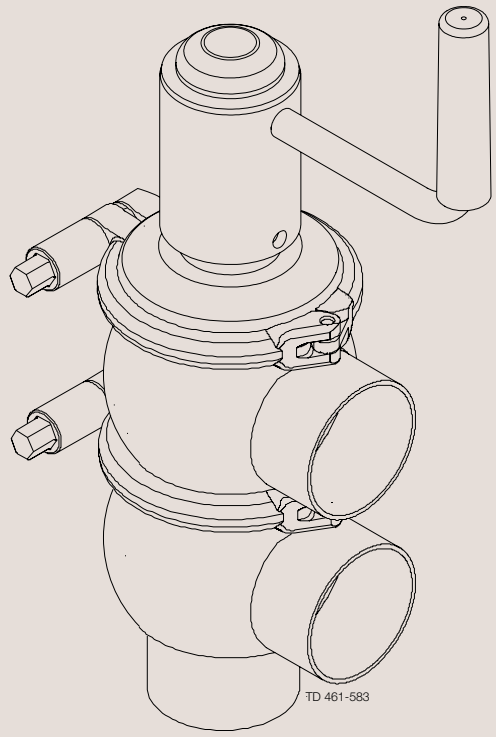
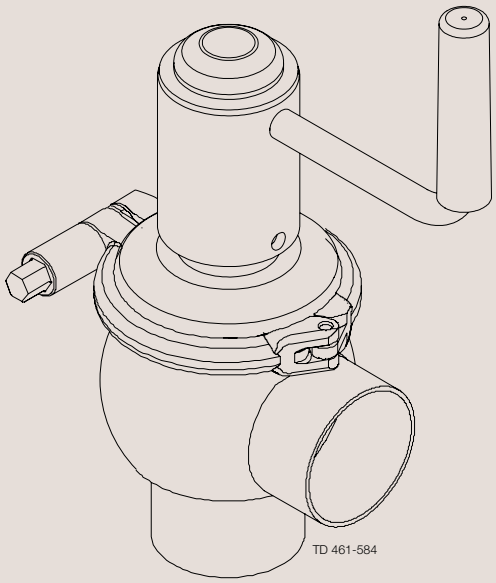
Instruction Manual

Unique Single Seat Valve - Manually Operated





ESE00523EN1 2008-11

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

Single Seat Valve	Manually Operated	2008
Denomination	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	Bjarne Søndergaard
Title	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.

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

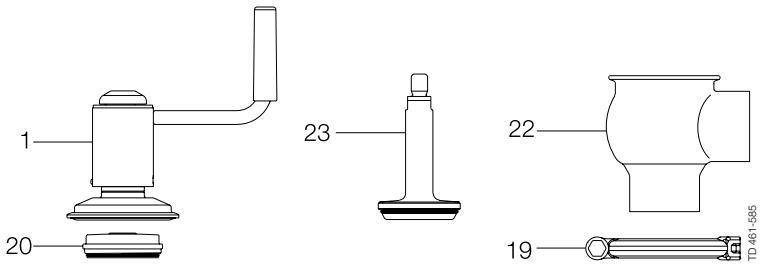
- **Always** read the technical data thoroughly (see chapter 5).
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.

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.

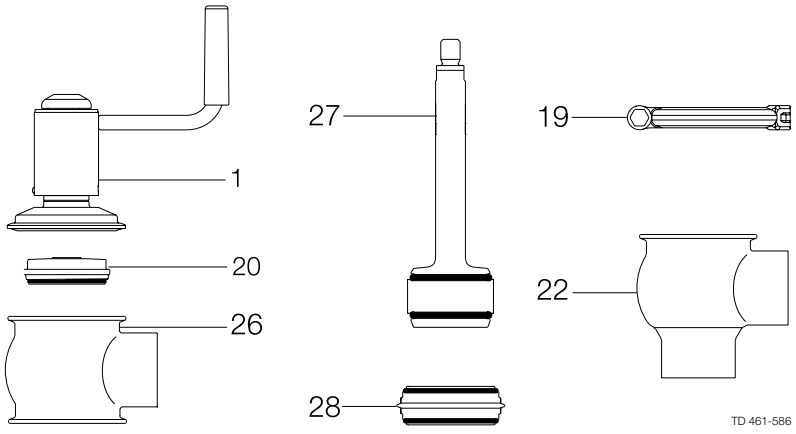
Step 1
CAUTION!
Alfa Laval cannot be held responsible for incorrect unpacking.

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:
Complete handle.
Bonnet (20)
Clamp (19).
Valve plug (23).
Valve body (22).



Step 2b
Change-over valve:
Complete handle.
Bonnet (20)
2 x clamp (19).
Valve plug (27).
Lower valve body (22).
Valve seat (28).
Upper valve body (26).



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.

Step1

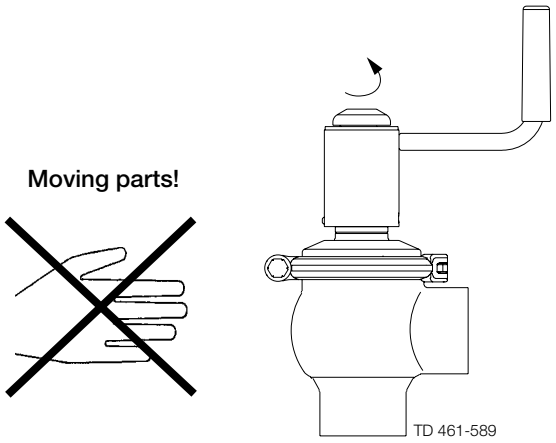
- **Always** read the technical data thoroughly (see chapter 5).

CAUTION!
Alfa Laval cannot be held responsible for incorrect installation.

Step 2

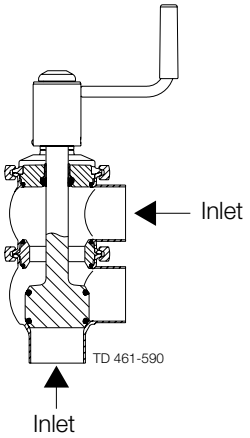
Never touch the moving parts during operation

Moving parts!



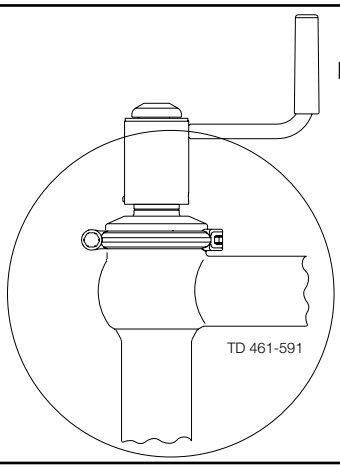
Step 3
It is recommended to install the valve so that the flow is against the closing direction to avoid water hammer.

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.

Risk of damage!

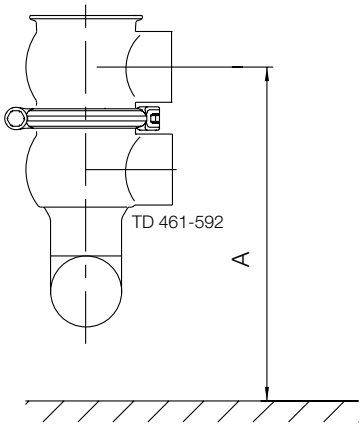


Study the instructions carefully.
The valve is supplied as separate parts to facilitate the welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

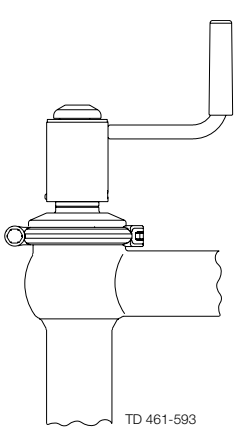
Step 1
Always install valves with more than one valve body so that the seals between the valve bodies can be replaced. Do not weld more than one valve body into the system.

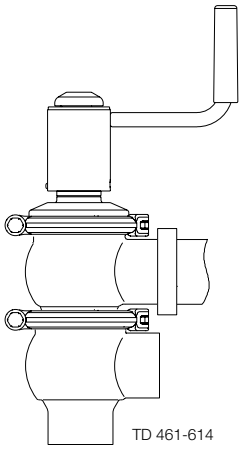
Measurement A is depending on body combination and piping solution.

Please see actual PD-sheet for further information



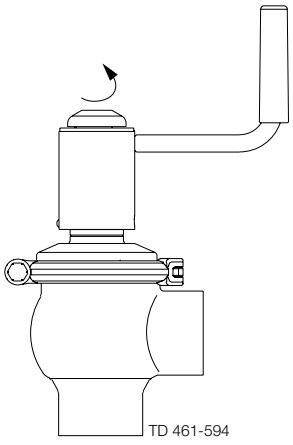
Step 2
Assemble the valve in accordance with the steps in section 4.4.
Pay special attention to the warnings!





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.

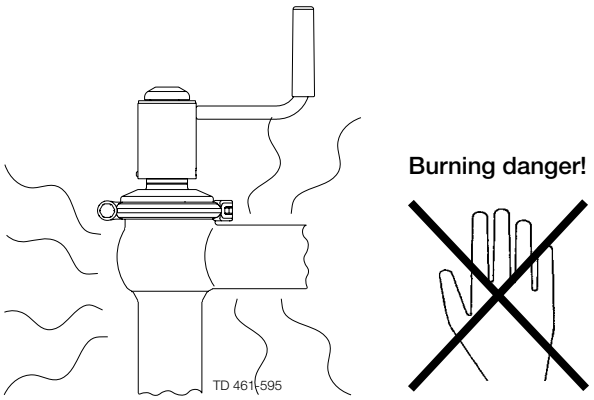
Step 1

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

CAUTION!
Alfa Laval cannot be held responsible for incorrect operation.

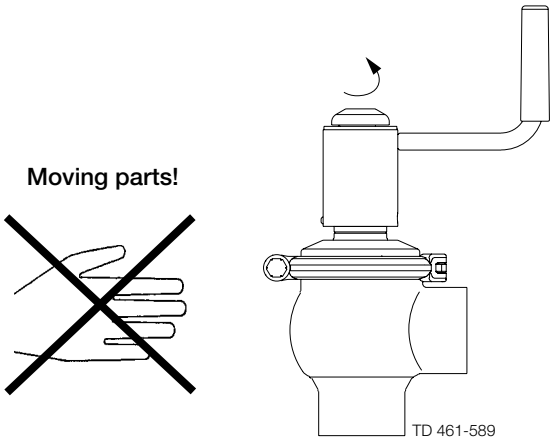
Step 2

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



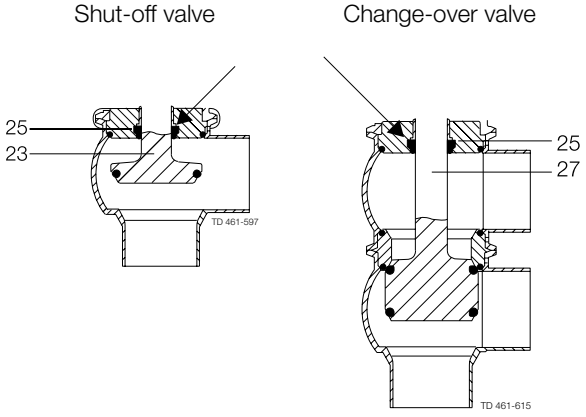
Step 3

Never touch the moving parts during operation.



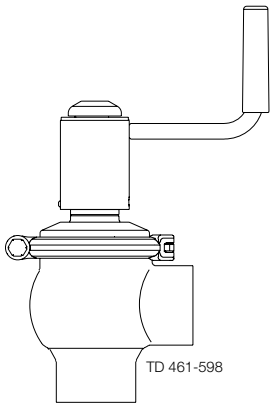
Step 4
Lubrication of valves:

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	- Replace the seals - Replace with seals of a different rubber grade
Internal product leakage	- Worn or product affected plug seal	- Replace the seal - Replace with a seal of a different rubber grade
	- Product deposits on the seat and/or plug	- Frequent cleaning
	- Product pressure exceeds actuator specification	- 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.
HNO_3 = Nitric acid.

Step 1

Always handle lye and acid with great care.

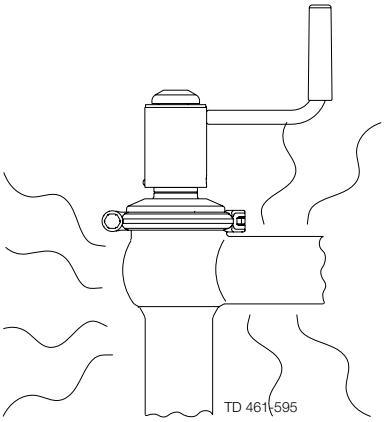
Caustic danger!

Always use rubber gloves!

Always use protective goggles!

Step 2

Never touch the valve or the pipelines when sterilizing.

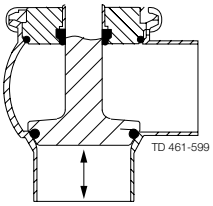


Burning danger!

Step 3

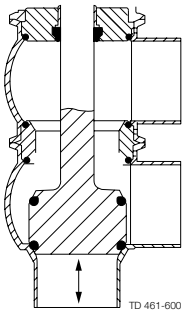
Clean the plug and the seats correctly.
Pay special attention to the warnings!
Lift and lower valve plug momentarily!

Shut-off valve



Lift/lower valve plug

Change-over valve



Step 4

Examples of cleaning agents:
Use clean water, free from clorides.

1. 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

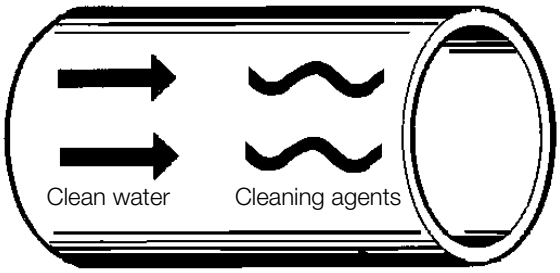
2. 0.5% by weight HNO_3 at 70° C

0.7 l 53% HNO_3	+	100 l water	=	Cleaning agent

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.

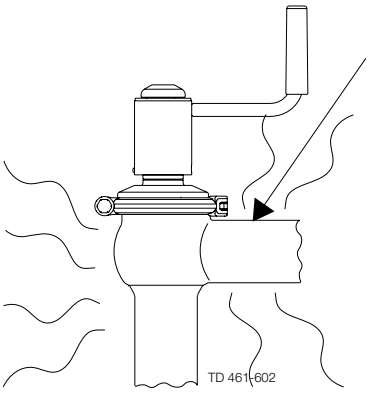
Step 1

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

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

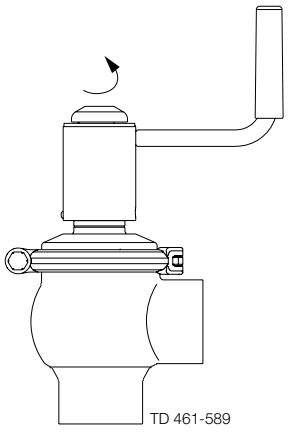
Step 2

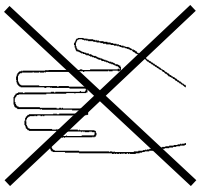
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.



Step 3

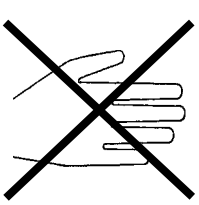
Never stick your fingers through the valve ports.

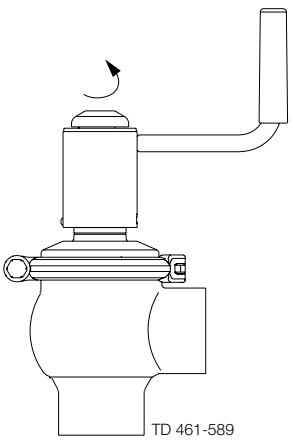




Step 4

Never touch the moving parts during operation.



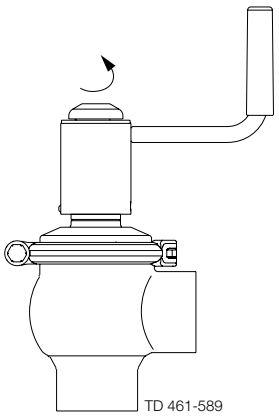


Maintain the valve regularly.
Study the instructions carefully.
Always keep spare rubber seals and lip seals stock.
Check the valve for smooth operation after service.

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	- 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

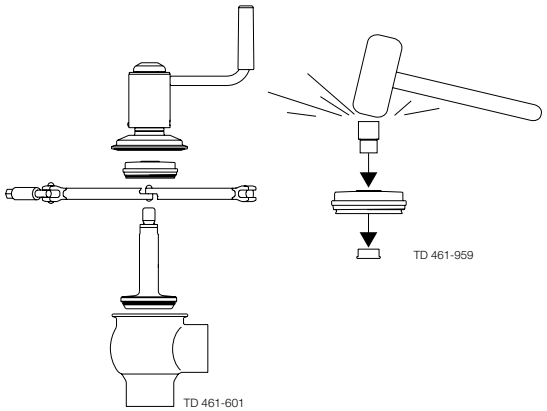
Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.

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.

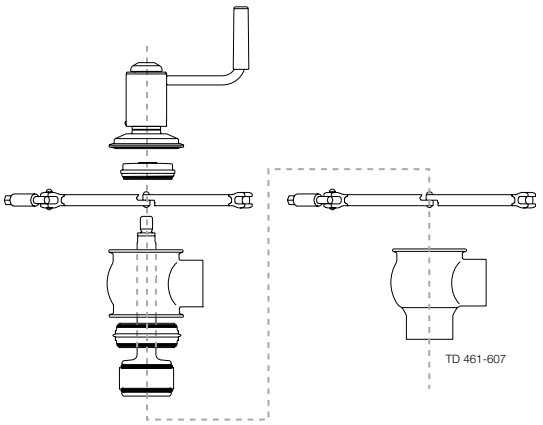


Step 1b
Change-over valve:

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.



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.

Note! For plug seal replacement please read instruction in service kit.

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.

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.

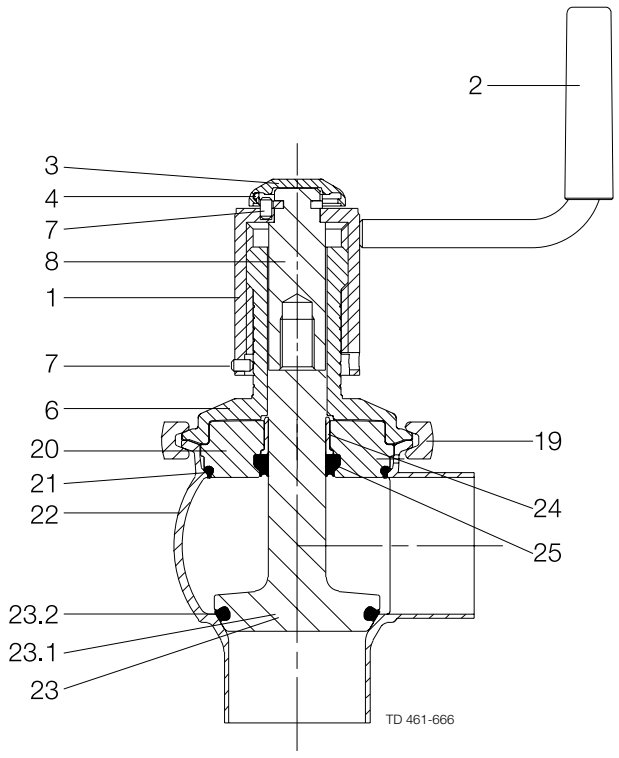
Data - valve	
Max. product pressure	1000 kPa (10 bar)
Min. product pressure	Full vacuum (depending on product specifications)
Temperature range	-10° C to + 140° C (standard EPDM seal)
Materials - valve/crank mechanism	
Product wetted steel parts	1.4404 (316L) (internal Ra < 0.8 µm)
Other steel parts	1.4301 (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)

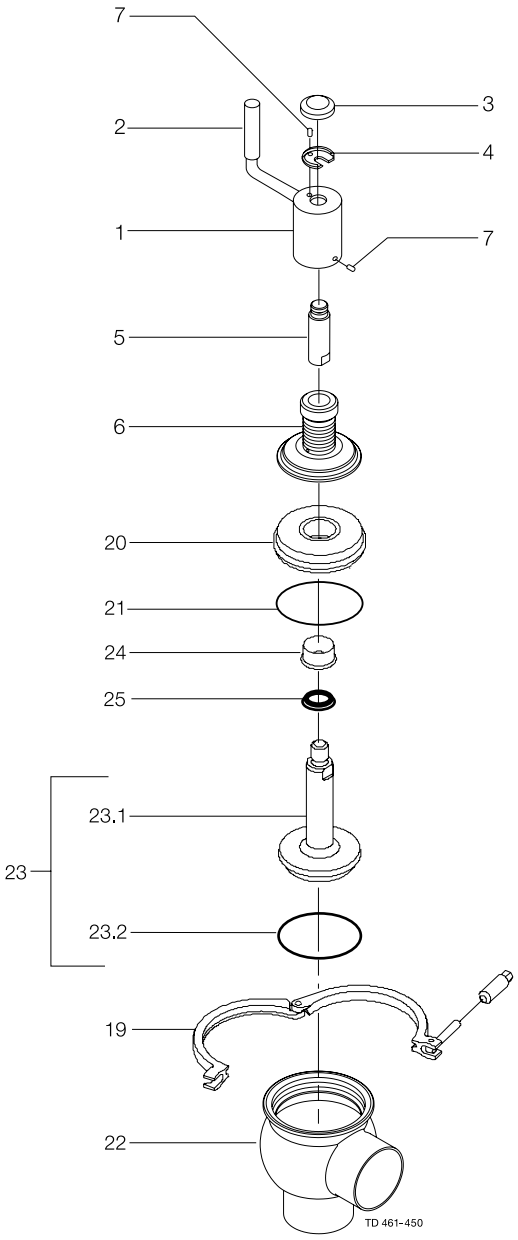
Δ: Service kits - EPDM
Δ: Service kits - HNBR
Δ: Service kits - FPM



Service Kits

Denomination	Item number
Product wetted parts (Shut-off)	
25 mm / DN 25	
Service kit, EPDM	9611-92-6501
Service kit, HNBR	9611-92-6507
Service kit, FPM	9611-92-6513
38 mm / DN 40	
Service kit, EPDM	9611-92-6502
Service kit, HNBR	9611-92-6508
Service kit, FPM	9611-92-6514
51 mm / DN 50	
Service kit, EPDM	9611-92-6503
Service kit, HNBR	9611-92-6509
Service kit, FPM	9611-92-6515
63.5 mm / DN65	
Service kit, EPDM	9611-92-6504
Service kit, HNBR	9611-92-6510
Service kit, FPM	9611-92-6516
76.1 mm / DN 80	
Service kit, EPDM	9611-92-6505
Service kit, HNBR	9611-92-6511
Service kit, FPM	9611-92-6517
101.6 mm / DN 100	
Service kit, EPDM	9611-92-6506
Service kit, HNBR	9611-92-6512
Service kit, FPM	9611-92-6518

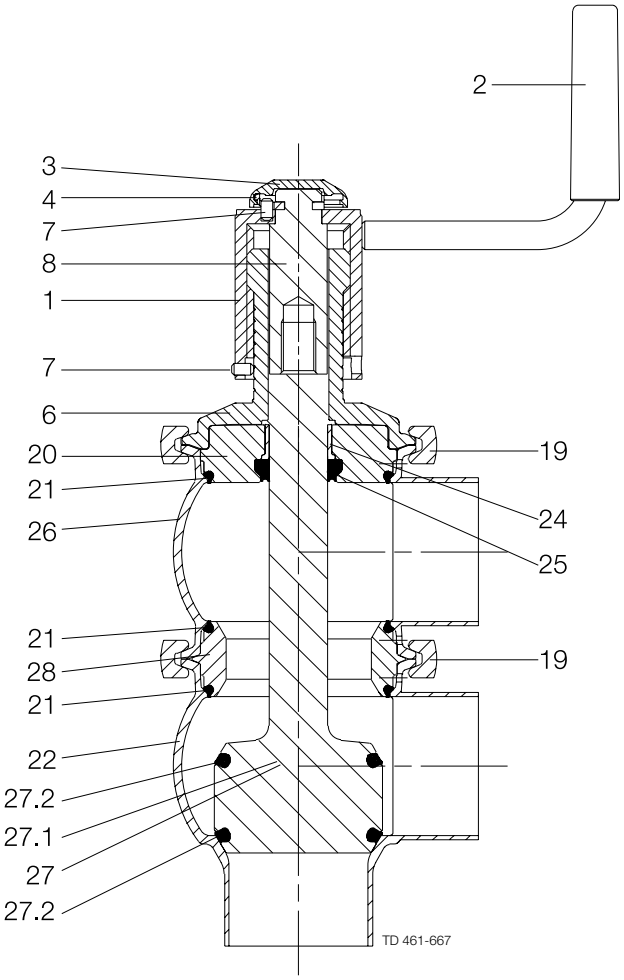
This page shows an exploded drawing of Unique Single Seat Valve, shut-off.



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)
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)
28		1	Seat

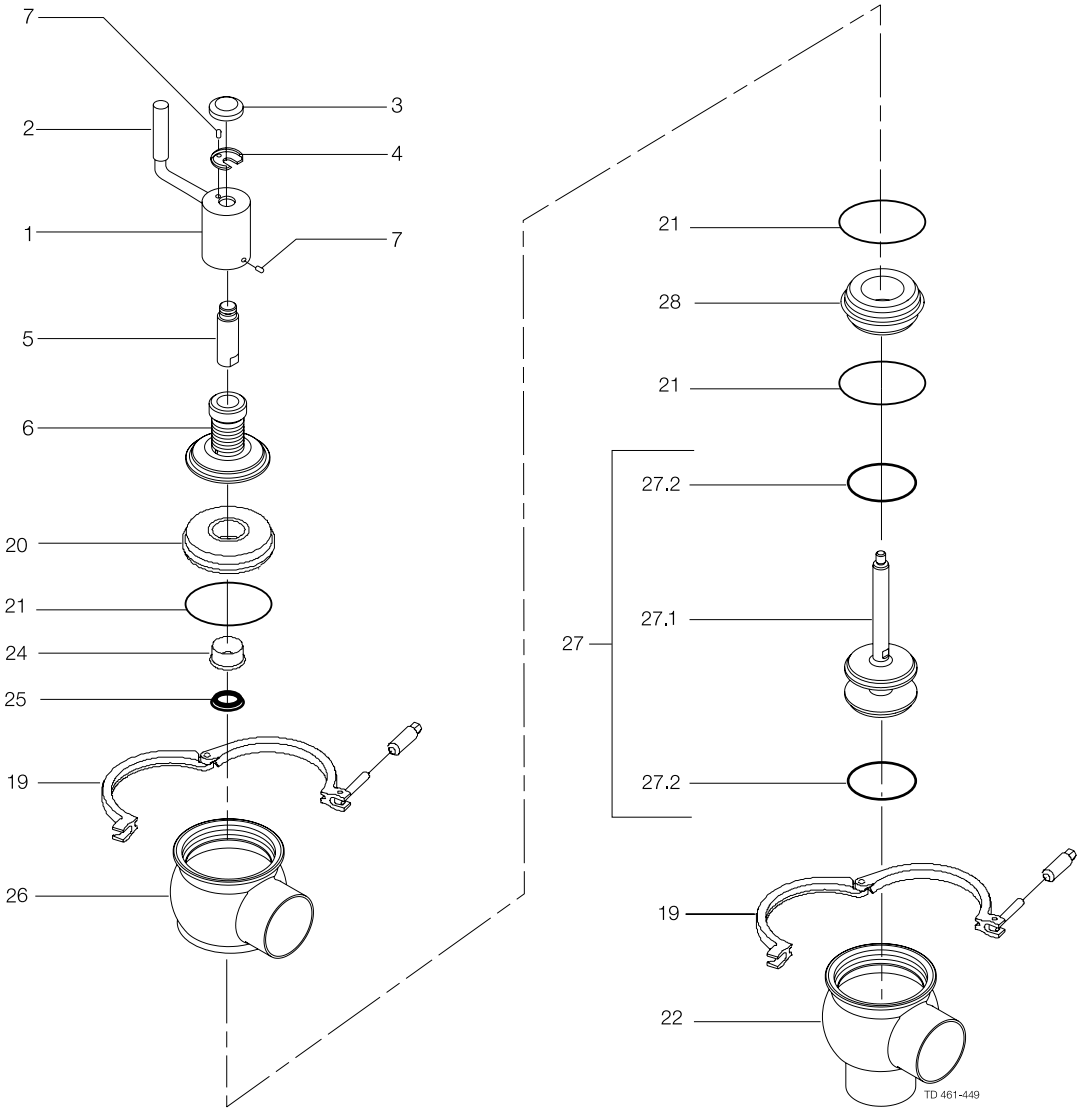
Δ: Service kits - EPDM
Δ: Service kits - HNBR
Δ: Service kits - FPM



Service Kits

Denomination	Item number
Product wetted parts (Change-over)	
25 mm / DN 25	
Service kit, EPDM	9611-92-6579
Service kit, HNBR	9611-92-6585
Service kit, FPM	9611-92-6591
38 mm / DN 40	
Service kit, EPDM	9611-92-6580
Service kit, HNBR	9611-92-6586
Service kit, FPM	9611-92-6592
51 mm / DN 50	
Service kit, EPDM	9611-92-6581
Service kit, HNBR	9611-92-6587
Service kit, FPM	9611-92-6593
63.5 mm / DN65	
Service kit, EPDM	9611-92-6582
Service kit, HNBR	9611-92-6588
Service kit, FPM	9611-92-6594
76.1 mm / DN 80	
Service kit, EPDM	9611-92-6583
Service kit, HNBR	9611-92-6589
Service kit, FPM	9611-92-6595
101.6 mm / DN 100	
Service kit, EPDM	9611-92-6584
Service kit, HNBR	9611-92-6590
Service kit, FPM	9611-92-6596

This page shows an exploded drawing of Unique Single Seat Valve, change-over.



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.