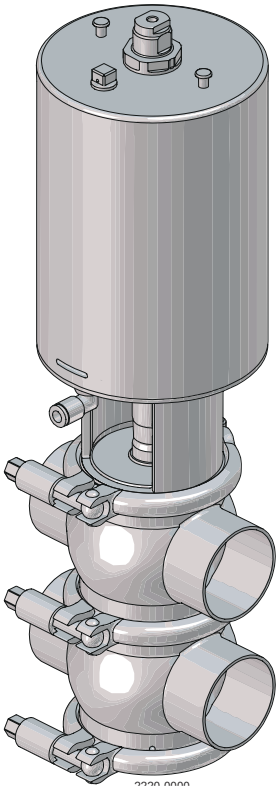
Alfa Laval Pressure Relief Valve

Single Seat Valves



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Instruction Manual

BRITISH ENGLISH

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

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

Valve

Designation

Unique SSV Pressure Relief PN10

Type

1000000-70000000000, AAX000000001-AAX999999999, AAB000000001-AAB999999999, ABJ000000001-ABJ999999999.

Serial number

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive (PED) 2014/68/EU

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	2025-05-01
Place	Date (YYYY-MM-DD)

Signature

DoC Revison_ 02_052025

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

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Valve

Designation

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Type

1000000-70000000000, AAX000000001-AAX999999999, AAB000000001-AAB999999999, ABJ000000001-ABJ999999999.

Serial number

is in conformity with the following directives with amendments:

- The Supply of Machinery (Safety) Regulations 2008
- The Pressure Equipment (Safety) Regulations 2016

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

Vice President BU Hygienic Fluid Handling Head of Product Management		Mikkel Nordkvist
Title		Name
Kolding, Denmark	2025-05-01	
Place	Date (YYYY-MM-DD)	Signature

DoC Revison_ 02_052025

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

	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.
	**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.

Operation

	**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.
	**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.

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.

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 Important Information

Actuators

CAUTION

Shock in the actuator must **never** occur.

To prevent shock in the actuator and to prevent exceeding 10 bar/145 psi product pressure, Alfa Laval recommends **not** to exceed 3 bar / 43.5 psi support air on the spring side in all the Unique SSV actuators.

CAUTION

Support air on Presure Relief Actuator is **not allowed**.

2.5 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.

2.6 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.

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3 Introduction

Protect your hygienic processing lines—especially those with positive displacement pumps—with the Alfa Laval Unique SSV Pressure Relief Valve. Preventing overpressure safeguards efficiency, productivity and product safety. Customize this compact, modular valve, built on the proven Unique SSV platform, to meet your requirements. Equip this overflow valve with Alfa Laval ThinkTop technology for valve monitoring and control, while safeguarding process efficiency, productivity and safety.

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4 Installation

4.1 Unpacking/Delivery

> **NOTE**
>
> Alfa Laval cannot be held responsible for incorrect unpacking.
>
> **Always** read *Technical Data* on page 53 thoroughly.

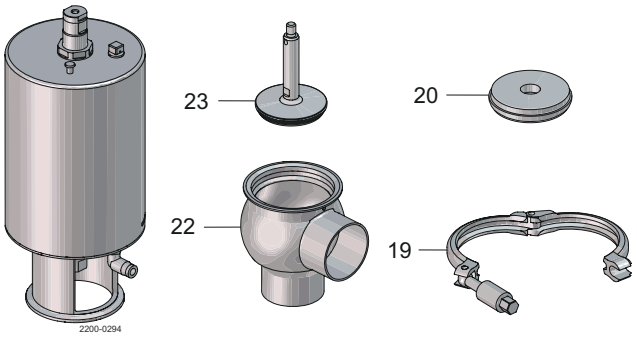
Check the delivery for:

- Delivery note
- Complete valve, shut-off valve (RA), (DA) or (DA) with aseptic feature - see below

Fully maintainable actuator

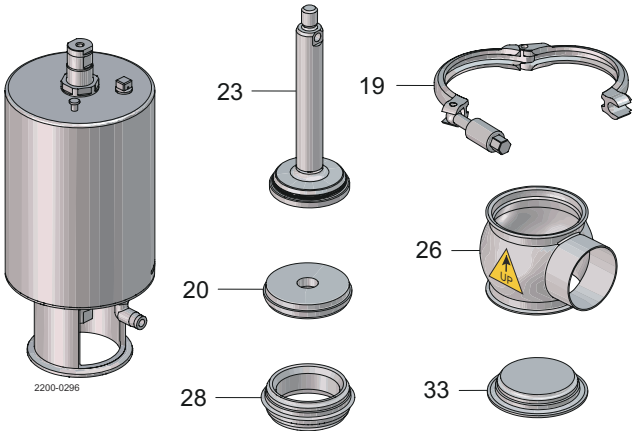
Shut-off valve:

- Complete actuator
- Clamp (19)
- Bonnet (20)
- Valve body (22)
- Valve plug (23)



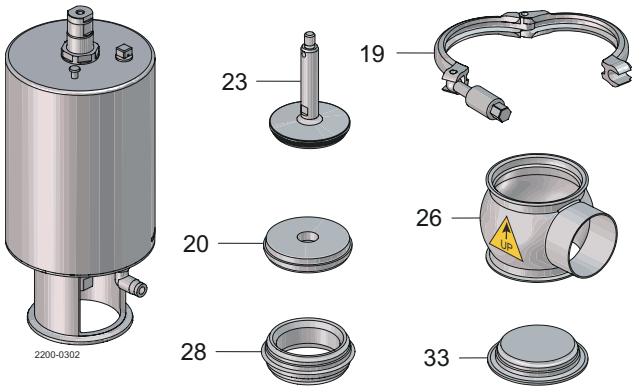
Shut-off valve - Reverse Acting:

- Complete actuator
- 3 x clamps (19)
- Bonnet (20)
- Valve plug (23)
- 2 x upper valve bodies (26)
- Valve seat (28)
- Lower bonnet (33)



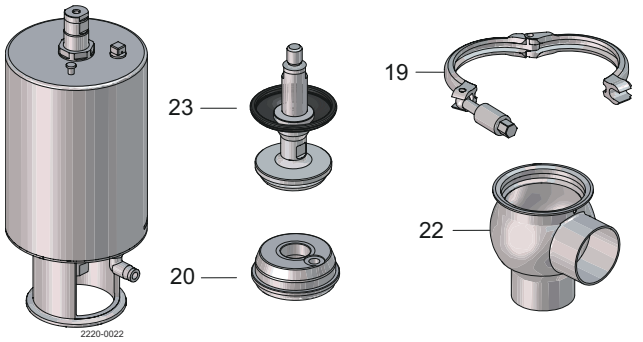
Shut-off valve - Direct Acting:

- Complete actuator
- 3 x clamps (19)
- Bonnet (20)
- Valve plug (23)
- 2 x upper valve bodies (26)
- Valve seat (28)
- Lower bonnet (33)



Shut-off valve aseptic - Direct Acting:

- Complete actuator
- Clamp (19)
- Bonnet (20)
- Valve body (22)
- Valve plug (23)



Unpacking and Initial Inspection

- Remove possible packing material from the valve and valve parts
- Inspect the valve/valve parts for visible transport damage
- Avoid damaging the valve and valve parts

4.2 General Installation

NOTE

Alfa Laval cannot be held responsible for incorrect installation.

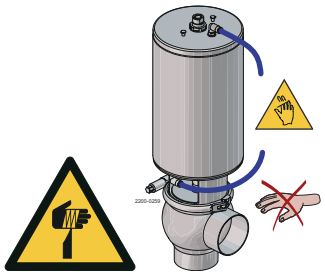
The valve has welding ends as standard but can also be supplied with fittings.

Always release compressed air after use.

Always read *Technical Data* on page 53 thoroughly.

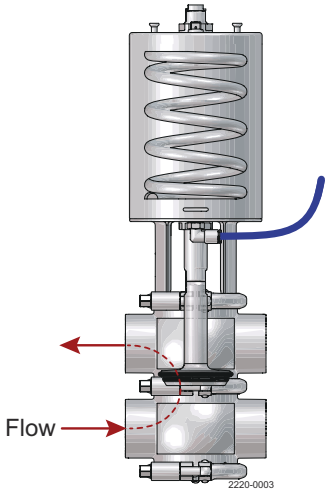
CAUTION

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



To avoid water hammering, it is recommended to install the valve so that the flow is against the spring closing direction.

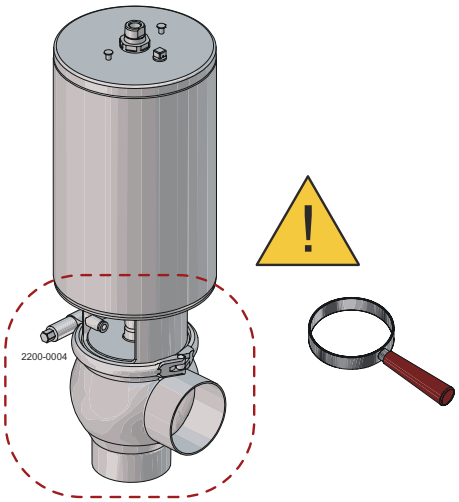
Shock in the actuator must **never** occur.



Avoid stressing the valve.

Pay special attention to:

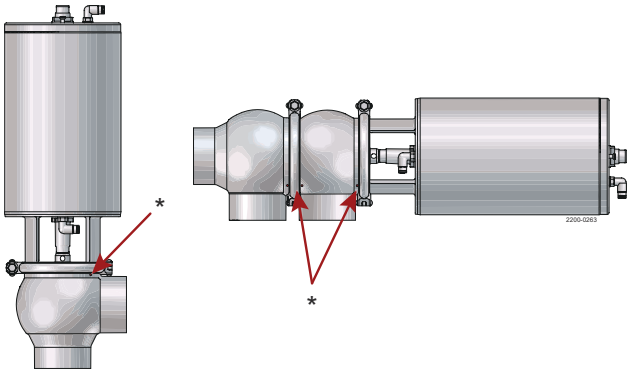
- Vibrations
- Thermal expansion of the pipelines
- Excessive welding
- Overloading of the pipelines



Make sure that the leak detection hole in the valve body:

1. is visible, when mounting the valve vertically
2. always is downwards due to self-drainning, when the valve is mounted horizontally

* = Leakage detection hole



4.3 Welding

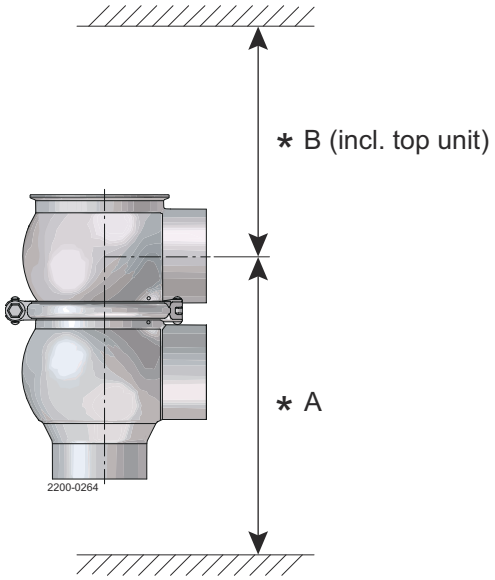
NOTE

The valve is supplied as separate parts to facilitate welding.

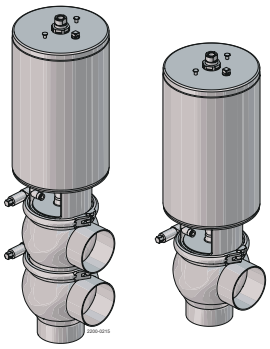
Always install valves with more than one valve body so that the seals between the valve bodies can be replaced. Do not weld more than one valve body into the system. It is recommended to fit sufficient clamps/unions to be able to disassemble the valve for servicing.

Valve size	A	B
DN25/25 mm (1")	*	750 mm (29.5")
DN40/38 mm (1½")	*	750 mm (29.5")
DN50/51 mm (2")	*	750 mm (29.5")
DN65/63.5 mm (2½")	*	800 mm (31.5")
DN80/76 mm (3")	*	800 mm (31.5")
DN100/101.6 mm (4")	*	800 mm (31.5")

* Depending on body combination and piping solution.

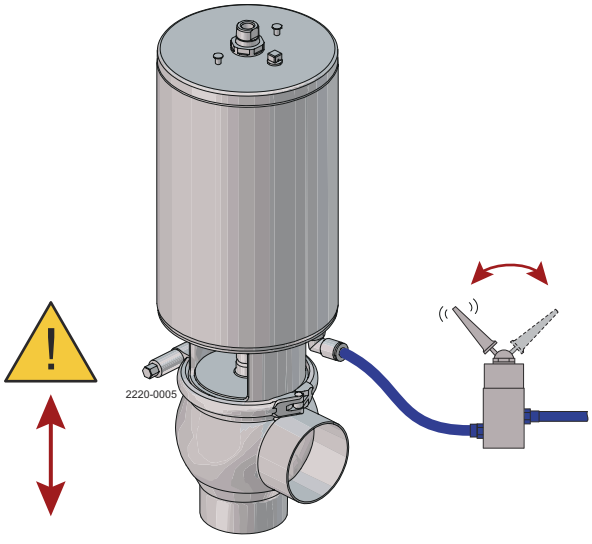


Assemble the valve (see *Valve Assembly* on page 49).



Pre-use check:

1. Supply compressed air to the actuator
2. Open and close the valve several times to ensure that it operates unobstructed



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5 Operation

5.1 General Operation

NOTE

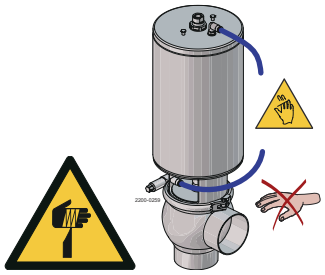
Alfa Laval cannot be held responsible for incorrect installation.

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

Always read *Technical Data* on page 53 thoroughly.

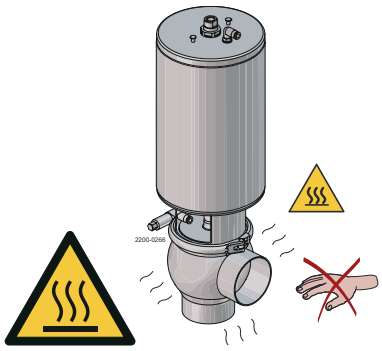
CAUTION

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



CAUTION

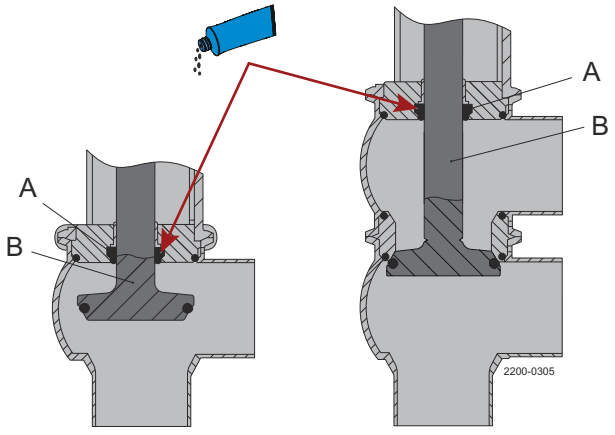
Never touch the valve or the pipelines when processing hot liquids or when sterilising.



1 Lubrication of Valves:

a) Ensure smooth movement between lip seal (A) and plug stem (B).

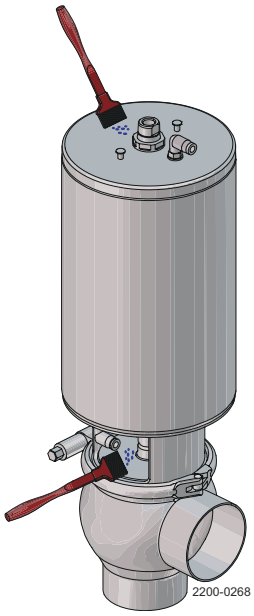
b) Lubricate the lip seal with Alfa Laval lubricant if necessary.



2 Lubrication of the actuator:

a) Ensure smooth movement of the actuator (the actuator is lubricated before delivery).

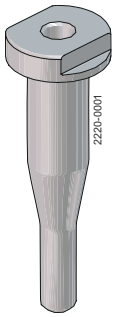
b) Lubricate all seals with Molykote Longterm 2 plus if necessary.



5.2 Pressure Adjustment

Pos. no. 5

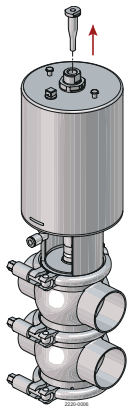
Tighten torque = 4 Nm/ 2.95 lbf-ft



1 Pre-conditions for adjustment:

a) The application should run ~2 bar above normal process pressure conditions.

b) If flow from the pressure relief valve is not observable eg. by not being connected to a drain within proximity, a inline pressure gauge can be used.



2 Adjustment procedure:

a) Remove the counterlock plug.

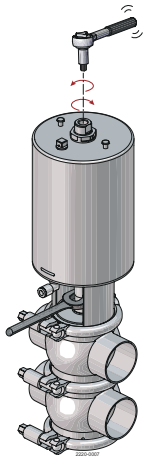
NOTE

RIGHT HAND THREAD!

b) Use a wrench with an 8 mm hex bit socket for the adjustment of spring preload

On direct acting valves Clockwise increases the preload.

On reverse acting valves Counter-Clockwise increases the preload.



c) Adjust to maximum preload while using a 17 mm spanner for fixation of the stem at the yoke side.

d) Reduce the spring preload until a flow from the pressure relief valve is observed or when the required set point pressure is shown on the pressure gauge, ideally ~1 barg above normal process pressure conditions.

e) Mount the counterlock plug.

NOTE

RIGHT HAND THREAD!

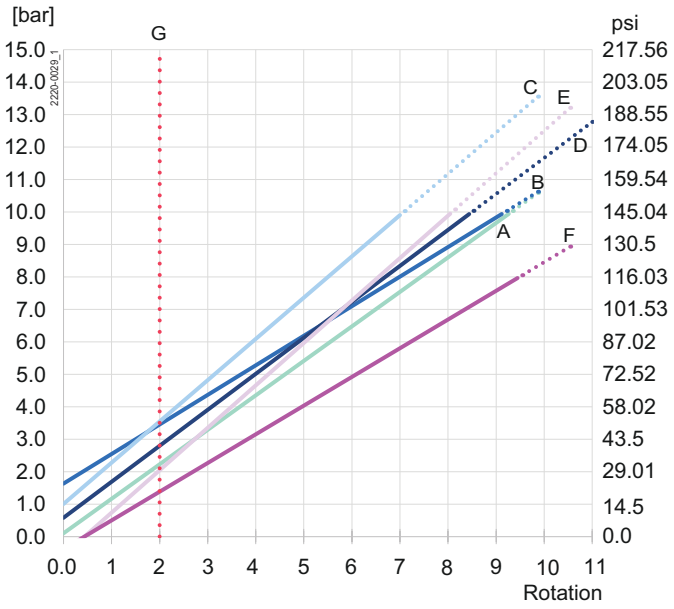
Below diagrams can be used for adjustment of a specific set point pressure.

From factory all actuators are adjusted to two full rotations.

Note that the set point accuracy can vary between different valves, but will be in the range of +/-0.5 barg.

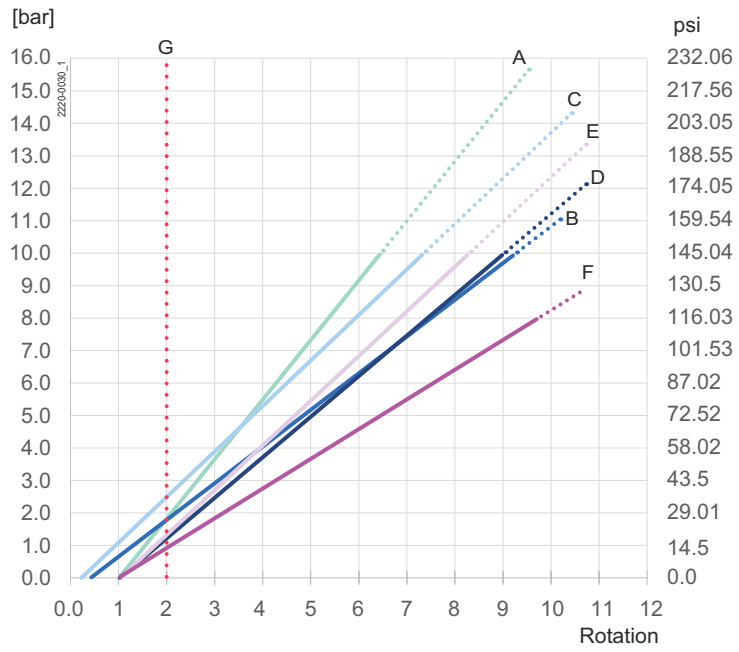
Final adjustment are a owner/end-user responsibility and must be carried out according to the first part of *Pressure Adjustment* on page 29.

NO



A	1"
B	1½"
C	2"
D	2½"
E	3"
F	4"
G	Factory

NC



A	1"
B	1½"
C	2"
D	2½"
E	3"
F	4"
G	Factory

5.3 Troubleshooting

NOTE

Study the maintenance instructions carefully before replacing worn parts - see table in *Maintenance* on page 35.

Problem	Cause/result	Repair
External product leakage	Worn or damaged lip seal and/or O-ring	• Replace the seals • Replace with seals of a different rubber grade
Internal product leakage	• Worn or product affected plug seal	• Replace the seal • Replace with a seal of a different rubber grade
	• Product deposits on the seat and/or plug	• Frequent cleaning
	• Product pressure exceeds actuator specification See *Important Information* on page 15	• Replace with a high pressure actuator • Use auxiliary air on the spring side (do not exceed 3 bar / 43.5 psi). Alfa Laval article number = 9611995903. See *Important Information* on page 15 and see table in *General Installation* on page 23 • Reduce product pressure
Water hammer	The flow direction is the same as the closing direction	• The flow direction should be against the closing direction. See table in *General Installation* on page 23 • Throttle air release of solenoid in top unit
The valve does not open/close	Product pressure exceeds actuator specification	• Replace with a high pressure actuator • Reduce product pressure • Use auxiliary air on the spring side. Always use the pressure relief fittings (3 bar / 43.5 psi) on support side. Alfa Laval article number = 9611995903

5.4 Recommended Cleaning

WARNING **Risk of burns!**

Never touch the supplied product or the pipelines when sterilizing.

CAUTION

Always handle lye and acid with great care.

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.

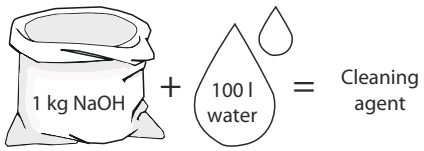
Examples of cleaning agents

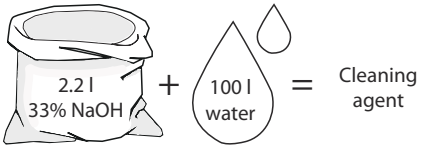
NOTE

Use clean water free from chlorides.

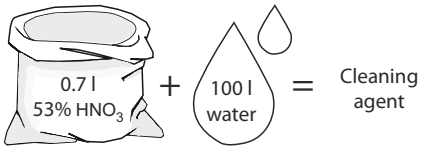
Metric System

1. 1% by weight NaOH at 70°C



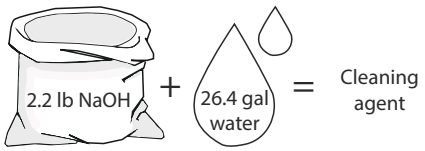


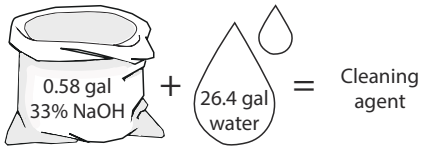
2. 0.5% by weight HNO_3 at 70°C



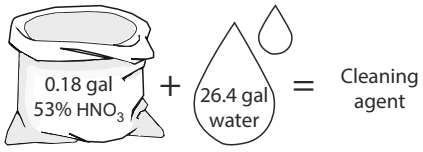
Imperial System

1. 1% by weight NaOH at 158°F





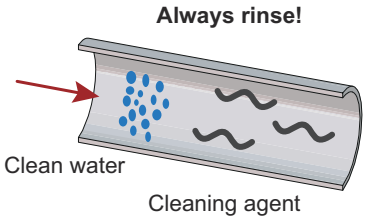
2. 0.5% by weight HNO_3 at 158°F



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.

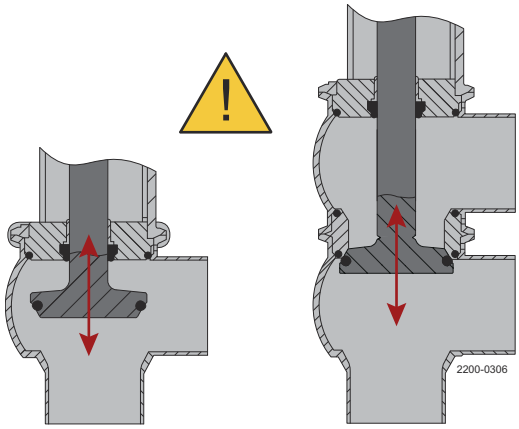


5.5 Cleaning

Clean the plug and the seats correctly.

CAUTION

Lift and lower valve plug momentarily!



6 Maintenance

6.1 General Maintenance

NOTE

Always read *Technical Data* on page 53 thoroughly.

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

Alfa Laval recommend to keep service kits in stock to optimise uptime of your equipment.

Alfa Laval cannot be held responsible for incorrect installation.

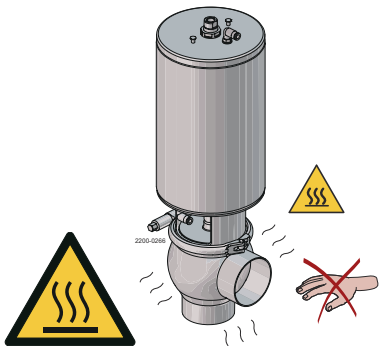
Alfa Laval recommends the use of our service tool for valve disassembly (item no. 8010014443). Please follow the QR link for further information.

CAUTION

Never service the valve when it is hot.

Never service the valve with valve and pipelines under pressure.

Atmospheric pressure required!

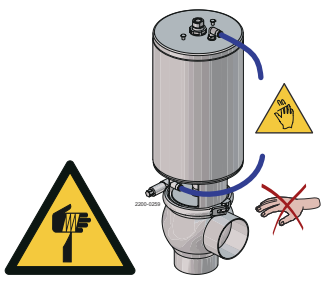


CAUTION

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.

Always release compressed air after use.



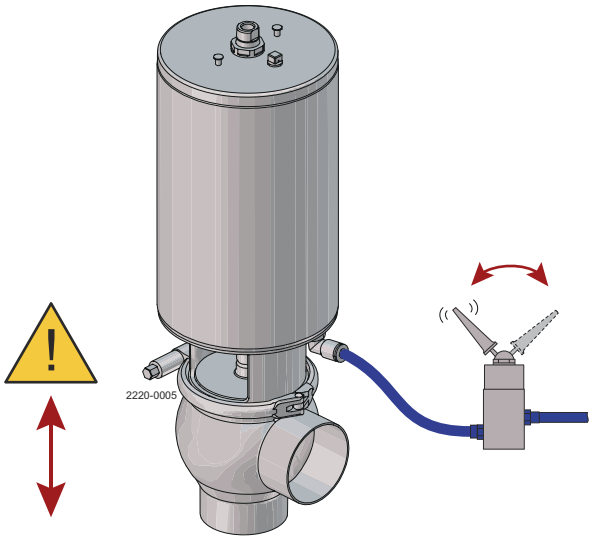
Below are some guidelines for maintenance and lubrication intervals.

Please note that the guidelines are for normal working conditions in one shift.

	Product wetted seals	Actuator bushings complete
Preventive maintenance	Replace after 12 months depending on working conditions	Replace after 5 years depending on working conditions
Maintenance after leakage (leakage normally starts slowly)	Replace at the end of the day	Replace when possible
Planned maintenance	• Regular inspection for leakage and smooth operation • Keep a record ofthe 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. Replace after leakage
Lubrication	**Before fitting:** Alfa Laval Silicon based Food-grade Lubricant USDA H1 approved grease	**Before fitting:** Molykote Longterm 2 plus

Pre-use check

1. Supply compressed air to the actuator
2. Open and close the valve several times to ensure that it operates unobstructed



6.2 Dismantling the Valve

NOTE

Handle scrap correctly — see *Recycling Information* on page 17.

NC = Normally closed.

NO = Normally open.

The service tool (item no.) can be used for below dis- and assembly procedures hereby omitting use of compressed air.

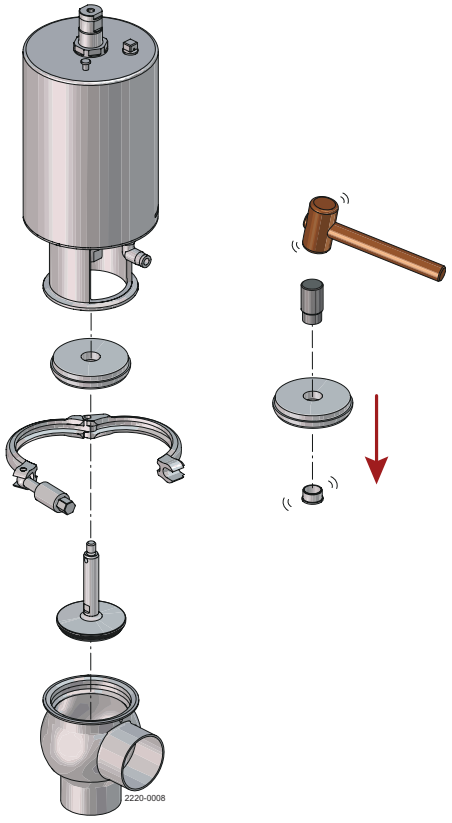
6.2.1 Shut-off valve

NOTE

Be careful not to damage the bushing.

Pay special attention to the warnings!

For plug seal replacement please see *Plug Seal Replacement (Elastomer)* on page 44.



1. Supply compressed air to the actuator.
2. Loosen and remove clamp.
3. Release compressed air.
4. Lift away the actuator.

5 Unscrew and remove valve plug.

6 Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet).

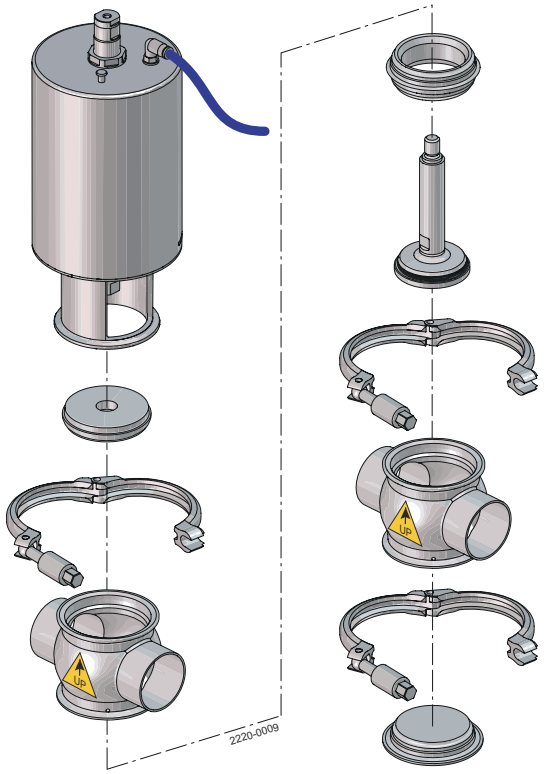
6.2.2 Shut-off valve - Reverse Acting

NOTE

Be careful not to damage the bushing.

Pay special attention to the warnings!

For plug seal replacement please see *Plug Seal Replacement (Elastomer)* on page 44.



1. Loosen and remove lower clamp
2. Remove lower bonnet and O-ring from lower body
3. Loosen and remove middle clamp
4. Lift away the actuator and upper valve body
5. Unscrew and remove valve plug
6. Remove seat and O-rings
7. Loosen and remove upper clamp
8. Remove upper valve body
9. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing for Shut-off valve)

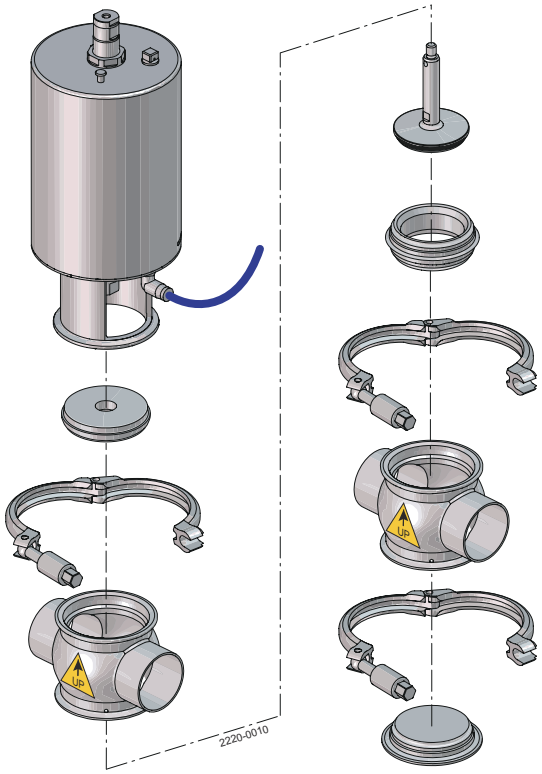
6.2.3 Shut-off valve - Direct Acting

NOTE

Be careful not to damage the bushing.

Pay special attention to the warnings!

For plug seal replacement please see *Plug Seal Replacement (Elastomer)* on page 44.

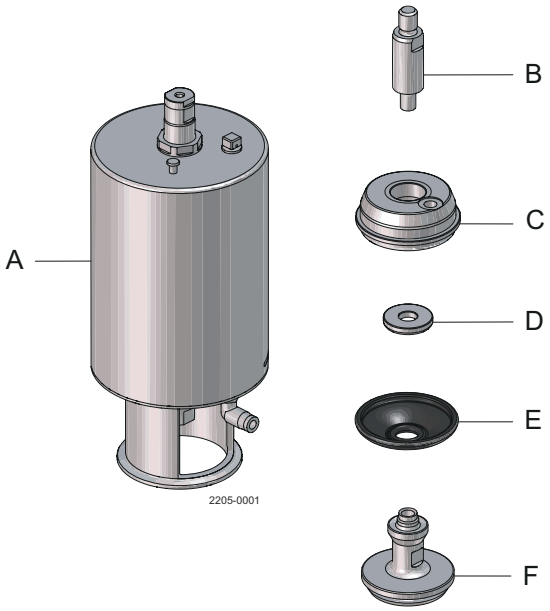


1. Loosen and remove lower clamp.
2. Remove lower bonnet and O-ring from lower valve body.
3. Supply compressed air to the actuator.
4. Loosen and remove upper clamp.
5. Release compressed air.
6. Lift away the actuator.
7. Unscrew and remove valve plug.
8. Loosen and remove middle clamp.
9. Remove upper valve body.
10. Remove seat and O-rings.

11 Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing for Shut-off valve).

6.2.4 Shut-off valve - Aseptic

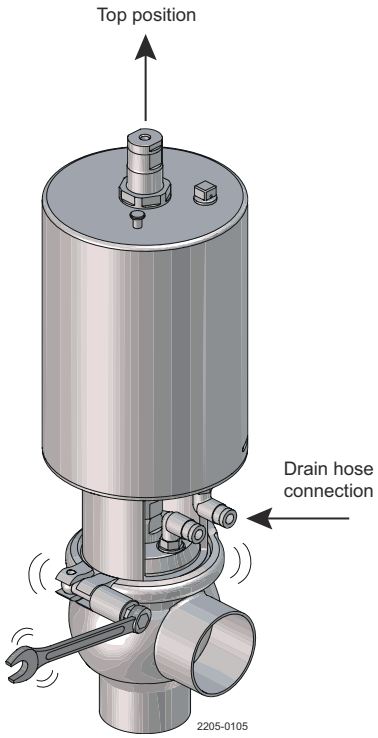
A = Actuator
B = Spindel
C = Bonnet
D = Disc
E = Diaphragm
F = Plug



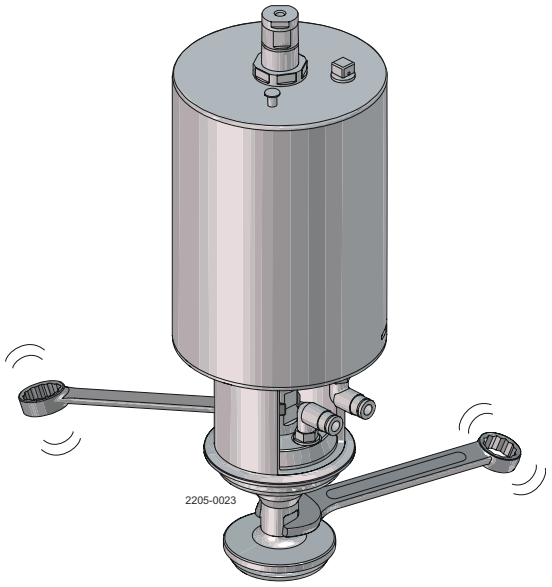
1 Move the plug in top position.

Remove the air drain hose.

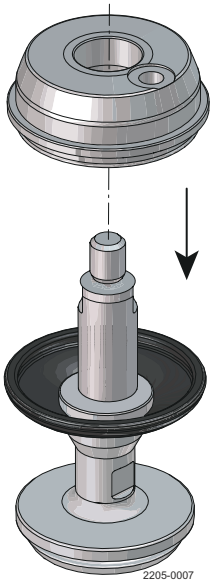
Ensure pipe is empty and not pressurized and then loosen the clamp using a 10 mm spanner.



2 Loosen the plug from the actuator by using two 17 mm spanners.



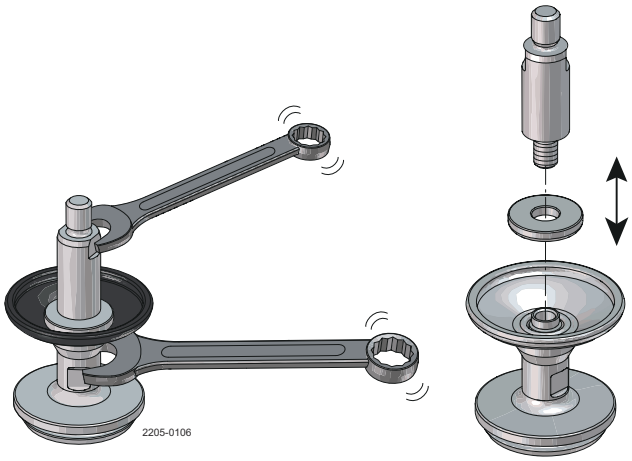
3 Remove the bonnet.



4 Loosen the plug from the spindle by using two 17 mm spanners.

If necessary can the bushing (24) in the bonnet be changed.

Clean all parts and replace diaphragm and plug seal.



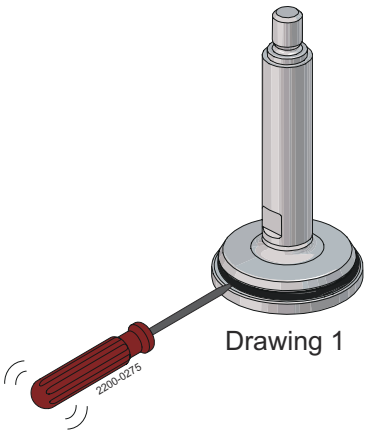
6.3 Plug Seal Replacement (Elastomer)

6.3.1 Removal of Plug Seal

Remove old seal ring using a knife, screwdriver or similar. Be careful not to damage the plug surface.

If using a screwdriver it must be placed underneath the plug groove (see drawing 1).

> **NOTE**
>
> It is important to place the screwdriver underneath the plug.



Drawing 1

6.3.2 Pre-mounting of plug seal

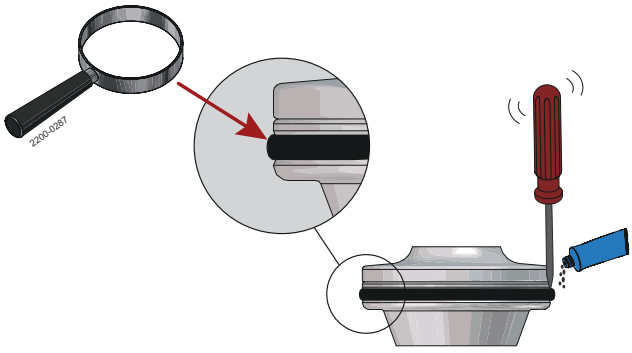
1. Grease the new plug seal with Alfa Laval Silicone based Food-grade Lubricant, which is included in the service kit.

   Only use a very small amount of grease.

2. Fit the plug seal on the plug without pressing it into the groove.

   Be careful not to twist the plug seal.

   Use a screwdriver (two turns) to fit the plug seal properly and to ensure it is not twisted.



Drawing 2

3. The plug seal can now be mounted by hand or with the Alfa Laval plug tool.

6.3.3 Mounting plug seal by hand

1

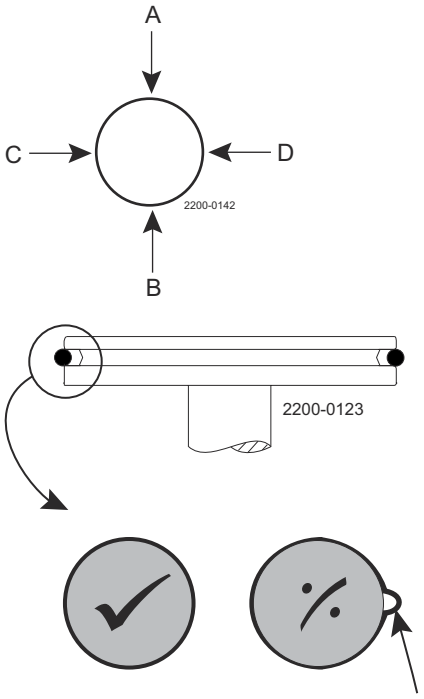
Check the plug seal is premounted as described in the section *Pre-mounting of plug seal* on page 44.

To ensure correct mounting, press with your thumb on the plug seal, which must be done approximately 10 times and always with opposite pressure points, from A to B and from C to D.

The rest of the plug seal can now be pressed into the groove so the whole plug seal is mounted. Check that there are NO “bulge”.

If there is a little bulge – then use the screwdriver to eliminate the bulge.

Again press with the thumb on the plug seal and keep the pressure while rotating 360°.



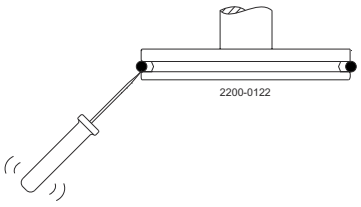
2

It is important to release compressed air behind the plug seal.

This is done with a screwdriver and always underneath the plug as shown.

It must be done at one or two different points on the circumference.

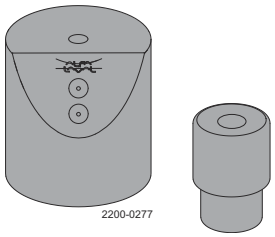
Be careful not to make marks on the surface of the plug and plug seal.



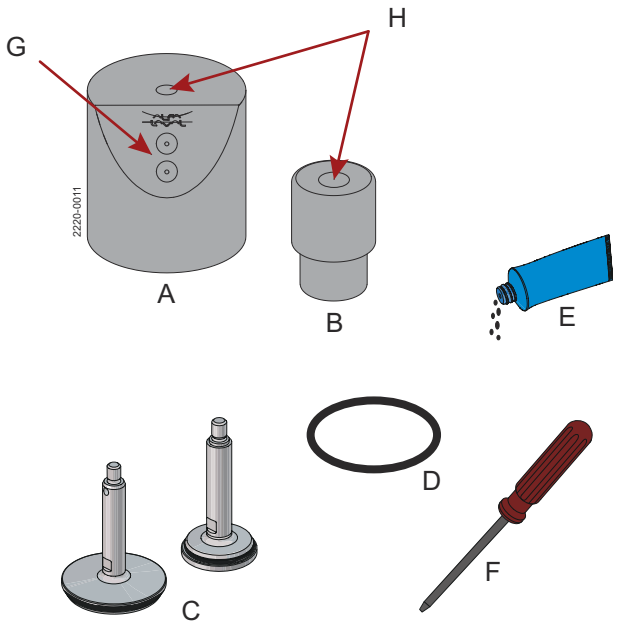
NOTE

It is important to place the screwdriver underneath the plug.

6.3.4 Mounting plug seal with Alfa Laval plug seal tool

Mounting tool for elastomer plug seals	DN40 38 mm	DN50 - DN65 51 mm - 63.5 mm	DN80 - DN100 76.1 mm - 101.6 mm
	9613172901	9613172902	9613172903

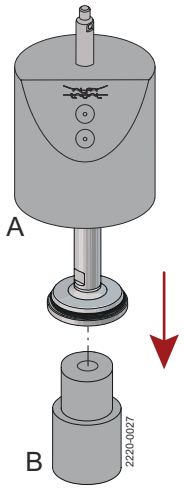
A. Part A
B. Part B
C. Plugs
D. O-ring
E. Alfa Laval Silicone based Food-grade Lubricant from service kit
F. Screwdriver (no sharp corner)
G. Exhaust holes for screwdriver
H. Ø20 hole for plug spindle



1

Part A has an upper and lower exhaust hole, as the tool can be used for two plug sizes – e.g. plug tool = 9613172902. The upper exhaust hole is for the small plug size e.g. DN50/ISO51 (small) and the lower exhaust hole is for DN65/ISO63 (large).

When using a “reverse acting plug” the Ø20 spindle must only be fitted in “part A”.

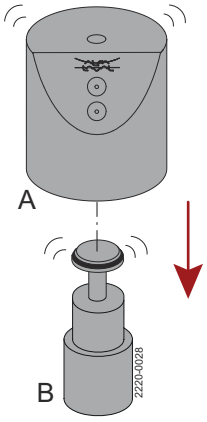


Reverse acting

When using a “standard shut-off plug” the Ø20 spindle is only fitted in “part B”.

Part B has a small and a large diameter as the tool can be used for two plug sizes – e.g. plug tool = 9613172902 can be used for DN50/ISO51 (small) and DN65/ISO63 (large).

“Part B” therefore has to be turned so it matches the plug size diameter.



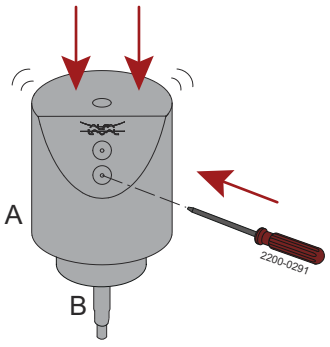
Standard

2

a) Fit the plug spindle in “part B” or “part A”.

b) Place “part A” onto “part B” and then press “hard” down on top of “part A”.

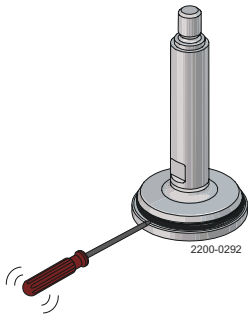
c) Now fit the screwdriver into the exhaust hole and underneath the plug groove meanwhile keeping the pressure on “part A”. This should ensure correct removal of air behind the seal ring. Normally the sound “Psst” can be heard one time. A “drill press” can of course also be used to press down on “part A”.



3

It is important to release compressed air behind the seal ring.

This is done with a screwdriver and always underneath the plug as shown.



NOTE

It is important to place the screwdriver underneath the plug.

6.4 Valve Assembly

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

Lubricate O-ring (21) and lip seal (25) with Alfa Laval Lubricant.

Remember to tighten spindle and plug (use two 17 mm spanners).

- Shut-off plug tighten torque = **20 Nm (15 lbf - ft)**

If there are vibrations in the pipeline, Alfa Laval recommends to use Loctite no. 243.

The clamps' thread must be lubricated before tightening - max. torque for the clamps is 10-12 Nm (8-9 lbf - ft).

6.5 Dismantling and mounting of Fully Maintainable Actuator

1 **Before dismantling ensure the spring preload is fully relieved (see *Pressure Adjustment* on page 29).**

a) Rotate the cylinder with service tool.

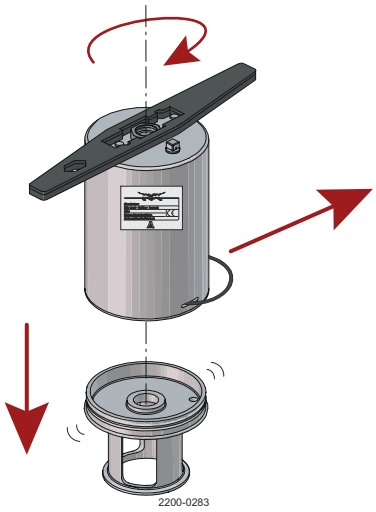
b) Remove lock wire and pull away cylinder.

c) Unscrew nuts and remove yoke.

d) Top and bottom bushings.

e) Remove piston with O-ring and spring assembly.

f) Remove O-rings and support disc.



> **NOTE**
>
> The Air/Air actuator has no spring assembly.

2

a) Lubricate O-rings (3, 7, 11) with "Molykote Longterm 2 plus" or an equivalent grease before mounting.

b) Tighten nuts to a torque of 17 Nm (12 lbf - ft).

c) Assemble the actuator in reverse order of step 1.

d) Follow the assembly procedure in *Valve Assembly* on page 49, for installing the bushings.

6.6 Changing Pneumatic Movement on Pressure Relief Valve (NC/NO)

1 **Before dismantling ensure the spring preload is fully relieved (see *Pressure Adjustment* on page 29).**

a) For NC actuator the counterlock plug must be moved to opposite actuator stem.

b) Remove air fitting and air plug.

c) Rotate the cylinder with service tool.

d) Remove lock wire and pull away cylinder.

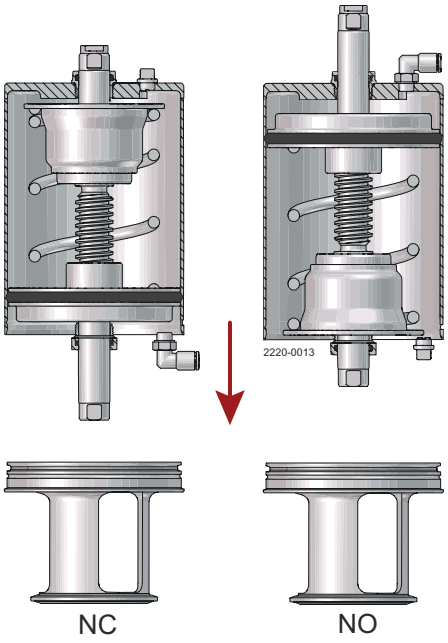
e) Reverse piston and spring assembly inside cylinder.

f) Reassemble in reverse order (c. to a.).

g) Mount air fitting and air plug in accordance with NC or NO.

NC = Pneumatic movement - upwards

NO = Pneumatic movement - downwards



> **NOTE**
>
> Prior changing pneumatic movement on NC actuators the counterlock plug must be moved to the opposite actuator stem (yoke side)

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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

Temperature / Pressure

Valve	
Temperature range:	-10 °C to +140 °C / 14 °F to + 284 °F (EPDM)
Max. product pressure:	1000 kPa / 10 bar / 145 psi
Min. product pressure:	Full vacuum (depending on product specifications)

Actuator	
Temperature range:	-10 °C to +60 °C / 14 °F to + 140 °F
Air pressure:	500-700 kPa / 5-7 bar / 72.5-101.5 psi

7.2 Physical Data

Materials	
Product wetted steel parts	1.4404 (316L)
Non-product wetted steel parts	1.4301 (304)
Product wetted seals	EPDM
Alternative product wetted seals	NBR, HNBR and FPM
External surface finish	Bead blasted
Internal surface finish	Bright (polished), Ra < 0.8 µm (< 32 µin)

7.3 Weight

(kg)

Nominal size	Inch tubes - DN/OD						DIN tubes - DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
Shut-off valve, config 200:	4.3	5.3	5.9	11	12	13.3	4.4	5.4	6	11.1	12.1	13.4

(lb)

Nominal size	1"	1½"	2"	2½"	3"	4"
Shut-off valve, config 200:	9.48	11.68	13.01	24.25	26.46	29.32

7.4 Noise

One metre / 3 ft away from and 1.6 metres / 5 ft above the exhaust, the noise level of a valve actuator will be approximately 77 dB(A) without noise damper and approximately 72 dB(A) with damper - measured at 7 bar air-pressure.

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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

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.

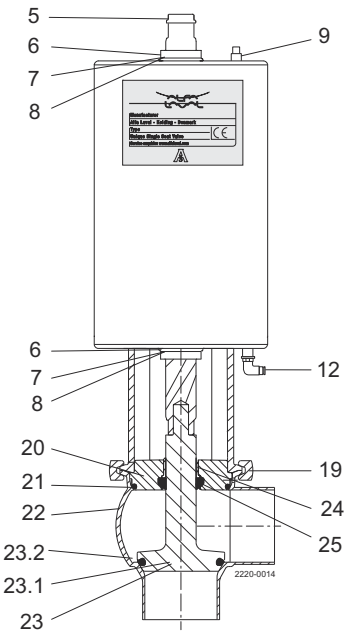
Liability and warranty are excluded:

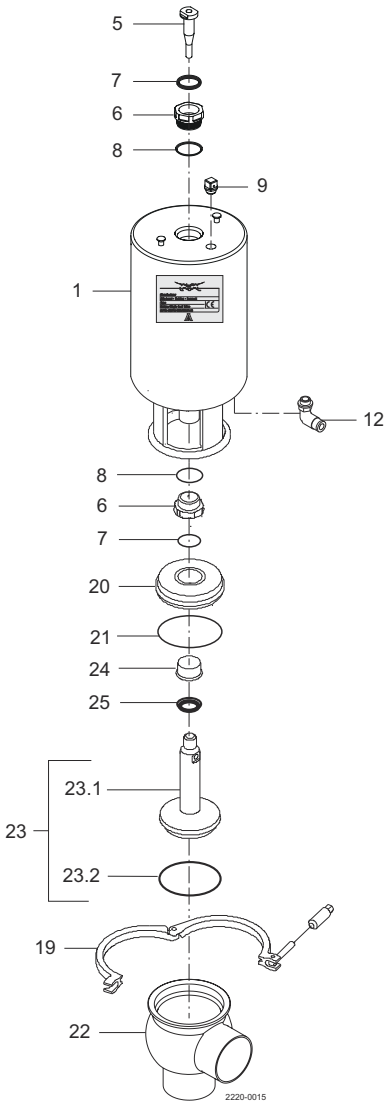
- If advice and instruction of operating instructions are ignored
- For incorrect operation or for insufficient maintenance of the supplied Alfa Laval product
- For any kind of change of function of the supplied Alfa Laval product without prior written agreement by Alfa Laval Kolding A/S
- If supplied 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.

9 Parts Lists and Exploded Views

9.1 Shut-off Valve - Standard Version

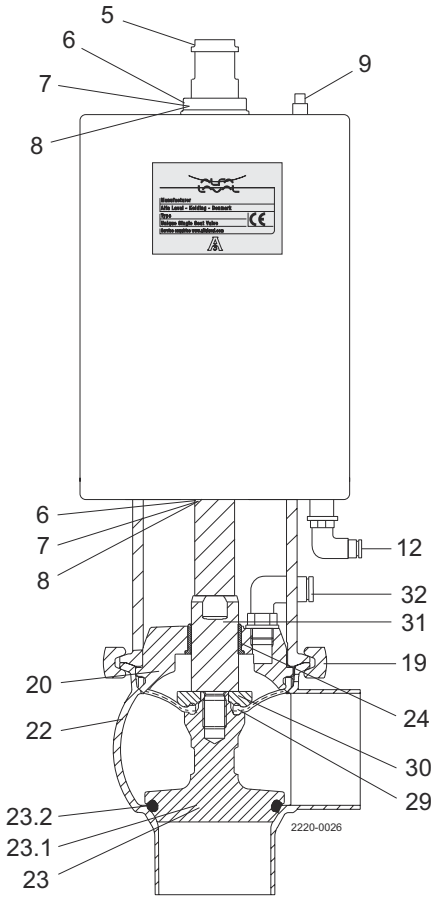


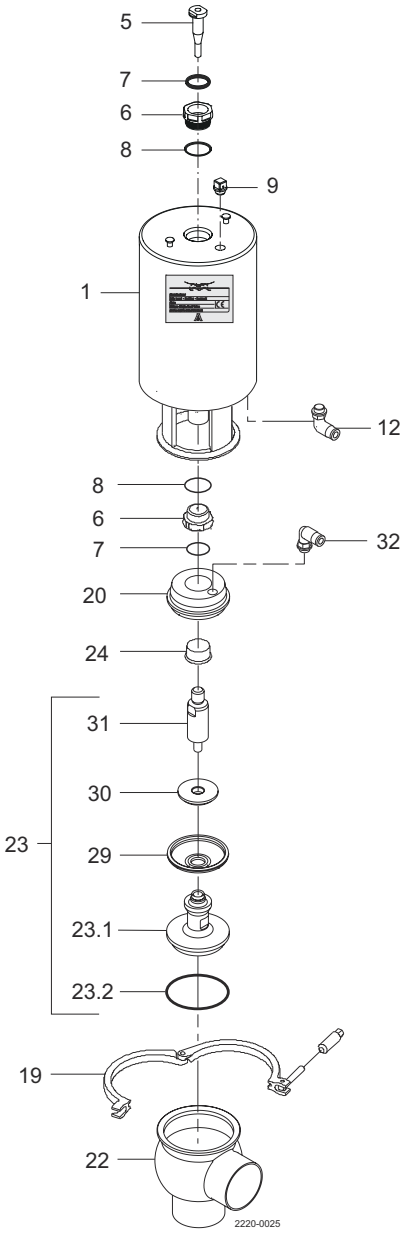


Pos.	Qty.	Denomination
1	1	Actuator, complete
5	1	Counter lock Plug
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1	Air fitting
19	1	Clamp

Pos.	Qty.	Denomination
20	1	Bonnet
21	1	O-ring
22	1	Valve body, lower
23	1	Plug
23.1	1	Plug
23.2	1	Plug seal
24	1	Bushing
25	1	Lip seal

9.2 Shut-off Valve - Aseptic

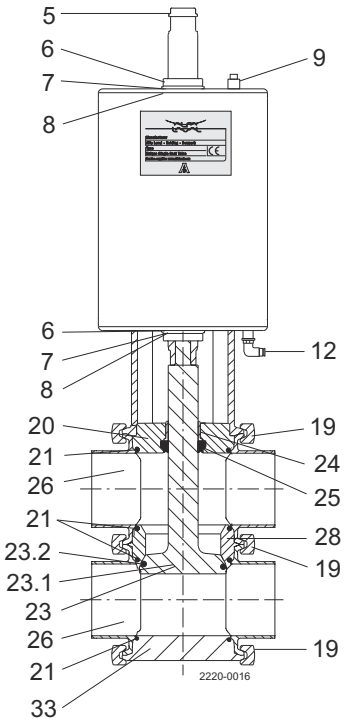


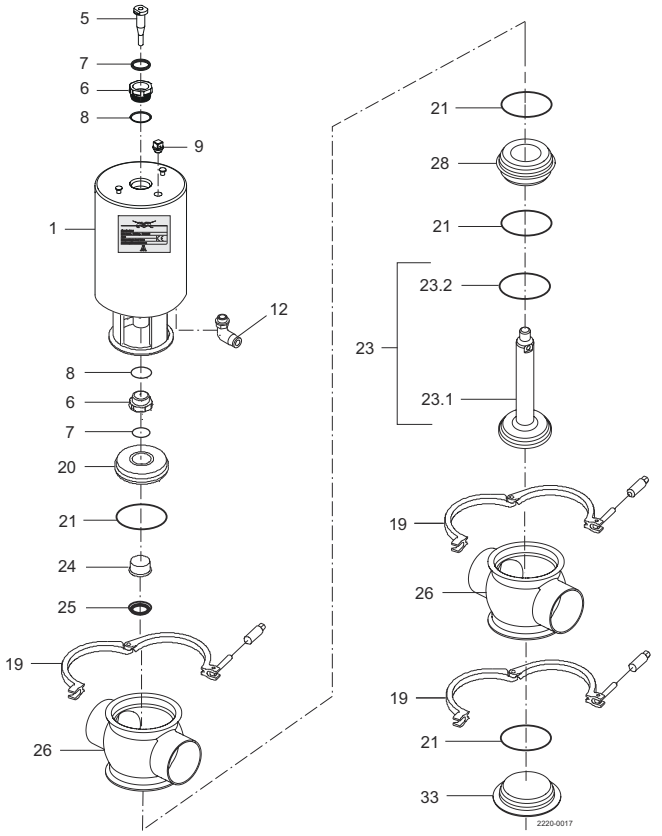


Pos.	Qty.	Denomination
1	1	Actuator, complete
5	1	Counter lock Plug
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1	Air fitting
19	1	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
22	1	Valve body, lower
23	1	Plug
23.1	1	Plug
23.2	1	Plug seal
24	1	Bushing
29	1	Diaphragm
30	1	Disc for diaphragm
31	1	Upper spindle
32	1	Air fitting

9.3 Shut-off Valve - Reverse Acting

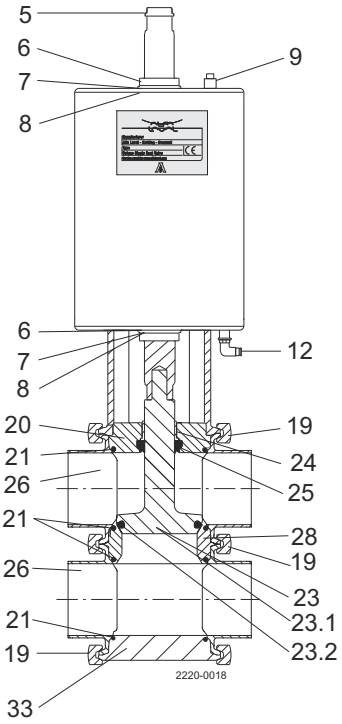


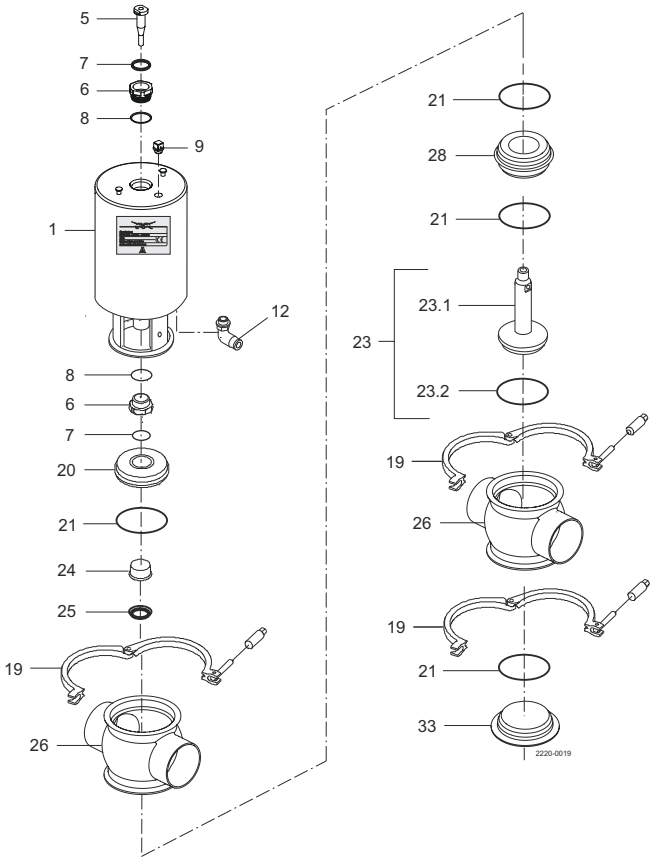


Pos.	Qty.	Denomination
1	1	Actuator, complete
5	1	Counter lock Plug
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1	Air fitting
19	3	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
21	1	O-ring
23	1	Plug
23.1	1	Plug
23.2	1	Plug seal
24	1	Bushing
25	1	Lip seal
26	1	Valve body
28	1	Seat
33	1	Lower bonnet

9.4 Shut-off Valve - Direct Acting

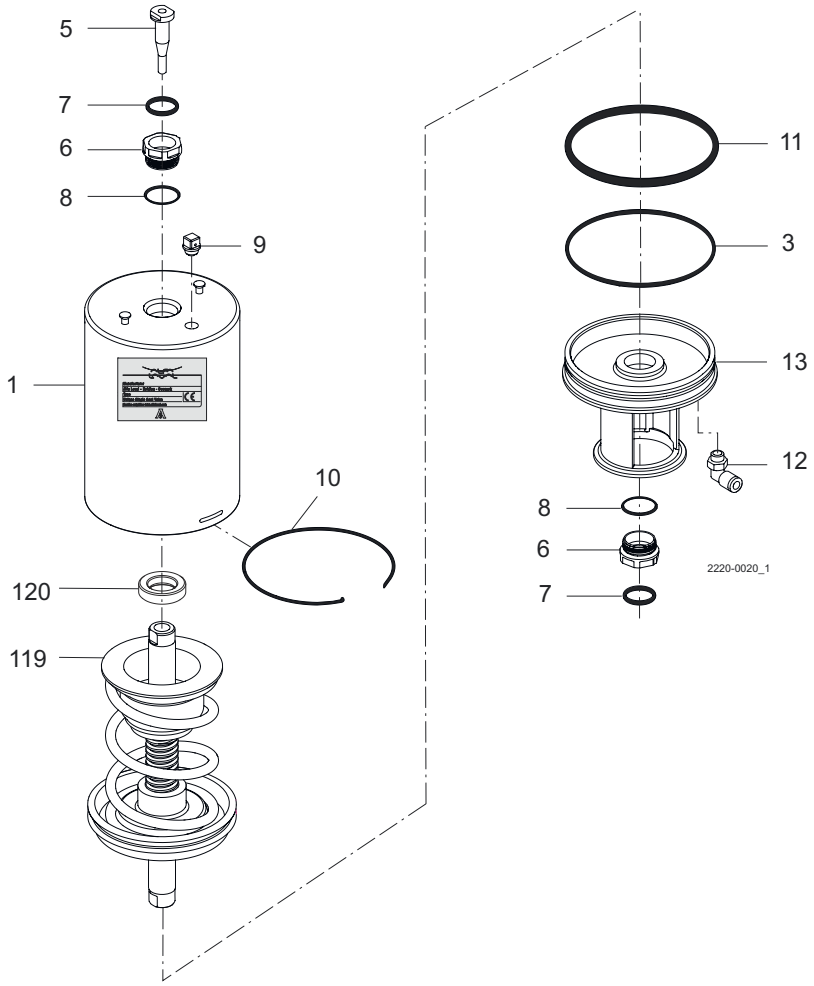




Pos.	Qty.	Denomination
1	1	Actuator, complete
5	1	Counter lock Plug
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1	Air fitting
19	3	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
21	1	O-ring
23	1	Plug
23.1	1	Plug
23.2	1	Plug seal
24	1	Bushing
25	1	Lip seal
26	2	Valve body
28	1	Seat
33	1	Lower bonnet

9.5 Maintainable Actuator



Pos.	Qty.	Denomination
1	1	Cylinder
3	1	O-ring
5	1	Counter lock Plug
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug

Pos.	Qty.	Denomination
10	1	Lock wire
11	1	O-ring
12	1	Air fitting
13	1	Yoke
119	1	Piston assembly
120	1	Stop