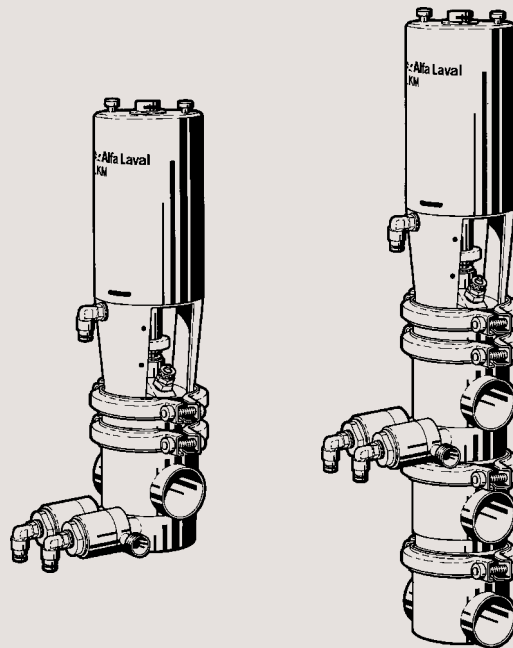




## Instruction Manual

### SMP-BCA Aseptic Mixproof Valve with PTFE Diaphragm



# Declaration of Conformity

## The designating company

**Alfa Laval**

Company Name

**6000 Kolding**

Address

**+45 79 32 22 00**

Phone No.

hereby declare that

**Aseptic Mixproof Valve**

Denomination

**SMP-BCA**

Type

Year

Was manufactured in conformity with the provisions in the COUNCIL DIRECTIVE of 14 June 1989 on mutual approximation of the laws of the Member States on the safety of machines (89/392/EEC as amended by directives 91/368/EEC and 93/44/EEC) with special reference to Annex 1 of the directive on essential safety and health requirements in relation to the construction and manufacture of machines.

**Bjarne Søndergaard**

Name

**Vice President, R & D**

Title

**Alfa Laval**

Company

*B. Søndergaard*

Signature

**Designation**

**CE**

*This manual is divided into main sections. - See below.*

## Safety

1. Important information .....	2
2. Warning signs .....	2
3. Safety precautions .....	3

## Installation

1. Unpacking/Delivery .....	4
2. General installation .....	5
3. Welding .....	6

## Operation

1. Operation .....	7
2. Fault finding .....	7
3. Recommended cleaning .....	8
4. Cleaning equipment (optional extra) .....	10

## Maintenance

1. General maintenance .....	11
2. Dismantling of valve .....	13
3. Reassembly of valve .....	14
4. Dismantling of actuator .....	16
5. Reassembly of actuator .....	17
6. Replacement of plug seals .....	18

## Technical data

1. Technical data .....	20
-------------------------	----

## Drawings/Parts list

1. Parts list	
- SMP-BCA .....	22+24+26+28
- Tool for plug seals .....	30+32
2. Exploded drawings	
- SMP-BCA .....	23+25
- Tool for plug seals .....	31
3. Drawings	
- SMP-BCA .....	27+29
- Tool for plug seals .....	33

# Safety

Unsafe practices and other important information are emphasized in this manual.

Warnings are emphasized by means of special signs.

## 1. Important information

Always read the manual before using the valve!

### WARNING!

: Indicates that special procedures **must** be followed to avoid severe personal injury.

### CAUTION!

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

### NOTE!

: Indicates important information to simplify practices or to make them clearer.

---

## 2. Warning signs



: General warning.



: Caustic agents.

All warnings in the manual are summarized on this page.

Pay special attention to the instructions below so that severe personal injury and/or damage to the valve are avoided.

## 3. Safety precautions

### Installation:



- : - **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Never** touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.



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

### Operation:



- : - **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Never** touch the clip assembly or the actuator piston rod when the actuator is supplied with compressed air.



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



- : **Always** handle lye and acid with great care.



- : - **Always** keep the cleaning pressure lower than the product pressure.
- **Never** throttle the outlet of the detecting valve.

### Maintenance:



- : - **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Always** remove the CIP connections before service.



- : - **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.



- : **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.

# Installation

The instruction manual is part of the delivery.  
Study the instructions carefully.

Stop valve: With one valve body.  
Divert valve: With three valve bodies.  
CIP = Cleaning In Place (see page 8-10).

## 1. Unpacking/Delivery

1

### CAUTION!

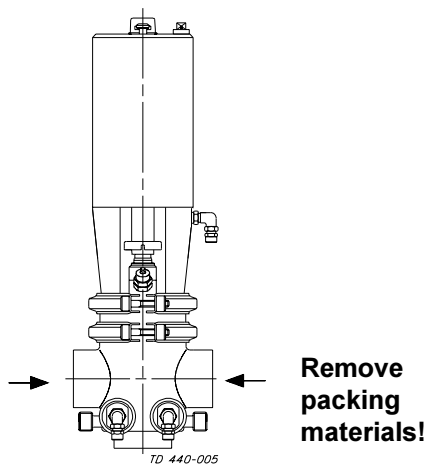
We cannot be held responsible for incorrect unpacking.

2

### Check the delivery for:

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

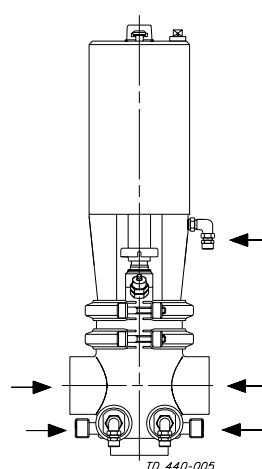
3



Remove possible packing materials from the valve ports.

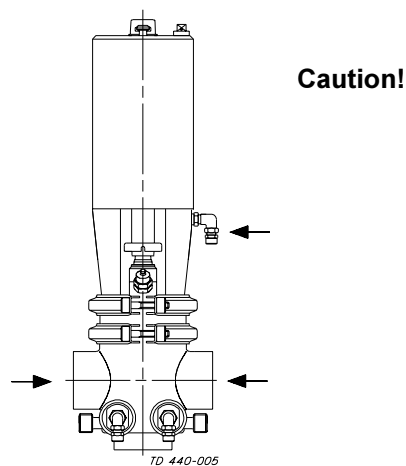
4

### Inspection!



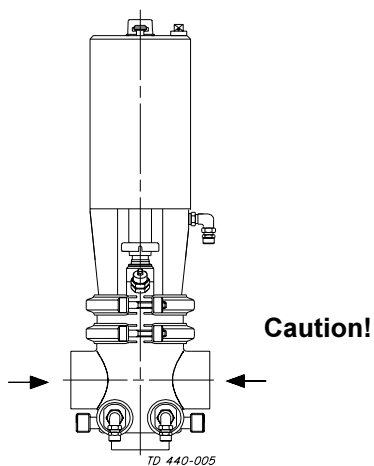
Inspect the valve for visible transport damage.

5



Avoid damaging the air connection and the valve ports.

6



Avoid damaging the detecting valve and the CIP valve.

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

The valve has welding ends as standard but can also be supplied with fittings.  
CIP = Cleaning In Place (see page 8-10).

## 3. General installation

1



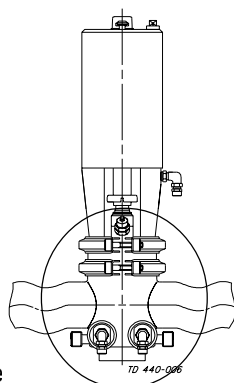
- **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Never** touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.

### CAUTION!

We cannot be held responsible for incorrect installation.

3

**Risk of damage!**

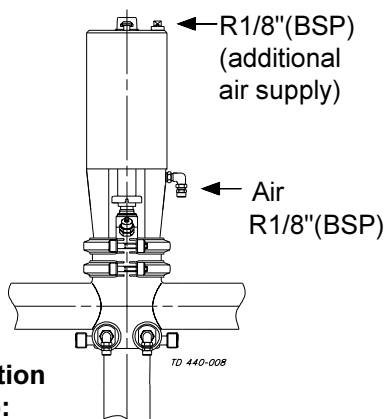


Avoid stressing the valve

Pay special attention to:

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

5



**Air connection R1/8"(BSP):**

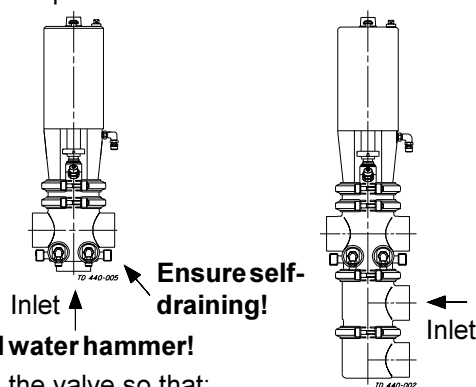
### Drain connection:

The drain hose on the bonnet should always be connected to a tube so that no personal injury can occur in case of a leakage.

2

Stop valve

Divert valve

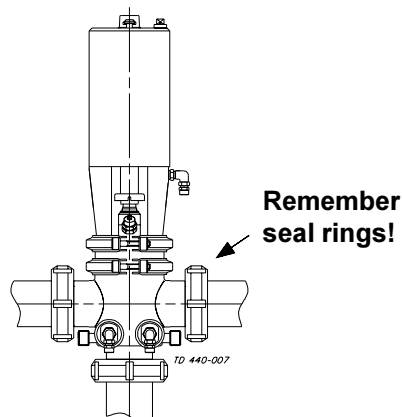


### Avoid water hammer!

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.

4

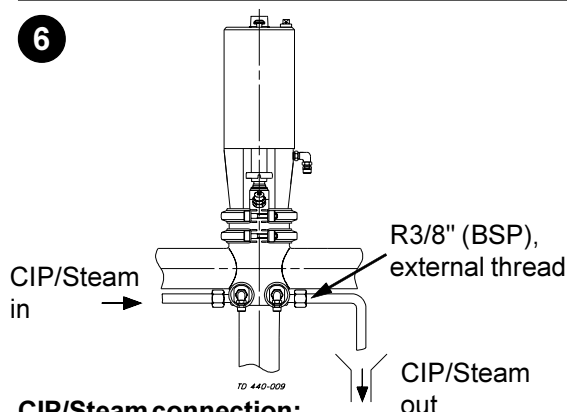


**Remember seal rings!**

### Fittings:

Ensure that the connections are tight.

6



### CIP/Steam connection:

1. See the description of cleaning and optional extras on pages 8-10.
2. Connect CIP correctly.
3. Internal steam pressure must not exceed 120°C/200 kPa (2 bar).

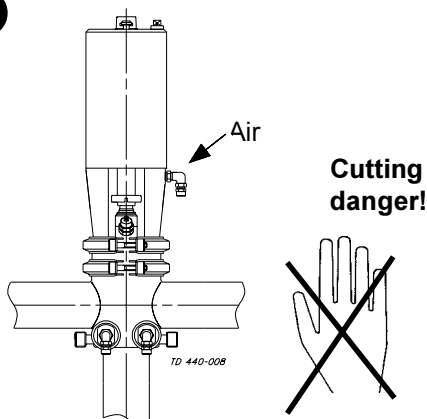
# Installation

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

The valve has welding ends as standard.  
Weld carefully.  
Check the valve for smooth operation after welding.

## 4. Welding

1



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

3

### NOTE!

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

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

Valve size	A (mm)	B <sub>1</sub> (mm)	B <sub>2</sub> (mm)
DN40/38 mm	280	580	760
DN50/51 mm	305	580	760
DN65/63.5 mm	360	580	760
DN80/76 mm	410	630	810
DN100/101.6 mm	470	630	860

5

Reassemble the valve in accordance with instructions 4-9 on page 14-15.

**Pay special attention to the warnings!**

2

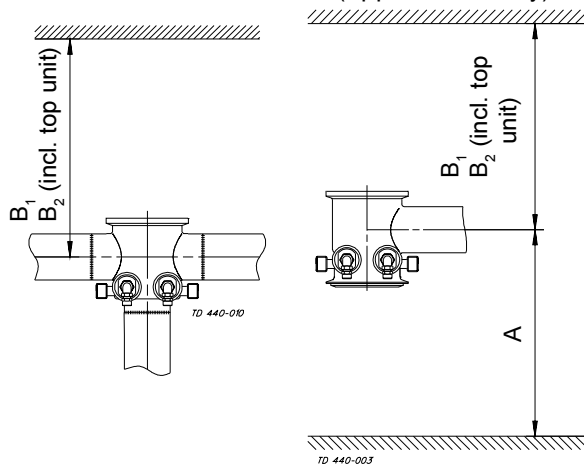
Dismantle the valve in accordance with instructions 1-3 on page 13.

**Pay special attention to the warnings!**

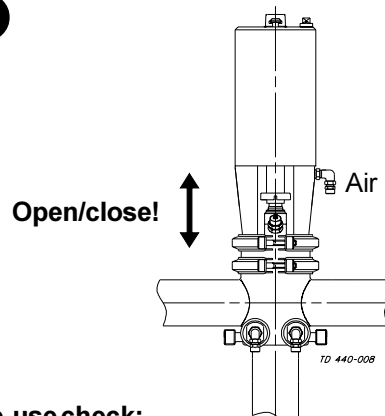
4

Stop valve

Divert valve  
(upper valve body)



6



### Pre-use check:

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

**Pay special attention to the warnings!**



The valve is adjusted and tested before delivery.  
Study the instructions carefully and pay special attention to the warnings!

Pay attention to possible faults.  
The items refer to the drawings and parts list on pages 22-29.  
CIP = Cleaning In Place (see page 8-10).

## 1. Operation

1

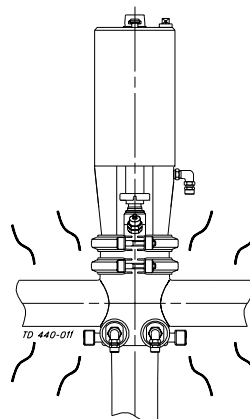


- **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Never** touch the clip assembly or the actuator piston rod when the actuator is supplied with compressed air.

### CAUTION!

We cannot be held responsible for incorrect operation.

2



**Burning danger!**



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

## 2. Fault finding

### NOTE!

Study the maintenance instructions carefully before replacing worn parts. - See page 13!

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 drain tube and/or clamp	Worn/product affected diaphragm set (22) and/or seal rings (17)	<ul style="list-style-type: none"> <li>- Replace the seal rings or diaphragm set</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

# Operation

The valve is designed for cleaning in place (CIP).  
CIP = Cleaning In Place.

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

NaOH = Caustic Soda.

HNO<sub>3</sub> = Nitric acid.

## 3. Recommended cleaning

1

**Caustic danger!**



**Always** use rubber gloves!

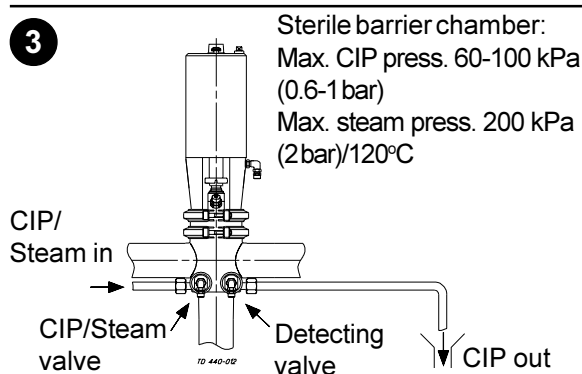


**Always** use protective goggles!



**Always** handle lye and acid with great care.

3



- **Always** keep the cleaning pressure lower than the product pressure.
- **Never** throttle the outlet of the detecting valve.

(Risk of mixing because of overpressure).

5

### Recommended cleaning periods:

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

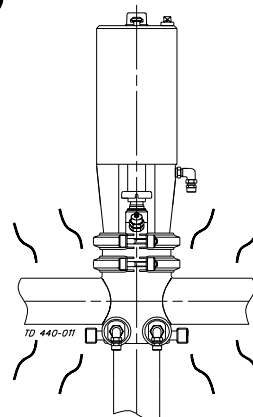
Product	Periods
Milk	1-2
Yoghurt	3-5
Beer	2-5
Cold wort	5-10

### Recommended cleaning flow rates:

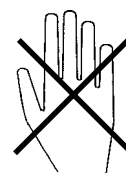
(For special processes, see 6).

Leakage chamber: 12-15 l/min.

2



**Burning danger!**



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

4

### Examples of cleaning agents:

Use clean water, free from chlorides.

- 1% by weight NaOH at 70°C.

1 kg NaOH	+	100 l water	= Cleaning agent.
-----------	---	-------------	-------------------

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

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

0.7 l 53% HNO <sub>3</sub>	+	100 l water	= Cleaning agent.
----------------------------	---	-------------	-------------------

6

- Avoid excessive concentration of the cleaning agent

⇒ **Dose gradually!**

- Adjust the cleaning flow to the process

**Milk sterilization/viscous liquids**

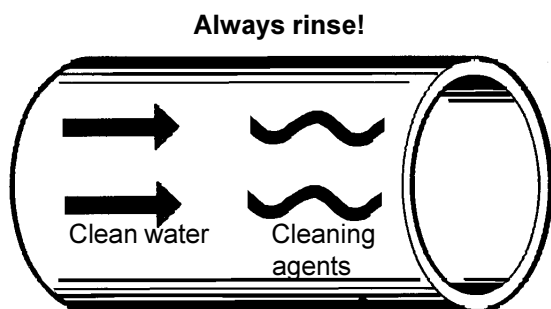
⇒ **Increase the cleaning flow!**

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

Study the instructions carefully.

## 3. Recommended cleaning

7



8

### NOTE!

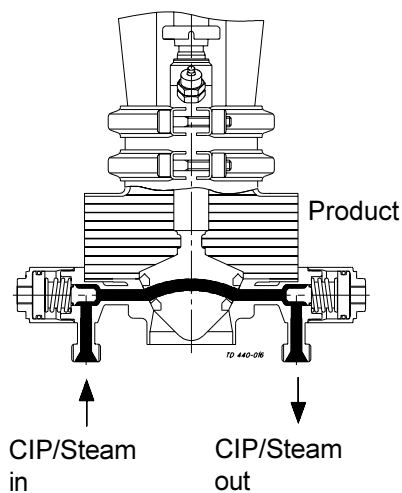
The cleaning agents must be stored/disposed of in accordance with current rules/directives.

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

### Cleaning cycle:

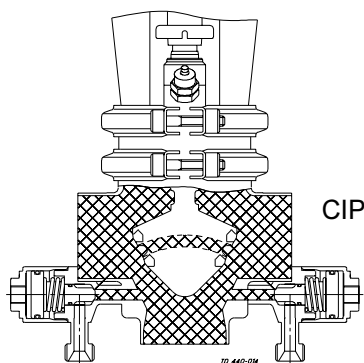
Pay special attention to the warnings!

#### Closed Stop valve:



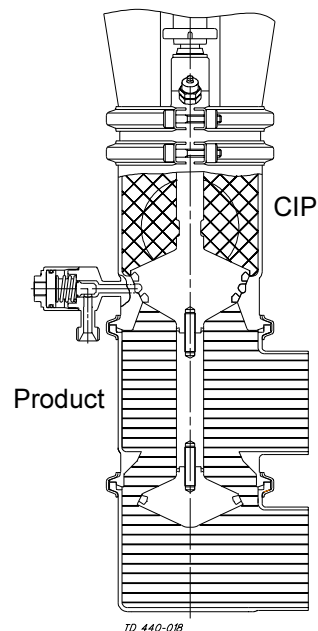
Cleaning of the sterile barrier chamber

#### Open Stop valve:



Cleaning of the valve body and the leakage chamber

#### Divert valve:



Cleaning of the upper valve body

# Operation

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

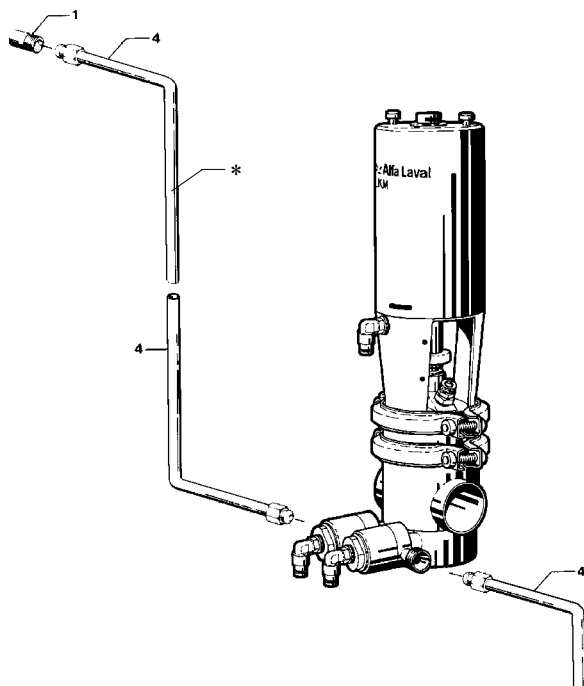
The stainless steel tubes must be cut and welded during installation.  
CIP = Cleaning In Place.

## 4. Cleaning and sterilization equipment (optional extra)

1

10

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



### Contents:

- Pos. 1 Welding male part
- Pos. 4 CIP leakage tube AISI 316

\* Adjust and weld during installation.

2

To ensure aseptic processing and mixproof function certain rules must be followed:

- After the valve is closed the leakage chamber must be cleaned and sterilized.
- The leakage chamber must be kept sterile until the valve is opened again.

Maintain the valve regularly.  
Study the instructions carefully and pay special attention to the warnings!  
CIP = Cleaning In Place.

## 1. General maintenance

1

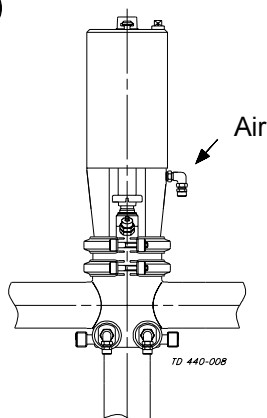


- **Always** read the technical data thoroughly (see page 20).
- **Always** release compressed air after use.
- **Always** remove the CIP connections before service.

### CAUTION!

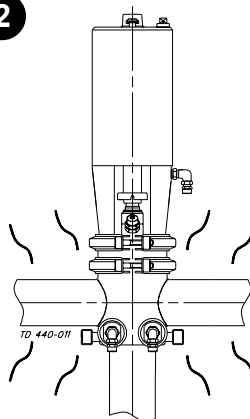
All scrap must be stored/disposed of in accordance with current rules/directives.

3



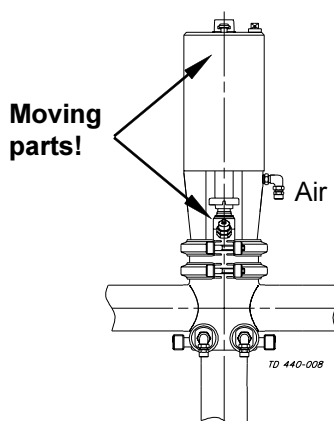
**Never** stick your fingers through the valve ports if the actuator is supplied with compressed air.

2



- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.

4



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

## Ordering spare parts

- Contact the Sales Department.
- Order from the Spare Parts List.

**Recommended spare parts: Service kits (see Spare Parts List).**

# Maintenance

12

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. Study the instructions carefully.

Always keep spare rubber seals, lip seals and guide rings in stock. Check the valve for smooth operation after service.

## 1. General maintenance

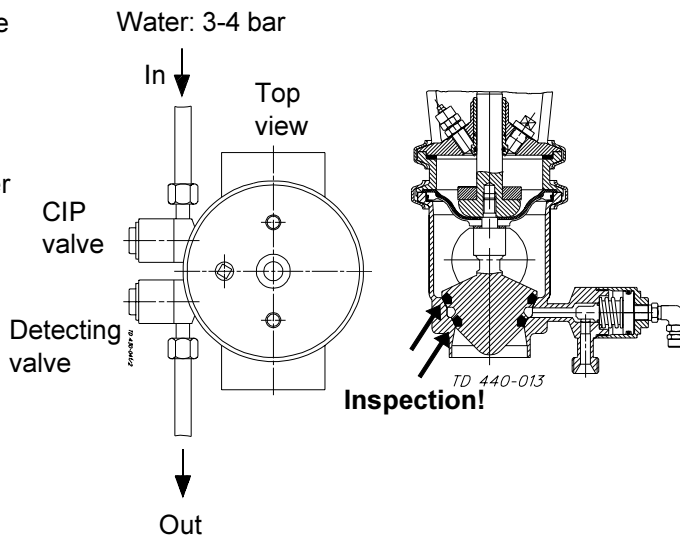
	Valve diaphragm unit	Valve rubber seals	Actuator rubber seals	Bonnet guide ring and O-rings
Preventive maintenance	<b>Replace after 12 months (depending on working conditions)</b>	Replace when replacing the diaphragms	<b>Replace after 5 years</b>	Replace when replacing the actuator rubber seals (*)
Maintenance after leakage (leakage normally starts slowly)	<b>Replace by the end of the day</b>	Replace when replacing the diaphragms	<b>Replace when possible</b>	Replace when replacing the actuator rubber seals (*)
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> <b>Replace after leakage</b>	Replace when replacing the diaphragms	<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> <b>Replace after air leakage</b>	
Lubrication (USDAH1 approved oil/grease)	<b>Before fitting</b> Silicone oil or silicone grease	<b>Before fitting</b> Silicone oil or silicone grease	<b>Before fitting</b> Silicone oil or silicone grease	Lubricate O-rings before fitting. Silicone oil or silicone grease

### (\*) IMPORTANT!

Check that the guide ring is fitted if replacing the bonnet.

### Pre-use check:

1. Ensure that the valve plug seals against the seat.  
**Pay special attention to the warnings!**
2. Pressurise the sterile barrier 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 a few times to ensure that it operates smoothly.  
**Pay special attention to the warnings!**

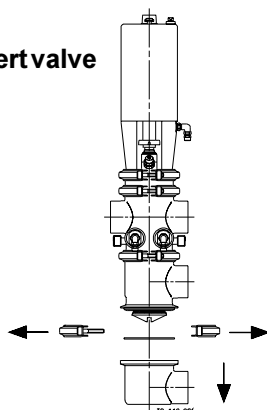


Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 22-29.

## 2. Dismantling of valve

1

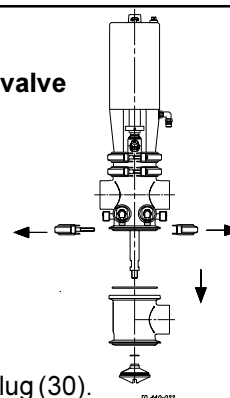
Divert valve



1. Loosen and remove lower clamp (19).
2. Take away lower valve body (31).
3. Pull out seal ring (17).

2

Divert valve

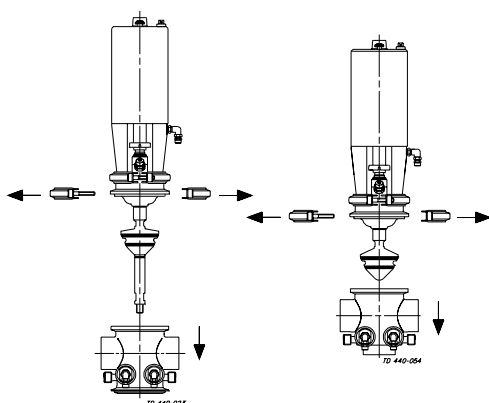


1. Unscrew lower plug (30).
2. Pull off seal ring (30a) (see special instruction on page 18).
3. Loosen and remove upper clamp (19).
4. Take away middle valve body (27).
5. Pull off O-ring (28) and seal ring (17).

3

Divert valve

Stop valve

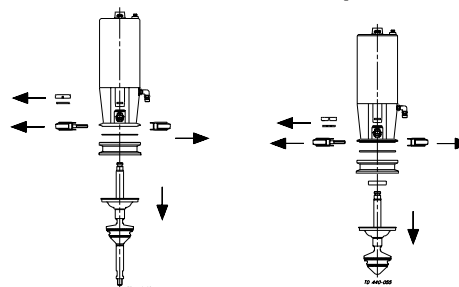


1. Loosen and remove lower diaphragm clamp (19).
2. Take away upper valve body (25).

4

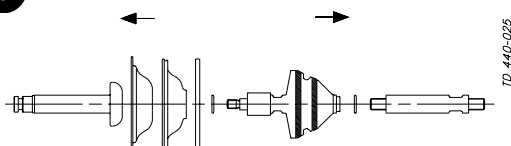
Divert valve

Stop valve



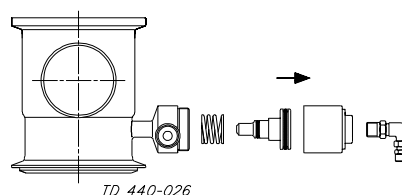
1. Remove clip assembly (9).
2. Remove upper plug with complete diaphragm/stem unit.
3. Remove washer (20) (stop valves only).
4. Loosen and remove upper diaphragm clamp (19).
5. Take away intermediate piece (18).
6. Remove seal ring (17) from the intermediate piece.

5



1. In sequence, turn lower and upper stem (29, 21) anticlockwise (for stop valve: only upper stem) to separate them from upper plug (24) (counterhold with a spanner).
2. Remove diaphragms (22a, 22b), L-seal (22c) and stem seal (22d) from the upper plug.
3. Remove diaphragm ring (23) and seal ring (17) from upper valve plug (25) (only for valve sizes 76-101.6 mm/DN80-100).

6



1. Remove air fitting (26g).
2. Unscrew CIP valve housing (26f).
3. Pull out CIP valve plug (26d).
4. Remove CIP valve spring (26b).

# Maintenance

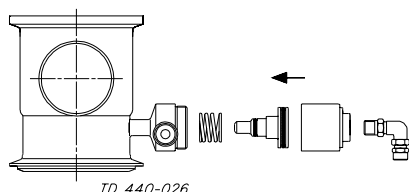
14

Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 22-29.

Lubricate the rubber seals and the diaphragms before fitting them.

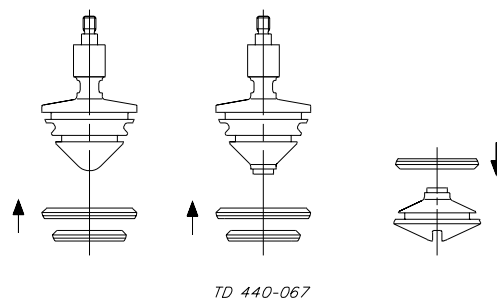
## 3. Reassembly of valve

1



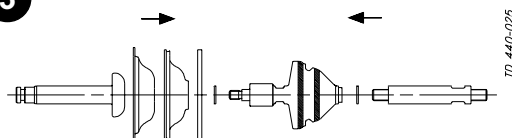
1. Fit CIP valve spring (26b) on CIP valve plug (26d).
2. Insert the CIP valve plug with spring in the CIP valve body.
3. Screw CIP valve housing (26f) onto the CIP valve body.
4. Screw air fitting (26g) into the CIP valve housing.

2



Fit seal rings (24b, 24c) and seal ring (30a) on plugs (see special instructions on pages 18-19).

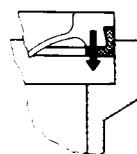
3



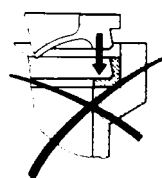
1. Fit stem seal (22d), L-seal (22c) and diaphragms (22a, 22b) on upper plug (24). (For L-seal: see instruction 4 on this page).
2. Fit diaphragm ring (23) between upper stem (21) and the upper plug (only for valve sizes 76-101.6 mm/DN80-100).
3. In sequence, screw the upper and lower stem (29) clockwise (for stop valve: only upper stem onto upper plug). Counterhold with a spanner. (Use loctite on threads of stems).

4

Correct!



Wrong!



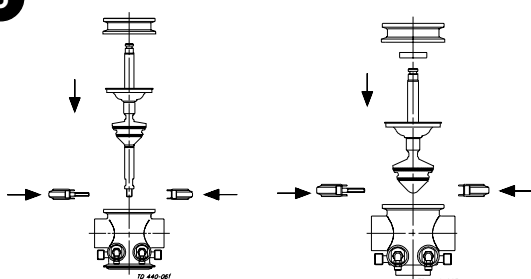
### CAUTION!

Ensure that L-seal (22c) is fitted on diaphragm (22a) before placing the diaphragm unit in upper valve body (25).

5

Divert valve

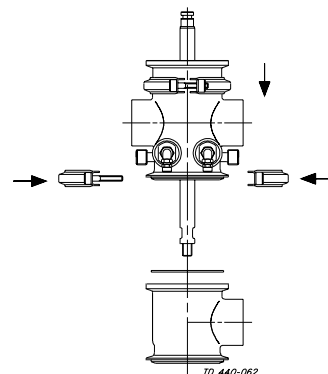
Stop valve



1. Slide seal ring (17) into upper valve body (25) (only valve sizes 76-101.6 mm/DN80-100).
2. Fit diaphragm/stem unit in the upper valve body.
3. Position intermediate piece (18) on the upper valve body.
4. Fit and tighten lower diaphragm clamp.
5. Position washer (20) on upper stem (stop valve only).

6

Divert valve



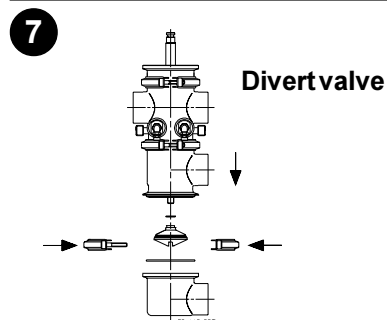
1. Slide seal ring (17) into middle valve body (27).
2. Position the middle valve body on upper valve body (25).
3. Fit and tighten upper clamp (19).



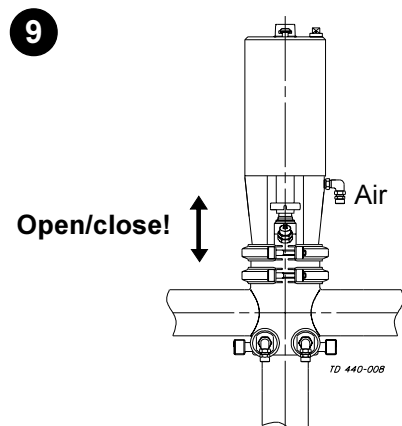
Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 22-29.

Lubricate the rubber seals and the diaphragms before fitting them.

## 3. Reassembly of valve

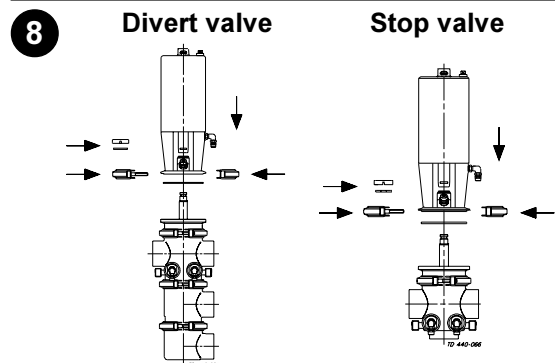


1. Slide O-ring (28) onto lower plug (30).
2. Screw the lower plug onto lower stem (29). (Use loctite).
3. Slide seal ring (17) into lower valve body (31).
4. Position the lower valve body on middle valve body (27).
5. Fit and tighten lower clamp (19).



1. Supply compressed air to the actuator.
2. Operate the valve a few times to ensure that it runs smoothly.

**Pay special attention to the warnings.**



1. Slide seal ring (17) into intermediate piece.
2. Supply compressed air to the actuator.
3. Lift actuator onto mounted intermediate piece (18).
4. Reassemble clip assembly (9).
5. Release compressed air.
6. Fit and tighten upper diaphragm clamp (19).

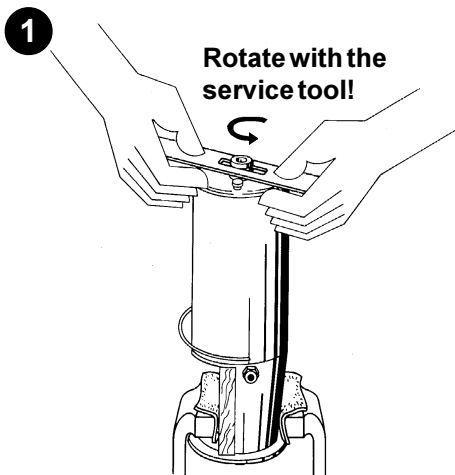
# Maintenance

Study the instructions carefully.  
The items refer to the drawings and the parts list on  
pages 22-29.

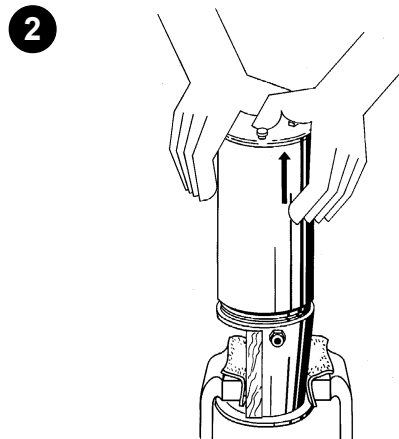
Handle scrap correctly.

## 4. Dismantling of actuator

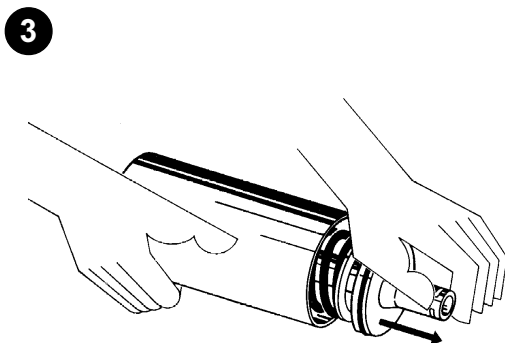
16



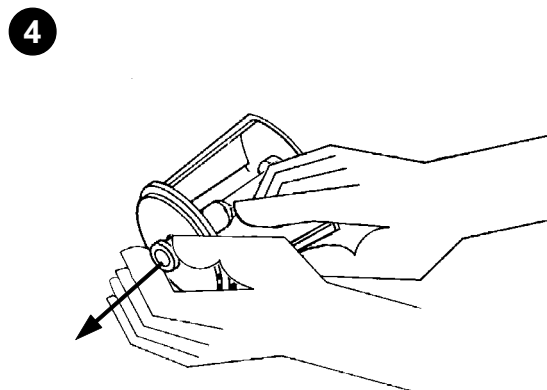
1. Rotate cylinder (4) to unhook lock wire (10).
2. Remove the lock wire.



1. Disconnect cylinder (4) from bonnet (11).
2. Pull off O-rings (2, 10) from the bonnet.



1. Pull out piston (8) and spring assembly (5).
2. Pull off O-ring (7) from the piston.



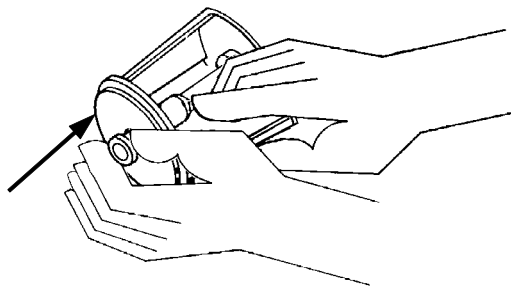
1. Remove guide ring (15) from bonnet (11).
2. Remove O-rings (14, 16) from guide ring (15).

Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 22-29.

Lubricate the rubber seals before fitting them.

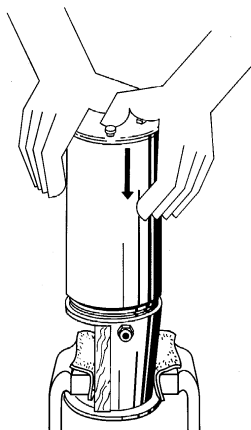
## 5. Reassembly of actuator

1



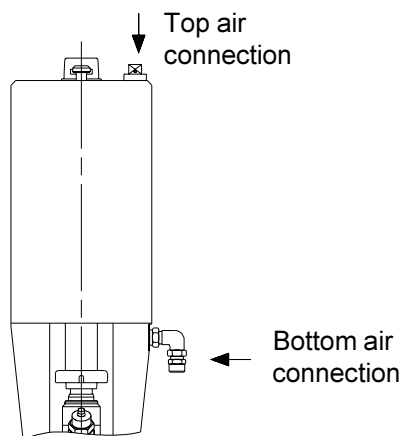
1. Fit O-rings (14, 16) on guide ring (15).
2. Fit guide ring (15) in bonnet (11).

3



1. Slide O-rings (2, 10) onto bonnet (11).
2. Fit cylinder (4) on the bonnet.

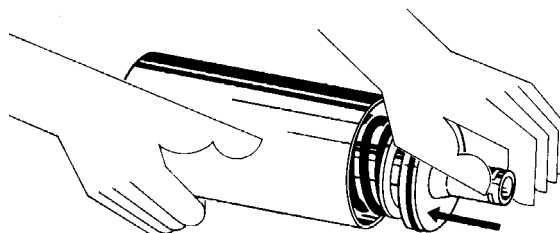
5



### NOTE!

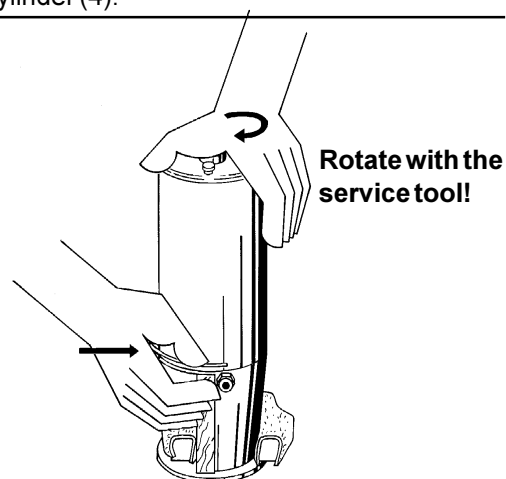
Rotate cylinder (4) further 180° in relation to bonnet (11) so that the top and bottom air connections are fixed on the same side.

2



1. Fit O-ring (7) on the piston.
2. Push the piston and spring packet (5) into cylinder (4).

4



1. Rehook lock wire (10) through the slot in cylinder (4) in the hole in bonnet (11).
2. Rotate the cylinder 360° (see illustration above).

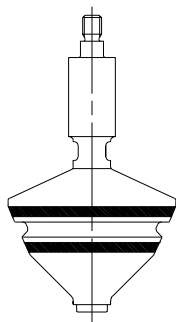
Study the instructions carefully.  
The items refer to the drawings and the parts list on the pages 30-33.

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

## 6. Replacement of plug seals

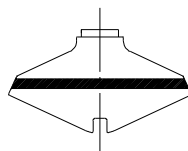
1

### Removing the seal rings



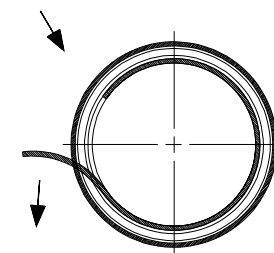
TD 440-036

Upper valve plug



Lower valve plug

Cutthrough!



Pull!

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

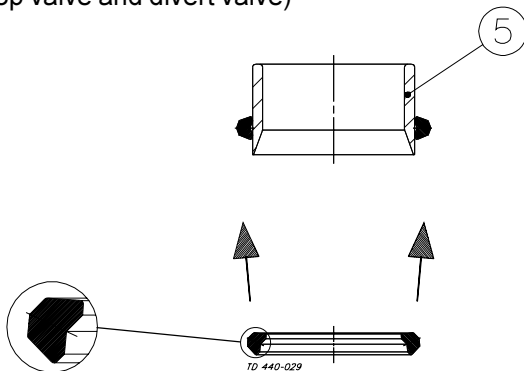
### CAUTION!

Do not damage the seal ring grooves.

2

### Fitting the seal rings

**Upper valve plug:**  
(Stop valve and divert valve)

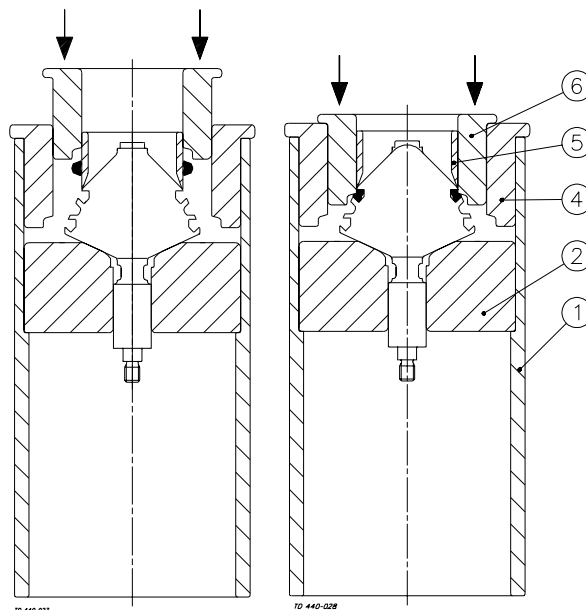


### Lower seal ring

1. Fit the lower seal ring on guide ring (5).
2. Assemble the tool (1-6) (also use ring (7) for large seal ring).
- Note!** For the SMP-BCA valve the supplied bush (3) is **not** used.
3. Press guide piston (6) downwards by means of a press so that the seal ring is fitted in the groove of the valve plug.
4. Release air between the seal ring and the valve plug by using a small screwdriver.

### CAUTION!

Do not damage the seal ring and the seal ring groove.



Study the instructions carefully.  
The items refer to the drawings and the parts list on the pages 30-33.

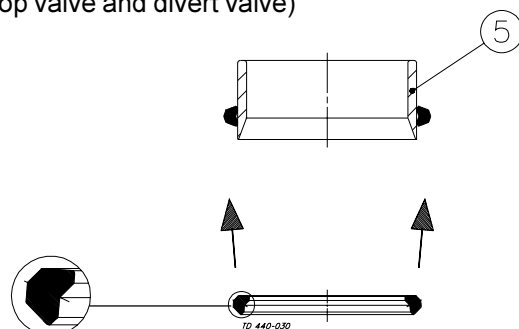
Do **not** lubricate the rubber seals or the tool parts before fitting the seals.

## 6. Replacement of plug seals

3

### Fitting the seal rings

**Upper valve plug:**  
(Stop valve and divert valve)

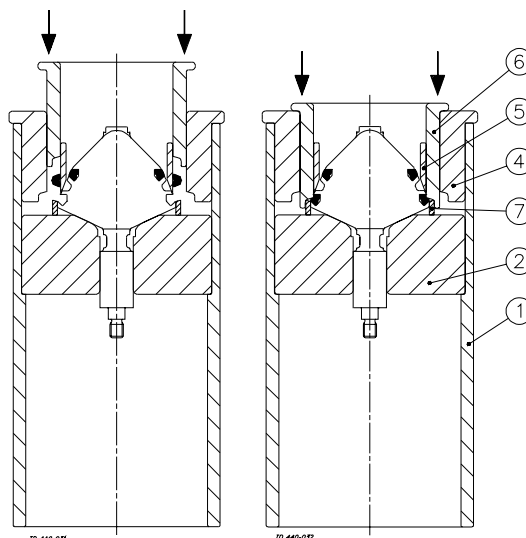


### Upper seal ring:

1. Fit the upper seal ring on guide ring (5).
2. Assemble the tool (1-6) (also use ring (7) for large seal ring).
- Note!** For the SMP-BCA valve the supplied bush (3) is **not** used.
3. Press guide piston (6) downwards by means of a press so that the seal ring is fitted in the groove of the valve plug.
4. Release air between the seal ring and the valve plug by using a small screwdriver.

### CAUTION!

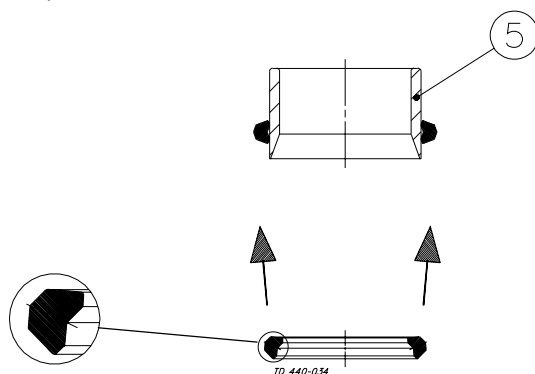
Do not damage the seal ring and the seal ring groove.



4

### Fitting the seal rings

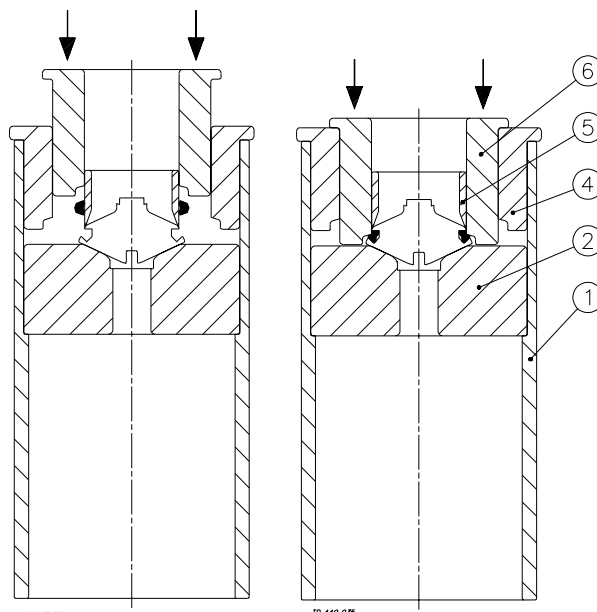
**Lower valve plug:**  
(Divert)



1. Fit the lower seal ring on guide ring (5).
2. Assemble the tool (1-6) (also use ring (7) for large seal ring).
- Note!** For the SMP-BCA valve the supplied bush (3) is **not** used.
3. Press guide piston (6) downwards by means of a press so that the seal ring is fitted in the groove of the valve plug.
4. Release air between the seal ring and the valve plug by using a small screwdriver.

### CAUTION!

Do not damage the seal ring and the seal ring groove.



# Technical data

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

*Inform the personnel about the technical data.*

## 1. Technical data

20

### Technical data

Pressure range .....	0 - 800 kPa (0-8 bar)
Temperature range .....	-10°C to 140°C (EPDM)
Optimum process conditions .....	>50 kPa (0,5 bar), > 20°C
Max. sterilisation temperature (steam – short time) ....	150°C – 380kPa (3,8 bar)
Air pressure .....	500 – 800 kPa (5-8 bar)
Air consumption (litres free air)	
38mm, 51mm, DN40, DN50 .....	0,2 x air pressure in bar
63,5mm, 76mm, 101,6mm, DN65, DN 80, DN100 .....	0,7 x air pressure in bar

**NOTE!** Vacuum is not recommended in aseptic applications.

Expected lifetime of diaphragm unit under normal conditions: (no pressure shocks or cavitation)		
Size\Type	Stop valve activations	Change over valve activations
38mm/DN40	12.000	10.000
51mm/DN50	12.000	10.000
63,5mm/DN65	12.000	5.000
76,1mm/DN80	5.000	5.000
101mm/DN100	5.000	5.000

**NOTE!** Activating the valve without internal product pressure reduces lifetime of diaphragm unit.

### Materials

Product wetted steel parts .....	Acid resistant steel AISI 316L
Other steel parts .....	Stainless steel AISI 304
Finish .....	Semi bright
Product wetted seals .....	EPDM, PTFE
Other seals .....	NBR, EPDM



# Drawing/Parts list

The drawings and the parts list include all items.

The items are identical with the items in the Spare Parts List.

When ordering spare parts, please use the Spare Parts List!

## Parts list SMP-BCA, Stop valve

22

Pos.	Qty.	Denomination
1	1	Cap
2△	2	O-ring
3	2	Plug
4	1	Cylinder
5	1	Spring assembly, standard, black
	1	Spring assembly, strong, white
6△	1	Lock wire
7△	1	O-ring
8	1	Piston
9△	1	Clip, complete
10△	1	O-ring
11	1	Bonnet
12	1	Drain tube
13	1	Air fitting, swivel bend
14△	1	O-ring (bonnet)
15△	1	Guide ring
16△	1	O-ring (stem)
17○	1	Seal ring
18	1	Intermediate piece
19	1	Clamp and screws (short)
	1	Clamp and screws (long)
20	1	Washer
21	1	Stem upper
22○	1	Diaphragm set
a	1	Diaphragm support, EPDM
b	1	Diaphragm, PTFE
c	1	L-seal
d	1	Stem seal
23	1	Diaphragm ring
24	1	Plug complete
a	1	Plug
b○	1	Seal ring
c○	1	Seal ring
25	1	Valve body, upper
26	1	Internal parts
a○	2	O-ring
b	2	Spring
c○	2	O-ring
d	2	Spindle
e○	2	O-ring
f	2	Plug
g	1	Air fitting, swivel bend
27	1	Valve body, middle
28	2	O-ring
29	1	Stem, lower
30	1	Plug, lower complete
a○	1	Seal ring
b	1	Plug
31	1	Valve body, lower

△ : Service kit for actuator

○: Service kit = EPDM, NBR, FPM



*The drawing includes all items of the valve.  
They are identical with the items in the Spare Parts  
List.*

Exploded view diagram of a mechanical assembly. The diagram shows the following components and their assembly sequence:

- 1**: Cap screw
- 2**: O-ring
- 3**: Cap screw
- 4**: Cylindrical body
- 5**: Spring
- 6**: Flange
- 7**: O-ring
- 8**: Shaft
- 9**: O-ring
- 10**: O-ring
- 11**: Cap screw
- 12**: Cap screw
- 13**: Cap screw
- 14**: O-ring
- 15**: O-ring
- 16**: O-ring
- 17**: O-ring
- 18**: Flange
- 19**: Bracket
- 20**: O-ring
- 21**: Shaft
- 22**: Flange
- 23**: Flange (Sizes 76-101.6 mm/DN80-100)
- 24**: O-ring
- 25**: Flange
- 26**: Assembly of components **a** through **g** (a: O-ring, b: O-ring, c: O-ring, d: O-ring, e: O-ring, f: O-ring, g: O-ring)

# Drawing/Parts list

The drawings and the parts list include all items.

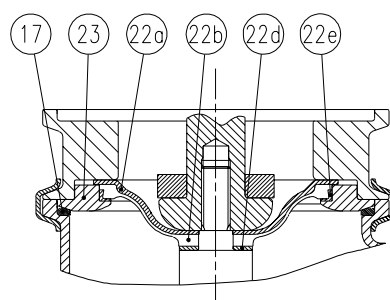
The items are identical with the items in the Spare Parts List.

When ordering spare parts, please use the Spare Parts List!

## Parts list SMP-BCA, Stop valve

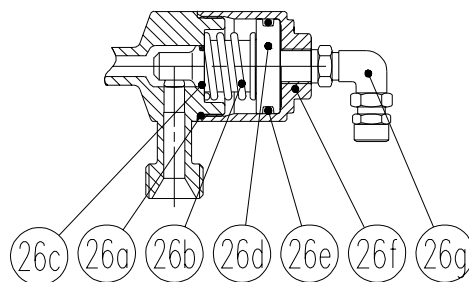
24

Pos.	Qty.	Denomination
1	1	Cap
2△	2	O-ring
3	2	Plug
4	1	Cylinder
5	1	Spring assembly, standard, black
	1	Spring assembly, strong, white
6△	1	Lock wire
7△	1	O-ring
8	1	Piston
9△	1	Clip, complete
10△	1	O-ring
11	1	Bonnet
12	1	Drain tube
13	1	Air fitting, swivel bend
14△	1	O-ring (bonnet)
15△	1	Guide ring
16△	1	O-ring (stem)
17○	1	Seal ring
18	1	Intermediate piece
19	1	Clamp and screws (short)
	1	Clamp and screws (long)
20	1	Washer
21	1	Stem upper
22○	1	Diaphragm set
a	1	Diaphragm support, EPDM
b	1	Diaphragm, PTFE
c	1	L-seal
d	1	Stem seal
23	1	Diaphragm ring
24	1	Plug complete
a	1	Plug
b○	1	Seal ring
c○	1	Seal ring
25	1	Valve body, upper
26	1	Internal parts
a○	2	O-ring
b	2	Spring
c○	2	O-ring
d	2	Spindle
e○	2	O-ring
f	2	Plug
g	1	Air fitting, swivel bend
27	1	Valve body, middle
28	2	O-ring
29	1	Stem, lower
30	1	Plug, lower complete
a○	1	Seal ring
b	1	Plug
31	1	Valve body, lower



TD 440-004/1

(76-101.6 mm/DN 80-100)



CIP/detecting valve

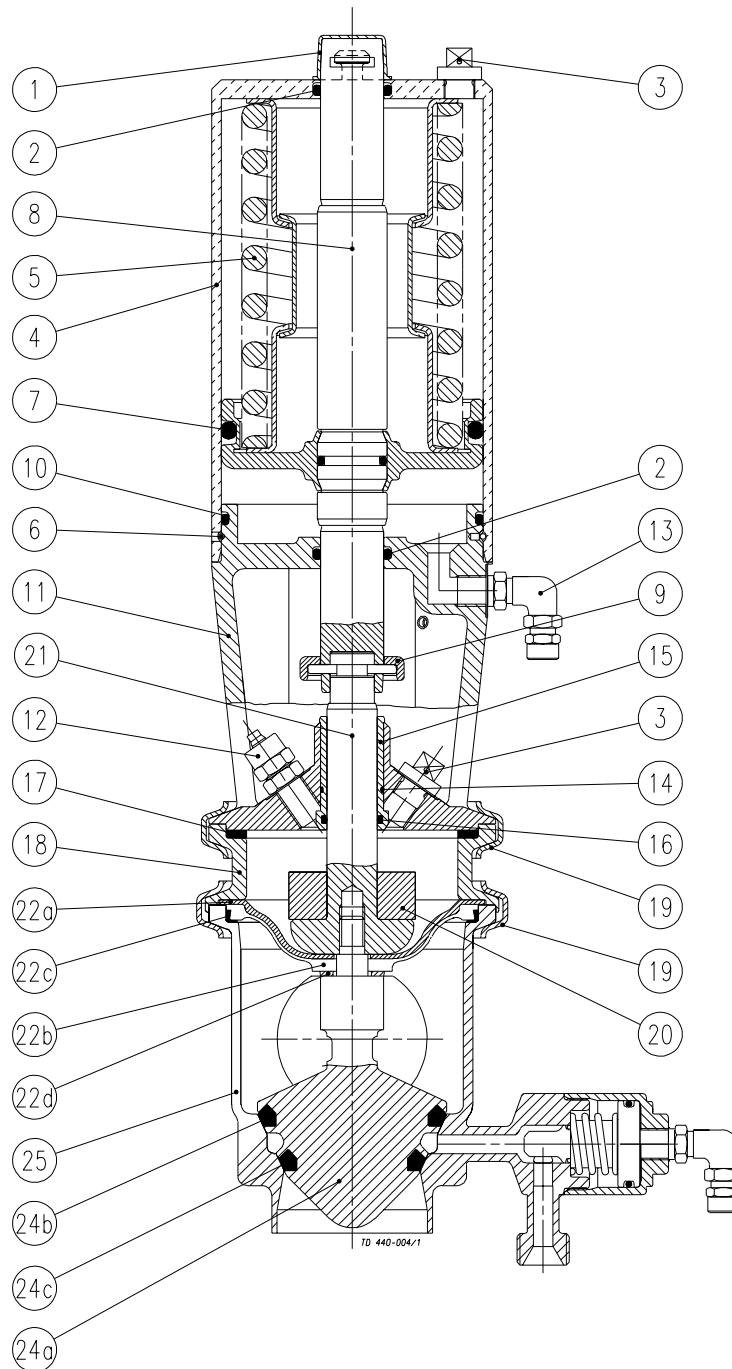
△ : Service kit for actuator

○: Service kit = EPDM, NBR, FPM

The drawings below show SMP-BCA, stop valve.

The items refer to the parts list on the opposite part of the page.

## Drawings



# Drawing/Parts list

The drawings and the parts list include all items.

The items are identical with the items in the Spare Parts List.

When ordering spare parts, please use the Spare Parts List!

## Parts list SMP-BCA, Divert valve

26

Pos.	Qty.	Denomination
1	1	Cap
2△	2	O-ring
3	2	Plug
4	1	Cylinder
5	1	Spring assembly, standard, black
	1	Spring assembly, strong, white
6△	1	Lock wire
7△	1	O-ring
8	1	Piston
9△	1	Clip, complete
10△	1	O-ring
11	1	Bonnet
12	1	Drain tube
13	1	Air fitting, swivel bend
14△	1	O-ring (bonnet)
15△	1	Guide ring
16△	1	O-ring (stem)
17○	1	Seal ring
18	1	Intermediate piece
19	1	Clamp and screws (short)
	1	Clamp and screws (long)
20	1	Washer
21	1	Stem upper
22○	1	Diaphragm set
a	1	Diaphragm support, EPDM
b	1	Diaphragm, PTFE
c	1	L-seal
d	1	Stem seal
23	1	Diaphragm ring
24	1	Plug complete
a	1	Plug
b○	1	Seal ring
c○	1	Seal ring
25	1	Valve body, upper
26	1	Internal parts
a○	2	O-ring
b	2	Spring
c○	2	O-ring
d	2	Spindle
e○	2	O-ring
f	2	Plug
g	1	Air fitting, swivel bend
27	1	Valve body, middle
28	2	O-ring
29	1	Stem, lower
30	1	Plug, lower complete
a○	1	Seal ring
b	1	Plug
31	1	Valve body, lower

△ : Service kit for actuator

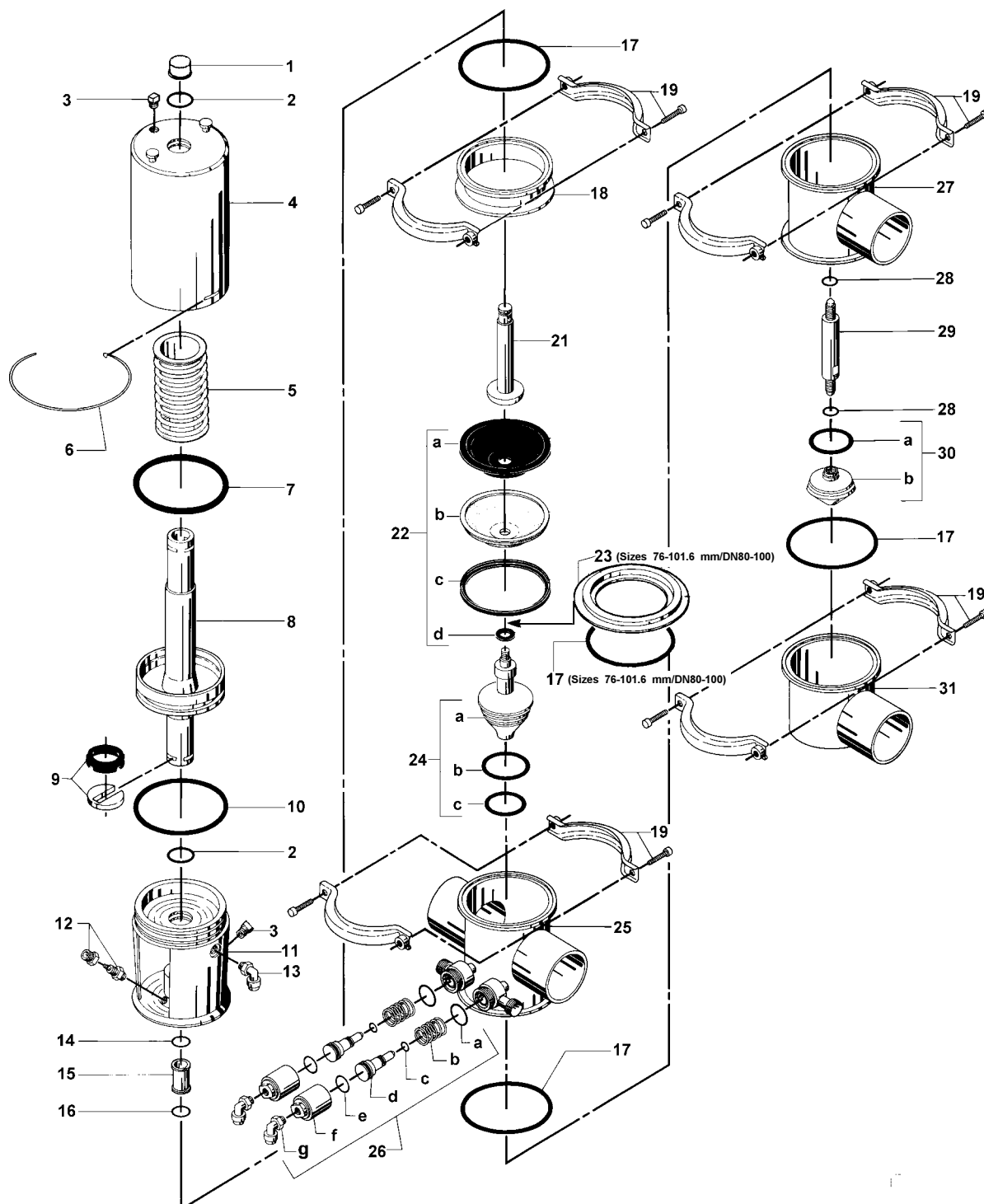
○: Service kit = EPDM, NBR, FPM

This page shows an exploded drawing of SMP-BCA, divert valve.

The drawing includes all items of the valve. They are identical with the items in the Spare Parts List.

## Exploded drawing

27



# Drawing/Parts list

The drawings and the parts list include all items.

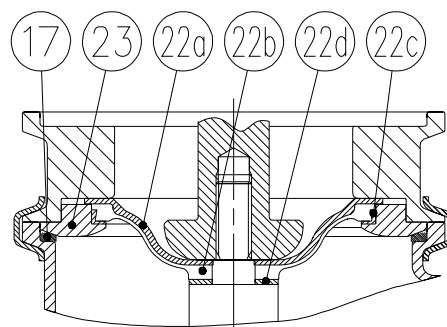
The items are identical with the items in the Spare Parts List.

When ordering spare parts, please use the Spare Parts List!

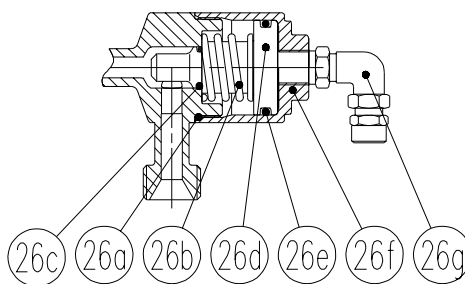
## Parts list SMP-BCA, Stop valve

28

Pos.	Qty.	Denomination
1	1	Cap
2△	2	O-ring
3	2	Plug
4	1	Cylinder
5	1	Spring assembly, standard, black
	1	Spring assembly, strong, white
6△	1	Lock wire
7△	1	O-ring
8	1	Piston
9△	1	Clip, complete
10△	1	O-ring
11	1	Bonnet
12	1	Drain tube
13	1	Air fitting, swivel bend
14△	1	O-ring (bonnet)
15△	1	Guide ring
16△	1	O-ring (stem)
17○	1	Seal ring
18	1	Intermediate piece
19	1	Clamp and screws (short)
	1	Clamp and screws (long)
20	1	Washer
21	1	Stem upper
22○	1	Diaphragm set
a	1	Diaphragm support, EPDM
b	1	Diaphragm, PTFE
c	1	L-seal
d	1	Stem seal
23	1	Diaphragm ring
24	1	Plug complete
a	1	Plug
b○	1	Seal ring
c○	1	Seal ring
25	1	Valve body, upper
26	1	Internal parts
a○	2	O-ring
b	2	Spring
c○	2	O-ring
d	2	Spindle
e○	2	O-ring
f	2	Plug
g	1	Air fitting, swivel bend
27	1	Valve body, middle
28	2	O-ring
29	1	Stem, lower
30	1	Plug, lower complete
a○	1	Seal ring
b	1	Plug
31	1	Valve body, lower



(/6-101.6 mm/DN 80-100)



CIP/detecting valve

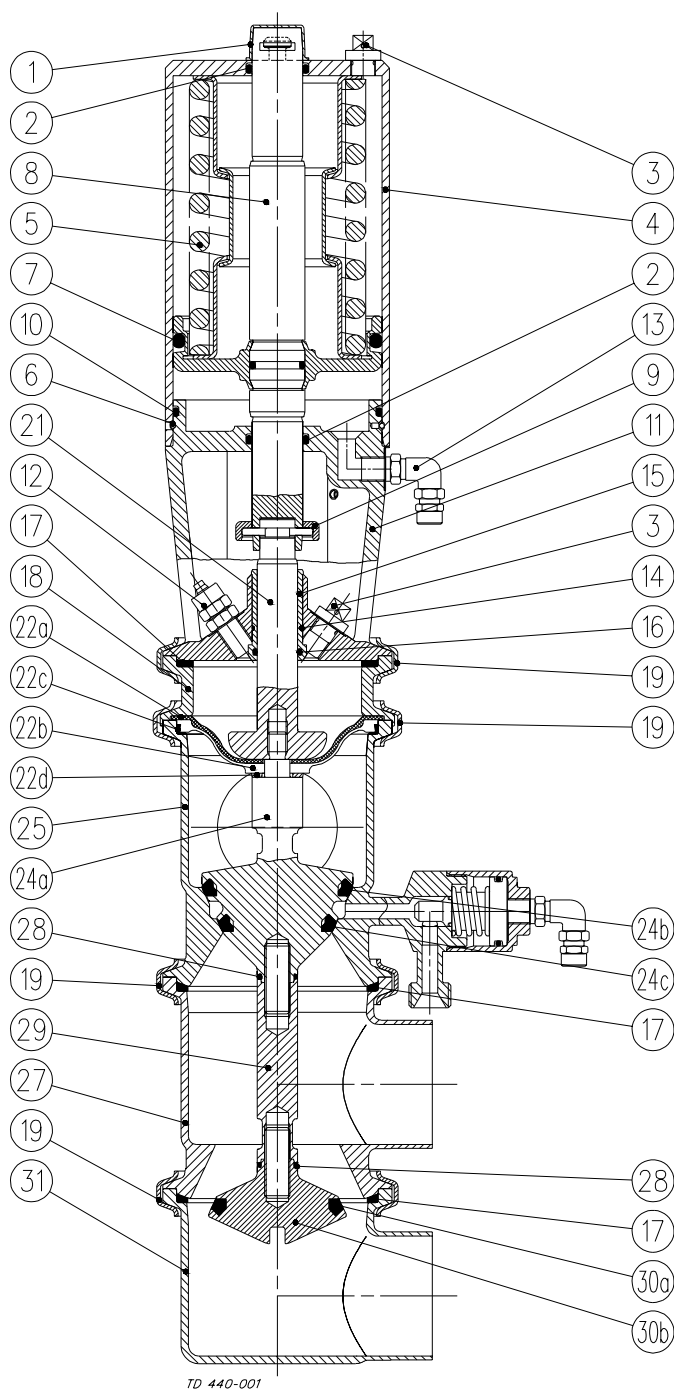
△ : Service kit for actuator

○: Service kit = EPDM, NBR, FPM

The drawings below show SMP-BCA, divert valve.

The items refer to the parts list on the opposite part of the page.

## Drawings



## Drawing/Parts list

*The drawing and the parts list include all items.*

*The items are identical with the items in the Spare Parts List.*

*When ordering spare parts, please use the Spare Parts List!*

### Parts list Tool for plug seals

30

Item	Qty.	Denomination
1	1	Outer main guide
2	1	Lower guide ring
3	1	Bush (not used for SMP-BCA)
4	1	Piston ring
5	1	Guide ring
6	1	Guide piston
7	1	Ring

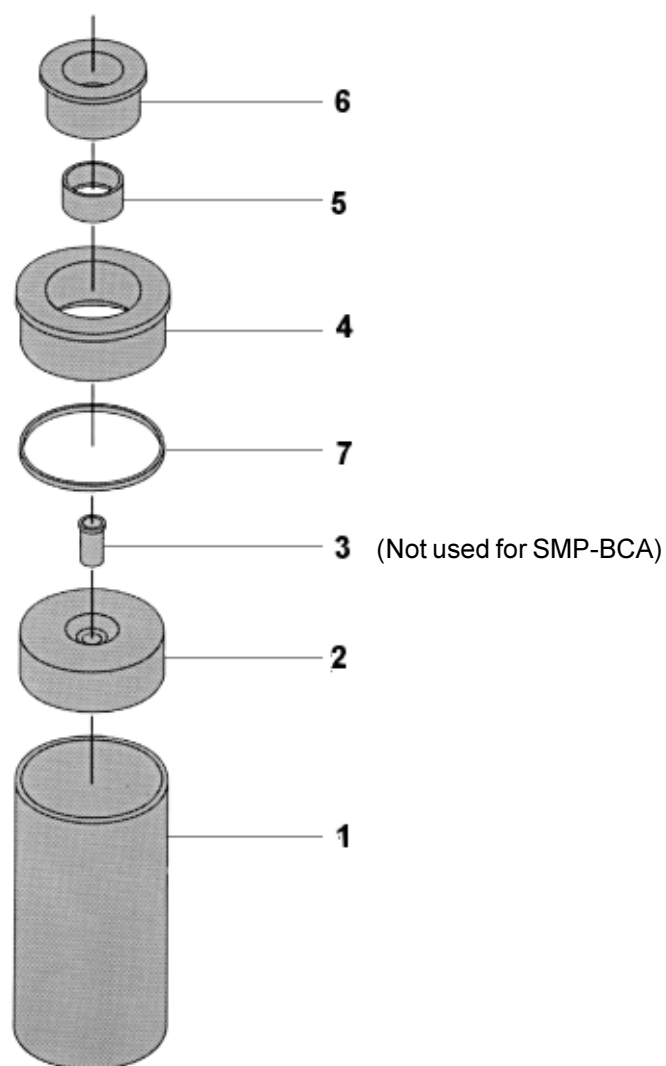
(See Spare Parts List)



*This page shows an exploded drawing of the tool for the plug seals.*

*The drawing includes all items of the tool. They are identical with the items in the Spare Parts List.*

### Exploded drawing



## Drawing/Parts list

*The drawing and the parts list include all items.*

*The items are identical with the items in the Spare Parts List.*

*When ordering spare parts, please use the Spare Parts List!*

### Parts list Tool for plug seals

32

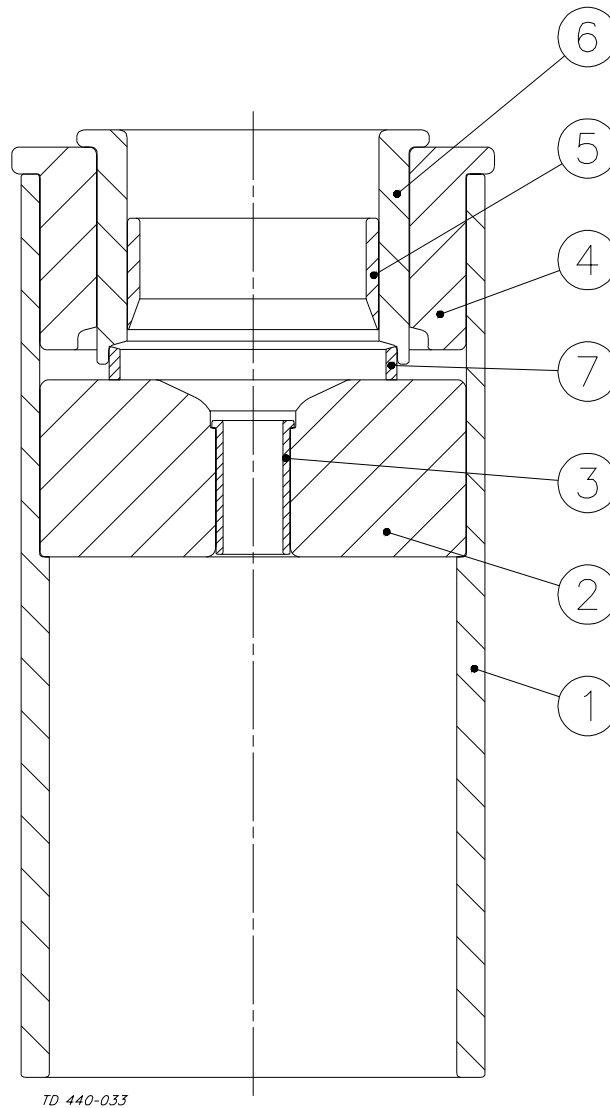
Item	Qty.	Denomination
1	1	Outer main guide
2	1	Lower guide ring
3	1	Bush (not used for SMP-BCA)
4	1	Piston ring
5	1	Guide ring
6	1	Guide piston
7	1	Ring

(See Spare Parts List)

The drawing below shows the tool for the plug seal.

The items refer to the parts list on the opposite part of the page.

### Drawing



**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 direct.