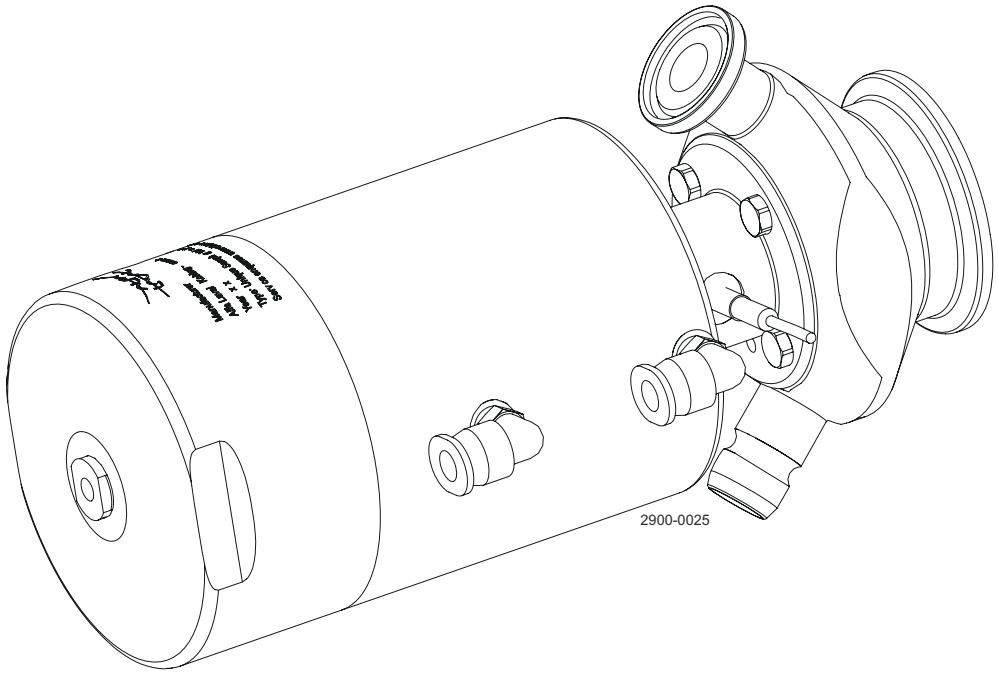
Unique Sampling Valve, Single and Double Seat valve, Type P - Pneumatic Operated

Sampling valves



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Instruction manual

BRITISH ENGLISH

Published by
Alfa Laval Kolding A/S
Albuen 31
DK-6000 Kolding, Denmark
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The original instructions are in English

Contents

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

Unique Sampling Valve

Designation

Unique Sampling Valve Size 4 P, Unique Sampling Valve Size 10 P, Unique Sampling Valve Size 25 P

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		Mikkel Nordkvist
Title		Name
Kolding, Denmark	2025-12-15	
Place	Date (YYYY-MM-DD)	Signature

DoC Revison_ 01_122025 / 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

Unique Sampling Valve

Designation

Unique Sampling Valve Size 4 P, Unique Sampling Valve Size 10 P, Unique Sampling Valve Size 25 P

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.

Title	Name
Vice President BU Hygienic Fluid Handling Head of Product Management	Mikkel Nordkvist

Place	Date (YYYY-MM-DD)	Signature
Kolding, Denmark	2025-12-15	

DoC Revison_ 02_122025

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 Burn Hazard.
	Cutting danger.
	Corrosive substance.
	Heavy object lifting.
	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

	To prevent unexpected start and contact with electrical live and moving parts. **Always** disconnect the power supply and air supply safely: • The power supply disconnecting device and air supply must be disconnected (in off position) and locked.

Transportation and Lifting

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

Installation

	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. **Always** release compressed air after use. **Always** assemble the valve completely before startup and make sure everything is in place and correctly tightened.
  	**Never** work on the valve or touch moving parts if the actuator is supplied with compressed air. **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. **Never** touch the valve or the pipelines when processing hot liquids or when sterilising.

Operation

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

Maintenance

In order to optimise the operation of the supplied Alfa Laval product and to minimize the down time due repair activities, the maintenance includes:

- 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

Always release compressed air after use.

Always ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before dismantling the valve.

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

Never work on the valve or touch moving parts if the actuator is supplied with compressed air.

Storage

Alfa Laval recommend:

- 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

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.

Hazards

Burn Hazard

- 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 bowl discs and threads, can cause cuts. Wear protective gloves

Crushing Hazard

- 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.

3 Introduction

Alfa Laval Unique Sampling Valve (Double Seat)

The Alfa Laval Unique Sampling Valve (Double Seat) is a double-seat sampling valve that enables representative sampling in hygienic processes under sterile conditions. It provides the high accuracy, exceptional repeatability and excellent reliability required for high-quality, cost-effective sampling. Either the ergonomically designed handle or the actuator ensures exceptional control during the sampling operation. It is possible to sterilize the entire seat between sampling, thereby eliminating the risk of cross-contamination.

Alfa Laval Unique Sampling Valve (Single Seat)

The Alfa Laval Unique Sampling Valve (Single Seat) is a single-seat sampling valve that enables representative sampling in hygienic processes under sterile conditions. It provides high accuracy, exceptional repeatability and excellent reliability required for high quality, cost-effective sampling. Either the ergonomically designed handle or the actuator ensures exceptional control during the sampling operation.

3.1 General Information

The patented double seat ensures representative sampling as the seat area is accessible for sterilisation.

The inner spindle pushes the membrane seal down onto the inner seat, closing off the product. Once the inner spindle is in place, the outer spindle is retracted, moving the membrane seal away from the outer seat making it possible to remove any remaining product and sterilise the outer seat.

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4 Installation

4.1 Unpacking/Delivery

NOTE

This Instruction Manual is part of the delivery.

Study the instructions thoroughly.

The items refer to the *Parts Lists and Exploded Views* on page 57.

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

1. Valve body
2. Actuator
3. Membrane
4. Clamp ring (size 25 only)
5. Plug (size 4 and 10 only)

1. Remove any packing materials from the valve/valve parts.

2. Inspect the valve/valve parts for visible transport damages.

   Avoid damaging the valve/valve parts.

4.2 General Installation

NOTE

Always read *Technical Data* on page 51 thoroughly.

Alfa Laval cannot be held responsible for incorrect installation.

WARNING

Always release compressed air after use.

4.3 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 57.

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 in relation to each other.

If the valve is fitted otherwise, it will not function appropriately.

Tank

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

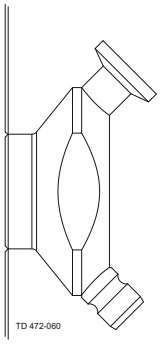
For a size 4 valve, a hole of Ø29 is made in the tank.

For a size 10 valve, a hole of Ø38 is made in the tank.

For a size 25 valve, a hole of Ø70 is made in the tank.

The connections are fitted so that they are placed vertically.

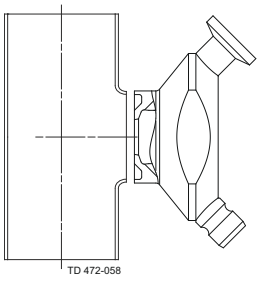
The body flushes with the inner side of the tank.



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 by using a clamp connection.

Size 4 & 10:

Seal ring (EPDM)

25 mm (A): 9611-99-1358

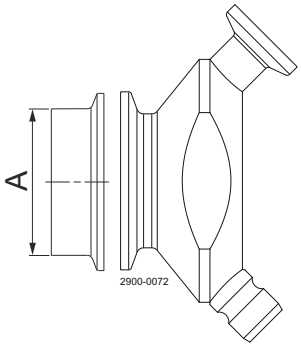
38 mm (A): 9611-99-1359

Clamp ring: 211053

Size 25:

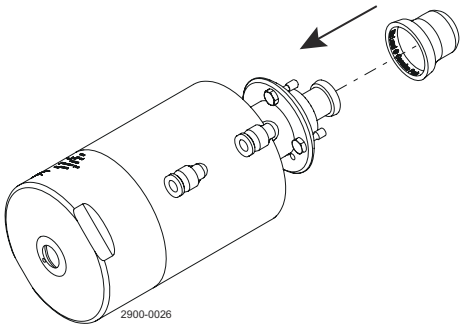
Seal ring (EPDM): 9611-99-1361

Clamp ring: 211055



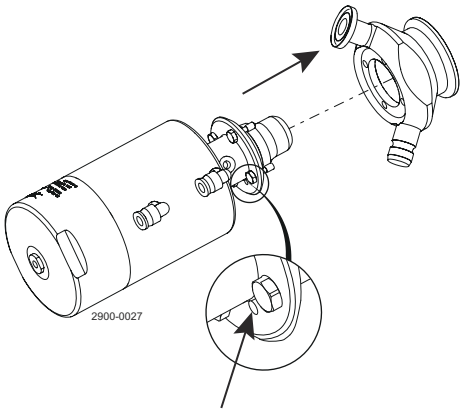
4.4 Fitting of Actuator - Sizes 4 and 10

1. Fit the membrane on the actuator.

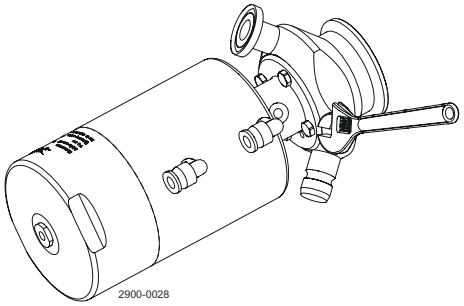


2. Fit the actuator on the valve body.

> **WARNING**
>
> Make sure that the two Ø3.2 mm leak detection holes are facing downwards.

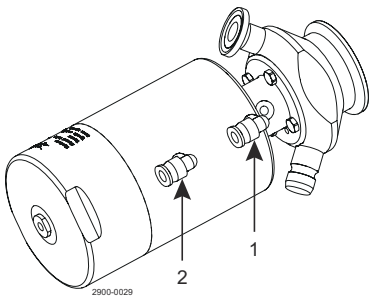


3. Tighten screw with a torque of 2-3 Nm.

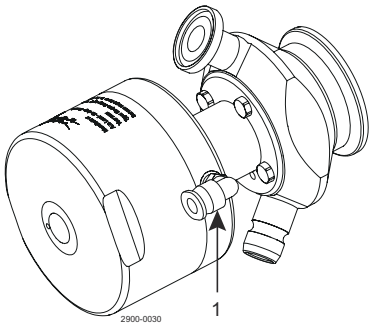


4. Fit the air hose on the actuator.

Double seat actuator



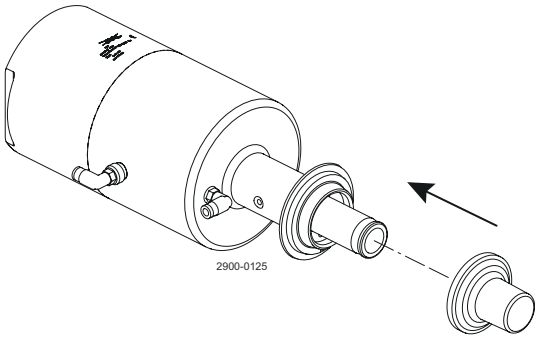
Single seat actuator



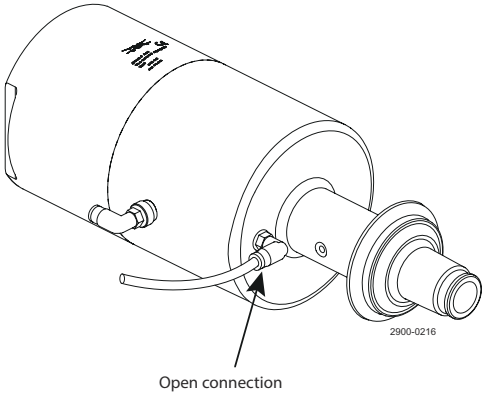
1. Sample/open connection
2. Steam/cleaning connection

4.5 Fitting of Actuator - Size 25

1. Fit the membrane on the actuator.



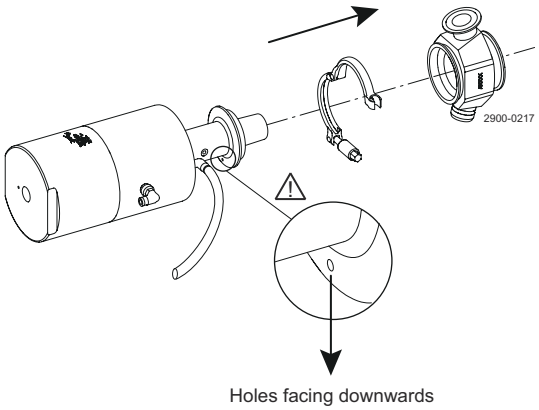
2. Apply air to the open connection.



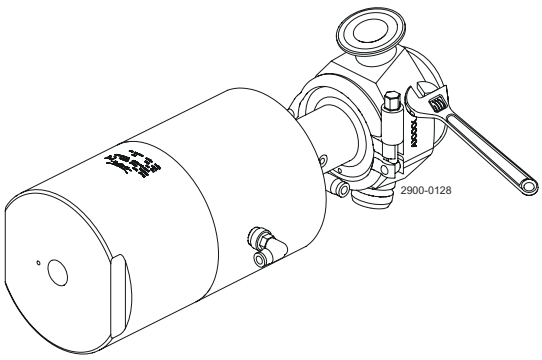
3.

> **WARNING**
>
> Make sure that the two Ø3.2 mm leak detection holes are facing downwards.

Mount the actuator to the valve body while air is applied to the open connection



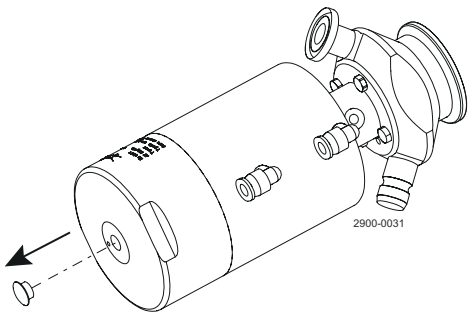
4. Tighten the clamp ring with a torque of 12 Nm.



4.6 Adjustment of Valve

The valve is fully adjustable in its movement, which enables a precise sample every time.

1. Remove the top plug.



2. Use a hexagon socket spanner to adjust the movement of the actuator.

   The actuator has by default a movement of:

   Size 4: 4 mm

   Size 10: 10 mm

   Size 25: 25 mm

   Turn the spanner anticlockwise to decrease the movement of the actuator.

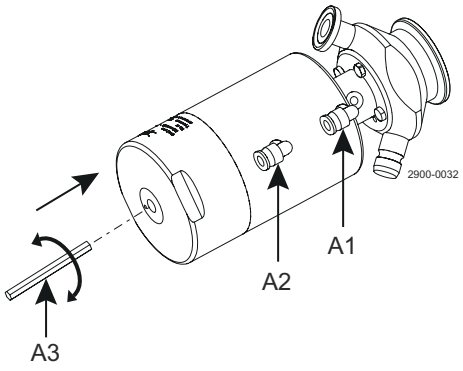
   Control the adjusted movement by applying air to the sample air connection (A1).

   A1. Sample/open connection

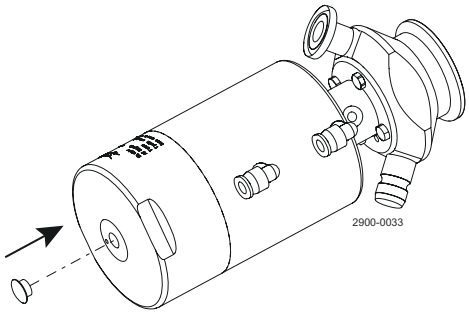
   A2. Steam/clean connection

   A3. Hexagon socket spanner

   (Sizes 4 and 10 = 5 mm, size 25 = 10 mm)



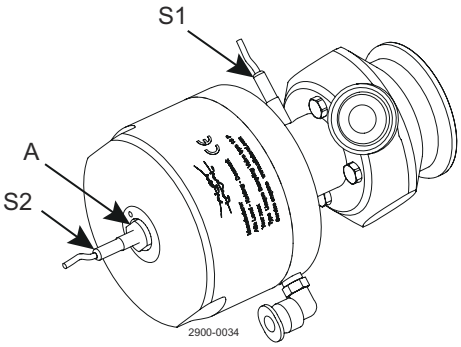
3. Mount the top plug.



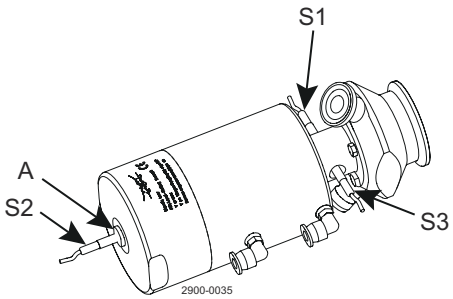
4.7 Installation of Proximity Switch (Accessories)

The Unique Sampling Valve can be fitted with a proximity switch to indicate whether it is in the closed, open or cleaning position.

Single Seat:



Double Seat:



S1	Proximity switch for closed valve
S2	Proximity switch for open valve
S3	Proximity switch for valve in cleaning position
A	Adaptor for proximity switch - Sizes 4 and 10: 9614-0174-01 - Size 25: 9614-2579-01

5 Operation

5.1 General Operation

NOTE

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

Ensure that the valve operates smoothly.

The items refer to *Parts Lists and Exploded Views* on page 57.

Always read *Technical Data* on page 51 thoroughly.

Alfa Laval cannot be held responsible for incorrect operation.

WARNING **Burning danger!**

Always release compressed air after use.

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.

5.2 Operation - Single Seat Valve

5.2.1 Sterilisation - Single Seat Pneumatic Actuator

NOTE

Study the instructions thoroughly.

WARNING

Always sterilise the valve before taking a sample.

1. Make sure that the valve is in the closed position before sterilisation (no air is applied to air connection A1). If using proximity switches, S1 will become active.
2. Connect steam to the upper connection. It is advisable to use the Non-return valve (N) on the upper connection. This enables steaming and sampling without removing the steam line or using an unsterile blind cap.
3. Steam the valve for a period of 2 minutes, at a constant pressure of 2 bar (29 psi). A pressure relief valve (P) is required. If using a pressure relief valve, release the steam by pulling the handle (P1) before removing the pressure relief valve(P) from the sampling valve.
4. The valve is now ready for taking a representative and sterile sample.

A1 = Air connection for open valve

A = Adaptor for proximity switch[1]
- sizes 4 and 10: 9614-0174-01
- size 25: 9614-0174-02

S1 = Proximity switch for closed valve[1]

S2 = Proximity switch for open valve[1]

N = Non-return valve[1]

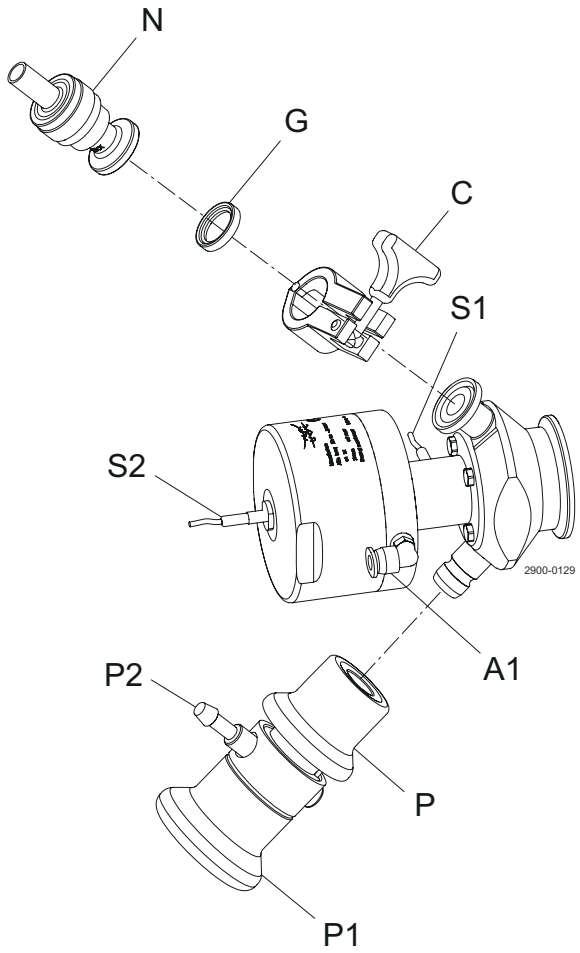
G = Seal ring[1]
- sizes 4 and 10: 290273
- size 25: 9611-99-2012

C = Clamp ring[1]
- sizes 4 and 10: 211290
- size 25: 211053

P = Pressure relief valve[1]
- sizes 4 and 10: 9614-1957-01
- size 25 9614-1957-02

P1 = Handle for quick release of steam

P2 = Steam outlet - be careful!



[1] = accessories

5.2.2 Sampling - Single Seat Pneumatic Actuator

NOTE

Pay attention for possible faults.

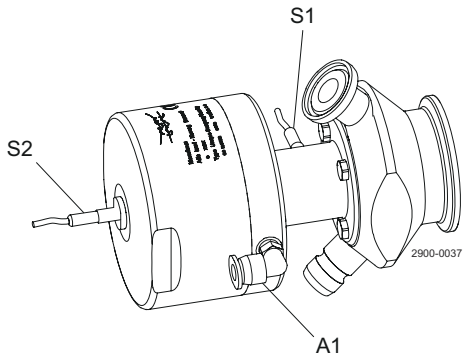
Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 57.

1 Taking a sample

a) Open the valve by supplying air to the A1 connection until the desired product flow is obtained.

b) Once the required amount of sample has been taken, shut off the supplied air.



NOTE

If the actuator is fitted with proximity switches, S1 is active when the valve is closed and S2 is active when the valve is open.

A1: Air to open valve

S1: Proximity switch to register that valve is open (accessories)

S2: Proximity switch to register that valve is closed (accessories)

2 Important!

WARNING

Always sterilise the valve after taking a sample.

a) Once the sampling has taken place, it is very important that the valve is properly cleaned and sterilised, so as to avoid the sample remaining and being enclosed for shorter or longer periods at the time.

b) Therefore repeat the sterilisation procedure, (see *Sterilisation - Single Seat Pneumatic Actuator* on page 26), each time the valve has been in use.

5.3 Operation - Double Seat Valve

5.3.1 Sterilisation - Double Seat Pneumatic Actuator

NOTE

Study the instructions thoroughly.

WARNING

Always sterilise the valve before taking a sample.

1. Make sure that the valve is in closed position before sterilisation. (No air is applied to air connection A1) - If using proximity switches, S1 will become active.
2. Apply air to A2 in order to actuate the valve in cleaning position - inner seat is now sealed (if proximity switches are used, S3 will become active).
3. Connect steam to the upper connection. It is advisable to use the Non-return valve (N) (accessories) on the upper connection. This enables steaming and sampling without removing the steam line or using an unsterile blind cap.
4. Steam the valve for a period of 2 minutes, at a constant pressure of 2 bar (29 psi). A pressure relief valve (P) (accessories) is required. If using a pressure relief valve (P), release the steam by pulling the handle (P2) before removing the pressure relief valve from the sampling valve.
5. Shut off the air supply to air connection A2.
6. The valve is ready for taking a representative and sterile sample.

A1 = Air connection for open valve

A2 = Air connection for cleaning position

A = Adaptor for proximity switch[1]
- sizes 4 and 10: 9614-0174-01
- size 25: 9614-0174-02

S1 = Proximity switch for closed valve[1]

S2 = Proximity switch for open valve[1]

S3 = Proximity switch for cleaning position[1]

N = Non-return valve[1]

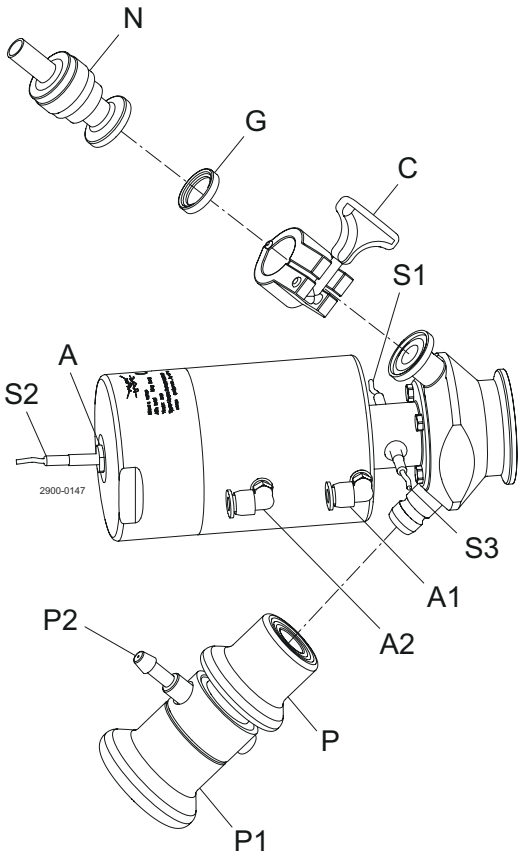
G = Seal ring[1]
- sizes 4 and 10: 290273
- size 25: 9611-99-2012

C = Clamp ring[1]
- size 4 and 10: 211290
- size 25: 211053

P = Pressure relief valve[1]
- sizes 4 and 10: 9614-1957-01
- size 25: 9614-1957-02

P1 = Handle for quick release of steam

P2 = Steam outlet - be careful!



[1] = accessories

5.3.2 Sampling - Double Seat Pneumatic Actuator

NOTE

Pay attention for possible faults.

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 57.

1 **Taking a sample**

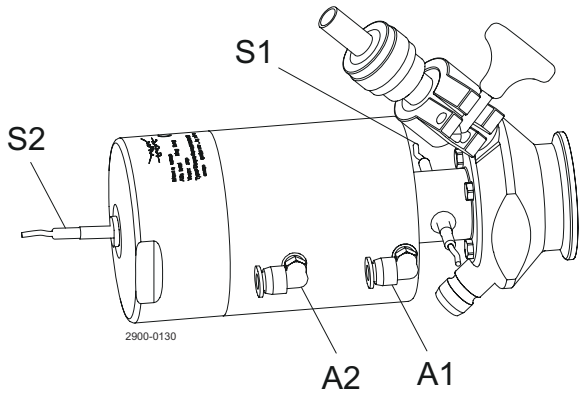
a) Apply air to A1 until the desired product flow is obtained. (If proximity switches are used, S2 will become active.)

b) Once the required amount of sample has been taken, close the valve by removing the air from A1. (If proximity switches are used, S1 will become active.)

A1: Air connection for open valve

S1: Proximity switch for closed valve (if mounted)

S2: Proximity switch for open valve (If mounted)



2 **Important!**

WARNING

Always sterilise the valve after taking a sample.

a) Once sampling has taken place, it is very important that the valve is properly cleaned and sterilised, so as to avoid the sample remaining and being enclosed for shorter or longer periods at the time.

b) Therefore, repeat the sterilisation procedure (see *Sterilisation - Double Seat Pneumatic Actuator* on page 28) each time the valve has been in use.

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6 Troubleshooting

NOTE

Study the maintenance instructions thoroughly before replacing worn parts.

Problem	Cause/result	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
	Supplied air pressure is too low	Min. air pressure is 5 bar (72.5 psi)

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7 Recommended Cleaning

NOTE

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

NaOH = Caustic soda.

HNO_3 = 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.

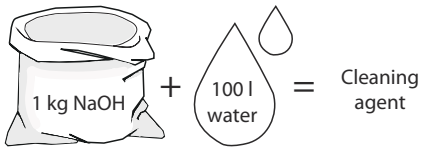
Always handle lye and acid with great care.

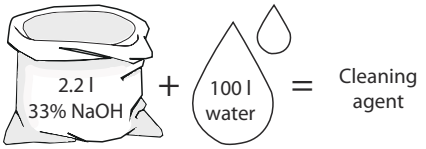
Examples of cleaning agents

Use clean water free from chlorides

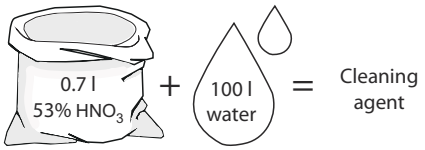
Metric System

1. 1% by weight NaOH at 70°C



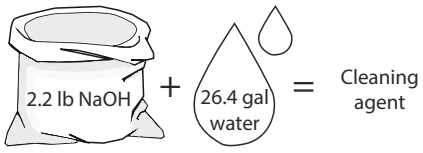


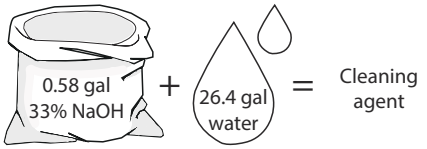
2. 0.5% by weight HNO_3 at 70°C



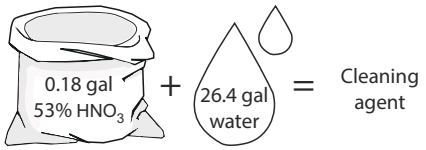
Imperial System

1. 1% by weight NaOH at 158°F





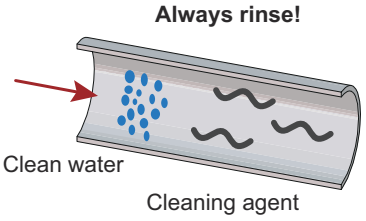
2. 0.5% by weight HNO_3 at 158°F



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.



7.1 Cleaning

WARNING **Danger of burns!**

Danger of burns!

Never touch the valve or the pipelines when sterilizing.

NOTE

Pay special attention to the warnings!

Clean the plug and seats correctly.

Lift and lower valve plug momentarily!

8 Maintenance

8.1 General Maintenance

NOTE

Maintain the valve regularly.

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

Always use Alfa Laval genuine spare parts and keep spare rubber seals and lip seals in stock.

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

Check the valve for smooth operation after service.

Always read *Technical Data* on page 51 thoroughly.

All scrap must be stored/discharged in accordance with current rules/directives.

WARNING **Danger of burns!**

Always release compressed air after use.

Never service the valve when it is hot.

Never service the valve with valve and pipelines under pressure.

WARNING **Cutting danger!**

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

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

Guidelines for maintenance and lubrication

Next 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	• Regular inspection for leakage and smooth operation • Keep a record of the valve • Use the statistics for inspection planning **Replace after leakage**	• Regular inspection for leakage and smooth operation • Keep a record of the actuator • Use the statistics for inspection planning
Lubrication	None	**Before fitting** Klüber Paraliq GTE 703 or similar

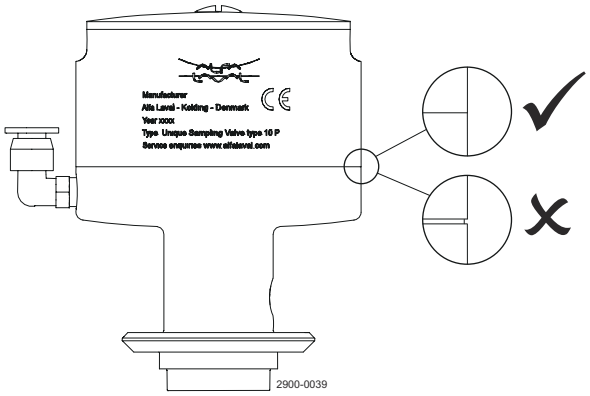
Pre-use check:

1. Supply compressed air to the actuator.
2. 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 57)

WARNING

Make sure that there never is a gap between the actuator top and actuator body when the valve is in use.



8.2 Dismantling of Valve

NOTE

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 57.

Handle scrap correctly.

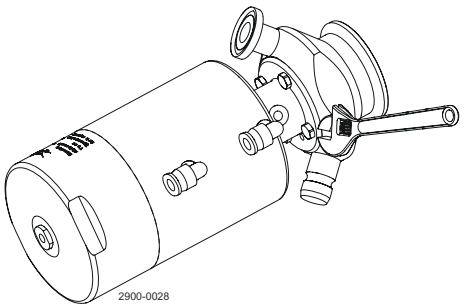
NC = Normally closed.

NO = Normally open.

A/A = Air/air activated.

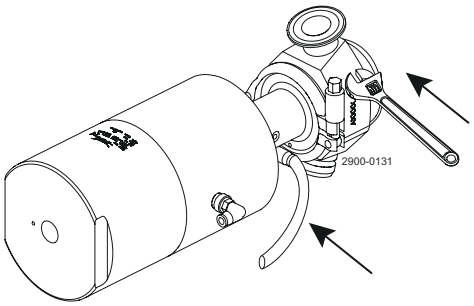
1 Undo screws/clamp ring.

a) Sizes 4 and 10



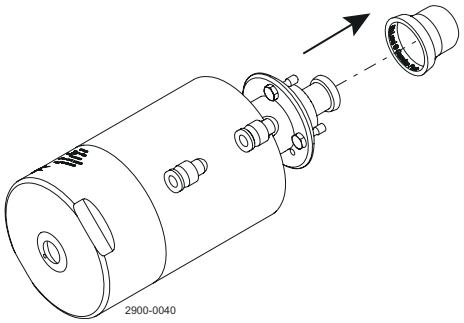
b) Size 25

Apply compressed air to the open connection before removing the clamp



2

1. Pull actuator from valve body.
2. Remove membrane.



8.3 Valve Assembly

Reverse order of *Dismantling of Valve* on page 37.

8.4 Dismantling of Single Seat Actuator

NOTE

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 57.

Handle scrap correctly.

If the actuator has to be dismantled due to membrane leakage or maintenance, follow the instruction described below.

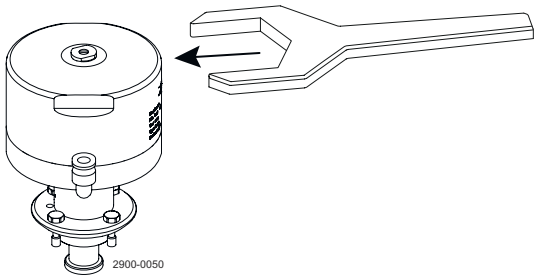
NOTE

The actuator can be dismantled using regular tools.

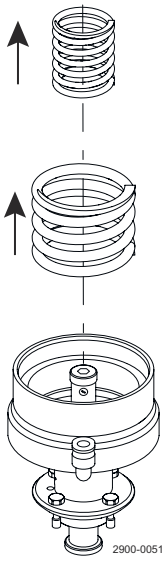
1. Remove top.

   Spanner size:

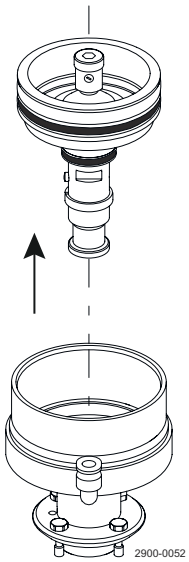
   - Size 4: 47 mm (9611-98-0111)
   - Size 10: 66 mm (9611-98-0141)
   - Size 25: 108 mm (9611-98-0115)



2. Remove springs.



3 Pull out piston.



8.5 Assembly of Single Seat Actuator

NOTE

Study the instructions thoroughly.

The items refer to *Parts Lists and Exploded Views* on page 57.

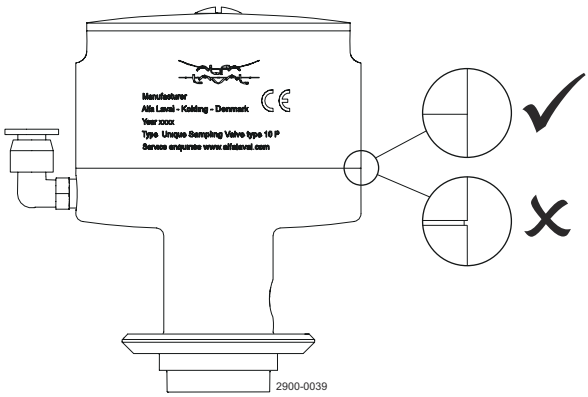
Handle scrap correctly.

1. Assemble the actuator in reversed order of dismantling - see *Dismantling of Single Seat Actuator* on page 38.

   Remember to lubricate the actuator during assembly - see *General Maintenance* on page 35.

   Tighten top to the following torque:

   - Size 4: **20 Nm**
   - Size 10: **30 Nm**
   - Size 25: **50 Nm**



WARNING

Make sure that there is no gap between the actuator top and actuator body when the actuator is reassembled.

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

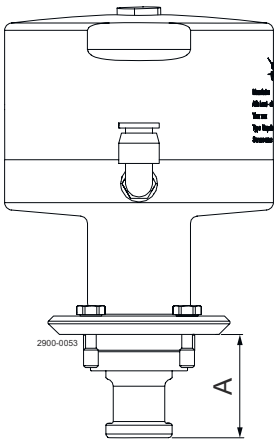
A:

Size 4: 19.1 - 19.3 mm

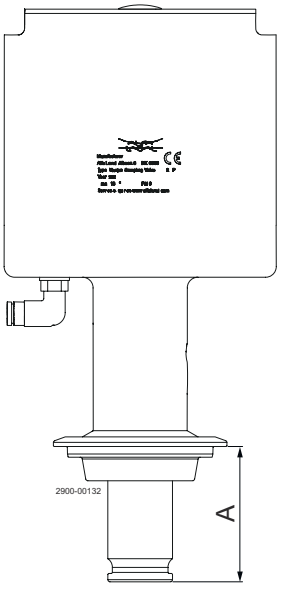
Size 10: 28 - 28.2 mm

Size 25: 63.05 - 63.25 mm

Sizes 4 and 10



Size 25



8.6 Dismantling of Double Seat Actuator

> **NOTE**
>
> Study the instructions thoroughly.
>
> The items refer to *Parts Lists and Exploded Views* on page 57.
>
> Handle scrap correctly.

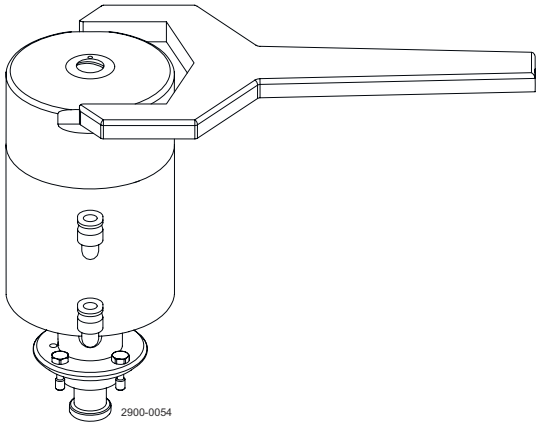
If the actuator has to be dismantled due to membrane leakage or maintenance, follow the instruction described below.

> **NOTE**
>
> The actuator can be dismantled by using regular and some special tools.

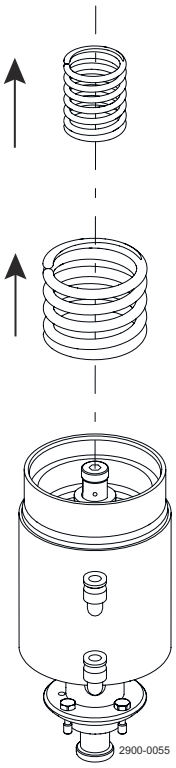
1. Remove top.

   Spanner size:

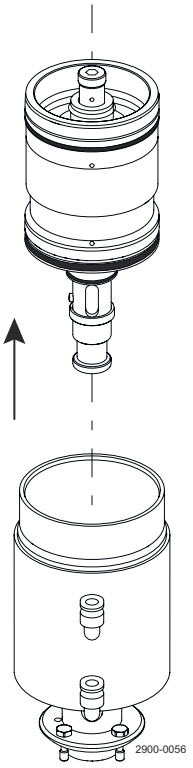
   - Size 4: 47 mm (9611-98-0111)
   - Size 10: 66 mm (9611-98-0141)
   - Size 25: 108 mm (9611-98-0115)



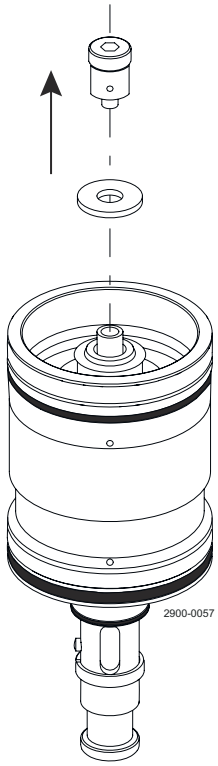
2. Remove springs.



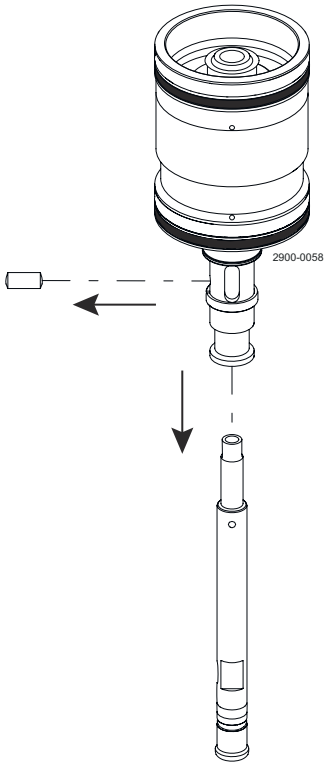
3 Pull up piston assembly.



4 Unscrew top nut.



5 Remove inner stem and pin from piston assembly.

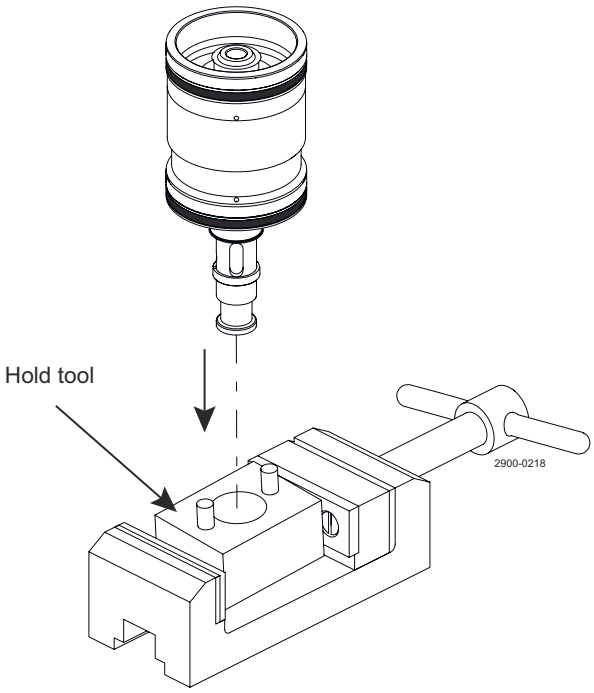


6 Fit the hold tool in a vice. Fit the piston assembly into the hold tool.

Size 4: 9614-0239-01

Size 10: 9614-0239-02

Size 25: 9614-0239-03

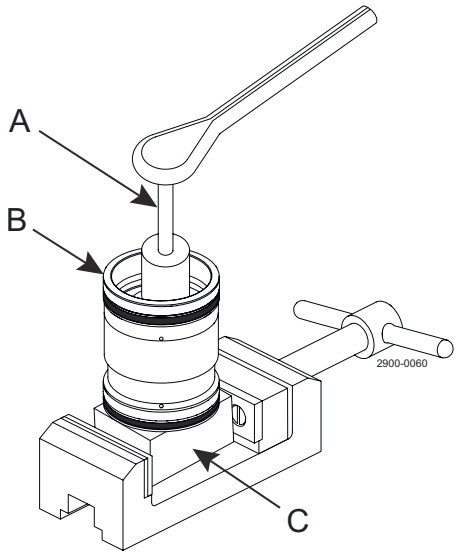


7 Unscrew the top piston with a socket spanner.

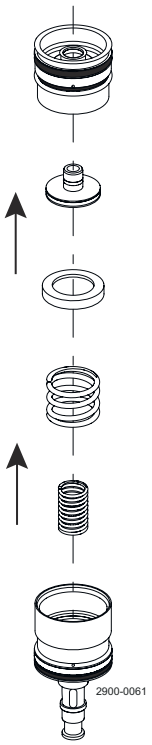
A. Socket spanner

B. Piston assembly

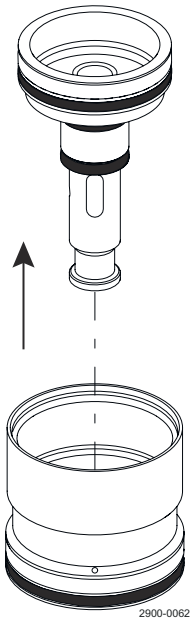
C. Hold tool



8 Remove top piston, inner piston, spring disc and springs.



9 Remove outer stem.



8.7 Assembly of Double Seat Actuator

NOTE

Study the instructions thoroughly.

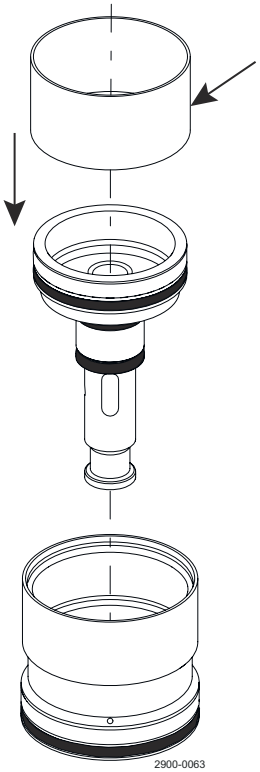
The items refer to *Parts Lists and Exploded Views* on page 57.

Handle scrap correctly.

1 Mount the tool ring on the outer stem.

NOTE

Remember to lubricate the actuator during assembly - see *General Maintenance* on page 35.



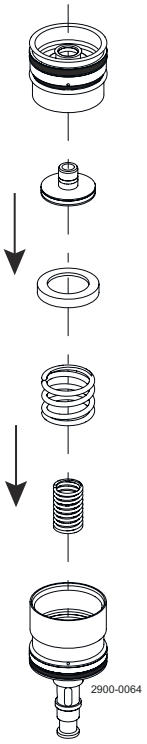
Mount tool

- Size 4: 9614-0258-01
- Size 10: 9614-0258-02
- Size 25: 9614-0258-03

2 Mount springs, spring disc, inner piston and top piston in the bottom piston.

NOTE

Remember to lubricate the thread.



3

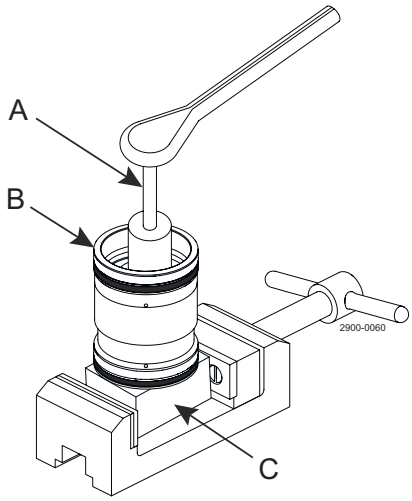
Tighten top to the following torque:

- Size 4: **20Nm**
- Size 10: **30Nm**
- Size 25: **50Nm**

A. Socket spanner

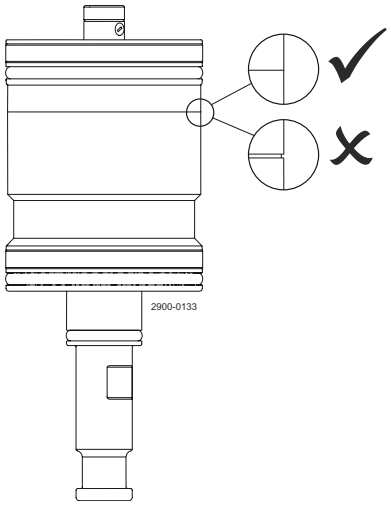
B. Piston assembly

C. Hold tool



WARNING

Make sure that there is no gap between the piston top and piston bottom when reassembled.

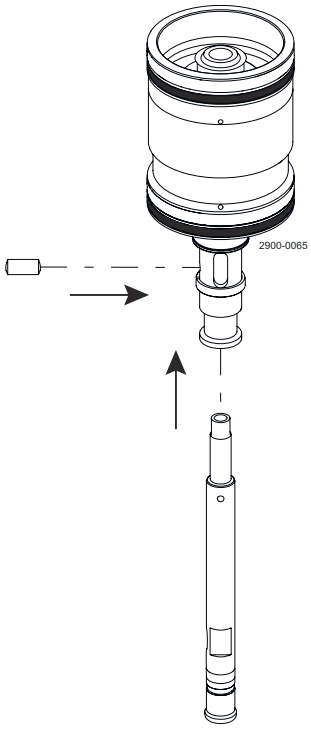


4

Mount inner stem and pin in piston assembly.

NOTE

Make sure that the inner stem is orientated correctly.



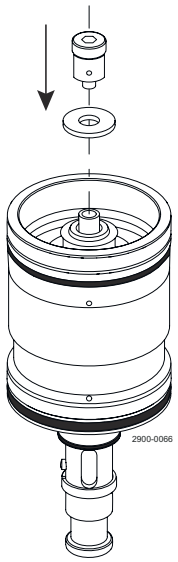
5 Mount top screw on inner stem.

NOTE

Use Loctite 243 to secure nut.

Tighten nut to the following torque:

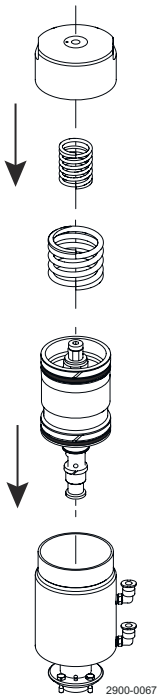
- Sizes 4 and 10: **3 Nm**
- Size 25: **5 Nm**



6 Mount piston assembly, spring and actuator top.

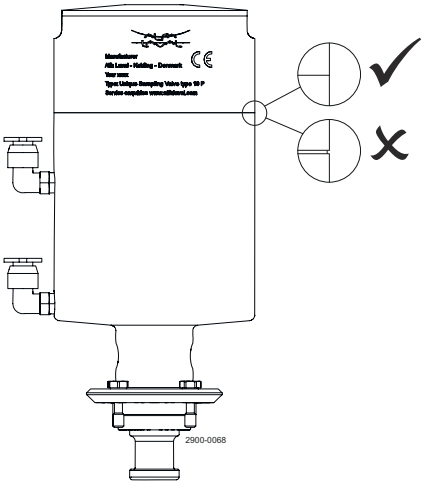
Tighten top to the following torque:

- Size 4: **20 Nm**
- Size 10: **30 Nm**
- Size 25: **50 Nm**



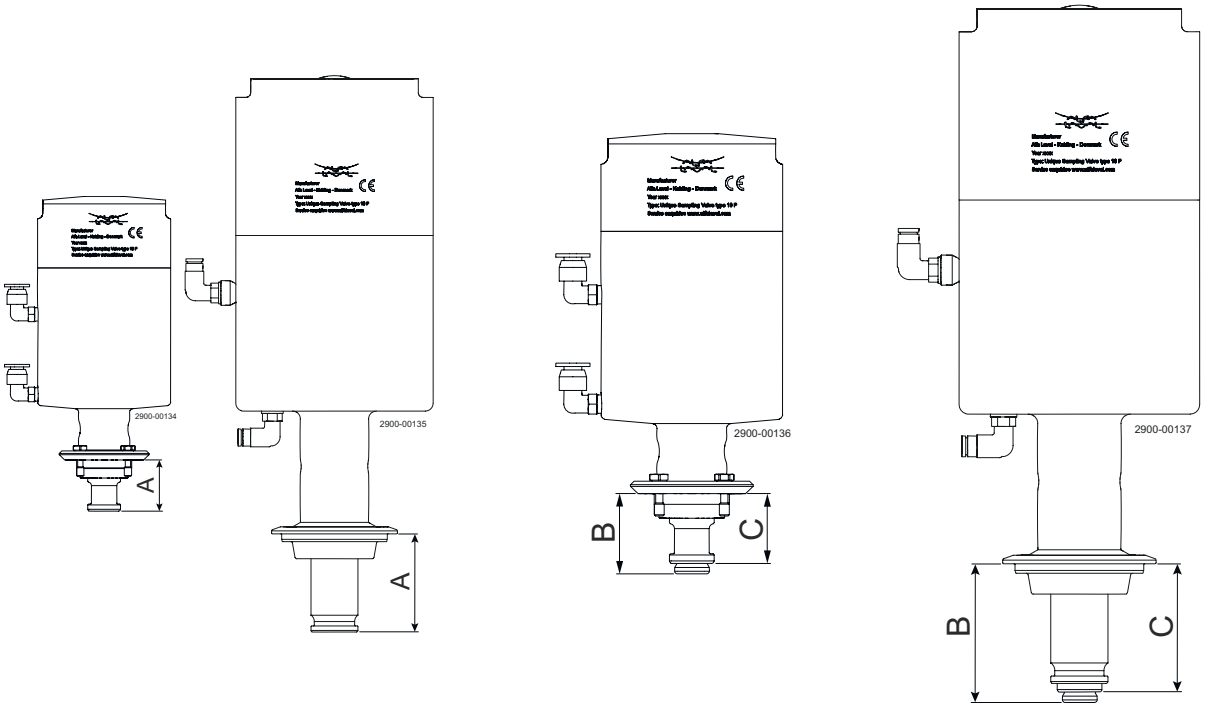
WARNING

Make sure that there is no gap between the actuator top and actuator body when the actuator is reassembled.



7 After the actuator has been assembled, it is important to measure the piston in both closed and seat lift position to ensure correct function of the valve. After assembly, check that the actuator is operating smoothly.

Sizes 4 and 10 Size 25 Sizes 4 and 10 Size 25



A:

Size 4: 19.1 - 19.3 mm

Size 10: 28.0 - 28.2 mm

Size 25: 63.05 - 63.24 mm

B:

Size 4: 21.0 - 21.2 mm

Size 10: 28.3 - 30.15 mm

Size 25: 66.85 - 67.15 mm

C:

Size 4: 17.4 - 17.6 mm

Size 10: 26.0 - 26.2 mm

Size 25: 58.25-58.45 mm

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9 Technical Data

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

9.1 Technical Data

Temperature	
Temperature range:	1°C - 130°C / 33.8°F - 266°F
Max. sterilisation temperature, dry steam (2 bar / 29 psi):	121°C / 249.8°F

Steam must be dry, since condensate will damage the membrane seal. It is recommended that the membrane seal is changed every 500 samples/sterilisations or in accordance with working conditions or condition.

Pressure	
Max. product pressure:	600 kPa (6 bar) / 87 psi
Min. product pressure:	0 kPa (0 bar) / 0 psi
Max. air supplied	10 bar / 145 psi

ATEX	
Classification: Single Seat Valve - size 4 & 10 Manual	II 2 G D[1]
Classification: Double Seat Valve	II 2 G D[1]

[1] This equipment is outside the scope of the directive 2014/34/EU and must not carry a separate CE marking according to the directive as the equipment has no own ignition source.

9.2 Physical Data

Materials	
Valve body:	1.4404 (316L) with 3.1 cert.
Actuator:	1.4301 (304), 1.4404 (316L)
Membrane seal:	EPDM, silicone

The valve is available in three sizes:

- **Size 4** for low-viscosity products such as water, beer, wine and liquid milk. Viscosity: (cP) 0 - 100. Max. particle size: 2.5 mm (0.098 in).
- **Size 10** for high-viscosity products such as fruit yoghurt, syrup and ice cream. Viscosity: (cP) 0 - 1000. Max. particle size: 7 mm (0.276 in).
- **Size 25** is for products with very high viscosity such as jam. Max. particle size: 20 mm (0.787 in).

Valve bodies:

- Tank (welding)
- Collared tube (welding)
- Tri-clamp

Valve heads:

- Handle
- Pneumatic actuator (air supply 5 - 8 bar (72.5 - 116 psi)

Accessories:

See Unique Sampling Valve - Accessories ordering leaflet.

9.3 Weight (kg)

Size 4 Double Seat	1.5 kg
Size 10 Single Seat	1.9 kg
Size 10 Double Seat	3.3 kg
Size 25 Single Seat	8.2 kg
Size 25 Double Seat	13.5 kg

Size 4

Valve Head	Handle Double Seat							
Valve Body Nominal size	Tank	Tri-clamp	Collarded pipe					
			ISO 25	ISO 38	ISO 51	ISO 25	DIN 40	DIN 50
Weight (kg)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Valve Head	Pneumatic Double seat							
Valve Body Nominal size	Tank	Tri-clamp	Collarded pipe					
			ISO 25	ISO 38	ISO 51	DIN 25	DIN 40	DIN 50
Weight (kg)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7

Size 10

Valve Head	Handle Double Seat							
Valve Body Nominal size	Tank	Tri-clamp	Collarded pipe					
			ISO 25	ISO 38	ISO 51	ISO 25	DIN 40	DIN 50
Weight (kg)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Valve Head	Pneumatic Double seat							
Valve Body Nominal size	Tank	Tri-clamp	Collarded pipe					
			ISO 25	ISO 38	ISO 51	DIN 25	DIN 40	DIN 50
Weight (kg)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Size 25

Valve Head	Pneumatic Double seat					
Valve Body Nominal size	Tank	Tri-clamp	Collarded pipe			
			ISO 51	ISO 63.5	DIN 50	DIN 65
Weight (kg)	13.5	13.5	13.5	13.5	13.5	13.5

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10 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.

10.1 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

10.2 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.

10.3 Warranty - Definition

WARNING

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-authorised 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.

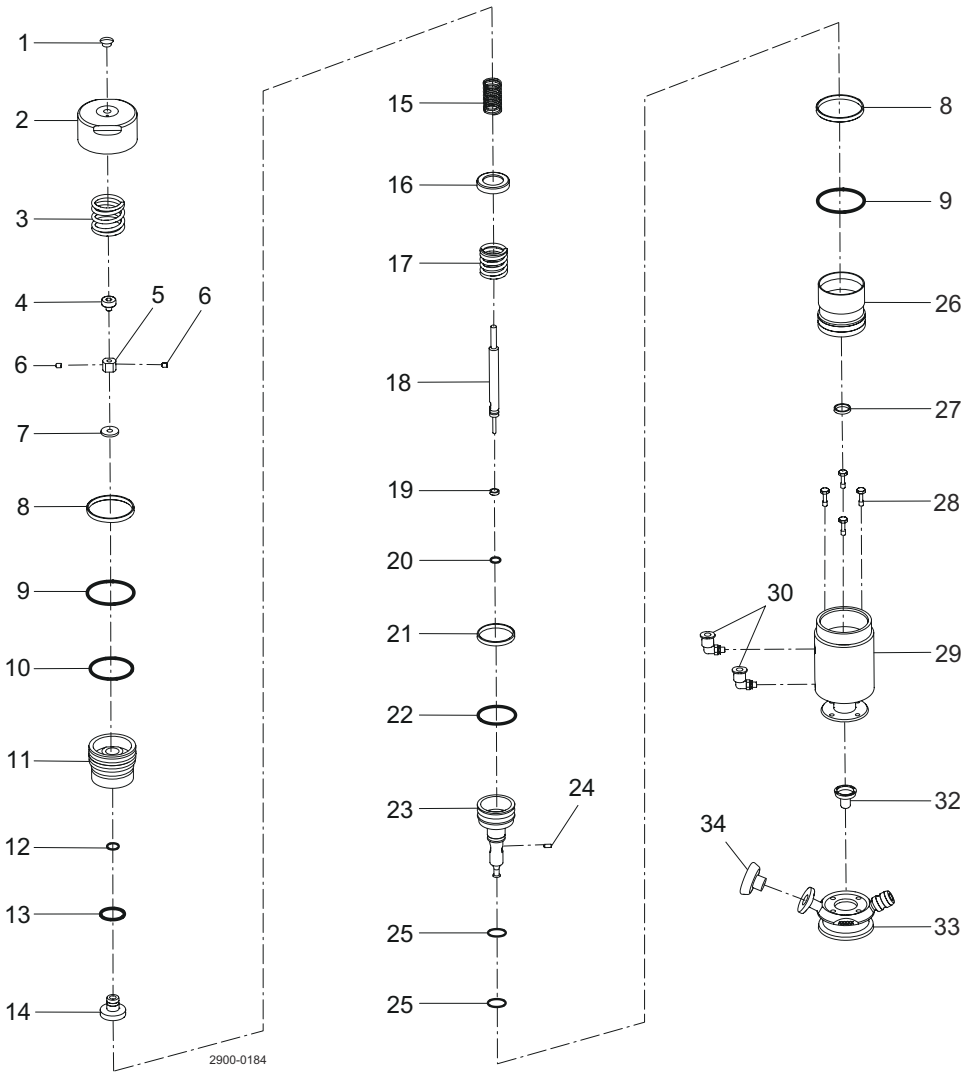
10.4 How to contact Alfa Laval

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

Please visit *http://www.alfalaval.com* to access the information directly.

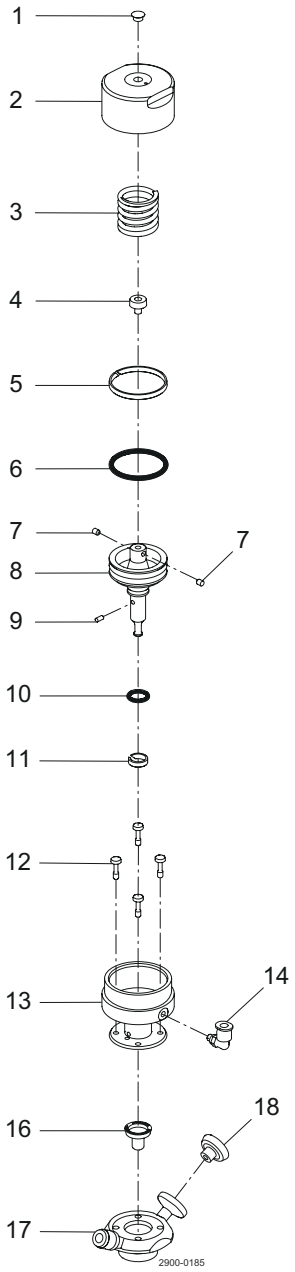
11 Parts Lists and Exploded Views

11.1 Actuator for USV Size 4 Double Seat



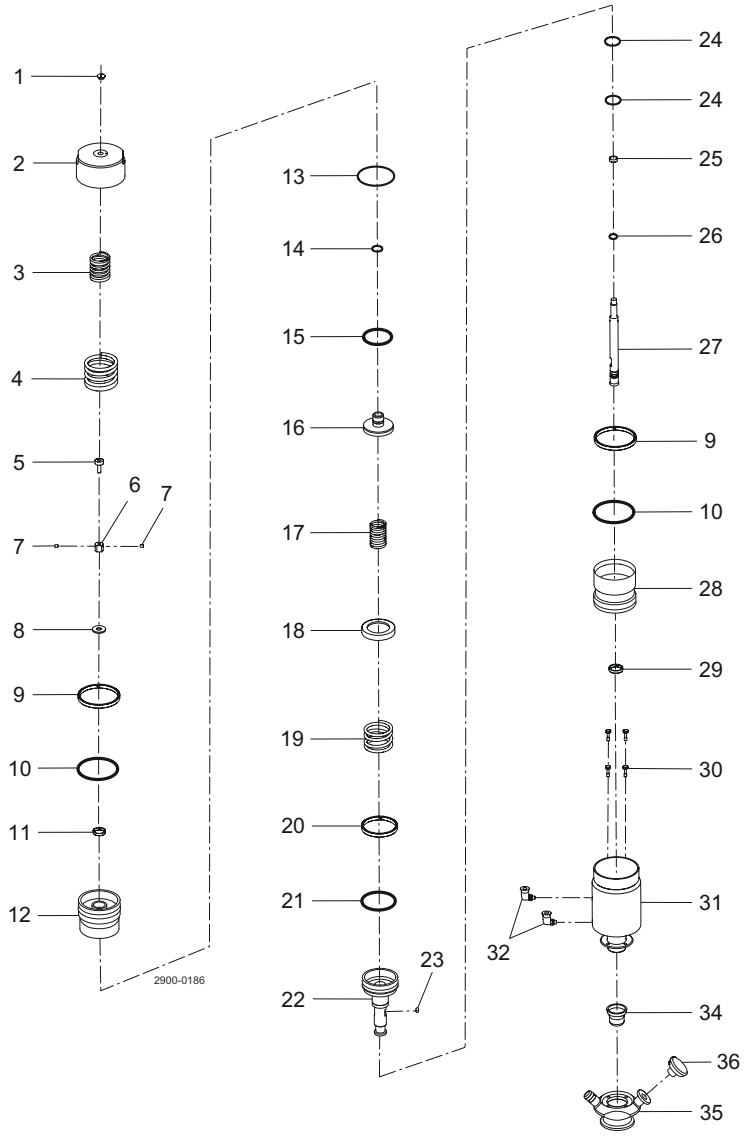
Pos	Qty	Denomination	Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	12	1	O-ring	23	1	Outer seat lift piston
2	1	Actuator top	13	1	O-ring	24	1	Pin
3	1	Spring	14	1	Inner seat lift piston	25	2	O-ring
4	1	Adjuster screw	15	1	Spring	26	1	Main piston bottom
5	1	Adjuster nut	16	1	Spring disc	27	1	Guide ring
6	2	Set screw	17	1	Spring	28	4	Mount screws
7	1	Disc	18	1	Inner stem	29	1	Actuator body
8	2	Guide ring	19	1	Guide ring	30	2	Air fitting angle
9	2	O-ring	20	1	O-ring	32	10	Membrane seal
10	1	O-ring	21	1	Guide ring	33	1	Valve body
11	1	Main piston top	22	1	O-ring	34	1	Plug for upper connection

11.2 Actuator for USV Size 4 Single Seat



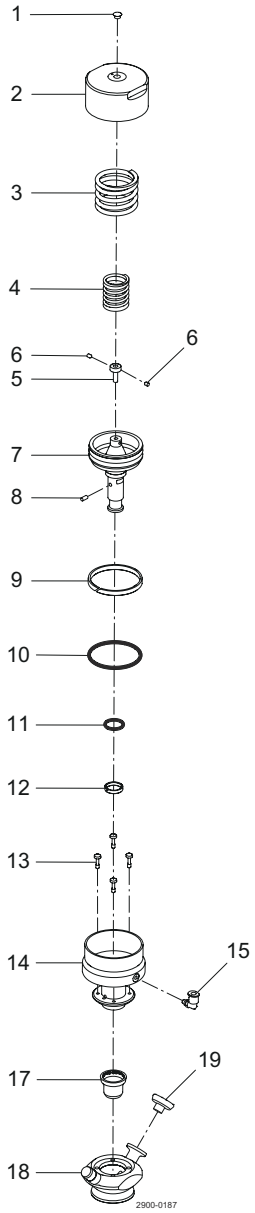
Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	10	1	O-ring
2	1	Actuator top	11	1	Guide ring
3	1	Spring	12	1	Mount screws
4	1	Adjuster screw	13	4	Actuator body
5	1	Guide ring	14	1	Air fitting angle
6	1	O-ring	16	10	Membrane seal
7	2	Set screw	17	1	Valve body
8	1	Main piston	18	1	Plug for upper connection
9	1	Pin			

11.3 Actuator for USV Size 10 Double Seat



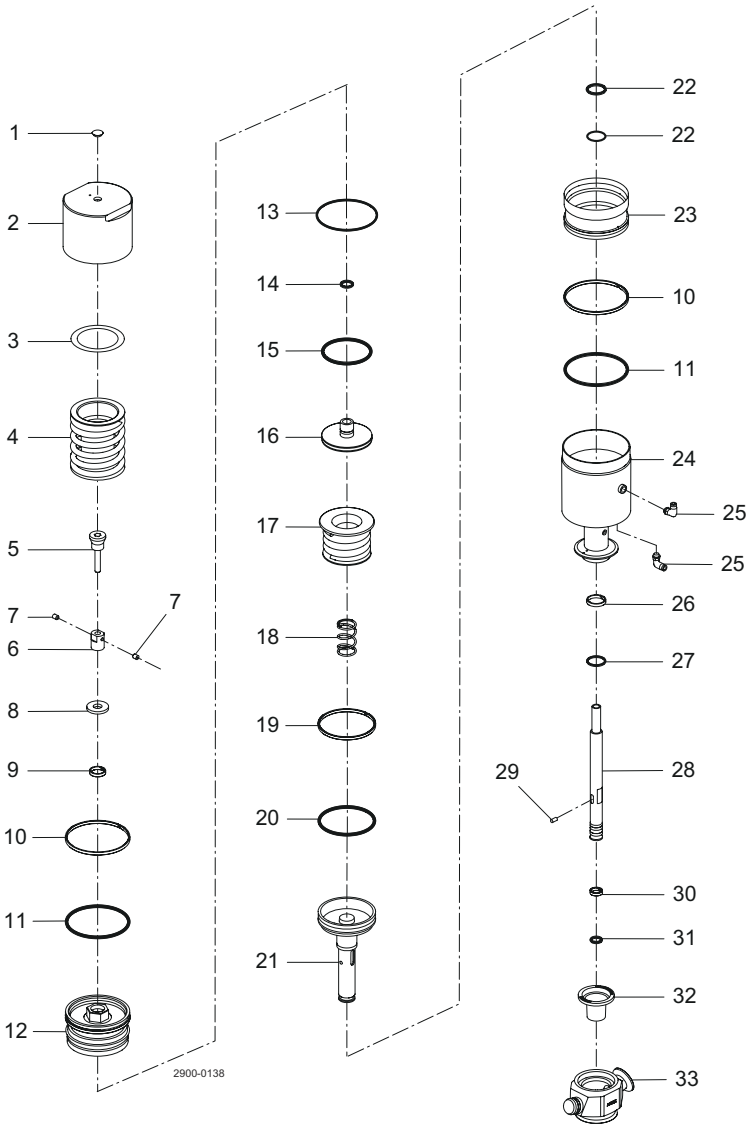
Pos	Qty	Denomination	Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	13	1	O-ring	25	1	Guide ring
2	1	Actuator top	14	1	O-ring	26	1	O-ring
3	1	Spring	15	1	O-ring	27	1	Inner stem
4	1	Spring	16	1	Inner seat lift piston	28	1	Main piston bottom
5	1	Adjuster screw	17	1	Spring	29	1	Guide ring
6	1	Adjuster nut	18	1	Spring disc	30	4	Mount screws
7	2	Set screw	19	1	Spring	31	1	Actuator body
8	1	Disc	20	1	Guide ring	32	2	Air fitting angle
9	2	Guide ring	21	1	O-ring	34	10	Membrane seal
10	2	O-ring	22	1	Outer seat lift piston	35	1	Valve body
11	1	Guide ring	23	1	Pin	36	1	Plug for upper connection
12	1	Main piston top	24	2	O-ring			

11.4 Actuator for USV Size 10 Single Seat



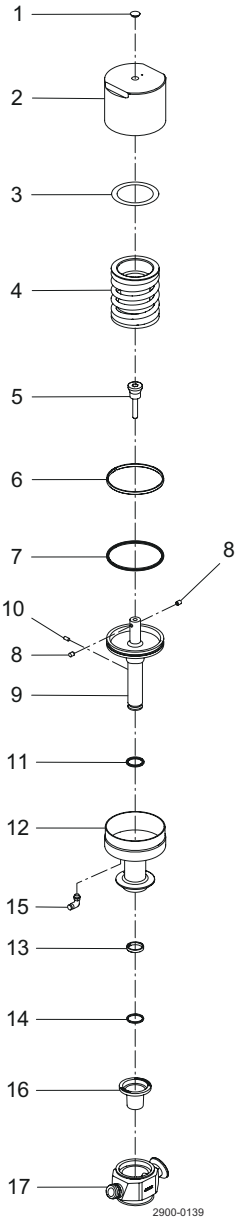
Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	10	1	O-ring
2	1	Actuator top	11	1	O-ring
3	1	Spring	12	1	Guide ring
4	1	Spring	13	4	Mount screws
5	1	Adjuster screw	14	1	Actuator body
6	2	Set screw	15	1	Aiir fitting angle
7	1	Main piston	17	10	Membrane seal
8	1	Pin	18	1	Valve body
9	1	Guide ring	19	1	Plug for upper connection

11.5 Actuator for USV Size 25 Double Seat



Pos	Qty	Denomination	Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	12	1	Upper piston	23	1	Lower piston
2	1	Actuator top	13	1	O-ring	24	1	Actuator body
3	1	PTFE disc	14	1	O-ring	25	2	Air fitting
4	1	Spring	15	1	O-ring	26	1	Guide ring
5	1	Adjuster screw	16	1	Inner piston	27	1	O-ring
6	1	Nut for adjustment	17	1	Spring cage	28	1	Inner stem
7	2	Set screw	18	1	Spring	29	1	Pin
8	1	Disc	19	1	Guide ring	30	1	Guide ring
9	1	Guide ring	20	1	O-ring	31	1	O-ring
10	2	Guide ring	21	1	Outer stem	32	10	Membrane seal
11	2	O-ring	22	2	O-ring	33	1	Valve body

11.6 Actuator for USV Size 25 Single Seat



Pos	Qty	Denomination	Pos	Qty	Denomination
1	1	Top plug	10	1	Pin
2	1	Actuator top	11	1	O-ring
3	1	PTFE disc	12	1	Actuator body
4	1	Spring	13	1	Guide ring
5	1	Adjuster screw	14	1	O-ring
6	1	Guide ring	15	1	Air fitting
7	1	O-ring	16	10	Membrane seal
8	2	Set screw	17	1	Valve body
9	1	Main piston			