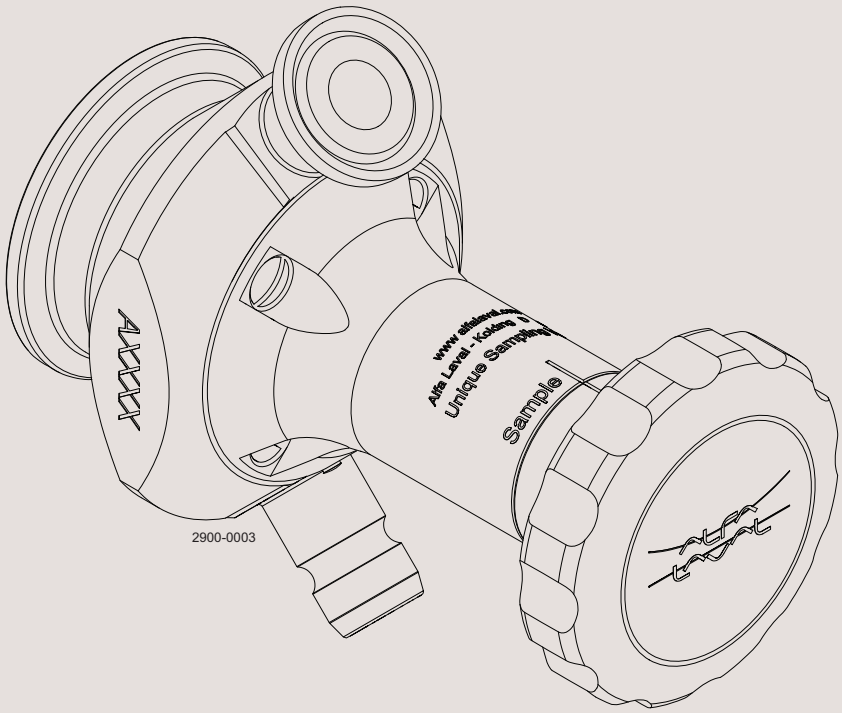
Instruction Manual

Unique Sampling Valve - type M - manually operated



ESE01605-EN4 2015-09

Original manual

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The information herein is correct at the time of issue but may be subject to change without prior notice

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1 Safety

Unsafe practices and other important information are emphasised in this manual.
Warnings are emphasised by means of special signs.

1.1 Important information

Always read the manual before using the valve!

WARNING
Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION
Indicates that special procedures must be followed to avoid damage to the valve.

NOTE
Indicates important information to simplify or clarify procedures.

1.2 Warning signs

General warning:

Caustic agents:

All warnings in the manual are summarised on this page.
Pay special attention to the instructions below so that serious personal injury and/or damage to the valve are avoided.

1.3 Safety precautions

Installation:

Always read the technical data thoroughly. (See chapter 6 Technical data)
Always release compressed air after use.
Never touch the moving parts if the actuator is supplied with compressed air.
Never touch the valve or the pipelines when processing hot liquids or when sterilising.
Never dismantle the valve with thevalve and pipelines under pressure.
Never dismantle the valve when it is hot.

Operation:

Never dismantle the valve with the valve and pipelines under pressure.
Never dismantle the valve when it is hot.
Always read the technical data thoroughly. (See chapter 6 Technical data)
Always release compressed air after use.
Never touch the valve or the pipelines when processing hot liquids or when sterilising.
Never touch the moving parts if the actuator is supplied with compressed air.
Always rinse well with clean water after cleaning.

Always handle lye and acid with great care.

Maintenance:

Always read the technical data thoroughly. (See chapter 6 Technical data)
Always release compressed air after use.
Never service the valve when it is hot.
Never service the valve with the valve and pipelines under pressure.
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.

Transportation:

Always ensure that compressed air is released.
Always ensure that all connections are disconnected before attempting to remove the valve from the installation.
Always drain liquid out of valves before transportation.
Always use pre-designed lifting points if available.
Always ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available, it must be used.

2 Installation

This instruction manual is part of the delivery. Study the instructions carefully.
The items refer to the parts list and service kits section.

2.1 Unpacking/delivery

Step 1
CAUTION
Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:
1. Valve body
2. Actuator
3. Membrane
4. Plug

Step 2
Remove possible packing materials from the valve/valve parts.
Inspect the valve/valve parts for visible transport damage.
Avoid damaging the valve/valve parts.

2.2 General installation

Step 1

Always read the technical data carefully.
See chapter 6 Technical data

Always release compressed air after use.

CAUTION
Alfa Laval cannot be held responsible for incorrect installation.

Study the instructions carefully.
The valve is supplied as separate parts to facilitate welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

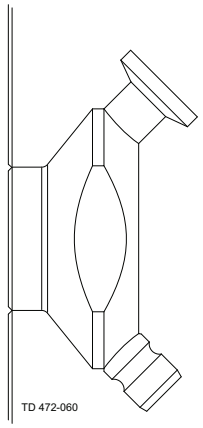
2.3 Valve body installation

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 Ø29mm is made in the tank.
For a size 10 valve, a hole of Ø38mm 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.



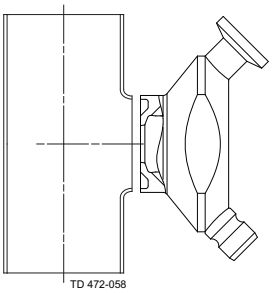
Pipes

Standard

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

Option

If the valve is fitted with a saddle shape, the dimensions of the pipe and whether the pipe is horizontal or vertical, must be specified.



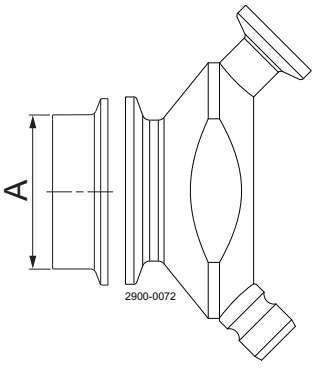
Clamp

The valve can also be mounted using a clamp connection.

Seal ring (EPDM)

Size 25mm (A): 9611-99-1358
Size 38mm (A): 9611-99-1359

Clamp ring: 211053

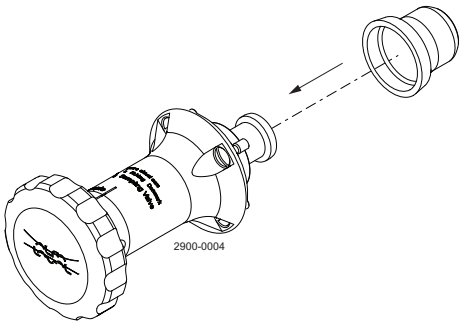


2 Installation

Study the instructions carefully.
The valve is supplied as separate parts to facilitate welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

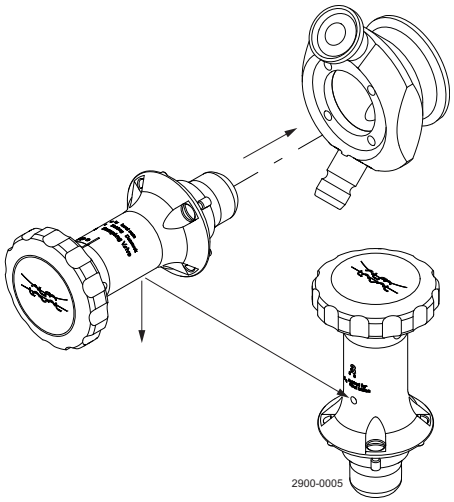
2.4 Fitting of actuator

Step 1
Fit the membrane on the actuator.

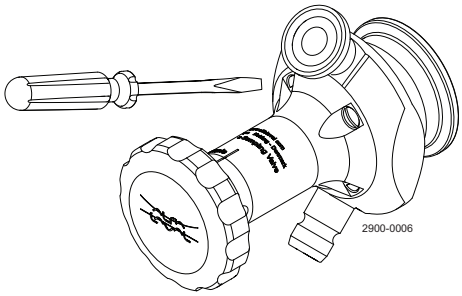


Step 2
Fit the actuator on the valve body.

⚠
Make sure that the Ø2.4mm leak detection hole is facing downwards.



Step 3
Tighten screws with a torque of 2-3 Nm.



Study the instructions carefully.
The valve is supplied as separate parts to facilitate welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

2.5 Recycling information

• Unpacking

- Packing material consists 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 and wearing parts in the machine are replaced.
- All metal parts should be sent for material recycling.
- Worn or defective electronic parts should be sent to a licensed handler for material recycling.
- Oil and all non-metal wearing parts must be dealt with in accordance with local regulations.

• Scrapping

- At the end of use, the equipment should be recycled according to the relevant, local regulations. As well as 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.

3 Operation - single seat valve

Study the instructions carefully and pay special attention to the warnings!
Ensure that the valve operates smoothly.
The items refer to the parts list and service kits section.

3.1 Operation

Step 1

Always read the technical data carefully.
See chapter 6 Technical data

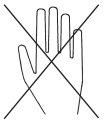
Always release compressed air after use.

CAUTION
Alfa Laval cannot be held responsible for incorrect operation.

Step 2

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

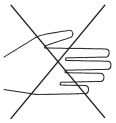
Danger of burns!



Step 3

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

Moving parts!



Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.

3.2 Sterilisation - single seat valve

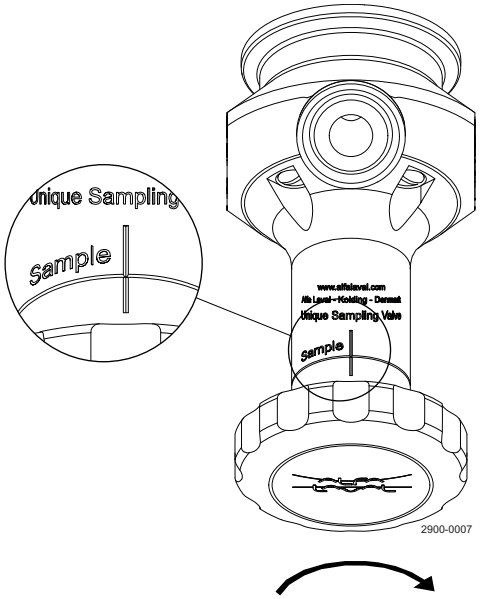
Step 1

⚠

Always sterilise the valve before taking a sample

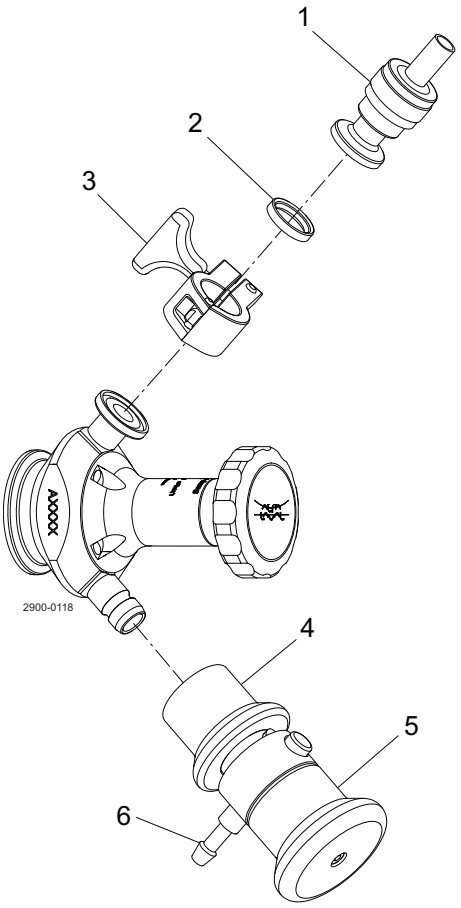
Sterilisation procedure:

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



Step 2

1. 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.
2. 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.
3. The valve is now ready to take a representative and sterile sample.



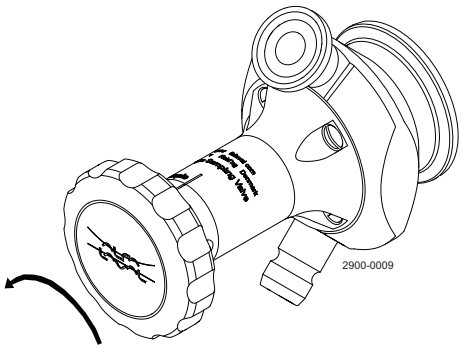
1. Non-return valve
2. Seal ring (article no. 290273) not included
3. Clamp ring (article no. 211290) not included
4. Pressure relief valve
5. Handle for quick release of steam
6. Steam outlet - be careful!

3 Operation - single seat valve

Pay attention to possible faults. Study the instructions carefully.
The items refer to the parts list and service kits section.

3.3 Sampling - single seat valve

Step 1
Taking a sample
1. Turn the handle anti-clockwise 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.



Step 2
Important!
1. 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 Troubleshooting

NOTE!

Study the maintenance instructions carefully 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)

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

3.5 Recommended cleaning

Step 1

Always handle lye and acid with great care.

Caustic danger!

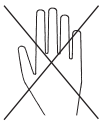
Always use rubber gloves!

Always use protective goggles!

Step 2

Never touch the valve or the pipelines when sterilising.

Danger of burns!



Step 3

Clean the plug and the seats correctly.
Pay special attention to the warnings!
Lift and lower valve plug momentarily!

Step 4

Examples of cleaning agents:
Use clean water, free from chlorides.

1. 1% by weight NaOH at 70° C

1 kg NaOH	+	100 l water	=	Cleaning agent.
2.2 l 33% NaOH	+	100 l water	=	Cleaning agent.

2. 0.5% by weight HNO_3 at 70° C

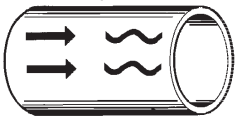
0.7 l 53% HNO_3	+	100 l water	=	Cleaning agent.

Step 5

1. Avoid excessive concentration of the cleaning agent.
2. Adjust the cleaning flow to the process.
3. **Always** rinse well with clean water after cleaning.

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

Always rinse!



Clean water Cleaning agents

4 Operation - double seat valve

Study the instructions carefully and pay special attention to the warnings!
Ensure that the valve operates smoothly.
The items refer to the parts list and service kits section.

4.1 Operation

Step 1

Always read the technical data carefully.
See chapter 6 Technical data

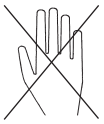
Always release compressed air after use.

CAUTION
Alfa Laval cannot be held responsible for incorrect operation.

Step 2

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

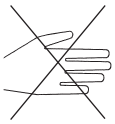
Danger of burns!



Step 3

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

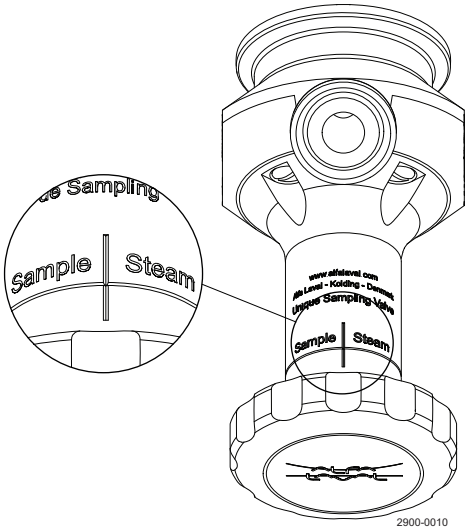
Moving parts!



4.2 Sterilisation - double seat valve

Step 1

Always sterilise the valve before taking a sample.
Sterilisation procedure:
1. Make sure that the valve is in the closed position before sterilisation.

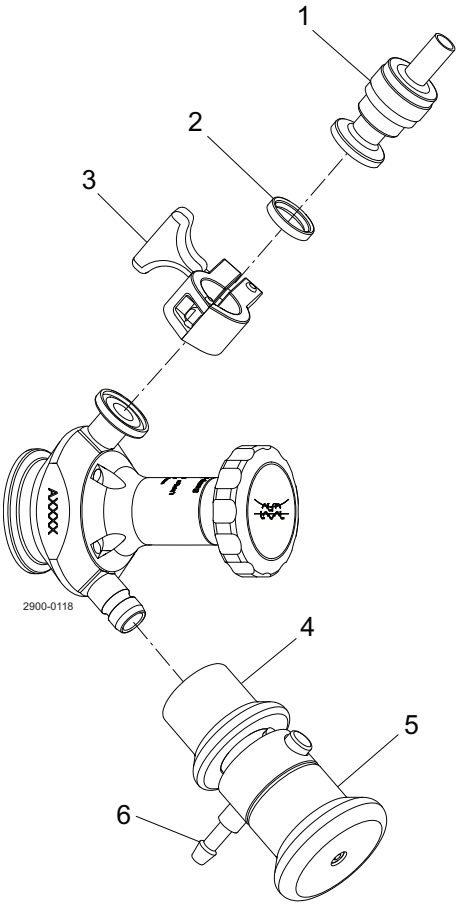


Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.

Step 2

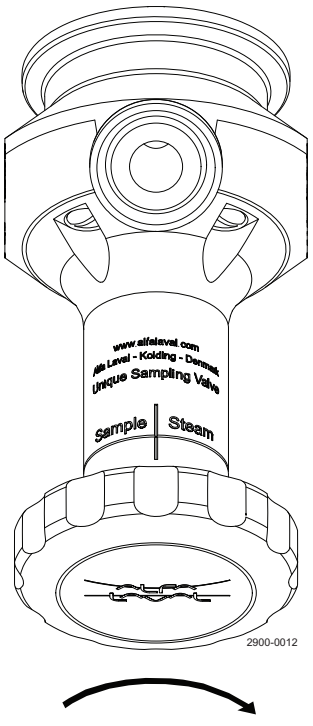
1. Connect steam to the upper connection. It is advisable to use a non-return valve (1) on the upper connection. This enables steaming and sampling without removal of the steam line or using an unsterile blind cap.

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!



Step 3

1. Turn the handle clockwise to steam/cleaning position.
2. 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.
3. The valve is now ready to take a representative and sterile sample.

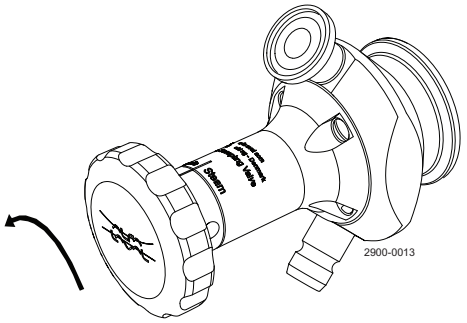


4 Operation - double seat valve

Pay attention to possible faults. Study the instructions carefully.
The items refer to the parts list and service kits section.

4.3 Sampling - double seat valve

Step 1
Taking a sample
1. 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.



Step 2
Important!
1. 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.

4.4 Troubleshooting

NOTE!

Study the maintenance instructions carefully 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)

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

4.5 Recommended cleaning

Step 1

Always handle lye and acid with great care.

Caustic danger!

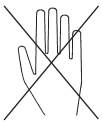
Always use rubber gloves!

Always use protective goggles!

Step 2

Never touch the valve or the pipelines when sterilising.

Danger of burns!



Step 3

Clean the plug and the seats correctly.
Pay special attention to the warnings!
Lift and lower valve plug momentarily!

Step 4

Examples of cleaning agents:
Use clean water, free from chlorides.

1. 1% by weight NaOH at 70° C

1 kg NaOH	+	100 l water	=	Cleaning agent.

2. 0.5% by weight HNO_3 at 70° C

0.7 l 53% HNO_3	+	100 l water	=	Cleaning agent.

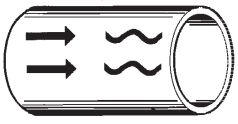
2.2 l 33% NaOH	+	100 l water	=	Cleaning agent.

Step 5

1. Avoid excessive concentration of the cleaning agent.
2. Adjust the cleaning flow to the process.
3. **Always** rinse well with clean water after cleaning.

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

Always rinse!



Clean water Cleaning agents

5 Maintenance

Maintain the valve regularly.
Study the instructions carefully 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.

5.1 General maintenance

Step 1

Always read the technical data carefully.
See chapter 6 Technical data.

Always release compressed air after use.

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

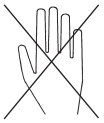
Step 2

Never service the valve when it is hot.

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

Atmospheric pressure required!

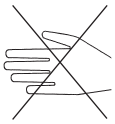
Danger of burns!



Step 3

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

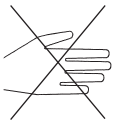
Cutting danger!



Step 4

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

Moving parts!



5 Maintenance

Maintain the valve regularly.
Study the instructions carefully 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.

Below 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

Pre-use check:
1. Open and close the valve several times to ensure that it operates smoothly.
   Pay special attention to the warnings!

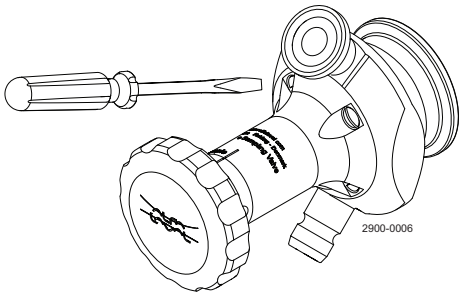
Recommended spare parts
Service kits (see section 7 Parts list and service kits)

5 Maintenance

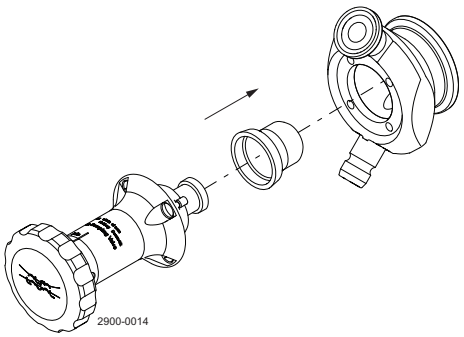
Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.
NC = Normally closed.
NO = Normally open.
A/A = Air/air activated.

5.2 Dismantling the valve

Step 1
1. Undo screws.



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



5.3 Valve assembly

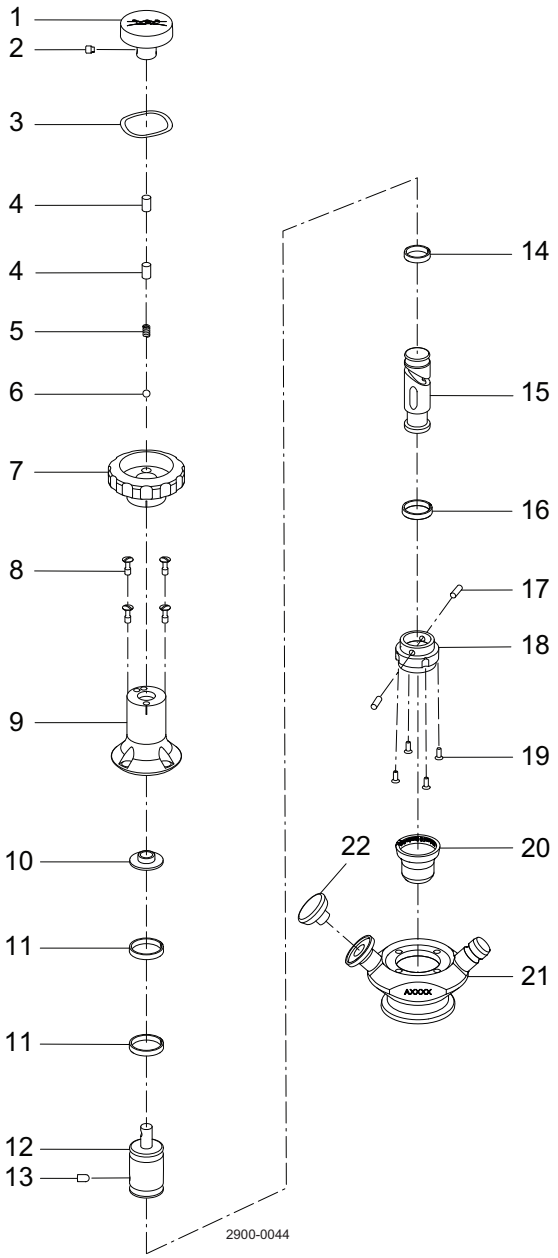
Follow the reverse order of chapter 5.2 Dismantling the valve.

Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.
NC = Normally closed.
NO = Normally open.
A/A = Air/air activated.

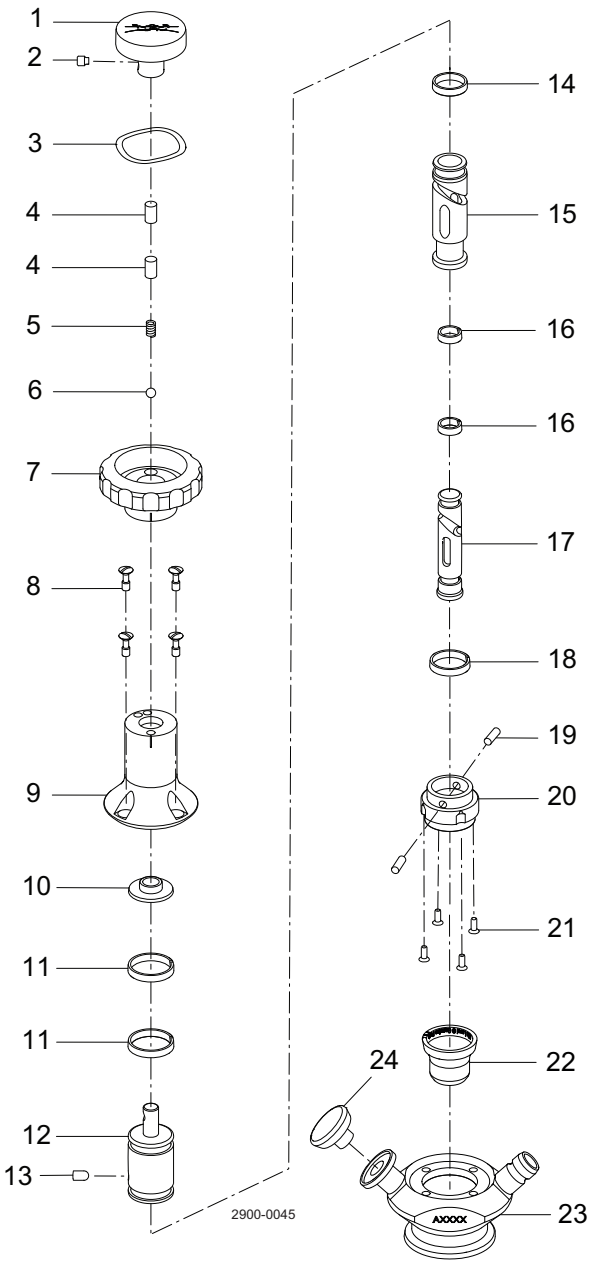
5.4 Dismantling the actuator

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



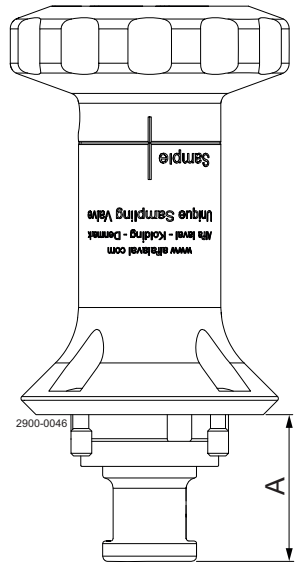
5 Maintenance

Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.
NC = Normally closed.
NO = Normally open.
A/A = Air/air activated.

5.5 Assembly of actuator

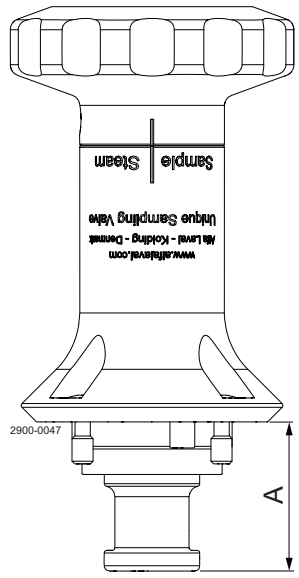
Use the drawing on the previous page to support the assembly. Don't forget to lubricate the actuator when assembling.
Note:
After the actuator has been assembled, it is important to measure the spindle position to ensure correct valve function.

Single seat actuator
Closed position

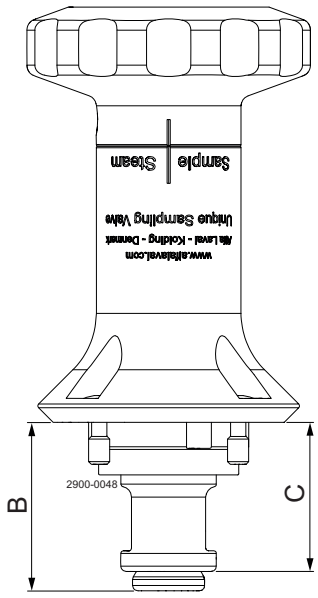


A:
Size 4: 19.1 - 19.3 mm
Size 10: 27.95 - 28.2 mm

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

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

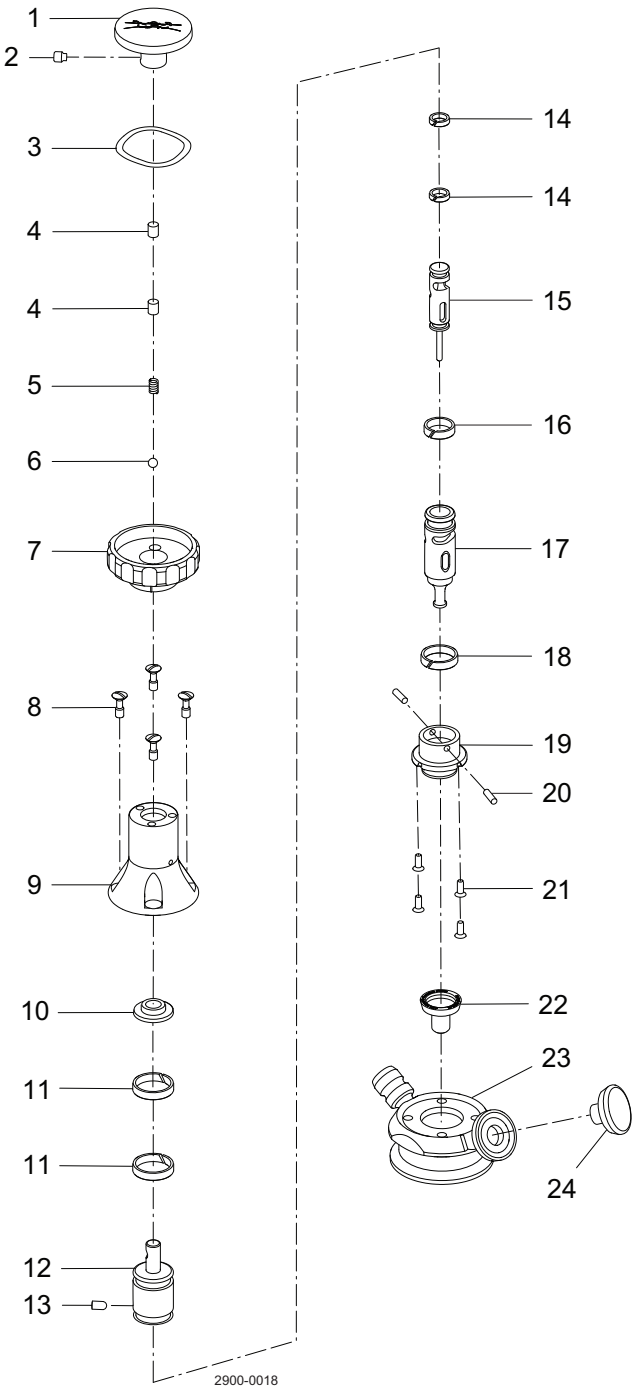
6.1 Technical data

Data - valve/actuator	
Max. product pressure	600 kPa (6 bar)
Max. working temperature	121 °C (2 bar)
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

7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

7.1 Manual handle for USV size 4 double seat



7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

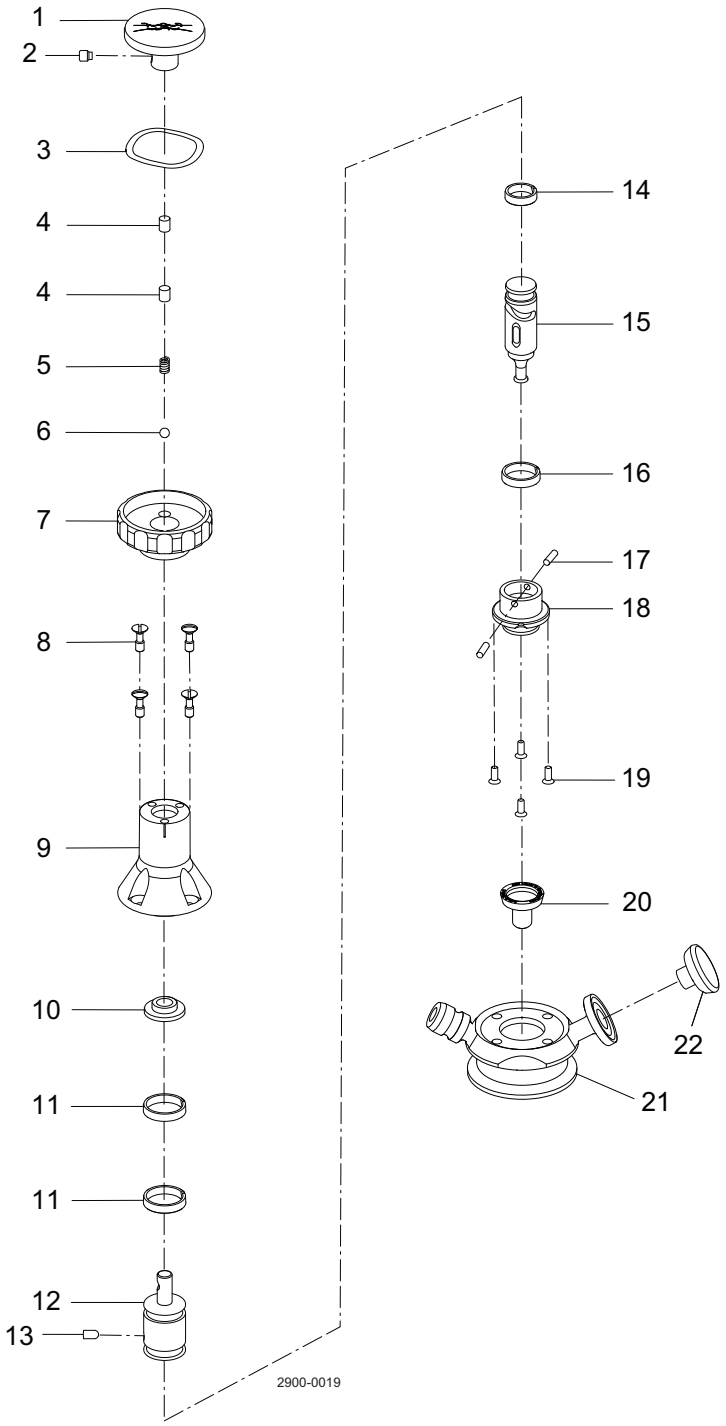
Parts list

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
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 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

7.2 Manual handle for USV size 4 single seat



7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

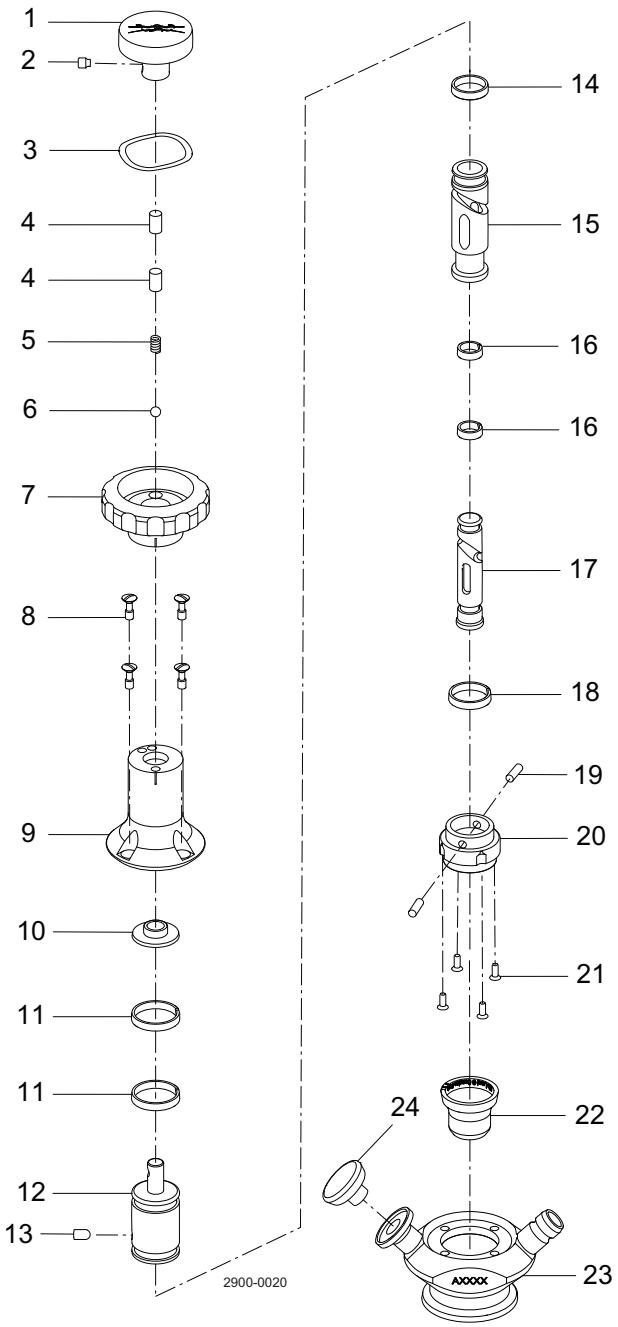
Parts list

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
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 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

7.3 Manual handle for USV size 10 double seat



7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

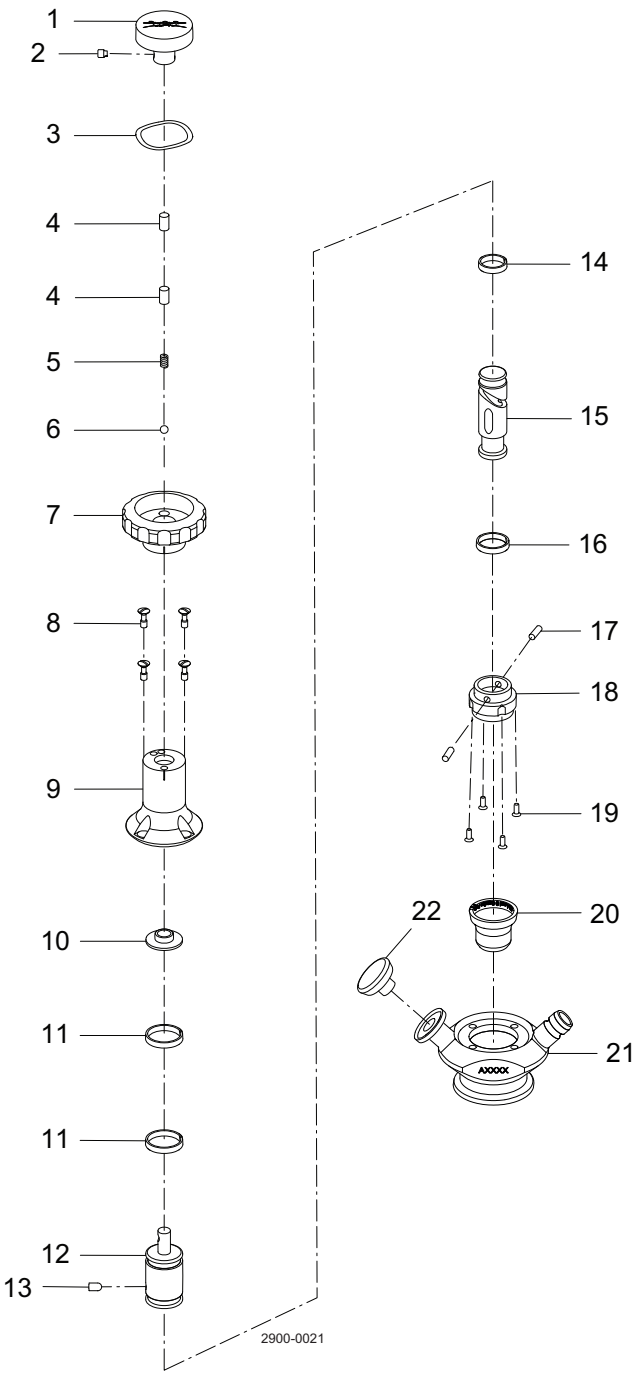
Parts list

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
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 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

7.4 Manual handle for USV size 10 single seat



7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.

Parts list

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
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

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