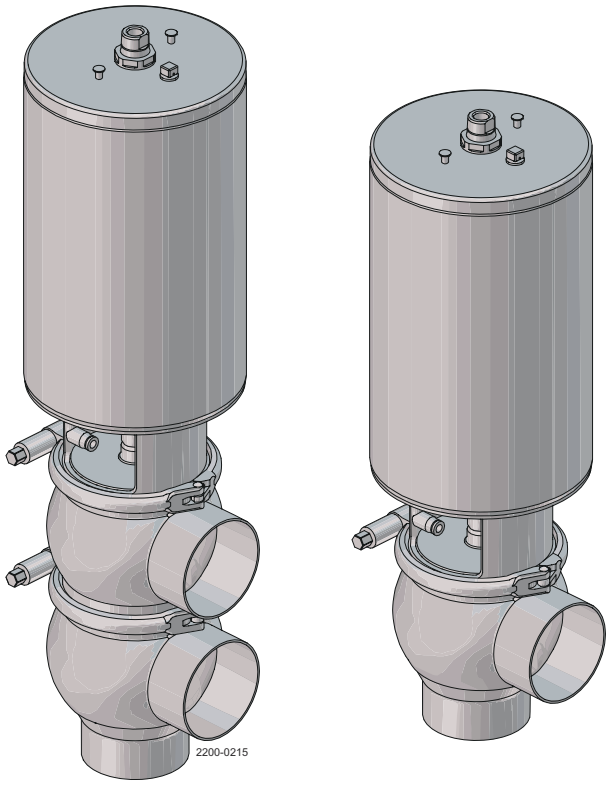
Unique SSV single seat valves

Standard, Direct and Reverse Acting, Aseptic, Long Stroke, Tangential



Lit. Code 200008033-5-EN-GB

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

Valve

Designation

Unique SSV PN10, Unique SSV LS PN10

Type

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

Serial number

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive (PED) 2014/68/EU *category 1 and subjected to assessment procedure Module A. May only be used for fluids in Group 2.*

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

Hereby declare that

Valve

Designation

Unique SSV PN10, Unique SSV LS PN10

Type

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

Serial number

is in conformity with the following directives with amendments:

- The Supply of Machinery (Safety) Regulations 2008
- The Pressure Equipment (Safety) Regulations 2016 *category 1 and subjected to assessment procedure Module A. May only be used for fluids in Group 2.*

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_ 03_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.
	Danger of injury (lasermarked on the actuator). Do **not** attempt to disassemble the actuator due to spring under load danger! (The lock wire opening is blocked).
	Danger of injury (lasermarked on the actuator). Do **not** attempt to cut open actuator due to spring under load danger! (The lock wire opening is blocked).
	Danger of injury (label marked on actuator). Do **not** attempt to cut the actuator open due to spring under load (the lock wire opening is locked).

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.

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 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** 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.
	Do **NOT** attempt to disassemble or by other means open the actuator due to spring under load danger!

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.

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

Do **NOT** attempt to disassemble or by other means open the actuator due to spring under load danger!

Never pressurize the valve/actuator when the valve is serviced **unless specifically prescribed.**

Storage

Alfa Laval recommend:

- Store the supplied Alfa Laval product as supplied in original packaging
- Port opening(s) should be protected against any ingress
- Bare steel (not stainless) should be lightly oiled/greased
- 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 threads, can cause cuts. Wear protective gloves

Crushing Hazard

- Avoid placing hands into valve orifice pinch points

Health Hazard

Danger of injury: (an extra yellow label marked on the actuator from June 2016). Do **NOT** attempt to cut the actuator open due to spring under load. (The lock wire opening is locked).

Danger of injury (laser marked on the actuator). Do **NOT** attempt to disassemble the actuator due to spring under load danger! (The lock wire opening is locked).

Danger of injury (label marked on actuator). Do **NOT** attempt to cut the actuator open due to spring under load. (The lock wire opening is locked).

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

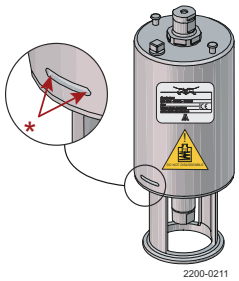
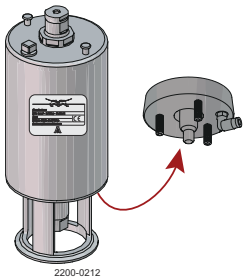
Indicates important information to simplify or clarify procedures.

2.4 Actuator types

Different actuator types for the SSV valve

In June 2016 the below change was implemented and the “removable yoke with bolts” version is thereby phased out and replaced by the “yoke without bolts” version.

> **NOTE**
>
> It is important to check for warnings marked on the actuator when servicing an actuator - see below table.

	Non-maintainable actuator	Fully maintainable actuator	Fully maintainable actuator
Actuator type	Spring under load and **cannot** be opened  2200-0211 *) Lock wire opening is locked when warning is marked on actuator	Spring cage and can be opened  2200-0212	Spring cage and can be opened  2200-0213
Yoke type	Non-removable yoke	“Removable yoke with bolts”. If the yoke with bolts is damaged it has to be replaced by the “yoke without bolts”.	“Yoke without bolts”
Service	Not possible to service internally (it is not possible to change piston O-rings)	Yes	Yes
Marked with warnings	Yes	No	No
Year of production	From 2006	From 2006 to June 2016	From June 2016

2.5 Important Information

Actuators

If support air is utilised:

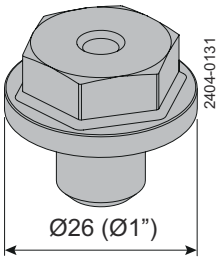
CAUTION **Shock in the actuator must never occur.**

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 high pressure actuator versions is not allowed.**

If support air is connected always use the 3 bar/43.5 PSI air relief fittings = 9611995903/9611996094 (1/4" = 6.35 mm hose). Using the air relief fitting also extends the service life of the actuator piston O-ring.

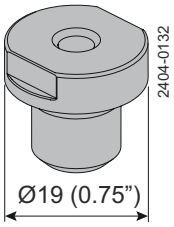
Obs. if using a 6 mm hose then use air relief fittings = 9611995903.



Pos. no. 5

For actuators, manufactured year 2005-2018, with serial number from 1000000 - 5999999 and from 20000000000 - 59999999999 always use steel adapter (pos 5) = 9614065301

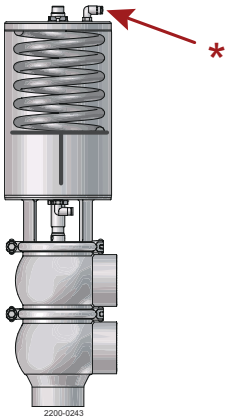
Tighten torque = 30 Nm/23 lbf-ft



Pos. no. 5

For actuators, manufactured year 2019 --> with serial number from 6000000 to 7000000 and from 60000000000 to 70000000000 always use steel adapter (pos 5) = 9615374701

Tighten torque = 15 Nm/11 lbf-ft



Alfa Laval recommends max. 3 bar support air.

Always use the “3 bar/43.5 PSI air relief fittings” on support air.

Alfa Laval article number = 9611995903/9611996094.

(1/4" = 6.35 mm hose).

2.6 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.

2.7 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

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

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 SSV Standard

The Alfa Laval Unique SSV Standard is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination.

Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety. It is built on the well-proven Alfa Laval Unique SSV platform. Few moving parts ensure easy maintenance, high reliability and low total cost of ownership. A wide range of optional features enables customization to specific process requirements.

Alfa Laval Unique SSV Reverse Acting

The Alfa Laval Unique SSV Reverse Acting is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination.

Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety. Built on the well-proven Alfa Laval Unique SSV platform, it provides multiple solutions where the direction of the flow does not allow the use of a standard Alfa Laval Unique SSV to eliminate the risk of pressure shock.

Few moving parts ensure easy dismantling, high reliability and low maintenance costs. A wide range of optional features enables customization to specific process requirements.

Alfa Laval Unique SSV Direct Acting

The Alfa Laval Unique SSV Direct Acting is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination. Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety. Built on the well-proven Alfa Laval Unique SSV platform, the combination of a standard plug and reverse acting valve housing Alfa Laval Unique SSV supports in building an optimum solution. Few moving parts ensure easy dismantling, high reliability and low maintenance costs. A wide range of optional features enables customization to specific process requirements.

Alfa Laval Unique SSV Aseptic

The Alfa Laval Unique SSV Aseptic is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination.

Its compact, modular and hygienic design meets the highest process requirements in terms of hygiene and safety. Built on the well-proven Alfa Laval Unique SSV platform, it features a one-piece diaphragm that provides hermetic sealing to prevent intrusion of contaminants from the atmosphere, ensuring full protection against the effects of microorganisms during processing. The special diaphragm can also be used with the Unique SSV Standard, Tangential, Two Step, Manual and Tank Outlet.

Few moving parts ensure easy maintenance, high reliability and low total cost of ownership. A wide range of optional features enables customization to specific process requirements.

Alfa Laval Unique SSV Long Stroke

The Alfa Laval Unique SSV Long Stroke is versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination. Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety. Built on the well-proven Unique SSV platform, it is especially suitable for use with highly viscous products and products containing particles and/or suspended solids due to its larger opening.

Alfa Laval Unique SSV Tangential

The Alfa Laval Unique SSV Tangential is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination. Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety.

Built on the well-proven Unique SSV platform, it provides complete drainability of the valve body near tank openings, on horizontally mounted ports, or wherever space restrictions make it difficult to install valves at other angles.

Few moving parts ensure easy maintenance, high reliability and low total cost of ownership. A wide range of optional features enables customization to specific process requirements.

4 Installation

4.1 Unpacking/Delivery

> **NOTE**
>
> Alfa Laval cannot be held responsible for incorrect unpacking.
>
> **Always** read *Technical Data* on page 87 thoroughly.

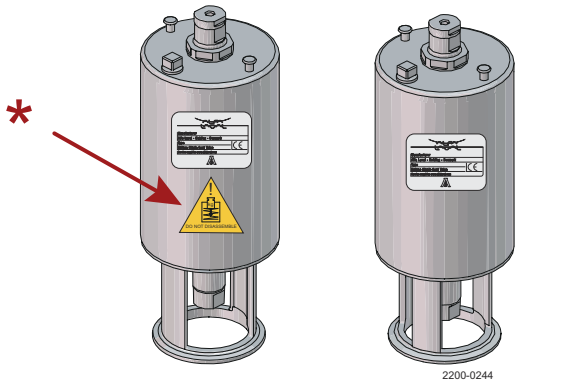
Check the delivery for:

1. Delivery note
2. Complete valve, shut-off valve (RA), (DA) or change-over valve (RA) — see below

Actuator version can be ordered as either “fully maintainable” (no warning marked on actuator) or “non-maintainable” (warning marked on actuator).

Non-maintainable actuator

Fully maintainable actuator

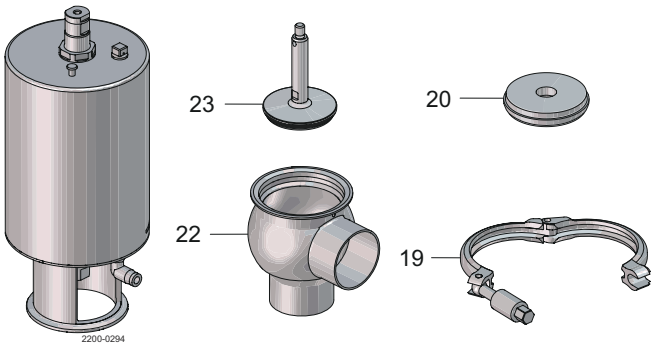


* = lasermarked warning

SSV - Standard

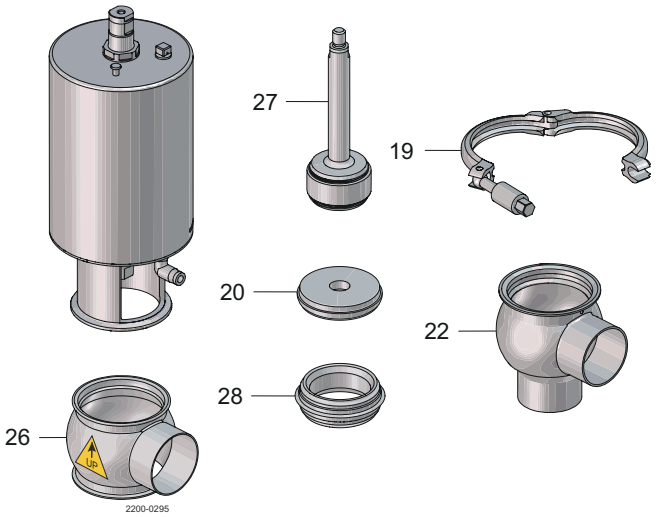
Shut-off valve:

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



Change-over valve:

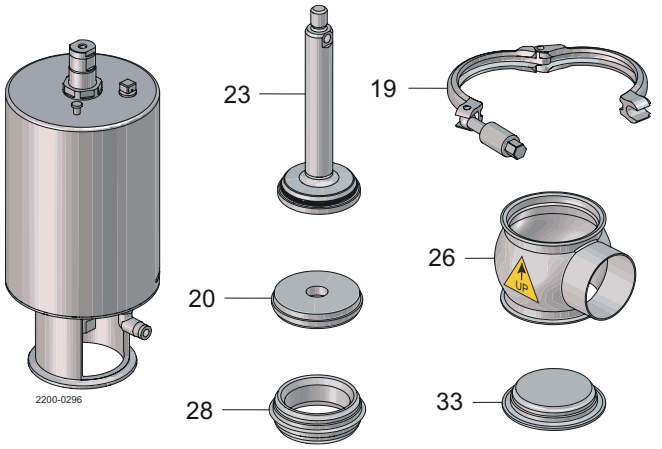
- Complete actuator
- 2 x clamps (19)
- Bonnet (20)
- Lower valve body (22)
- Upper valve body (26)
- Valve plug (27)
- Valve seat (28)



SSV - Reverse Acting

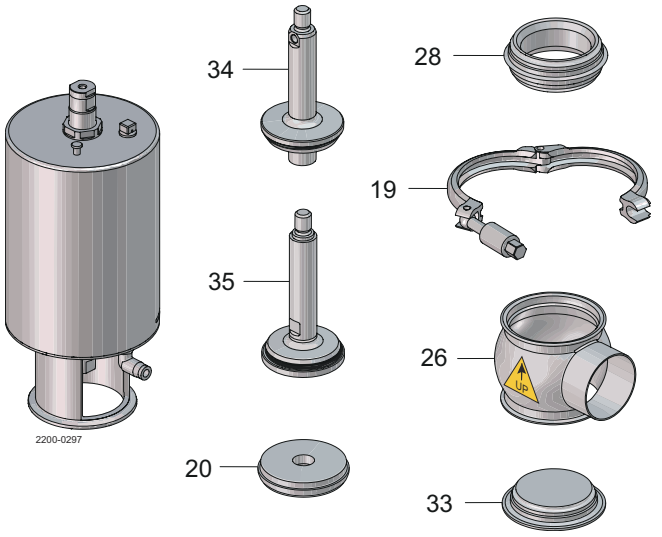
Shut-off valve:

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



Change-over valve:

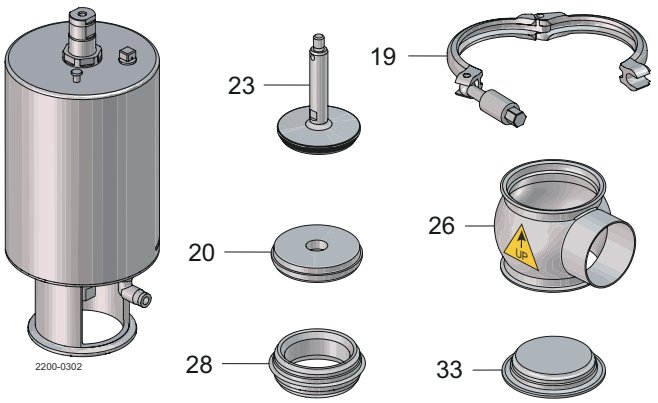
- Complete actuator
- 4 x clamps (19)
- Bonnet (20)
- 3 x upper valve bodies (26)
- 2 x valve seats (28)
- Lower bonnet (33)
- Upper valve plug (34)
- Lower valve plug (35)



SSV - Direct Acting

Shut-off valve:

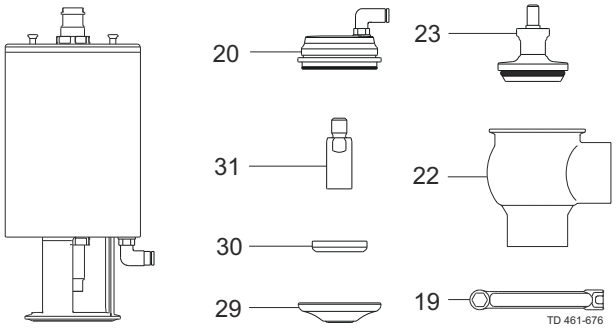
- Complete actuator
- 3 x clamps (19)
- Bonnet (20)
- Valve plug (23)
- 2 x upper valve bodies (26)
- Valve seat (28)
- Lower bonnet (33)



SSV - Aseptic

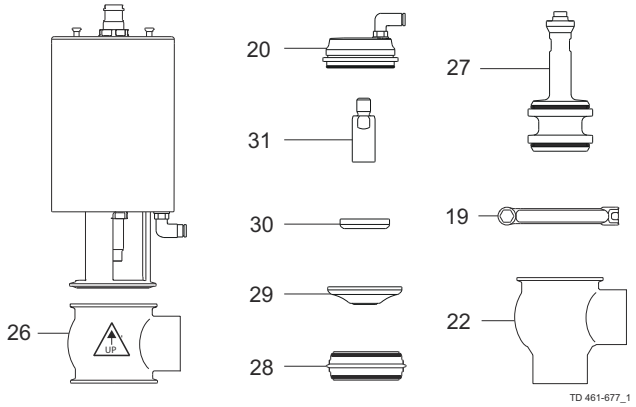
Shut-off valve:

1. Complete actuator
2. Clamp (19)
3. Bonnet (20)
4. Valve body (22)
5. Valve plug (23)
6. Diaphragm (29)
7. Disc for diaphragm (30)
8. Upper spindle (31)



Change-over valve:

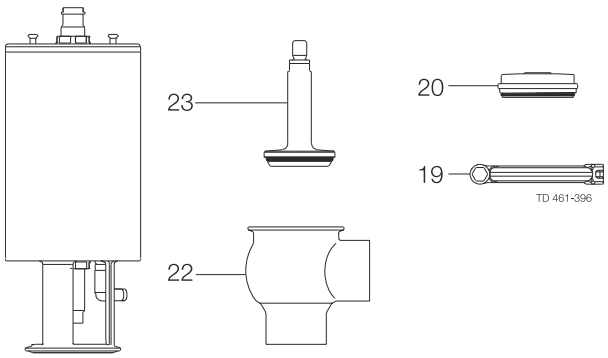
1. Complete actuator
2. 2 x clamps (19)
3. Bonnet (20)
4. Lower valve body (22)
5. Upper valve body (26)
6. Valve plug (27)
7. Valve seat (28)
8. Diaphragm (29)
9. Disc for diaphragm (30)
10. Upper spindle (31)



SSV - Long Stroke

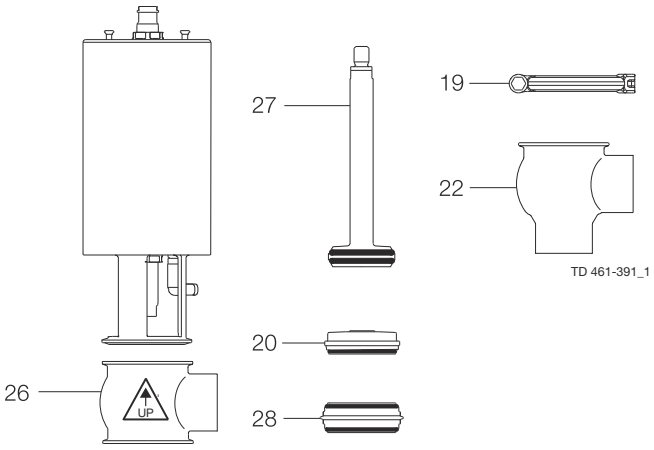
Shut-off valve

1. Complete actuator.
2. Clamp (19).
3. Bonnet (20).
4. Valve body (22).
5. Valve plug (23).



Change over valve:

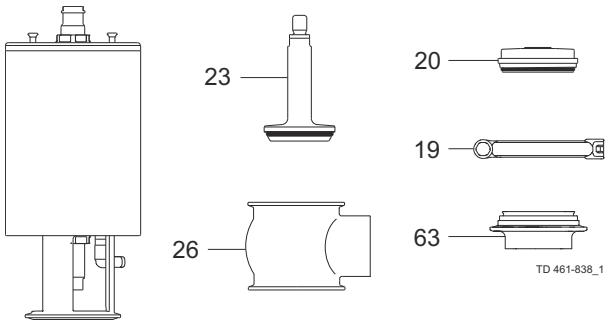
1. Complete actuator.
2. Bonnet (20).
3. 2 x clamps (19).
4. Valve plug (27).
5. Lower valve body (22).
6. Valve seat (28).
7. Upper valve body (26).



SSV - Tangential

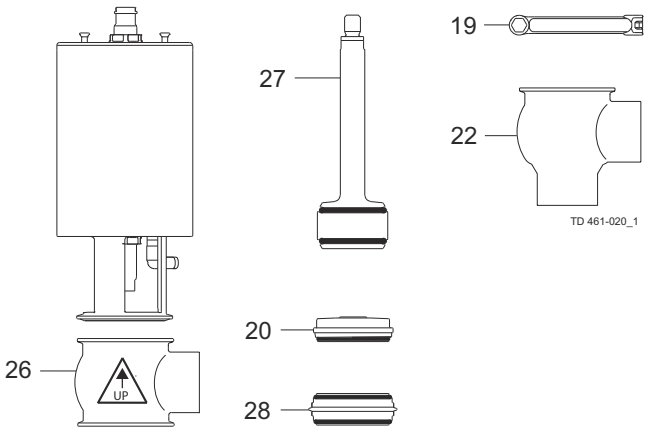
Shut-off valve:

1. Complete actuator.
2. 2 x Clamp (19).
3. Bonnet (20).
4. Valve plug (23).
5. Valve body (26).
6. Port seal element (63).



Change over valve:

1. Complete actuator.
2. 3 x clamp (19).
3. Bonnet (20).
4. 2 x upper valve body (26).
5. Valve plug (27).
6. Valve seat (28).
7. Port seal element (63).



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 87 thoroughly.

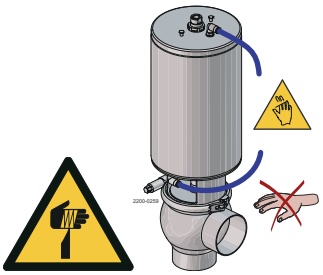
WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

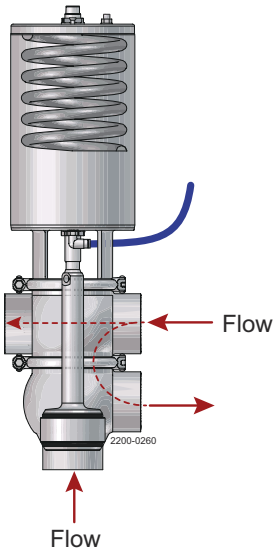
CAUTION

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.

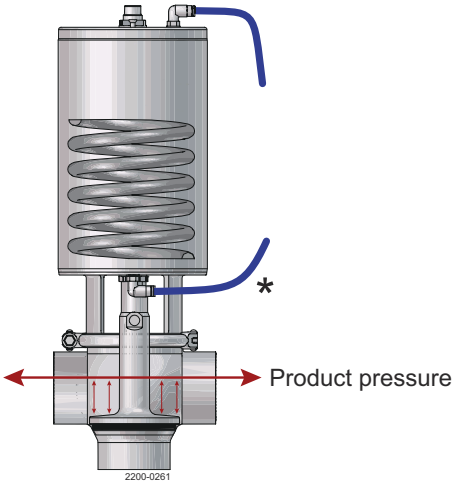
Shock in the actuator must **never** occur.



If support air is used: Pay special attention to shock in the actuator due to support air.

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

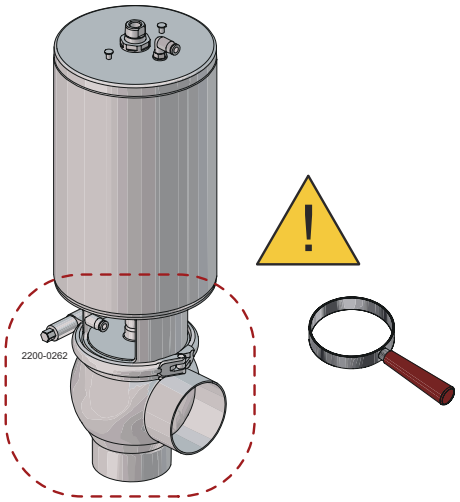
* = Careful if using support air on spring side and a high product pressure above the plug, as this can result in a high “hammer effect” which can damage the actuator. Use Alfa Laval part no. 9611995903, which ensures max. 3 bar (43.5 PSI) support air pressure. Alternatively remove the product pressure while activating the plug.



Avoid stressing the valve.

Pay special attention to:

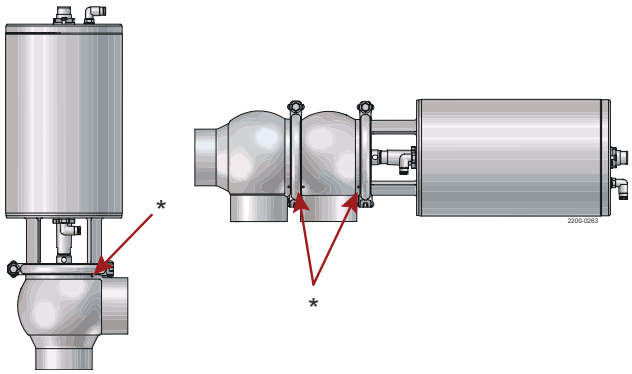
- Vibrations
- Thermal expansion of the pipelines
- Excessive welding
- Overloading of the pipelines



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-draining, when the valve is mounted horizontally

* = Leakage detection hole



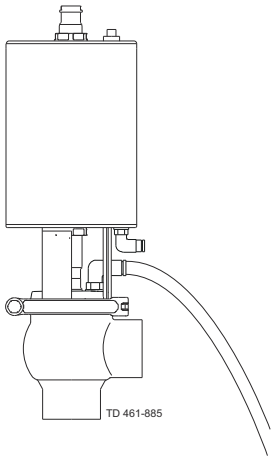
NOTE

Specific for SSV Aseptic

WARNING

Always check if the diaphragm is tight - it can be dangerous if it leaks steam/CIP.

Therefore, **always** mount the air fitting included in the box with the valve on the bonnet and mount hose to the drain accordingly.



To avoid accidents, the loose end of the hose must reach the drain!

4.3 Welding

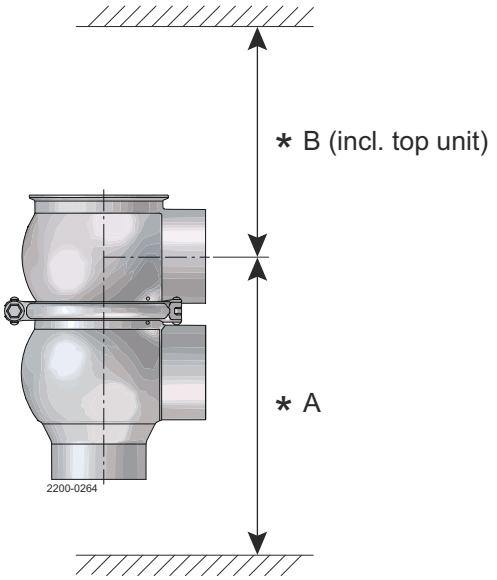
NOTE

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.

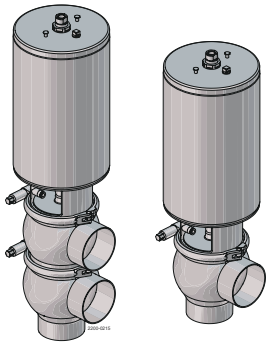
Valve size	A	B
DN25/25 mm (1")	*	630 mm (24.8")
DN40/38 mm (1½")	*	700 mm (27.6")
DN50/51 mm (2")	*	750 mm (29.5")
DN65/63.5 mm (2½")	*	740 mm (29.1")
DN80/76 mm (3")	*	800 mm (31.5")
DN100/101.6 mm (4")	*	790 mm (31.1")

* Depending on body combination and piping solution.



1

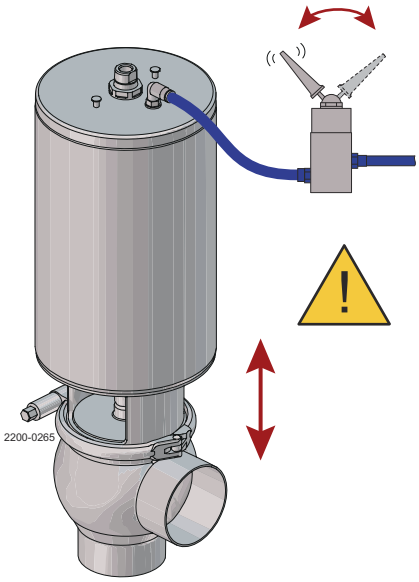
Assemble the valve (see *Valve Assembly, SSV Standard, Reverse and Direct Acting, Long Stroke and Tangential* on page 63 and *Valve Assembly, SSV Aseptic* on page 63).



2

Pre-use check:

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



5 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 87 thoroughly.

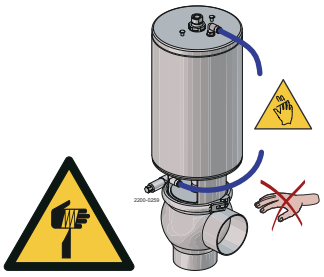
WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

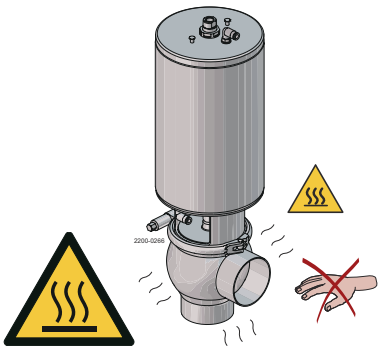
CAUTION

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



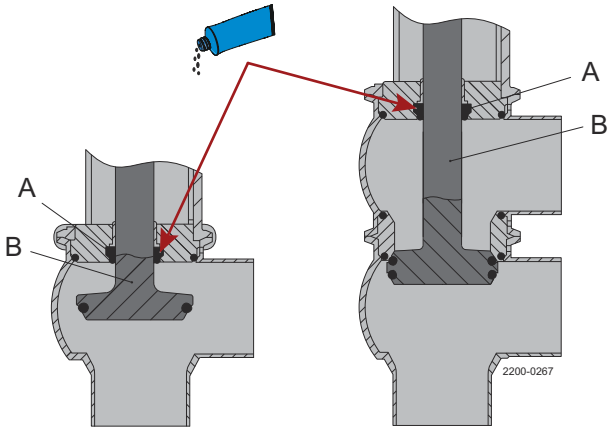
CAUTION

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



1 Lubrication of Valves:

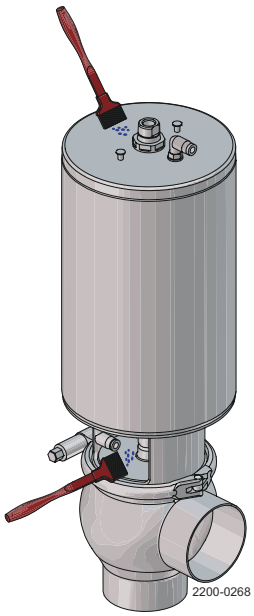
1. Ensure smooth movement between lip seal (A) and plug stem (B).
2. Lubricate the lip seal with Alfa Laval lubricant if necessary.



Shut-off valve Change-over valve

2 Lubrication of the actuator:

1. Ensure smooth movement of the actuator (the actuator is lubricated before delivery).
2. Lubricate all seals with Molykote Longterm 2 plus if necessary.



5.1 Troubleshooting

NOTE

Study the maintenance instructions carefully before replacing worn parts - see table in section *General Maintenance* on page 39.

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

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 17	• 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 17 and see table in section *General Installation* on page 28 • 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 see table in section *General Installation* on page 28 • 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

5.2 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.

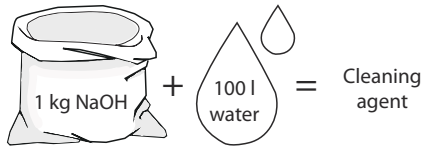
Always handle lye and acid with great care.

Examples of cleaning agents

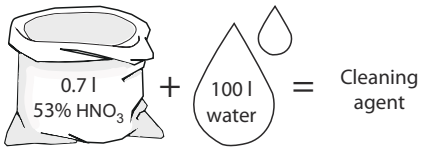
Use clean water free from chlorides

Metric System

1. 1% by weight NaOH at 70°C

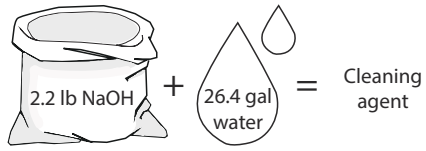


2. 0.5% by weight HNO_3 at 70°C

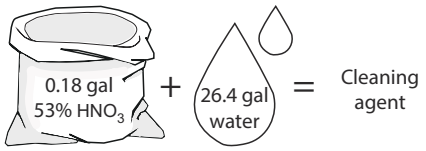


Imperial System

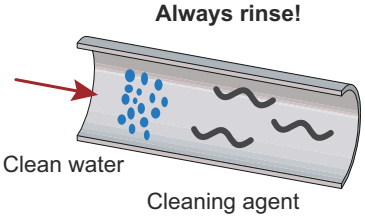
1. 1% by weight NaOH at 158°F



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.

5.2.1 Cleaning

> **NOTE**
>
> **Pay special attention to the warnings!**

Clean the plug and seats correctly.

Lift and lower valve plug momentarily!

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6 Maintenance

6.1 General Maintenance

NOTE

Always read the technical data thoroughly (see *Technical Data* on page 87).

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.

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

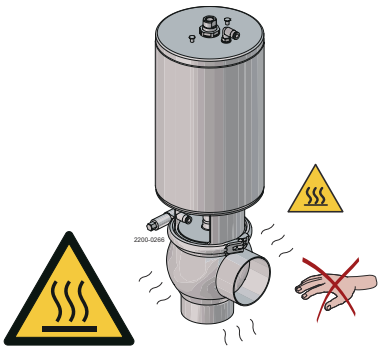
The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

CAUTION **Burn hazard!**

Never service the valve when it is hot.

Never service the valve with valve and pipelines under pressure.

Atmospheric pressure required!

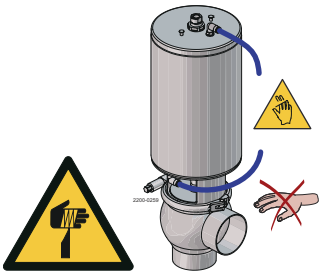


CAUTION **Cutting hazard!**

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.



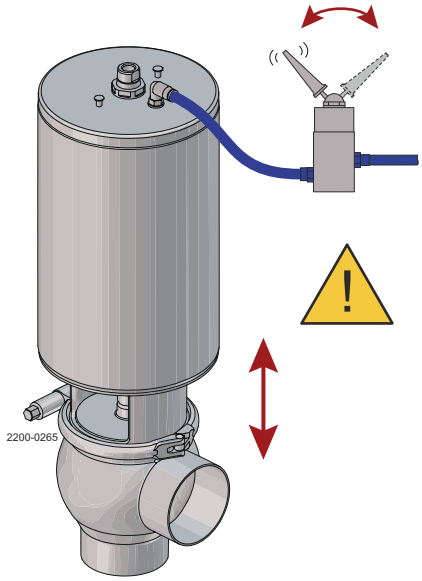
Below are some guidelines for maintenance and lubrication intervals.

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 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 **Replace after leakage**
Lubrication	**Before fitting:** Alfa Laval Silicon based Food-grade Lubricant or similar USDA H1 approved grease	**Before fitting:** Molykote Longterm 2 plus

1 **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, SSV Standard, Reverse and Direct Acting, Long Stroke and Tangential

NOTE

Handle scrap correctly — see *Recycling Information* on page 19.

NC = Normally closed.

NO = Normally open.

A/A = Air/air activated.

Always use Alfa Laval genuine spare parts.

Always keep spare rubber seals and lip seals in stock.

The service tool (item no. 8010014443) can be used for below dis- and assembly procedures hereby omitting use of compressed air.

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

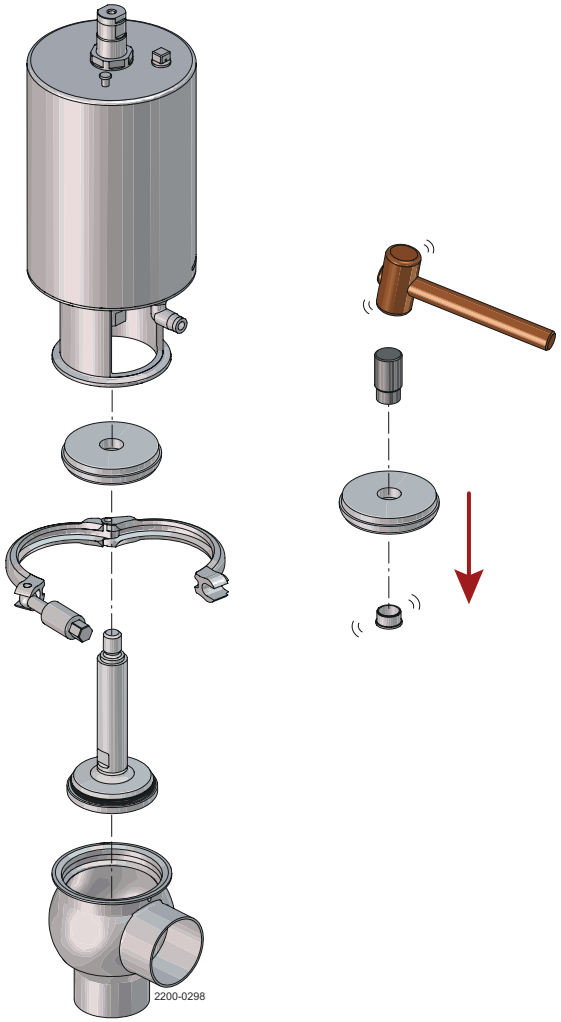
The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

SSV - Standard

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 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

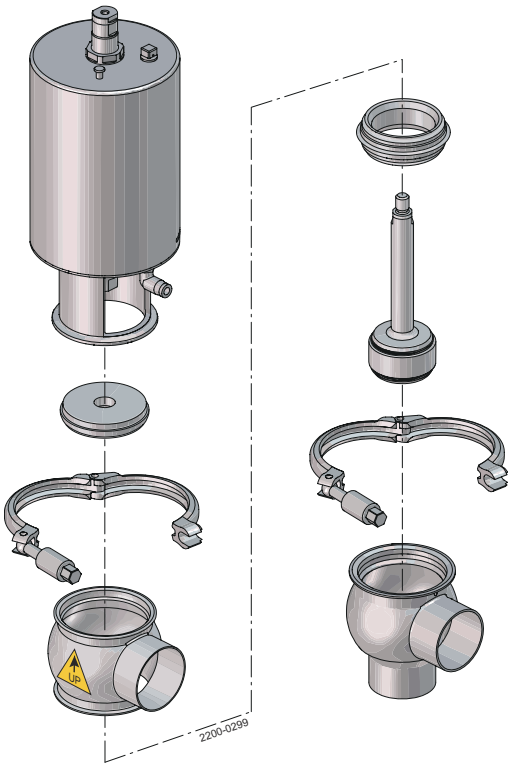
1. Supply compressed air to the actuator (only NC)
2. Loosen and remove clamp
3. Release compressed air (only NC)
4. Lift away the actuator
5. Unscrew and remove valve plug
6. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet)



Change-over 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 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Supply compressed air to the actuator (only NC)
2. Loosen and remove lower clamp
3. Release compressed air (only NC)
4. Lift away the actuator and upper valve body
5. Supply compressed air to the actuator (only NO)
6. Unscrew and remove valve plug
7. Release compressed air (only NO)
8. Remove seat and O-rings
9. Loosen and remove upper clamp
10. Remove upper valve body
11. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing for Shut-off valve)

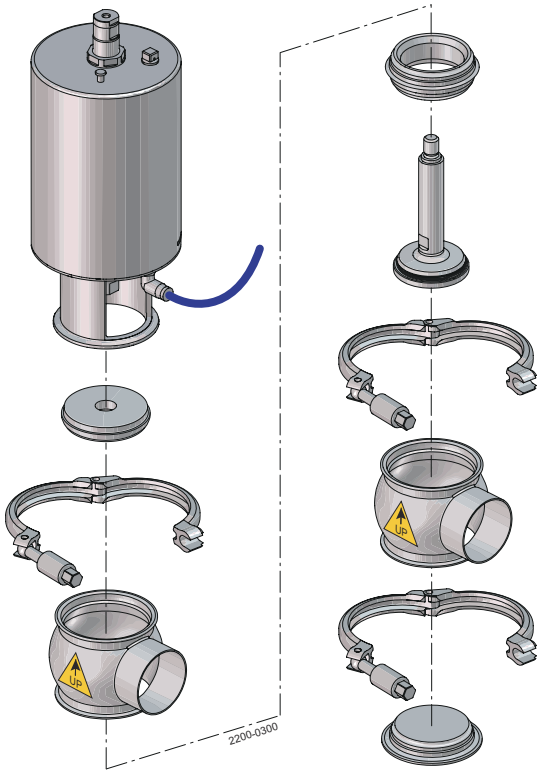


SSV - Reverse Acting

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 section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

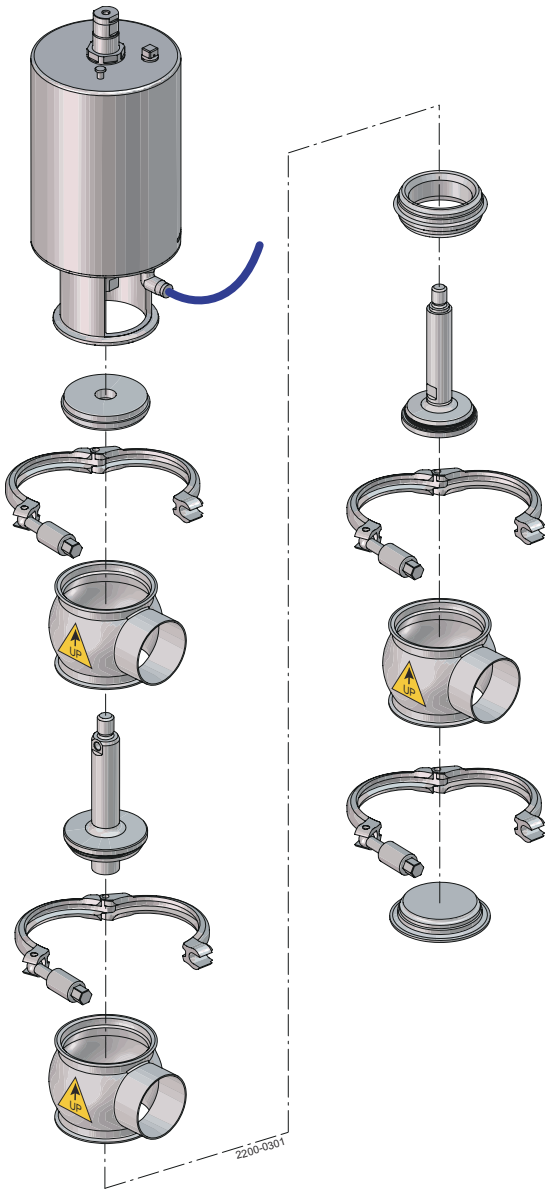
1. Loosen and remove lower clamp
2. Remove lower bonnet and O-ring from lower body
3. Loosen and remove middle clamp
4. Lift away the actuator and upper valve body
5. Supply compressed air to the actuator (only NC)
6. Unscrew and remove valve plug
7. Release compressed air (only NC)
8. Remove seat and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



Change-over valve - Reverse Acting:

> **NOTE**
>
> Be careful not to damage the bushing.
>
> Pay special attention to the warnings!
>
> For plug seal replacement please see section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Loosen and remove lower clamp
2. Remove lower bonnet and O-ring
3. Loosen and remove clamp between lower and middle valve body
4. Lift away the actuator and upper + middle valve body
5. Supply compressed air to the actuator (only NC)
6. Unscrew and remove lower valve plug
7. Release compressed air (only NC)
8. Remove lower seat and O-rings
9. Supply compressed air to the actuator (only NO)
10. Loosen and remove clamp between middle and upper valve body
11. Remove middle valve body and upper seat with O-rings
12. Release compressed air (only NO)
13. Loosen and remove upper clamp
14. Remove upper valve body
15. Unscrew and remove upper valve plug
16. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing for Shut-off valve)

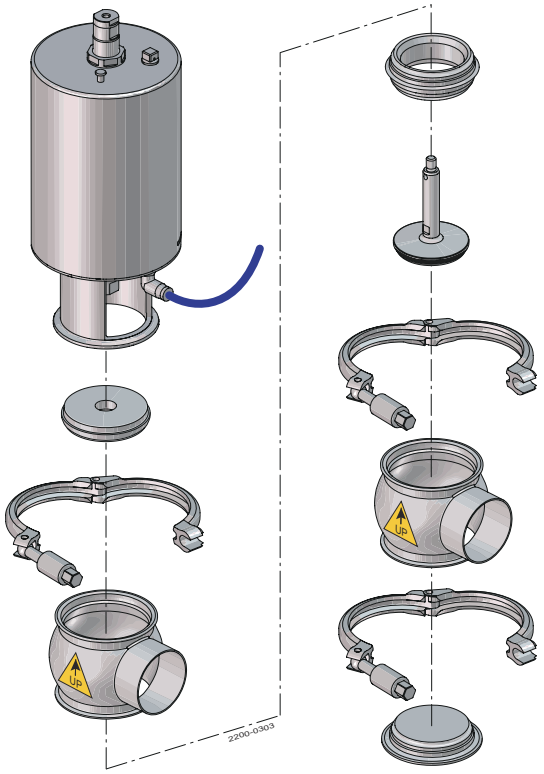


SSV - Direct Acting

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 section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Loosen and remove lower clamp
2. Remove lower bonnet and O-ring from lower valve body
3. Supply compressed air to the actuator (only NC)
4. Loosen and remove upper clamp
5. Release compressed air (only NC)
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)

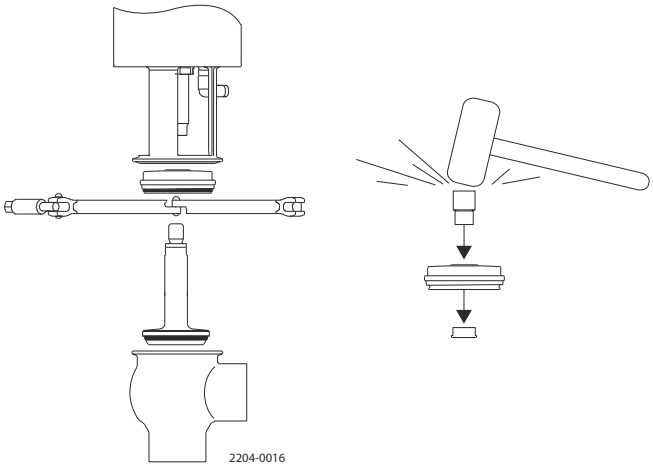


SSV - Long Stroke

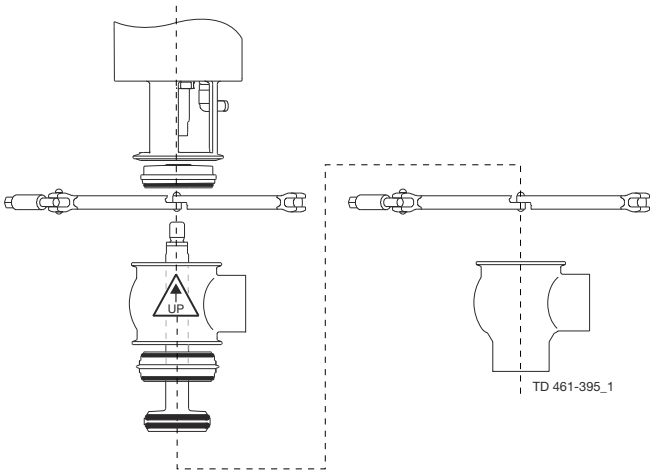
Shut-off valve - Long Stroke:

> **NOTE**
>
> Be careful not to damage the bushing.
>
> Pay special attention to the warnings!
>
> For plug seal replacement please see section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Supply compressed air to the actuator (only NC).
2. Loosen and remove clamp.
3. Release compressed air (only NC).
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).



Change-over valve - Long Stroke:

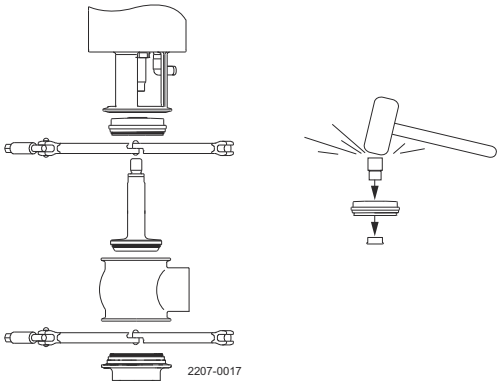


> **NOTE**
>
> Be careful not to damage the bushing.
>
> Pay special attention to the warnings!
>
> For plug seal replacement please see section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Supply compressed air to the actuator (only NC).
2. Loosen and remove lower clamp.
3. Release compressed air (only NC).
4. Lift away the actuator and upper valve body.
5. Supply compressed air to the actuator (only NO).
6. Unscrew and remove valve plug.
7. Release compressed air (only NO).
8. Remove seat and O-rings.
9. Loosen and remove upper clamp.
10. Remove upper valve body.
11. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing, step 1a).

SSV - Tangential

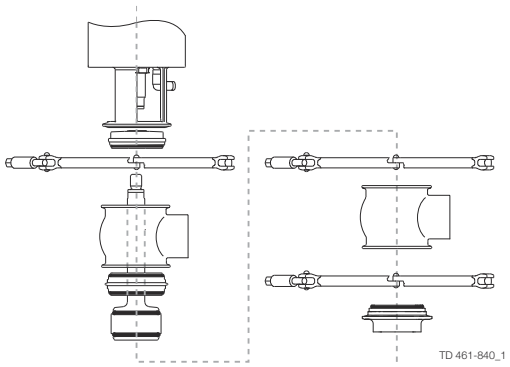
Shut-off valve - Tangential:



> **NOTE**
>
> Be careful not to damage the bushing.
>
> Pay special attention to the warnings!
>
> For plug seal replacement please see section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Supply compressed air to the actuator (only NC).
2. Loosen and remove clamp.
3. Release compressed air (only NC).
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).
7. Loosen and remove lower clamp.
8. Remove valve body.
9. Remove O-ring in port seal element.

Change-over valve - Tangential:



NOTE

Be careful not to damage the bushing.

Pay special attention to the warnings!

For plug seal replacement please see section *Plug Seal Replacement (Elastomer)* on page 58 and *Plug Seat Ring Replacement (TR2 and TR3)* on page 62.

1. Supply compressed air to the actuator (only NC).
2. Loosen and remove middle clamp.
3. Release compressed air (only NC).
4. Lift away the actuator and upper valve body.
5. Supply compressed air to the actuator (only NO).
6. Unscrew and remove valve plug.
7. Release compressed air (only NO).
8. Remove seat and O-rings.
9. Loosen and remove upper clamp.
10. Remove upper valve body.
11. Remove O-ring, lip seal and bushing in bonnet. (Use bushing tool and rubber mallet. See drawing, step 1a).
12. Loosen and remove lower clamp.
13. Remove valve body.
14. Remove O-ring in port seal element.

6.3 Dismantling the Valve, SSV Aseptic

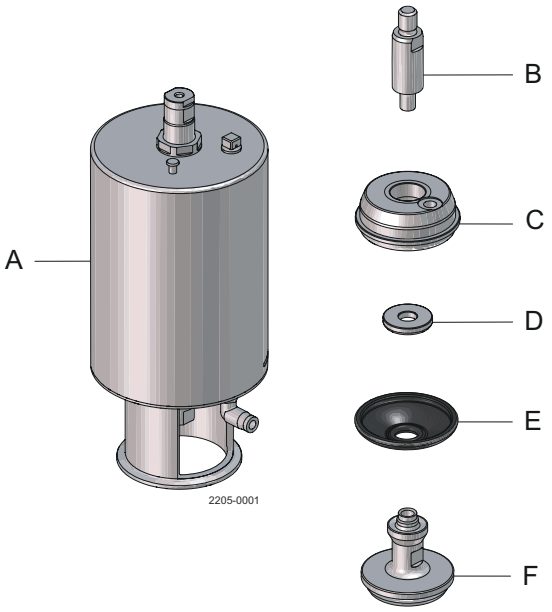
6.3.1 Dismantling Shut-off Valve

WARNING

Do **NOT** attempt to disassemble the actuator due to spring under load danger!

Do **NOT** attempt to cut the actuator open due to spring under load danger!

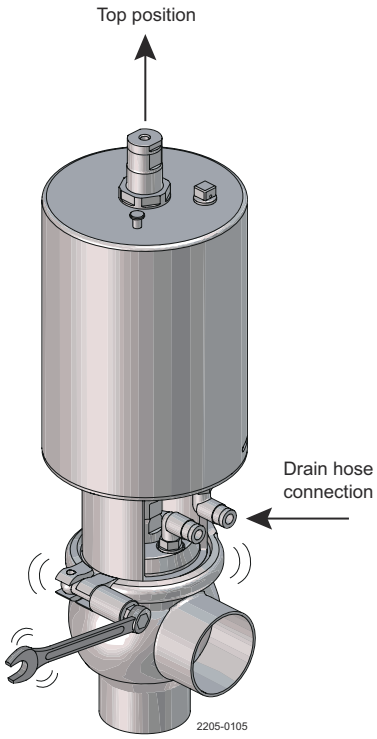
A = Actuator
B = Spindel
C = Bonnet
D = Disc
E = Diaphragm
F = Plug



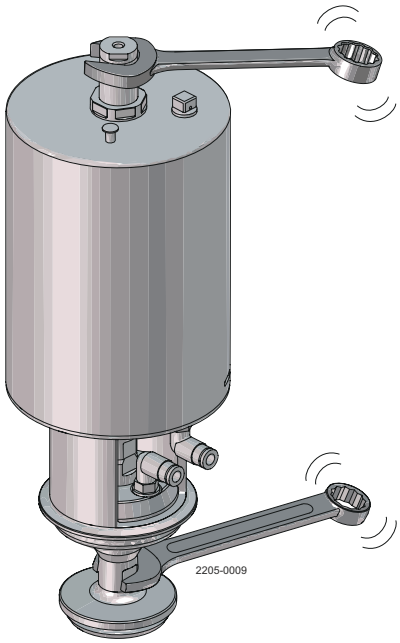
1 Remove the drain hose from the leakage detection port in the bonnet.

Ensure that the valve is emptied and depressurized.

While the plug is in its upper position, loosen the clamp with a 10 mm spanner.

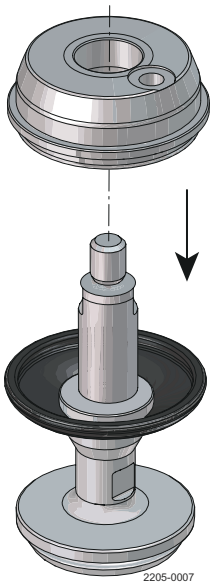


2 Loosen the plug from the actuator by using two 17 mm spanners.



3 Remove the bonnet.

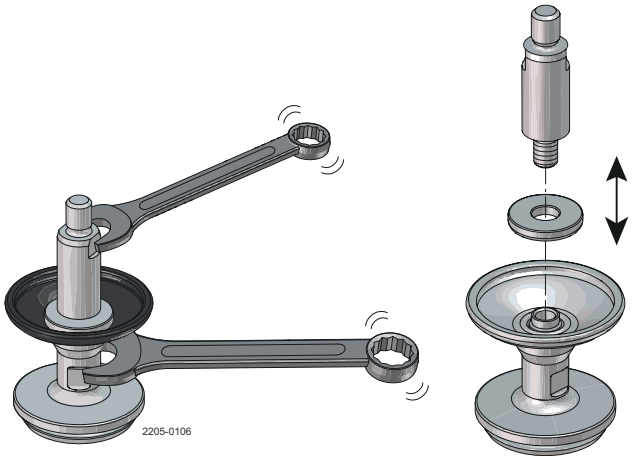
If necessary the bushing (24) in the bonnet can be replaced.



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

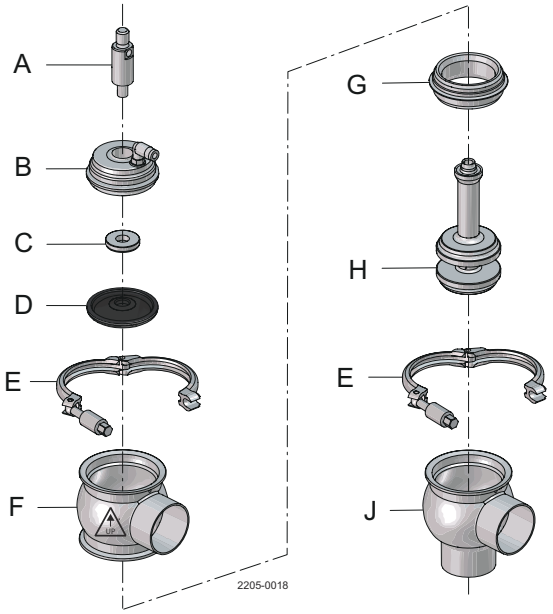
Remove the diaphragm and plug seal.

Clean all parts intended for reuse.



6.3.2 Dismantling Change-over Valve

A = Spindle
B = Bonnet
C = Disc
D = Diaphragm
E = Clamp
F = Upper valve body
G = Seat
H = Change-over plug
J = Lower valve body

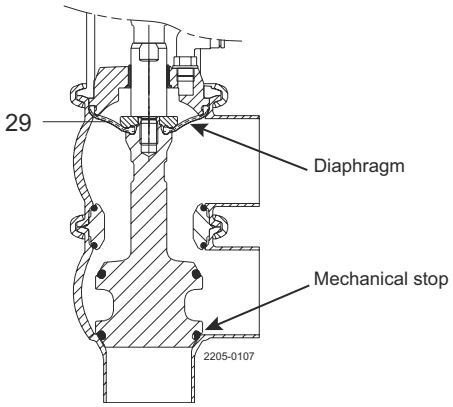


CORRECT assembly/disassembly of Unique SSV Aseptic change-over valve.

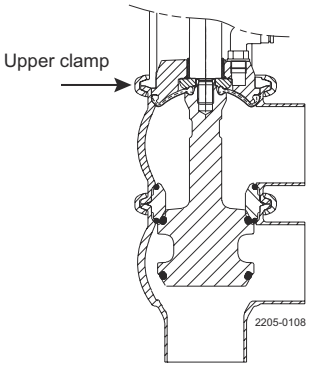
⚠ CAUTION

The mechanical stop is in lower body.

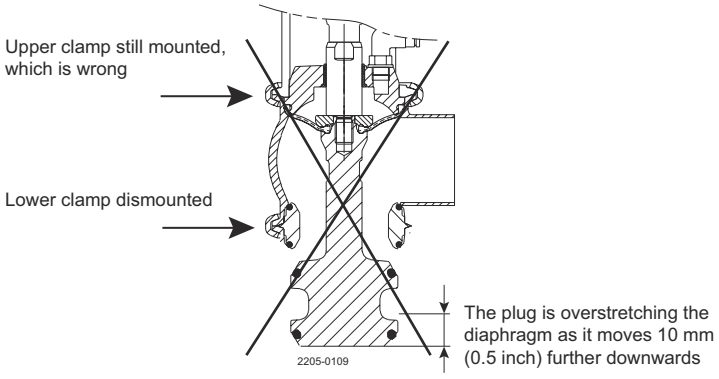
To avoid overstreching the diaphragm the lower body clamp must not be loosened before the upper body clamp.



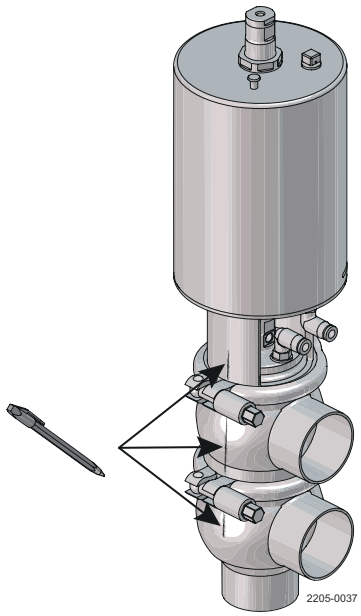
Place the plug in upper position and loosen the upper clamp.



INCORRECT assembly/disassembly of Unique SSV Aseptic change-over valve.



1. For an easier reassembly it is advised to mark the position of the actuator, upper and lower valve body as depicted.



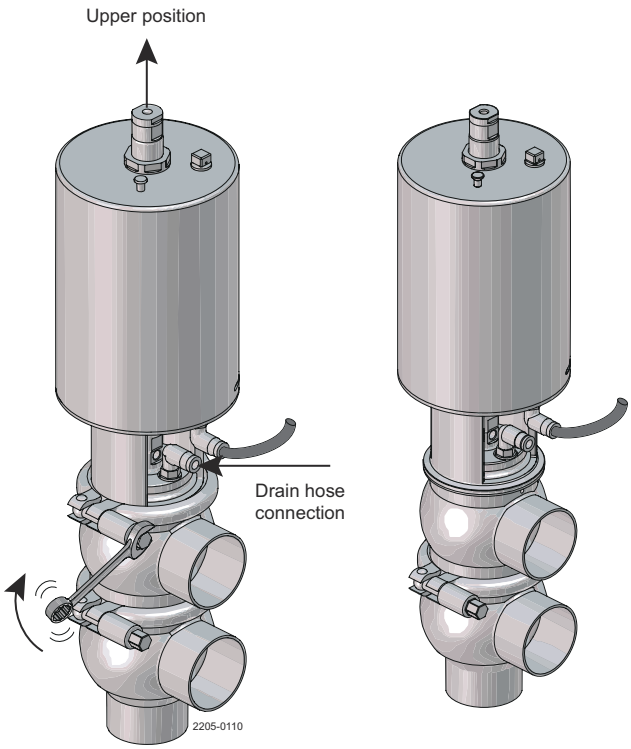
2 Remove the drain hose from the leakage detection port in the bonnet.

Ensure that the valve is emptied and depressurized.

While the plug is in its upper position, loosen the upper clamp with a 10 mm spanner.

NOTE

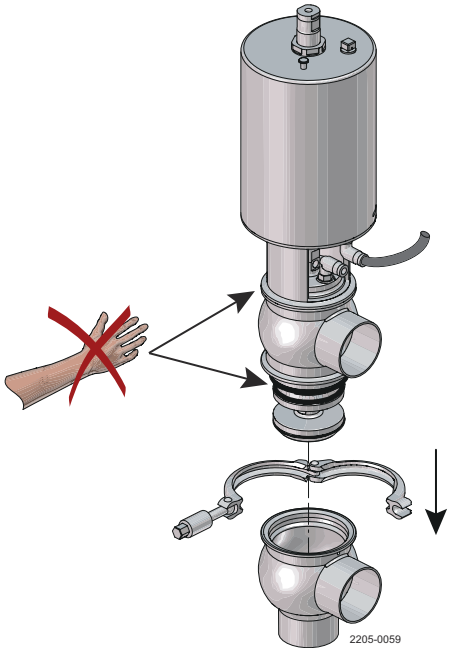
Ensure correct plug position before loosening the clamps. An incorrect position will lead to damage of the diaphragm from overstreching.



3 Dismount lower clamp and lower valve body.

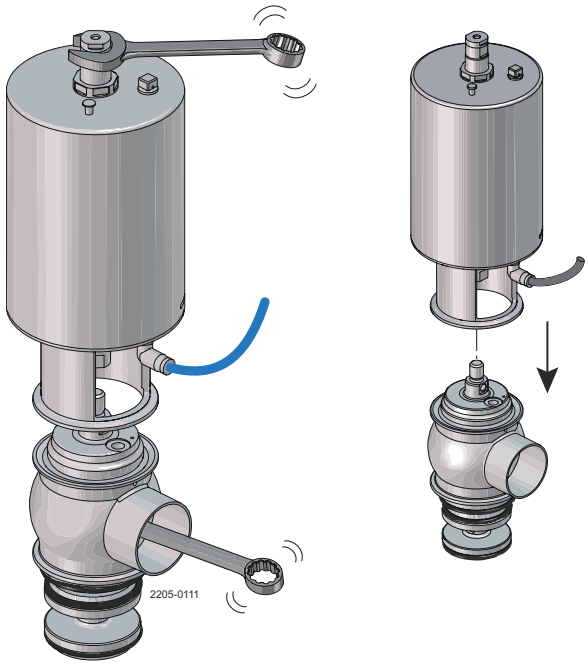
DANGER

Finger crushing at “bonnet” and “seat ring”.

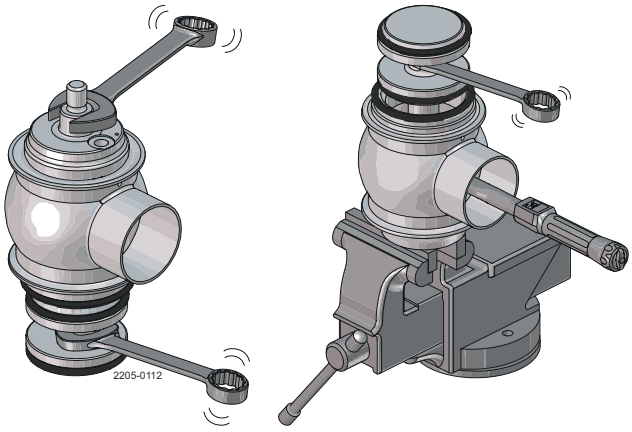


4 Move the plug to its lower position.

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

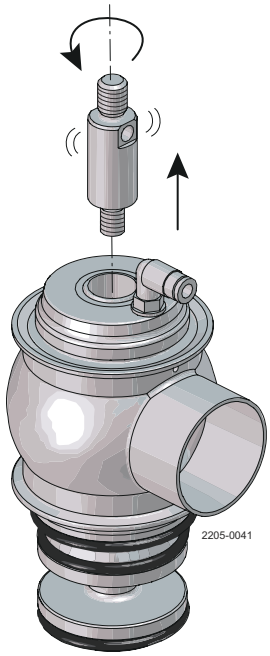


5 Loosen the plug from the spindle by using two 17 mm spanners.

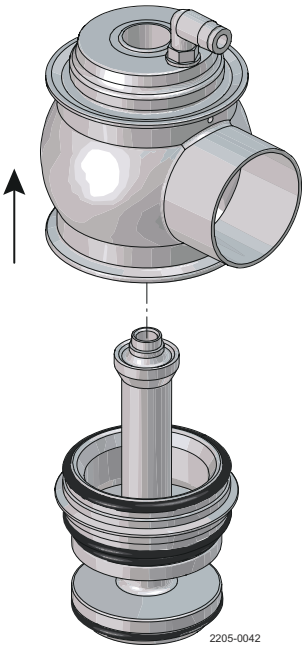


6 Dismount the spindle form the plug.

> **NOTE**
>
> No need for removal of the leakage detection port in the bonnet.

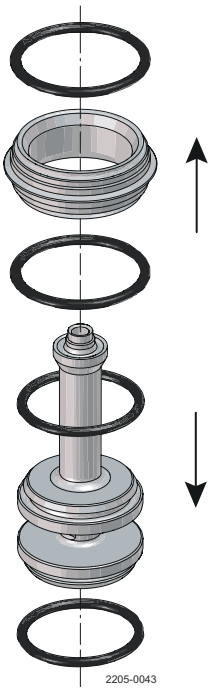


7 Dismount upper valve body from the plug/ seat.

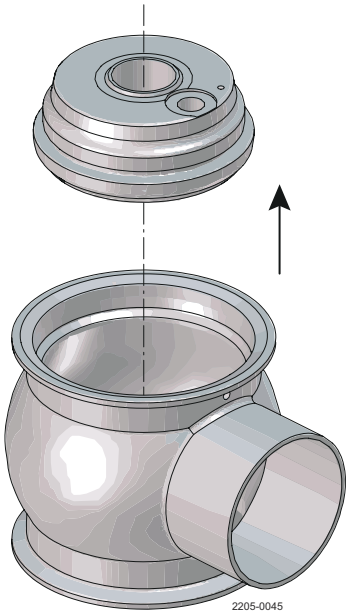


8 Remove all bonnet, seat and plug seals.

Clean all parts intended for reuse.



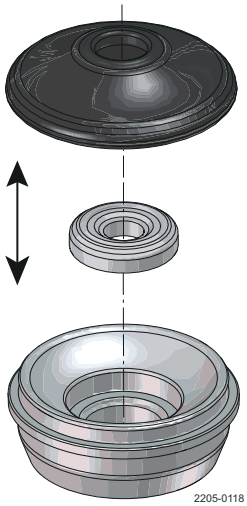
9 Dismount bonnet and diaphragm.



10 Remove the diaphragm.

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

Clean all parts intended for reuse.



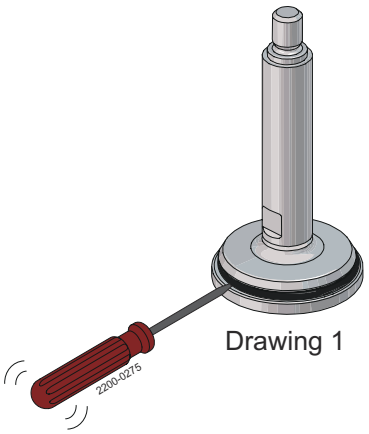
6.4 Plug Seal Replacement (Elastomer)

6.4.1 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

6.4.2 Pre-mounting of plug seal

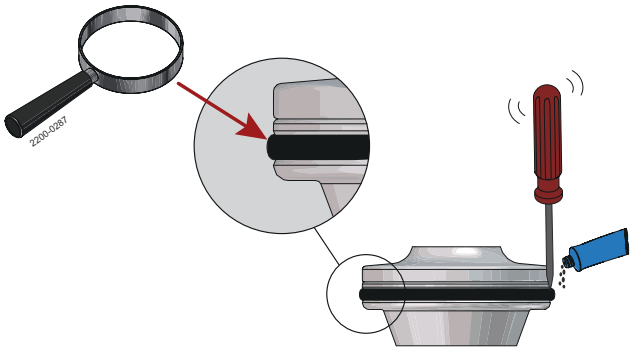
1. Grease the new plug seal with Alfa Laval Silicone based Food-grade Lubricant, which is included in the service kit.

   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.

6.4.3 Mounting plug seal by hand

1

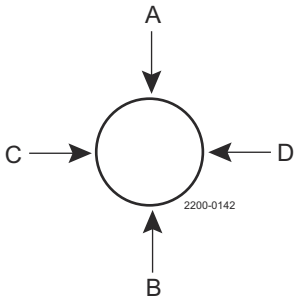
Check the plug seal is premounted as described in the section *Pre-mounting of plug seal* on page 58.

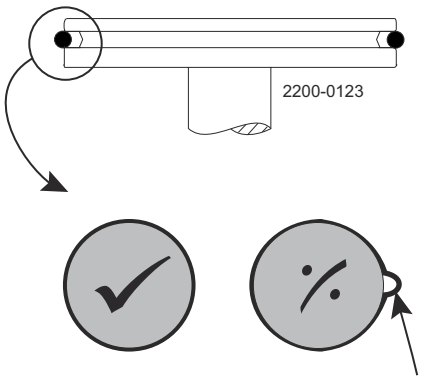
To ensure correct mounting, press with your thumb on the plug seal, which must be done approximately 10 times and always with opposite pressure points, from A to B and from C to D.

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°.





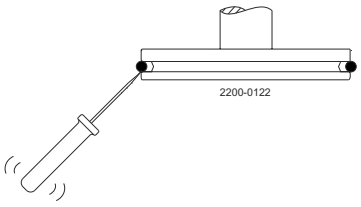
2

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.

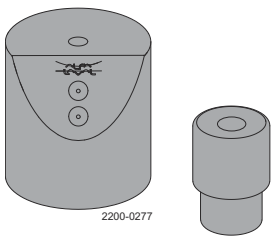
Be careful not to make marks on the surface of the plug and plug seal.



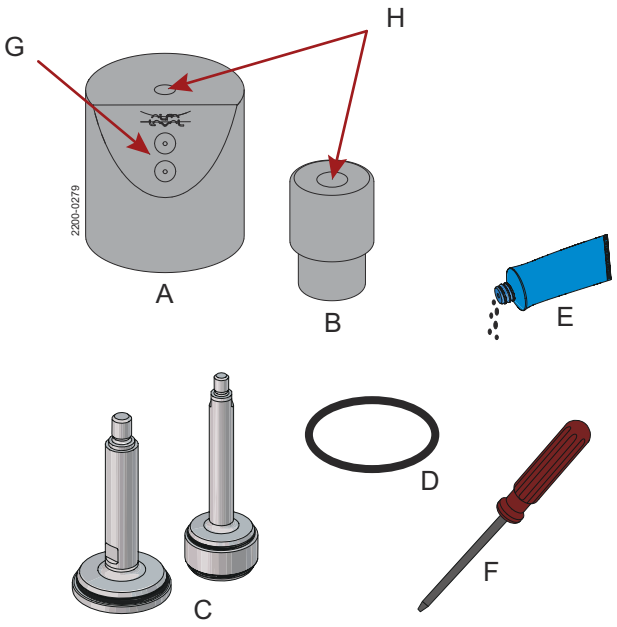
NOTE

It is important to place the screwdriver underneath the plug.

6.4.4 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



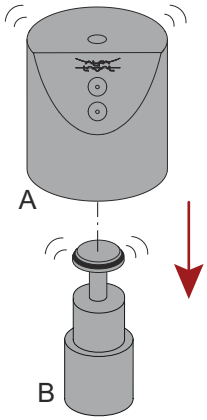
1

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).

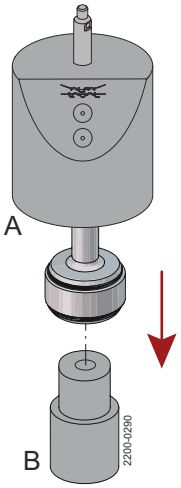
When using a “change-over plug” the Ø20 spindle must also be fitted in “part A” and “part B” (see drawing 2).

When using a “reverse acting plug” the Ø20 spindle must only be fitted in “part A” (see drawing 2).

When using a “standard shut-off plug” the Ø20 spindle is only fitted in “part B” (see drawing 1).



Drawing 1



Drawing 2

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).

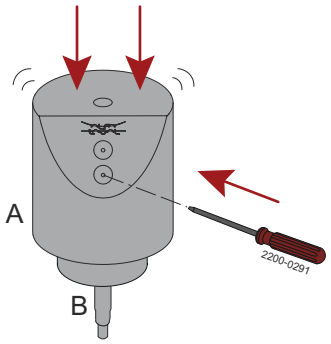
“Part B” therefore has to be turned so it matches the plug size diameter.

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”.



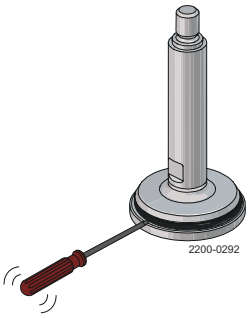
3

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.



6.5 Plug Seat Ring Replacement (TR2 and TR3)

NOTE

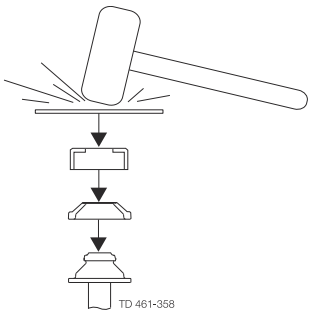
Use the mounting tool for TR2 and TR3- see spare part.

1. Place the plug element on a firm support.

2. Using a utility knife, partially and *CAREFULLY* cut through the upper ring portion of the TR2 plug avoiding contact with stainless steel stem.For TR3 use a finetoothed hacksaw.

3. Force apart both cut ends of the plug for removal from stem.

4. For TR2 and TR3 plugs are installed by applying uniform pressure on all sides. (Pressure can be applied by using the seat assembly tool).



5. Using a piece of metal and a rubber mallet, place a precise tab to make the TR2 plug snap on to the stem.

   Reverse the tool and tab again to secure proper fit.

6. Examine seat assembly to be sure the TR2 and TR3 plug is properly mounted, holding the seat assembly in one hand - rotate the TR2 and TR3 plug. (For proper CIP cleaning the TR2 and TR3 plug should turn freely on the stem).

6.6 Valve Assembly, SSV Standard, Reverse and Direct Acting, Long Stroke and Tangential

Reverse order of *Dismantling the Valve, SSV Standard, Reverse and Direct Acting, Long Stroke and Tangential* on page 42.

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

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

- Change-over plug tighten torque = **30 Nm (22 lbf - ft)**
- 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 - torque for the clamps is 10-12 Nm (8-9 lbf - ft).

6.7 Valve Assembly, SSV Aseptic

6.7.1 Assembly of shut-off valve

1

Before mounting all parts must be cleaned.

A = Actuator

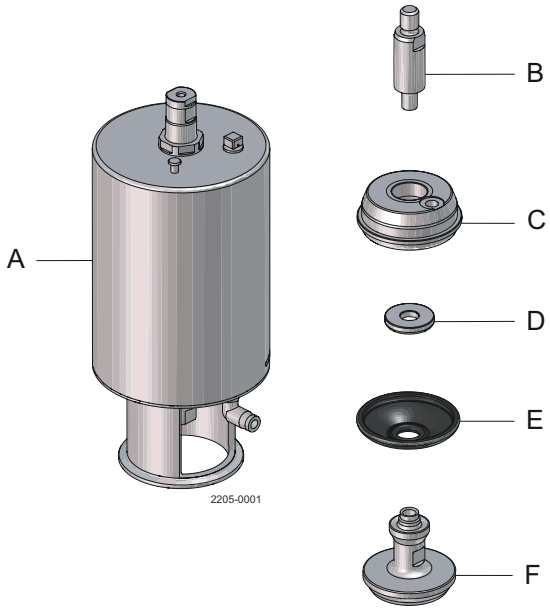
B = Spindle

C = Bonnet

D = Disc

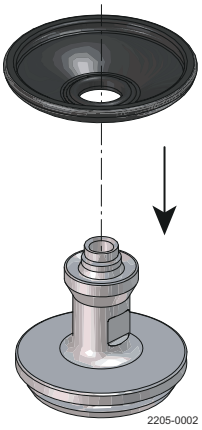
E = Diaphragm

F = Plug



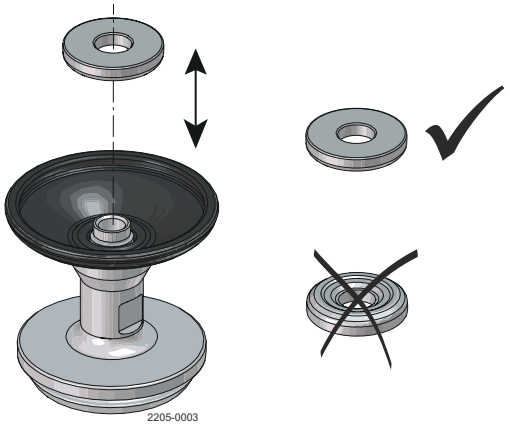
2

Mount a new diaphragm.



3 Fit the face with curvature of the disc towards the diaphragm.

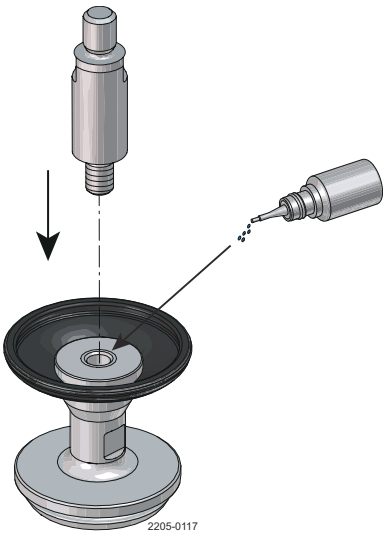
It is important that the face with curvature have contact with the diaphragm.



4 Mount spindle.

Apply a few droplets of Loctite 243 to the internal thread of the plug at approximately 2/3 from the bottom.

Be careful not to use excessive amounts and/or spill on other surfaces than the thread.

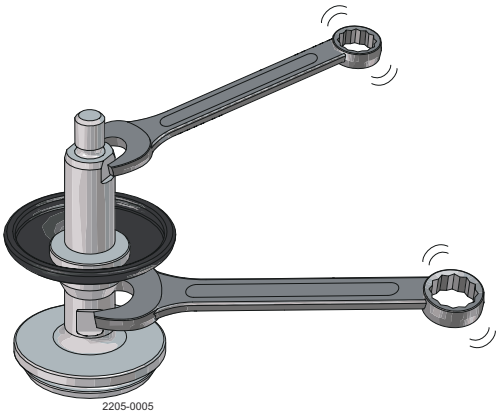


5

Tighten spindle and plug with:

- DN50 - DN100 (2" - 4") with Torque = 33 Nm (25 lbf-ft)
- DN25 - DN40 (1" - 1.5") with Torque = 17 Nm (13 lbf-ft)

Use two 17 mm spanners.



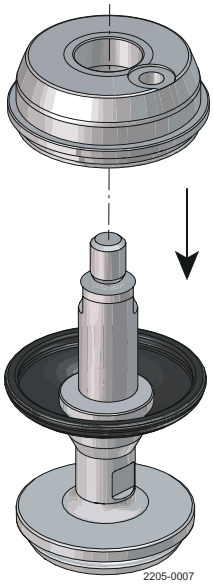
6 For easier mounting of the diaphragm to the bonnet, we recommend to apply water to the groove as a lubricant before mounting the diaphragm

7 Mount the fitting for leakage in the bonnet.

Fit the diaphragm to the bonnet.

Best mounted by hand and ensure not to scratch or by other means damage the diaphragm.

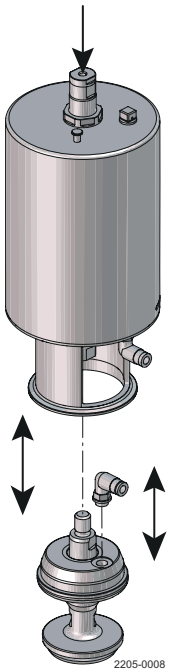
Before continuing to next step, ensure the diaphragme is installed evenly into the groove on the bonnet.



8

Ensure the actuator stem is in its lower position.

Mount the plug assembly onto the actuator stem.

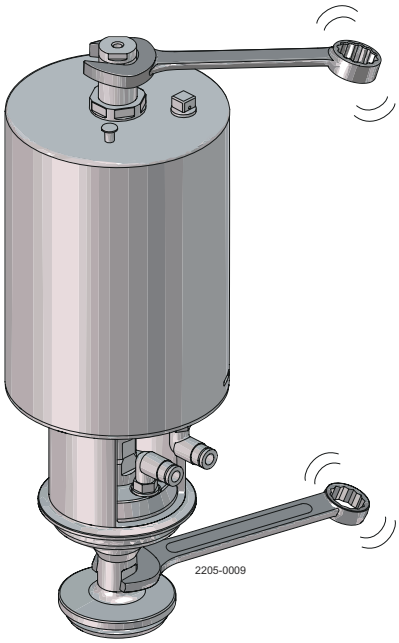


9

Tighten plug and actuator with:

- DN50 - DN100 (2" - 4") with Torque = 33 Nm (25 lbf-ft)
- DN25 - DN40 (1" - 1.5") with Torque = 17 Nm (13 lbf-ft)

Use two 17 mm spanners.

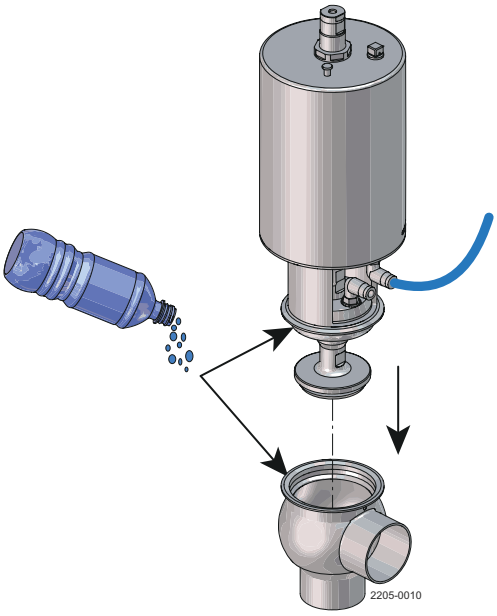


10

Before mounting bonnet/diaphragm into valve body use grease (Alfa Laval Silicone based Food-grade Lubricant) on sealing surface. This will reduce friction when diaphragm is pressed into the valve body.

Make sure that the actuator stem is in lower position, as this makes it easiest to fit diaphragm into the valve body.

- Mount actuator type “NC” without air pressure
- Mount actuator type “NO” with air pressure



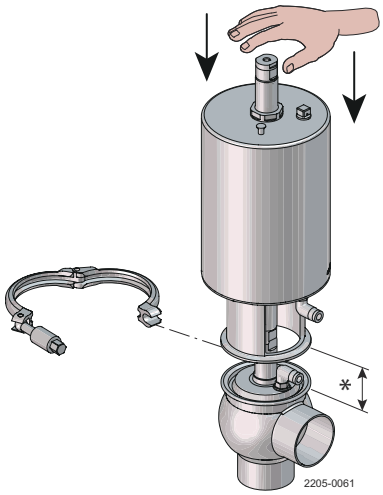
11

Ensure that the actuator stem is still in lower position.

Then press hard on top of the actuator to fit the bonnet/diaphragm in the valve body.

There is a distance (*) between yoke and valve body, but diaphragm is now placed correctly into the valve body.

> **NOTE**
>
> There is a “big” gap, but diaphragm is now placed into the valve body.



12

Now move the actuator stem in top position and press **HARD** on top of the actuator to reduce the distance (*) to approx. 1 mm (0.04 inch).

13

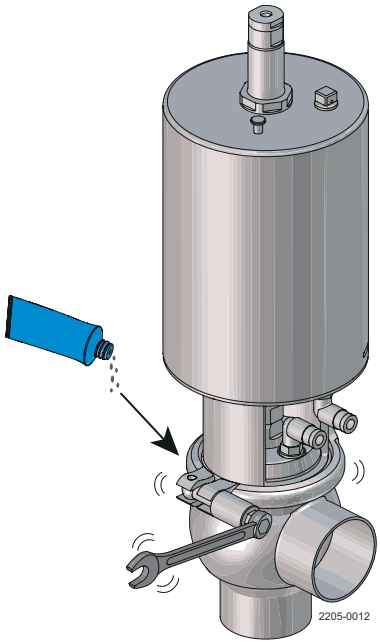
Mount the clamp (make sure it is located correctly).

Tighten with a 10 mm spanner.

Torque = 10-12 Nm (8–9 lbf-ft).

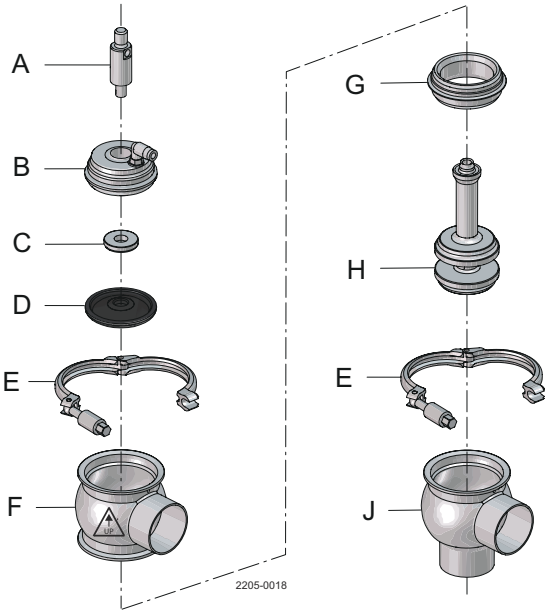
Apply a grease intended for use on threads.

Connect a drain hose to the leakage detection port.



6.7.2 Assembly of change-over valve

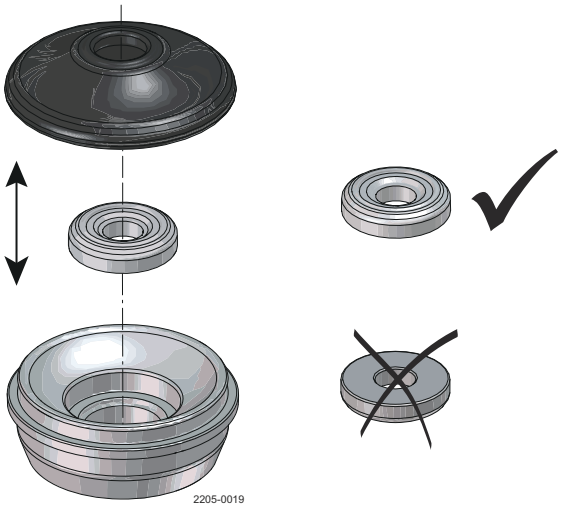
A = Spindle
B = Bonnet
C = Disc
D = Diaphragm
E = Clamp
F = Upper valve body
G = Seat
H = Change-over plug
J = Lower valve body



1. For easier mounting of the diaphragm to the bonnet, we recommend to apply water to the groove as a lubricant before mounting the diaphragm.

2. Fit the flat face of the disc into the bonnet.

   It is important that the face with curvature have contact with the diaphragm.

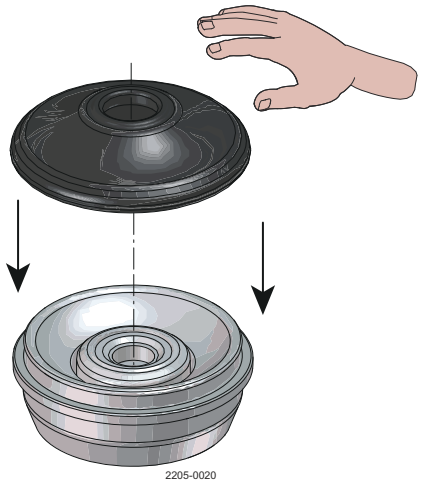


3

Fit the diaphragm to the bonnet.

Best mounted by hand and ensure not to scratch or otherwise damage the diaphragm.

Before continuing to next step, ensure the diaphragm is installed evenly into the groove on the bonnet.



4

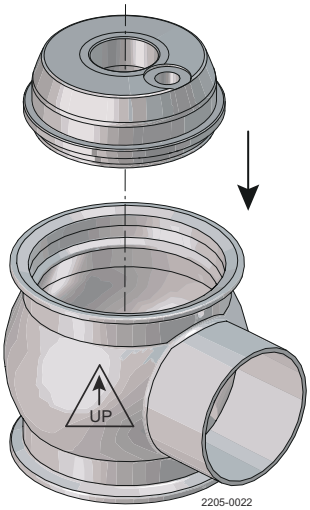
We strongly recommend to use grease (Alfa Laval Silicone based Food-grade Lubricant) on the edges of the upper valve body to ensure that the diaphragm is mounted correctly.

The sealing surface must be clean to avoid leakage.

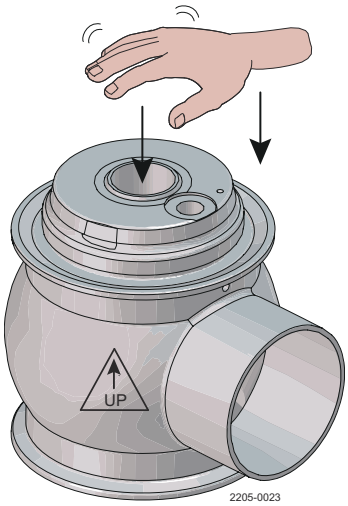
5

Mount bonnet/diaphragm/disc assembly into the upper valve body.

Please take note of correct orientation indicated by a label on the valve body.

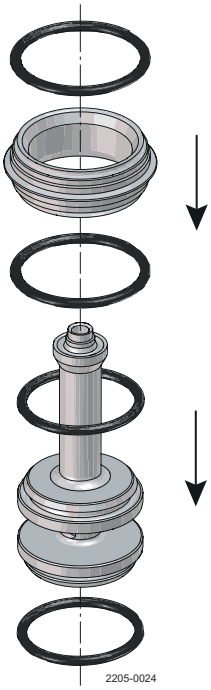


6 Apply pressure onto the bonnet until it properly seats into the upper valve body



7 Mount the corresponding O-rings into the grooves on both seat and plughead

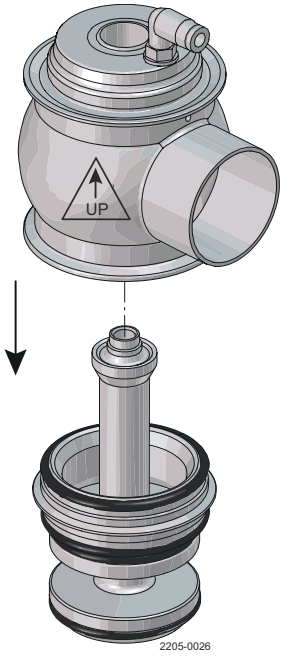
Slide the seat onto the plug.



8 Apply a few droplets of Loctite 243 to the internal thread of the plug at approximately 2/3 from the bottom

Be careful not to use excessive amounts and/or spill on other surfaces than the thread.

9 Install upper valve body assembly onto seat/ plug.

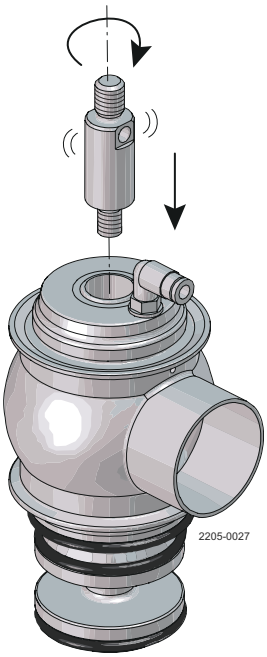


10

Assemble spindle and plug.

Be sure that the disc is placed correctly on the plug while screwing spindle and plug together.

Remember to mount the leakage fitting in the bonnet!



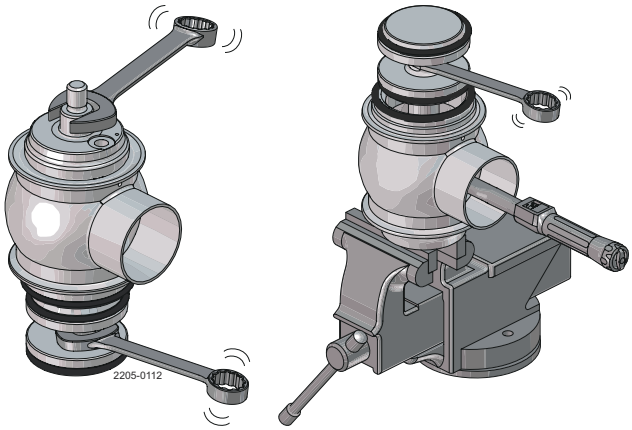
11

Tighten the spindle and plug.

Use two 17 mm spanners.

It is easiest to use a vice.

- Tighten valve size DN50/(2") - DN100/(4") with Torque = 33 Nm/(25 lbf-ft)
- Tighten valve size DN25/(1") - DN40/(1½") with Torque = 17 Nm/(13 lbf-ft)



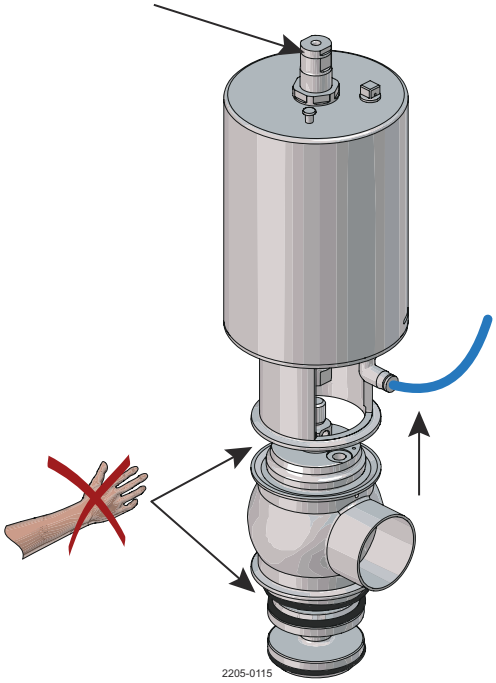
12 Ensure the stem of the actuator is in its lower position.

Air is only needed on NO actuators.

Screw the valve body/plug and actuator stem together.

DANGER

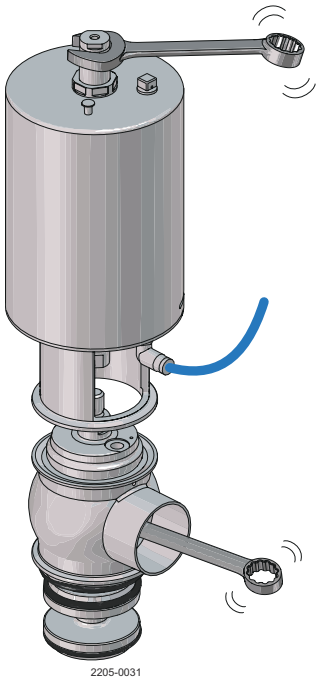
Finger crushing at “bonnet” and “upper valve body”.



13 Tighten the actuator stem and plug.

Use two 17 mm spanners.

- Tighten valve size DN50 - DN100 (2"- 4") with Torque = 33 Nm/(25 lbf-ft)
- Tighten valve size DN25 - DN40 (1"- 1.5") with Torque = 17 Nm/(13 lbf-ft)



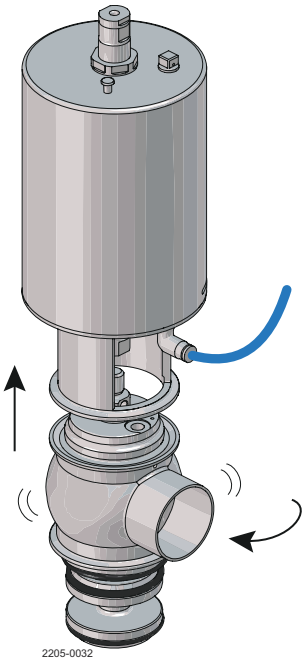
14

Align upper valve body and actuator if necessary.

This is done by rotating the valve body clockwise.

NOTE

Only the valve body can rotate as diaphragm is locked.

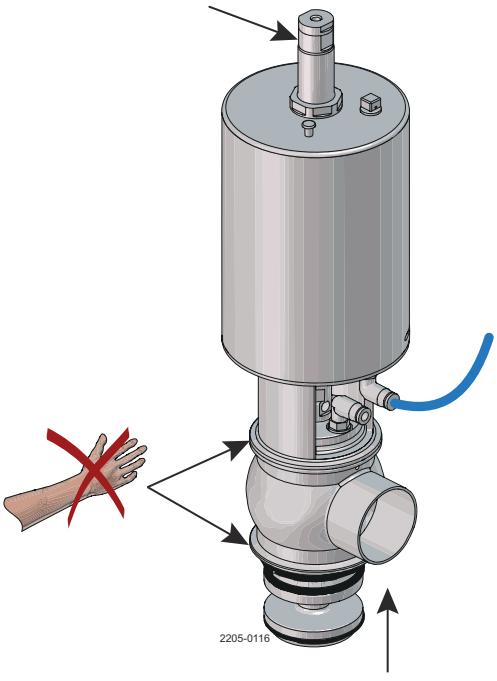


15

Ensure that the actuator stem is in upper position.

DANGER

Finger crushing at “bonnet” and “upper valve body”.

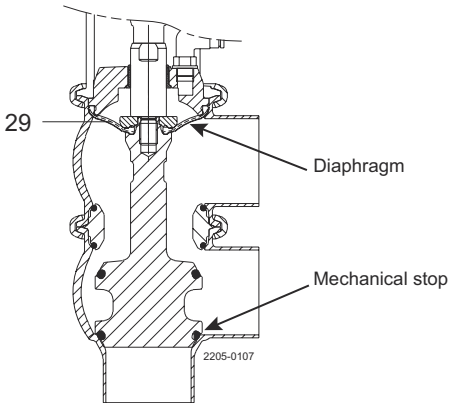


16 CORRECT assembly/disassembly of Unique SSV Aseptic change-over valve.

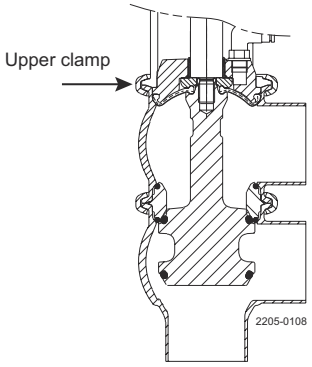
CAUTION

The mechanical stop is in lower body.

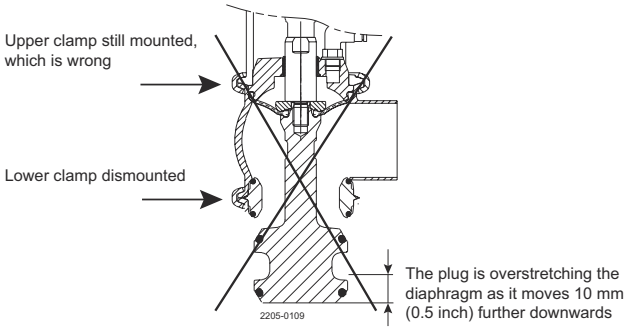
To avoid overstreching the diaphragm the lower body clamp must not be loosened before the upper body clamp.



a) Place the plug in upper position and loosen the upper clamp.



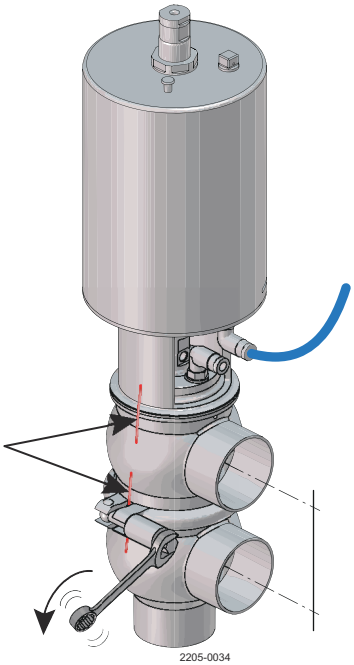
17 INCORRECT assembly/disassembly of Unique SSV Aseptic change-over valve.



18 Mount lower valve body and lower clamp.

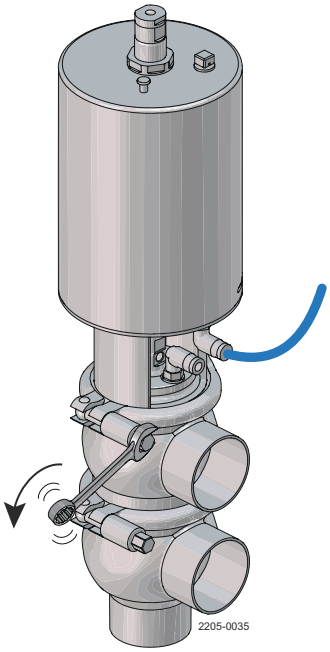
Tighten lower clamp with a 10 mm spanner.

Torque = 10-12 Nm (8–9 lbf-ft)



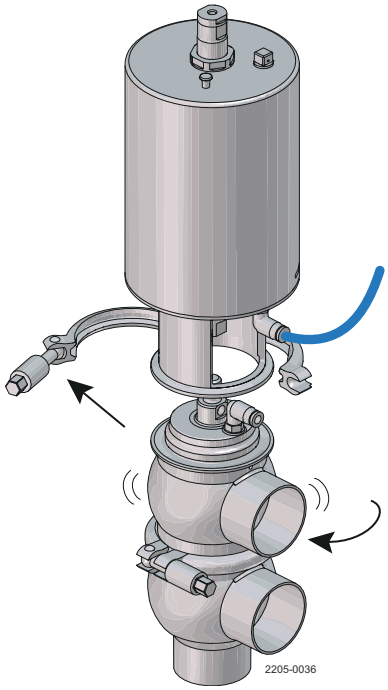
19 Mount upper clamp and tighten with a 10 mm spanner.

Torque = 10-12 Nm (8–9 lbf-ft).



20 If there is a need for rotating the valve bodies start removing the upper clamp first before the lower clamp.

> **NOTE**
>
> **Never** loosen the lower clamp while the plug is in lower position.

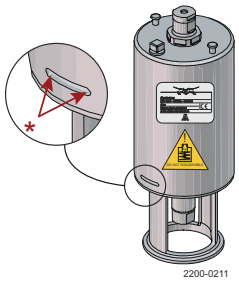
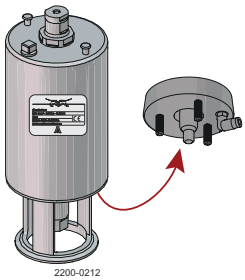


6.8 Actuator types

Different actuator types for the SSV valve

In June 2016 the below change was implemented and the “removable yoke with bolts” version is thereby phased out and replaced by the “yoke without bolts” version.

> **NOTE**
>
> It is important to check for warnings marked on the actuator when servicing an actuator - see below table.

	Non-maintainable actuator	Fully maintainable actuator	Fully maintainable actuator
Actuator type	Spring under load and **cannot** be opened  2200-0211 *) Lock wire opening is locked when warning is marked on actuator	Spring cage and can be opened  2200-0212	Spring cage and can be opened  2200-0213
Yoke type	Non-removable yoke	“Removable yoke with bolts”. If the yoke with bolts is damaged it has to be replaced by the “yoke without bolts”.	“Yoke without bolts”
Service	Not possible to service internally (it is not possible to change piston O-rings)	Yes	Yes
Marked with warnings	Yes	No	No
Year of production	From 2006	From 2006 to June 2016	From June 2016

6.9 Actuator Bushing Replacement (Non-maintainable Actuator)

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

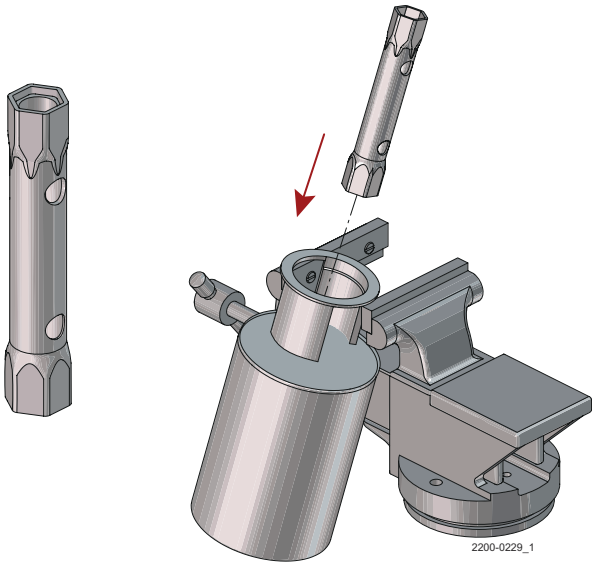
Introduction

- The actuator service kit contains two bushings and four O-rings
- Mount the thick O-ring inside and the thin O-ring outside the bushing
- Lubricate the stem and O-rings with "Molykote Longterm 2 Plus" or an equivalent grease before sliding the new bushings onto the actuator stem

Introduction - Standard tubular box wrench

Use a 27 mm (1 1/16") tubular box wrench to un-mount and/or mount the bushings.

This tool will allow the actuator stem to fit inside and will provide good access to the bushing placed in the actuator yoke end.



Introduction - Aligning spindle

The actuator spindle can in some cases be forced off centre by the internal spring, as shown.

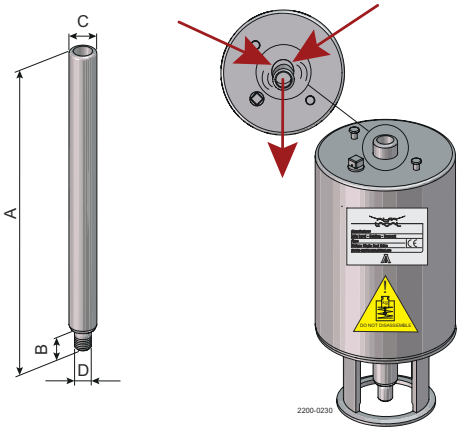
In cases with misalignment of the actuator stem in relation to the bushing thread, as shown, the tubular box wrench together with a spindle for alignment is a great help and will ensure a reliable mounting of the bushing.

The aligning spindle can either be purchased from Alfa Laval (**9614198401**) which also include a 27 mm (1 1/16") tubular box wrench or it can be manufactured locally using below dimensions.

Dimension A is based on a tubular box wrench with a total length of 185 mm (7 1/4").

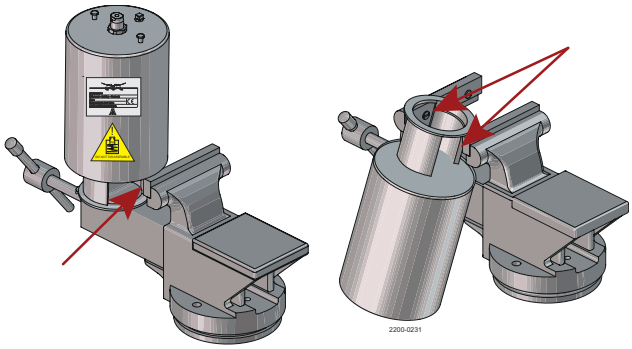
Dimensions
A = 280 mm (11")
B = 16 mm (0.63")
C = Rod Ø20 mm (0.79")
D = M12 x 1.5

Spindle forced off centre by spring inside actuator

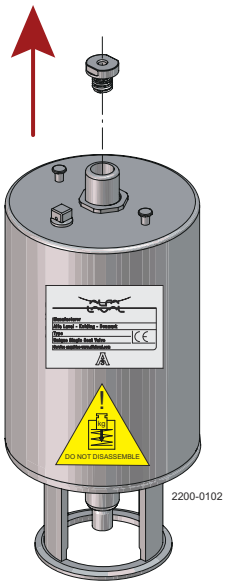


1. The actuator must be fixed in a vice, Alfa Laval recommend use of soft jaws.

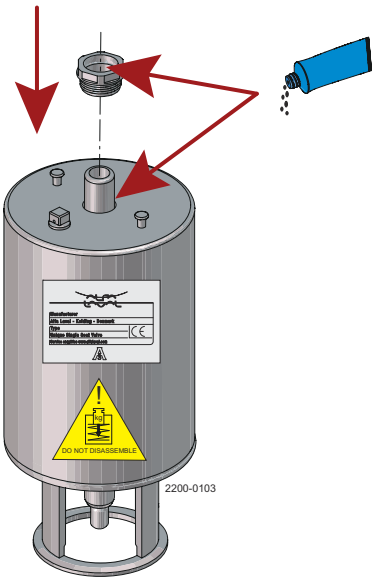
   Be careful not to damage the yoke by over tightening and only fix carefully on the "yoke leg", as shown.



2. Remove the adaptor screw.

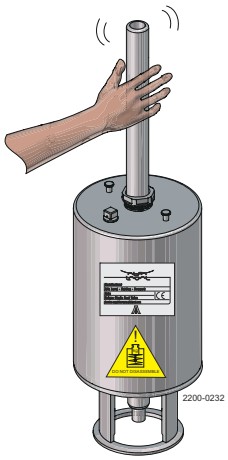


3 Slide the lubricated bushing onto the actuator stem.

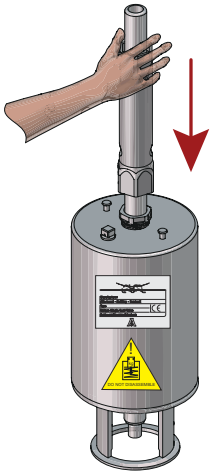


4 Fit the aligning spindle to the actuator stem and apply the tubular box wrench.

Aligning spindle

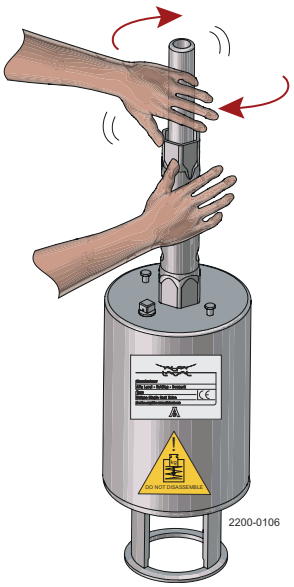


Tubular box wrench

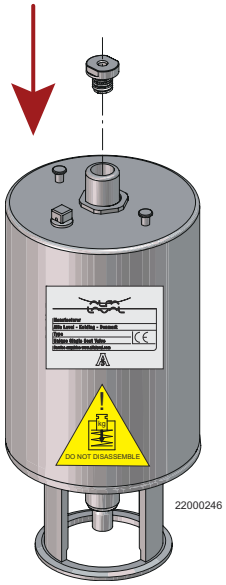


5 Now pull the aligning spindle to center the actuator stem in relation to the bushing thread. When centered, initiate fastening of the bushing. Ensure the thread catches evenly!

The bushing must only be tightened with a torque of 10 Nm (7 lb-ft) which is achievable by hand tightening only.



6 Mount adaptor screw.



6.10 Dismantling and mounting of Fully Maintainable Actuator (Removable Yoke with Bolts/2006-June 2016)

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

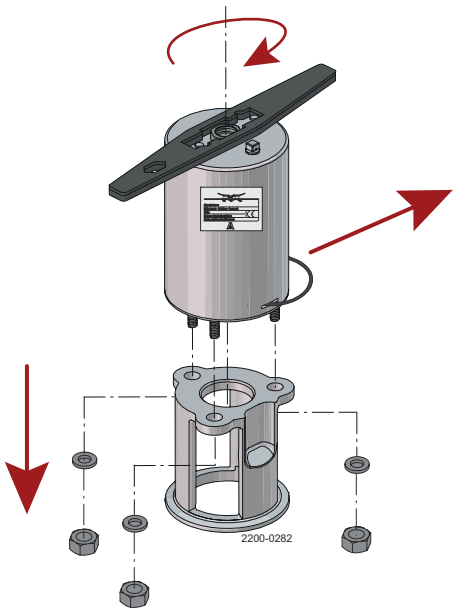
The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

1

Before dismantling check that the actuator is not marked with a warning.

See also *Actuator types* on page 16.

1. Rotate the cylinder with service tool
2. Remove lock wire and pull away cylinder
3. Unscrew nuts and remove yoke
4. Top and bottom bushings
5. Remove piston with O-ring and spring assembly
6. Remove O-rings and support disc



NOTE

The Air/Air actuator has no spring assembly.

2

1. Lubricate O-rings (3, 7, 11) with "Molykote Longterm 2 plus" or an equivalent grease before mounting
2. Tighten nuts to a torque of 17 Nm (12 lbf - ft)
3. Assemble the actuator in reverse order of step 1
4. Follow the assembly procedure in section 6.6 for installing the bushings

6.11 Dismantling and mounting of Fully Maintainable Actuator (Yoke without Bolts/June 2016 ->)

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

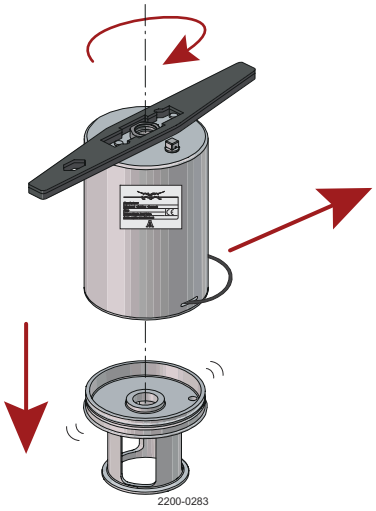
The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

(1)

Before dismantling check that the actuator is not marked with a warning.

See also *Actuator types* on page 16.

1. Rotate the cylinder with service tool
2. Remove lock wire and pull away cylinder
3. Remove top and bottom bushings
4. Remove piston with O-ring and spring assembly



(2)

1. Lubricate O-rings (3, 7, 11) with "Molykote Longterm 2 plus" or an equivalent grease before mounting
2. Assemble the actuator in reverse order of step 1
3. Follow the assembly procedure in section 6.6 for installing the bushings

6.12 Changing Pneumatic Movement on Fully Maintainable Actuator (NC/NO)

WARNING

If the actuator is marked with one of the below warnings, do NOT attempt to disassemble it.

The spring inside is under load — any type of breakage of the actuator can lead to severe injury or even death!

1

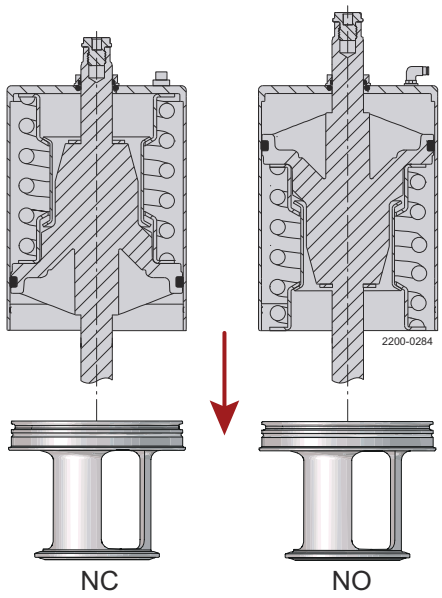
Before dismantling check that the actuator is not marked with a warning.

See also *Actuator types* on page 16.

1. Remove adaptor screw, air fitting and air plug
2. Rotate the cylinder with service tool
3. Remove lock wire and pull away cylinder
4. Reverse piston and spring assembly inside cylinder
5. Reassemble in reverse order (c. to a.)
6. Mount adaptor screw, air fitting and air plug in accordance with NC or NO

NC = Pneumatic movement - upwards

NO = Pneumatic movement - downwards



NOTE

The A/A actuator has no spring assembly.

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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	EPDM seal: -10°C to +140°C / 14°F to + 284°F PTFE (TR2) seal: -10°C to +105°C / 14°F to + 221°F PEEK (TR3) seal: -10°C to 160°C / 14°F to 320°F
Max. product pressure	SSV Standard, Direct Acting, Reverse Acting, Long Stroke and Tangential: 1000 kPa (10 bar / 145 psi) SSV Aseptic: 800 kPa (8 bar / 116 psi)
Min. product pressure	Full vacuum (depending on product specifications)
Only SSV Aseptic Max. sterilisation temperature (steam - short time)	150°C at pressure 380 kPa (3.8 bar) / 302°F at pressure 380 kPa (55 psi)

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

7.2.1 Weight

SSV Standard, Direct and Reverse Acting

kg

Nominal size	Inch tubes — DN/OD						DIN tubes — DN					
Size	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
Shut-off valve	3.1	3.3	5.5	6.5	11.3	13.6	3.2	3.4	5.5	6.6	11.8	13.6
Change-over valve	3.9	4.2	7.1	8.5	14.0	18.0	4.1	4.5	7.2	8.8	14.9	17.9
Shut-off valve: high pressure	4.7	4.8	9.5	10.0	9.8	14.2	4.8	4.9	9.5	10.1	10.2	14.2
Change-over valve: high pressure	4.9	5.1	10.1	10.8	10.9	16.5	5.1	5.3	10.1	11.1	11.8	16.4

lbs

Nominal size	Inch tubes — DN/OD						DIN tubes — DN					
Size	1"	1½"	2"	2½"	3"	4"	1"	1½"	2"	2½"	3"	4"
Shut-off valve	6.8	7.3	12.1	14.3	24.9	30.0	7.1	7.5	12.1	14.6	26.0	30.0
Change-over valve	8.6	9.3	15.7	18.7	30.9	39.7	9.0	9.9	15.9	19.4	32.8	39.5
Shut-off valve: high pressure	10.4	10.6	20.9	22.0	21.6	31.3	10.6	10.8	20.9	22.3	22.5	31.3
Change-over valve: high pressure	10.8	11.2	22.3	23.8	24.0	36.4	11.2	11.7	22.3	24.5	26.0	36.2

SSV Aseptic

kg

Nominal size	Inch tubes — DN/OD						DIN tubes — DN					
Size	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
Shut-off valve	3.1	3.3	5.6	6.6	11.5	14.0	3.2	3.4	5.6	6.8	11.9	13.9
Change-over valve	3.9	4.2	7.2	8.7	14.2	18.4	4.1	4.5	7.1	9.0	15.1	18.3

lbs

Nominal size	Inch tubes — DN/OD						DIN tubes — DN					
Size	1"	1½"	2"	2½"	3"	4"	1"	1½"	2"	2½"	3"	4"
Shut-off valve	6.8	7.3	12.3	14.6	25.4	30.9	7.1	7.5	12.3	15.0	26.2	30.6
Change-over valve	8.6	9.3	15.9	19.2	31.3	40.6	9.0	9.9	15.7	19.8	33.3	40.3

SSV Long Stroke

kg

Nominal size	Inch tubes — DN/OD					DIN tubes — DN				
Size	38	51	63.5	76.1	101.6	40	50	65	80	100
Shut-off valve	6.1	6.6	7.5	14.8	17.2	6.2	6.6	7.6	15.3	17.2
Change-over valve	6.8	7.9	9.8	17.9	22.2	7.0	7.9	10.1	18.8	22.1

lbs

Nominal size	Inch tubes — DN/OD					DIN tubes — DN				
Size	1½"	2"	2½"	3"	4"	1½"	2"	2½"	3"	4"
Shut-off valve	13.4	14.6	16.5	32.6	38.0	13.7	14.6	16.8	33.7	37.9
Change-over valve	15.0	17.4	21.6	39.5	48.9	15.4	17.4	22.3	41.4	48.7

SSV Tangential

kg

Nominal size	Inch tubes — DN/OD			
Size	**51**	**63.5**	**76.1**	**101.6**
Shut-off valve	6.0	6.5	11.5	16.0
Change-over valve	7.5	8.5	16.5	18.5
Shut-off valve: high pressure	10.5	11.0	12.0	14.0
Change-over valve: high pressure	12.0	13.0	15.0	19.0

lbs

Nominal size	Inch tubes — DN/OD			
Size	**2"**	**2½"**	**3"**	**4"**
Shut-off valve	13.2	14.3	25.4	35.3
Change-over valve	16.5	18.7	36.4	40.8
Shut-off valve: high pressure	23.1	24.3	26.5	30.9
Change-over valve: high pressure	26.5	28.7	33.1	41.9

7.3 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.

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.

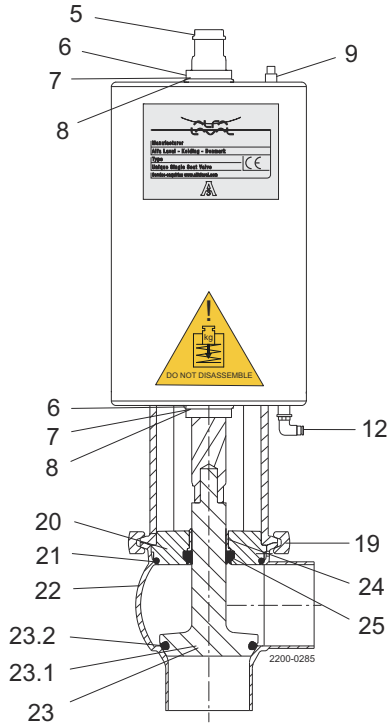
Liability and warranty are excluded:

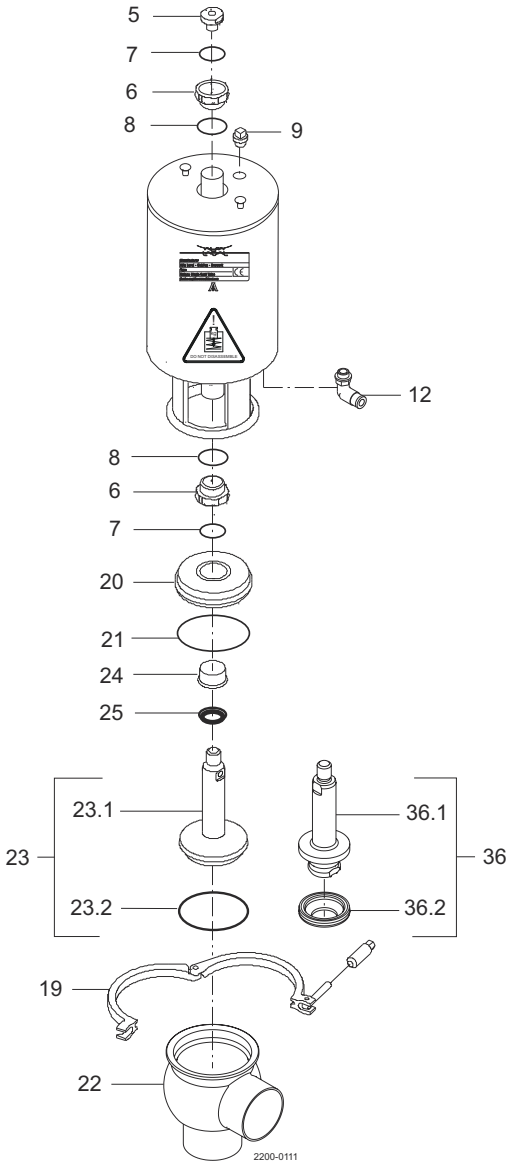
- If advice and instruction of operating instructions are ignored
- For incorrect operation or for insufficient maintenance of the supplied Alfa Laval product
- For any kind of change of function of the supplied Alfa Laval product without prior written agreement by Alfa Laval Kolding A/S
- If supplied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

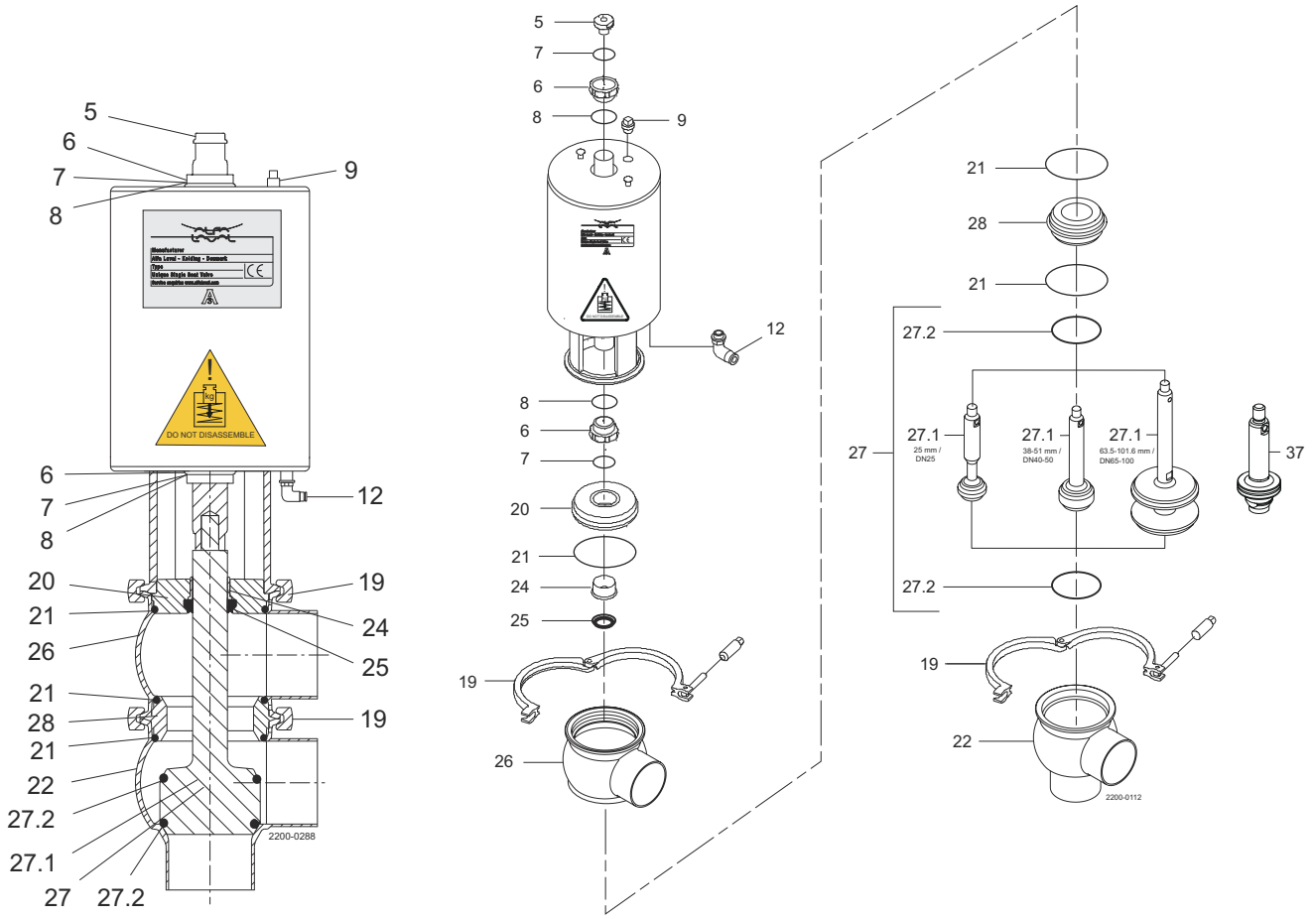
9.1 Standard Version — Shut-off





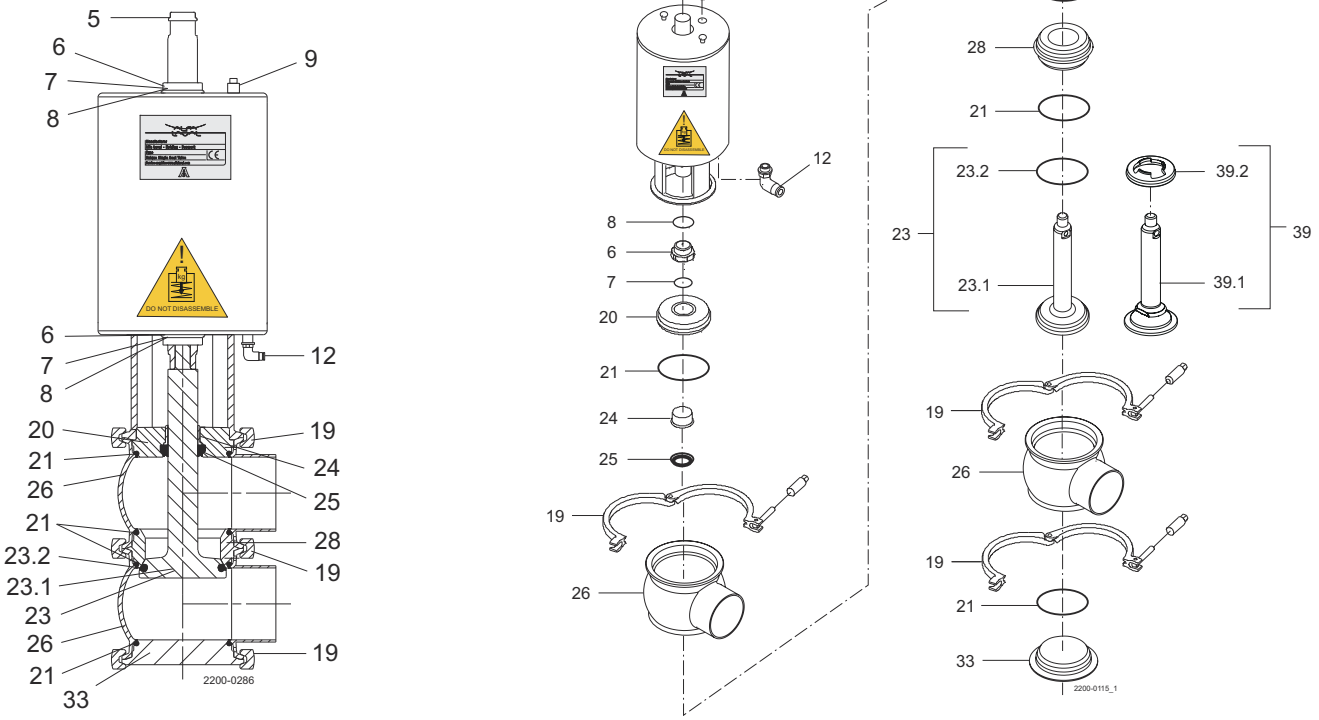
Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
5	1	Adapter	22	1	Valve body
6	2	Bushing	23	1	Plug
7	2	O-ring	23.1	1	Plug
8	2	O-ring	23.2	1	Plug seal
9	1	Plug	24	1	Bushing
12	1 (2)	Air fitting	25	1	Lip seal
19	1	Clamp	36	1	Plug with seal TR2 or TR3
20	1	Bonnet	36.1	1	Plug without seal TR2 or TR3
21	1	O-ring	36.2	1	Plug Seal TR2 or Plug Seal TR3

9.2 Standard Version — Change-over



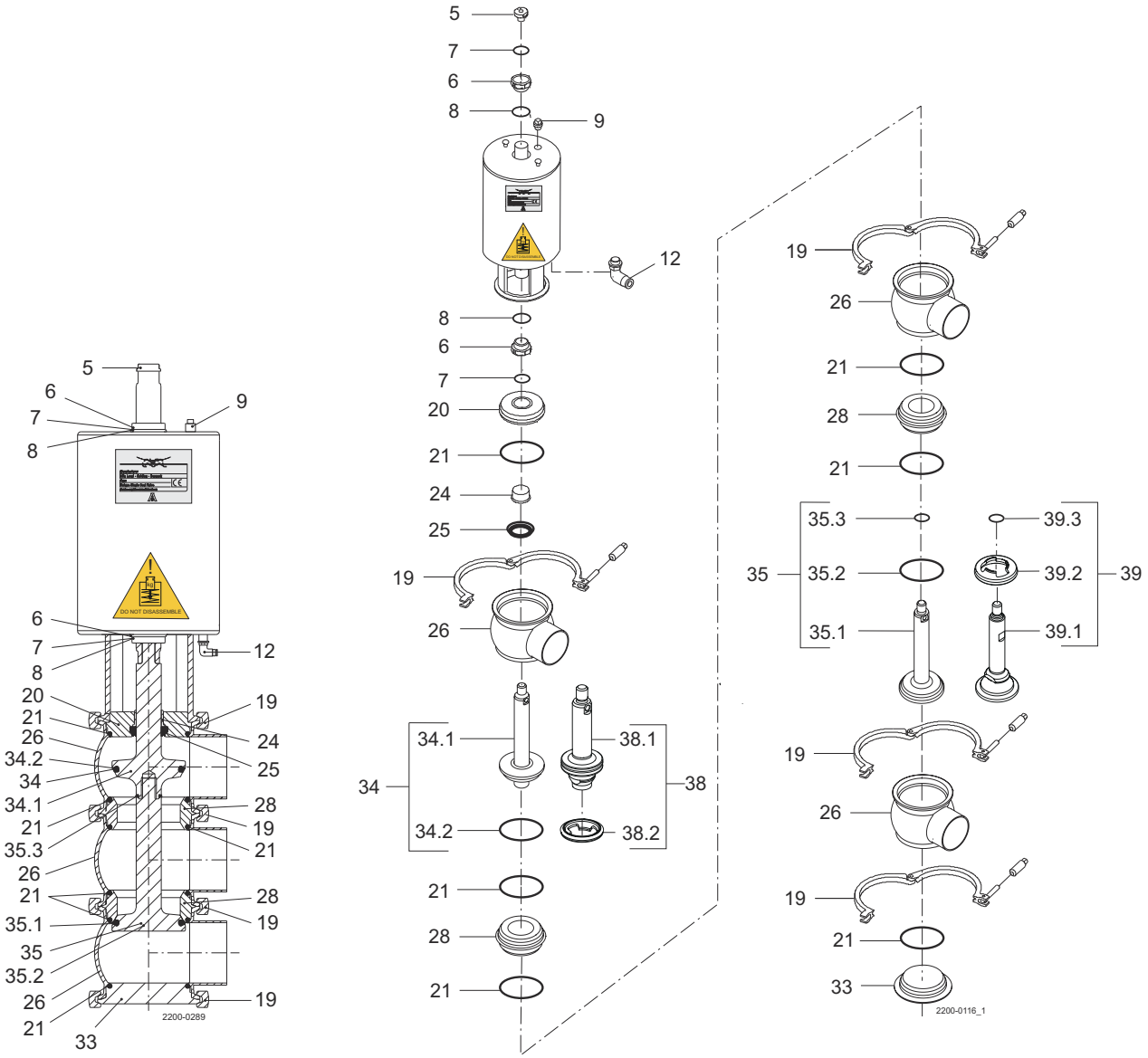
Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
5	1	Adapter	22	1	Valve body
6	2	Bushing	24	1	Bushing
7	2	O-ring	25	1	Lip seal
8	2	O-ring	26	1	Valve body
9	1	Plug	27	1	Plug
12	1(2)	Air fittting	27.1	1	Plug
19	2	Clamp	27.2	2	Plug seal
20	1	Bonnet	28	1	Seat
21	3	O-ring	37	1	Plug with seal TR2 or TR3

9.3 Reverse Acting — Shut-off



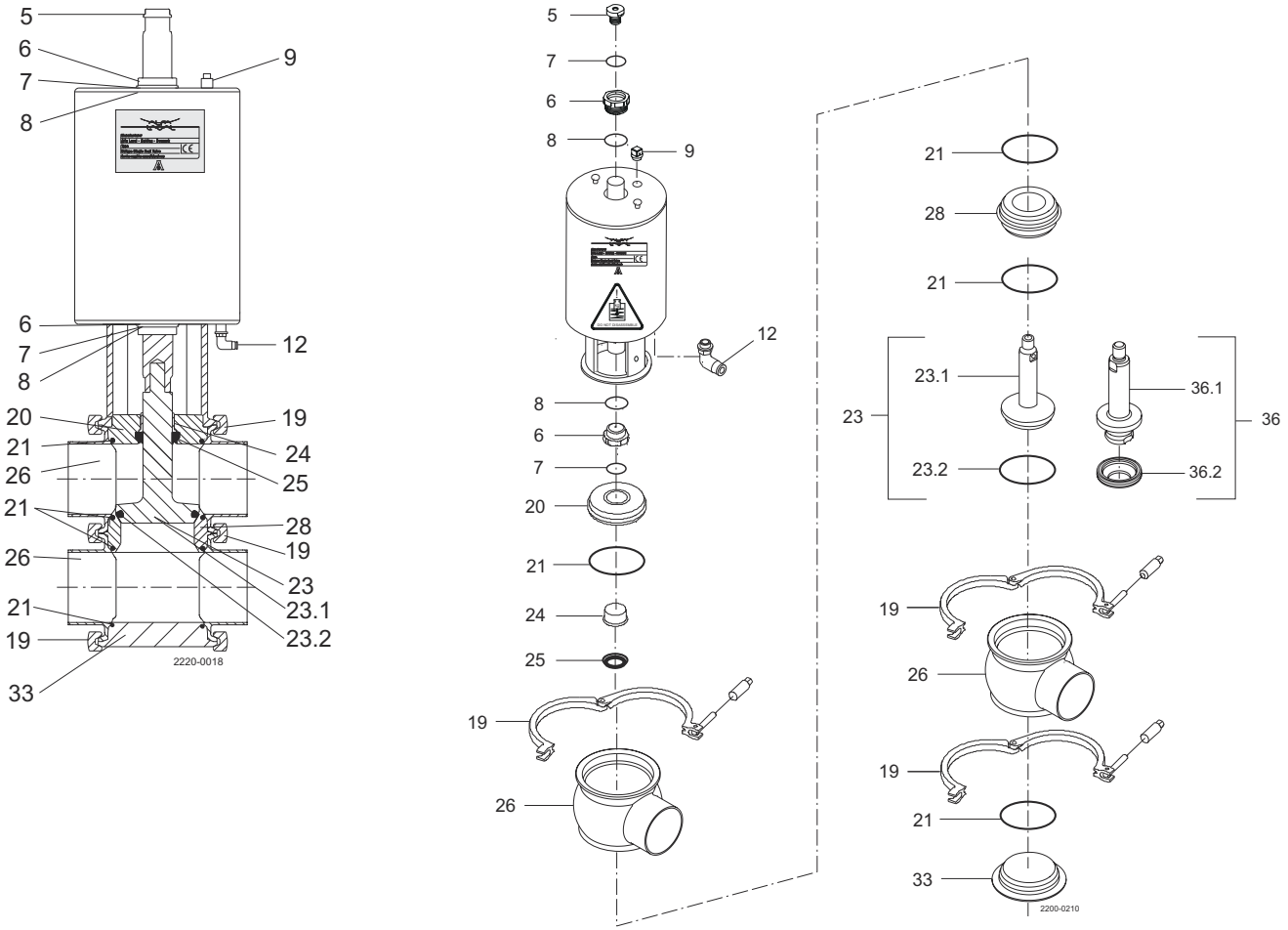
Pos.	Qty	Denomination	Pos.	Qty	Denomination
5	1	Adapter	23	1	Plug
6	2	Bushing	23.1	1	Plug
7	2	O-ring	23.2	1	Plug seal
8	2	O-ring	24	1	Bushing
9	1	Plug	25	1	Lip seal
12	1(2)	Air fitting	26	2	Valve body
19	3	Clamp	28	1	Seat
20	1	Bonnet	33	1	Lower bonnet
21	4	O-ring	39	1	Plug with seal TR2 or TR3

9.4 Reverse Acting — Change-over



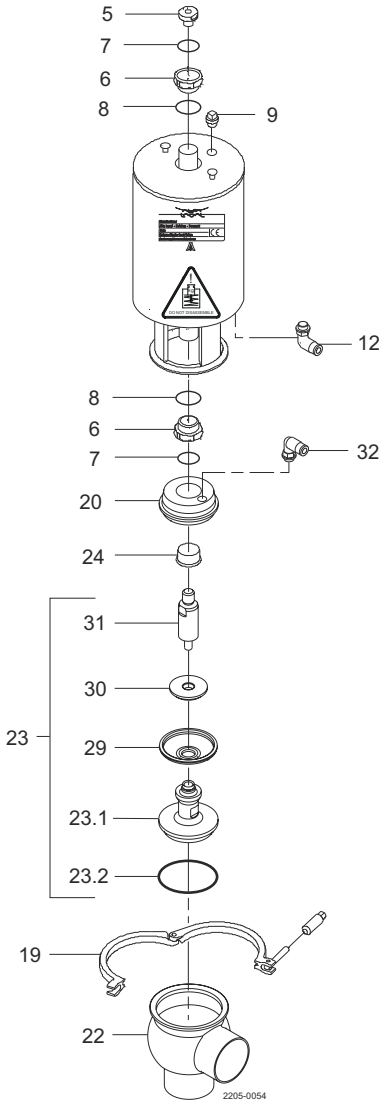
Pos.	Qty	Denomination	Pos.	Qty	Denomination
5	1	Adapter	28	2	Seat
6	2	Bushing	33	1	Lower bonnet
7	2	O-ring	34	1	Plug
8	2	O-ring	34.1	1	Plug
9	1	Plug	34.2	1	Plug seal
12	1(2)	Air fitting	35	1	Plug
19	4	Clamp	35.1	1	Plug
20	1	Bonnet	35.2	1	Plug seal
21	6	O-ring	35.3	1	O-ring
24	1	Bushing	38	1	Plug with seal TR2 or TR3 (upper)
25	1	Lip seal	39	1	Plug with seal TR2 or TR3 (lower)
26	3	Valve body			

9.5 Direct Acting — Shut-off



Pos.	Qty	Denomination	Pos.	Qty	Denomination
5	1	Adapter	23.1	1	Plug
6	2	Bushing	23.2	1	Plug seal
7	2	O-ring	24	1	Bushing
8	2	O-ring	25	1	Lip seal
9	1	Plug	26	2	Valve body
12	1(2)	Air fitting	28	1	Seat
19	3	Clamp	33	1	Lower bonnet
20	1	Bonnet	36	1	Plug with seal TR2 or TR3
21	4	O-ring	36.1	1	Plug without seal TR2 or TR3
23	1	Plug	36.2	1	Plug Seal TR2 or Plug Seal TR3

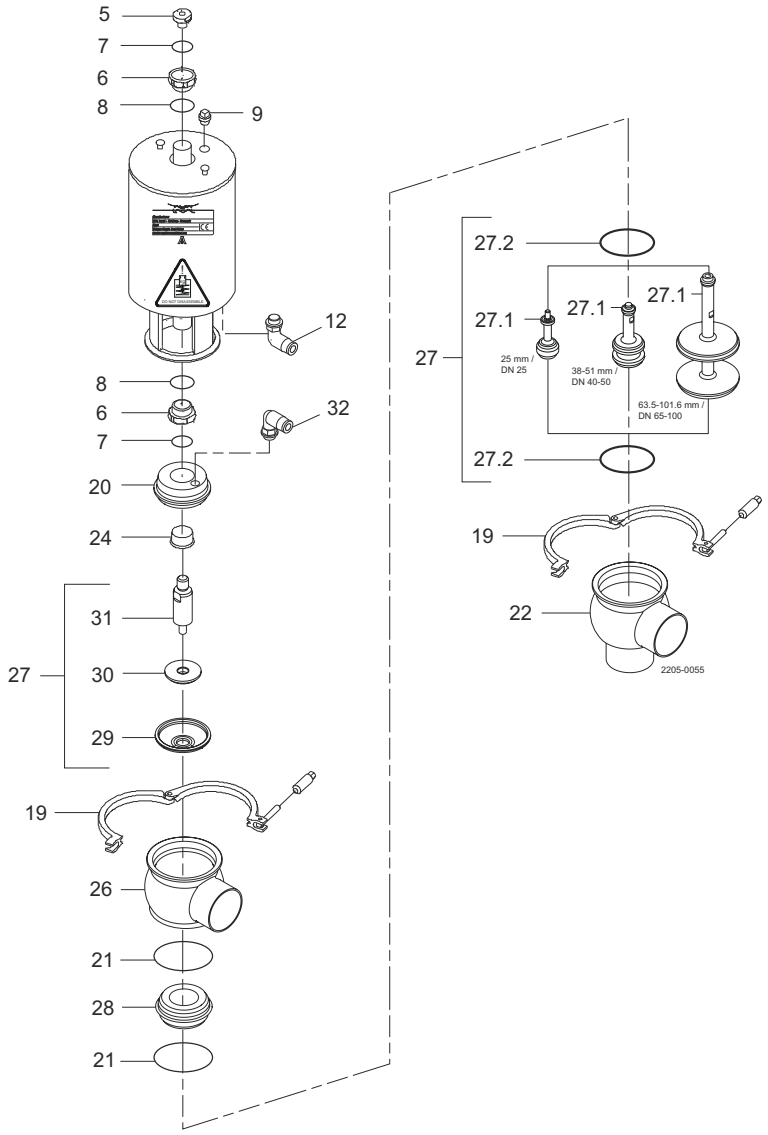
9.6 Aseptic - Shut-off



Pos.	Qty.	Denomination
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	1	Clamp
20	1	Bonnet
22	1	Valve body

Pos.	Qty.	Denomination
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

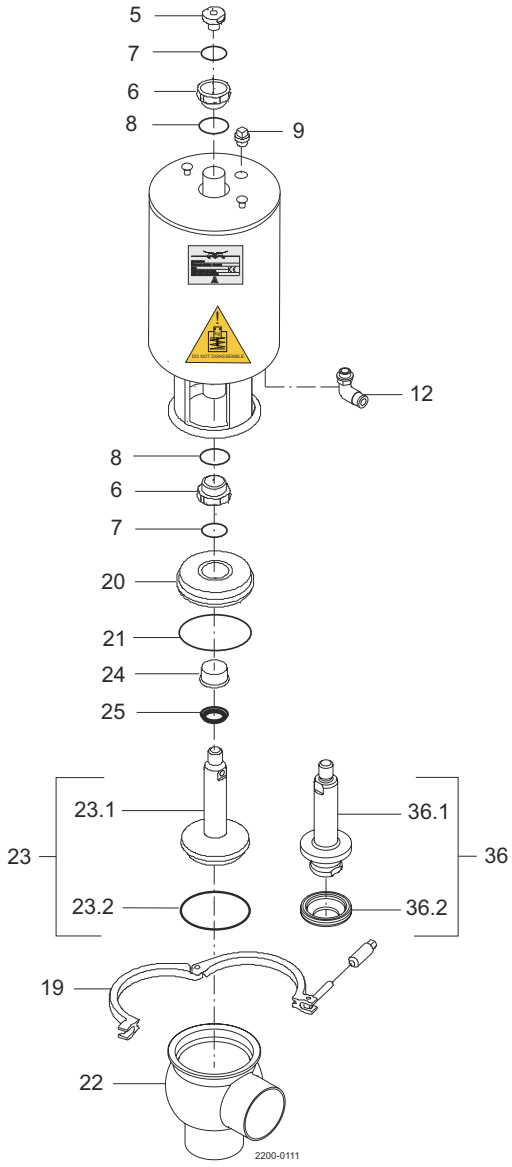
9.7 Aseptic - Change-over



Pos.	Qty.	Denomination
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	2	Clamp
20	1	Bonnet
21	2	O-ring
22	1	Valve body

Pos.	Qty.	Denomination
24	1	Bushing
26	1	Valve body
27	1	Plug
27.1	1	Plug
27.2	2	Plug seal
28	1	Seat
29	1	Diaphragm
30	1	Disc for diaphragm
31	1	Upper spindle
32	1	Air fitting

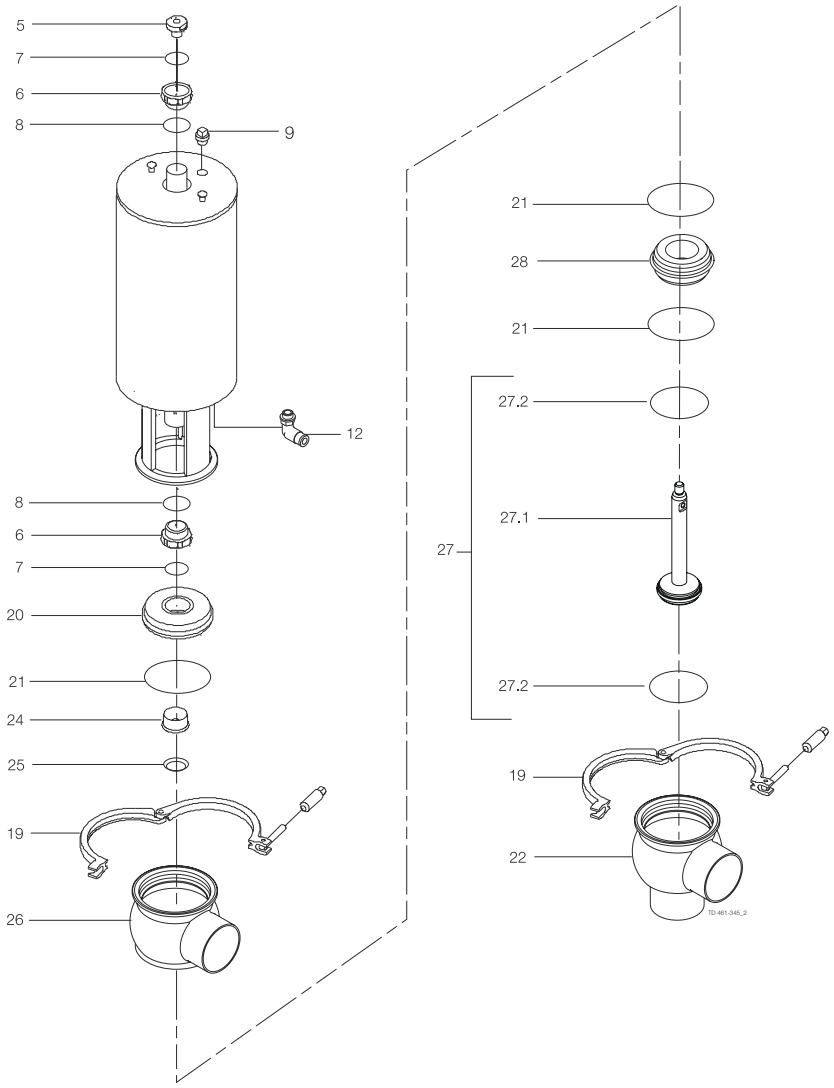
9.8 Long Stroke - Shut-off



Pos.	Qty.	Denomination
		Actuator
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	1	Clamp

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

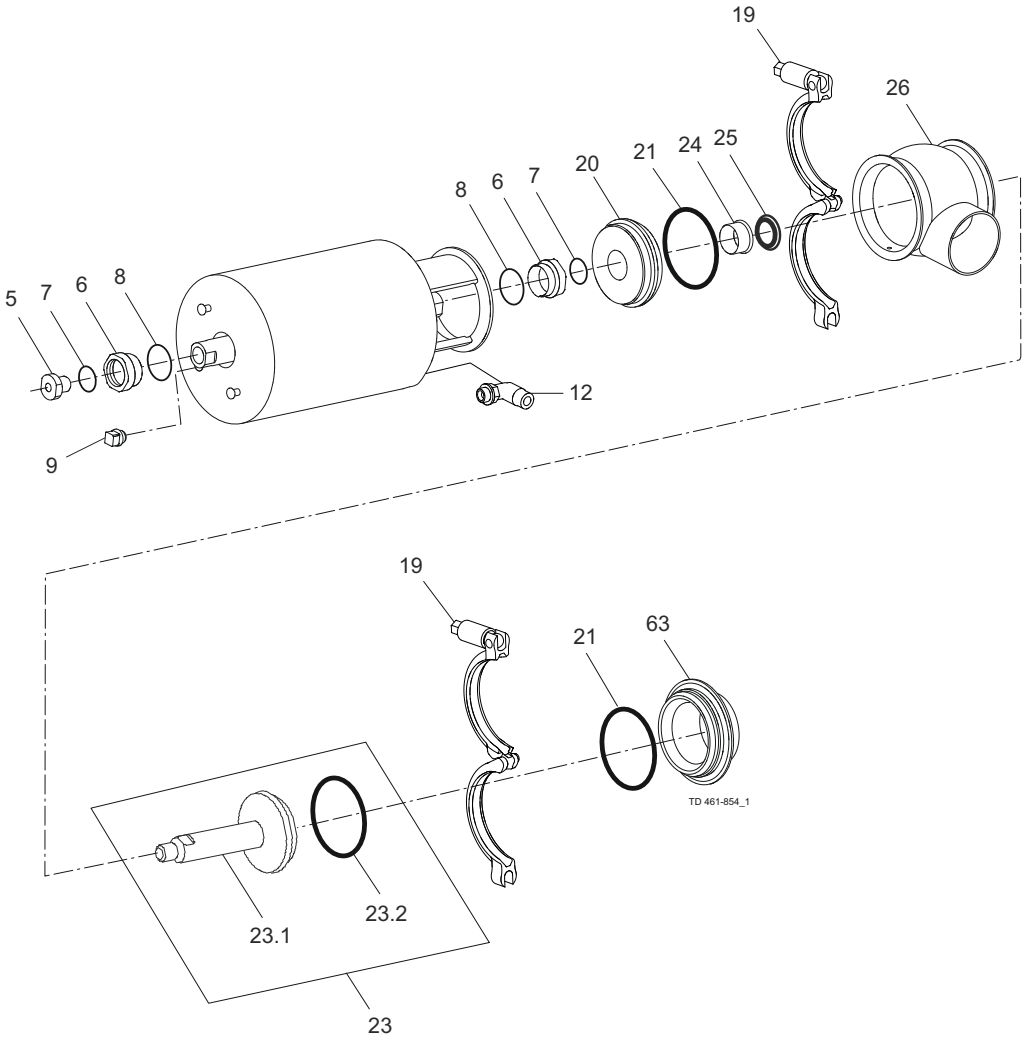
9.9 Long Stroke - Change-over



Pos.	Qty.	Denomination
		Actuator
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	2	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
21	3	O-ring
22	1	Valve body
24	1	Bushing
25	1	Lip seal
27	1	Plug
27.1	1	Plug, change over, ISO/DIN
27.2	2	Plug seal
28	1	Seat

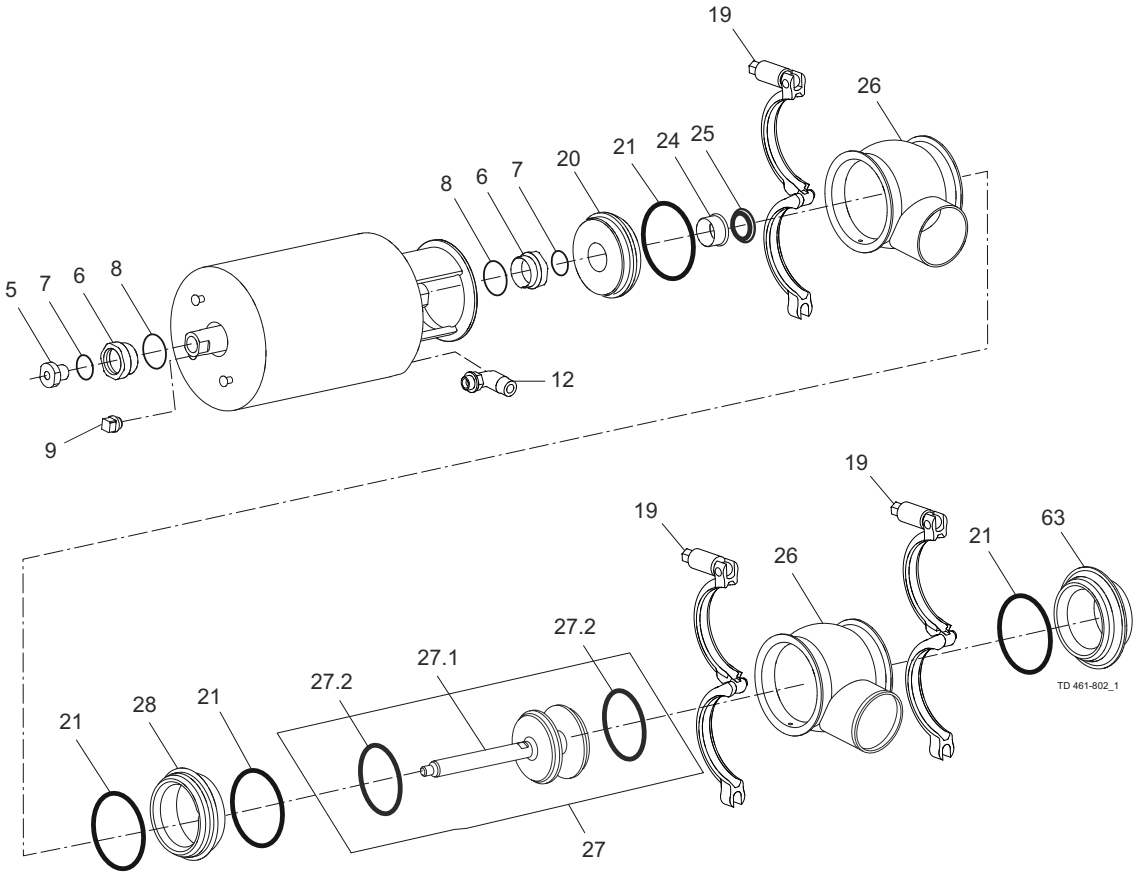
9.10 Tangential - Shut-off



Pos.	Qty.	Denomination
		Actuator
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	2	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
21	2	O-ring
23	1	Plug
23.1	1	Plug, shut-off
23.2	1	Plug seal
24	1	Bushing
25	1	Lip seal
26	1	Valve body
63	1	Port seal element, welding ends

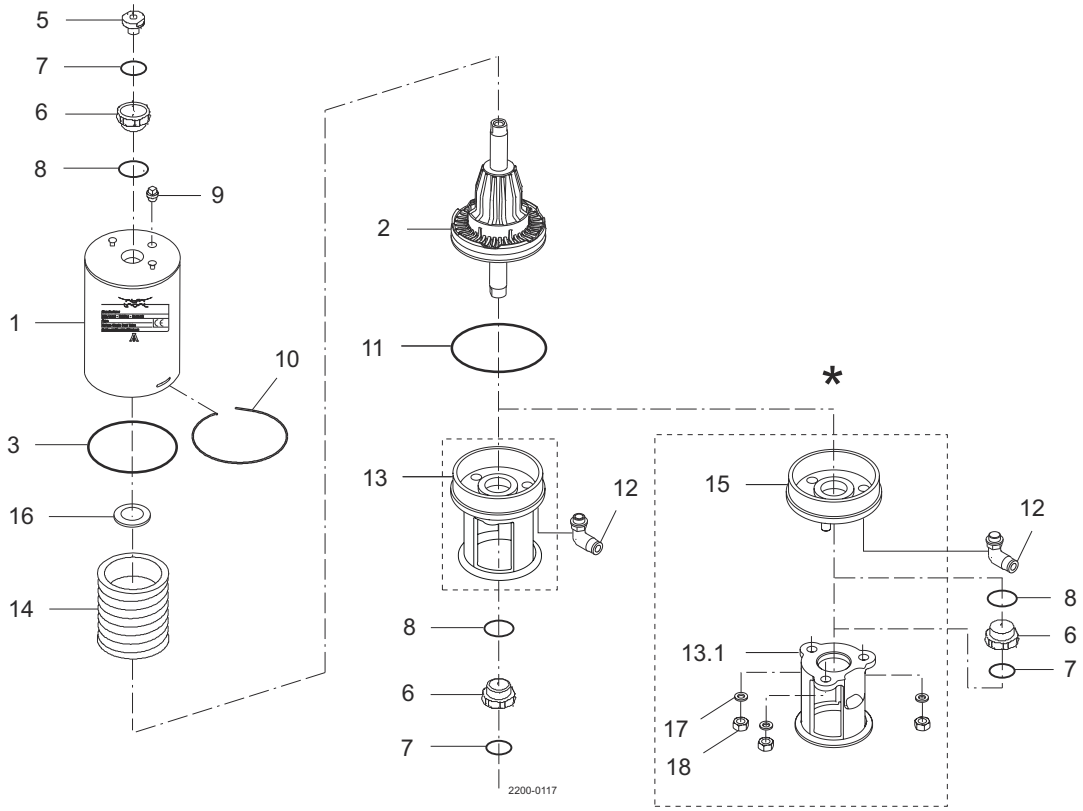
9.11 Tangential - Change-over



Pos.	Qty.	Denomination
		Actuator
5	1	Adapter
6	2	Bushing
7	2	O-ring
8	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	3	Clamp
20	1	Bonnet

Pos.	Qty.	Denomination
21	4	O-ring
24	1	Bushing
25	1	Lip seal
26	1	Valve body
27	1	Plug
27.1	1	Plug, change over
27.2	2	Plug seal
28	1	Seat
63	1	Port seal element, welding ends

9.12 Maintainable Actuator



*)
“Removable yoke with bolts” version, produced from 2006 to June 2016.
Replaced by “yoke without bolts” (13)

Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Cylinder	11	1	O-ring
2	1	Piston	12	1(2)	Air fittings (only 2 for A/A)
3	1	O-ring	13	1	Yoke without bolts
5	1	Adapter	13.1	1	Yoke (-> 0616)
6	2	Bushing	14	1	Spring assembly
7	2	O-ring	15	1	Bottom (-> 0616)
8	2	O-ring	16	1(2)	Support disc (only 2 for A/A)
9	1	Plug	17	3	Washer (-> 0616)
10	1	Lock wire	18	3	Nut (-> 0616)