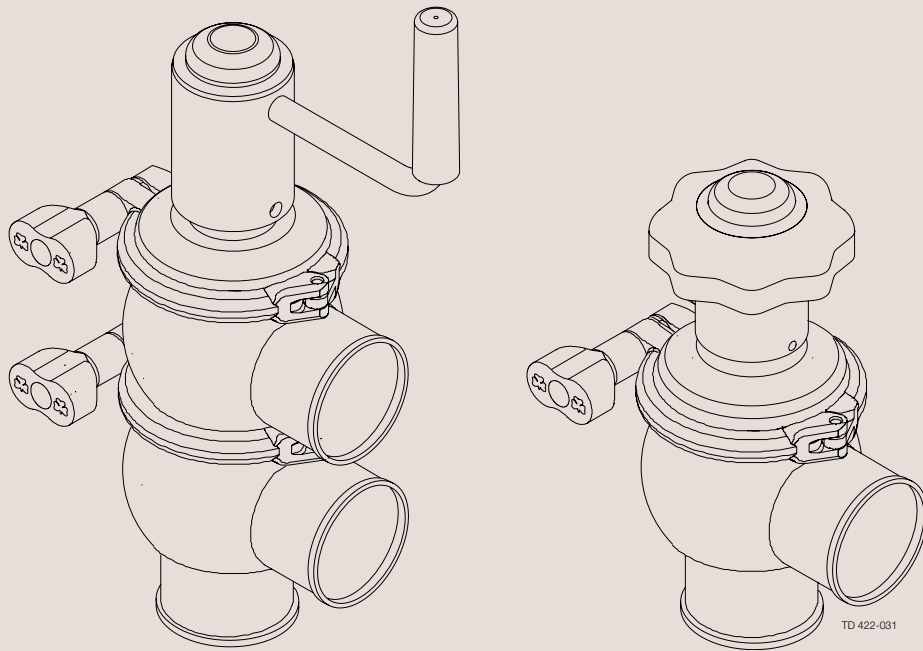




Instruction Manual

Unique 7000 Series - Manually Operated Valve



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

Unique 7000 Series Valve

Denomination

Manually Operated

Type

Year

is in conformity with the following directive:

- Machinery Directive 98/37/EEC
- 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 Kolding

Company



Signature

Designation



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

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1.1 Important information

1.2 Warning signs

*Unsafe practices and other important information are emphasized in this manual.
Warnings are emphasized by means of special signs.*

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 or clarify practices.

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.

Installation

- **Always** read the technical data thoroughly (see chapter 5).
- **Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.
- **Never** dismantle the valve with valve and pipelines under pressure.
- **Never** dismantle the valve when it is hot.



Operation

- **Never** dismantle the valve with valve and pipelines under pressure.
- **Never** dismantle the valve when it is hot.
- **Always** read the technical data thoroughly (see chapter 5).
- **Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.
- **Always** rinse well with clean water after the cleaning.



Always handle lye and acid with great care.



Maintenance

- **Always** read the technical data thoroughly (see chapter 5).
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.



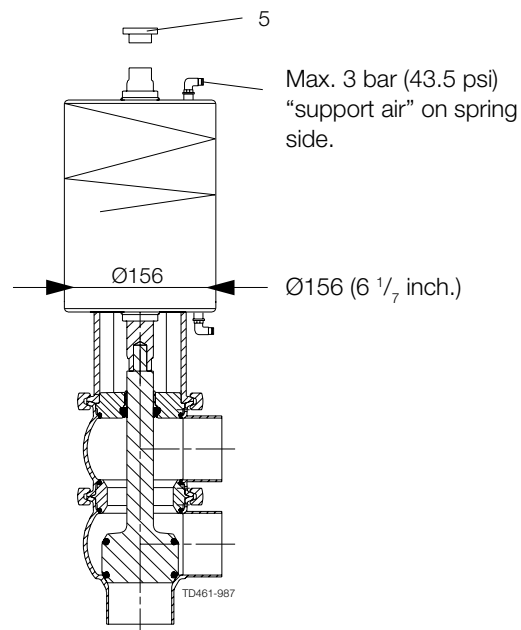
Warning!

When using “support air” on spring side in all the Unique 7000 actuators, the pressure must **NOT** exceed 3 bar (43.5 psi.)

When using Unique 7000 actuators with OD156mm (6 1/7 inch) with support air, **always** use the “steel adaptor” (pos. 5). Tighten the “steel adaptor” with torque of 30 Nm (23 lbf-ft) and use Loctite 243.

The actuator with OD156mm is mainly used on valves ISO76/DN80 - ISO101/DN100.

The outer actuator diameter = 6 1/7 inch.



The instruction manual is part of the delivery. Study the instructions carefully.
 The items refer to parts list and service kits section.
 The valve is supplied as separate parts as standard (for welding).
 The valve is assembled before delivery, if it is supplied with fittings.

Step 1

CAUTION!

Alfa Laval cannot be held responsible for incorrect unpacking.

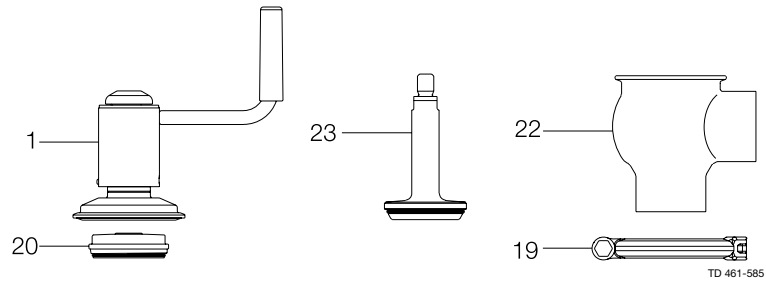
Check the delivery for:

1. Complete valve, shut off valve or change-over valve.
2. Delivery note.
3. Instruction Manual.

Step 2a

Shut-off valve:

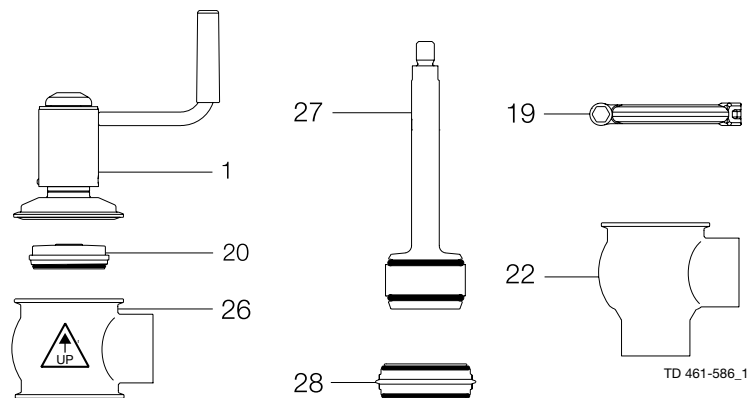
1. Complete handle.
2. Bonnet (20)
3. Clamp (19).
4. Valve plug (23).
5. Valve body (22).



Step 2b

Change-over valve:

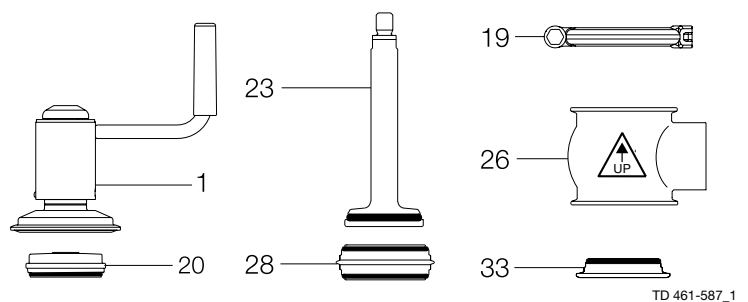
1. Complete handle.
2. Bonnet (20)
3. 2 x clamp (19).
4. Valve plug (27).
5. Lower valve body (22).
6. Valve seat (28).
7. Upper valve body (26).



Step 2c

Shut-off valve - Reverse Acting:

1. Complete handle.
2. Bonnet (20)
3. 3 x clamp (19).
4. Valve plug (23).
5. 2 x upper valve body (26).
6. Valve seat (28).
7. Lower bonnet (33).



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

The items refer to parts list and service kits section. The valve is supplied as separate parts as standard (for welding).

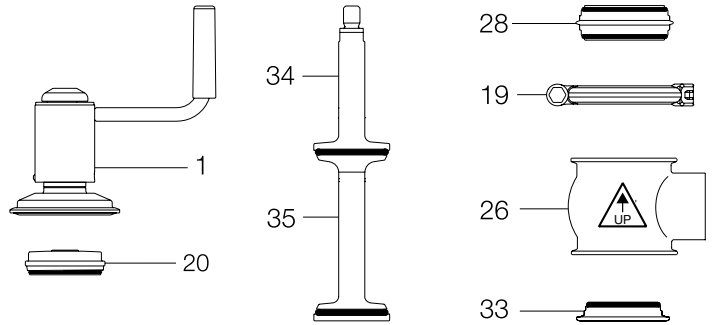
The valve is assembled before delivery, if it is supplied with fittings.

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

Step 2d

Change-over valve - Reverse Acting:

1. Complete handle.
2. Bonnet (20)
3. 4 x clamp (19).
4. Upper valve plug (34).
5. Lower valve body (35).
6. 3 x upper valve body (26).
7. 2 x valve seat (28).
8. Lower bonnet (33).



TD 461-588_1

Step 3

Remove possible packing materials from the valve/valve parts.

Inspect the valve/valve parts for visible transport damages.

Avoid damaging the valve/valve parts.

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.

Step 1



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

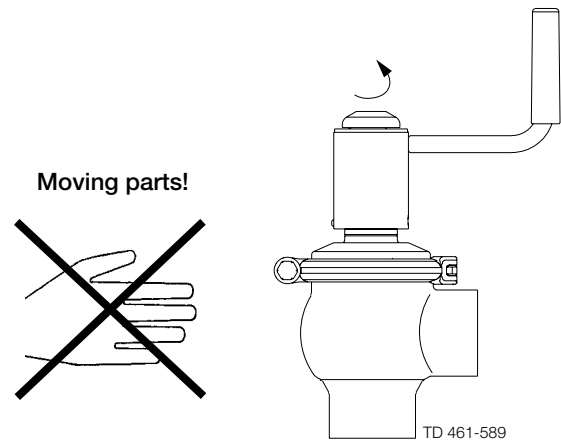
CAUTION!

Alfa Laval cannot be held responsible for incorrect installation.

Step 2

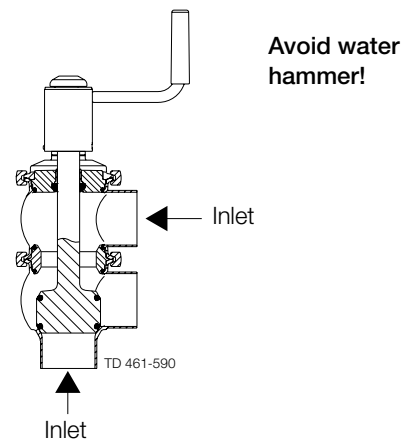


Never touch the moving parts during operation



Step 3

It is recommended to install the valve so that the flow is against the closing direction to avoid water hammer.

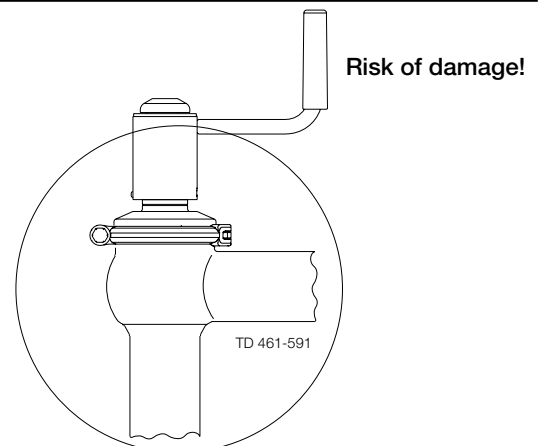


Step 4

Avoid stressing the valve.

Pay special attention to:

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



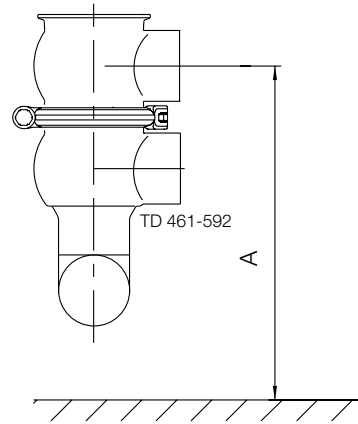
Study the instructions carefully.
 The valve is supplied as separate parts to facilitate the welding.
 The items refer to the parts list and service kits section.
 Check the valve for smooth operation after welding.

Step 1

Always install valves with more than one valve body so that the seals between the valve bodies can be replaced. Do not weld more than one valve body into the system.

Measurement A is depending on body combination and piping solution.

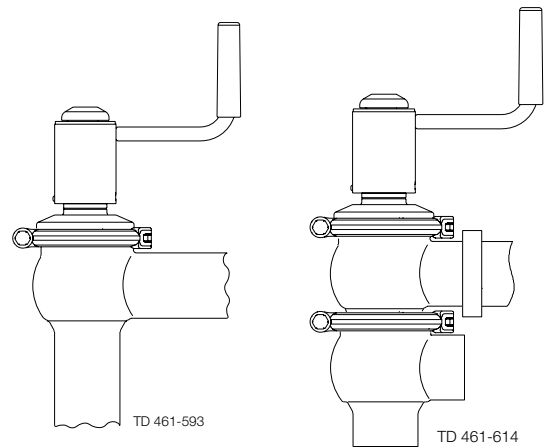
Please see actual PD-sheet for further information



Step 2

Assemble the valve in accordance with the steps in section 4.4.

Pay special attention to the warnings!

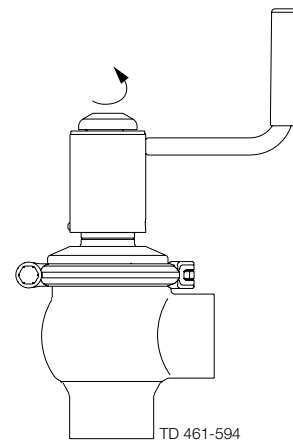


Step 3

Pre-use check:

1. Open and close the valve several times to ensure that it operates smoothly.

Pay special attention to the warnings!



Study the instructions carefully and pay special attention to the warnings!
 Ensure that the valve operates smoothly.
 The items refer to the parts list and service kits section.

Step 1



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

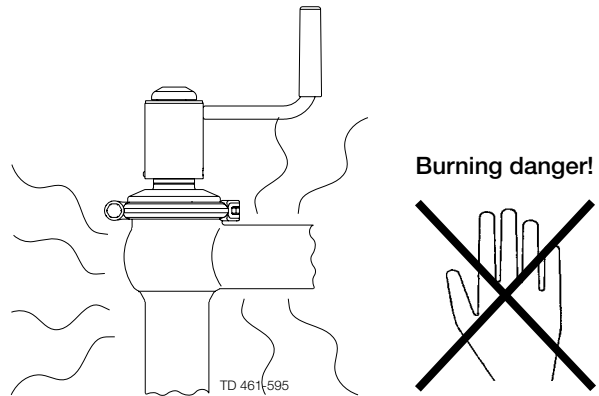
CAUTION!

Alfa Laval cannot be held responsible for incorrect operation.

Step 2



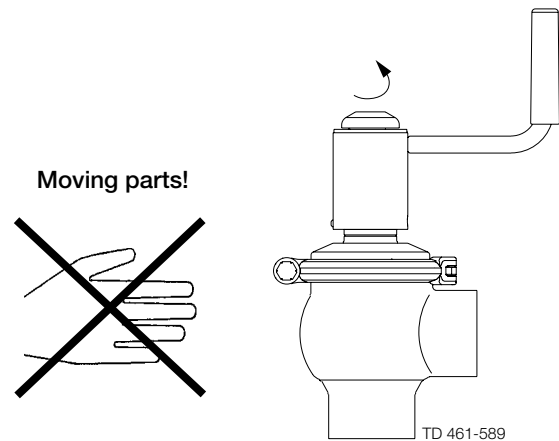
Never touch the valve or the pipelines when processing hot liquids or when sterilizing.



Step 3



Never touch the moving parts during operation.



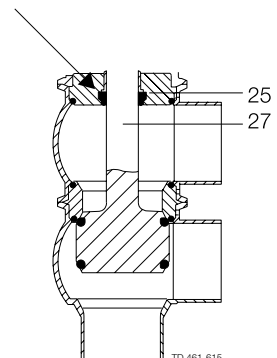
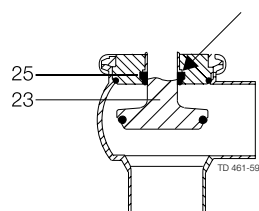
Shut-off valve

Change-over valve

Step 4

Lubrication of valves:

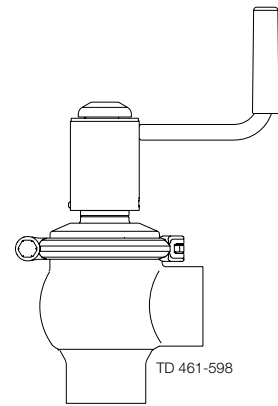
1. Ensure smooth movement between lip seal (25) and plug stem (23, 27).
2. Lubricate with Klüber Paraliq GTE 703 if necessary. (see section 4.1)



Step 5

Lubrication of crank mechanism

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



*Pay attention to possible faults. Study the instructions carefully.
The items refer to the parts list and service kits section*

NOTE!

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

Problem	Cause/result	Repair
External product leakage	Worn or product affected lip seal and/or O-ring	<ul style="list-style-type: none"> - Replace the seals - Replace with seals of a different rubber grade
Internal product leakage	<ul style="list-style-type: none"> - Worn or product affected plug seal - Product deposits on the seat and/or plug - Product pressure exceeds actuator specification 	<ul style="list-style-type: none"> - Replace the seal - Replace with a seal of a different rubber grade - Frequent cleaning - Replace with a high pressure actuator - Use auxiliary air on the spring side - Reduce product pressure
Water hammer	The flow direction is the same as the closing direction	The flow direction should be against the closing direction
The valve does not open/close	Product pressure exceeds specification	Reduce pressure

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!

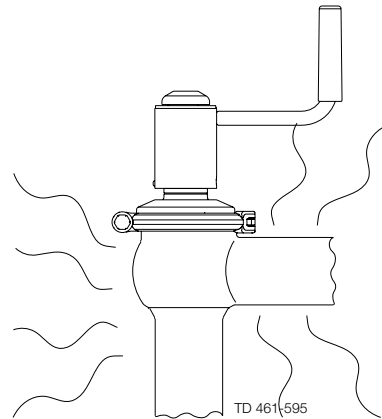


Always use protective goggles!

Step 2



Never touch the valve or the pipelines when sterilizing.

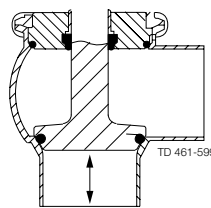


Burning danger!

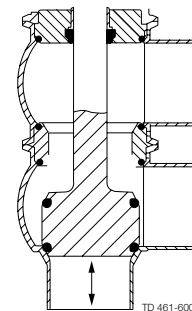
Step 3

Clean the plug and the seats correctly.
Pay special attention to the warnings!
Lift and lower valve plug momentarily!

Shut-off valve



Change-over valve



Lift/lower valve plug

Step 4

Examples of cleaning agents:

Use clean water, free from chlorides.

- 1% by weight NaOH at 158°F

2.2 lb NaOH	+	26.4 gal water	= Cleaning agent
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0.6 gal 33% NaOH	+	26.4 gal water	= Cleaning agent
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- 0.5% by weight HNO₃ at 158°F

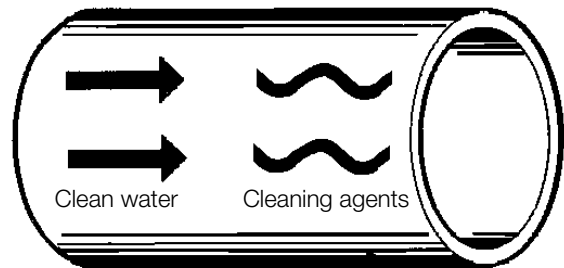
0.2 gal 53% HNO ₃	+	100 l water	= Cleaning agent
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Step 5



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

Always rinse!



Step 6

NOTE!

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

Maintain the valve regularly.
 Study the instructions carefully and pay special attention to the warnings!
 Always keep spare rubber seals and lip seals in stock.

Step 1



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

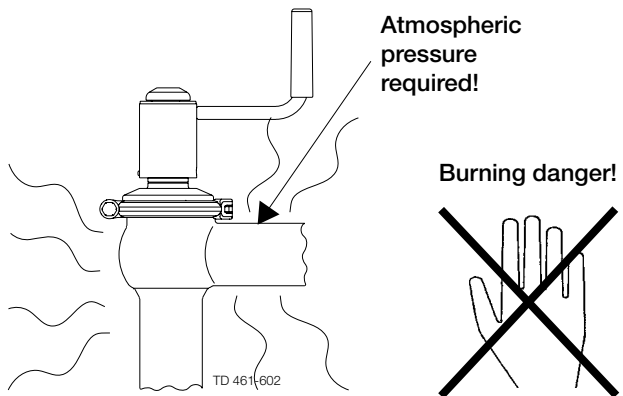
CAUTION!

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

Step 2



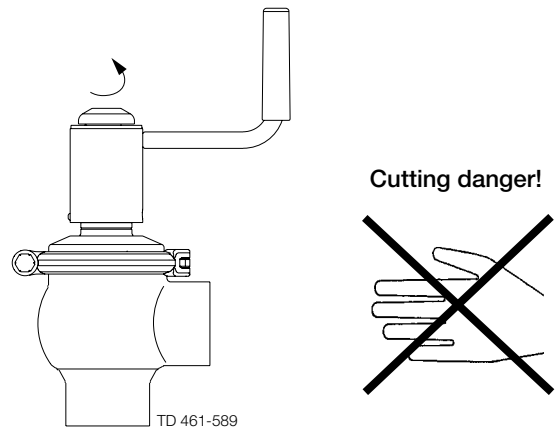
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.



Step 3



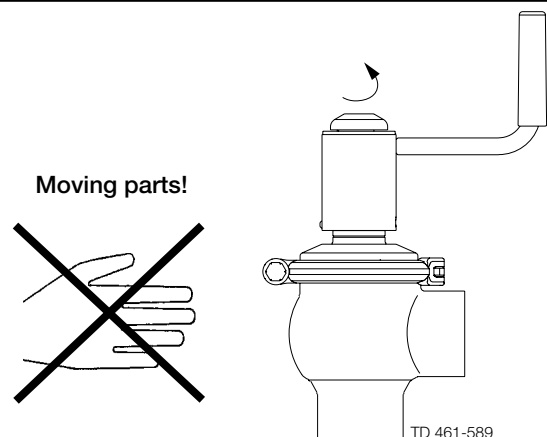
Never stick your fingers through the valve ports.



Step 4



Never touch the moving parts during operation.



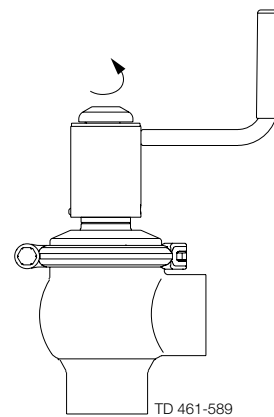
Maintain the valve regularly.
 Study the instructions carefully.
 Always keep spare rubber seals and lip seals stock.
 Check the valve for smooth operation after service.

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

	Product wetted seals
Preventive maintenance	Replace after 12 months depending on working conditions
Maintenance after leakage (leakage normally starts slowly)	Replace at the end of the day
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
Lubrication	Before fitting Klüber Paraliq GTE 703 or similar USDA H1 approved oil/grease

Pre-use check:

1. Open and close the valve several times to ensure that it operates smoothly.
Pay special attention to the warnings!



Recommended spare parts

Service kits (see chapter 6)

4.2 Dismantling of valve
4.3 Plug seal replacement
4.4 Assembly of valve

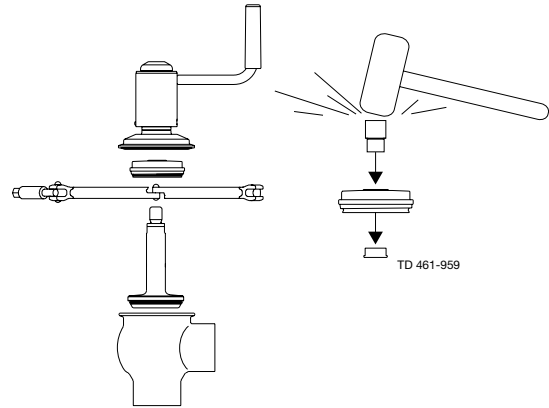
Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.

Step 1a

Shut-off valve:

1. Remove cap, loosen screw and remove the washer by sliding it sideways.
2. Loosen and remove clamp.
3. Lift away the crank.
4. Remove valve plug.
5. Remove O-ring, lip seal and bushing in bonnet.
(Use bushing tool and rubber mallet).

Pay special attention to the warnings!



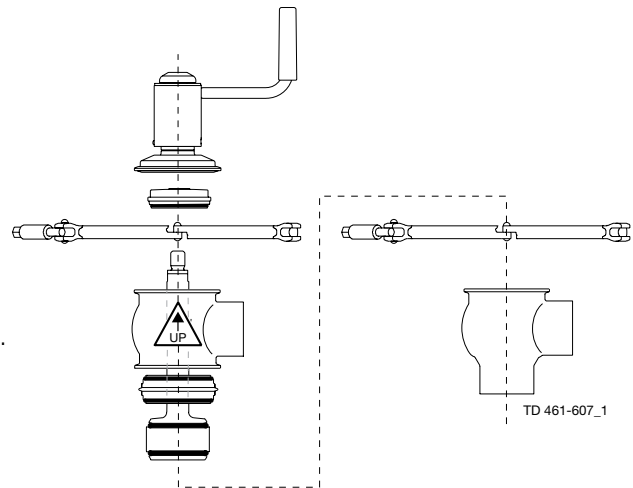
Note! For plug seal replacement please see section 4.3.

Step 1b

Change-over valve:

1. Loosen and remove lower clamp.
2. Lift away the crank and upper valve body.
3. Remove cap, loosen screw and remove the washer by sliding it sideways.
4. Loosen and remove upper clamp.
5. Lift away the crank.
6. Remove valve plug.
7. Remove seat and O-rings.
8. Remove O-ring, lip seal and bushing in bonnet.
(Use bushing tool and rubber mallet. See drawing, step 1a).

Pay special attention to the warnings!



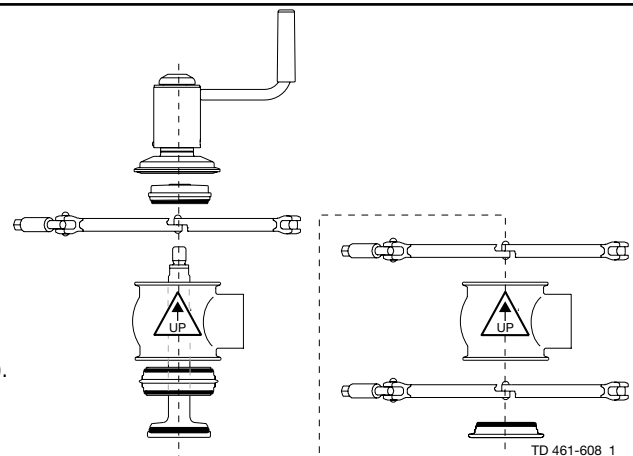
Note! For plug seal replacement please see section 4.3.

Step 1c

Shut-off valve - Reverse Acting:

1. Loosen and remove lower clamp.
2. Remove lower bonnet and O-ring from lower body.
3. Loosen and remove middle clamp.
4. Lift away the crank and upper valve body.
5. Remove cap, loosen screw and remove the washer by sliding it sideways.
6. Loosen and remove upper clamp.
7. Remove valve plug
8. Remove seat and O-rings.
9. Remove O-.ring, lip seal and bushing in bonnet.
(use bushing tool and rubber mallet. See drawing, step 1a).

Pay special attention to the warnings!

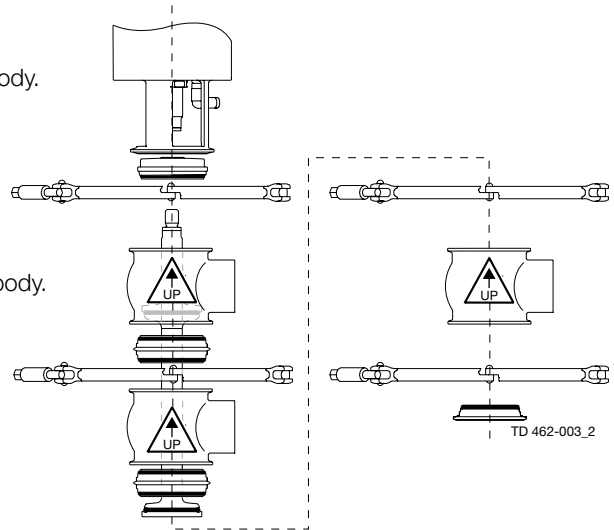


Note! For plug seal replacement please see section 4.3.

Step 1d

Change-over valve - Reverse Acting:

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



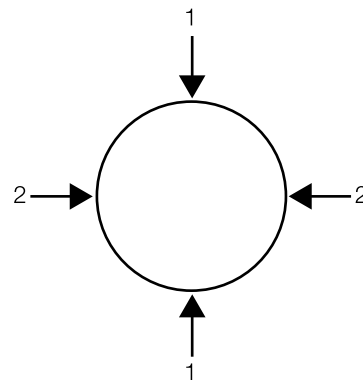
Note! Be careful not to damage the bushing.

Pay special attention to the warnings!

Note! For plug seal replacement please see section 4.3.

4.3 Plug seal replacement

1. Remove old seal ring using a knife, screwdriver or similar.
Be careful not to damage metal parts.
2. Pre-mount plug seal without pressing it into the groove.
3. Squeeze plug seal into the groove using opposite pressure points.
4. Release compressed air behind plug seal.



4.4 Assembly of valve

Reverse order of 4.2, Dismantling of valve.

Lubricate O-ring (21) and lip seal (25) with Klüber Paraliq GTE 703.

Remember to tighten spindle and plug with a torque $M = 23 \text{ lbf-ft}$ (30 Nm) (Use two 17 mm spanners)

If there are vibrations in the pipeline Alfa Laval recommend to use loctite no. 243.

Note!

Do not forget to screw in lower set screw 7 when assembling the valve. It acts as a stroke stop. Without this screw the valve can be opened so far that the crank comes off. In some valve sizes the flats on the plug stem may enter into the lip seal, which will then leak.

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

Data - valve

Max. product pressure..... 145 psi (1000 kPa) (10 bar)
 Min. product pressure..... Full vacuum (depending on product specifications)
 Temperature range 14° F to + 284° F (standard EPDM seal)

Materials - valve/crank mechanism

Product wetted steel parts..... AISI 316L (internal Ra < 32 µ inch)
 Other steel parts..... AISI 304
 Plug seal..... EPDM / PTFE (TR2)
 Other product wetted seals EPDM (standard)
 Optional product wetted seals HNBR and FPM

The parts list includes all items.

Parts List

Pos.	Qty.	Denomination
1	1	Crank
2	1	Handle (included in pos. 1)
3	1	Cap
4	1	Washer
8	1	Stem holder
6	1	Guide
7	2	Set screw
19	1	Clamp
20	1	Bonnet
21 Δ	1	O-ring, EPDM (standard)
22	1	Valve body, lower
23	1	Plug, shut off, complete
23.1	1	Plug, shut off
23.2 Δ	1	Plug seal, EPDM (standard)
24	1	Bushing
25 Δ	1	Lip seal, EPDM (standard)

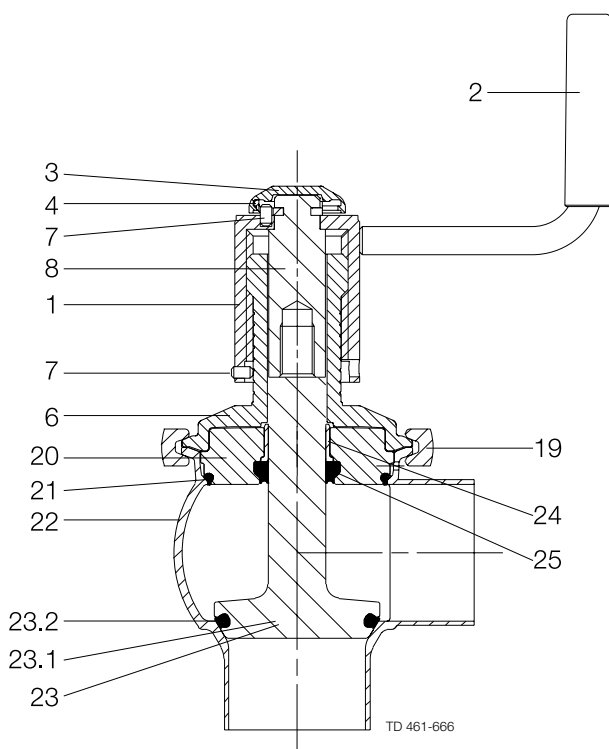
Δ: Service kits - EPDM

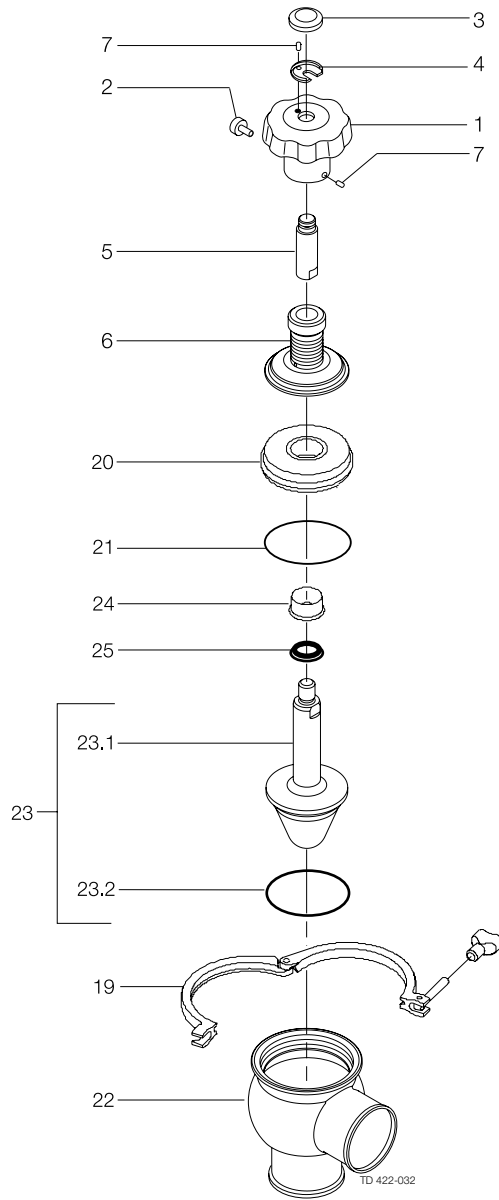
Δ: Service kits - HNBR

Δ: Service kits - FPM

Service Kits

Denomination	Item number
Product wetted parts (Shut-off)	
1"	
Service kit, EPDM.....	9611-92-6501
Service kit, HNBR.....	9611-92-6507
Service kit, FPM	9611-92-6513
1½"	
Service kit, EPDM.....	9611-92-6502
Service kit, HNBR.....	9611-92-6508
Service kit, FPM	9611-92-6514
2"	
Service kit, EPDM.....	9611-92-6503
Service kit, HNBR.....	9611-92-6509
Service kit, FPM	9611-92-6515
2½"	
Service kit, EPDM.....	9611-92-6504
Service kit, HNBR.....	9611-92-6510
Service kit, FPM	9611-92-6516
3"	
Service kit, EPDM.....	9611-92-6505
Service kit, HNBR.....	9611-92-6511
Service kit, FPM	9611-92-6517
4"	
Service kit, EPDM.....	9611-92-6506
Service kit, HNBR.....	9611-92-6512
Service kit, FPM	9611-92-6518





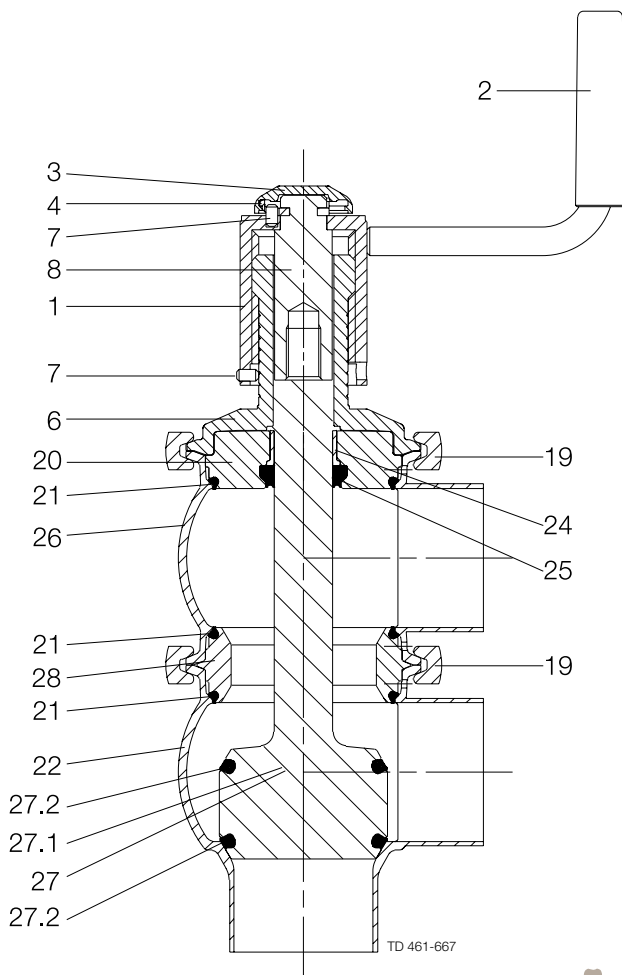
Parts List

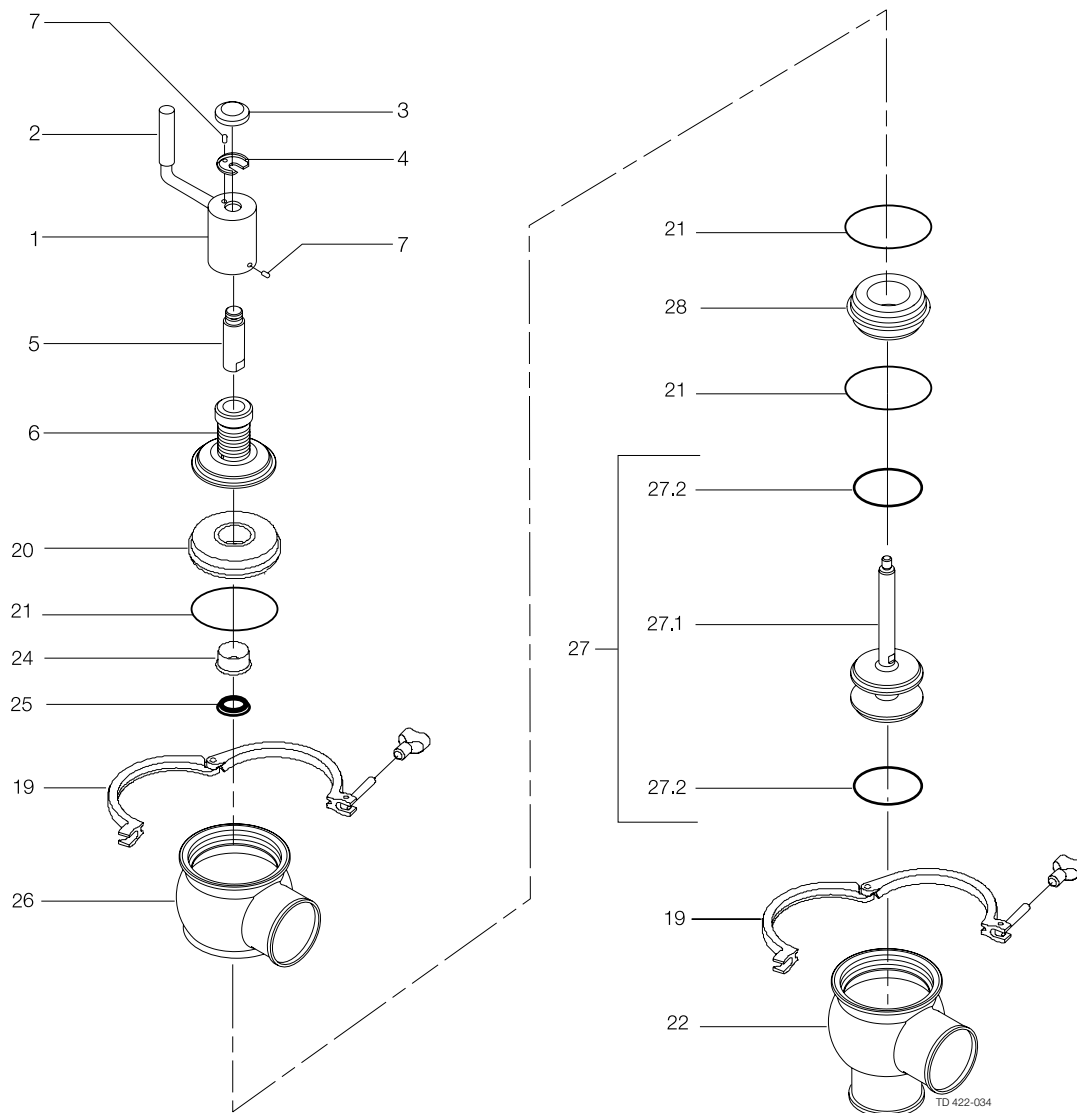
Pos.	Qty.	Denomination
1	1	Crank
2	1	Handle (included in pos. 1)
3	1	Cap
4	1	Washer
8	1	Stem holder
6	1	Guide
7	2	Set screw
19	2	Clamp
20	1	Bonnet
21	Δ 3	O-ring, EPDM (standard)
22	1	Valve body, lower
24	1	Bushing
25	Δ 1	Lip seal, EPDM (standard)
28	1	Seat
26	1	Valve body, upper
27	1	Plug, change over, complete
27.1	1	Plug, change over
27.2	Δ 2	Plug seal, EPDM (standard)

Δ: Service kits - EPDM
 Δ: Service kits - HNBR
 Δ: Service kits - FPM

Service Kits

Denomination	Item number
Product wetted parts (Change-over)	
1"	
Service kit, EPDM.....	9611-92-6579
Service kit, HNBR.....	9611-92-6585
Service kit, FPM	9611-92-6591
1½"	
Service kit, EPDM.....	9611-92-6580
Service kit, HNBR.....	9611-92-6586
Service kit, FPM	9611-92-6592
2"	
Service kit, EPDM.....	9611-92-6581
Service kit, HNBR.....	9611-92-6587
Service kit, FPM	9611-92-6593
2½"	
Service kit, EPDM.....	9611-92-6582
Service kit, HNBR.....	9611-92-6588
Service kit, FPM	9611-92-6594
3"	
Service kit, EPDM.....	9611-92-6583
Service kit, HNBR.....	9611-92-6589
Service kit, FPM	9611-92-6595
4"	
Service kit, EPDM.....	9611-92-6584
Service kit, HNBR.....	9611-92-6590
Service kit, FPM	9611-92-6596





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 direct.