 Avoid damaging the valve/valve parts.

4.2 General installation

NOTE

Always read the technical data thoroughly. See [Technical Data](#) on page 35

CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

WARNING

Always release compressed air from the actuator for force opening after use.



4.3 Valve assembly

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

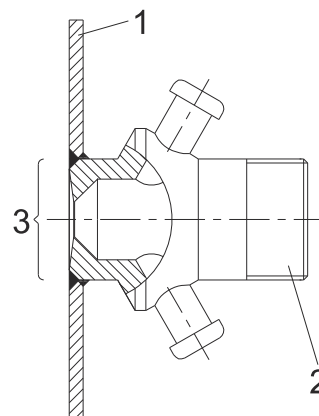
The valve must always be fitted so that the connections are placed vertically or the valve will not function properly.

Before welding type T and P, the valve must be disassembled so the seals, gaskets and membrane are not damaged by the heat.

Valve body - type T

For tank-mounted valves. It is important that the valve seat is not damaged by grinding or excessive heat.

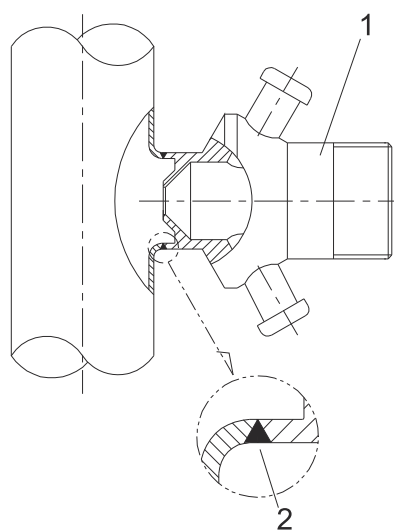
1. Tank wall
2. Valve body - type T
3. No grinding



Valve body - type P

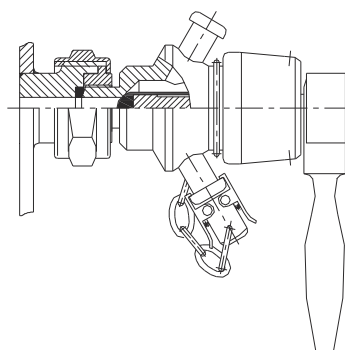
For pipe-mounted valves. It is important that the valve seat is not damaged by grinding or excessive heat.

1. Valve body - type P
2. Ensure flush welding



Valve body - type S

Valves in the type-S execution come with a 3/8" BSP male thread. Ensure that the connection is not leaking.



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5 Operation

5.1 Operation

NOTE

Always read the technical data thoroughly. See [Technical Data](#) on page 35

CAUTION

Alfa Laval cannot be held responsible for incorrect operation.

WARNING

Always release compressed air after use.



DANGER Burning hazard!

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



DANGER Moving parts!

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



5.2 Sterilisation with alcohol

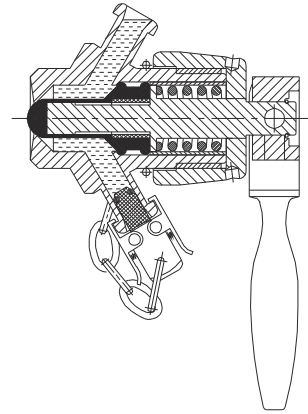
NOTE

Always sterilise the valve before taking a sample.

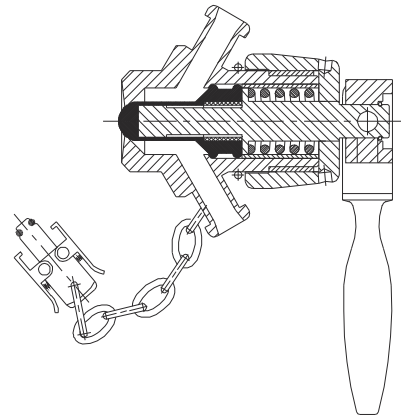
Make sure that the valve is in the closed position before sterilisation.

1 Sterilisation procedure:

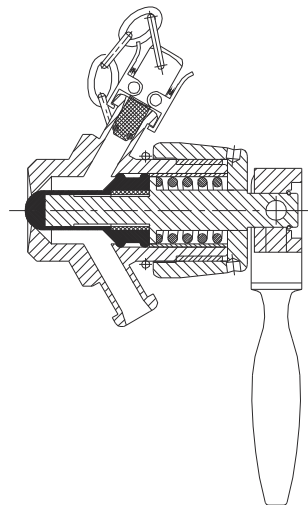
- a) Close the lower outlet of the valve with the clip-on cap and fill the valve with alcohol.



- b) Remove the clip-on cap and drain the valve.



- c) Close the upper outlet with the clip-on cap.



5.3 Sterilisation with steam

NOTE

Always sterilise the valve before taking a sample.

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

WARNING Burn Hazard!

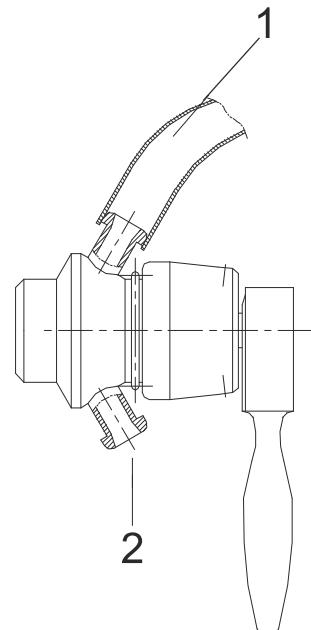
Never service the valve when it is hot



1 Sterilisation procedure:

- a) Remove the clip-on cap from the valve lower connection.
- b) Sterilise the valve for approximately 40 seconds using steam, added through a hose connected to the valve top connection.
- c) Remove the steam hose.
- d) Sterilise the clip-on cap with alcohol.
- e) Close the upper connection with the clip-on cap.

Heat accumulated during steaming will completely dry out the interior of the valve.



1. Steam inlet
2. Water/steam outlet

5.4 Sampling

NOTE

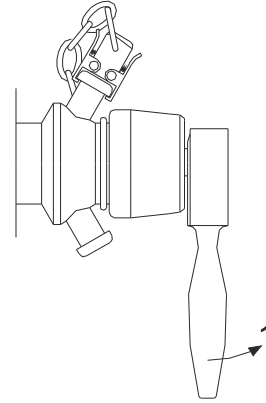
Always sterilise the valve before taking a sample.

1 Sterilisation procedure:

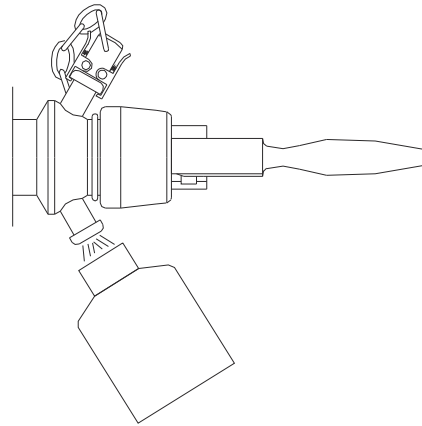
- a) Open/activate the valve to carry out sampling.

For pneumatic valves, apply compressed air.

Pos. 1 Open



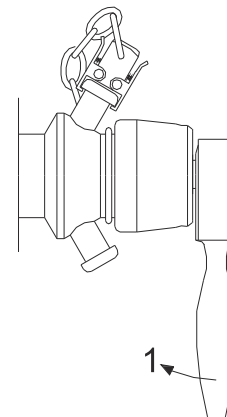
- b) Carry out the sampling.



- c) Close/deactivate the valve after sampling.

For pneumatic valves, release the compressed air.

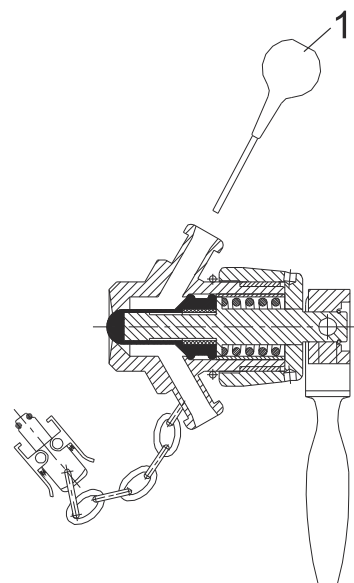
Pos. 1 Close



2

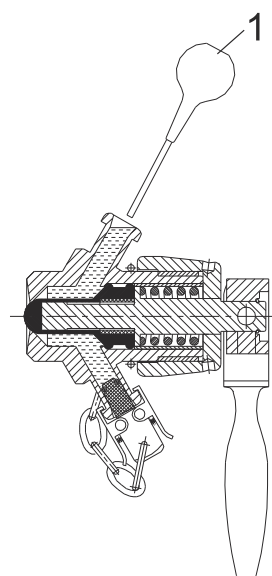
- a) Remove the clip-on cap and rinse with water or alcohol.

Pos. 1 Use syringe



- b) Put the clip-on cap on the lower connection and fill the valve with alcohol.

Pos. 1 Use syringe



The valve is now sealed and has to be drained before the next sampling

This page is intentionally left blank.

6 Maintenance

6.1 General maintenance

NOTE

Maintain the valve regularly.

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

Always keep spare rubber membranes in stock.

Check the valve for smooth operation after service.

Always read the technical data thoroughly. See [Technical Data](#) on page 35.

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

WARNING

Always release compressed air after use.



DANGER Burning hazard!

Never service the valve when it is hot.

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

Atmospheric pressure required!



DANGER Moving parts!

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



6.2 Membrane maintenance

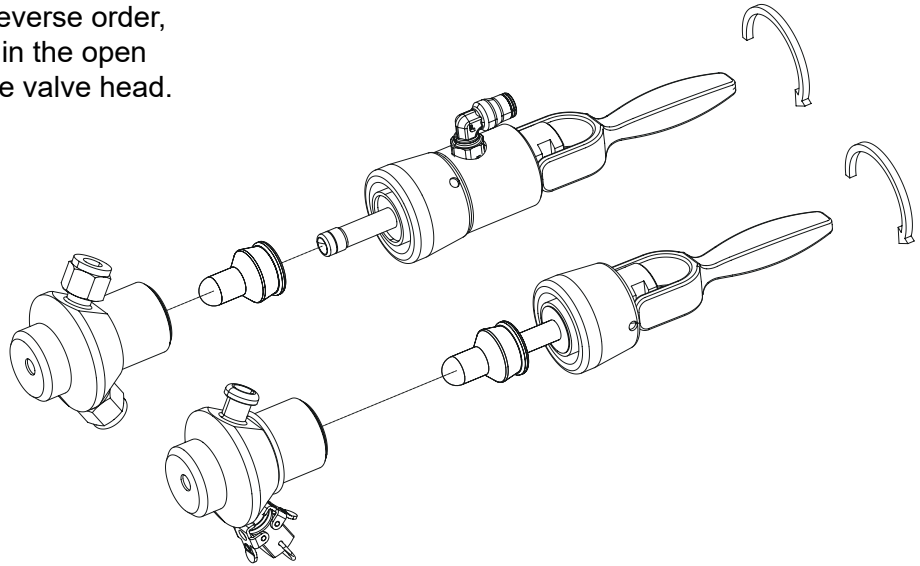
Regularly inspect the valves for leaks. Replace a leaking membrane within a few hours.

In general, it is recommended that the membrane is replaced every two months.

Replacement intervals for the membranes depend on frequency of sampling, cleaning procedure, temperature etc. It is recommended to monitor replacements in order to carry out planned maintenance.

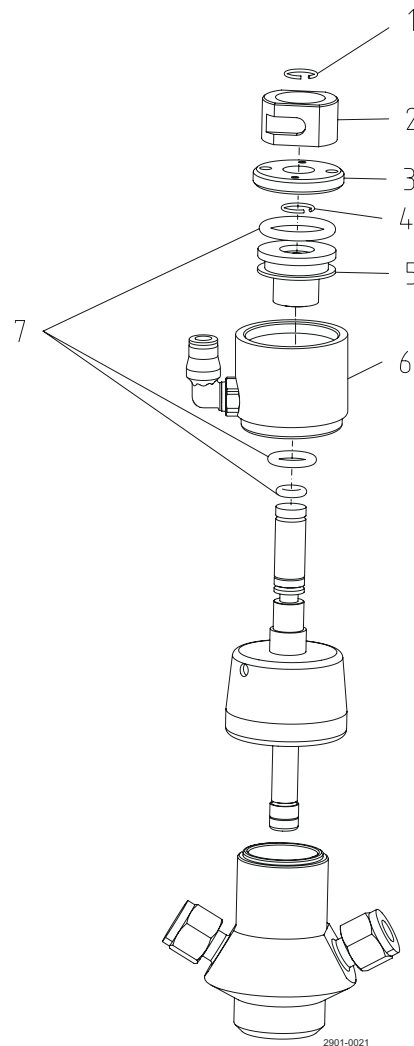
The membranes can be supplied in three different colours to facilitate the monitoring of replacements.

- 1 The valve has to be in the open position before disassembly or the membrane may be damaged.
- 2 Loosen the valve head and replace the membrane.
- 3 Reassemble the valve in reverse order, observing that it has to be in the open position when mounting the valve head.



6.3 Actuator maintenance (Pneumatic version)

Replace O-rings, clean and lubricate the actuator every 5 years (depending on working conditions).



- 1
 - a) Remove locking ring (pos. 1)
 - b) Remove activating ring (pos. 2)
 - c) Loosen the end cover using two pins inserted in the two holes (pos. 3)
 - d) Remove locking ring (pos. 4)
 - e) Push the piston out of cylinder (pos. 5)
 - f) Remove cylinder (pos. 6)
- 2
 - a) Replace and lubricate O-rings (pos. 7)
 - b) Lubricate inner surface of cylinder (pos. 6)
- 3
 - a) Reassemble the valve in reverse order
 - b) Make sure to replace locking rings (pos. 1 & 4)
 - c) Reassemble the valve in reverse order

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7 Technical Data

NOTE

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

7.1 Technical Data

Valve Data

Temperature

Temperature range: +1 °C to +130 °C / 33.8 °F to 266 °F

Max sterilisation temperature dry steam¹ (2 bar): 121 °C / 249.8 °F

¹ Steam must be dry, since condensate will damage the membrane seal.

Pressure

Product pressure: 1000 kPa (10 bar) / 145 psi

Weight

Weight: 0.86 kg

Actuator Data

Actuator for force opening

Max. air supply: 8 bar / 116 psi

Min. air supply: 6 bar / 87 psi

Noise: 70 dB(A)

7.2 Physical Data

Materials

Valve body:	1.4404 (AISI 316L) with 3.1 cert.
Other metallic parts:	1.4307 (AISI 304L)
Membrane:	1 pcs. silicone and 1 pcs. EPDM supplied with valve
Product wetted steel surfaces	Surface roughness $Ra < 0.8 \mu\text{m}$ ($< 32 \mu''$)
Product wetted seals	EPDM
Membrane seal	EPDM, Silicone

Accessories

See SB Membrane Sampling Valve Accessories ordering leaflet.

Special Versions

Instead of being clip-on type, the two outlets of the valve can be supplied with Swagelok. Other type is available on request.

The pneumatic valve can alternatively be supplied in a combined manual - pneumatic execution.

Please ask for separate information on the SCANDI BREW® Sampling system.

The valve body is available in the following constructions:

- Type T for direct welding into tank
- Type P for direct welding into pipe
- Type S for socket mounting. Valve body with male part in 3/8" BSP
- Other types are available on request, f.inst. 1/2" BSP, NW 10, NW 15

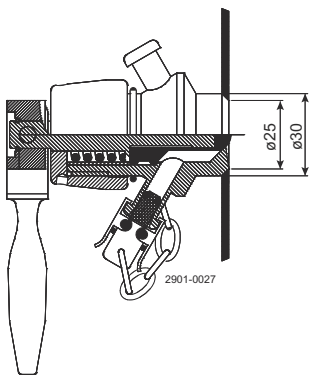


Figure 1: Type T

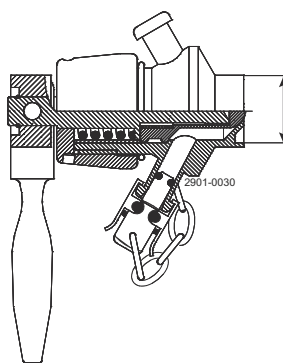


Figure 2: Type P

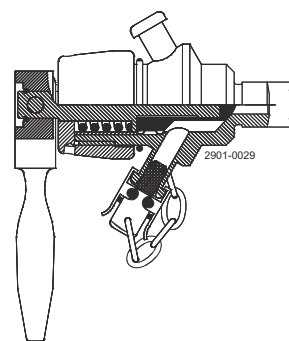


Figure 3: Type S

8 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.

8.1 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

8.2 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.

8.3 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.



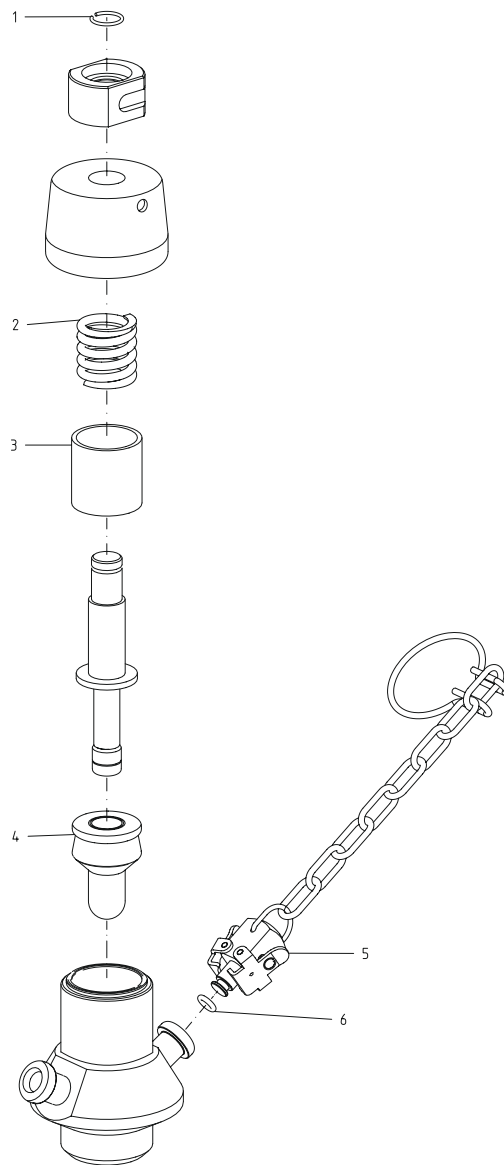
Liability and warranty are excluded:

- 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 7)
- 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.

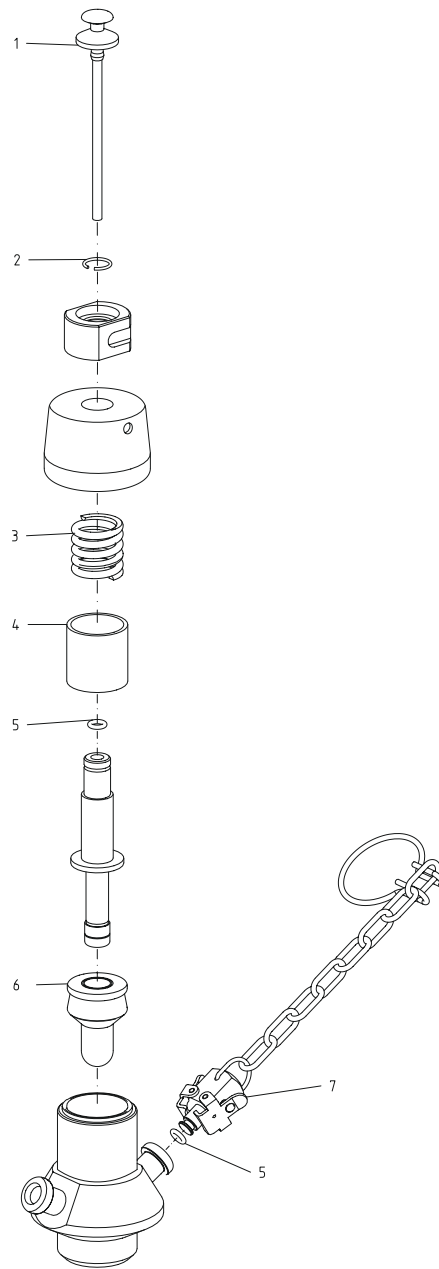
9 Parts Lists and Exploded Views

9.1 Membrane Sampling Valve, manual



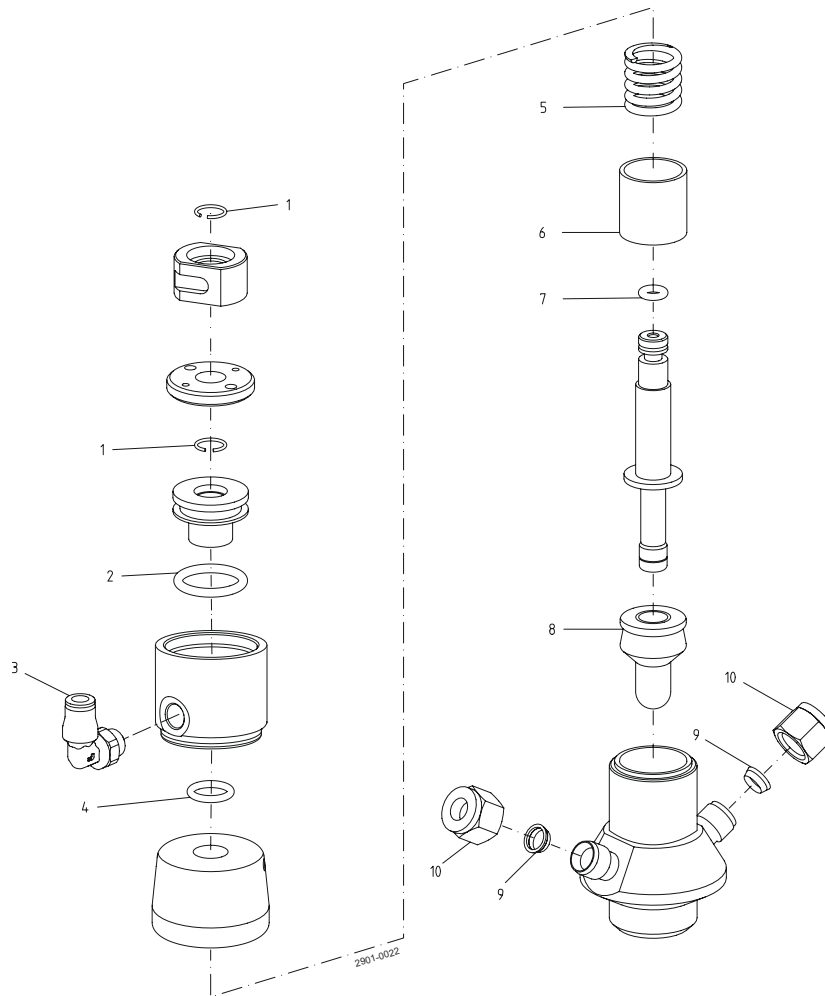
Pos.	Qty.	Denomination
1	1	Locking ring
2	1	Spring
3	1	Bushing for spring
4	1	Membrane
5	1	Clip-on closing cap with chain (includes O-ring, pos 6)
6	1	O-ring

9.2 Membrane Sampling Valve, manual & micro port



Pos.	Qty.	Denomination
1	1	Closing cap w. pipe
2	1	Locking ring
3	1	Spring
4	1	Bushing for spring
5	1	O-ring, EPDM
6	1	Membrane, EPDM 20 pcs
	1	Membrane, Q 20 pcs
7	1	Clip-on closing cap with chain (includes O-ring)

9.3 Membrane Sampling Valve, pneumatic



Pos.	Qty.	Denomination
1	2	Locking ring
2	1	O-ring, NBR
3	1	Air inlet
4	1	O-ring NBR
5	1	Spring

Pos.	Qty.	Denomination
6	1	Bushing for spring
7	1	O-ring, NBR
8	1	Membrane
9	2	Ferrule set
10	2	Nut