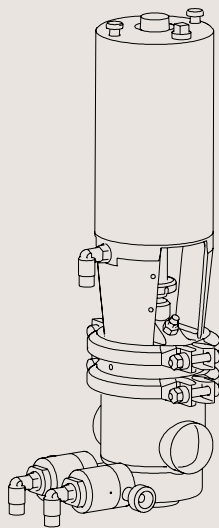


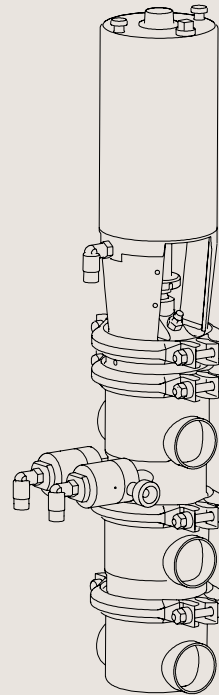


Instruction Manual

SMP-BCA Aseptic Mixproof Valve with PTFE Diaphragm



TD 440-072



TD 440-073

IM70811-EN3 2010-04

Original Instructions

Declaration of Conformity

The designating company

Alfa Laval

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Aseptic Mixproof Valve

Denomination

SMP-BCA

Type

Year

is in conformity with the following directive

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive 97/23/EC category 1, and subjected to assessment procedure Module A.

**Manager, Product Centres,
Compact Heat Exchangers & Fluid Handling**

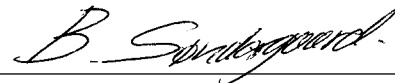
Title

Bjarne Søndergaard

Name

Alfa Laval

Company



Signature

Designation



The information contained herein is correct at the time of issue but may be subject to change without prior notice.

1. Safety	6
1.1 Important information.....	6
1.2 Warning signs.....	6
1.3 Safety precautions.....	6
2. Installation	7
2.1 Unpacking/Delivery.....	7
2.2 General installation.....	9
2.3 Welding.....	11
3. Operation	13
3.1 Operation.....	13
3.2 Fault finding.....	13
3.3 Recommended cleaning.....	14
3.4 Cleaning equipment (optional extra).....	17
4. Maintenance	18
4.1 General maintenance.....	18
4.2 Dismantling of valve.....	20
4.3 Assembly of valve.....	22
4.4 Dismantling of actuator.....	25
4.5 Assembly of actuator.....	26
4.6 Replacement of plug seals.....	28
5. Technical data	30
5.1 Technical data.....	30
6. Parts list and service kits	32
6.1 Drawings.....	32
6.2 SMP-BCA stop valve.....	34
6.3 SMP-BCA change-over valve.....	36
6.4 Tool for plug seals.....	38

1.1 Important information

1.2 Warning signs

1.3 Safety precautions

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

Warnings are emphasized by means of special signs.

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.

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.

Warning signs

General warning:



Caustic agents:



Cutting danger:



TD 449-303

Transportation:

Always secure that compressed air is released

Always secure that all connections is disconnected before attempt to remove the valve from the installation

Always drain liquid out of valves before transportation

Always used predesigned lifting points if defined

Always secure sufficient fixing of the valve during transportation - if special designed packaging material is available it must be used

Safety precautions

Installation

- **Always** read the technical data thoroughly (see chapter 5).
- **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.



TD 449-303

Operation

- **Always** read the technical data thoroughly (see chapter 5).
- **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.



TD 449-303



Maintenance

- **Always** read the technical data thoroughly (see chapter 5).
- **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.



TD 449-303

The instruction manual is part of the delivery.

Study the instructions carefully.

Stop valve: With one valve body. Change-over valve: With three valve bodies.

CIP = Cleaning In Place (see section 3.3).

Step 1

CAUTION!

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

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

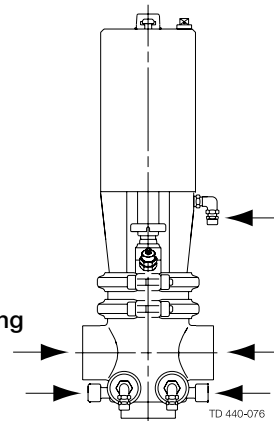
Step 2

Remove possible packing materials from the valve ports.

Avoid damaging the air connection and the valve ports, the detecting valve and the CIP valve.,

Caution!

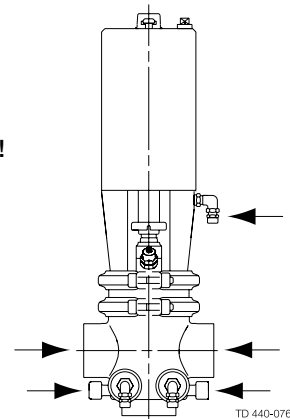
Remove packing materials!



Step 3

Inspect the valve for visible transport damage.

Inspection!



Recycling information.

• Unpacking

- Packing material consists 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 and wear parts in the machine are replaced.
- All metal parts should be sent for material recycling.
- Worn out or defective electronic parts should be sent to a licensed handler for material recycling.
- Oil and all non metal wear parts must be taken care of in agreement with local regulations.

• Scrapping

- At end of use, the equipment shall be recycled according to relevant, local regulations. Beside 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 the local Alfa Laval sales company.

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 section 3.3).

Step 1

- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.
- **Never** touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.

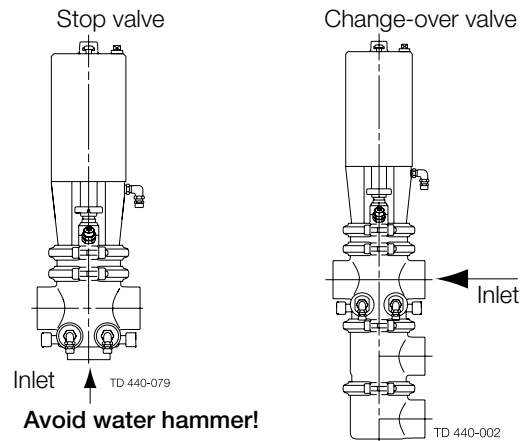
CAUTION!

Alfa Laval cannot be held responsible for incorrect installation.

Step 2

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.

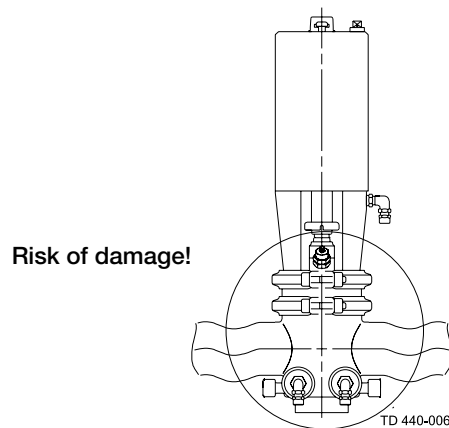


Step 3

Avoid stressing the valve.

Pay special attention to:

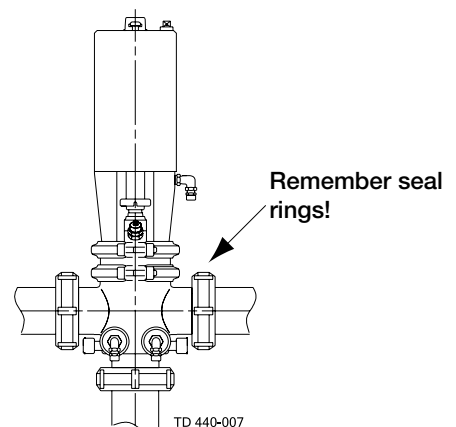
- Vibrations.
- Thermal expansion of the tubes.
- Excessive welding.
- Overloading of the pipelines.



Step 4

Fittings:

Ensure that the connections are tight.

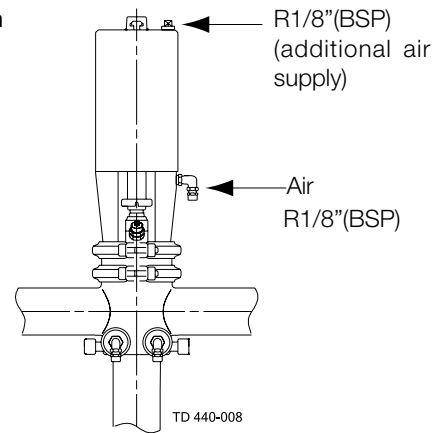


Step 5

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.

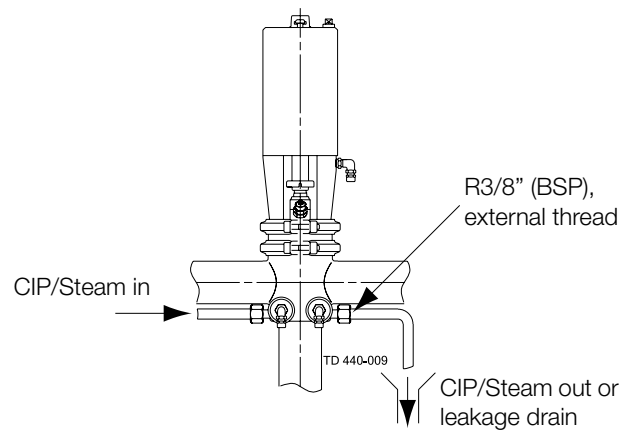
**Air connection
R1/8"(BSP):**



Step 6

CIP/Steam connection:

1. See the description of cleaning and optional extras in section 3.3.
2. Connect CIP correctly.
3. Internal steam pressure must not exceed 120°C/200 kPa (2 bar).

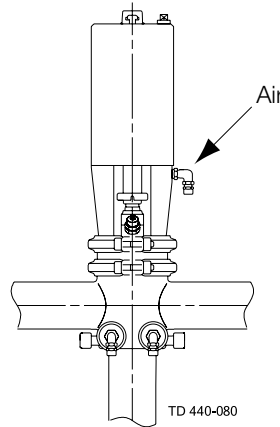


Study the instructions carefully and pay special attention to the warnings!
 The valve has welding ends as standard.
 Weld carefully.
 Check the valve for smooth operation after welding.

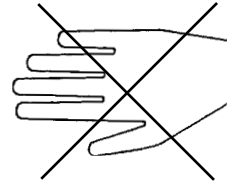
Step 1



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



Cutting danger!



Step 2

Dismantle the valve in accordance with instructions 1-3 in section 4.2.

Pay special attention to the warnings!

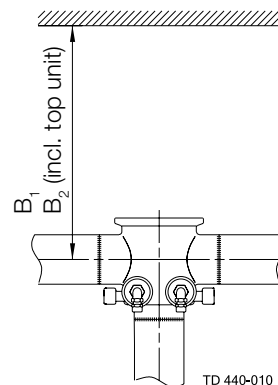
Step 3

NOTE!

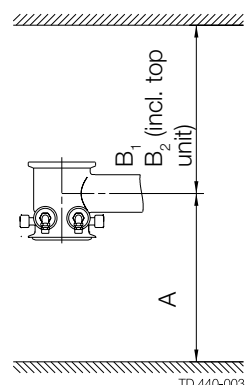
Always weld the valve body into the pipelines so that the valve body seal rings can be replaced (change-over valve).
 Maintain the minimum clearances (A and B) so that the lower valve plug (change-over valve) and the actuator with the internal parts can be removed.

Valve size	A (mm/inch)	B ₁ (mm/inch)	B ₂ (mm/inch)
DN40/38 mm	280/11	580/22.8	760/30
DN50/51 mm	305/12	580/22.8	760/30
DN65/63.5 mm	360/14	580/22.8	760/30
DN80/76 mm	410/16	630/24.8	810/31.9
DN100/101.6 mm	470/19	630/24.8	860/33.9

Stop valve



Change-over valve (upper valve body)



Step 4

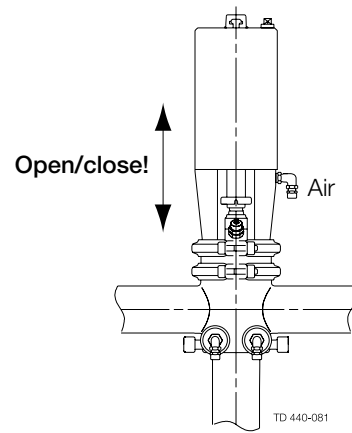
Assemble the valve in accordance with instructions 4-9 in section 4.2.

Pay special attention to the warnings!

Step 5**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 in chapter 6.

CIP = Cleaning In Place (see section 3.3).

Step 1



- Always read the technical data thoroughly (see chapter 5).
- 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!

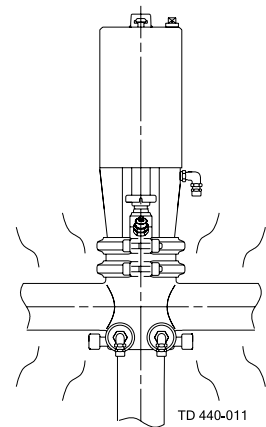
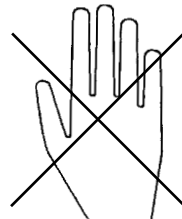
Alfa Laval cannot be held responsible for incorrect operation.

Step 2



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

Burning danger!



Fault finding

NOTE! Study the maintenance instructions carefully before replacing worn parts. - See section 4.1!

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

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.
 HNO₃ = Nitric acid.

Step 1



Always handle lye and acid with great care.

Caustic danger!



Always use rubber gloves!



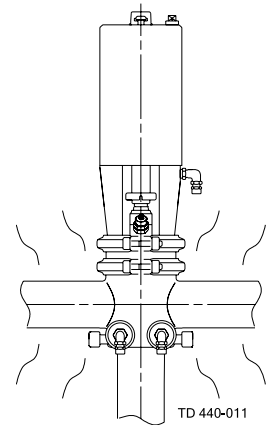
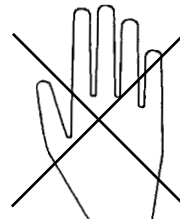
Always use protective goggles!

Step 2



Never touch the valve or the pipelines when sterilizing.

Burning danger!

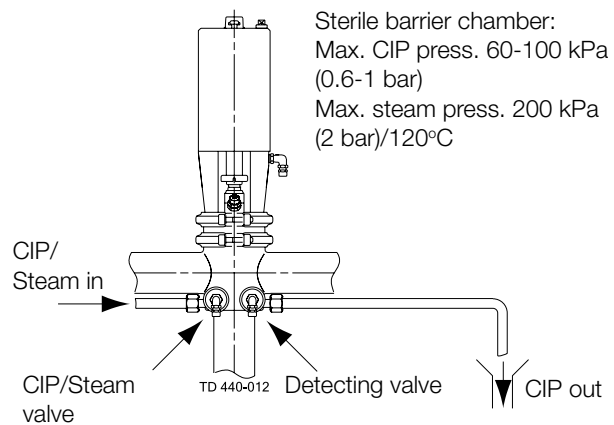


Step 3



- **Always** keep the cleaning pressure lower than the product pressure.
- **Never** throttle the outlet of the detecting valve. (Risk of mixing because of overpressure).

Sterile barrier chamber:
 Max. CIP press. 60-100 kPa (0.6-1 bar)
 Max. steam press. 200 kPa (2 bar)/120°C



Step 4

Examples of cleaning agents:

Use clean water, free from chlorides.

1. 1% by weight NaOH at 70° C (158°F).

1 kg (2.2 lbs) NaOH	+	100 l (26.4 gal) water	= Cleaning agent.
------------------------	---	---------------------------	-------------------

2.2 l (2.2 lbs) 33%NaOH	+	100 l (26.4 gal) water	= Cleaning agent.
----------------------------	---	---------------------------	-------------------

2. 0.5% by weight HNO₃ at 70° C (158°F).

0.7 l (0.2 gal) 53% HNO ₃	+	100 l (26.4 gal) water	= Cleaning agent.
---	---	---------------------------	-------------------

Step 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 (3.2 - 4.0 gpm).

Step 6

1. Avoid excessive concentration of the cleaning agent

⇒ **Dose gradually!**

2. Adjust the cleaning flow to the process

Milk sterilization/viscous liquids

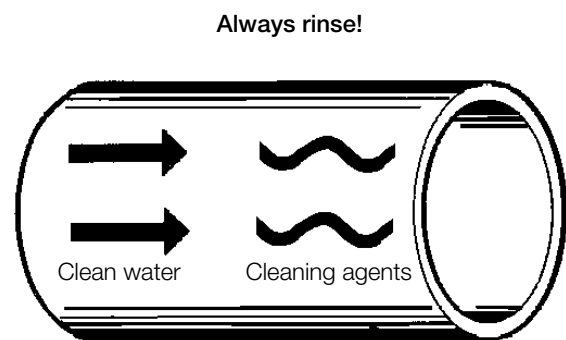
⇒ **Increase the cleaning flow!**

Step 7

Always rinse well with clean water after the cleaning.

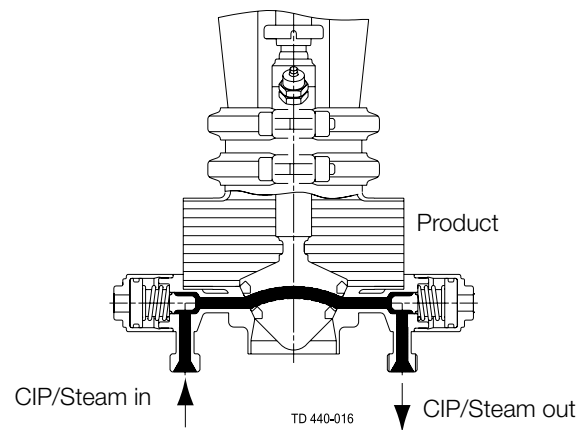
NOTE!

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

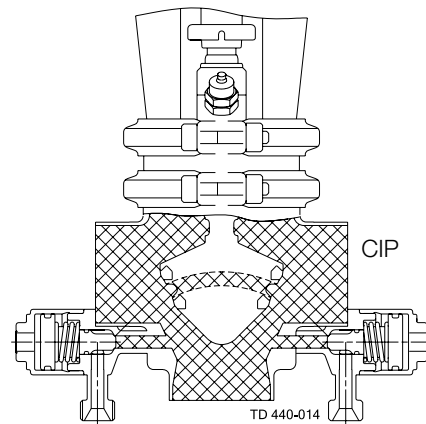


Cleaning cycle:
Pay special attention to the warnings!

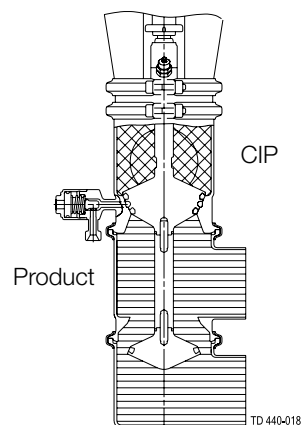
Closed Stop valve:
 Cleaning of sterile barrier chamber



Open Stop valve:
 Cleaning of the valve body and the leakage chamber



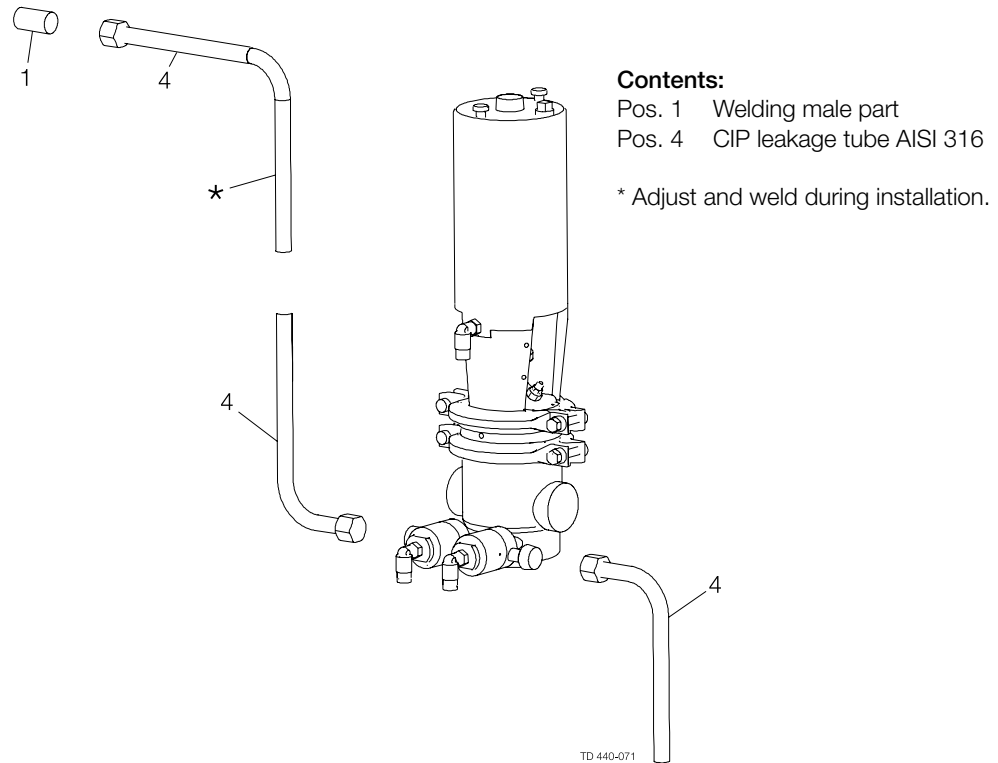
Change-over valve:
 Cleaning of the upper valve body



The installations 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.

Step 1

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

**Step 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.

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

Step 1



- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.
- **Always** remove the CIP connections before service.

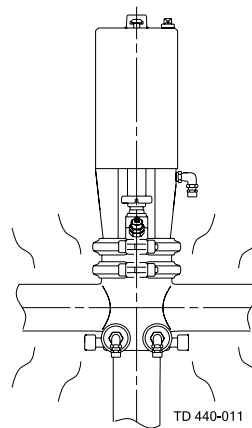
CAUTION!

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

Step 2

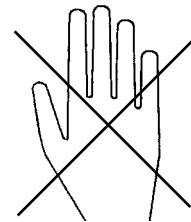


- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.



Atmospheric pressure required!

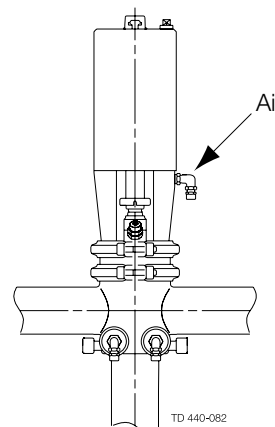
Burning danger!



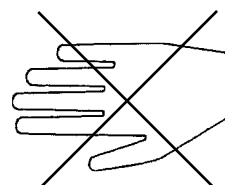
Step 3



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



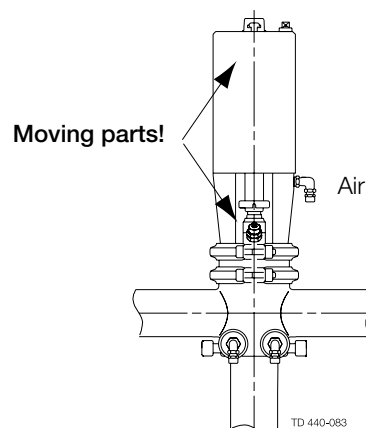
Cutting danger!



Step 4



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. Study the instructions carefully.

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

Ordering spare parts

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

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

	Valve diaphragm unit	Valve rubber seals	Actuator rubber seals	Bonnet guide ring and O-rings
Preventive maintenance	Replace after 12 months (depending on working conditions)	Replace when replacing the diaphragms	Replace after 5 years	Replace when replacing the actuator rubber seals (*)
Maintenance after leakage (leakage normally starts slowly)	Replace by the end of the day	Replace when replacing the diaphragms	Replace when possible	Replace when replacing the actuator rubber seals (*)
Planned maintenance	<ul style="list-style-type: none"> - Regular inspection for leakage and smooth operation - Keep a record of the valve - Use the statistics for planning of inspections Replace after leakage	Replace when replacing the diaphragms	<ul style="list-style-type: none"> - Regular inspection for leakage and smooth operation - Keep a record of the actuator - Use the statistics for planning of inspections Replace after air leakage	
Lubrication (USDAH1 approved oil/grease)	Before fitting Silicone oil or silicone grease	Before fitting Silicone oil or silicone grease	Before fitting 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.

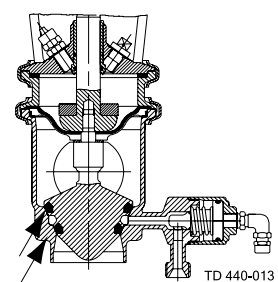
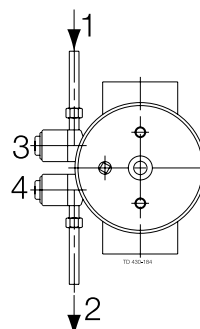
Pre-use check:

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!

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

Water: 3-4 bar



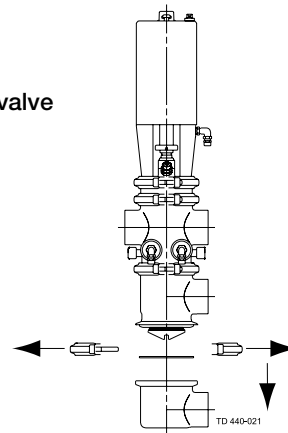
Inspection

Study the instructions carefully.
 The items refer to the drawings and the parts list in chapter 6.
 Lubricate the rubber seals and the diaphragms before fitting them.

Step 1

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

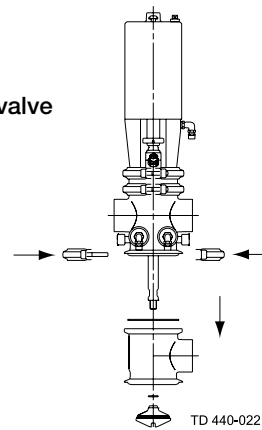
Change-over valve



Step 2

1. Unscrew lower plug (30).
2. Pull off seal ring (30a) (see special instruction in section 4.6).
3. Loosen and remove upper clamp (19).
4. Take away middle valve body (27).
5. Pull off O-ring (28) and seal ring (17).

Change-over valve

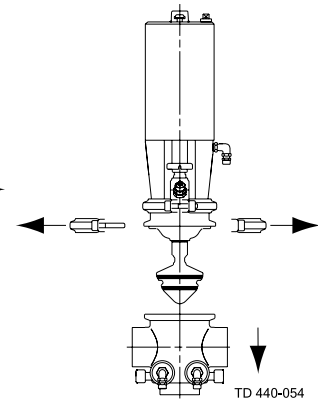
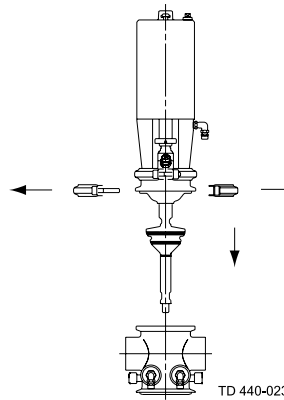


Step 3

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

Change-over valve

Stop valve

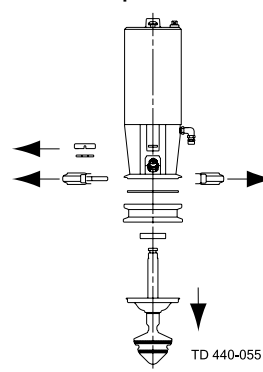
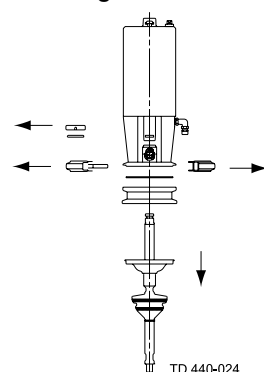


Step 4

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.

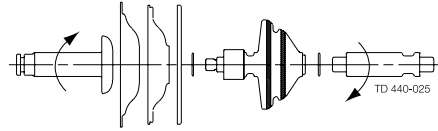
Change-over valve

Stop valve

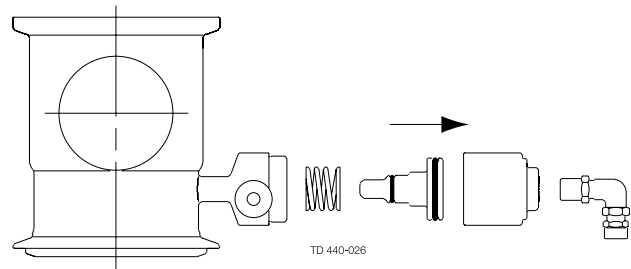


Step 5

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 76-101.6mm/ DN80-100).

**Step 6**

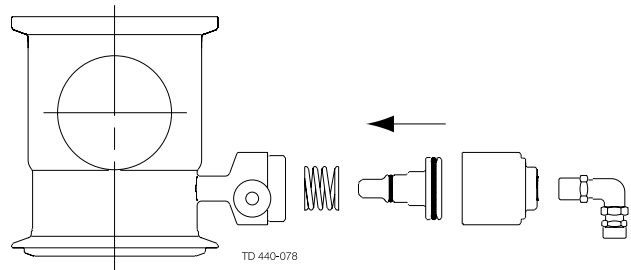
1. Remove air fitting (26g).
2. Unscrew CIP valve housing (26f).
3. Pull out CIP valve plug (26d).
4. Remove CIP valve spring (26b).



Study the instructions carefully.
The items refer to the drawings and the parts list in chapter 6.
Lubricate the rubber seals and the diaphragms before fitting them.

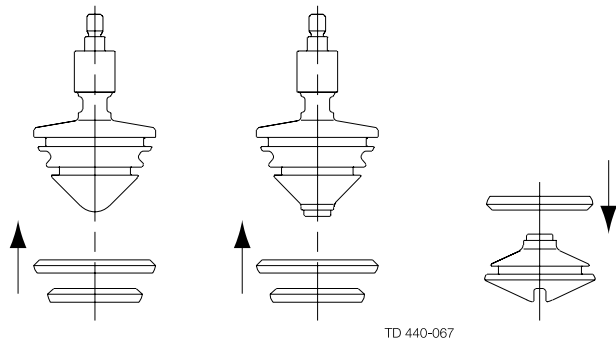
Step 1

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.



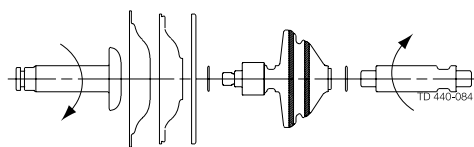
Step 2

Fit seal rings (24b, 24c) and seal ring (30a) on plugs (see special instructions in section 4.6).



Step 3

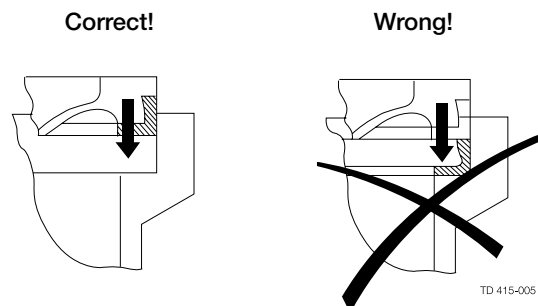
1. Fit stem seal (22d), L-seal (22c) and diaphragms (22a, 22b) on upper plug (24).
(For L-seal: see instruction 4 on this page).
2. Fit diaphragm ring (23) between upper stem (21) and the upper plug (only for valve sizes 76-101.6 mm/ DN80-100).
3. In sequence, screw the upper and lower stem (29) clockwise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



Step 4

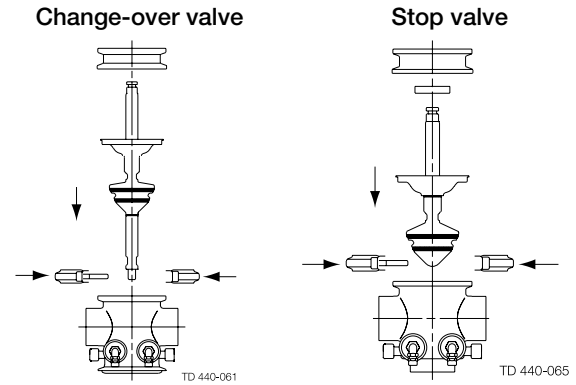
CAUTION!

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



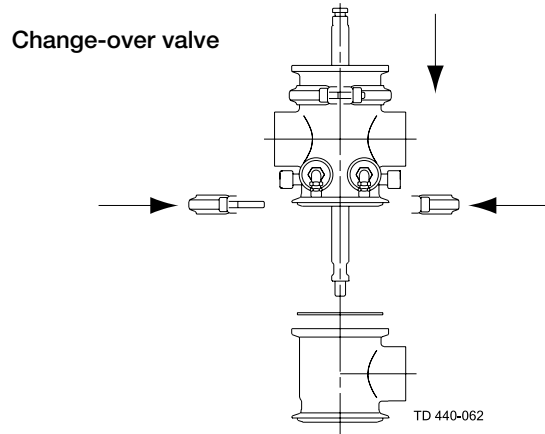
Step 5

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).



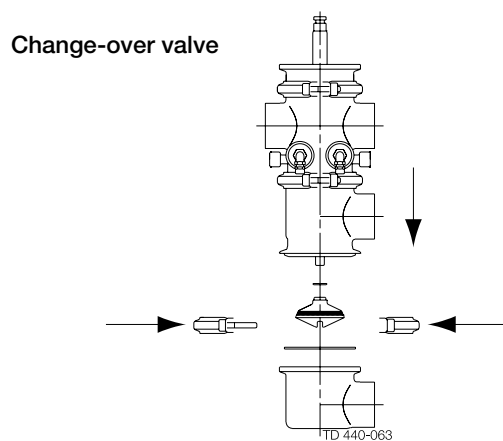
Step 6

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).



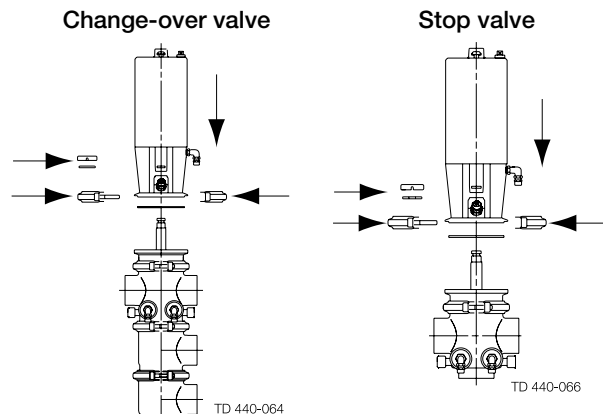
Step 7

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).



Step 8

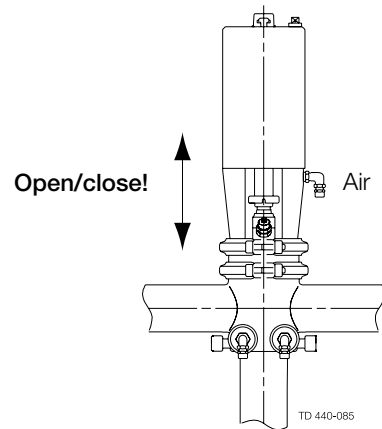
1. Slide seal ring (17) into intermediate piece.
2. Supply compressed air to the actuator.
3. Lift actuator onto mounted intermediate piece (18).
4. Reassemble clip assembly (9).
5. Release compressed air.
6. Fit and tighten upper diaphragm clamp (19).



Step 9

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.

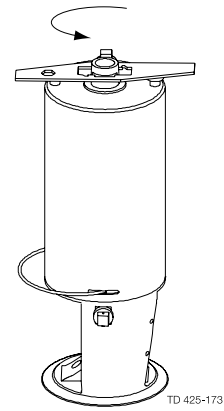


Study the instructions carefully.
The items refer to the drawings and the parts list in chapter 6.
Handle scrap correctly.

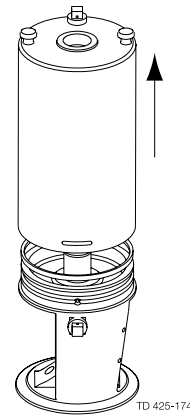
Step 1

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

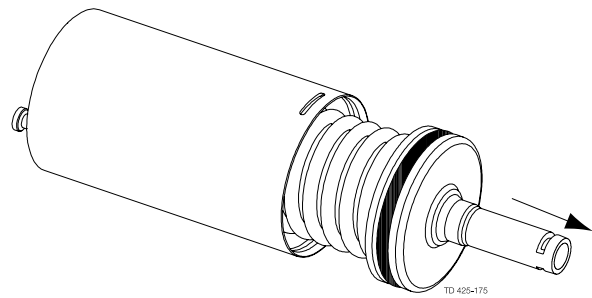
Rotate with the
service tool!

**Step 2**

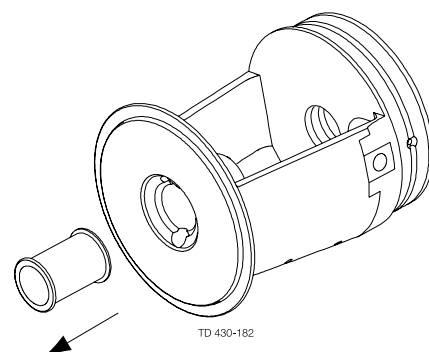
1. Disconnect cylinder (4) from bonnet (11).
2. Pull off O-rings (2,10) from the bonnet.

**Step 3**

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

**Step 4**

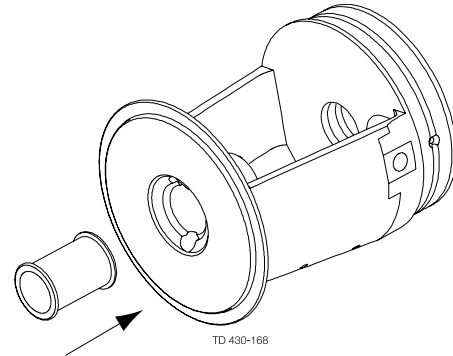
1. Remove guide ring (15) from bonnet (11).
2. Remove O-rings (14,16) from guide ring (15).



Study the instructions carefully.
 The items refer to the drawings and the parts list in chapter 6.
 Lubricate the rubber seals before fitting them.

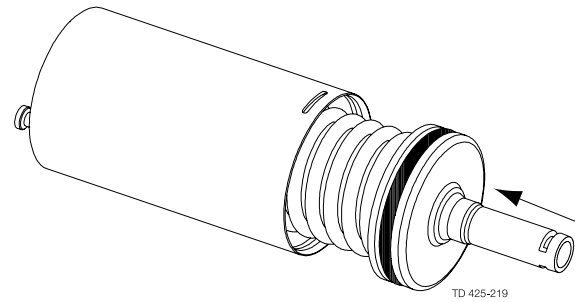
Step 1

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



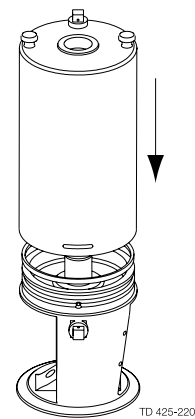
Step 2

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



Step 3

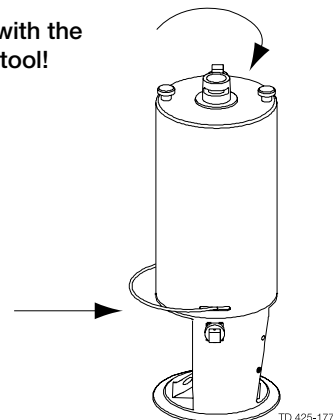
1. Slide O-rings (2,10) onto bonnet (11).
2. Fit cylinder (4) on the bonnet.



Step 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).

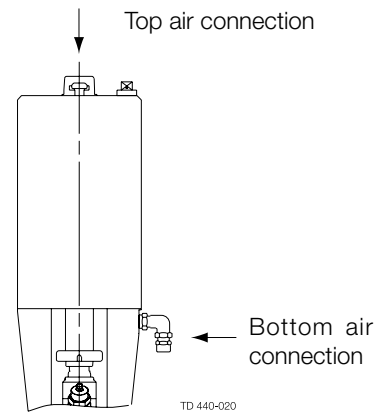
Rotate with the service tool!



Step 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.



Study the instructions carefully.
 The items refer to the parts list and service kits section.
 Handle scrap correctly.
 Do **not** lubricate the rubber seals or the tool parts before fitting the seals.

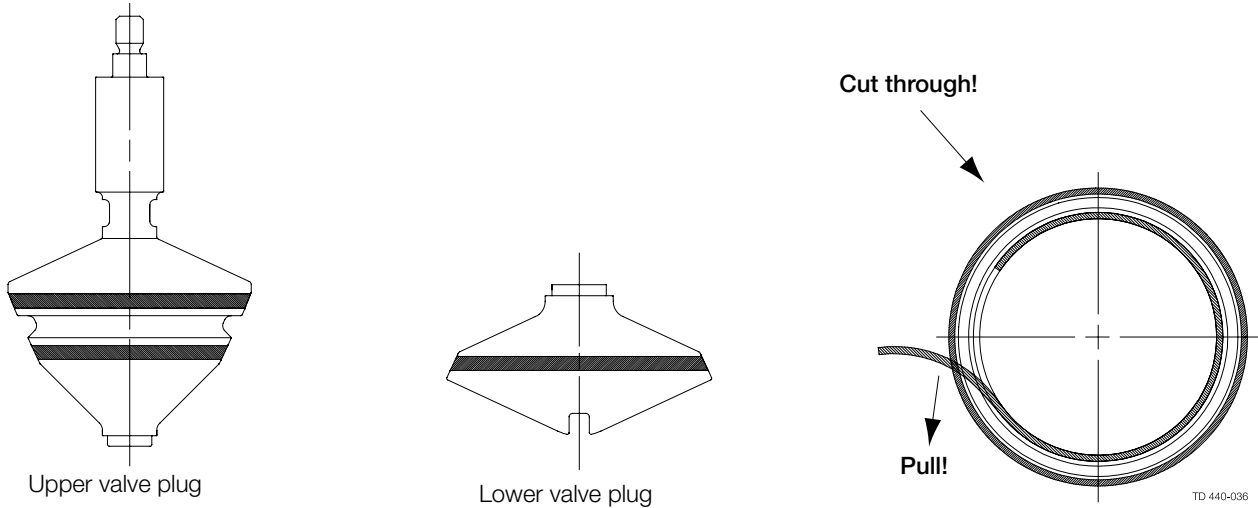
Step 1

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

CAUTION!

Do not damage the seal ring grooves.

Removing the seal rings



IMPORTANT! Before reading step 2-4, please see section 6.4

Step 2

Fitting the seal rings (For stop and change-over valves).

Lower (small) seal ring

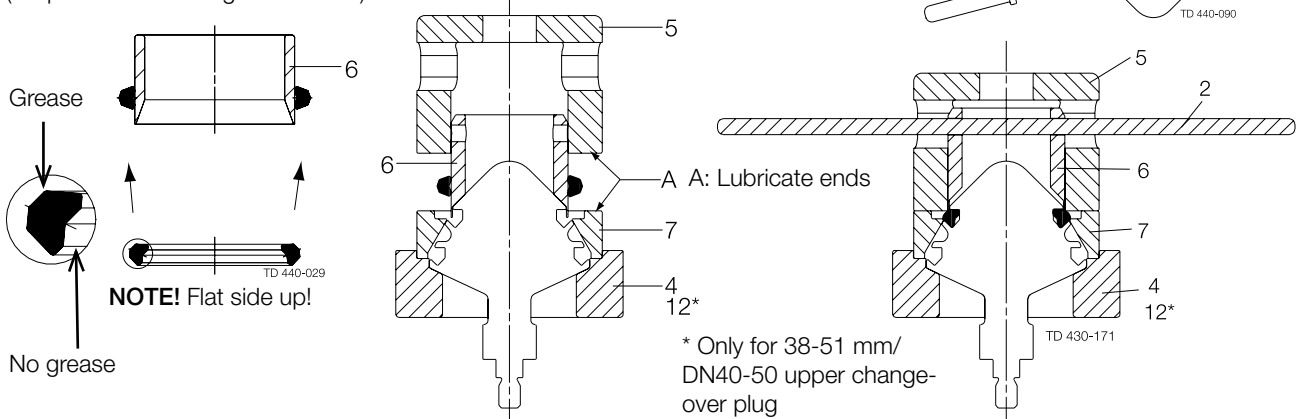
- Carefully grease the seal with Klüber Paraliq GTE 703 (USDA H1) - do NOT grease on back of seal!
- Fit the small seal on the inner guide ring (6). Remember to mount the flat side of seal upwards as shown on figure.
- Fit support part (7) for smaller seal.
- Lubricate the ends (A) of the support part (7) and the outer guide ring (5) with Klüber Paraliq GTE 703 (USDA H1) and assemble the tool.
- 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.

- If the seal is not fitted correctly in the groove this can be fixed with a screwdriver.
- Always remember to release air behind the seal after fitting.

Upper valve plug:

(Stop valve and change-over valve)



Step 3

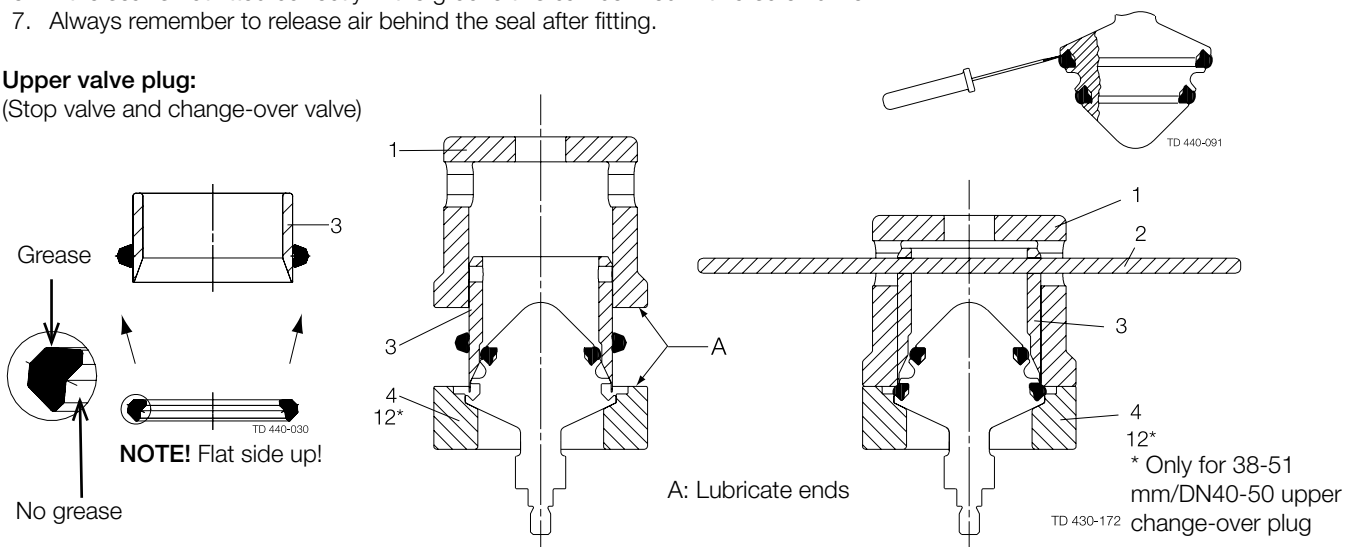
Fitting the seal rings (For stop and change-over valves)

Upper (large) seal ring:

1. Carefully grease the seal with Klüber Paraliq GTE 703 (USDA H1) - 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 tool housing (4) and the outer guide ring (1) with Klüber Paraliq GTE 703 (USDA H1) and assemble the tool.
 5. 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 tool housing (4). Normally, the inner guide ring (3) 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:

(Stop valve and change-over valve)



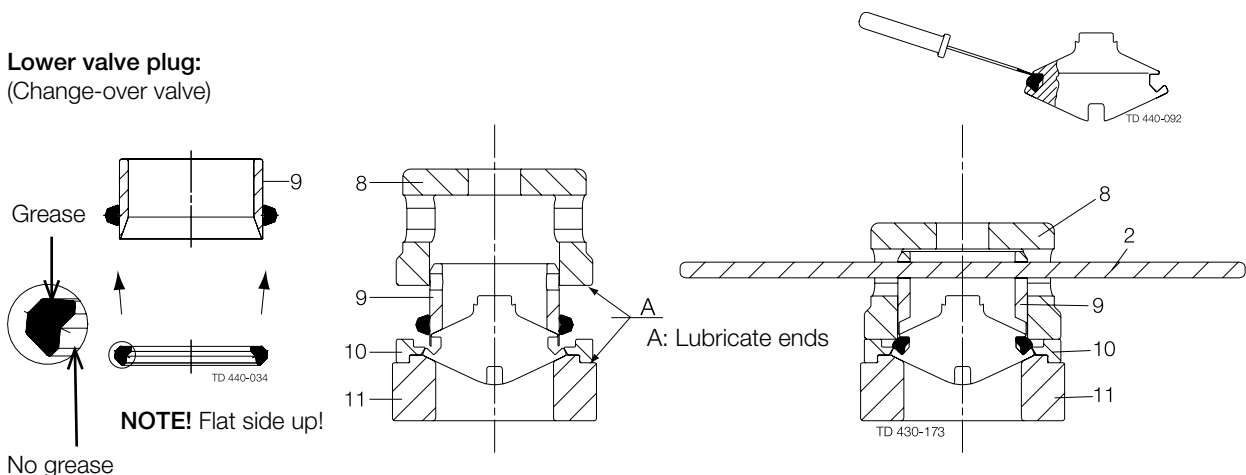
Step 4

Fitting the seal rings (For change-over valves)

1. Carefully grease the seal with Klüber Paraliq GTE 703 (USDA H1) - Do NOT grease on back of seal!
 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 Klüber Paraliq GTE 703 (USDA H1) 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)



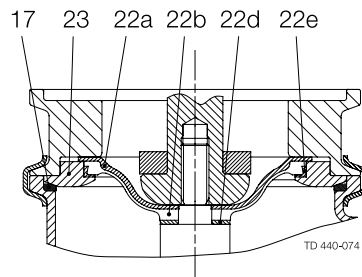
It is important to observe the technical data during installation, operation and maintenance.
Inform the personnel about the technical data.

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	

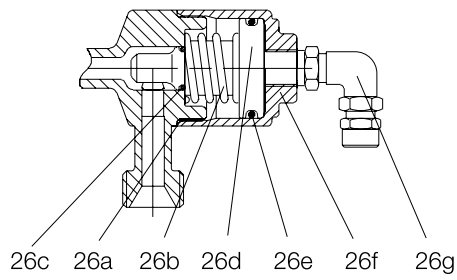
Noise

One meter away from - and 1.6 meter above the exhaust the noise level of a valve actuator will be approximately 77db(A) without noise damper and approximately 72 db(A) with damper - Measured at 7 bars air-pressure.

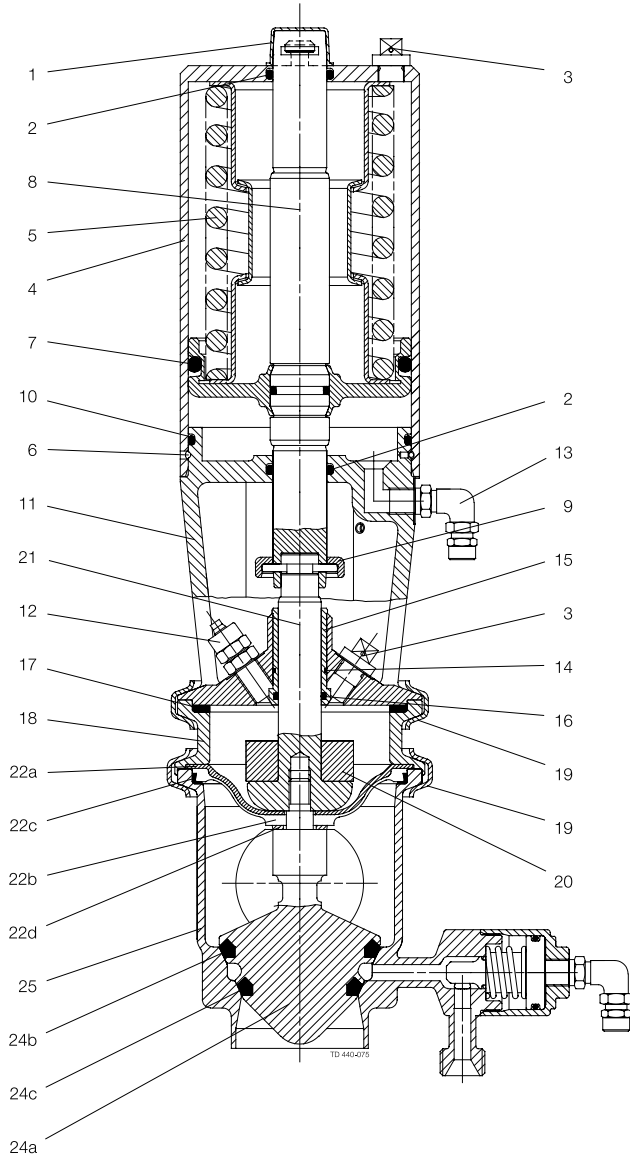
The parts list includes all items.
See sections 6.2 - 6.3 for parts lists.



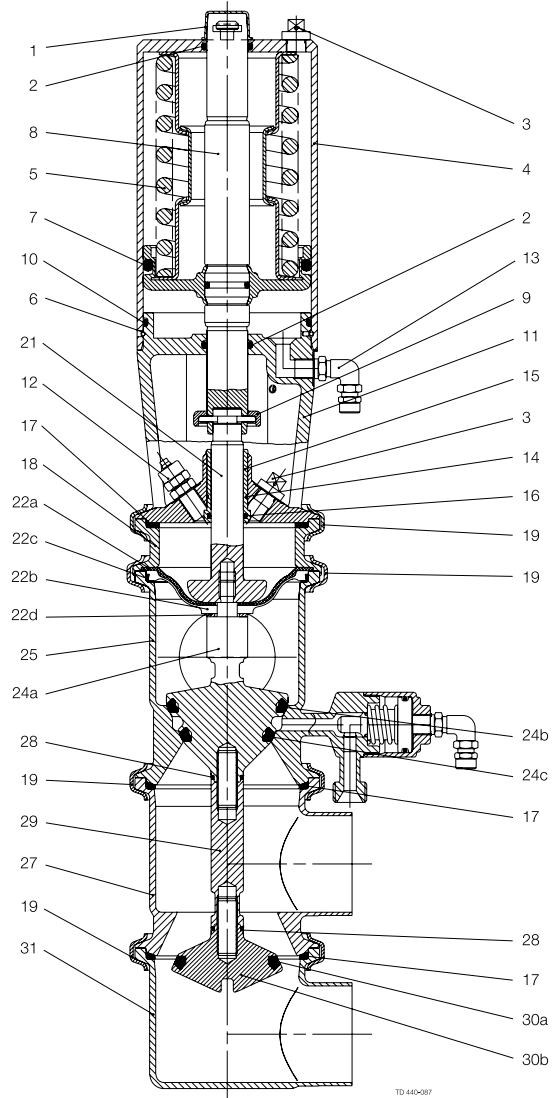
(76-101.6 mm/DN 80-100)



CIP/detecting valve



Stop valve



Change-over valve

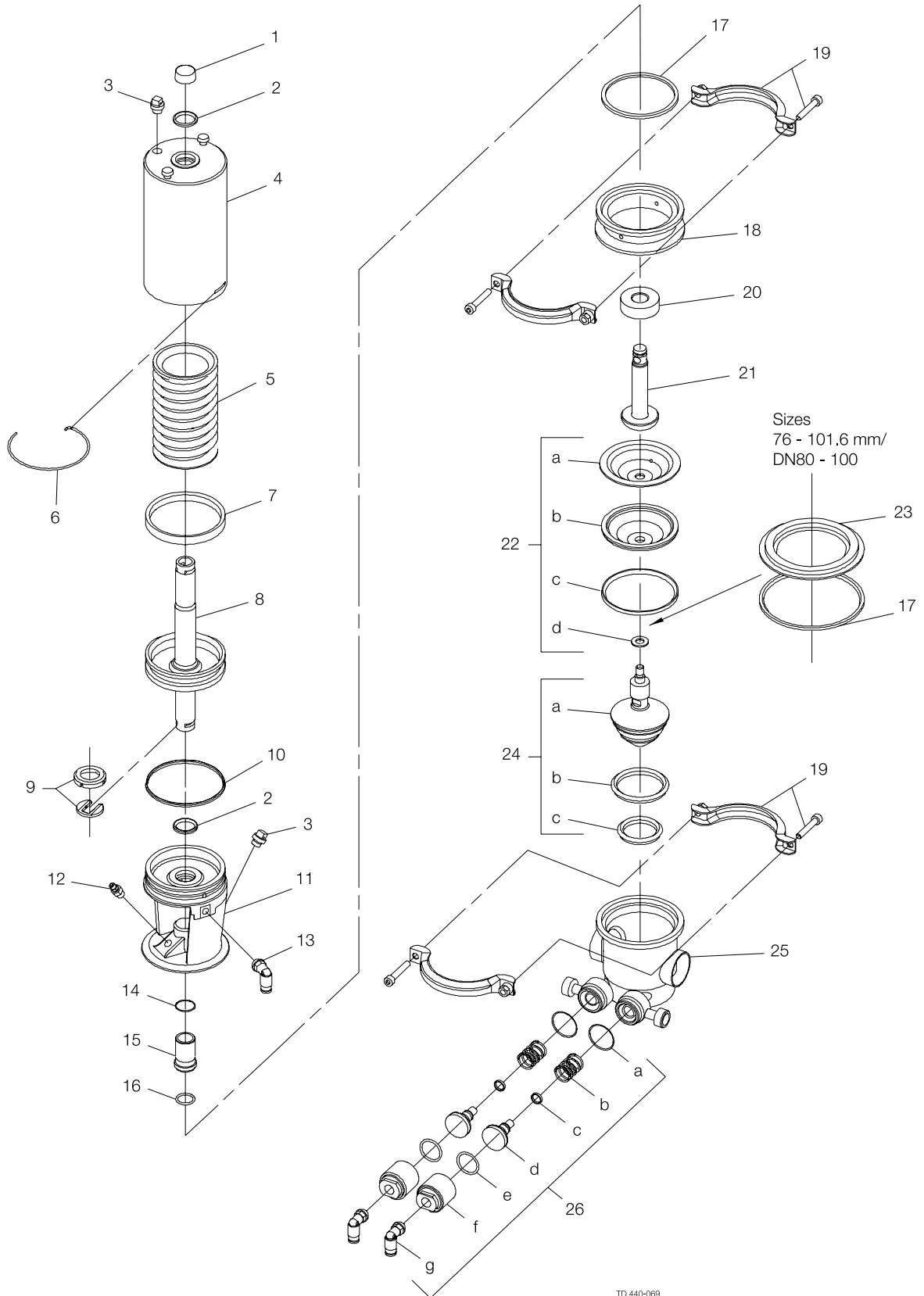
The parts list includes all items.

Parts List			Service Kits	
Pos.	Qty.	Denomination	Denomination	Item number
1	1	Cap	Actuator	
2	□ 2	O-ring	38mm/DN40 - 51mm/DN50	9611-92-0362
3	2	Plug	63.5mm/DN65	9611-92-0363
4	1	Cylinder	76mm/DN80 - 101.6mm/DN100.....	9611-92-0364
5	1	Spring assembly		
6	□ 1	Lock wire	Product wetted parts	
7	□ 1	O-ring	38mm/DN 40 - 51mm/DN50	
8	1	Piston	EPDM.....	9611-92-0371
9	□ 1	Clip, complete		
10	□ 1	O-ring	63.5mm/DN65	
11	1	Bonnet	EPDM.....	9611-92-0373
12	1	Drain tube		
13	1	Air fitting, swivel bend	76mm/DN80	
14	□ 1	O-ring (bonnet)	EPDM.....	9611-92-0374
15	□ 1	Guide ring		
16	□ 1	O-ring (stem)	101.6mm/DN100	
17	1	Seal ring	EPDM.....	9611-92-0375
	2	Seal ring		
18	1	Intermediate piece	Detecting/CIP-valve	
19	2	Clamp and screws	EPDM.....	9611-92-0354
20	1	Washer	NBR	9612-92-0270
21	1	Stem upper	FPM	9611-92-0271
22	Δ 1	Diaphragm set		
22a	1	Diaphragm support, EPDM		
22b	1	Diaphragm, PTFE		
22c	1	L-seal		
22d	1	Stem seal		
23	1	Diaphragm ring		
24	1	Plug complete		
24a	1	Plug		
24b	Δ 1	Seal ring		
24c	Δ 1	Seal ring		
25	1	Valve body		
26a	Δ○ 2	O-ring		
26b	2	Spring		
26c	Δ○ 2	O-ring		
26d	2	Spindle		
26e	Δ○ 2	O-ring		
26f	2	Plug		
26g	1	Air fitting, swivel bend		

□: Service kits - actuator

Δ: Service kits - product wetted parts

○: Service kits - Detecting/CIP-valve



TD 440-069

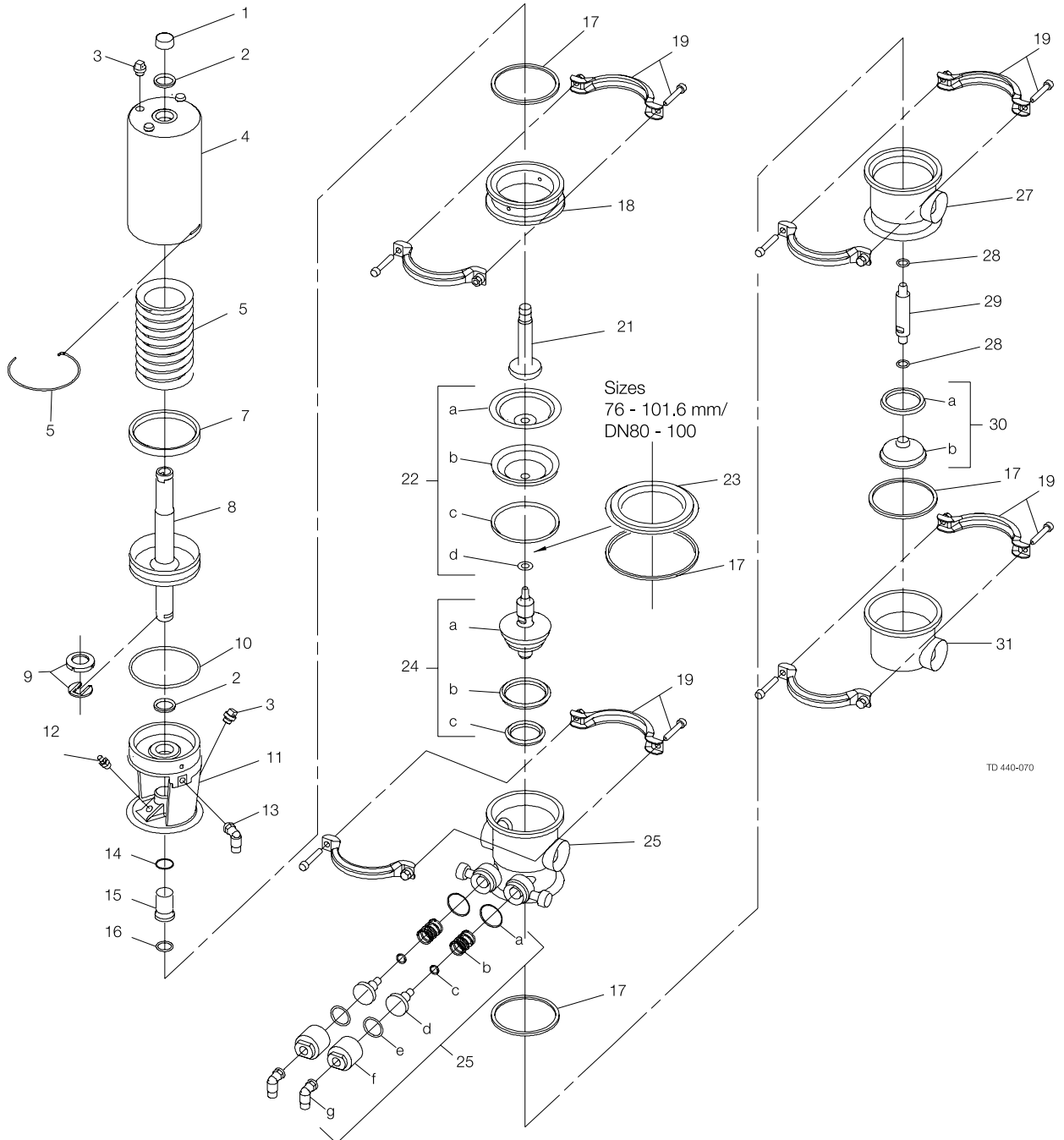
The parts list includes all items.

Parts List			Service Kits	
Pos.	Qty.	Denomination	Denomination	Item number
1	1	Cap	Actuator	
2	□	O-ring	38mm/DN40 - 51mm/DN50	9611-92-0362
3	2	Plug	63.5/DN65	9611-92-0363
4	1	Cylinder	76mm/DN80 - 101.6mm/DN100.....	9611-92-0364
5	1	Spring assembly		
6	□	Lock wire	Product wetted parts	
7	□	O-ring	38mm/DN40 - 51mm/DN50	
8	1	Piston	EPDM.....	9611-92-0386
9	□	Clip, complete	NBR	9611-92-0390
10	□	O-ring	FPM	9611-92-0394
11	1	Bonnet		
12	1	Drain tube	63.5mm/DN65	
13	1	Air fitting, swivel bend	EPDM.....	9611-92-0387
14	□	O-ring (bonnet)	NBR	9611-92-0391
15	□	Guide ring	FPM	9611-92-0395
16	□	O-ring (stem)		
17	Δ	Seal ring	76mm/DN80	
	4	Seal ring	EPDM.....	9611-92-0388
18	1	Intermediate piece	NBR	9611-92-0392
19	4	Clamp and screws	FPM	9611-92-0396
21	1	Stem upper		
22	Δ	Diaphragm set	101.6mm/DN100	
22a	1	Diaphragm support	EPDM.....	9611-92-0389
22b	1	Diaphragm	NBR	9611-92-0393
22c	1	L-seal	FPM	9611-92-0397
22d	1	Stem seal		
23	1	Diaphragm ring	Detecting/CIP-valve	
24	1	Upper plug complete	EPDM.....	9611-92-0354
24a	1	Upper plug	NBR	9611-92-0270
24b	Δ	Seal ring	FPM	9611-92-0271
24c	Δ	Seal ring		
25	1	Valve body, upper		
26a	Δ○	O-ring		
26b	2	Spring		
26c	Δ○	O-ring		
26d	2	Spindle		
26e	Δ○	O-ring		
26f	2	Plug		
26g	1	Air fitting, swivel bend		
27	1	Valve body, middle		
28	2	O-ring		
29	1	Stem lower		
30	1	Lower plug, complete		
30a	1	Seal ring		
30b	1	Lower plug		
31	1	Lower valve body		

□: Service kits - Actuator

Δ: Service kits - Product wetted parts

○: Service kits - Detecting/CIP-valve



The drawings below shows the tool for the plug seals.
The drawing and the parts list include all items.

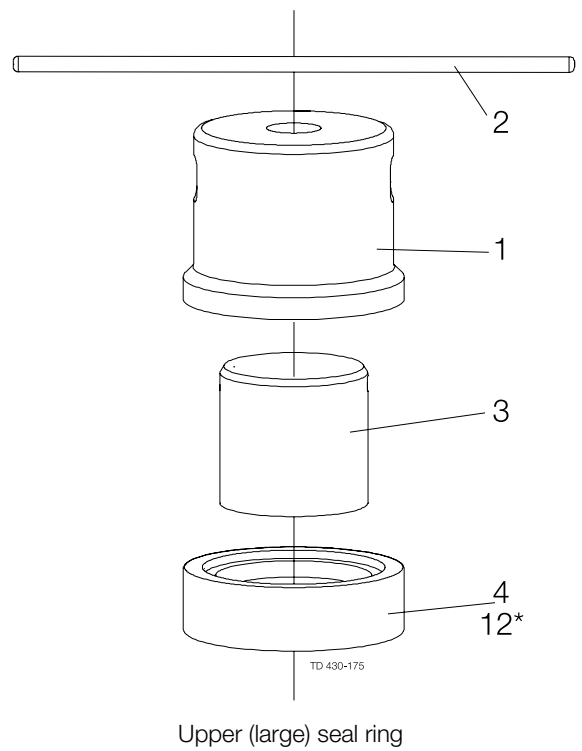
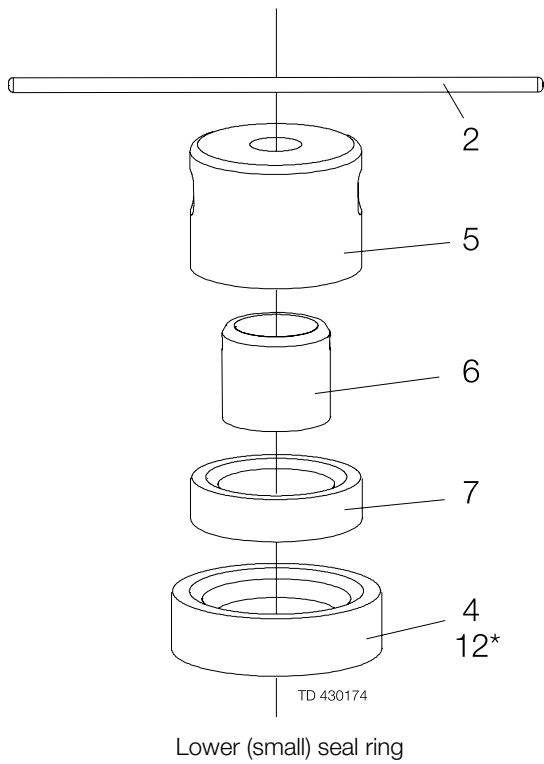
Tool for fitting on stop and change-over-valve

Tool for fitting on lower plug (only change-over valve)

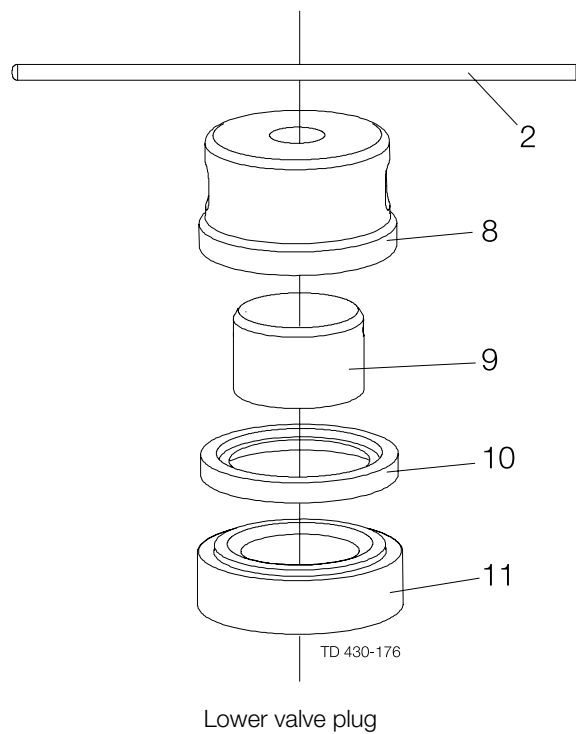
Item	Qty.	Denomination
1	1	Outer guide ring for large seal
2	1	Pin for tool
3	1	Inner guide ring for large seal
4	1	Tool housing, upper plug
5	1	Outer guide ring for small seal
6	1	Inner guide ring for small seal
7	1	Support part, upper plug
12	1	Tool housing, ch/o upper plug

Item	Qty.	Denomination
8	1	Outer guide ring, lower plug
9	1	Inner guide ring, lower plug
10	1	Support part, lower plug
11	1	Tool housing, lower plug

Pos	Denomination	DN 40/DN 50 38 mm/51 mm	DN 65 63.5 mm	DN 80 76.1 mm	DN 100 101.6 mm
1	Outer guide ring for large seal	C 1/8	E 1/7	G 1/7	I 1/7
2	Pin for tool	C7	E7	G7	I7
3	Inner guide ring for large seal	C5	E5	G5	I5
4	Tool housing, upper plug	C3	E3	G3	I3
5	Outer guide ring for small seal	C2	E2	G2	I2
6	Inner guide ring for small seal	C6	E6	G6	I6
7	Support part, upper plug	C4	E4	G4	I4
12	Tool housing, ch/o upper plug	C8			
		DN 40/DN 50 38 mm/51 mm	DN 65 63.5 mm	DN 80 76.1 mm	DN 100 101.6 mm
8	Outer guide ring, lower plug	D 1/4	F 1/4	H 1/4	J 1/4
9	Inner guide ring, lower plug	D4	F4	H4	J4
10	Support part, lower plug	D3	F3	H3	J3
11	Tool housing, lower plug	D2	F2	H2	J2



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



How to contact Alfa Laval

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

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