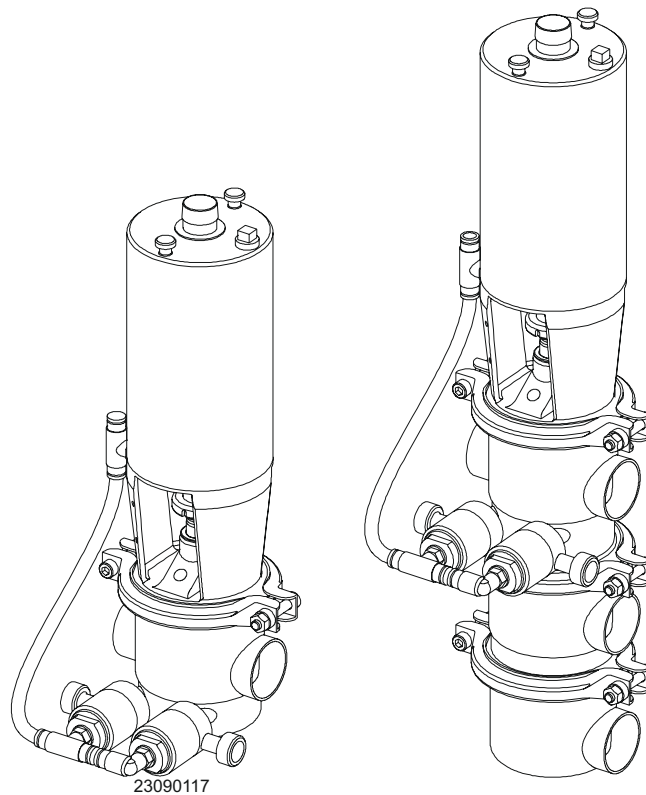


# Alfa Laval SMP-BC

Double seal valve

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Lit. Code

200007942-1-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 Declaration 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

Sanitary Mixproof Valve

Designation

SMP-BC PN10

Type

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC
- The valve is in compliance with the Pressure Equipment Directive 2014/68/EU and was subjected to the following assessment procedure Module A. Diameters  $\geq$  DN125 may not be used for fluids group 1.

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

2025-01-20

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

Sanitary Mixproof Valve

Designation

SMP-BC PN10

Type

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. Diameters  $\geq$  DN125 may not be used for fluids group 1

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

2025-01-20

Date (YYYY-MM-DD)



Signature

DoC Revison\_ 02\_012025



## 2 Safety

### Read this first



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

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

Not following the instructions can result in serious accidents.

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

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

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

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

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

#### NOTE

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





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

## 2.1 Safety Signs



### Mandatory Action Signs

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

### Warning Signs

	General warning.
	Transportation with forklift truck or other industrial vehicles if heavy.
	Hot surface and burning danger.
	Cutting danger.




	Corrosive substance.
	Crushing of hands.






## 2.2 Safety Precautions

All warnings in the Instruction Manual are summarised on these pages. Pay special attention to the instructions below so that severe personal injury and/or damage to the supplied Alfa Laval product is avoided.






### General

	<p>To prevent unexpected start and contact with electrical live and moving parts.</p> <p><b>Always</b> disconnect the power supply safely:</p> <ul style="list-style-type: none"> <li>The power supply disconnecting device must be disconnected (in off position) and locked.</li> </ul>
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### Transportation and Lifting

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





## Installation

	<p>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.</p> <p><b>Always</b> release compressed air after use.</p> <p><b>Always</b> assemble the valve completely before startup and make sure everything is in place and correctly tightened.</p>
  	<p><b>Never</b> touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.</p> <p><b>Always</b> ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before installation, inspection, assembly, or dismantling of the valve.</p> <p><b>Never</b> stick your fingers through the valve ports if the actuator is supplied with compressed air.</p>
	<p><b>Never</b> work on the valve or touch moving parts if the actuator is supplied with compressed air.</p>


## Operation

	<p>Always read <b>Technical Data</b> thoroughly.</p> <p><b>Never</b> operate the valve unless a correct installation has been verified.</p> <p><b>Never</b> pressurise air connections simultaneously as both valve plugs can be lifted (can cause mixing).</p> <p><b>Never</b> throttle the leakage outlet.</p> <p><b>Never</b> throttle the CIP outlet, if supplied.</p>
	<p><b>Never</b> touch the valve or pipelines when hot.</p> <p><b>Never</b> touch the valve or the pipelines when processing hot liquids or when sterilising.</p>
	<p><b>Always</b> rinse well with clean water after cleaning.</p> <p><b>Always</b> handle lye and acid with great care.</p> <p><b>Always</b> follow the instructions in the safety data sheets from the suppliers of cleaning agents, detergents, oils etc.</p>
	<p><b>Never</b> touch moving parts of the valve during operation.</p> <p><b>Never</b> dismantle the valve during operation or when pressurized.</p> <p><b>Always</b> release compressed air after use.</p> <p><b>Never</b> touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.</p> <p><b>Never</b> touch the moving parts if the actuator is supplied with compressed air.</p>


## Maintenance

	<p>In order to optimise the operation of the supplied Alfa Laval product and to minimize the down time due repair activities, the maintenance includes:</p> <ul style="list-style-type: none"> <li>• Inspection and maintenance of the supplied Alfa Laval product: strictly follow the technical documentation</li> <li>• <b>Preventive maintenance:</b> visual inspection of the supplied Alfa Laval product followed by necessary adjustments and planned periodic replacement of wear and tear parts</li> <li>• <b>Repairs:</b> unscheduled break down of a component, often causing the system to stop. Damaged components must be replaced</li> <li>• <b>Stock of Alfa Laval genuine spare parts:</b> Alfa Laval recommend keeping a stock of genuine spare parts facilitating preventive maintenance and reducing downtime in case of unplanned break downs</li> </ul> <p><b>Always</b> fit the seals correctly.  <b>Always</b> remove the CIP connections, if supplied, before service.</p>
 	<p><b>Always</b> release compressed air after use.</p> <p><b>Always</b> ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before dismantling the valve.</p> <p><b>Never</b> stick your fingers through the valve ports if the actuator is supplied with compressed air.</p> <p><b>Never</b> touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.</p> <p><b>Never</b> service the valve when it is hot.</p>
	<p><b>Never</b> work on the valve or touch moving parts if the actuator is supplied with compressed air.</p> <p><b>Never</b> service the valve with valve and pipelines under pressure <b>unless specifically prescribed.</b></p>





## Storage

	<p><b>Alfa Laval recommend:</b></p> <ul style="list-style-type: none"> <li>• Store the supplied Alfa Laval product as supplied in original packaging</li> <li>• Port opening(s) should be protected against any ingress</li> <li>• Bare steel (not stainless) should be lightly oiled/greased</li> <li>• Store in a clean, dry place without direct sunlight or UV light</li> <li>• Temperature range -5 °C to +40 °C (23 °F - 104 °F)</li> <li>• Relative humidity less than 60%</li> <li>• No exposure to corrosive substances (including contained air)</li> </ul>
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## Noise

	<p>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.</p>
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## Hazards

	<p><b>Burn Hazard</b></p> <ul style="list-style-type: none"><li>• Lubrication oil, machine parts and various machine surfaces can be hot and cause burns. Wear protective gloves</li></ul>
	<p><b>Corrosive Hazard</b></p> <ul style="list-style-type: none"><li>• Always handle cleaning liquids, lye and acid with great care and in accordance with separate instructions for those fluids</li><li>• When using chemical cleaning agents and lubricants, make sure you follow the general rules and suppliers recommendation regarding ventilation, personnel protection etc.</li></ul>
	<p><b>Cut Hazard</b></p> <ul style="list-style-type: none"><li>• Sharp edges, especially on bowl discs and threads, can cause cuts. Wear protective gloves</li></ul>
	<p><b>Crushing Hazard</b></p> <ul style="list-style-type: none"><li>• Avoid placing hands into valve orifice pinch points</li></ul>

## Safety check



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

**Inspection acceptance criteria:**

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

**Procedure in case of non-acceptance:**

- Fix and/or replace the protective device

## 2.3 Warning Signs in Text

Pay attention to the safety instructions in this Instruction Manual.

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

 **DANGER**

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

 **WARNING**

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

 **CAUTION**

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

 **NOTE**

Indicates important information to simplify or clarify procedures.

## 2.4 Requirements of Personnel

### Operators

The operators shall read and understand this Instruction Manual.

### Maintenance personnel

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

### Trainees

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

### People in general

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

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

## 2.5 Recycling Information

### Unpacking

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



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

### Maintenance

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

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

### Scrapping

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

### How to contact Alfa Laval

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

Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information directly.



---

## 3 Introduction

The Alfa Laval SMP-BC Mixproof Valve is a hygienic pneumatic double-seal valve that safely handles the simultaneous flow of two different products through the same valve without any risk of cross-contamination. Standardized and cost-effective, the top-loaded valve is designed for quick leakage detection to maximize product safety and low maintenance due to few moving parts. It is often used in Cleaning-in-Place (CIP) lines and can also be used in other systems handling products.

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## 4 Installation

### 4.1 Unpacking/Delivery

#### NOTE

Alfa Laval cannot be held responsible for incorrect unpacking.

The instruction manual is part of the delivery.

**Always** read *Technical Data* on page 49 thoroughly.

**Shut-off valve:** With one valve body.

**Change-over valve:** With three valve bodies.

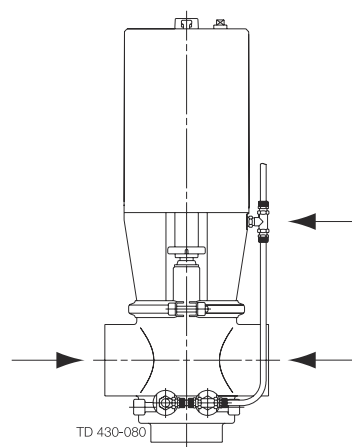
**CIP** = Cleaning In Place.

#### Check the delivery for:

1. Complete valve, standard or three-bodied valve
2. Delivery note
3. Instruction manual

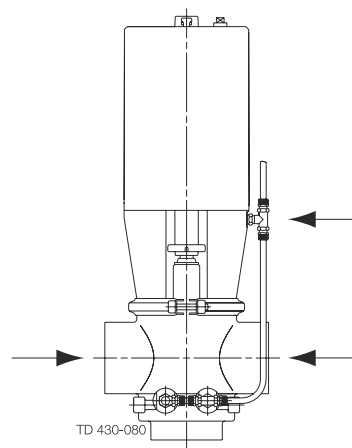
1

Remove possible packing materials from the valve ports. Avoid damaging the air connection, the valve ports, the detecting valve and the CIP valve.



2

Inspect the valve for visible transport damage.



### 4.1.1 Recommended Auxiliary Equipment (DN125/150)

The valve sizes DN125-150 are very heavy. Therefore Alfa Laval recommends manufacturing and usage of auxiliary equipment. A proposal is given below.

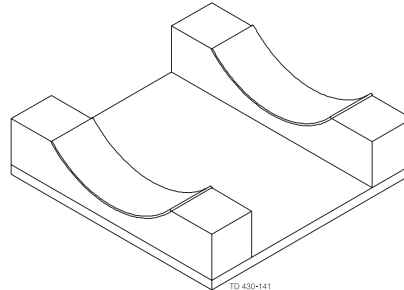
Please note that the auxiliary equipment **cannot** be supplied by Alfa Laval.

1

**For lifting the valve:** Screw an eye bold (6 mm/0.25 inch) into top pin (10). Using a small hook crane or similar, lift the valve by an eye bolt.

**Trestle:**

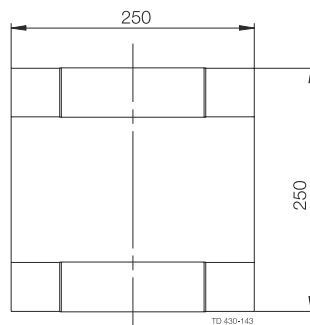
- The purpose of the trestle is to support the valve during dismantling and assembly
- The trestle is made of a base plate, two support plates, two rubber linings and four bolts
- The rubber linings are attached to the support plates so that the valve/actuator will rest on these
- To prevent the valve from turning during dismantling and reassembly the trestle must be made with the correct measurements (see drawings - all measurements are in mm)



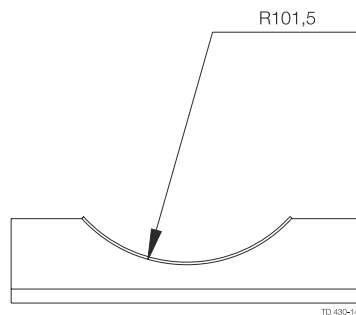
**Trestle**



**Side view**



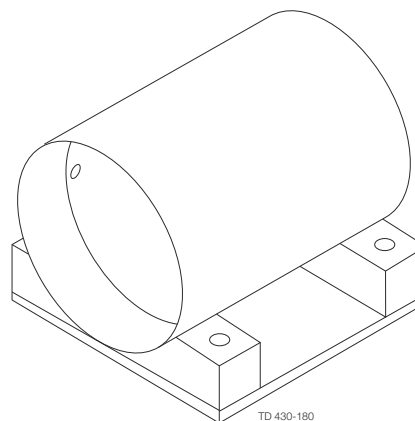
**Top view**



**End view**

2

1. Place the valve in the trestle
2. Make sure that the actuator rests on the rubber linings on the trestle support plates
3. Dismantle/assemble the valve



#### 4.1.2 General Installation

##### NOTE

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

CIP = Cleaning In Place.

##### CAUTION

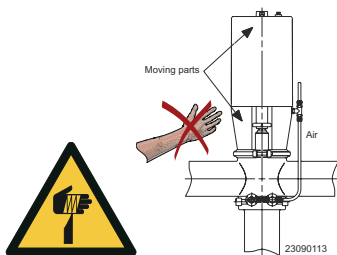
Alfa Laval cannot be held responsible for incorrect installation.

**Always** release compressed air after use.

**Always** read the technical data thoroughly (see [Technical Data](#) on page 49).

##### WARNING

**Never** touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.

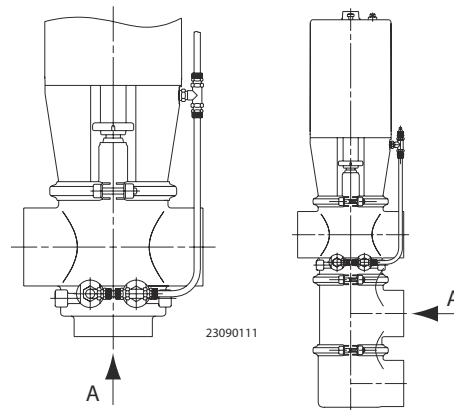


1

**Install the valve so that:**

- The actuator is turned to the uppermost point
- The detecting valve is self-draining
- The flow is against the closing direction to avoid water hammer

A = Inlet



Avoid water hammer!

**Shut-off valve**

**Change-over valve**

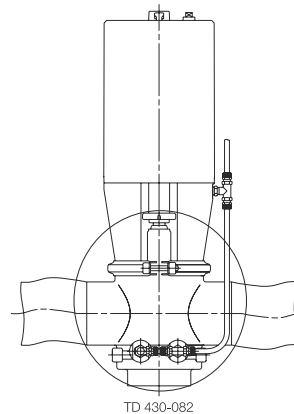
2

Avoid stressing the valve.

**Pay special attention to:**

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

**Risk of damage!**

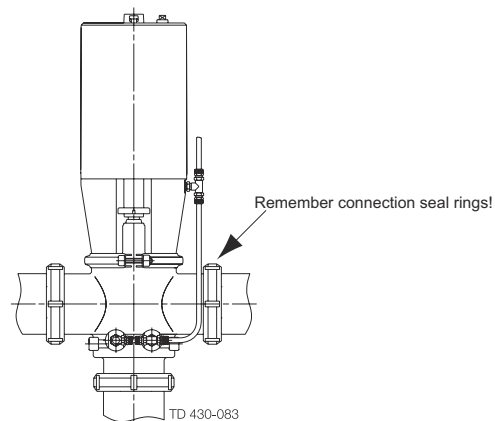


3

**Fittings:**

Ensure that the connections are tight.

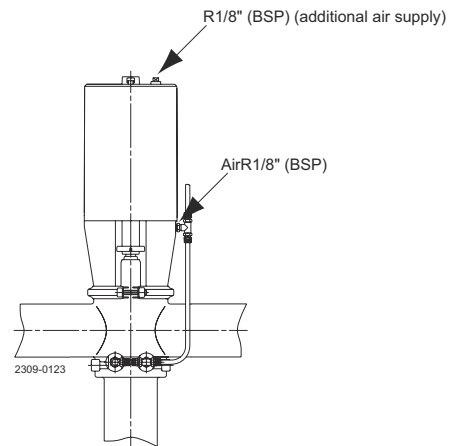
**Remember connection seal rings!**



4

**Air connection:**

If actuator is supported by air on spring side;  
max. allowable pressure is 300 kPa (3 bar).



5

**CIP connection:**

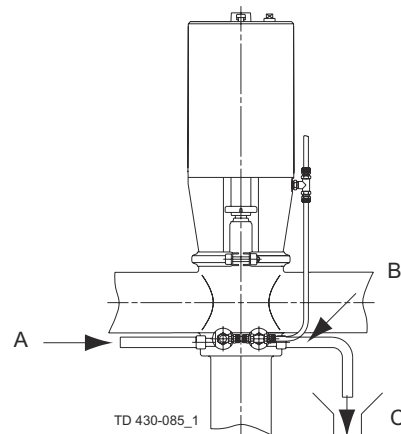
1. See description of cleaning and optional extras see [Cleaning](#) on page 30 and [Cleaning Equipment \(optional extra\)](#) on page 32

2. Connect CIP correctly

A = CIP in

B = R3/8" (BSP), external thread

C = CIP out/ leakage drain



## 4.1.3 Welding

**NOTE**

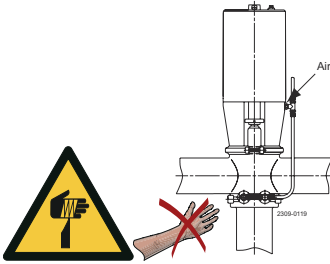
The valve has welding ends as standard.

Check the valve for smooth operation after welding.

Weld carefully.

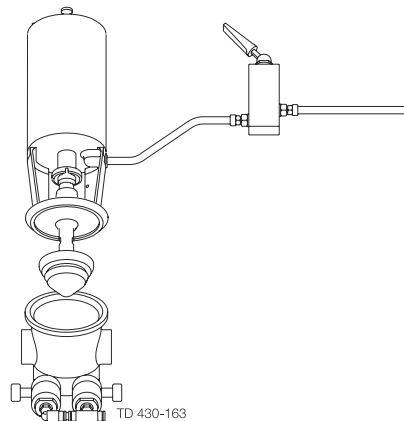
**WARNING**

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



1

Dismantle the valve in accordance with steps 1-3, in *Dismantling of Valve* on page 37.





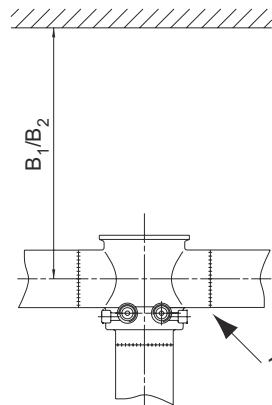
2

**NOTE**

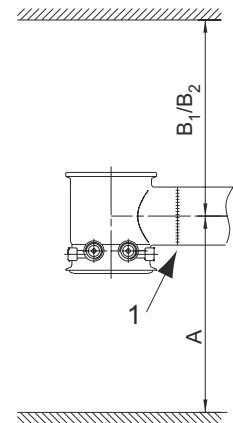
**Always** weld the valve body into the pipelines so that the valve body seal rings can be replaced (change-over valve).

Maintain the minimum clearances (A and B) so that the lower valve plug (change-over valve) and the actuator with the internal parts can be removed.

Valve size	A	B	B (Incl. top unit)
mm (figures in ( ) = inches)			
DN40/38 mm	280 (11)	550 (22)	730 (29)
DN50/51 mm	305 (12)	550 (22)	730 (29)
DN65/63.5 mm	360 (14)	550 (22)	730 (29)
DN80/76 mm	410 (16)	600 (24)	780 (31)
DN100/101.6 mm	470 (19)	650 (26)	830 (33)
DN125	- (-)	750 (30)	930 (33)
DN150	- (-)	790 (31)	970 (38)



**Shut-off valve**

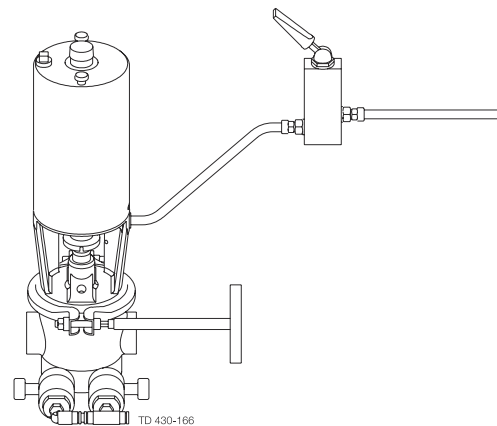


**Change-over valve**  
(upper valve body)

**1 = CAUTION!**

3

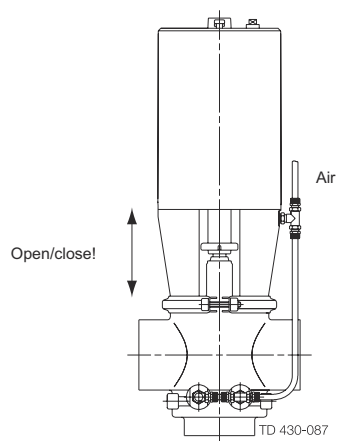
Assemble the valve in accordance with steps 4-6, in [Assembly of Valve](#) on page 39.



4

**Pre-use check:**

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



## 5 Operation

### NOTE

**Always** read the technical data thoroughly (see *Technical Data* on page 49).

CIP = Cleaning in Place

The valve is adjusted and tested before delivery.

Pay attention to possible faults

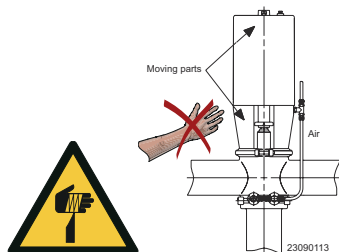
### CAUTION

**Always** release compressed air after use.

Alfa Laval cannot be held responsible for incorrect operation.

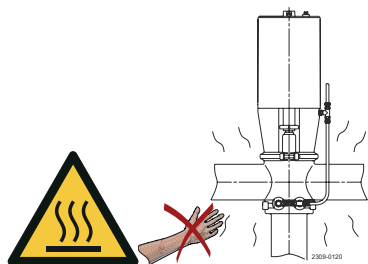
### WARNING

**Never** touch the clip assembly or the actuator piston rod when the actuator is supplied with compressed air.



### WARNING

**Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.



## 5.1 Fault Finding



### NOTE

Study the maintenance instructions carefully before replacing worn parts (see [Maintenance](#) on page 35).

Problem	Cause/result	Possible solution
Product leakage through the detecting valve (closed valve)	<ul style="list-style-type: none"> <li>• Worn seal rings</li> <li>• The two seal rings affected by different products</li> <li>• Incorrect fitting of seal rings</li> <li>• Product deposits on the seat and/or plug</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the seal rings</li> <li>• Select a different rubber grade</li> <li>• Frequent cleaning</li> </ul>
Product leakage through the detecting valve (open valve)	<ul style="list-style-type: none"> <li>• Worn O-ring (26a)</li> <li>• Worn spindle (26d)</li> <li>• Product deposits on the seat and/or plug</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the O-ring</li> <li>• Replace the spindle</li> <li>• Frequent cleaning</li> </ul>
Product leakage at stem and/or clamp	<ul style="list-style-type: none"> <li>• Worn/product affected lip seal (22a) and/or seal rings (22c, 27)</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the seal rings</li> <li>• Select a different rubber grade</li> </ul>
Product leakage through middle or lower valve body (closed lower plug)	<ul style="list-style-type: none"> <li>• Worn/product affected plug seal ring</li> <li>• Loose parts (vibrations)</li> <li>• Product deposits on the seat and/or plug</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the seal ring</li> <li>• Select a different rubber grade</li> <li>• Tighten the loose parts</li> <li>• Frequent cleaning</li> </ul>
<ul style="list-style-type: none"> <li>• Air leakage through the CIP and detecting valve</li> <li>• Air leakage at the actuator</li> </ul>	Worn seal rings	Replace the seal rings

## 5.2 Recommended Cleaning

### NOTE

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

NaOH = Caustic soda.

HNO<sub>3</sub> = 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.

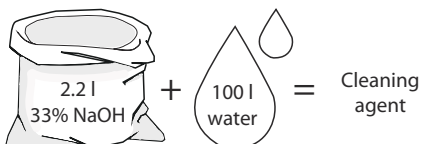
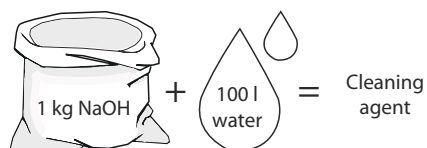


### Examples of cleaning agents

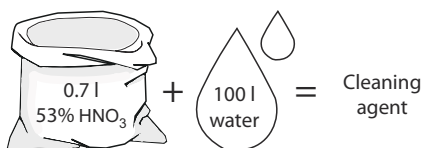
Use clean water free from chlorides

#### Metric System

1. 1% by weight NaOH at 70°C

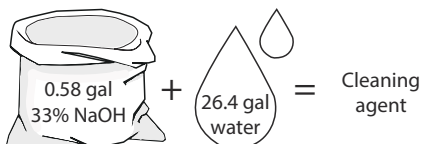
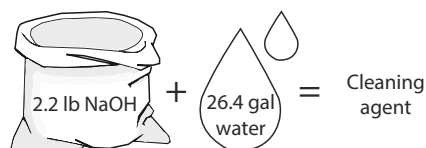


2. 0.5% by weight HNO<sub>3</sub> at 70°C

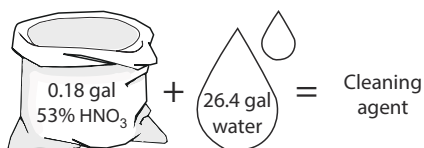


#### Imperial System

1. 1% by weight NaOH at 158°F



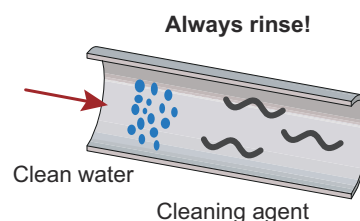
2. 0.5% by weight HNO<sub>3</sub> at 158°F



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

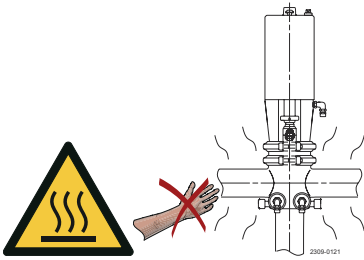
**Always** rinse well with clean water after the cleaning.



### 5.3 Cleaning

**! WARNING**

**Never** touch the valve or the pipelines when sterilizing.

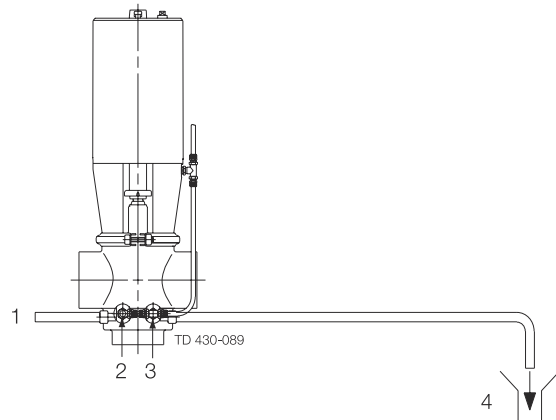


- 1 = CIP in
- 2 = CIP valve
- 3 = Detecting valve
- 4 = CIP out

**! CAUTION**

**Always** keep the cleaning pressure lower than the product pressure.

**Never** throttle the outlet of the detecting valve (risk of mixing because of overpressure).



Leakage chamber: **60-100 kPa**

**Recommended cleaning periods:**

Cleaning periods of 10-15 seconds for the leakage chamber.

Product	Periods
Milk	1-2
Yoghurt	3-5
Beer	2-5
Cold wort	5-10

**Recommended cleaning flow rates:**

(For special processes, see [Recommended Cleaning](#) on page 29).

Leakage chamber: 12-15 l/min (3.2 - 4.0 gpm).

**Cleaning cycle:**

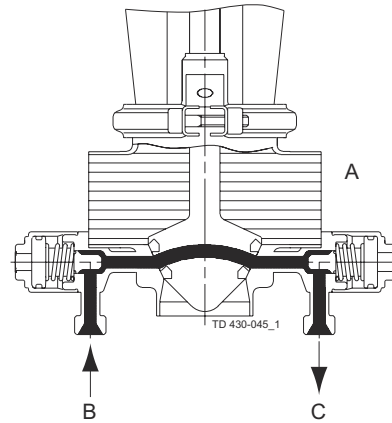
**Closed shut-off valve:**

Cleaning of the leakage chamber:

A = Product

B = CIP in

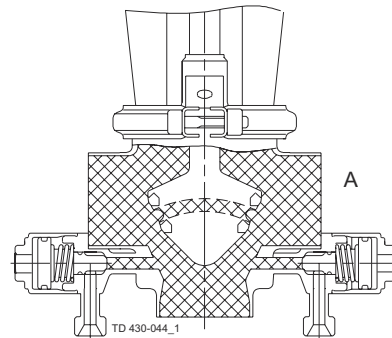
C = CIP out



**Open shut-off valve:**

Cleaning of the valve body and the leakage chamber:

A = CIP

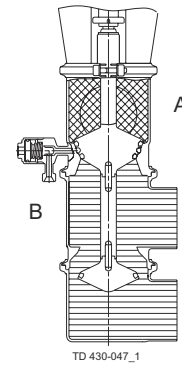


**Closed change-over valve:**

Cleaning of the upper valve body:

A = CIP

B = Product



## 5.4 Cleaning Equipment (optional extra)

### NOTE

The installation kits are for cleaning of the leakage chamber when the valve is closed.

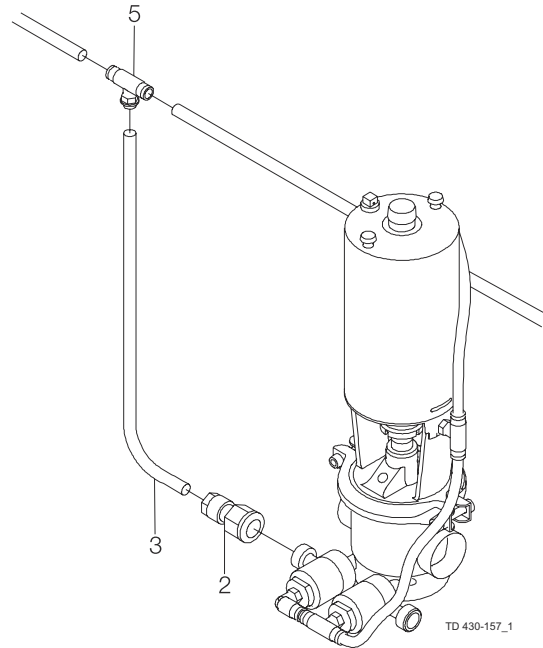
The combination of the different kits depends on the actual applications.

CIP = Cleaning In Place.

#### Installation kit A (inlet) for parallel connection of CIP (PVDF tubes).

##### Contents:

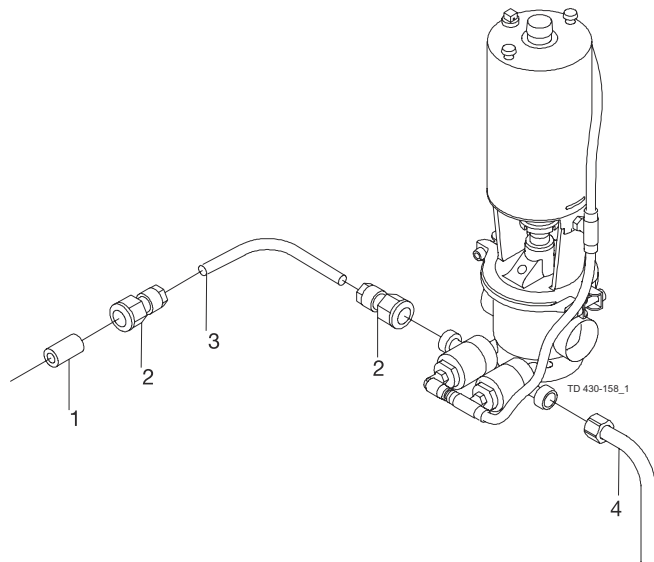
- 2 = Fitting PVDF female
- 3 = Tube PVDF
- 5 = Fitting PVDF



#### Installation kit B for CIP and leakage connections of a single valve (PVDF/stainless steel tubes).

##### Contents:

- 1 = Welding male part
- 2 = Fitting PVDF female
- 3 = Tube PVDF
- 4 = Leakage tube AISI 316





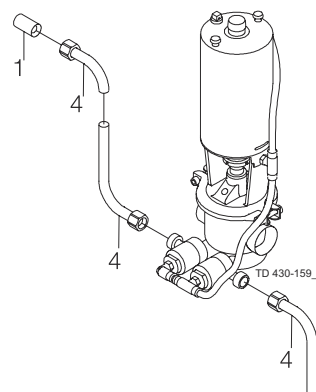
**Installation kit C for CIP and leakage connection of a single valve (stainless steel tubes).**

**Contents:**

1 = Welding part

4 = CIP leakage tube AISI 316

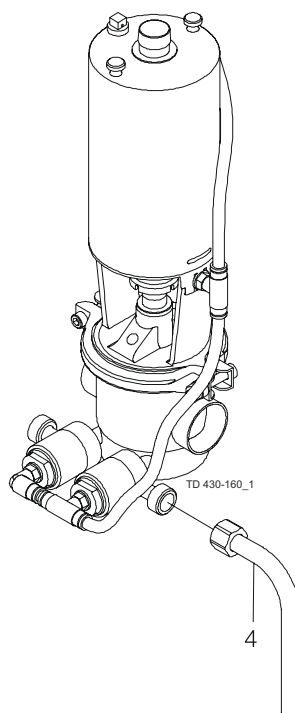
Adjust and weld during installation.



**Installation kit D for leakage connection (stainless steel tubes).**

**Contents:**

4 = Leakage tube AISI 316



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## 6 Maintenance

### 6.1 General Maintenance

#### NOTE

Maintain the valve regularly.

**Always** keep spare rubber seals, lip seals and guide rings in stock.

**Always** read the technical data thoroughly (see [Technical Data](#) on page 49).

#### CAUTION

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

**Always** release compressed air after use.

**Always** remove the CIP connections before service.

CIP = Cleaning In Place.

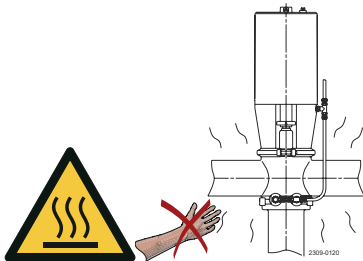
**Never** pressurize the valve/actuator when the valve is serviced **unless specifically prescribed**.

#### WARNING

**Never** service the valve when it is hot.

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

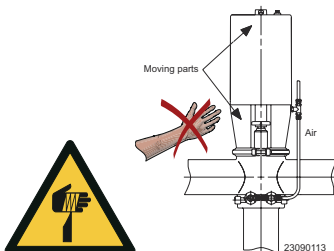
Atmospheric pressure required!



#### WARNING

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

**Never** touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.



The valve is designed so that single internal leakages do not result in the products becoming mixed.

Internal leakage in the valve is externally visible.

Check the valve for smooth operation after service.

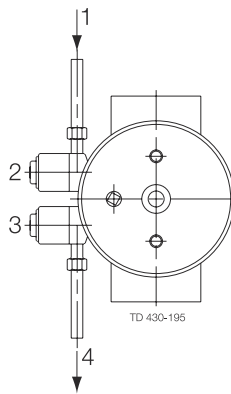
	Valve rubber seals	Valve lip seal	Valve guide rings (for DN125 and DN150 only)	Actuator rubber seals	Bonnet guide ring
Preventive maintenance	<b>Replace after 12 month</b>	Replace when replacing the valve rubber seals	Replace when required	<b>Replace after 5 years</b>	Replace when replacing the actuator rubber seals <sup>1</sup>
Maintenance after leakage (leakage normally starts slowly)	<b>Replace by the end of the day</b>	Replace when replacing the valve rubber seals	Replace when required	<b>Replace when possible</b>	
Planned maintenance	<ul style="list-style-type: none"> <li>Regular inspection for leakage and smooth operation</li> <li>Keep a record of the valve</li> <li>Use the statistics for planning of inspections</li> </ul>	Replace when replacing the valve rubber seals	Replace when required	<ul style="list-style-type: none"> <li>Regular inspection for leakage and smooth operation</li> <li>Keep a record of the actuator</li> <li>Use the statistics for planning of inspections</li> </ul>	Replace when replacing the actuator rubber seals <sup>1</sup>
Lubrication (US-DAH1 approved oil/grease)	<b>Before fitting:</b> Silicone oil or silicone grease	<b>Before fitting:</b> Silicone oil or silicone grease	None	<b>Before fitting:</b> Silicone oil or silicone grease	None

<sup>1</sup> Check that the guide ring is fitted if replacing the bonnet (except on DN125 and DN150).

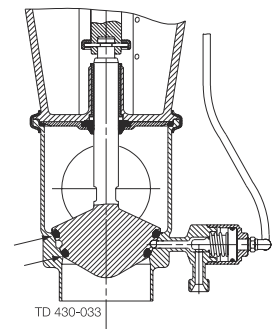
**Pre-use check**

1. Ensure that the valve plug seals against the seat. **Pay special attention to the warnings!**
2. Pressurise the leakage chamber by means of water
3. Check that the plug seals are tight (no water leakage through the valve ports)
4. Supply compressed air to the actuator
5. Open and close the valve several times to ensure that it operates smoothly. **Pay special attention to the warnings!**

Top view  
Water 3-4 bar



- 1 = In
- 2 = CIP valve
- 3 = Detecting valve
- 4 = Out



**Inspection!**

## 6.2 Dismantling of Valve

### NOTE

The items refers to the drawings in *Parts List and Exploded View* on page 53.

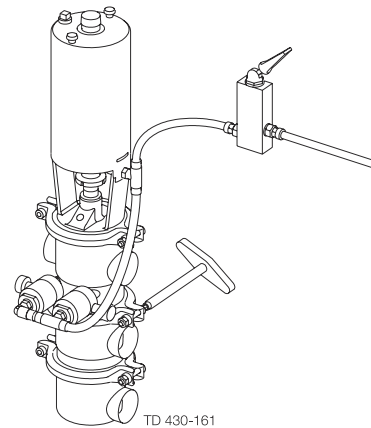
Handle scrap correctly.

Removal of plug seals, please see the special instructions in *Replacement of Plug Seals* on page 45.

1

#### Change-over valve:

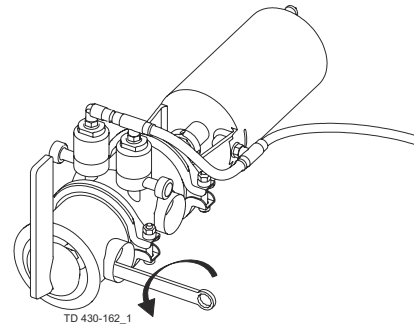
1. Loosen and remove lower clamp (24)
2. Remove lower valve body (32)
3. Pull out lower seal ring (27)



2

#### Change-over valve:

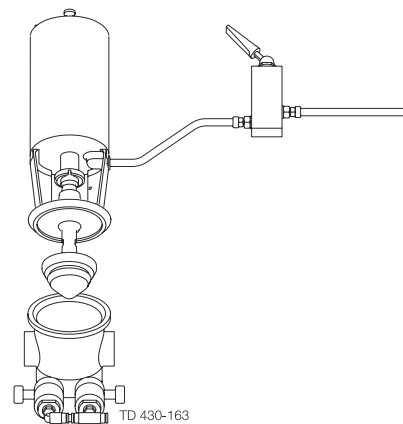
1. Remove lower plug (31b)
2. Pull off lower O-ring (29) from the plug
3. Loosen and remove middle clamp (24)
4. Remove middle valve body (24)
5. Pull out upper seal ring (27)



Use a piece of 5-6 mm Counterhold with a  
(0.2 inch) flat bar! spanner.

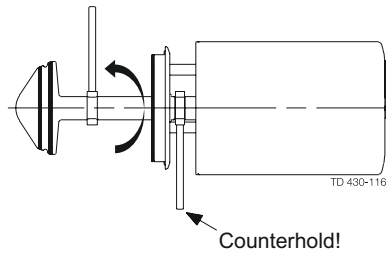
3

1. Supply compressed air to the actuator
2. Loosen and remove upper clamp (24)
3. Lift out the actuator together with plug (23)
4. Release compressed air

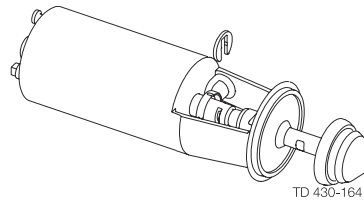


4

1. Remove clip assembly (12), (not for DN125/DN150: see illustration)
2. Pull out plug (23)
3. Remove stem seal (22), (not DN125/ DN150: see illustration)



DN125/DN150

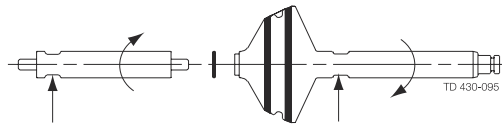


Turn plug anticlockwise with a spanner

5

**Change-over valve:**

1. Remove stem (30) from plug (23a)
2. Pull off upper O-ring (29) from the plug

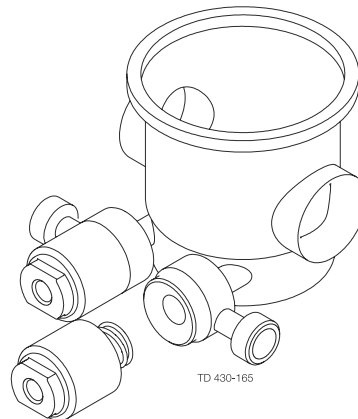


Use a spanner!

Use a spanner!

6

1. Remove air fittings (26g, 26h)
2. Unscrew plugs (26f)
3. Remove the internal parts



## 6.3 Assembly of Valve

### NOTE

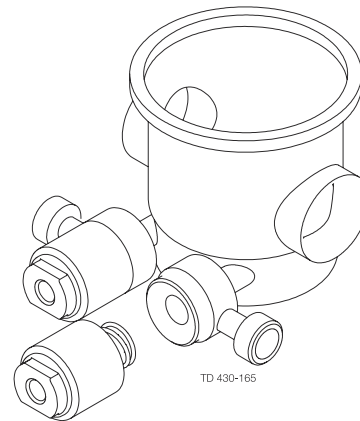
The items refers to the drawings in *Parts List and Exploded View* on page 53.

Lubricate the rubber seals and the lip seal before fitting them.

Fitting of plug seals, please see the special instructions in *Replacement of Plug Seals* on page 45.

1

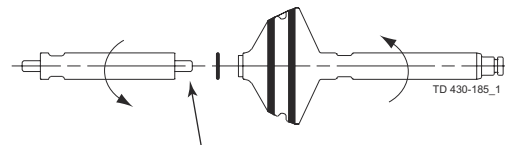
1. Fitting internal parts
2. Screw in plugs (26f)
3. Fit air fittings (26g, 26h)



2

### Change-over valve

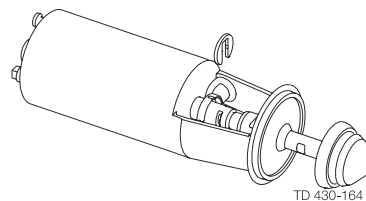
1. Slide upper O-ring (29) onto plug (23a)
2. Fit stem (30) in the plug - use Loctite or similar on thread



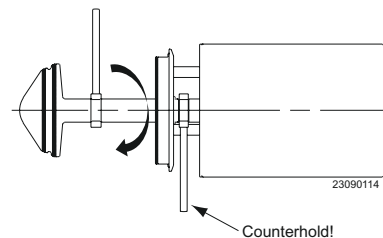
Use Loctite or similar

3

1. Push stem seal (22) onto plug (23), (not DN125/DN150: see illustration)
2. Fit the plug in piston (11)
3. Fit clip assembly (12), (not DN125/ DN150: see illustration)



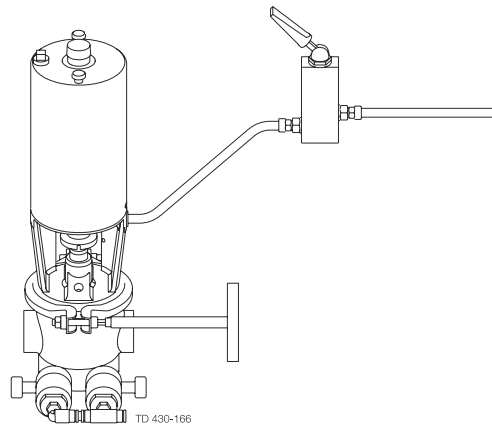
DN125/DN150



Turn plug clockwise with a spanner

4

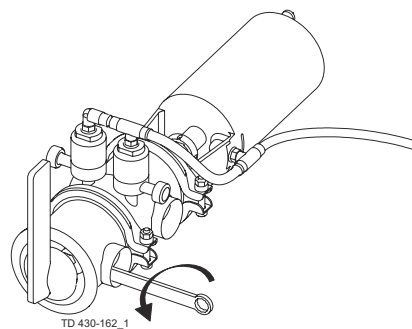
1. Supply compressed air to the actuator
2. Lift in the actuator together with plug (23)
3. Fit and tighten upper clamp (24)
4. Release compressed air



5

**Change-over valve:**

1. Fit upper ring (27) in middle valve body (28)
2. Position the middle valve body on upper valve body (25)
3. Fit and tighten middle clamp (24)
4. Slide lower O-ring (29) onto lower plug (31b)
5. Fit the lower plug - use Loctite or similar

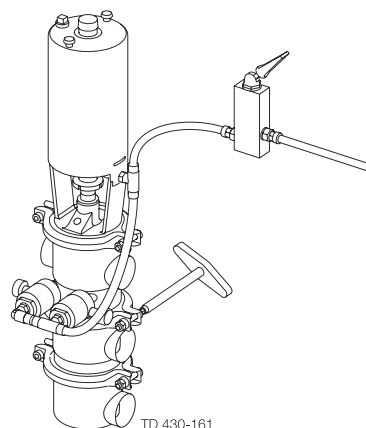


Use a piece of 5-6 mm Counterhold with a spanner.  
(0.2 inch) flat bar!

6

**Change-over valve:**

1. Fit lower seal ring (27) in lower valve body (32)
2. Position the lower valve body on middle valve body (28)
3. Fit and tighten lower clamp (24)





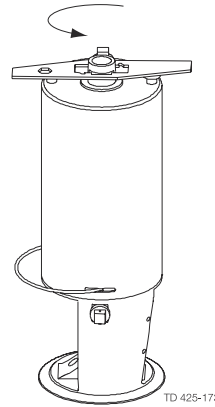
## 6.4 Dismantling of Actuator

### NOTE

The items refers to the drawings in *Parts List and Exploded View* on page 53.  
Handle scrap correctly.

1

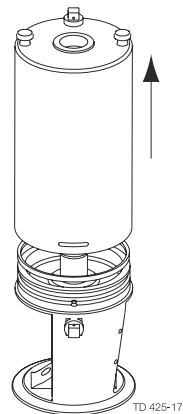
1. Rotate cylinder (5) to unlock lock wire (7)
2. Remove the lock wire.



Rotate by hand or with the service tool!

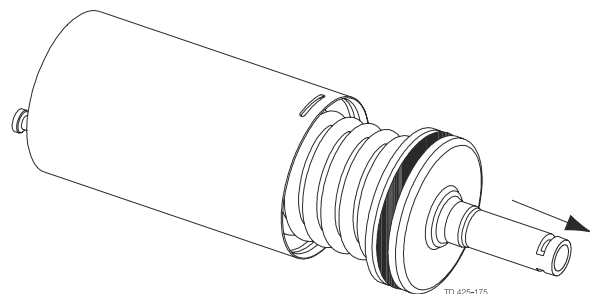
2

1. Disconnect cylinder (5) from bonnet (16)
2. Pull off O-ring (13) from the bonnet



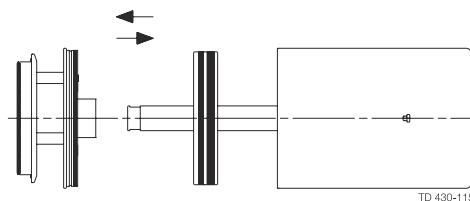
3

1. Pull out piston (11) and spring packet (6)
2. Pull off O-rings (2, 9) from the piston
3. Remove guide ring (8) from the piston (DN125/DN150)

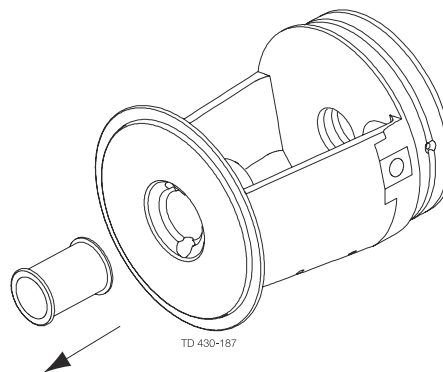


4

1. Remove guide ring (17) from bonnet (16)
2. Remove guide rings (18, 19) from bonnet (16) (DN125/DN150)

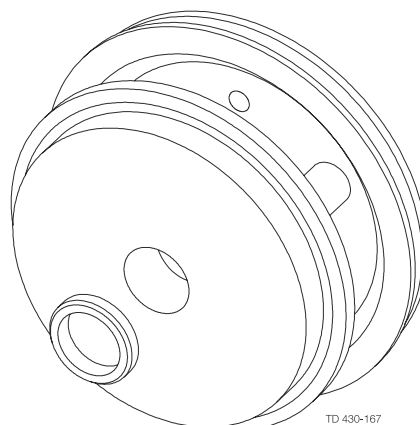


DN125/DN150



5

1. Remove lip seal (20) from bonnet (16), (DN125/DN150)



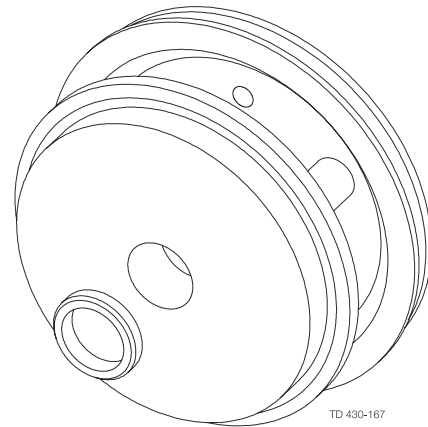
## 6.5 Assembly of Actuator

### NOTE

The items refers to the drawings in *Parts List and Exploded View* on page 53.  
Lubricate the rubber seals before fitting them.

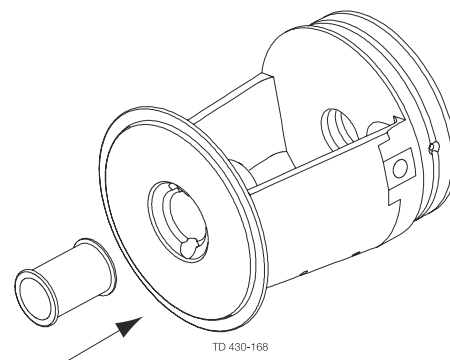
1

1. Fit lip seal (20) in bonnet (16) (DN125/ DN150)



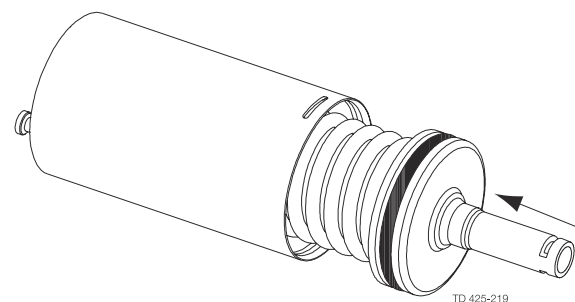
2

1. Fit guide ring (17) in bonnet (16)
2. Fit guide rings (18, 19) in bonnet (16) (DN125/DN150)



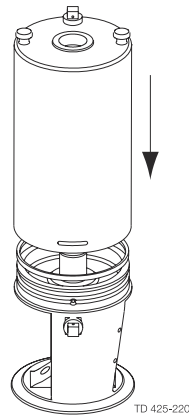
3

1. Fit guide ring (8) on piston (11) (DN125/ DN150)
2. Fit O-rings (2, 9) on the piston
3. Push the piston and spring packet (6) into cylinder (5)



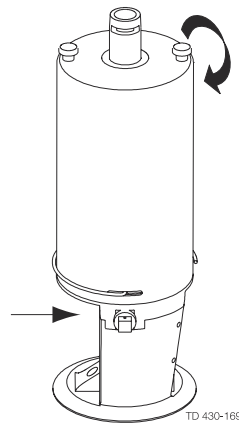
4

1. Slide O-ring (13) onto bonnet (16)
2. Fit cylinder (5) on the bonnet



5

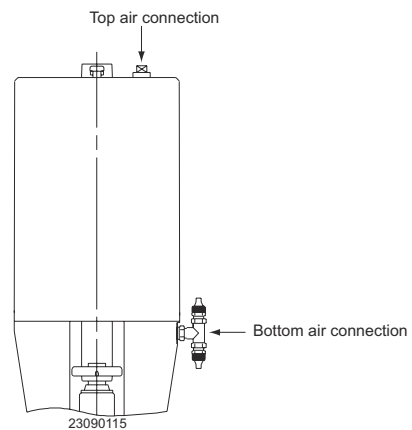
1. Rehook lock wire (7) through the slot in cylinder (5) in the hole in bonnet (16)
2. Rotate the cylinder 360° (see illustration)



Rotate by hand or with the service tool!

**NOTE**

Rotate cylinder (5) further 180° in relation to bonnet (16) so that the top and bottom air connections are fixed on the same side.



## 6.6 Replacement of Plug Seals

### NOTE

The items refers to the drawings in *Parts List and Exploded View* on page 53.

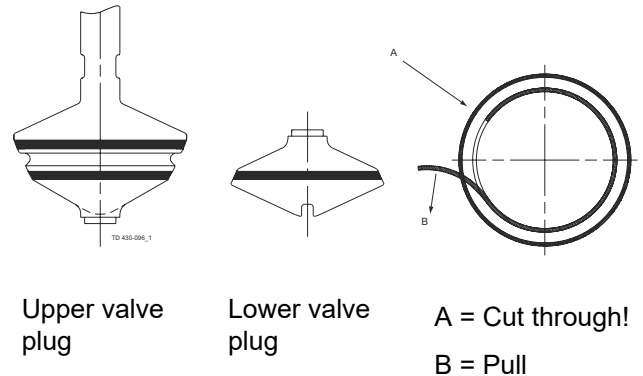
Handle scrap correctly.

Do **not** lubricate the rubber seals or the tool parts before fitting the seals.

### 1 Removing the seal rings

Remove the old seal rings by cutting them through and pulling them out of the grooves.

**IMPORTANT!** Before reading the following steps, please see *Tools for Plug Seals* on page 60.



### 2 Fitting the seal rings

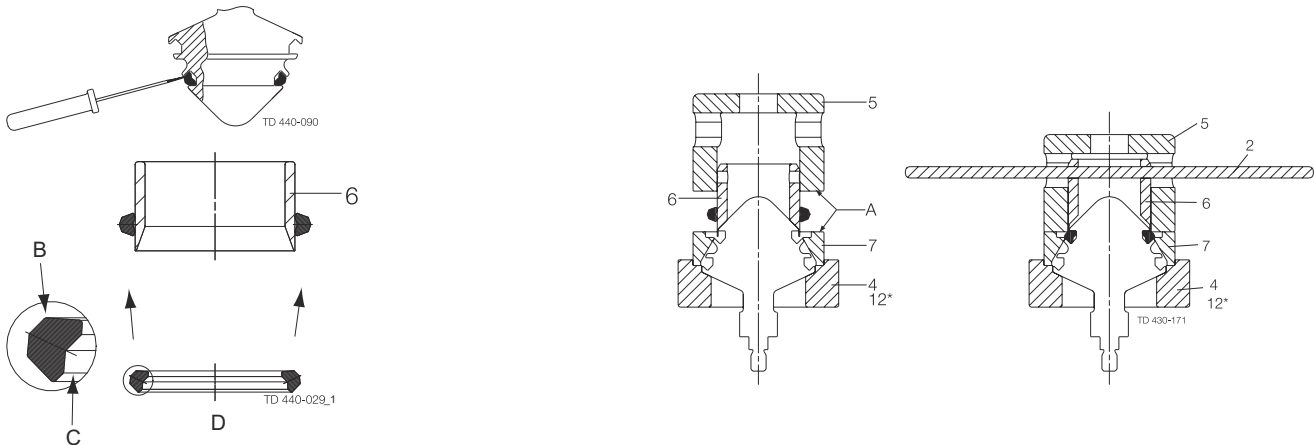
#### Shut-off and change-over valves

##### Lower (small) seal ring:

1. Carefully grease the seal with Alfa Laval Silicone based Food-grade Lubricant - do NOT grease on back of seal!
2. Fit the small seal on the inner guide ring (6). Remember to mount the flat side of seal upwards as shown on figure
3. Fit support part (7) for smaller seal
4. Lubricate the ends (A) of the support part (7) and the outer guide ring (5) with Alfa Laval Silicone based Food-grade Lubricant and assemble the tool
5. In a hydraulic press, the outer guide ring (5) is pressed downwards so that the seal is fitted in the groove of the valve plug. **IMPORTANT!** The outer guide ring (5) must be closed quickly until metal contact with the support part (7). Normally, the inner guide ring (6) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed
6. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver
7. Always remember to release air behind the seal after fitting

**Upper valve plug:**

(Shut-off valve and change-over valve)



B = Grease

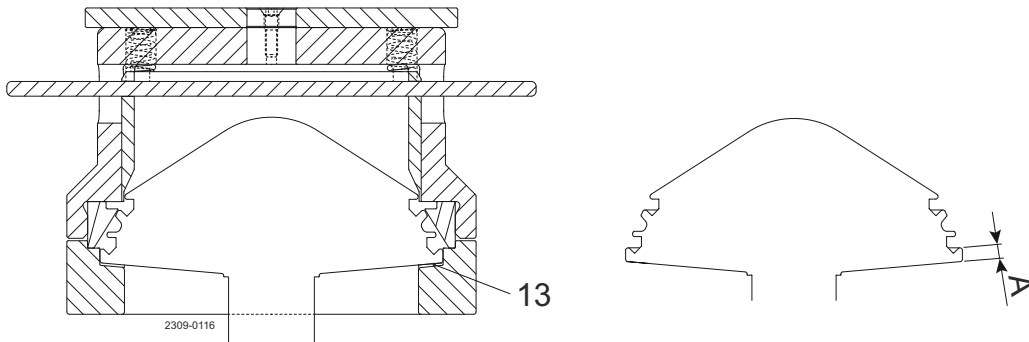
C = No grease

D = **NOTE!** Flat side up!

A = Lubricate ends

\* = Only for 38-51 mm/DN40-50 upper change-over plug

**DN125/150 only**



Spacer (13) is only used when A is between 5.5-5.9 mm

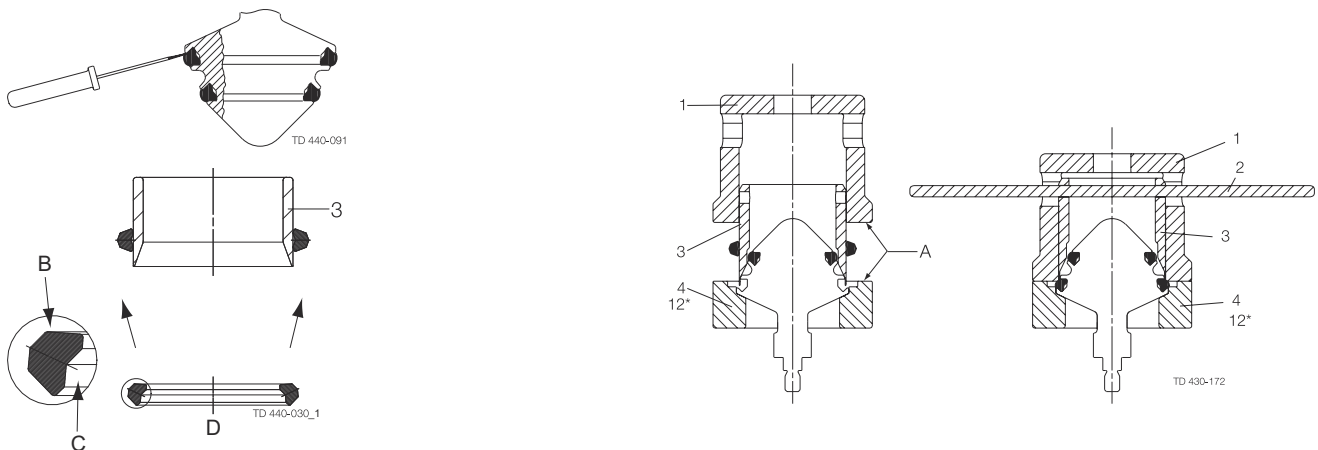
**Shut-off and change-over valves**

**Upper (large) seal ring:**

1. Carefully grease the seal with Alfa Laval Silicone based Food-grade Lubricant - Do NOT grease on back of seal!
2. Fit the large seal on the inner guide ring (3). Remember to mount the flat side of seal upwards as shown on figure
3. Lubricate the ends (A) of the support part (4) and the outer guide ring (1) with Alfa Laval Silicone based Food-grade Lubricant and assemble the tool
4. In a hydraulic press, the outer guide ring (1) is pressed downwards so that the seal is fitted in the groove of the valve plug. **IMPORTANT!** The outer guide ring (1) must be closed quickly until metal contact with the support part (4). Normally, the inner guide ring (3) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed
5. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver
6. Always remember to release air behind the seal after fitting

**Upper valve plug:**

(Shut-off valve and change-over valve)



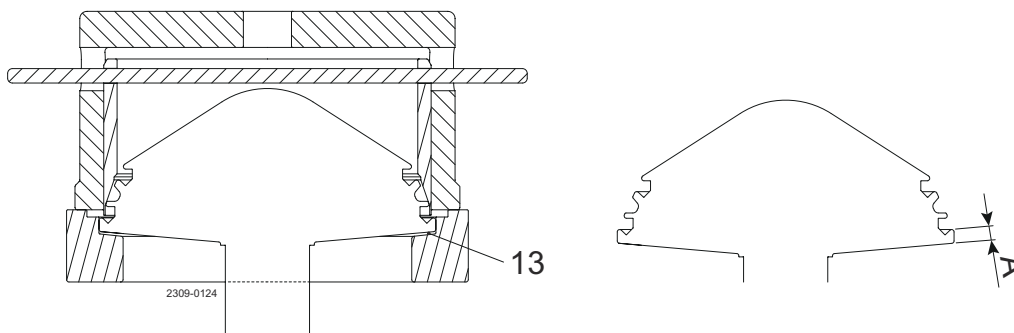
B = Grease

C = No grease

D = **NOTE!** Flat side up!

A = Lubricate ends

\* = Only for 38-51 mm/DN40-50 upper change-over plug

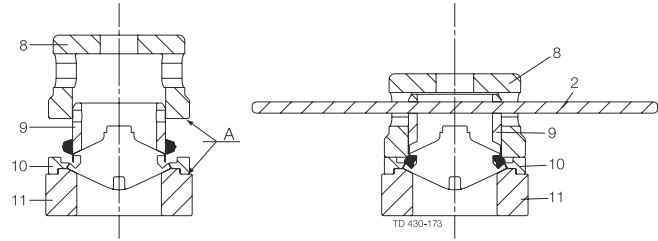
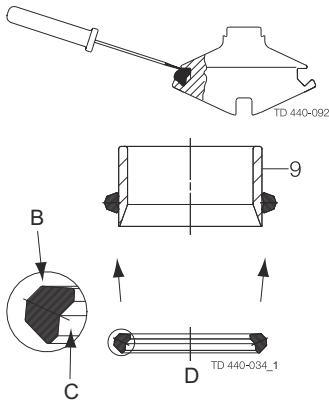
**DN125/150 only**

Spacer (13) is only used when A is between 5.5-5.9 mm

**Change-over valves:**

1. Carefully grease the seal with Alfa Laval Silicone based Food-grade Lubricant
2. Fit the seal on the inner guide ring (9). Remember to mount the flat side of seal upwards as shown on figure
3. Fit support part (10)
4. Lubricate the ends of the support part (10) and the outer guide ring (8) with Alfa Laval Silicone based Food-grade Lubricant and assemble the tool
5. In a hydraulic press, the outer guide ring (8) is pressed downwards so that the seal is fitted in the groove of the valve plug. **IMPORTANT!** The outer guide ring (8) must be closed quickly until metal contact with the support part (10). Normally, the inner guide ring (9) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed
6. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver
7. Always remember to release air behind the seal after fitting

**Lower valve plug:**  
(Change-over valve)



B = Grease

C = No grease

D = **NOTE!** Flat side up!

A = Lubricate ends



## 7 Technical Data

### NOTE

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

Inform the personnel about the technical data.

### Data

Max. product pressure	1000 kPa (10 bar/145 PSI)
Min. product pressure	Full vacuum
Temperature range	-10° C to +140° C (EPDM) (14° F to 284° F)
Air pressure, actuator	500 to 800 kPa (5-8 bar) (72.5 to 116 PSI)

### Air consumption (litres free air)

38 mm, 51 mm, DN40, DN50	0.2 x air pressure in bar
63.5 mm, 76 mm, 101.6 mm, DN65, DN 80, DN100	0.7 x air pressure in bar

### DN125/DN150, NC

For opening the valve	1.5 x air pressure in bar
Support air for closing the valve	3.6 x air pressure in bar

### DN125/DN150, NO

For opening the valve	2.2 x air pressure in bar
Support air for closing the valve	2.9 x air pressure in bar

### Materials

Product wetted steel parts	AISI 316L
Finish	Semi bright
Other steel parts	AISI 304
Product wetted seals	EPDM (standard)
Other seals	Nitrile (NBR)
Alternative product wetted seals	Nitrile (NBR) and Fluorinated rubber (FPM)

Size/ Weight (kg)	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	40D N	50D N	65D N	80D N	100 DN	125 DN	150 DN
Weight (kg) - Shut-off valve	6.0	6.3	12.8	13.3	16.6	6.0	6.3	12.8	14.0	16.6	43.4	44.5
Weight (kg) - Change-over valve	7.7	8.1	15.0	17.0	23.0	7.7	8.1	15.0	18.0	23.0		

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## 8 Spare Parts

For every delivered Alfa Laval Product, a spare part list is available.

This spare part list contains a range of the most common wear parts for the machinery. If any component not mentioned is required, please contact your local Alfa Laval representative for availability.

You can find our spare part catalogue at <https://hygienicfluidhandling-catalogue.alfalaval.com>.

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

### 8.1 Ordering Spare Parts

When ordering spare parts, please always state:

1. Serial number (if available)
2. Item number/spare part number (if available)
3. Capacity or other relevant identification

### 8.2 Alfa Laval Service

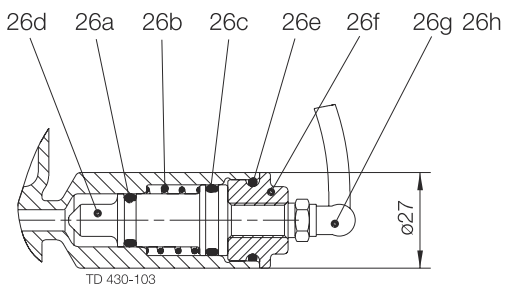
Alfa Laval is represented in all larger countries of the world.

Do not hesitate to contact your local Alfa Laval representative, with any questions or requirement of spare parts for Alfa Laval equipment.

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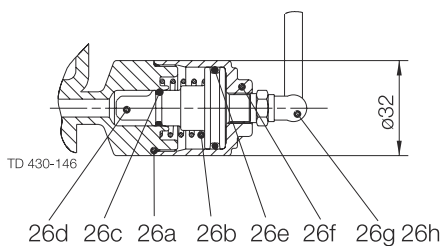
# 9 Parts List and Exploded View

## 9.1 Drawings



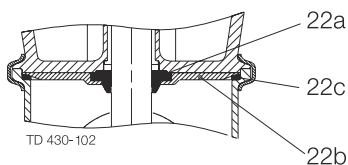
### CIP/detecting valve (period 9304–9504)

The drawing show SMP-BC shut-off valve, change-over valve.



### CIP/detecting valve (period 9505–)

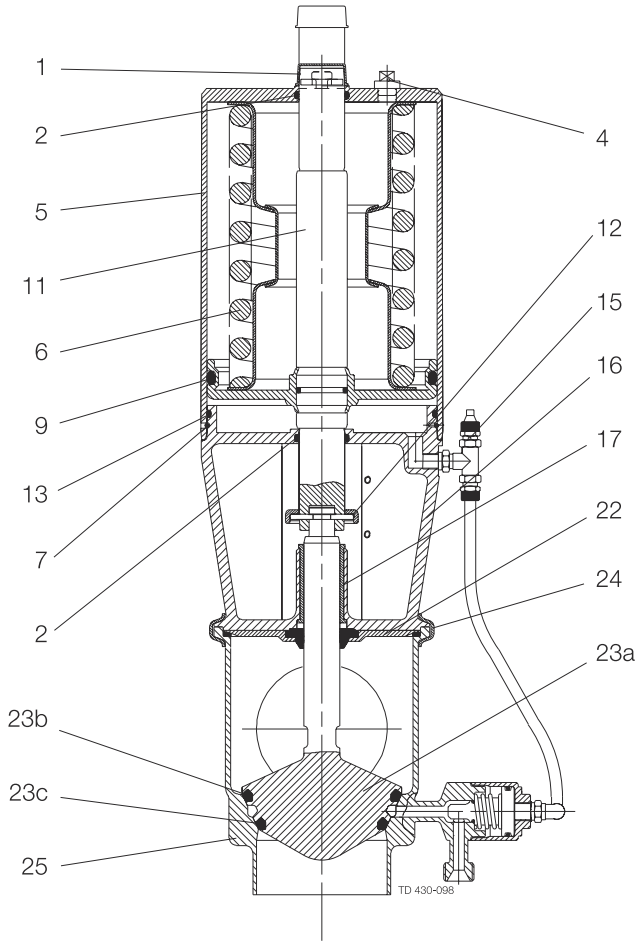
The drawing show SMP-BC shut-off valve, change-over valve and shut-off size DN125/DN150.



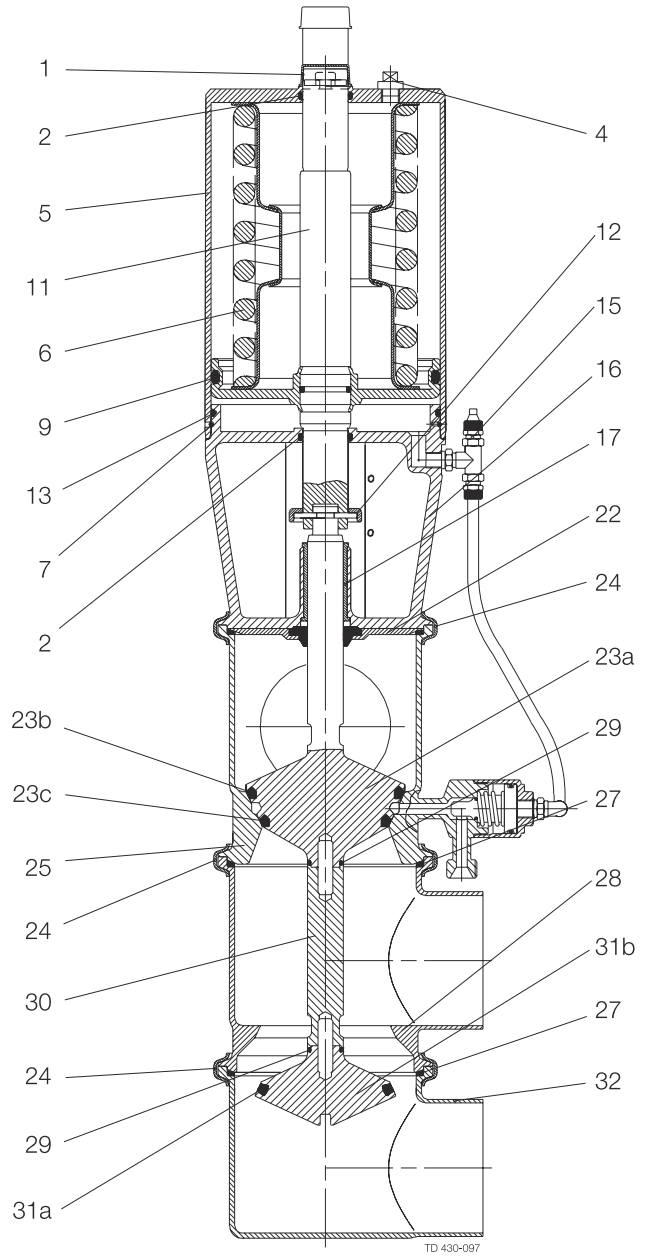
### Stem seal

The drawing show SMP-BC shut-off valve, change-over valve.

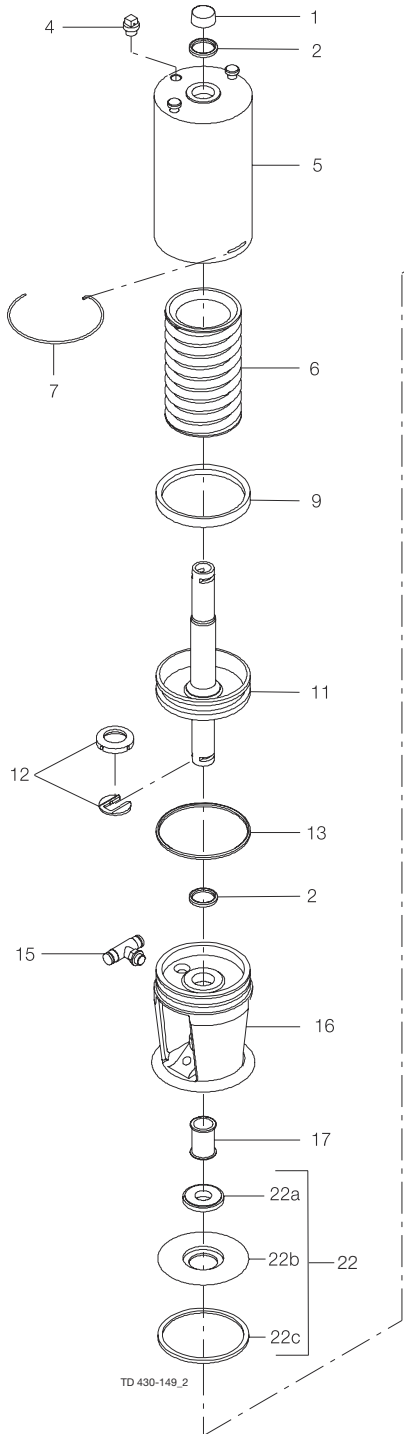
Shut-off valve



Change-over valve



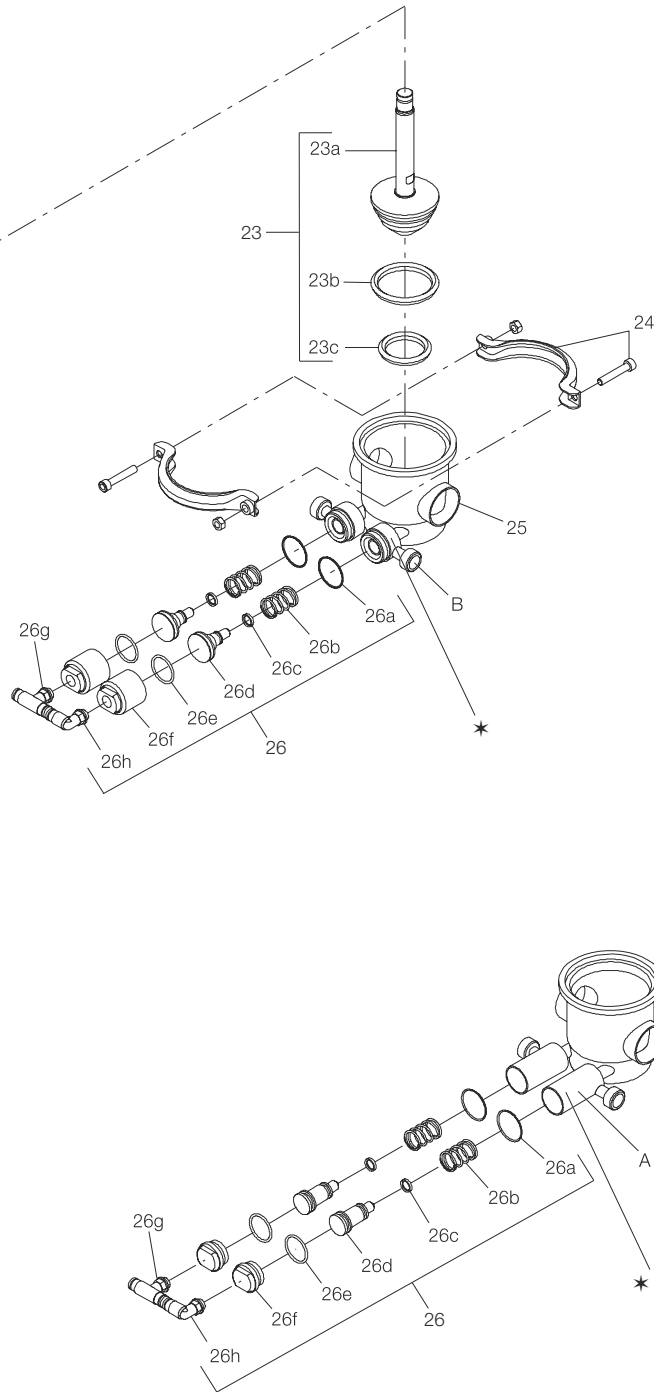
### 9.2 SMP-BC Shut-off Valve



\* = CIP/detecting valve.

Diam. Ø32.

(Period 9505– )



\* = CIP/detecting valve.

Diam. Ø27.

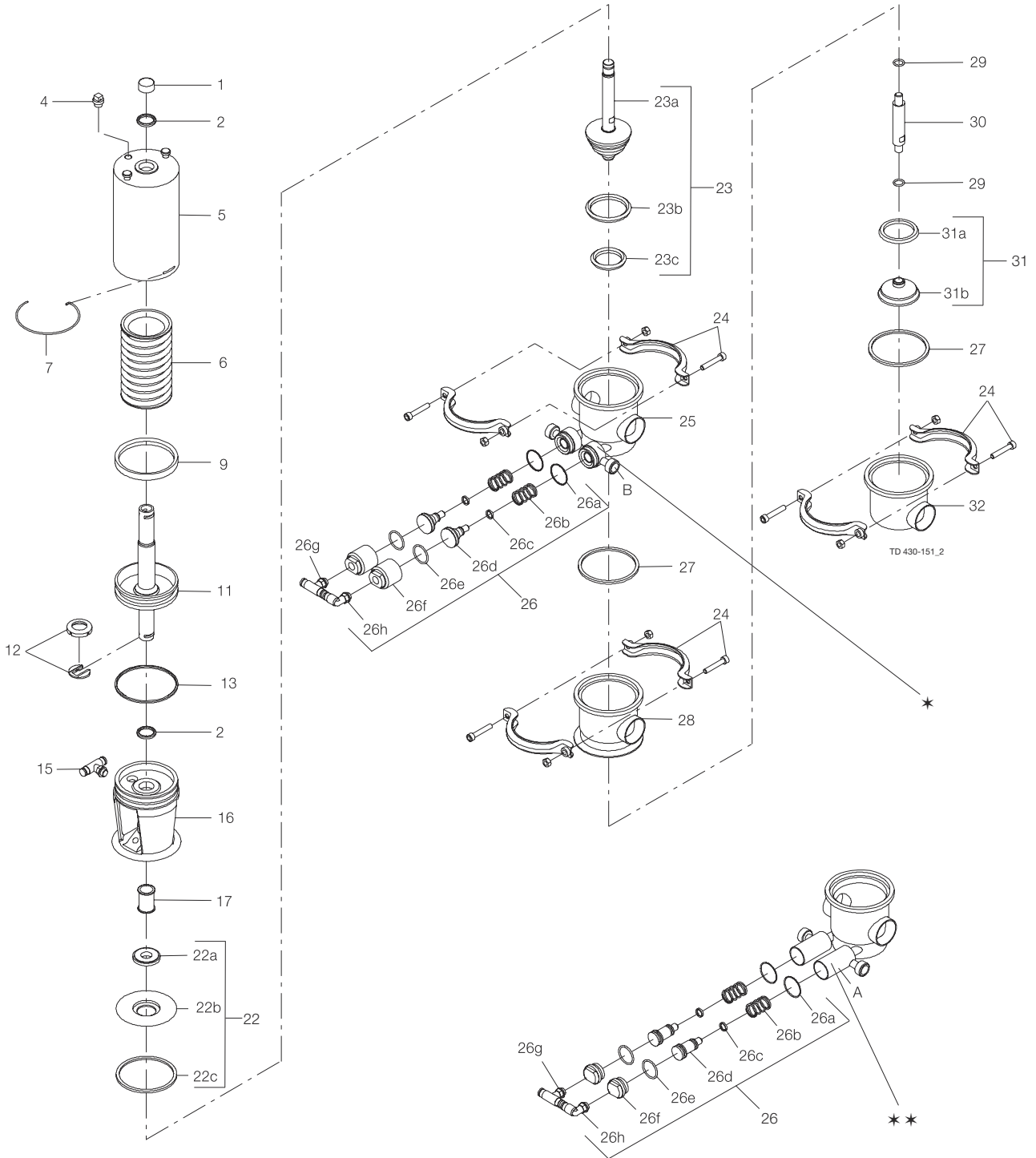
(Period 9304–9504)

Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Cap	22c	1	Seal ring
2	2	O-ring	23	1	Plug
4	1	Plug	23a	1	Plug

<b>Pos.</b>	<b>Qty.</b>	<b>Denomination</b>	<b>Pos.</b>	<b>Qty.</b>	<b>Denomination</b>
5	1	Cylinder	23b	1	Seal ring
6	1	Spring packet	23c	1	Seal ring
7	1	Lock wire	24	1	Clamp complete
9	1	O-ring	25	1	Valve body
11	1	Piston	26	1	Internal parts
12	1	Clip, complete	26a	2	O-ring, NBR
13	1	O-ring	26b	2	Spring
15	1	Air fitting, swivel tee	26c	2	O-ring
16	1	Bonnet	26d	2	Spindle
17	1	Guide ring	26e	2	O-ring, HNBR
22	1	Lip seal kit	26f	2	Plug
22a	1	Lip seal	26g	1	Air fitting, swivel tee
22b	1	Plate	26h	1	Air fitting, swivel bend



### 9.3 SMP-BC Change-over Valve



\* = CIP/detecting valve.

Diam. Ø32.

(Period 9505–)

\* = CIP/detecting valve.

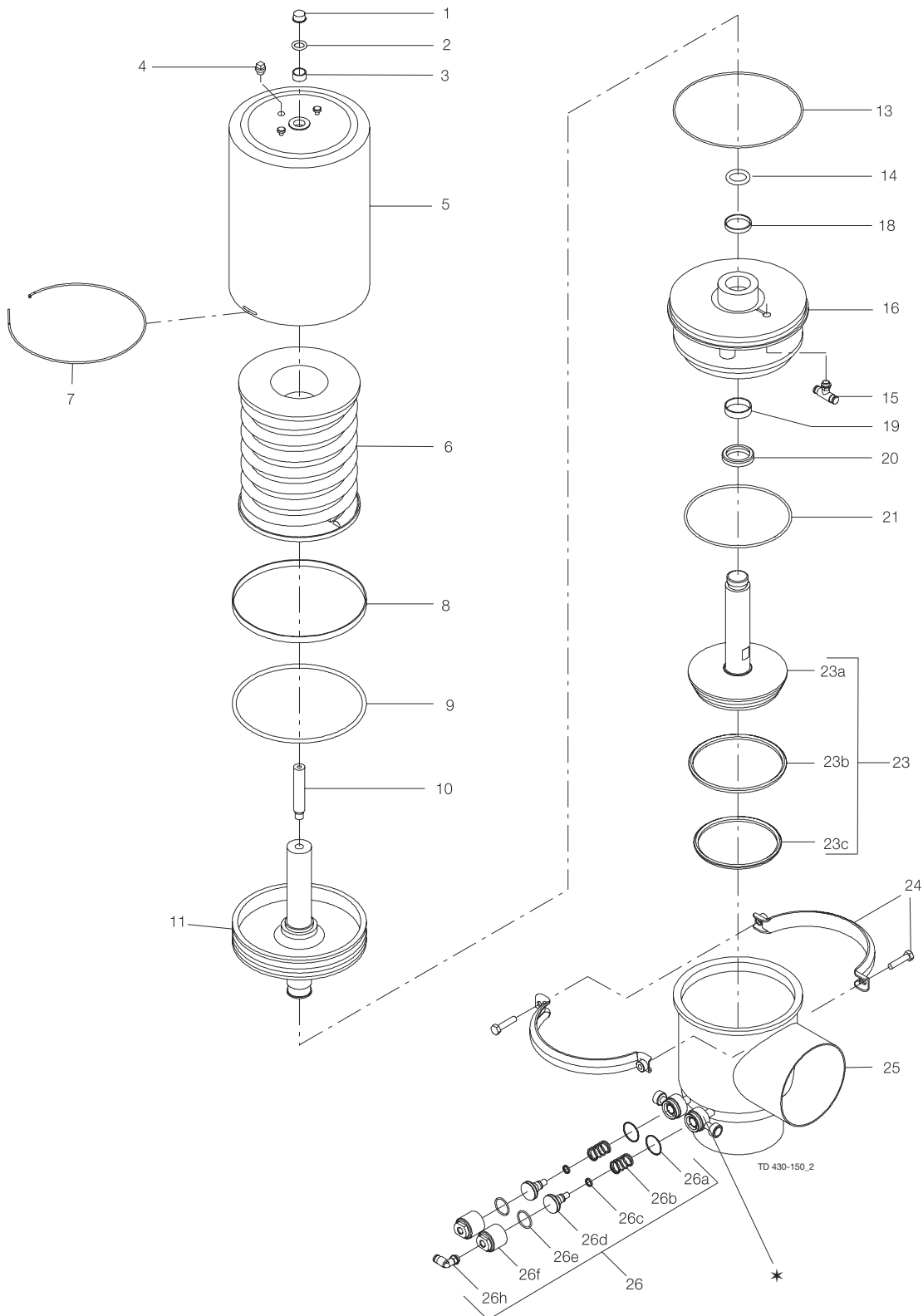
Diam. Ø27.

(Period 9304–9504)

Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Cap	24	3	Clamp complete
2	2	O-ring	25	1	Valve body
4	1	Plug	26	1	Internal parts

Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
5	1	Cylinder	26a	2	O-ring, NBR
6	1	Spring packet	26b	2	Spring
7	1	Lock wire	26c	2	O-ring
9	1	O-ring	26d	2	Spindle
11	1	Piston	26e	2	O-ring, HNBR
12	1	Clip, complete	26f	2	Plug
13	1	O-ring	26g	1	Air fitting, swivel tee
15	1	Air fitting, swivel tee	26h	1	Air fitting, swivel bend
16	1	Bonnet	27	2	Seal ring
17	1	Guide ring	28	1	Valve body
22	1	Lip seal kit	29	2	O-ring
22a	1	Lip seal	30	1	Stem, lower
22b	1	Plate	31	1	Plug
22c	1	Seal ring	31a	1	Seal ring
23	1	Plug	31b	1	Plug, lower
23a	1	Plug, upper	32	1	Valve body
23b	1	Seal ring			

### 9.4 SMP-BC Shut-off Valve — size DN125/DN150



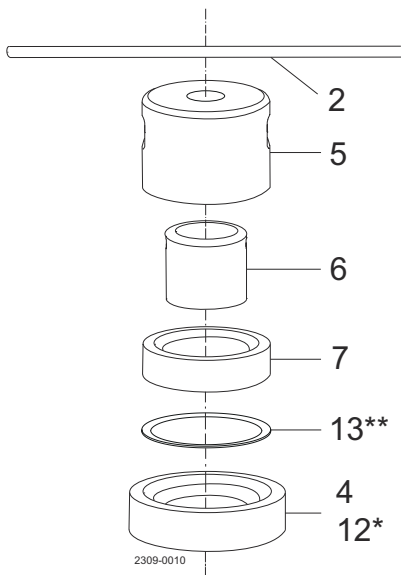
\* = CIP/detecting valve.

Diam. Ø32.

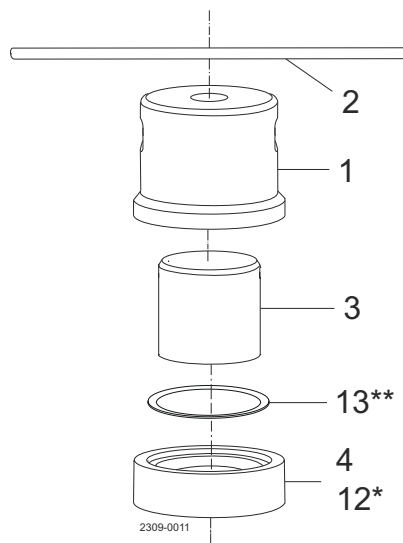
Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Cap	20	1	Lip seal
2	1	O-ring	21	1	Valve body seal ring
3	1	Guide ring	23	1	Plug
4	1	Plug	23a	1	Plug
5	1	Cylinder	23b	1	Seal ring
6	1	Spring packet	23c	1	Seal ring
7	1	Lock wire	24	1	Clamp complete
8	1	Guide ring	25	1	Valve body
9	1	O-ring	26	1	Internal parts
10	1	Top pin	26a	2	O-ring, NBR
11	1	Piston	26b	2	Spring
13	1	O-ring	26c	2	O-ring
14	1	O-ring	26d	2	Spindle
15	1	Air fitting	26e	2	O-ring, HNBR
16	1	Bonnet	26f	2	Plug
18	1	Guide ring	26h	1	Ait fitting, swivel bend
19	1	Guide ring			

### 9.5 Tools for Plug Seals

Tool for shut-off and change-over valve (upper plug)



Small seal ring

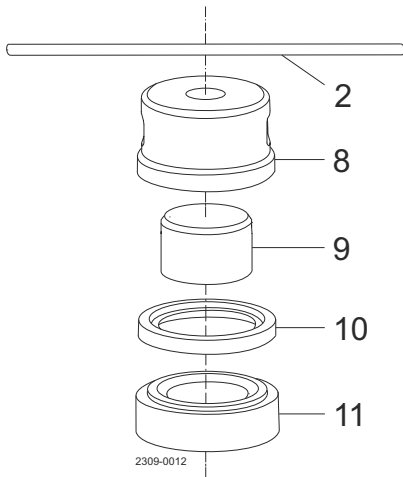


Large seal ring

\* = Only for 38–51 mm/DN40–50 upper change-over plug (marking C8).

\*\* = Only for DN/125–150.

## Tool for change-over valve (lower plug)



## Lower valve plug

Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Outer guide ring for large seal	8	1	Outer guide ring, lower plug
2	1	Pin for tool	9	1	Inner guide ring, lower plug
3	1	Inner guide ring for large seal	10	1	Support part, lower plug
4	1	Tool housing, upper plug	11	1	Tool housing, lower plug
5	1	Outer guide ring for small seal	12	1	Tool housing, ch/o upper plug
6	1	Inner guide ring for small seal	13	1	Spacer (DN125/150)
7	1	Support part, upper plug			