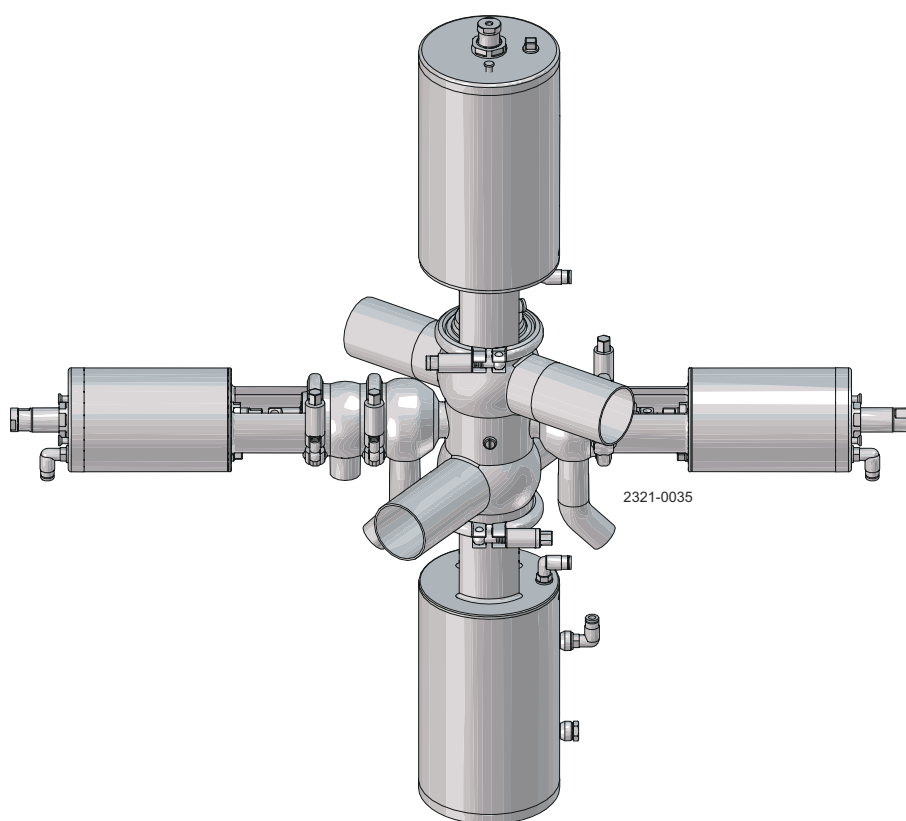


Alfa Laval Aseptic Mixproof

Double seat valves



Lit. Code

200007885-2-EN-GB

Instruction Manual

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

The original instructions are in English

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1 Declarations of Conformity

1.1 EU Declaration of Conformity

The designated company

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

Company name, address and phone number

Hereby declare that

Valve

Designation

Aseptic Mixproof PN8

Type

Serial number from AMV 000001

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

Title

Mikkel Nordkvist

Name

Kolding, Denmark

Place

2025-01-15

Date (YYYY-MM-DD)



Signature

DoC Revison_ 01_012025 / This Declaration of Conformity replaces Declaration of Conformity dated 2022-10-01



1.2 UK Declaration of Conformity

The designated company

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

Company name, address and phone number

Hereby declare that

Valve

Designation

Aseptic Mixproof PN8

Type

Serial number from AMV 000001

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

Title

Mikkel Nordkvist

Name

Kolding, Denmark

Place

2025-01-15

Date (YYYY-MM-DD)



Signature

DoC Revison_ 02_012025

UK
CA



2 Safety

Read this first



This Instruction Manual is designed for operators and service engineers working with the supplied Alfa Laval product.

Operators must read and understand the **Safety, Installation and Operating** instructions of the supplied Alfa Laval product before carrying out any work or before you put the supplied Alfa Laval product into service!

Not following the instructions can result in serious accidents.

This documentation describes the authorized way to use the supplied Alfa Laval product. Alfa Laval will take no responsibility for injury or damage if the equipment is used in any other way.

This Instruction Manual is designed to provide the user with the information to perform tasks safely for all phases in the lifetime of the supplied Alfa Laval product.

The operator shall always read the chapter **Safety** first. Hereafter the operator can skip to the relevant section for the task to be carried out or for the information needed.

Always read the chapter **Technical Data** thoroughly.

This is the complete Instruction Manual for the supplied Alfa Laval product.

NOTE

The illustrations and specifications in this Instruction Manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify the Instruction Manual without prior notice or any obligation.

The English version of the Instruction Manual is the original manual. Alfa Laval cannot be held responsible for incorrect translations. In case of doubt, the English version applies.

2.1 Safety Signs

Mandatory Action Signs

	General mandatory action sign.
	Refer to instruction manual.
	Use eye protection - safety glasses.
	Use protective hand wear - safety gloves.
	Wear protective equipment - safety helmet.
	Use ear protection in noisy environments - noise protector.
	Wear protective equipment - safety shoes.

Warning Signs

	General warning.
	Transportation with forklift truck or other industrial vehicles if heavy.
	Hot surface and Burn Hazard.
	Cutting danger.
	Corrosive substance.
	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.

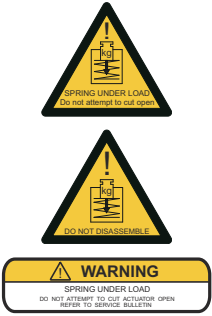
General

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

Transportation and Lifting

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

Installation

	If the local safety regulations prescribe that the installation has to be inspected and approved by responsible authorities before the valve is put into service, consult with such authorities before installing the equipment and have the projected installation approved by them. Always release compressed air after use. Always assemble the valve completely before startup and make sure everything is in place and correctly tightened.
	Never work on the valve or touch moving parts if the actuator is supplied with compressed air. Always ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before installation, inspection, assembly, or dismantling of the valve.
	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 pressurise air connections (AC1, AC3) simultaneously as both valve plugs can be lifted (can cause mixing). Never throttle the leakage outlet. Never throttle the CIP outlet, if supplied.
	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 fit the seals correctly. Always remove the CIP connections, if supplied, before service.
 	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. Never service the valve with valve and pipelines under pressure 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)
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Noise



Under certain operating conditions, the supplied Alfa Laval product and/or the systems in which they are installed can produce high sound pressure levels. Appropriate noise protection measures should be taken when necessary and in accordance with local legislation.

Hazards



Burn Hazard

- Lubrication oil, machine parts and various machine surfaces can be hot and cause burns. Wear protective gloves



Corrosive Hazard

- Always handle cleaning liquids, lye and acid with great care and in accordance with separate instructions for those fluids
- When using chemical cleaning agents and lubricants, make sure you follow the general rules and suppliers recommendation regarding ventilation, personnel protection etc.



Cut Hazard

- Sharp edges, especially on bowl discs and threads, can cause cuts. Wear protective gloves



Crushing Hazard

- Avoid placing hands into valve orifice pinch points

Safety check



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

Inspection acceptance criteria:

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

Procedure in case of non-acceptance:

- Fix and/or replace the protective device

2.3 Warning Signs in Text

Pay attention to the safety instructions in this Instruction Manual.

Below are definitions of the four grades of warning signs used in the text where there is a risk for injury to personnel or damage to the supplied Alfa Laval product.



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate damage to the supplied Alfa Laval product.



Indicates important information to simplify or clarify procedures.

2.4 Requirements of Personnel

Operators

The operators shall read and understand this Instruction Manual.

Maintenance personnel

The maintenance personnel shall read and understand this Instruction Manual. The maintenance personnel or technicians shall be skilled within the field required to carry out the maintenance work safely.

Trainees

Trainees can perform tasks under the supervision of an experienced employee.

People in general

The public shall not have access to the supplied Alfa Laval product.

In some cases, specially skilled personnel may need to be hired (i.e. electricians, welders). In some cases the personnel has to be certified according to local regulations with experience of similar types of work.

2.5 Recycling Information



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!



Unpacking

Packing material may consist of wood, plastics, cardboard boxes and in some cases metal straps.



- Wood and cardboard boxes can be reused, recycled or used for energy recovery
- Plastics should be recycled or burnt at a licensed waste incineration plant
- Metal straps should be sent for material recycling

Maintenance

During maintenance, oil (if used) and wear parts in the supplied Alfa Laval product should be replaced.

- Oil and all non-metal wear parts must be disposed of in accordance with local regulations
- Rubber and plastics should be burnt at a licensed waste incineration plant. If not available they should be disposed of in accordance with local regulations
- Bearings and other metal parts should be sent to a licensed handler for material recycling
- Seal rings and friction linings should be disposed of to a licensed land fill site. Check your local regulations
- All metal parts should be sent for material recycling
- Worn out or defected electronic parts should be sent to a licensed handler for material recycling

Scrapping

At end of use, the equipment must be recycled in accordance with the relevant local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.

How to contact Alfa Laval

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

Please visit www.alfalaval.com to access the information directly.

3 Introduction

The Alfa Laval Aseptic Mixproof Valve is an advanced double block-and-bleed mixproof valve for use in hygienic and aseptic processes that demand a contaminant-free environment. The valve enables the simultaneous flow of two different products or fluids through the same valve without the risk of cross-contamination. Its one-piece diaphragm ensures hermetic sealing and prevents intrusion from the atmosphere, even during unwanted pressure spikes.

With a flexible, modular design, the Aseptic Mixproof Valve is easy to configure in Alfa Laval Anytime to meet virtually any process requirement. Choose from a broad range of components, including seat lift, temperature sensor or transmitter. Plus its design makes maintenance quick and easy, thereby reducing the total cost of ownership to the lowest level possible compared to other aseptic valves.

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4 Installation

4.1 Unpacking/delivery

! NOTE

This Instruction Manual is part of the delivery.

Study the instructions carefully.

The valve is supplied as separate parts as standard (for welding).

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

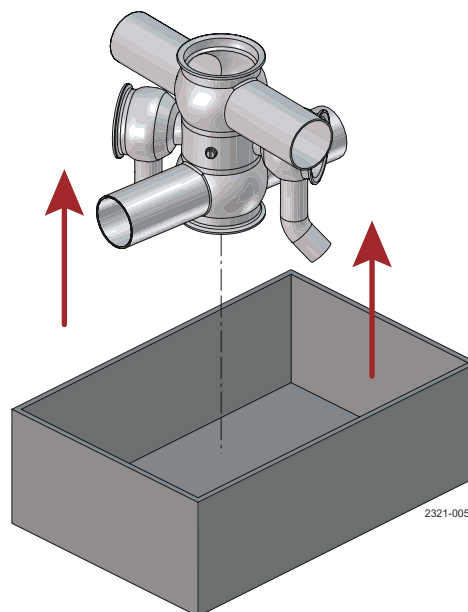
1. Complete valve.
2. Delivery note.
3. Warning label.
4. Instruction manual.

1 Remove transportation strips.

2 Lift out the valve.

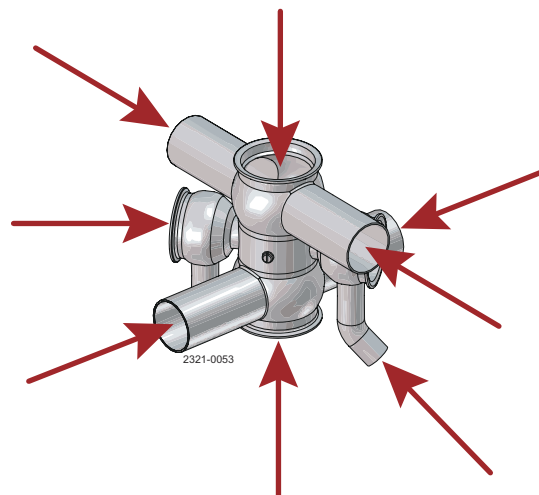
! NOTE

Please note weight of valve printed on the box.

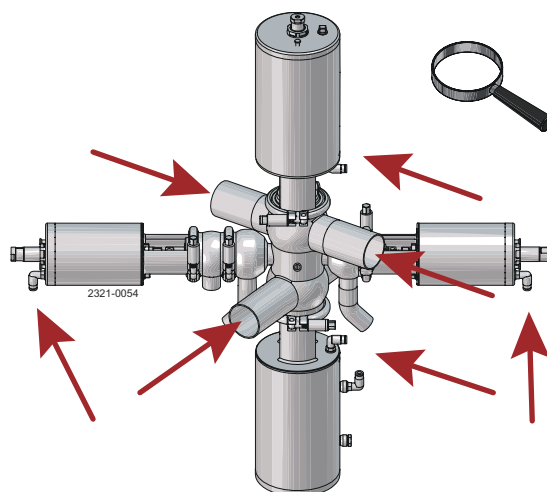


2321-0052

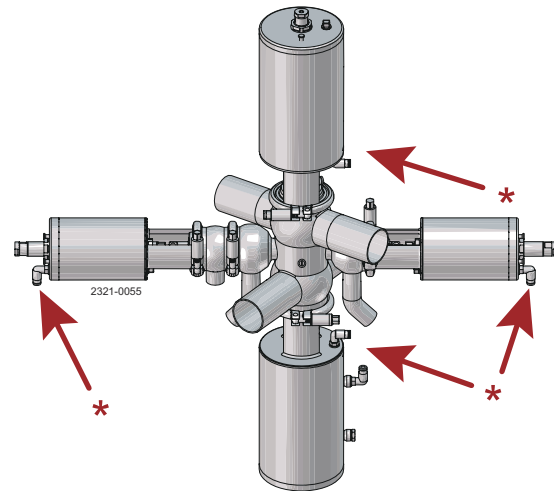
- 3 Remove possible packing materials for the valve ports.



- 4 Inspect the valve for visible transport damages.

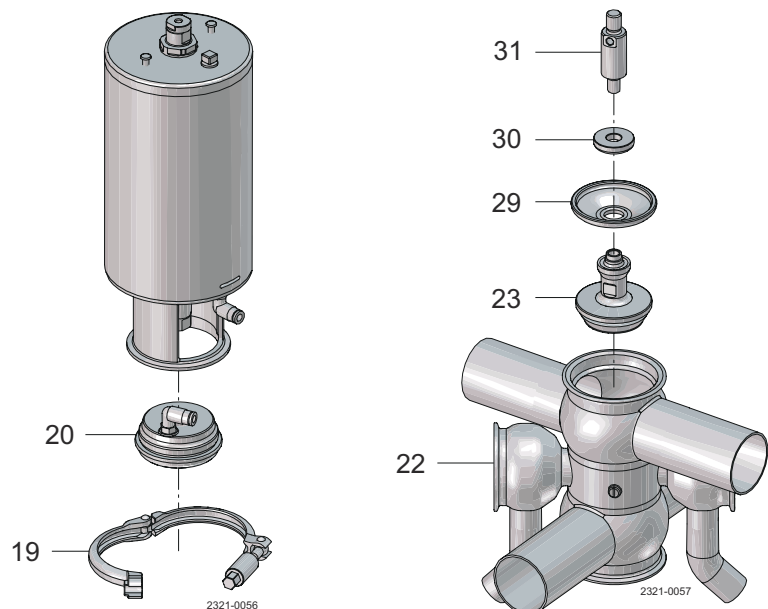


- 5 Avoid damaging the air connections*, the valve ports and the CIP connections.



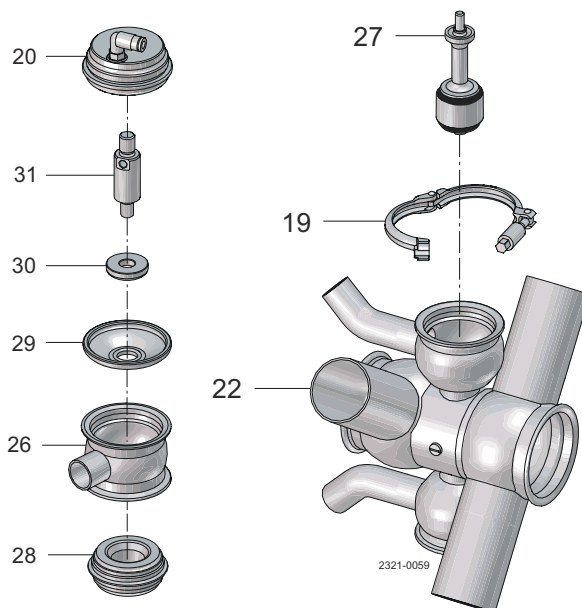
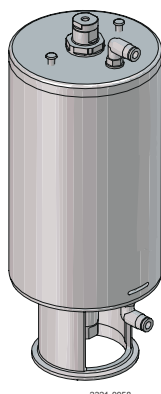
Shut-off valve:

- Complete actuator
- Bonnet (20)
- Clamp (19)
- Valve plug (23)
- Valve body (22)
- Diaphragm (29)
- Disc for diaphragm (30)
- Upper spindle (31)



Change-over valve:

- Complete actuator
- Bonnet (20)
- 2 x clamps (19)
- Valve plug (27)
- Lower valve body (22)
- Valve seat (28)
- Upper valve body (26)
- Diaphragm (29)
- Disc for diaphragm (30)
- Upper spindle (31)

**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.

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

Always read the [Technical Data](#) on page 81 thoroughly.

WARNING

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



WARNING

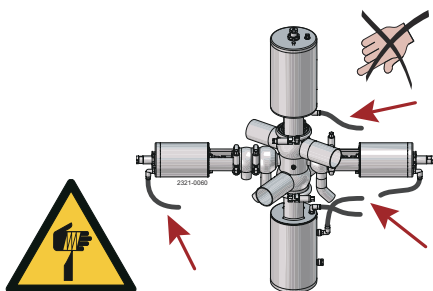
If marked with this warning, do **NOT** attempt to cut the actuator open, due to spring under load danger!



WARNING

Moving parts!

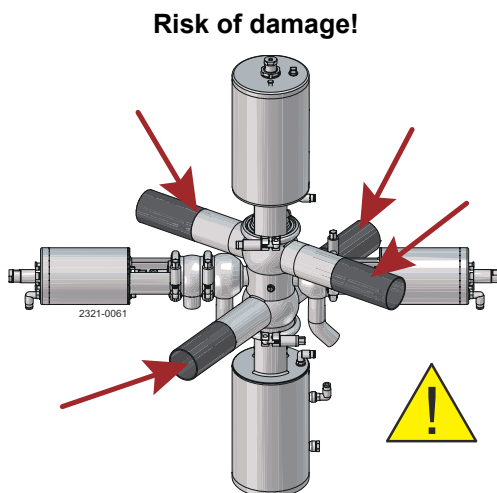
Never touch moving parts if the actuator is supplied with compressed air.



Avoid stressing the valve

Pay special attention to:

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

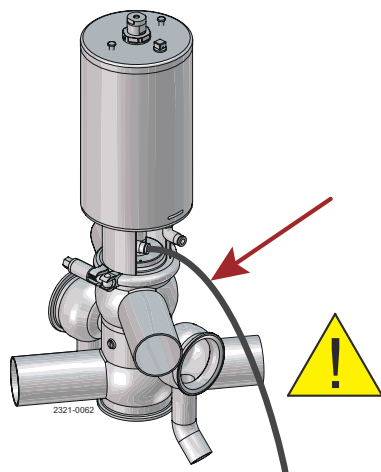


WARNING

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

The hose must be a 4 mm (1/6") hose for $\varnothing 25$ and a 6 mm (1/4") hose for larger types.

To avoid all danger, the hose must reach the drain!



4.3 Welding

NOTE

Study the instructions carefully.

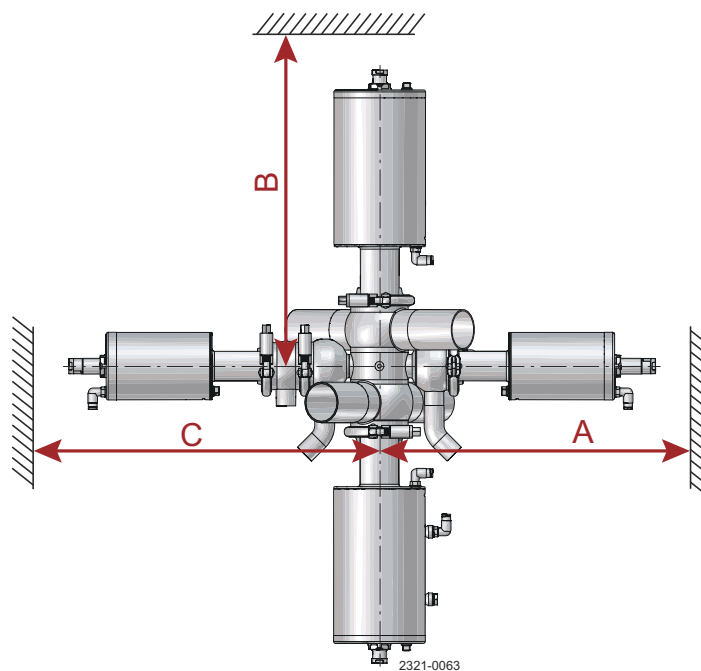
The valve is supplied as separate parts to facilitate welding.

Check the valve for smooth operation after welding.

To ensure safe operation and easy maintenance of the valve, be sure to follow the recommended installation dimensions in the table below.

Valve size	A (mm)*	B (mm)*	C (mm)*
51 mm / 2"	596	603	644
63.5 mm / 2½"	604	609	652
76 mm / 3"	611	643	659

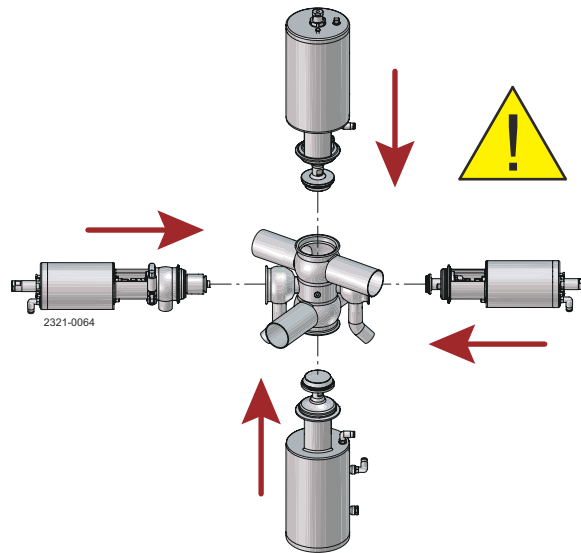
*Recommended clearance for ThinkTop® included



Assemble the valve

NOTE

Pay special attention to the warnings!

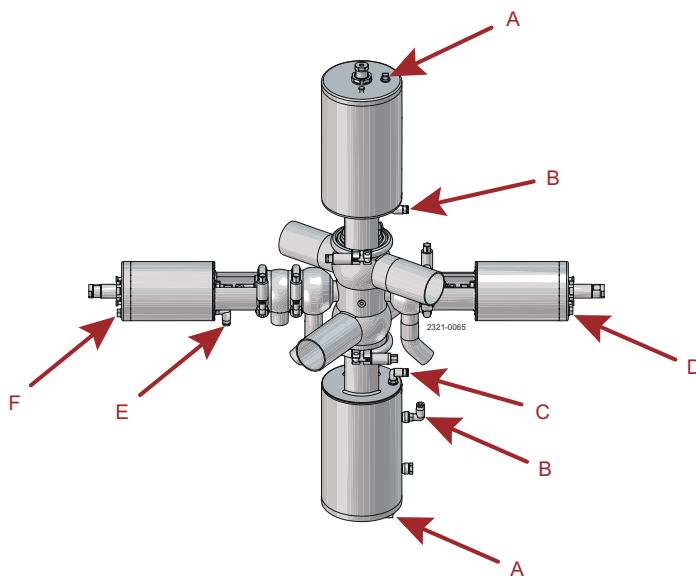


Pre-use check

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



Pay special attention to the warnings!



- A Support air NC*
- B Main stroke
- C Seat lift
- D Steam valve. Main stroke NO
- E Steam valve. Main stroke NC
- F Steam valve. Main stroke NO. Support air NC*

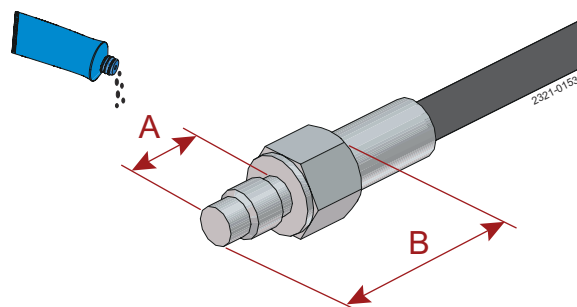
*Max. 3 bar support air

4.4 Temperature sensor

The optional temperature sensor should be mounted in the threaded hole between the two valve bodies with a tightening torque of 1.5 Nm.

When mounting, thermal paste must be applied to the thread and end of the sensor (A) to ensure the best possible heat transfer to the temperature sensor.

Make sure that the sensor is protected from outside effects, that could influence the temperature readings (detectable area B).



A. Thermal paste.

B. Detectable area.

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5 Operation

5.1 General operation

NOTE

Alfa Laval cannot be held responsible for incorrect operation.

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

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

Always read the *Technical Data* on page 81 thoroughly.

Ensure that the valve operates smoothly.

WARNING

Always release compressed air after use.

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



WARNING

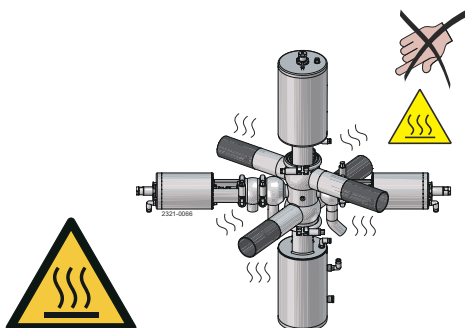
If marked with this warning, do **NOT** attempt to cut the actuator open, due to spring under load danger!



WARNING

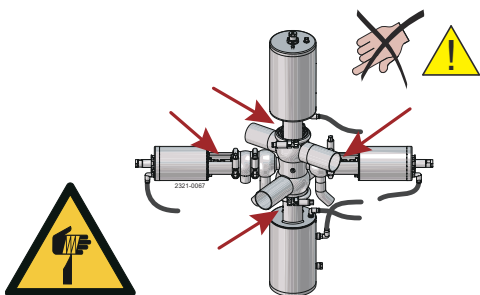
Danger of burns!

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



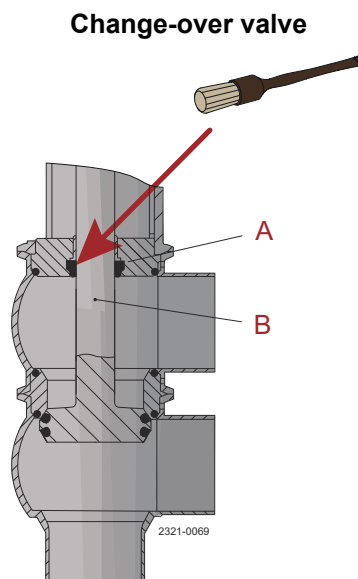
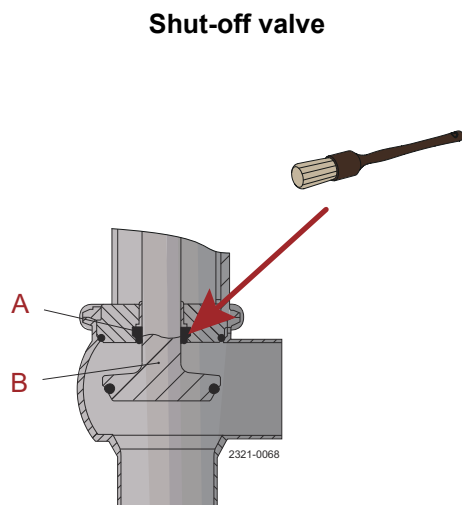
⚠ WARNING Moving parts!

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



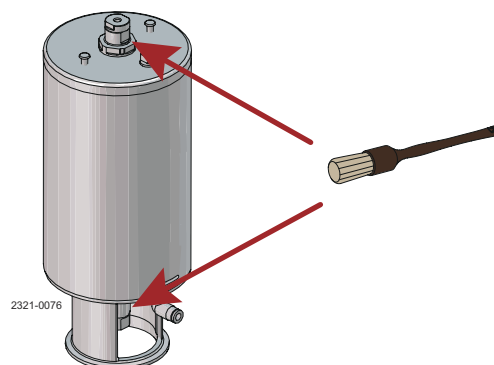
5.1.1 If fitted with hygienic plugs

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



5.1.2 Lubrication of 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.



5.2 Temperature sensor

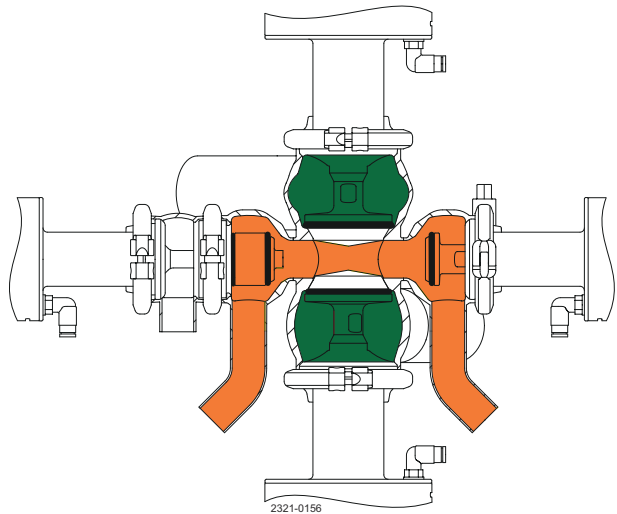
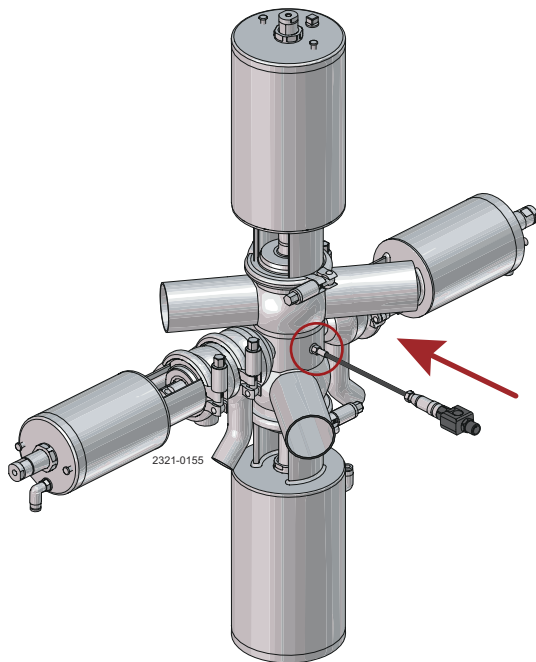
The optional temperature sensor enables validation of the sterilization process. It is placed in the sidewall of the valve body, surrounding the leakage chamber and not inside to ensure an obstacle-free flow through the valve.

The measured temperature will be affected by the actual temperature of the product, the sterile barrier and the surrounding environment the valve is exposed to. This will give a deviation of the actual sterile barrier temperature inside the leakage chamber and the measured temperature.

Ensure validation of temperatures during commissioning and before starting up the production.

For sterilization of the whole valve use min. 130 °C for 20 minutes.

Always consult instruction manual of the sensor, to ensure proper installation.



5.3 Troubleshooting

NOTE

Pay attention to possible faults.

Study the maintenance instructions carefully.

WARNING

If marked with a danger warning, do **NOT** attempt to cut the actuator open, due to spring under load.

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



Problem	Cause/result	Repair
External product leakage	Worn or damaged lipseal and/or O-ring	• Replace the seals • Replace with seals of a different rubber grade
Internal product leakage	• Worn or product affected plug seal • Product deposits on the seat and/or plug • Product pressure exceeds actuator specification	• Replace the seal • Replace with a seal of a different rubber grade • Frequent cleaning • Use auxiliary air on the spring side (do not exceed 3 bar). Alfa Laval article number = 9611995903. See Safety Precautions on page 10 • 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 General installation on page 25 • Throttle air release of solenoid in top unit
The valve does not open/close	Product pressure exceeds actuator specification	• Reduce product pressure • Use auxiliary air on the spring side. Always use the pressure relief fittings (3 bar) on support side. Alfa Laval article number = 9611995903

5.4 Recommended cleaning

NOTE

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

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

NaOH = Caustic soda.

HNO₃ = Nitric acid.

Internal leakage in the valve is externally visible by means of the leakage outlet.

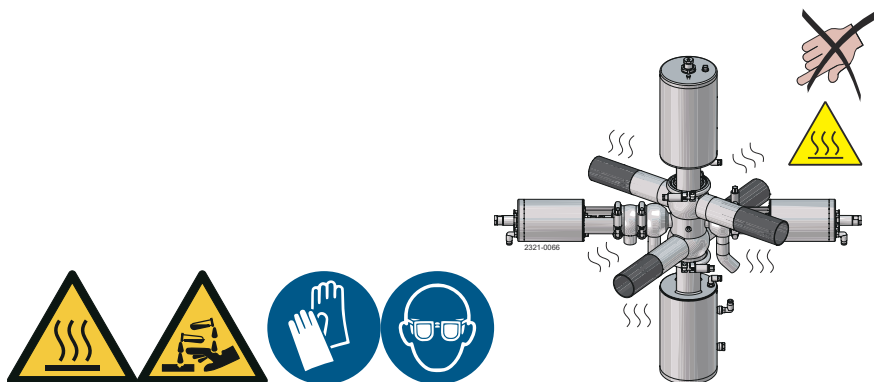
The cleaning agents must be stored/disposed of in accordance with current regulations/directives.



CAUTION Danger of burns!

Never touch the valve or the pipelines when sterilizing.

Always handle lye and acid with great care.



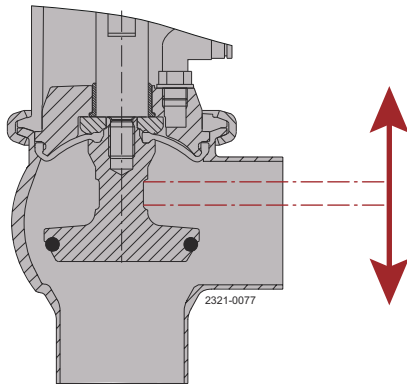
5.4.1 Clean the plug and the seats correctly

! NOTE

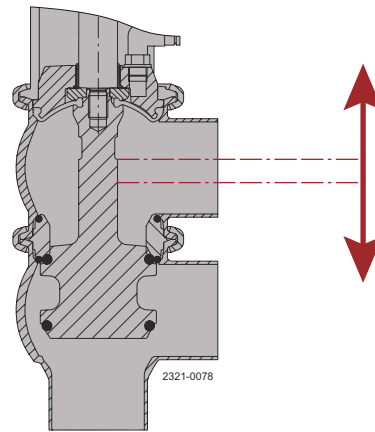
Pay special attention to the warnings.

Lift and lower valve plug momentarily!

Shut-off valve



Change-over valve

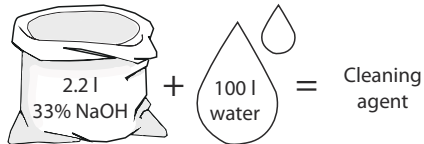
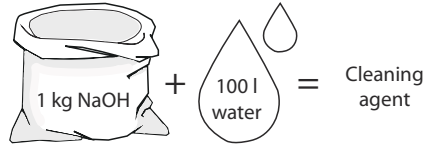


5.4.2 Examples of cleaning agents

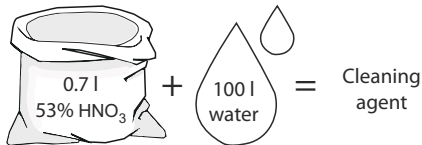
Use clean water free from chlorides

Metric System

1. 1% by weight NaOH at 70°C

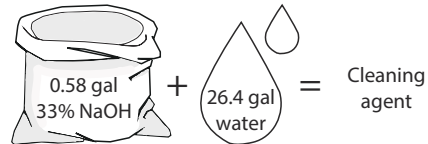
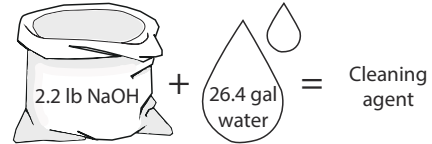


2. 0.5% by weight HNO₃ at 70°C

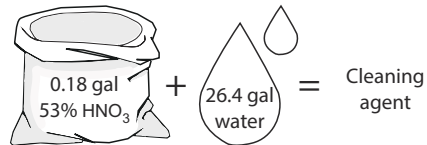


Imperial System

1. 1% by weight NaOH at 158°F



2. 0.5% by weight HNO₃ at 158°F

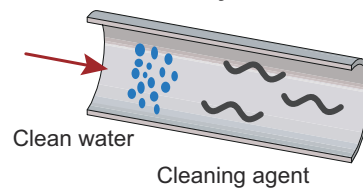


1. Avoid excessive concentration of the cleaning agent ⇒ **Dose gradually!**
2. Adjust the cleaning flow to the process
3. **Always** rinse well with clean water after the cleaning.

NOTE

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

Always rinse!

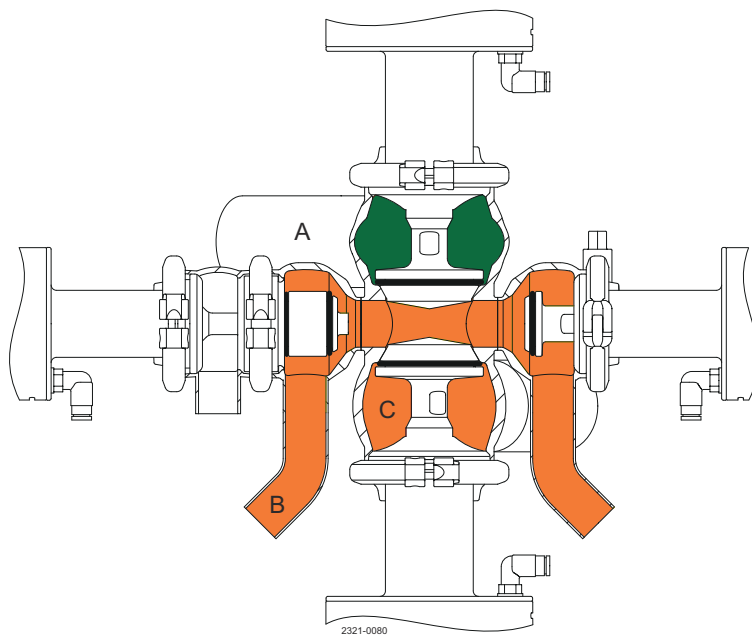


5.5 Function

Sterilization before production

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.

No seat lift



A From UHT plant. Water 135 °C

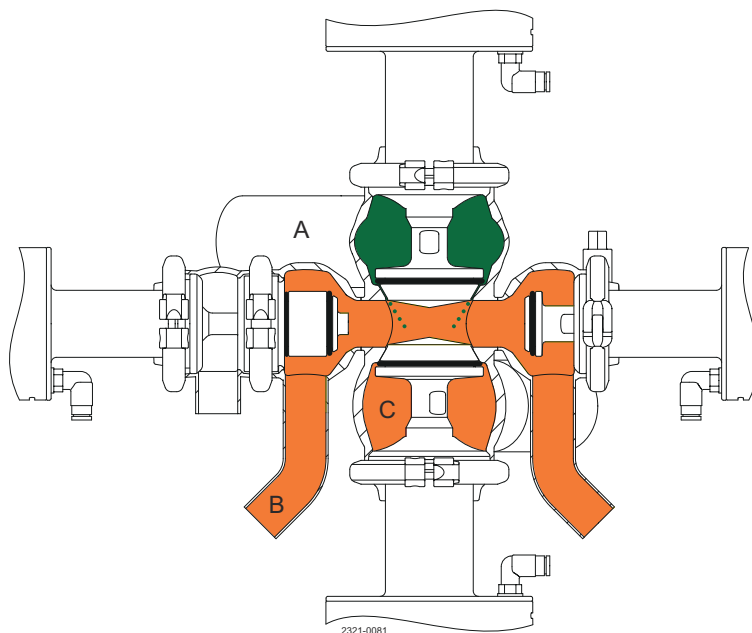
B Steam inlet 3 bar

C To sterile tank steam 3 bar

Sterilization before production subsequence

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.

Seat lift upper



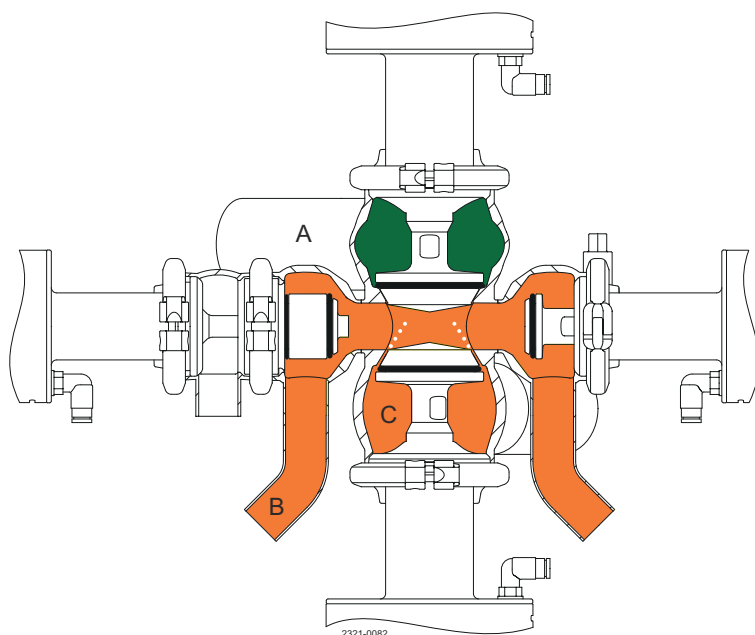
A From UHT plant. Water 135 °C

B Steam inlet 3 bar

C To sterile tank steam 3 bar

Sterilization before production subsequence

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.

Seat lift lower

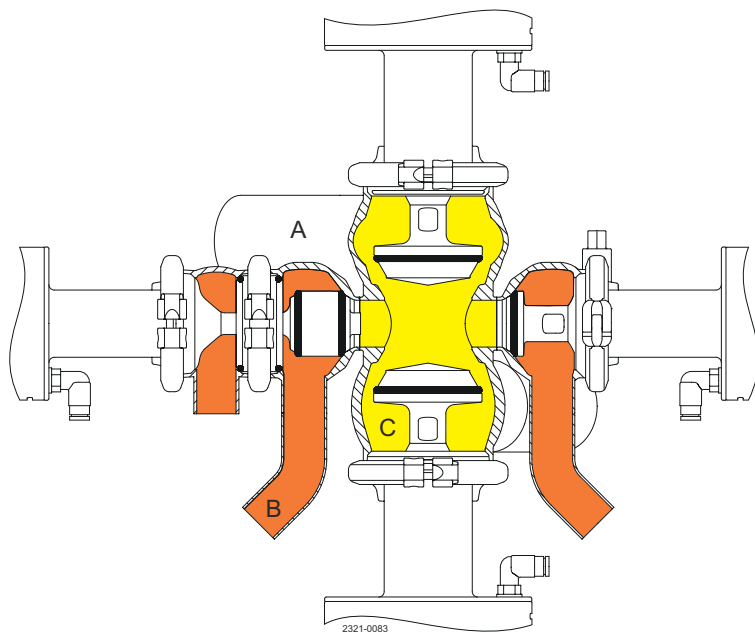
A From UHT plant. Water 135 °C

B Steam inlet 3 bar

C To sterile tank steam 3 bar

Open valve

When main plugs are closed after production, immediately open the drain and steam forward valves to prevent product build-up in the leakage chamber.

Production

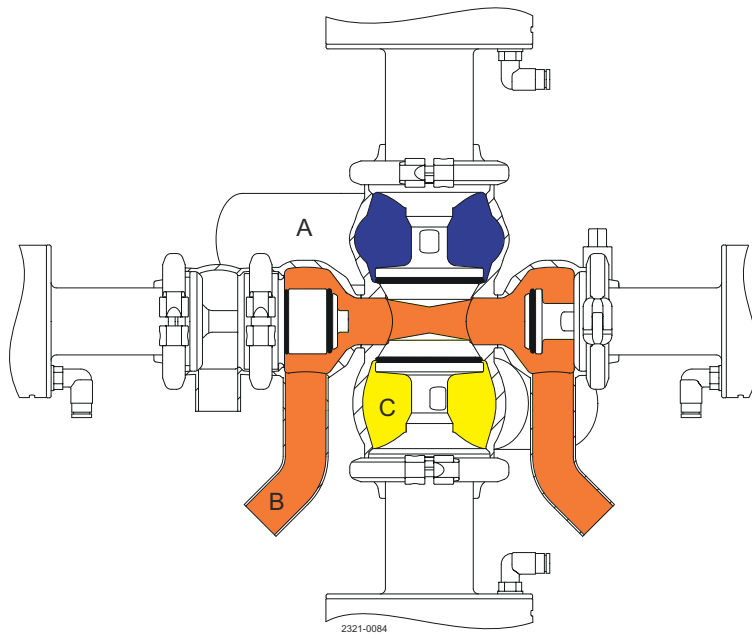
A From UHT

B Steam inlet 1.2 bar

C To sterile tank

Closed valve

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.

UHT sterile CIP

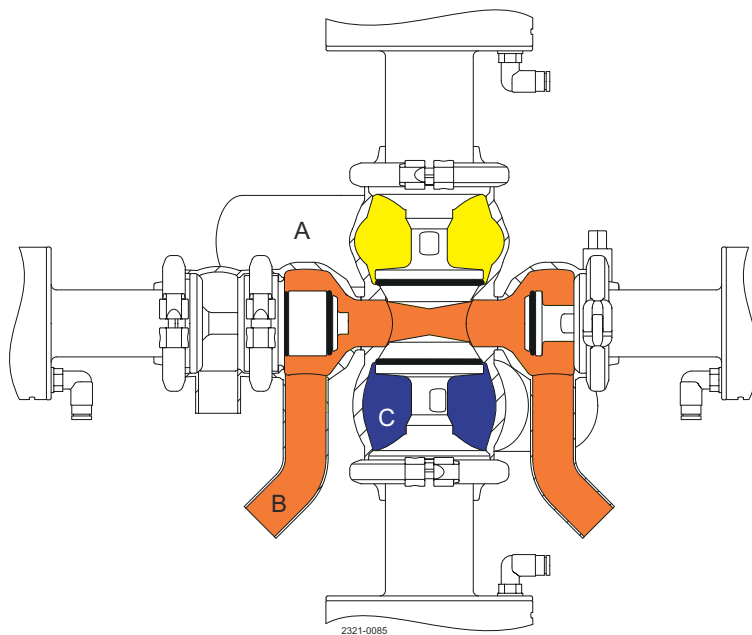
A UHT plant. Sterile CIP

B Steam inlet 1.2 bar

C Sterile tank. Tank standby

Closed valve

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.

Standby

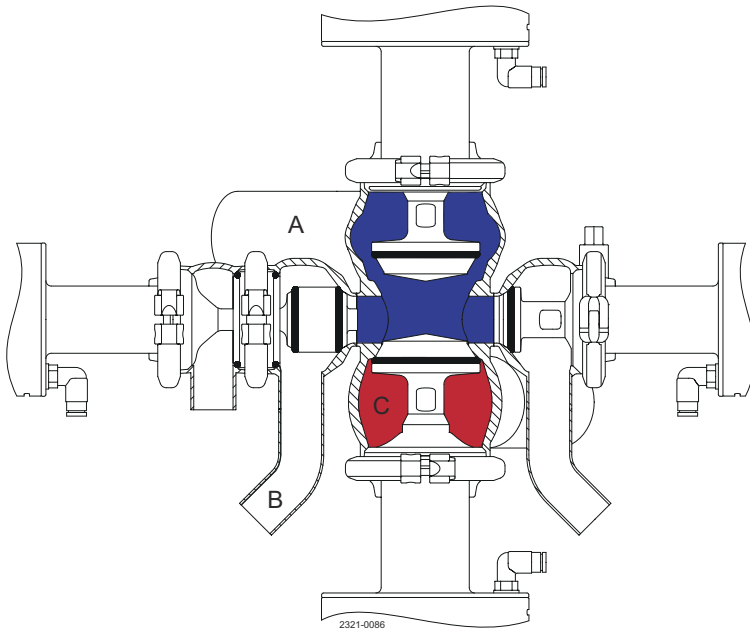
A From UHT

B Steam supply 1.2 bar

C To sterile tank

Standard CIP-UHT

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.



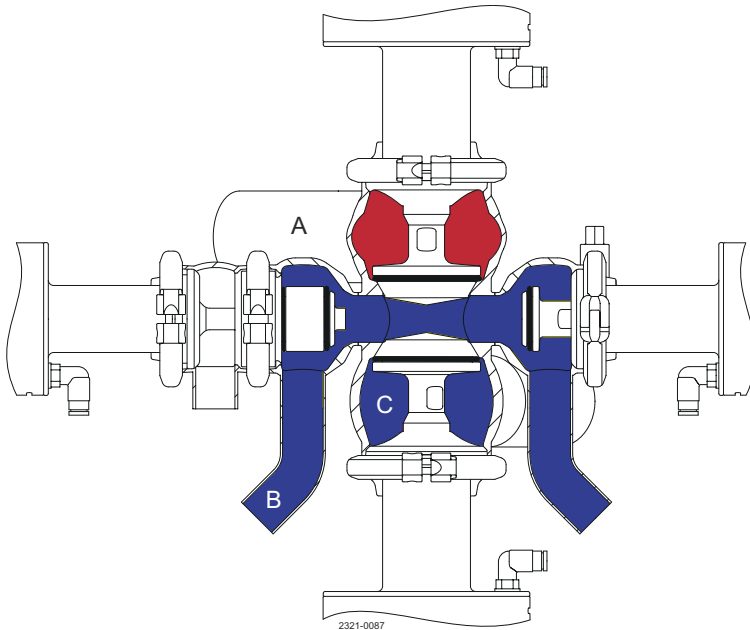
A CIP of line from UHT plant (valve open in order to create turbulence for cleaning leakage chamber)

B Both leakage chamber valves closed

C Sterile tank idle

Standard CIP-sterile tank

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats.



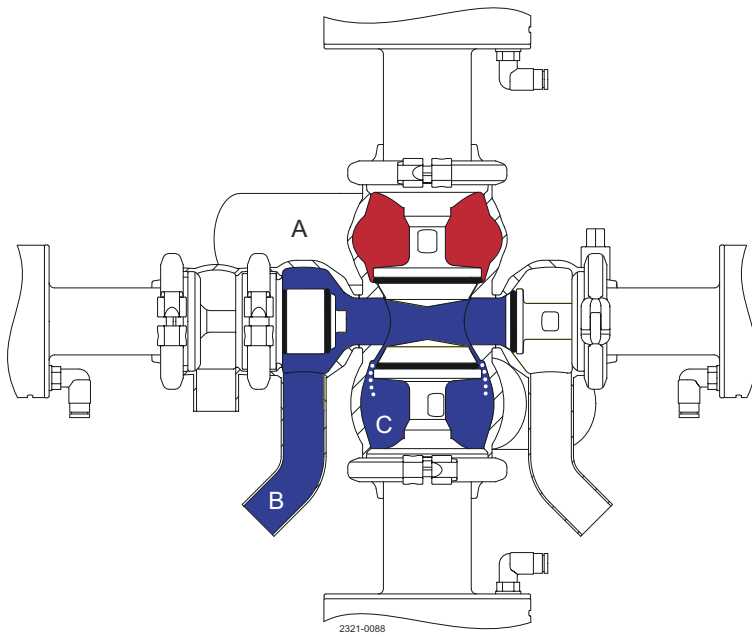
A UHT plant Idle

B CIP forward taken from CIP forward to sterile tank

C CIP return to CIP return sterile tank

Standard CIP**Sterile tank subsequent seat lift**

Always ensure that the drain plug is the last to close, to prevent a pressure build-up between the valve seats



A Line from UHT plant (not sterile)

B CIP forward taken from CIP forward to sterile tank

C CIP return from sterile tank

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6 Maintenance

6.1 General maintenance

NOTE

Service the valve regularly.

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

Always use Alfa Laval genuine spare parts.

Always keep spare rubber seals, lip seals and diaphragms in stock.

Check the valve for smooth operation after servicing.

CAUTION

Alfa Laval cannot be held responsible for incorrect maintenance.

Always read the [Technical Data](#) on page 81 thoroughly.

Always use Alfa Laval genuine spare parts.

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

Always release compressed air after use.

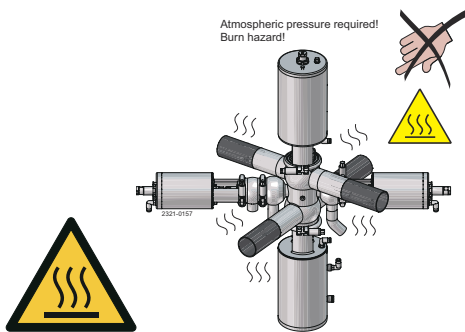


WARNING

Danger of burns!

Never service the valve when it is hot.

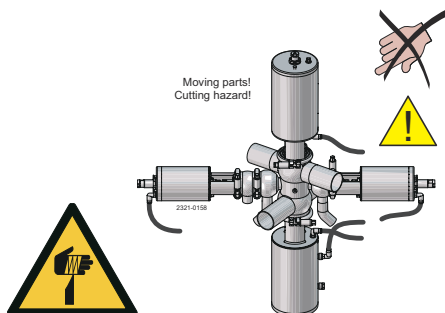
Never service the valve with valve and pipelines under pressure.



WARNING Danger of cuts!

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.



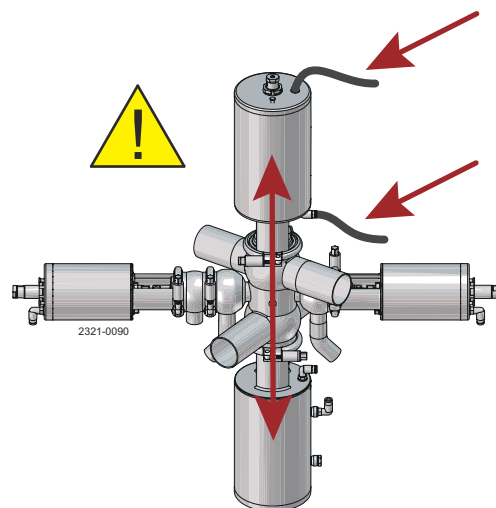
Below are some guidelines for maintenance and lubrication intervals. Please note that the guidelines are for normal working conditions in one shift.

	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 USDA H1 approved grease	Before fitting Molykote Longterm 2 plus

Pre-use check

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

Pay special attention to the warnings!



Recommended spare parts Service kits

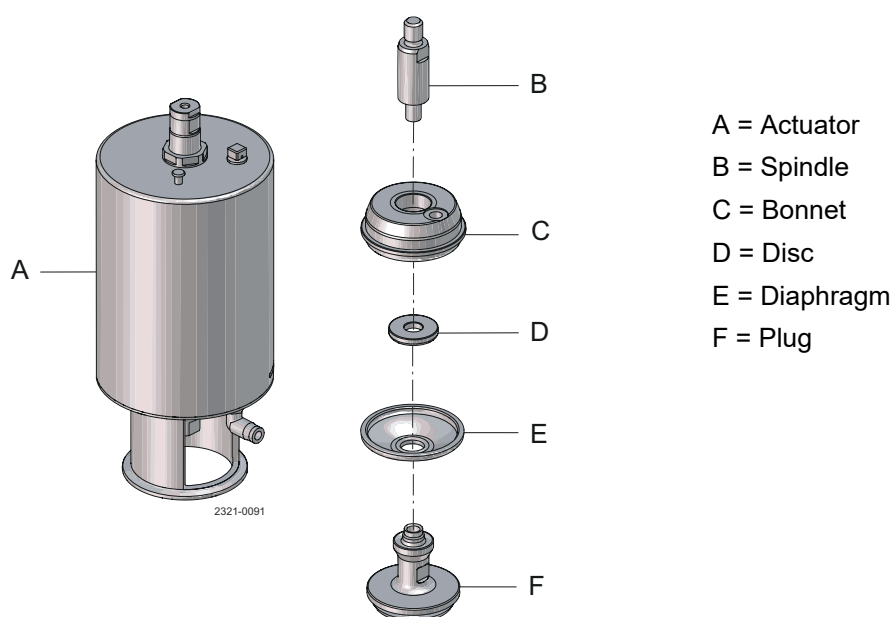
6.2 Dismantling shut-off valve



If the actuator is marked with a danger warning, do **NOT** attempt to cut the actuator open.

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!



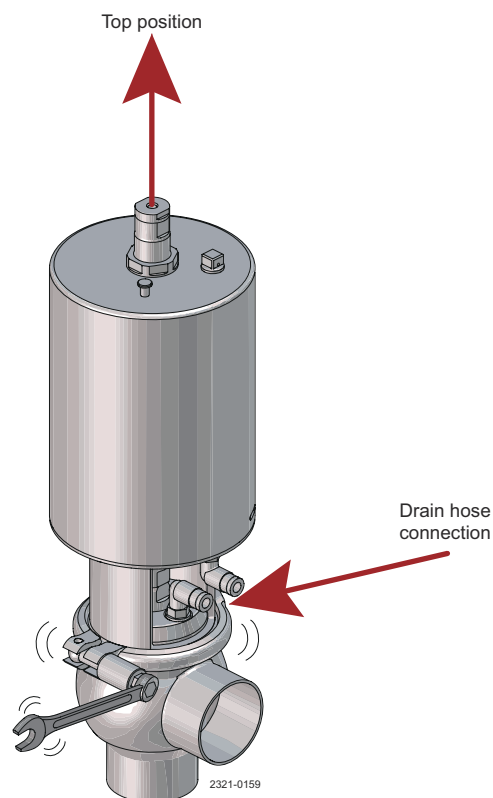
A = Actuator
B = Spindle
C = Bonnet
D = Disc
E = Diaphragm
F = Plug

Max. weight to handle during maintenance (actuator with bonnet and plug fitted):

51 mm/2"	63.5 mm/2,5"	76.1 mm/3"
6.2 kg (13.7 lb)	6.5 kg (14.3 lb)	10.1 kg (22.3 lb)

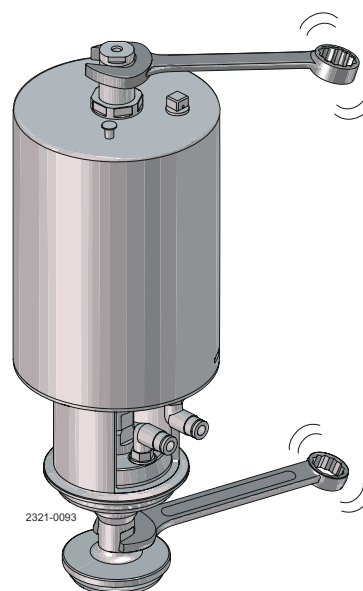
1

1. Move the plug in top position.
2. Remove the air drain hose.
3. Ensure pipe is empty and not pressurized and then loosen the clamp using a 10 mm spanner.

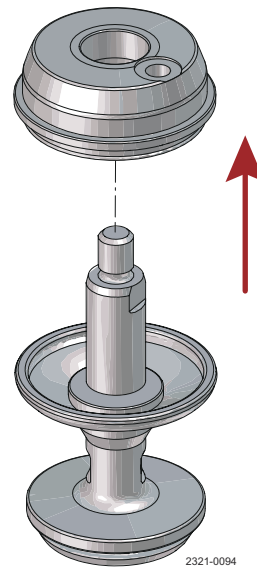


2

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



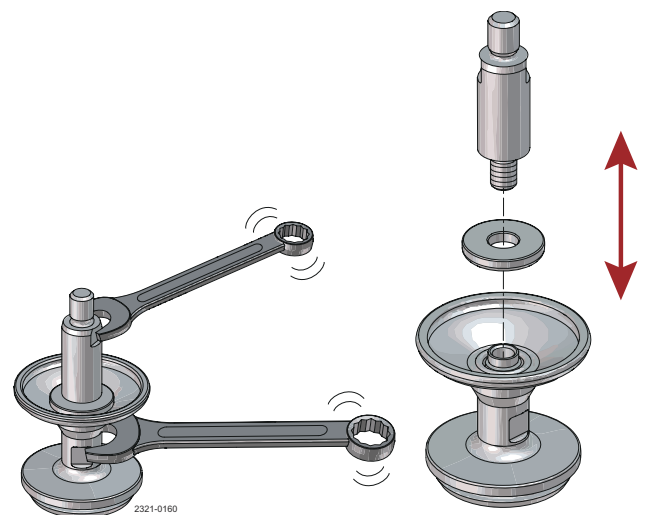
3 Remove the bonnet.



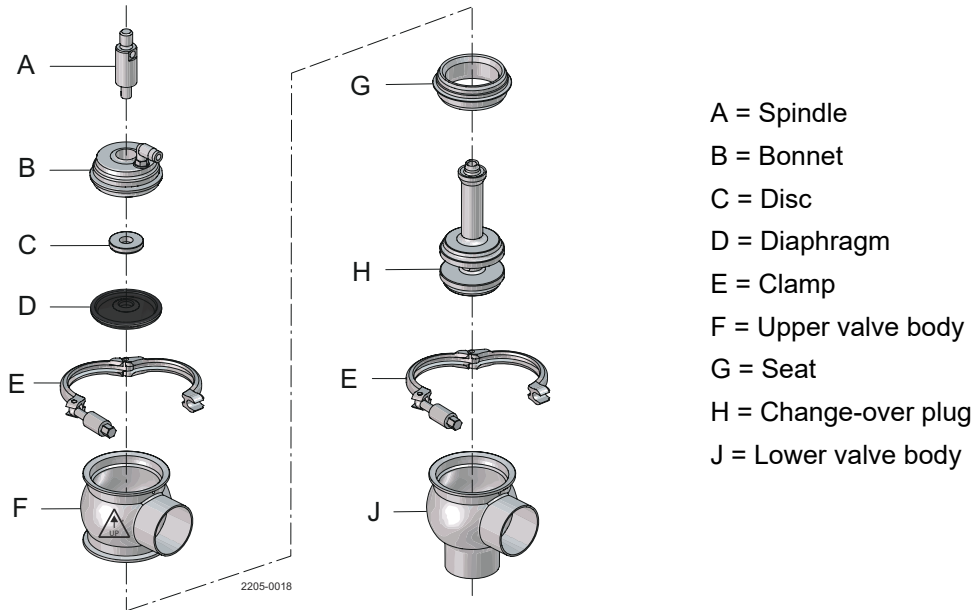
4 Loosen the plug from the spindle by using two 17 spanners.

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

Clean all parts and replace diaphragm and plug seal.

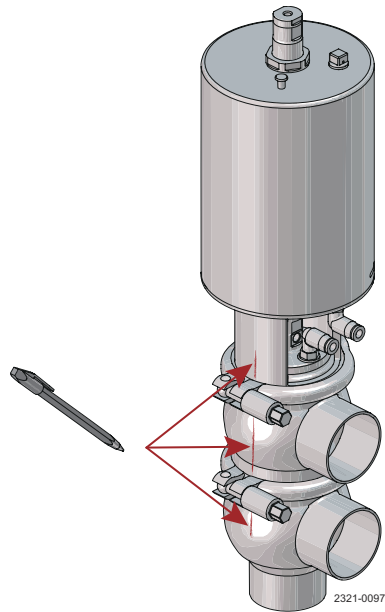


6.3 Dismantling change-over valve



When dismantling always mark the position of actuator, upper and lower valve body.

This makes the reassembly much easier, as the valve can be mounted up in the same position in the workshop.



WARNING

CORRECT assembling and disassembling to avoid destroying (stretching) diaphragm

IMPORTANT!

The mechanical stop is in lower body.

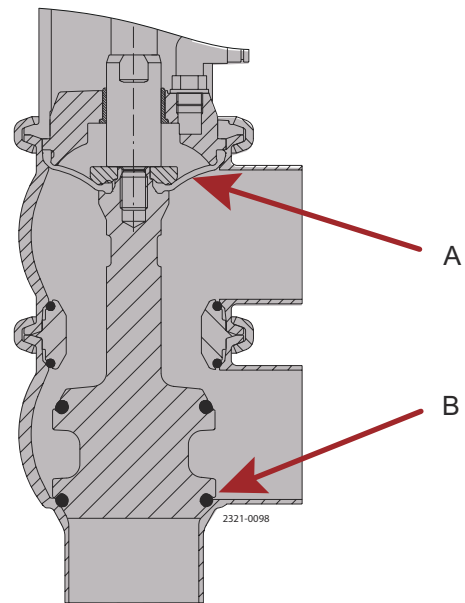
To avoid overstretching the diaphragm the lower body clamp must not be loosened before the upper body clamp.

A. Diaphragm

B. Mechanical stop

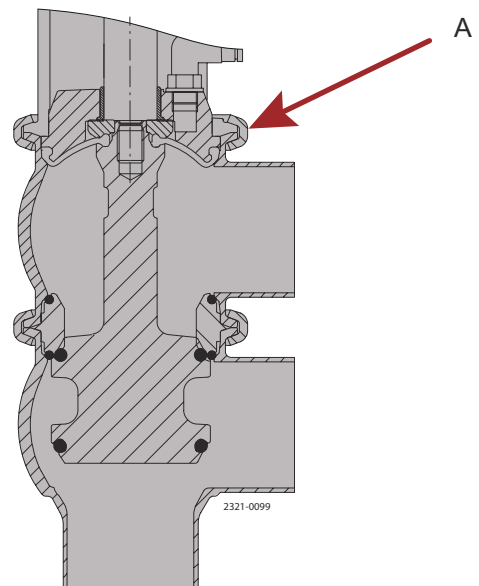
Recommended spare parts

Service kits



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

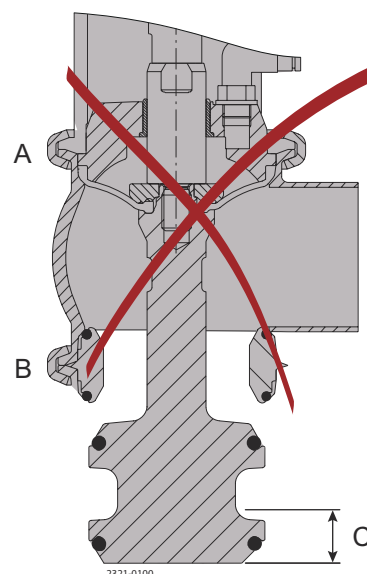
A = Upper clamp

**INCORRECT assembling and disassembling of Aseptic Mixproof Valve change-over valve**

A = Upper clamp still mounted, which is wrong

B = Lower clamp dismounted

C = The plug is overstretching the diaphragm as it moves 10 mm further downwards



1

A

Ensure that the actuator stem is in upper position before loosening the upper clamp.

B

Remove the air drain hose.

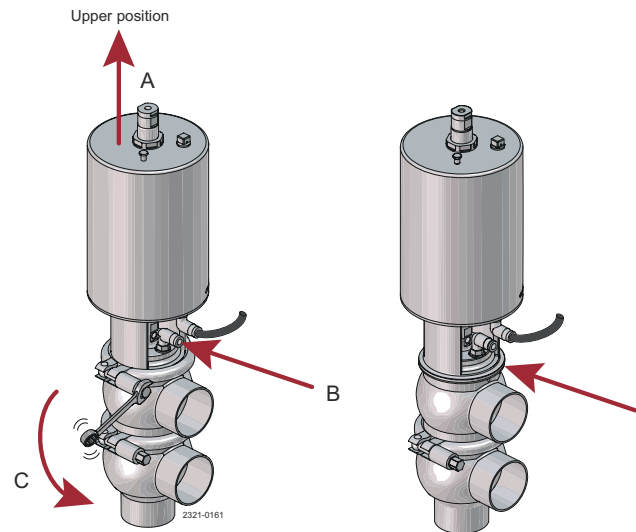
Ensure pipe is empty and not pressurized.

C

ALWAYS start with dismantling the upper clamp to avoid damaging the diaphragm.

IMPORTANT

Please remember **NOT** to dismount the lower clamp unless plug stays in the upper position (only type NO actuator), as diaphragm then will be destroyed if plug moves downwards.

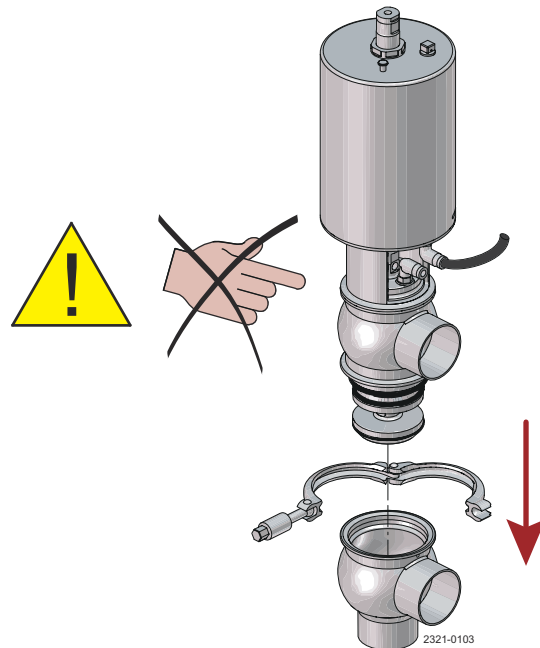


2

Dismount lower clamp and lower valve body.

**WARNING****Danger of cuts!**

Finger cuts at "bonnet" and "seat ring"

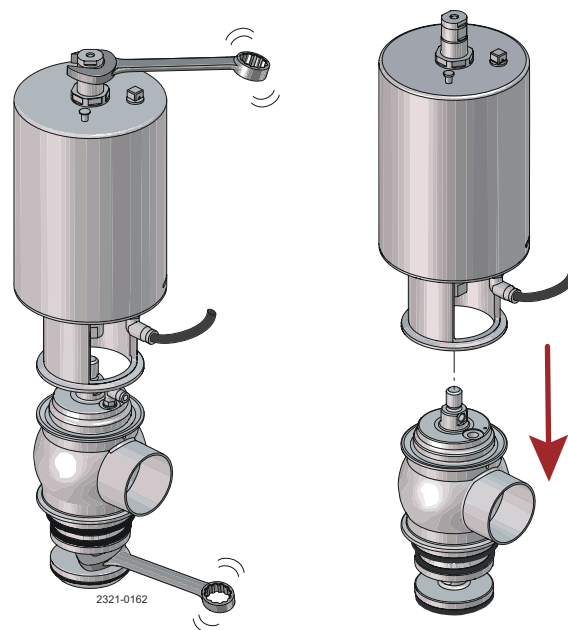


3

Loosen the spindle from the actuator. Use 17 mm spanners.

Ensure actuator stem is in lower position.

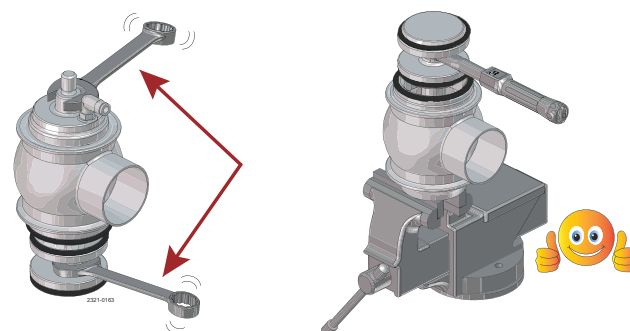
Now the plug/seat/upper valve body can be removed from the actuator yoke.



4

Loosen the spindle from the plug. Use 17 mm spanners.

It is easiest to use a vice.

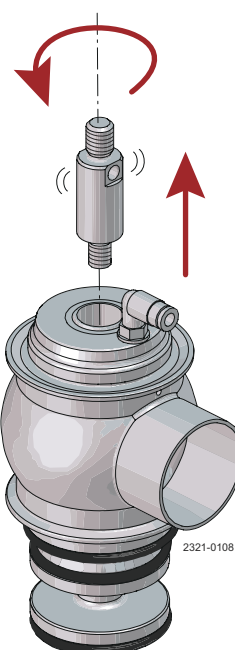


5

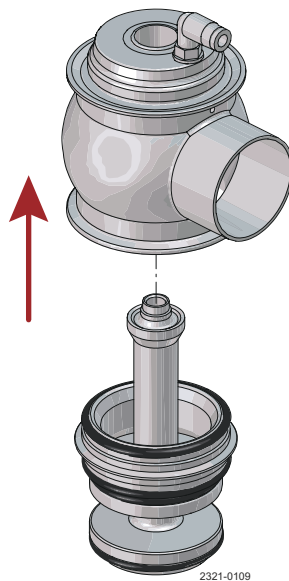
Dismount spindle from the plug.

! NOTE

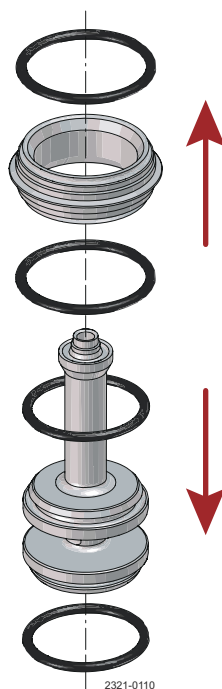
The leakage fitting in the bonnet does not need to be dismantled.



- 6 Dismount upper valve body from the plug/seat.



- 7 Dismount seat from the plug.
Remember to replace o-rings in the seat and the plug.



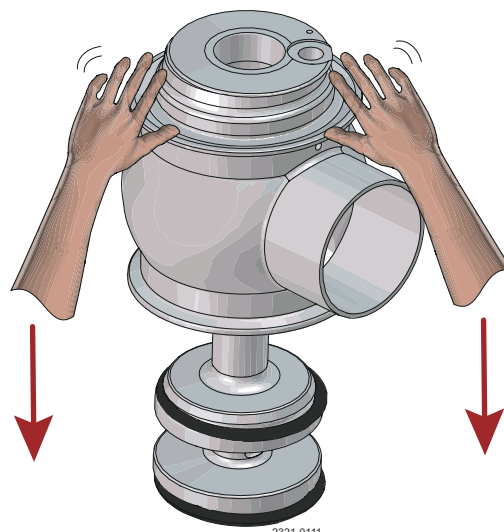
8

Remove bonnet from upper valve body.

To do this - use the plug to press the bonnet out of the valve.

Remove the seat from the plug. Place the plug in the upper valve body and press down on upper valve body until bonnet is loose.

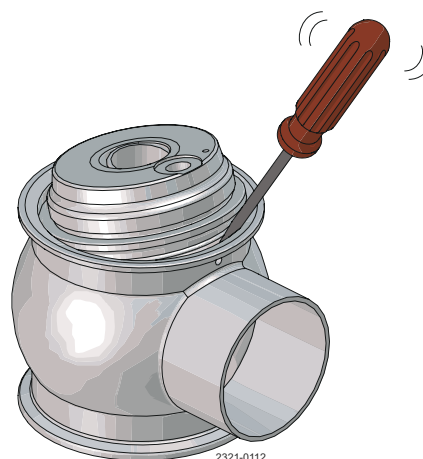
Be careful not to damage the plug.



9

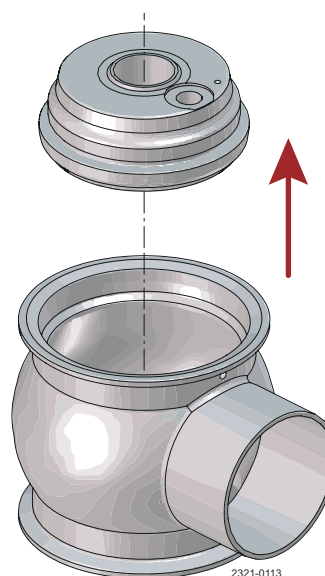
! NOTE

It is also possible to use a screw driver between the bonnet and valve. There is an "opening" marked in the bonnet where the screw driver can be fitted.



10

Dismount bonnet and diaphragm.

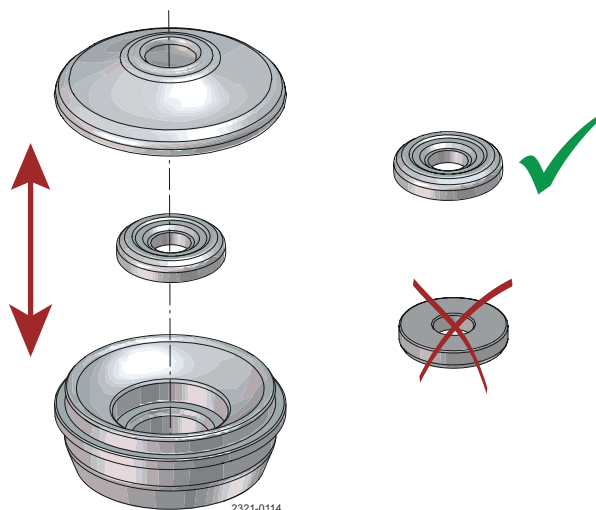


11

Replace the diaphragm.

It is important that the rounded face of the disc point towards the diaphragm.

The bushing (24) in the bonnet can be changed, if necessary.



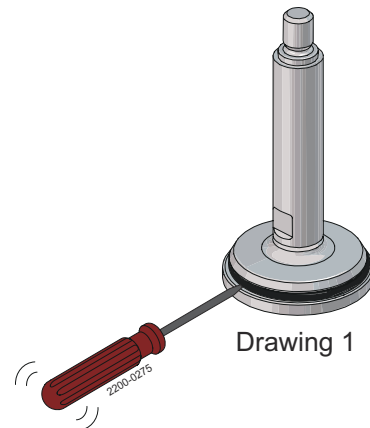
6.4 Plug Seal Replacement (Elastomer)

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.

NOTE

Be careful not to scratch the plug surface.



Drawing 1

6.4.2 Pre-mounting of plug seal

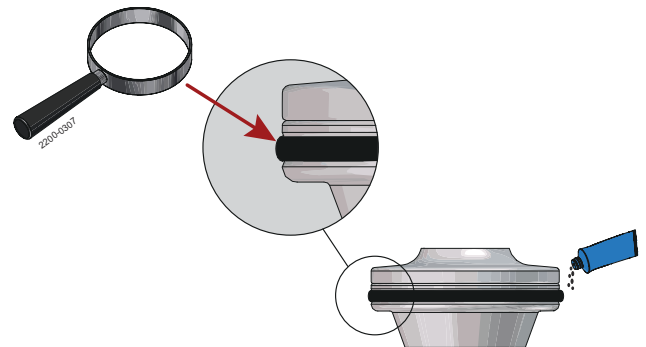
- 1 Lubricate the new plug seal with Alfa Laval Silicone based Food-grade Lubricant, which is included in the service kit.

Only a small amount is needed.

- 2 Fit the plug seal onto the plug seal groove.

NOTE

Be careful not to twist the plug seal.

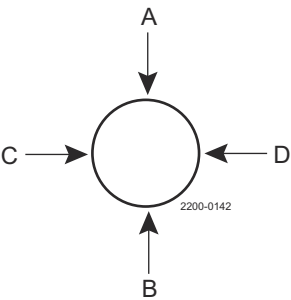


Drawing 2

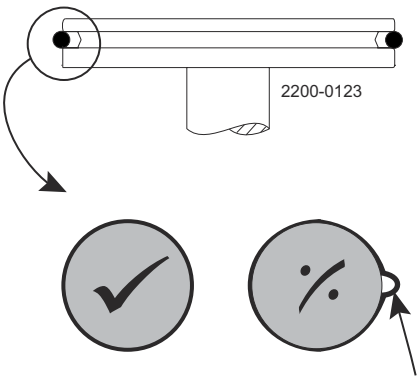
- 3 The plug seal can now be mounted by hand or with the Alfa Laval plug tool.

6.4.3 Mounting plug seal by hand

- 1 Ensure full circumferential seating of the sealing by applying opposite pressure with your fingers. Eg. A - B and C - D.



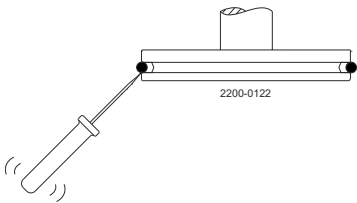
If a bulge is present, apply pressure on the plug seal and keep the pressure while rotating the plug 360°.



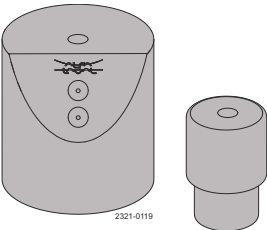
- 2 If necessary, trapped air behind the plug seal. can be relieved by use of a small flat-blade screwdriver.

NOTE

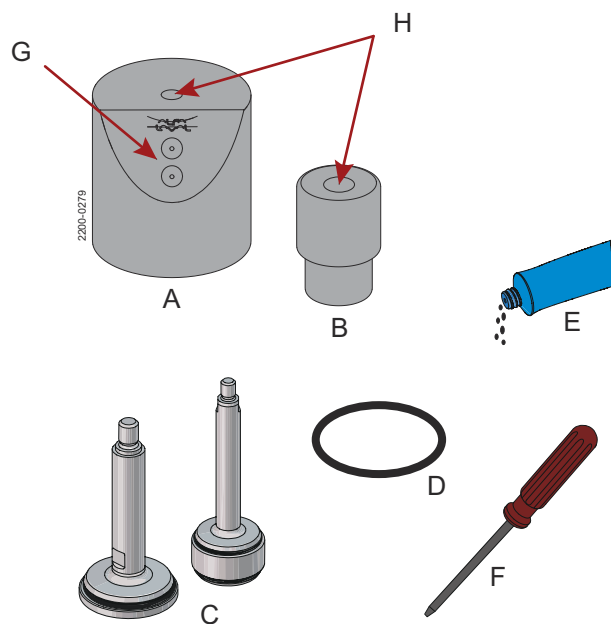
Be careful not to scratch the surface of the plug and/or damage the seal.



6.4.4 Mounting plug seal with Alfa Laval plug seal tool

Mounting tool for elastomer plug seals	25 mm	51 mm - 63.5 mm	76.1 mm
	9614060001	9614060003	9614060004

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

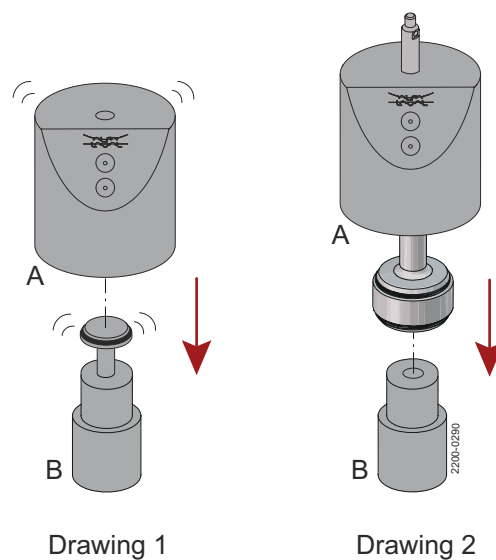


1 Assembly

For shut-off plug - See drawing 1.

For reverse acting plug - See drawing 2.

For change-over plug - See drawing 1 + 2.



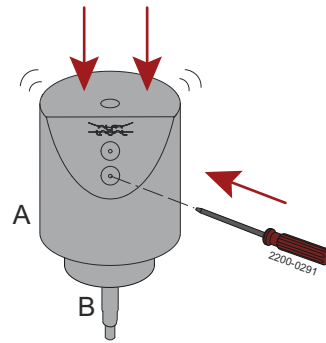
2

- a) Fit the plug according to plug type.
- b) Apply force to push Part A and B together which will ensure full circumferential seating of the sealing.
- c) To relieve trapped air behind the plug sealing, insert the flat-blade screwdriver through the applicable exhaust hole on part A and fit it between the plug sealing and plug.

With the flat-blade screwdriver fitted apply force again and a single "hiss" sound can be heard.

! NOTE

Be careful not to scratch the surface of the plug and/or damage the seal.

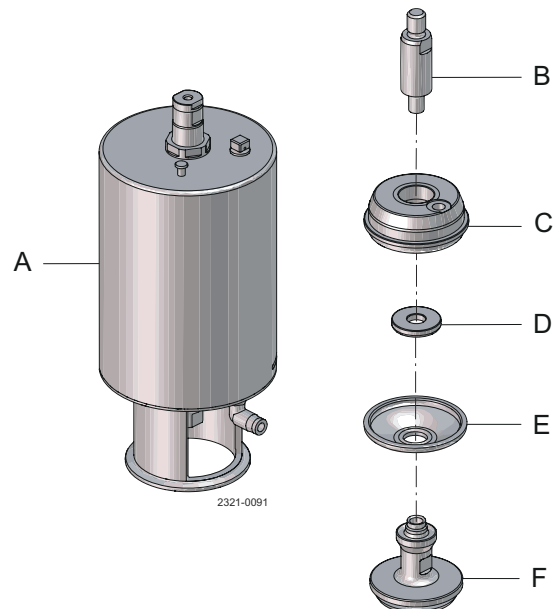


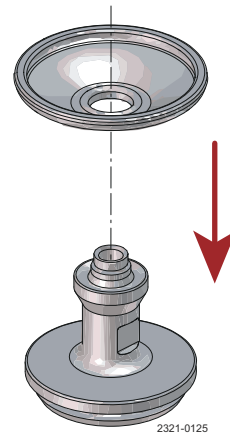
6.5 Assembly of shut-off valve

1

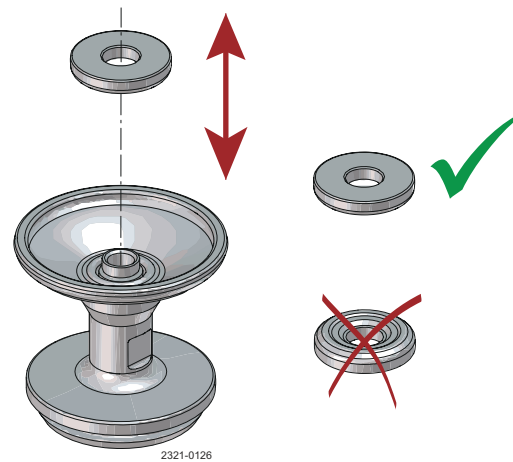
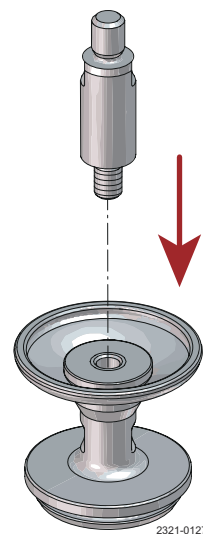
Before mounting all parts must be cleaned.

- A.** Actuator
- B.** Spindle
- C.** Bonnet
- D.** Disc
- E.** Diaphragm
- F.** Plug



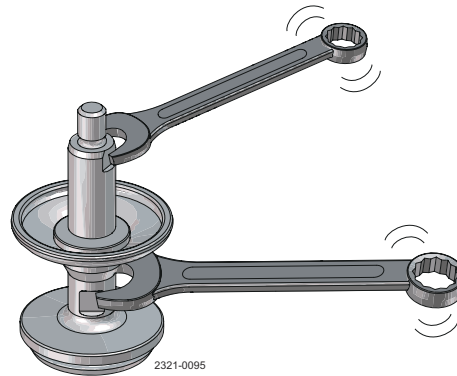
2 Mount a new diaphragm.**3** Fit disc on plug.

It is important that the rounded face of the disc point towards the diaphragm.

**4** Mount spindle.

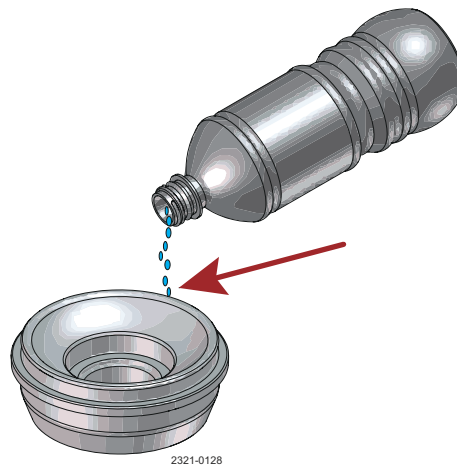
5 Tighten spindle and plug with:

- 51 mm (2") to 76.1 mm (3") with torque = 33 Nm
- 25 mm (1") with torque = 17 Nm



6 We strongly recommend to use some water to "lubricate" on the bonnets round edge, before mounting the diaphragm.

This makes it much easier to mount diaphragm correctly.

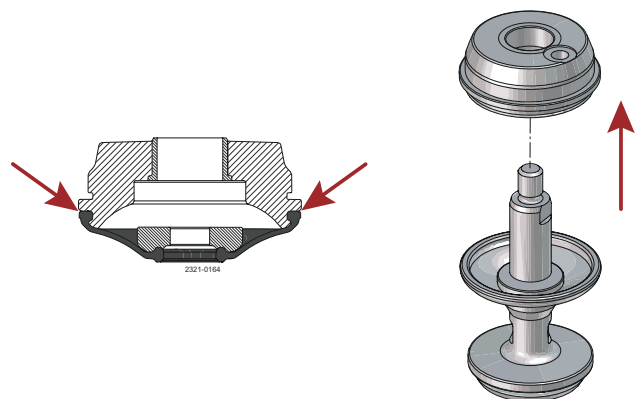


7 Mount bonnet on spindle and fit diaphragm.

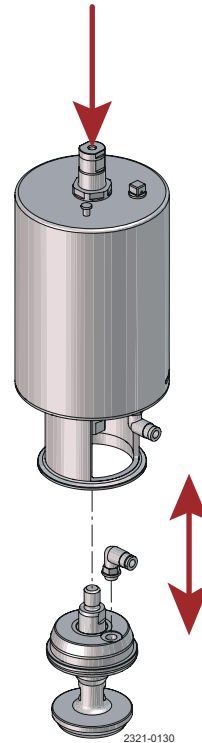
Press only with the fingers to avoid scratches on diaphragm. Be sure that diaphragm is correctly fitted on the "round edge" on the bonnet.



Make sure that the diaphragm is securely mounted on the bonnet before installing the complete diaphragm/stem into the valve body.

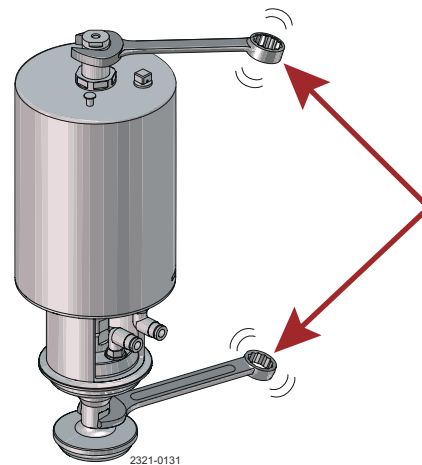


- 8 Mount the fitting for leakage in the bonnet. Be sure the actuator stem is in lower position. Mount the assembled "plug unit" onto the actuator stem.



- 9 Tighten plug and actuator with:

- 51 mm (2") to 76.1 mm (3") with torque = 33 Nm
- 25 mm (1") with torque = 17 Nm

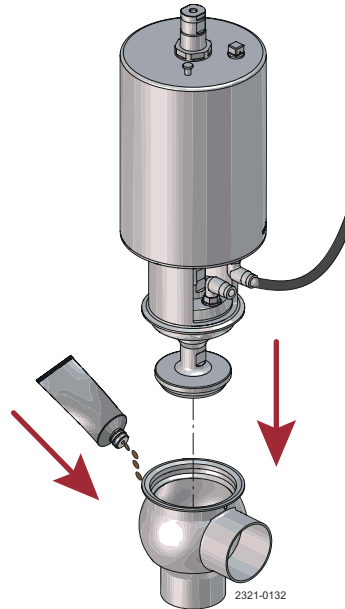


- 10** Before mounting bonnet/diaphragm into valve body use grease (Paraliq GTE 703) on sealing surface. This will reduce friction when diaphragm is pressed into the valve body.

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.



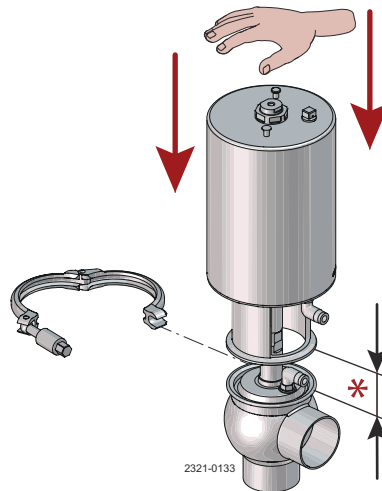
- 11** Ensure that the actuator stem is still in lower position.

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



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

* = Big gap



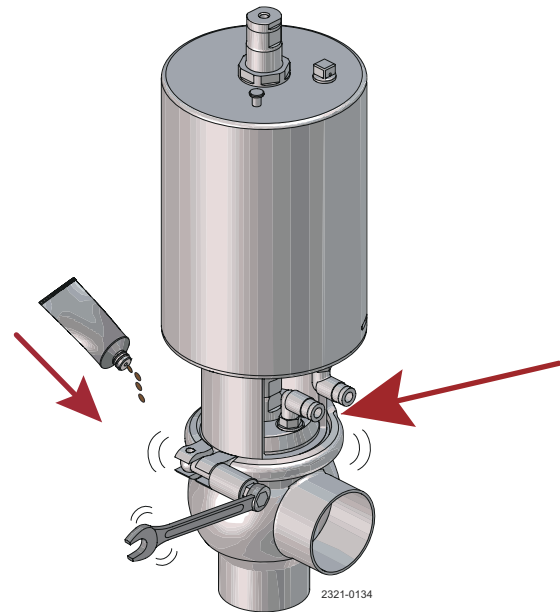
- 12** Now move the actuator stem in top position and press **HARD** on top of the actuator to reduce the gap to approx. 1 mm.

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

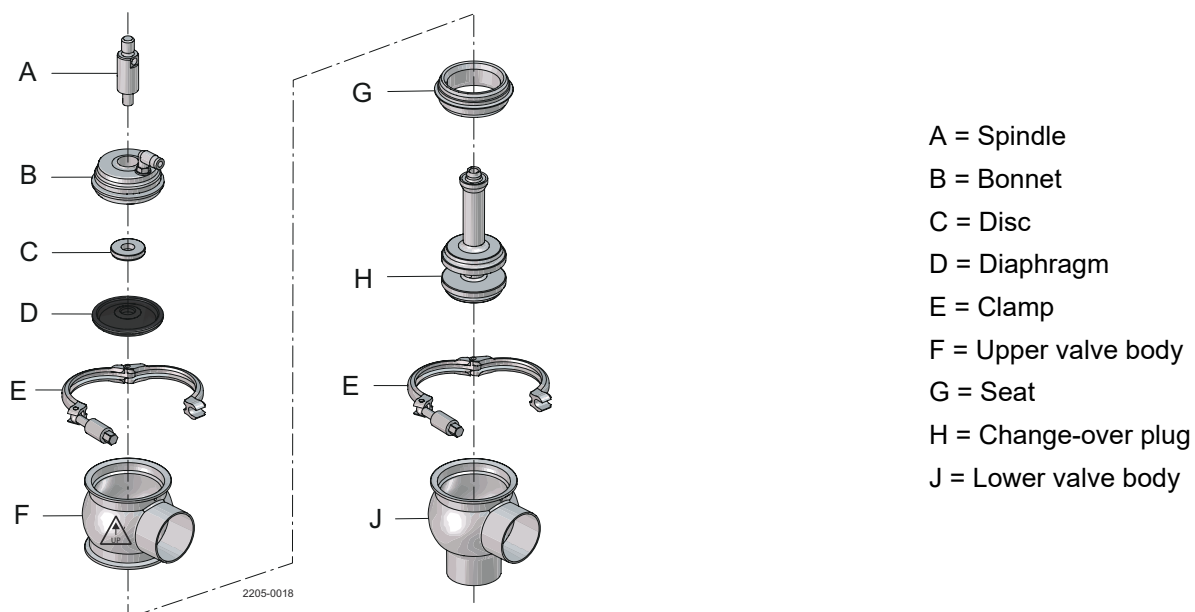
Tighten with a 10 mm spanner. Torque = 10-12 Nm.

Grease the thread with Molykote.

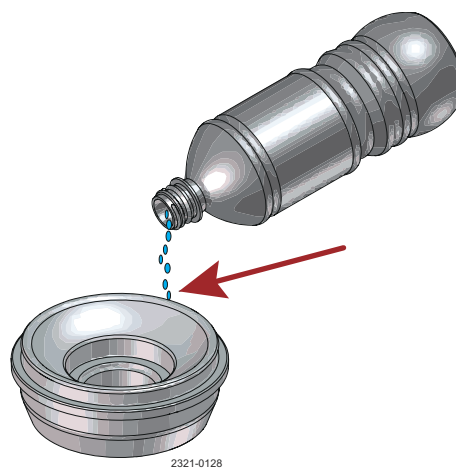
Place a hose in the fitting in the sealing element (hole for leakage detection).



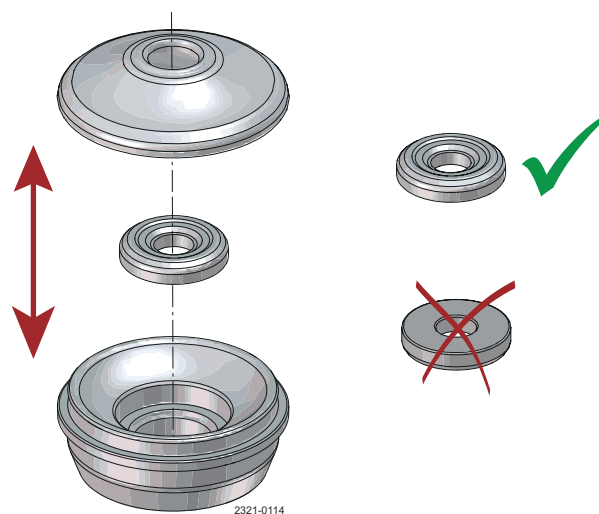
6.6 Assembly of change-over valve



- 1 We recommend to use some water to "lubricate" on the bonnets round edge, before mounting the diaphragm. This makes it much easier to mount diaphragm correctly.

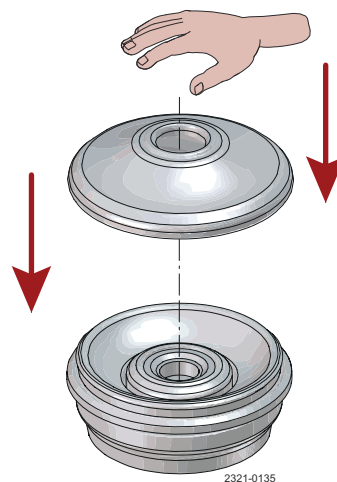


- 2 Mount the disc in the bonnet, with the plane disc side towards the bonnet bushing. It is important that the rounded face of the disc point towards the diaphragm.

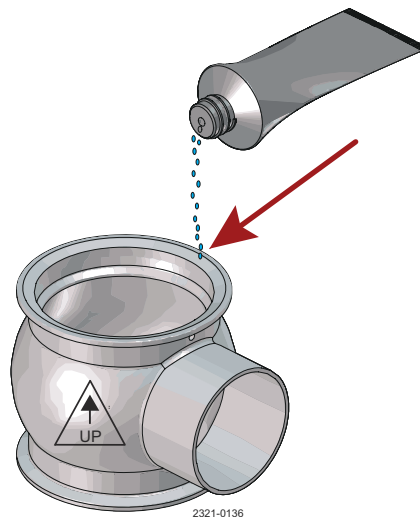


- 3 Fit diaphragm to the bonnet. Press only with the fingers so no scratch comes on the diaphragm as this might result in leakage.

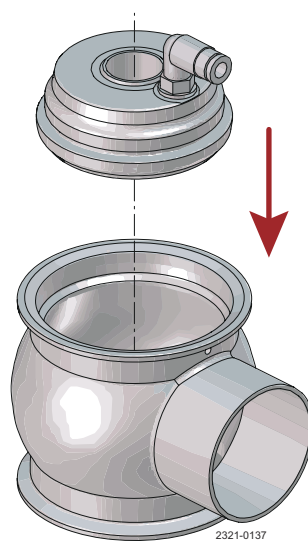
Be sure that the diaphragm is fitted correctly on the "round edge" on the bonnet.



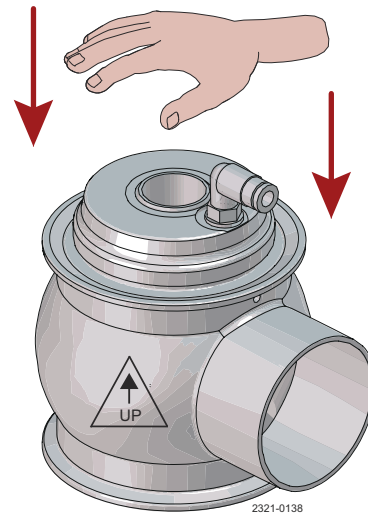
- 4 We strongly recommend to use grease (Paraliq GTE 703) on the edges of the upper valve body to ensure that the diaphragm is mounted correctly. The sealing surface must be clean to avoid leakage.



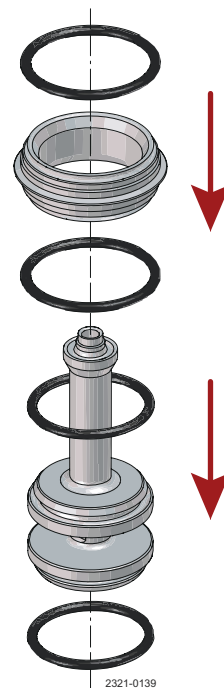
- 5 Mount bonnet and diaphragm (disc inside) into upper valve body.



- 6 Remember to position valve body with the Ø2 hole upwards. Press hard on the bonnet to fit it in the upper valve body.

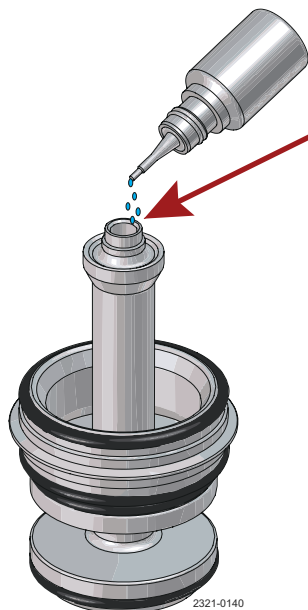


- 7 Place the seat on the plug. Remember to mount new O-rings in the seat and plug.

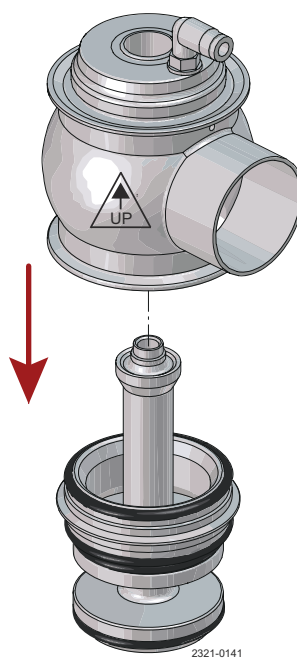


- 8 Use a little amount of "Loctite 243" on the plug treat.

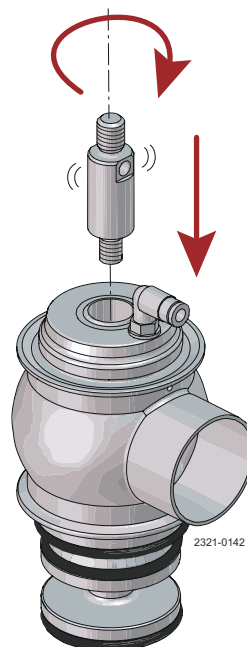
Be careful not to spill a drop outside the threaded hole, as this will glue the disc and plug together and this can make it difficult to dismount the valve next time service is carried out.



- 9 Mount upper valve body onto the plug/seal.



- 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!

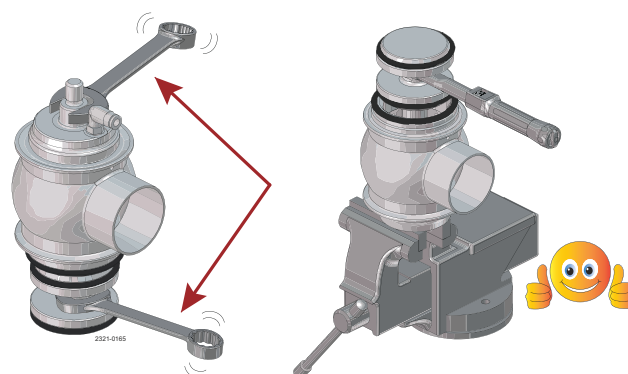


- 11** Tighten the spindle and plug. Use 17 mm spanners.

It is easiest to use a vice.

Tighten valve size 51 mm (2") to 76.1 mm (3") with torque = 33 Nm

Tighten valve size 25 mm (1") with torque = 17 Nm



- 12 Ensure that the actuator stem is in lower position.

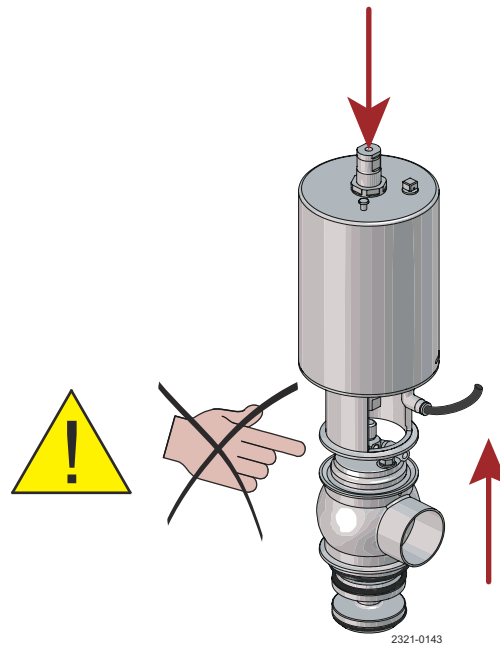
Tighten the valve body/plug together with the actuator.

Activate the actuator, if is it a NO version, so the actuator stem moves downwards to ensure right mounting.



WARNING

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

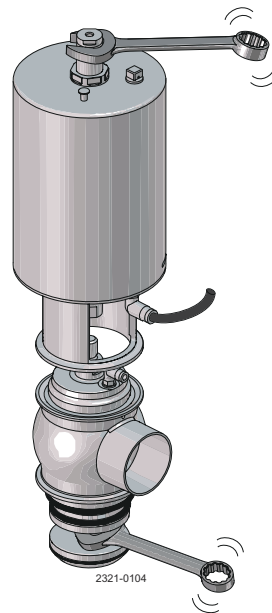


2321-0143

- 13 Tighten the actuator stem and plug. Use 17 mm spanners.

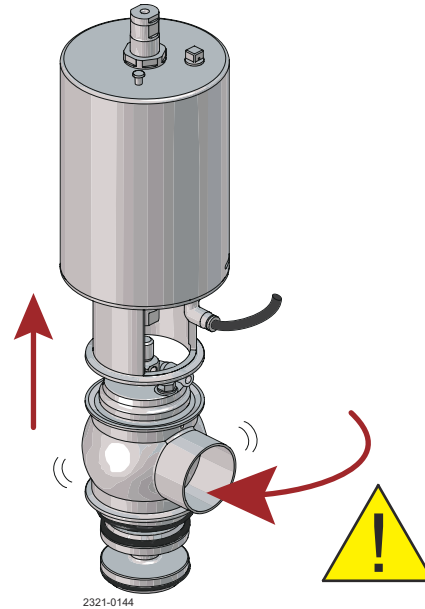
Tighten valve size 51 mm (2") to 76.1 mm (3") with torque = 33 Nm.

Tighten valve size 25 mm (1") with torque = 17 Nm.



2321-0104

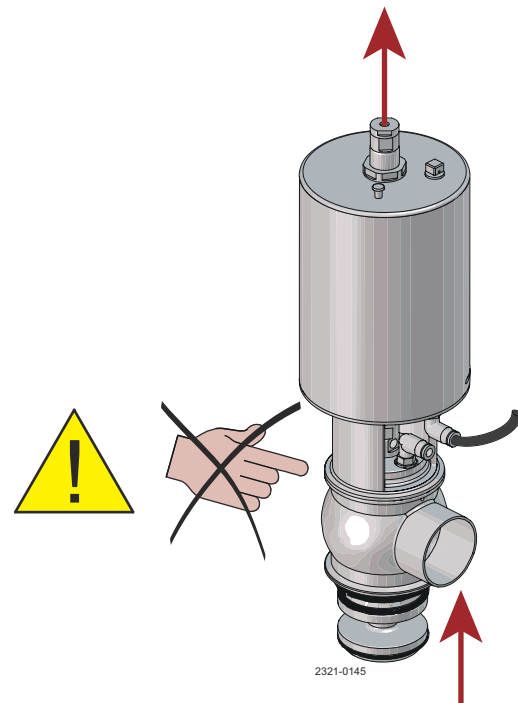
- 14 Align upper valve body and actuator if necessary. This is done by rotating the valve body only clockwise (only the valve body can rotate as diaphragm is locked).



- 15 Ensure that the actuator stem is in upper position.

**WARNING**

Finger cut at "bonnet" and "seat ring".



16 **CORRECT assembling and disassembling to avoid destroying (stretching) diaphragm**

IMPORTANT!

The mechanical stop is in lower body.

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

A = Diaphragm

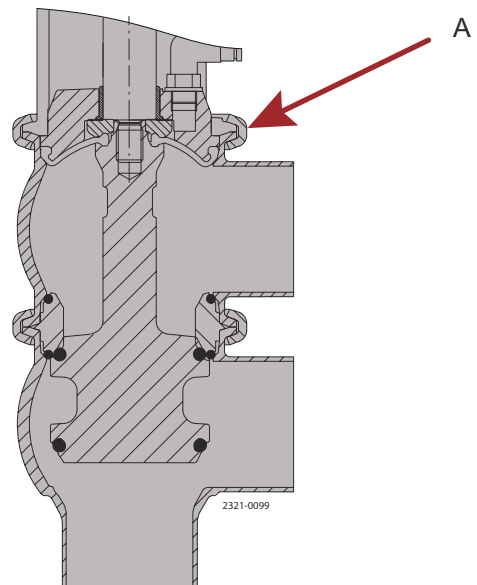
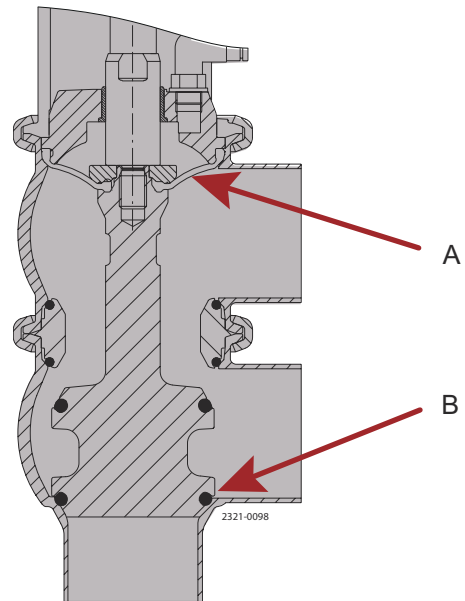
B = Mechanical stop



Recommended spare parts: Service kits

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

A = Upper clamp



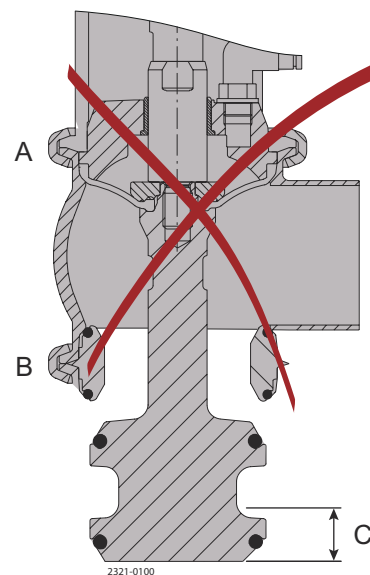
- b) **INCORRECT assembling and disassembling of Aseptic Mixproof Valve change-over valve**

A = Upper clamp still mounted, which is wrong

B = Lower clamp dismounted

C = The plug is overstretching the diaphragm as it moves 10 mm further downwards

Lower clamp dismounted

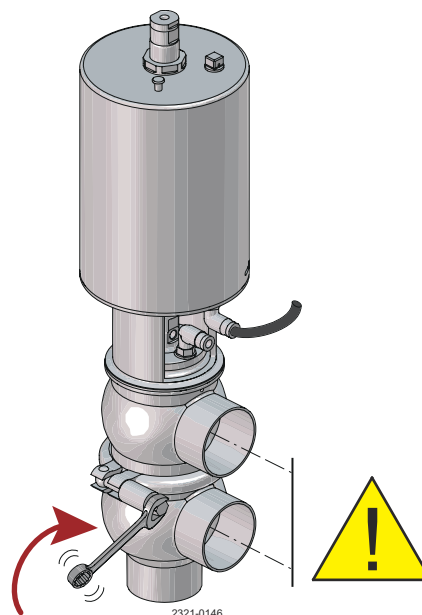


17

Mount lower valve body, but remember to align with upper valve body, before tightening the lower clamp. Then tighten **LOWER** clamp with torque $M = 10-12 \text{ Nm}$.

IMPORTANT:

Remember always to fit the **LOWER** clamp first and the upper clamp as the last one to avoid damaging the diaphragm (also see step 16 on page 74).

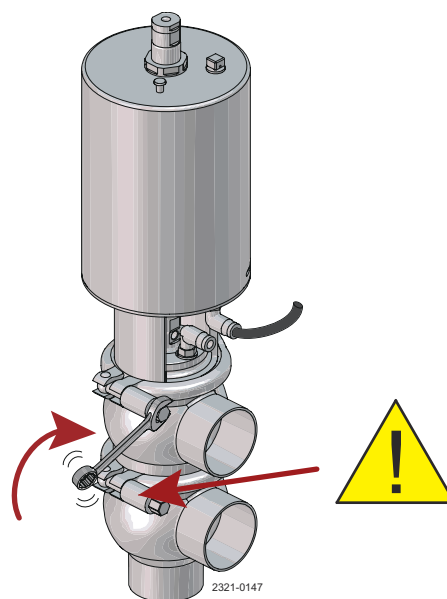


18

Now mount upper clamp and tighten - torque $= 10-12 \text{ Nm}$.

IMPORTANT!

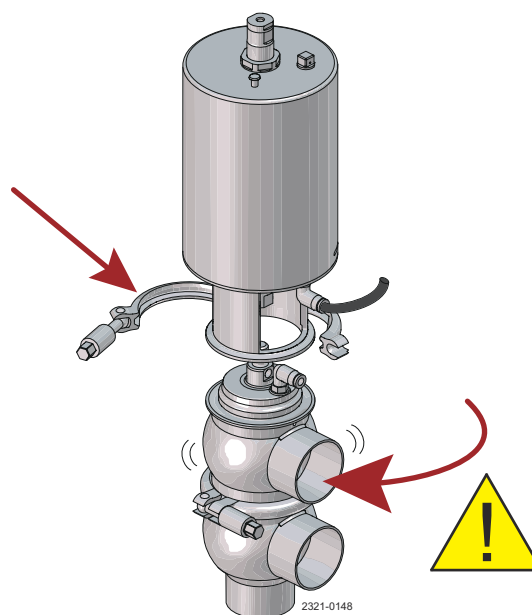
Please remember **NOT** to dismount the lower clamp unless plug stays in the upper position, as diaphragm will be destroyed if plug moves downwards (also see step 16 on page 74).



- 19 If the upper valve body has to be rotated remember **ALWAYS** to start with dismantling the upper clamp.

IMPORTANT!

Please remember **NOT** to dismount the lower clamp unless plug stays in the upper position, as diaphragm will be destroyed if plug moves downwards. (see also step 16 on page 74).



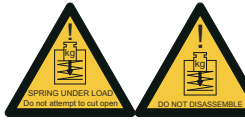
6.7 Dismantling of fully maintainable actuator



If the actuator is marked with a danger warning, do **NOT** attempt to cut the actuator open.

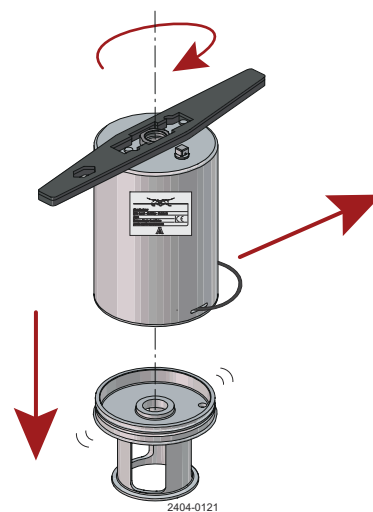
Do **NOT** attempt to disassemble the actuator due to spring under load danger!

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



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

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



Rotate cylinder with service tool

6.8 Mounting of fully maintainable actuator

1

1. Reverse order of *Dismantling of fully maintainable actuator* on page 77.
 2. Lubricate O-rings (3, 7, 11) with Molykote Longterm 2 plus before fitting.
 3. Tighten bushings with a torque = 10 Nm and be careful not to overtightened.
-

6.9 Changing pneumatic movement on fully maintainable actuator (NC/NO)



If the actuator is marked with a danger warning, do **NOT** attempt to cut the actuator open.

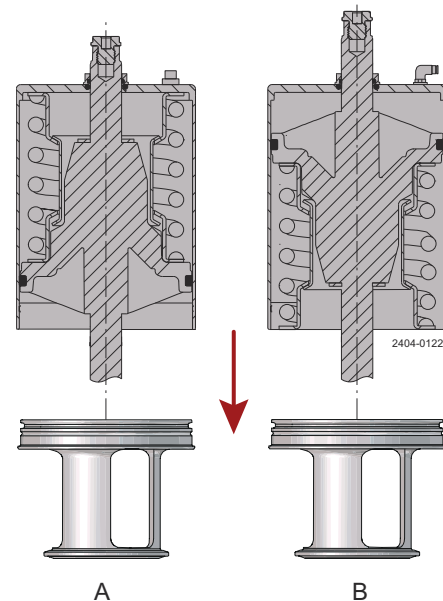
Do **NOT** attempt to disassemble the actuator due to spring under load danger!

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



- 1 Rotate cylinder.
- 2 Remove lock wire and pull away cylinder.
- 3 Reverse piston and spring assembly.
- 4 Reverse adapter, air fitting and plug to opposite end.
- 5 Reassemble in reverse order (3 to 1).

A = Pneumatic movement - upwards (NC)
B = Pneumatic movement - downwards (NO)



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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

Temperature range:	-10 °C to +140 °C (EPDM) / 14 °F to +284 °F (EPDM)
Max. sterilization temperature (<1 min):	150 °C/380 kPa (3.8 bar) / 302 °F/380 kPa (55 PSI)

Pressure

Pressure range:	0-800 kPa (0-8 bar) / 0-116 PSI (0-8 bar)
Air pressure:	500-700 kPa (5-7 bar) / 72.5-101.5 PSI (5-7 bar)
Pressure range, support air:	0-300 kPa (0-3 bar) / 0-43 PSI (0-3 bar)

NOTE

Note! Vacuum is not recommended in aseptic applications.

7.2 Physical data

Materials

Product wetted steel parts:	1.4404 (316L)
Other steel parts:	1.4301 (304)

Surface finish

External surface finish:	Semi-bright (blasted)
Internal surface finish:	Bright (polished), Ra < 0.8 µm (32 µin)

Seals

Product wetted seals:	EPDM
Optional product wetted seals:	HNBR, FPM
Other seals:	NBR
Diaphragm:	PTFE (Product wetted side) / EPDM

Option

Temperature sensor (PT100):	with or without transmitter
Steam valve	Hygienic or Aseptic

Sizes

Main valve ISO:	51 mm; 63.5 mm; 76.1 mm (2", 2.5", 3")
-----------------	--

Weight

Size	51 mm (2")	63.5 mm (2.5")	76.1 mm (3")
Maximum weight (depending on valve configuration)	29 kg (64 lb)	30 kg (66 lb)	46 kg (99 lb)

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



The rules of Intended use are absolute. Use of the supplied Alfa Laval product is allowed only when in compliance with the technical data supplied with the Intended use.

Differing utilisation, other than agreed with Alfa Laval Kolding A/S, exclude any liability and warranty.

No modification or alteration of the supplied Alfa Laval product is allowed, unless explicit permission is granted by Alfa Laval Kolding A/S.



Liability and warranty are excluded:

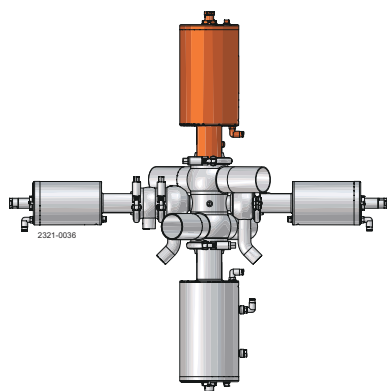
- If advice and instruction of operating instructions are ignored
- For incorrect operation or for insufficient maintenance of the supplied Alfa Laval product
- For any kind of change of function of the supplied Alfa Laval product without prior written agreement by Alfa Laval Kolding A/S
- If supplied Alfa Laval product is modified by non-authorised persons
- If using the supplied Alfa Laval product without attention of appropriate safety regulations, (see [Safety](#) on page 7)
- If protection equipment is not used and vessel process / ancillary equipment is not brought to a standstill
- If the supplied Alfa Laval product and ancillary parts are not properly maintained (to be executed in intervals and including fitting of prescribed replacement parts)

When exchanging parts, only original replacement parts, released from the manufacturer, must be used.

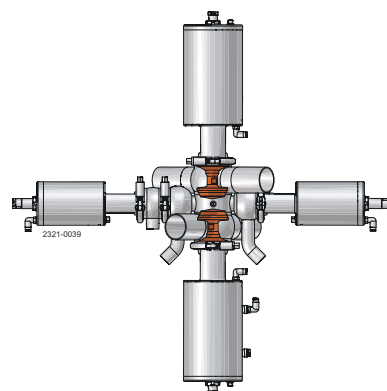
9 Parts Lists and Exploded Views

9.1 Valve Overview

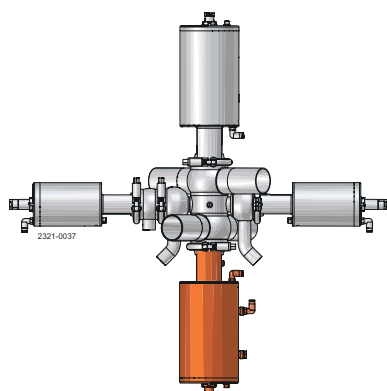
Actuator, primary valves (no seat lift)



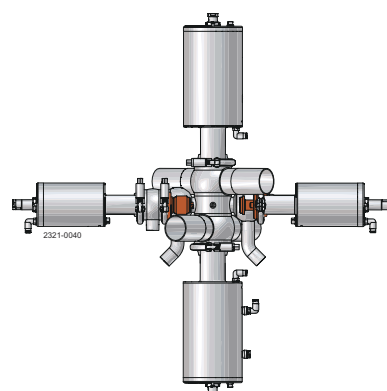
Plugs, primary valves



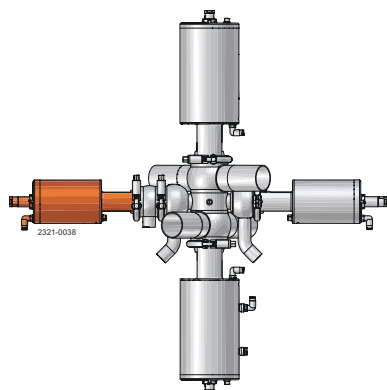
Actuator, primary valves (with seat lift)



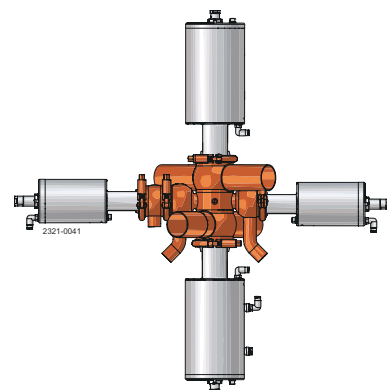
Plugs, secondary valves



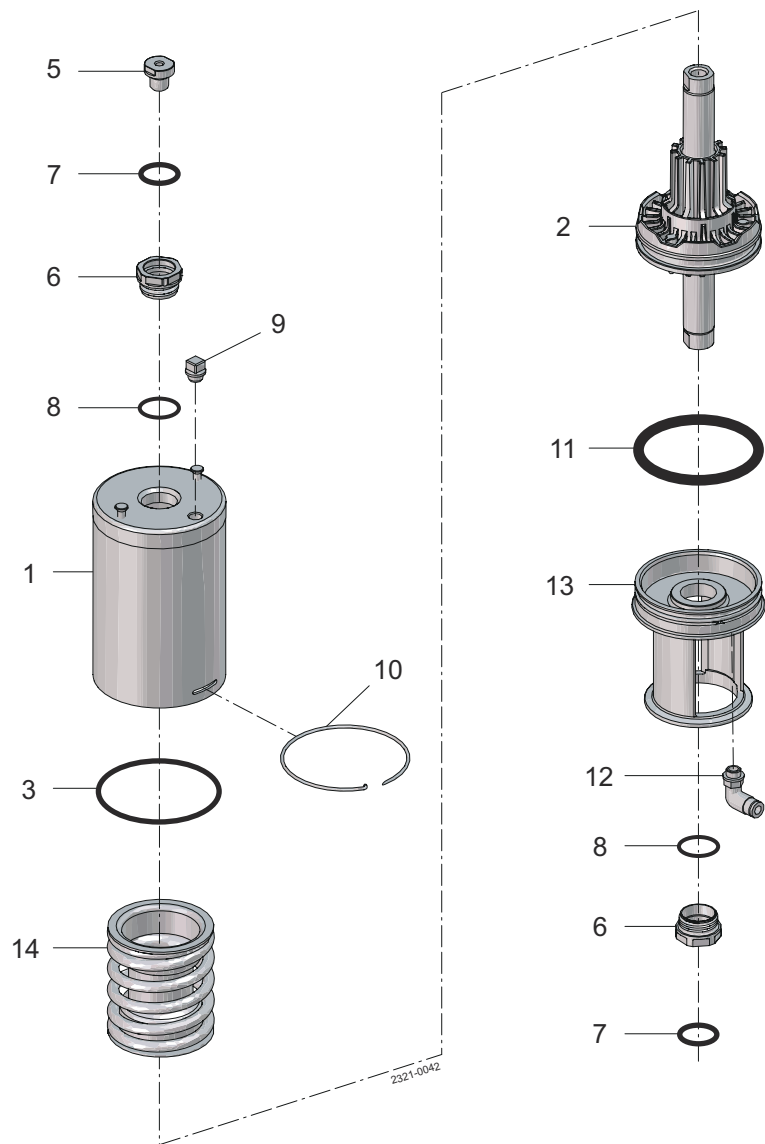
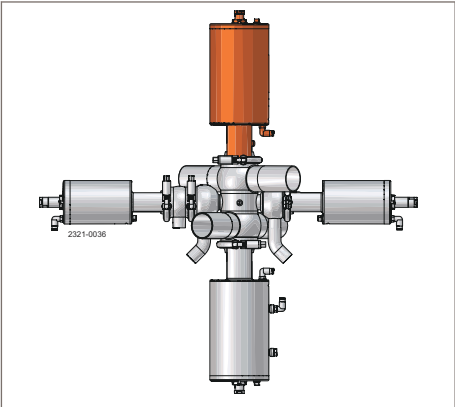
Actuator, secondary valves



Clamps, bonnets and bodies



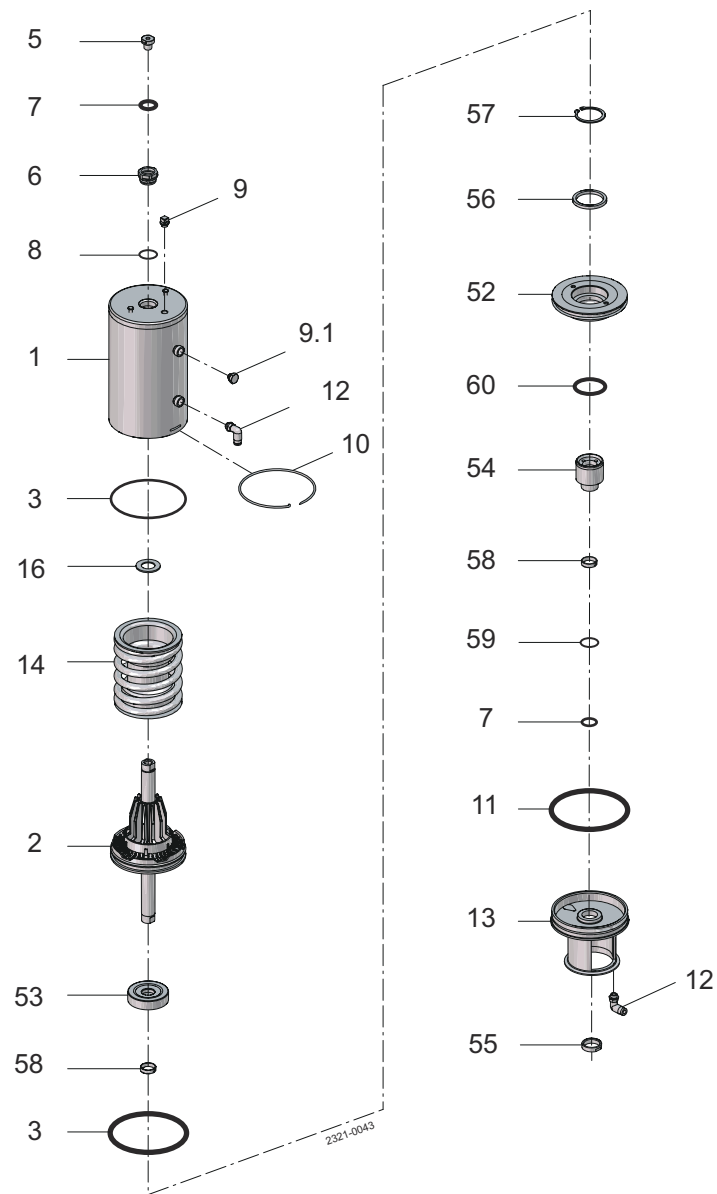
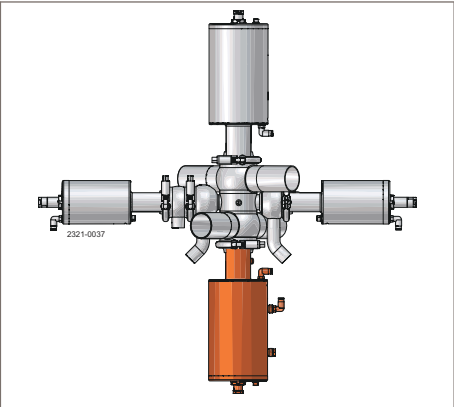
9.2 Actuators, primary valves (no seat lift)



Pos.	Qty.	Denomination
	1	Actuator
1	1	Cylinder
2	1	Piston
3	1	O-ring
5	1	Adapter
6	2	Bushing
7	2	O-ring

Pos.	Qty.	Denomination
8	2	O-ring
9	1	Plug, air vent
10	1	Lock wire
11	1	O-ring
12	1-2	Air fitting
13	1	Yoke
14	1	Spring assembly

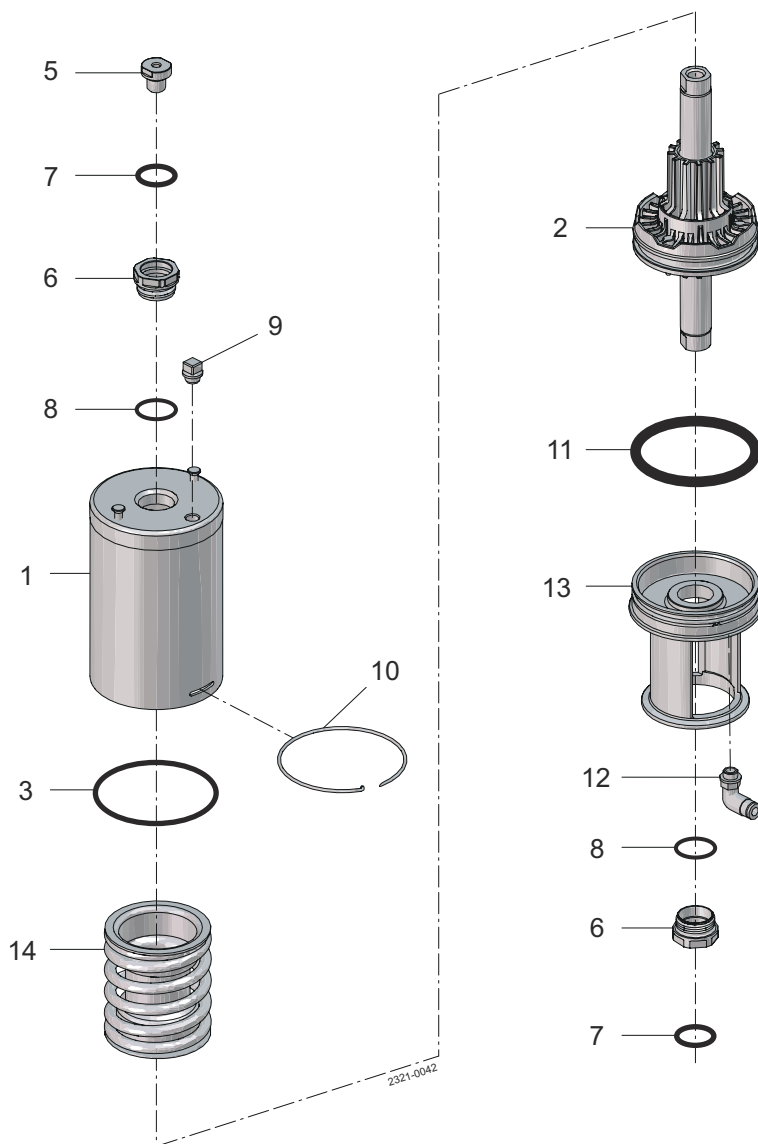
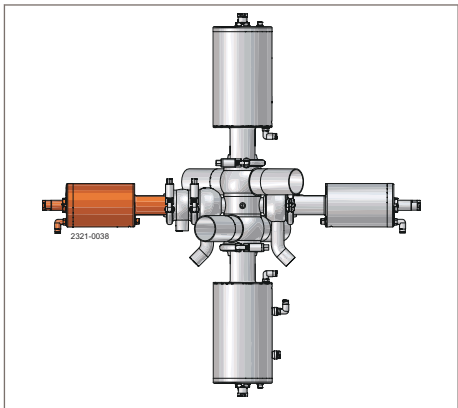
9.3 Actuators, primary valves (with seat lift)



Pos.	Qty.	Denomination
	1	Actuator
1	1	Cylinder
2	1	Piston
3	2	O-ring
5	1	Adapter
6	1	Bushing
7	2	O-ring
8	1	O-ring
9	1	Plug, air vent.
9.1	1	Plug
10	1	Lock wire
11	1	O-ring
12	2-3	Air fitting

Pos.	Qty.	Denomination
13	1	Yoke
14	1	Spring assembly
16	1	Support disc
52	1	Piston
53	1	Thrust plate
54	1	Guide
55	1	Nut
56	3	Spacer
57	1	Lock ring
58	2	Guide ring
59	1	O-ring
60	1	O-ring

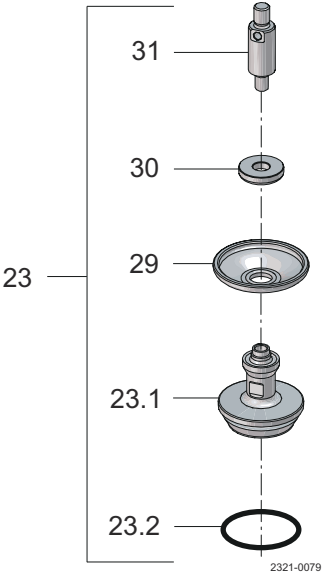
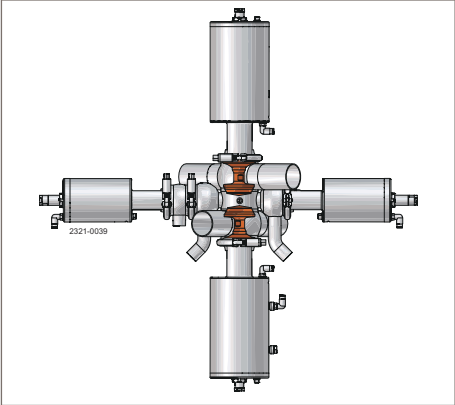
9.4 Actuators, secondary valves



Pos.	Qty.	Denomination
	1	Actuator
1	1	Cylinder
2	1	Piston
3	1	O-ring
5	1	Adapter
6	2	Bushing
7	2	O-ring

Pos.	Qty.	Denomination
8	2	O-ring
9	1	Plug
10	1	Lock wire
11	1	O-ring
12	1-2	Air fitting
13	1	Yoke
14	1	Spring assembly

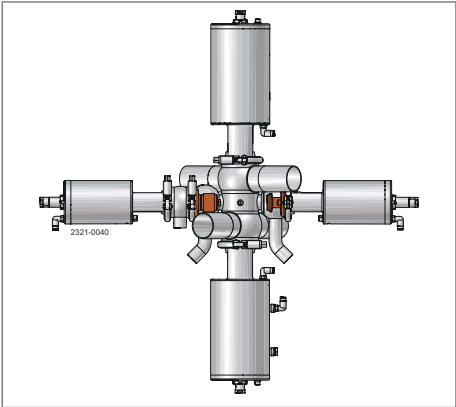
9.5 Plugs, primary valves



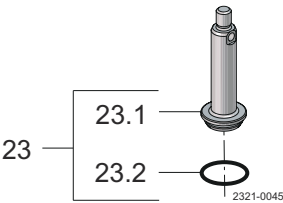
Pos.	Qty.	Denomination
23	1	Plug
23.1	1	Plug
23.2	1	Plug seal

Pos.	Qty.	Denomination
29	1	Diaphragm
30	1	Disc for diaphragm
31	1	Upper spindle

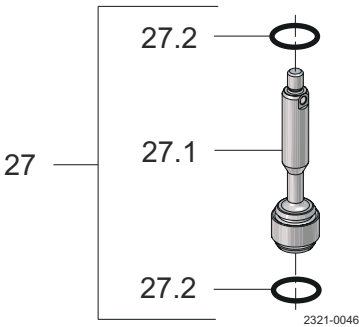
9.6 Plugs, secondary valves



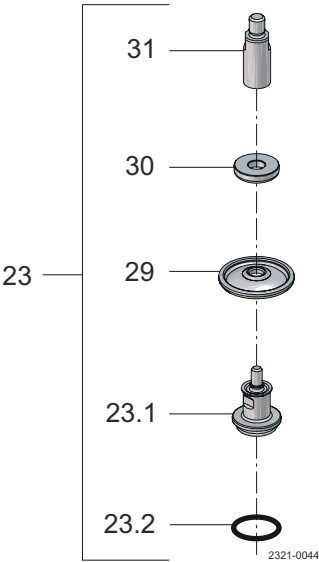
Hygienic plugs - shut-off



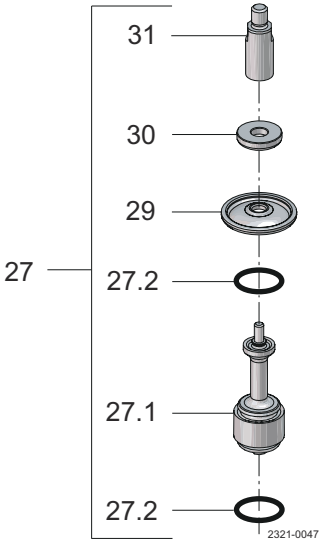
Hygienic plugs - change-over



Aseptic plugs - shut-off



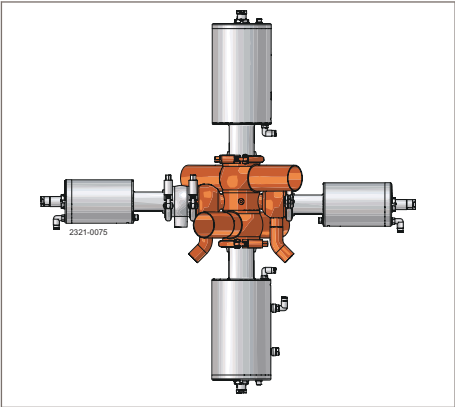
Aseptic plugs - change-over



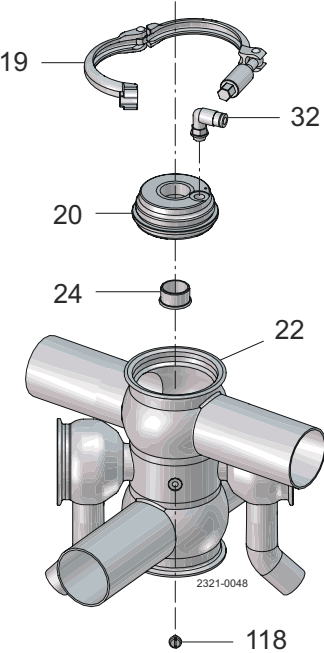
Pos.	Qty.	Denomination
23	1	Plug, complete
23.1	1	Plug
23.2	1	Plug seal
27	1	Plug, complete
27.1	1	Plug

Pos.	Qty.	Denomination
27.2	2	Plug seal
29	1	Diaphragm
30	1	Disc for diaphragm
31	1	Upper spindle

9.7 Clamp, bonnet and body, primary valves

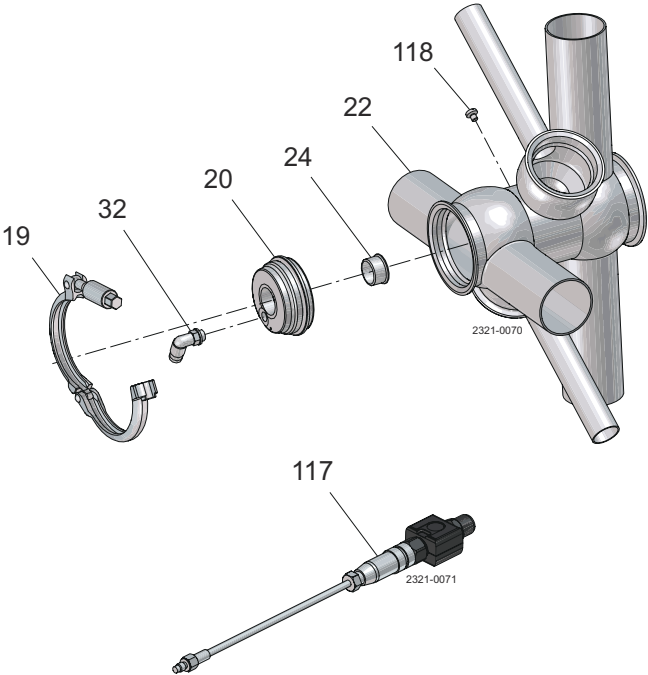


Vertical mount



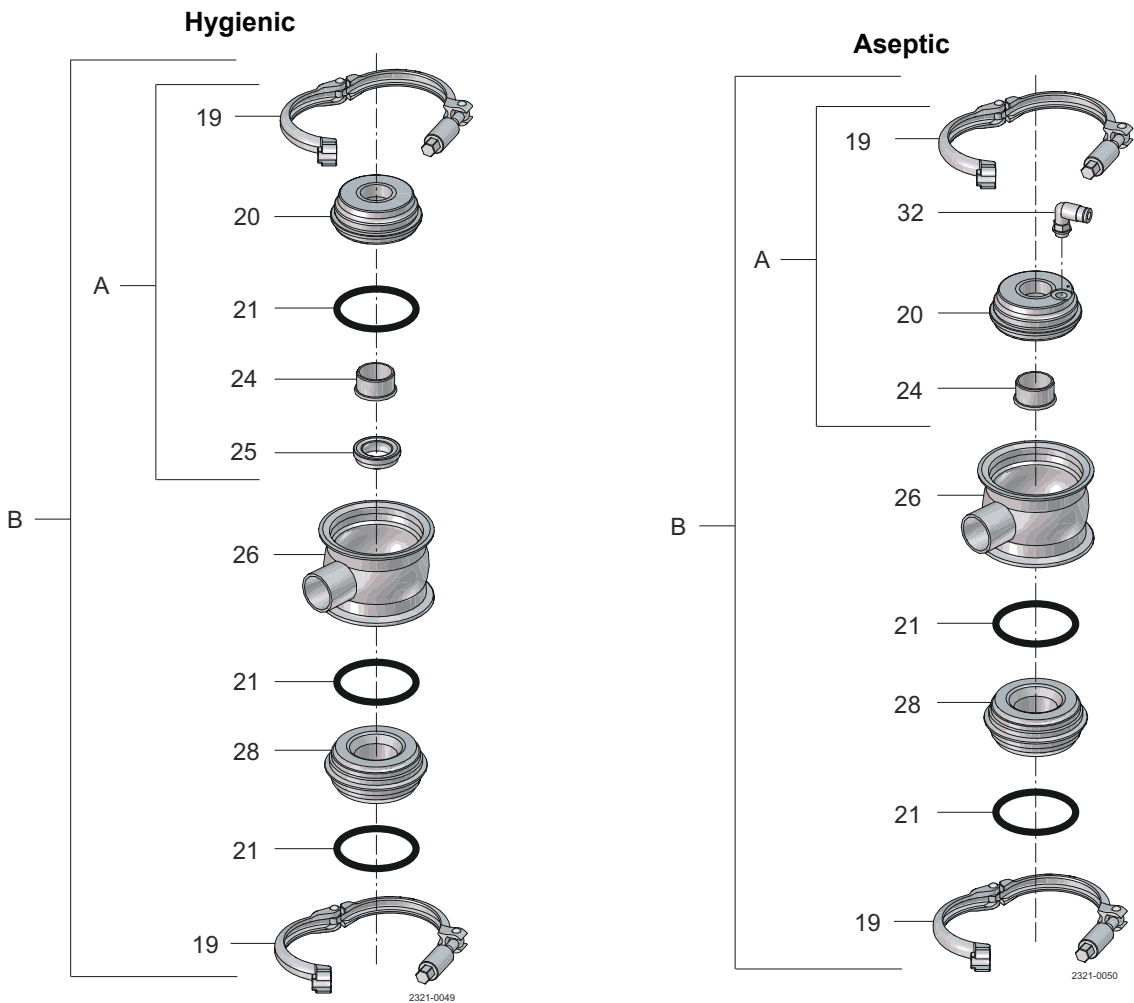
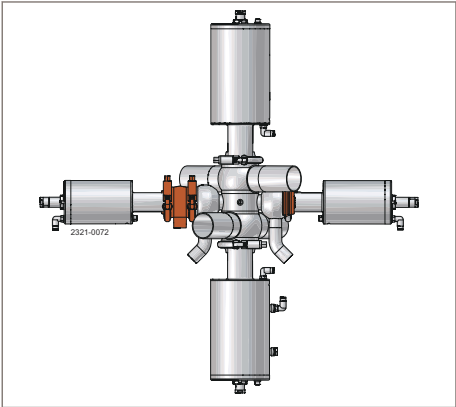
Pos.	Qty.	Denomination
19	2	Clamp
20	2	Bonnet
22	1	Valve body

Horizontal mount



Pos.	Qty.	Denomination
24	2	Bushing
32	2	Air fitting
117	(1)	Temperature sensor + transmitter (accessories)

9.8 Clamp, bonnet and body, secondary valves



A = Shut-off, B = Change-over

Pos.	Qty.	Denomination
19	2/3	Clamp
20	2	Bonnet
21	1	O-ring
24	2	Bushing

Pos.	Qty.	Denomination
25	2	Lip seal
26	1	Valve body
28	1	Sear
32	2	Air fitting