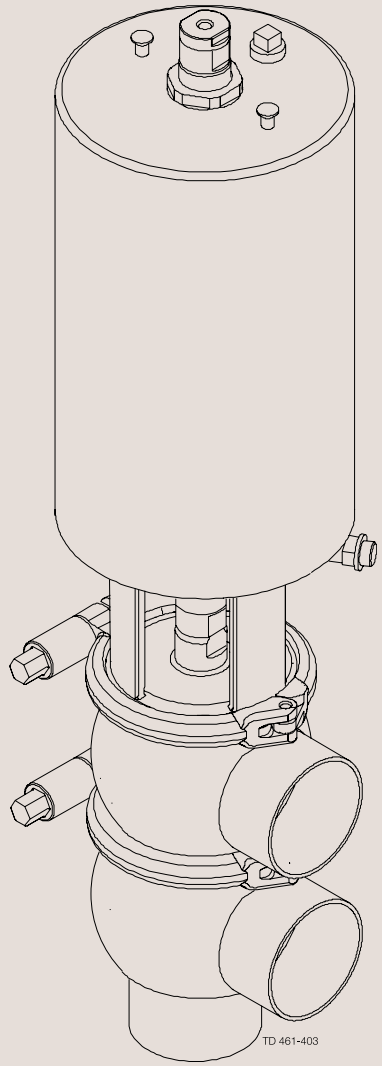
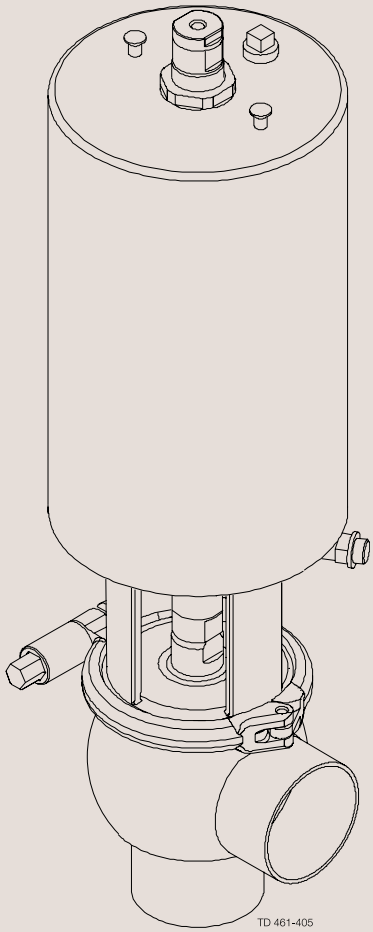
Instruction Manual

Unique Single Seat Valve - Long Stroke





ESE00222EN1 2006-08

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

Sanitary Unique Single Seat Valve	**Long Stroke**	**2006**
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).
- **Always** release compressed air after use.
- **Never** touch the moving parts if the actuator is supplied with compressed air.
- **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).
- **Always** release compressed air after use.
- **Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.
- **Never** touch the moving parts if the actuator is supplied with compressed air.
- **Always** rinse well with clean water after the cleaning.

Always handle lye and acid with great care.

Maintenance

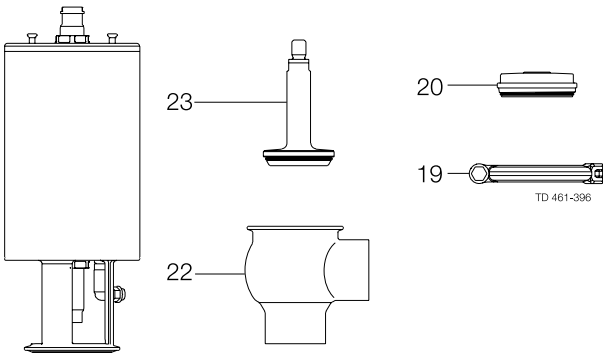
- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.
- **Never** stick your fingers through the valve ports if the actuator is supplied with compressed air.
- **Never** touch the moving parts if the actuator is supplied with compressed air.

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.

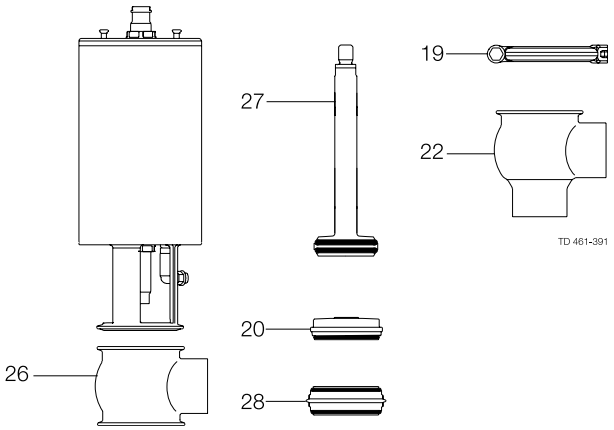
Step 1
CAUTION!
Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:
1. Complete valve, shut off valve or change-over valve (see steps 2a, 2b).
2. Delivery note.
3. Instruction Manual.

2a
Shut-off valve:
1. Complete actuator.
2. Bonnet (20).
3. Clamp (19).
4. Valve plug (23).
5. Valve body (22).



2b
Change-over valve:
1. Complete actuator.
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 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.

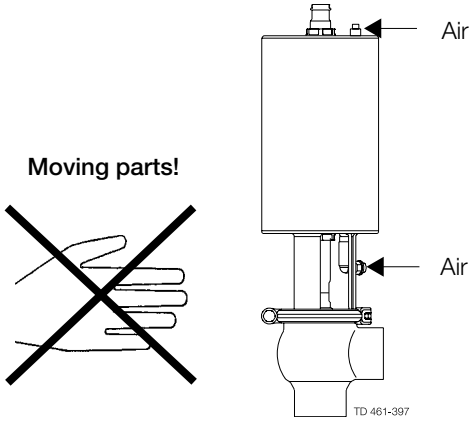
Step1

- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.

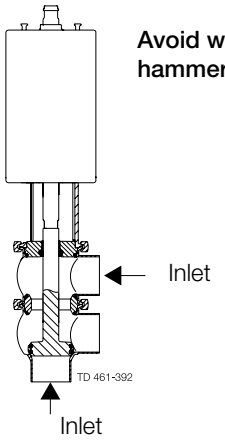
CAUTION!
Alfa Laval cannot be held responsible for incorrect installation.

Step 2

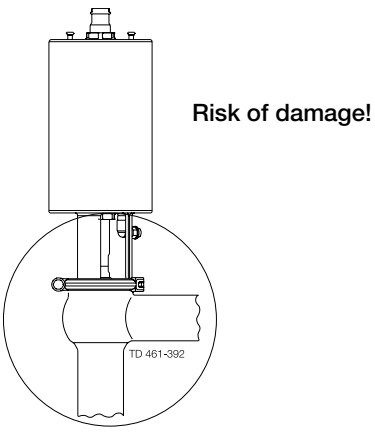
Never touch the moving parts if the actuator is supplied with compressed air.



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.

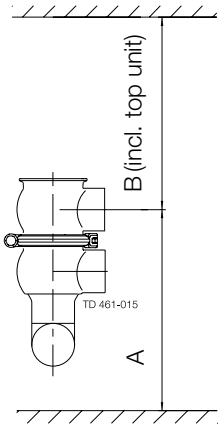


Study the instructions carefully.
The valve is supplied as separate parts to facilitate the welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

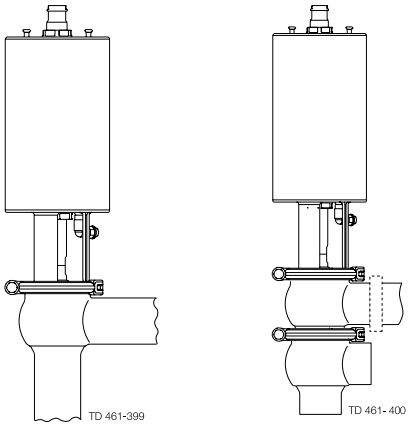
Step 1
Always install valves with more than one valve body so that the seals between the valve bodies can be replaced.
Do not weld more than one valve body into the system.

Valve size	A (mm)	B (mm)
DN25/25 mm	*	630
DN40/38 mm	*	700
DN50/51 mm	*	750
DN65/63.5 mm	*	740
DN80/76.1 mm	*	800
DN100/101.6 mm	*	790

***** Depending on body combination and piping solution.

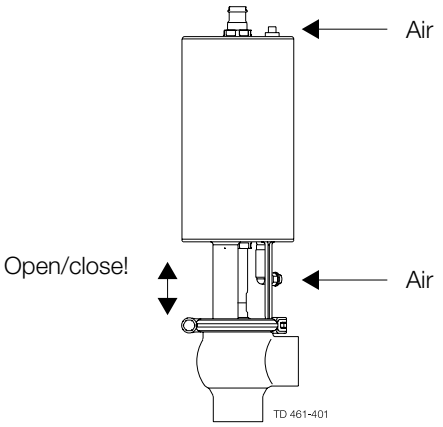


Step 2
Assemble the valve in accordance with the steps in section 4.4.
Pay special attention to the warnings!



Step 3
Pre-use check:
1. Supply compressed air to the actuator.
2. 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.

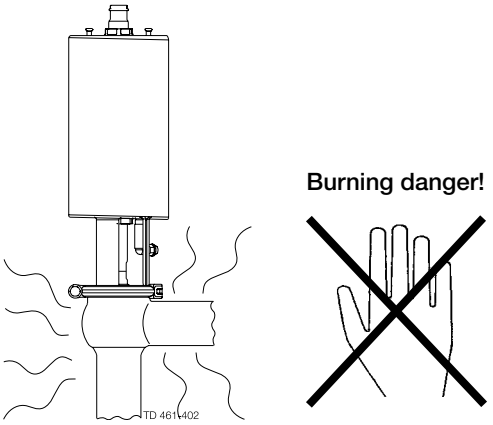
Step 1

- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.

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

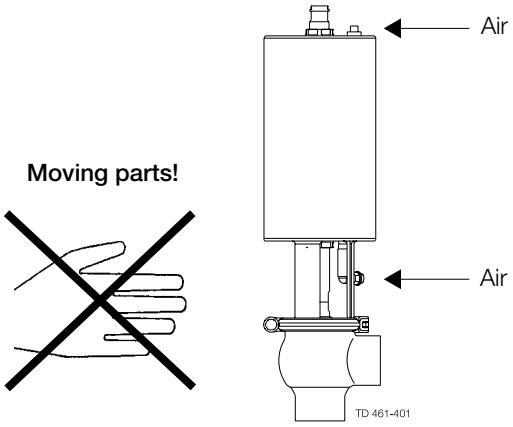
Step 2

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



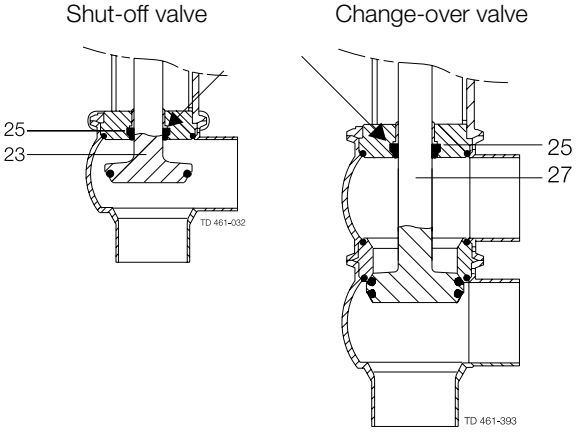
Step 3

Never touch the moving parts if the actuator is supplied with compressed air.



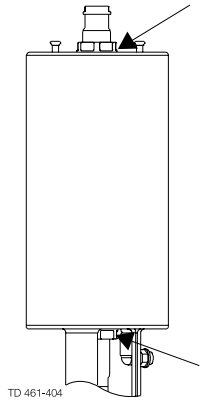
Step 4
Lubrication of valves:

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 actuator

1. Ensure smooth movement of the actuator (the actuator 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 - Throttle air release of solenoid in top unit
The valve does not open/close	- Product pressure exceeds actuator specification	- Replace with a high pressure actuator - Use auxiliary air on the spring side - Reduce product 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.

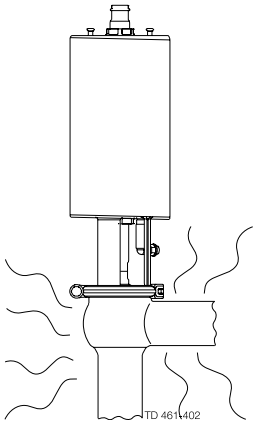
Caustic danger!

Always use rubber gloves!

Always use protective goggles!

Step 2

Never touch the valve or the pipelines when sterilizing.

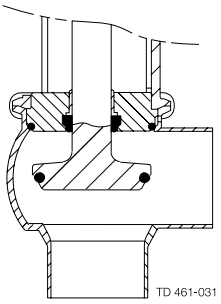


Burning danger!

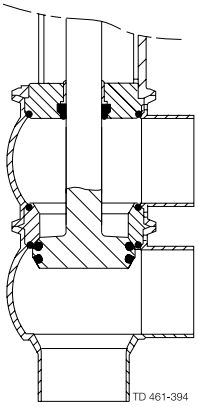
Step 3

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

Shut-off valve



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

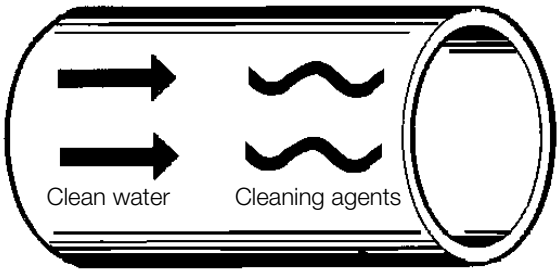
2. 0.5% by weight HNO_3 at 70° C

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.

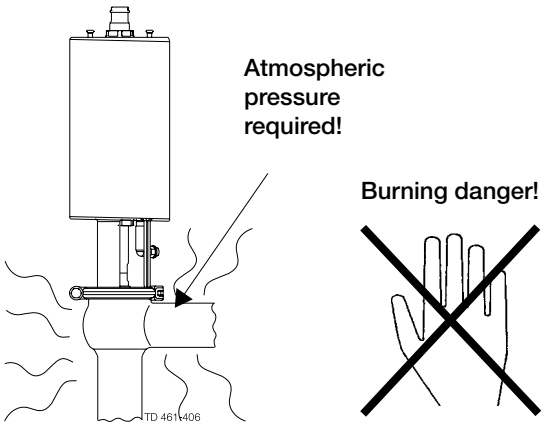
Step 1

- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release the compressed air after use.

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

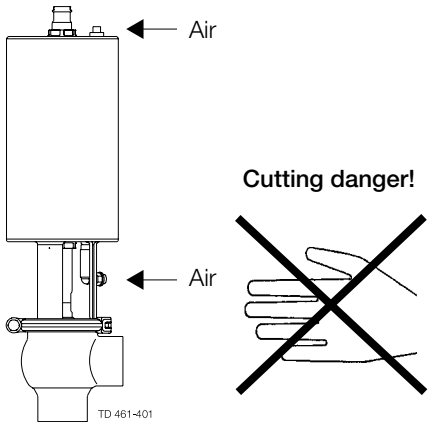
Step 2

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



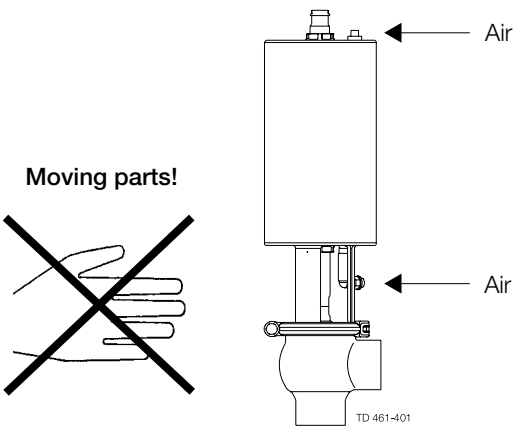
Step 3

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



Step 4

Never touch the moving parts if the actuator is supplied with compressed air.

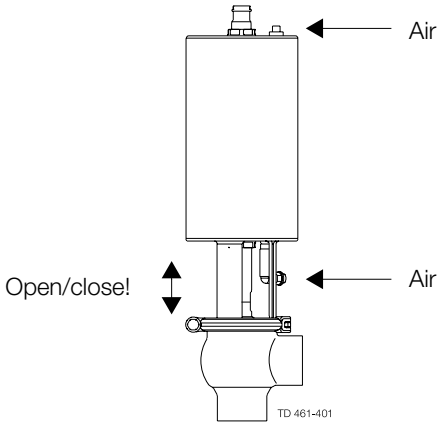


Maintain the valve regularly.
Study the instructions carefully.
Always keep spare rubber seals and lip seals stock.
Check the valve for smooth operation after service.

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	**Actuator bushings complete**
Preventive maintenance	**Replace after 12 months depending on working conditions**	**Replace after 5 years depending on working conditions**
Maintenance after leakage (leakage normally starts slowly)	**Replace at the end of the day**	**Replace when possible**
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**	- Regular inspection for leakage and smooth operation - Keep a record of the actuator - Use the statistics for planning of inspections **Replace after leakage**
Lubrication	**Before fitting** Klüber Paraliq GTE 703 or similar USDA H1 approved oil/grease	**Before fitting** Molykote Longterm 2 plus

Pre-use check:
1. Supply compressed air to the actuator.
2. Open and close the valve several times to ensure that it operates smoothly.
   Pay special attention to the warnings!



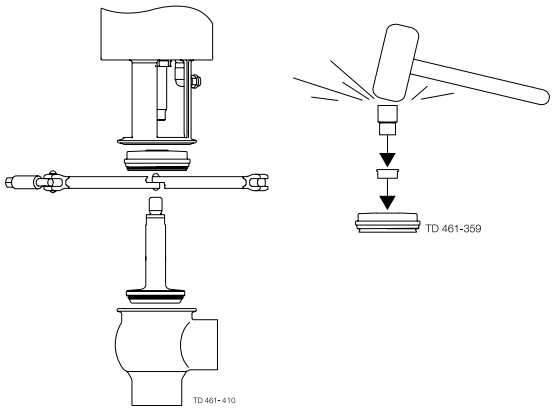
Recommended spare parts
Service kits (see chapter 6)

Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly.
NC = Normally closed.
NO = Normally open.
A/A = Air/air activated.

Step 1a
Shut-off valve:
1. Supply compressed air to the actuator (only NC).
2. Loosen and remove clamp.
3. Release compressed air (only NC).
4. Lift away the actuator.
5. Unscrew and remove valve plug.
6. Remove O-ring, lip seal and bushing in bonnet.
   (Use bushing tool and rubber mallet).

Pay special attention to the warnings!

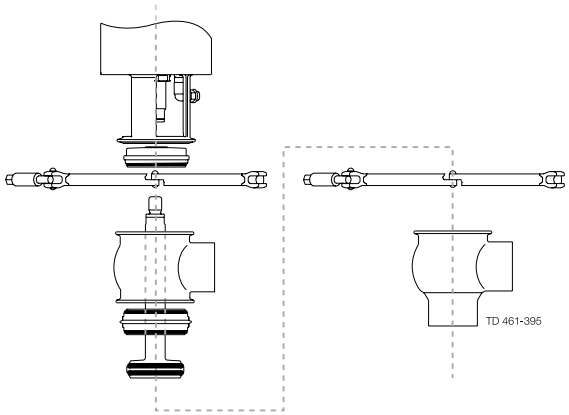
Note! For plug seal replacement please see section 4.3.



Step 1b
Change-over valve:
1. Supply compressed air to the actuator (only NC).
2. Loosen and remove lower clamp.
3. Release compressed air (only NC).
4. Lift away the actuator and upper valve body.
5. Supply compressed air to the actuator (only NO).
6. Unscrew and remove valve plug.
7. Release compressed air (only NO).
8. Remove seat and O-rings.
9. Loosen and remove upper clamp.
10. Remove upper valve body.
11. Remove O-ring, lip seal and bushing in bonnet.
    (Use bushing tool and rubber mallet. See drawing, step 1a).

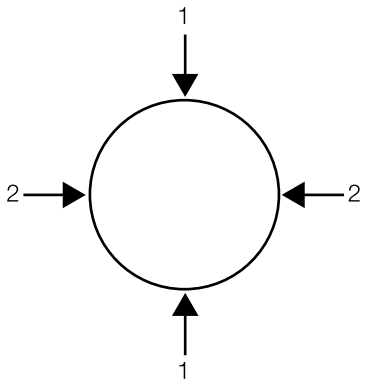
Pay special attention to the warnings!

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.

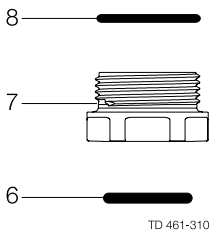


4.4 Assembly of valve

Reverse order of 4.2, Dismantling of valve.
Lubricate O-ring (21) and lip seal (25) with Klüber Paraliq GTE 703.

4.5 Actuator bushing replacement

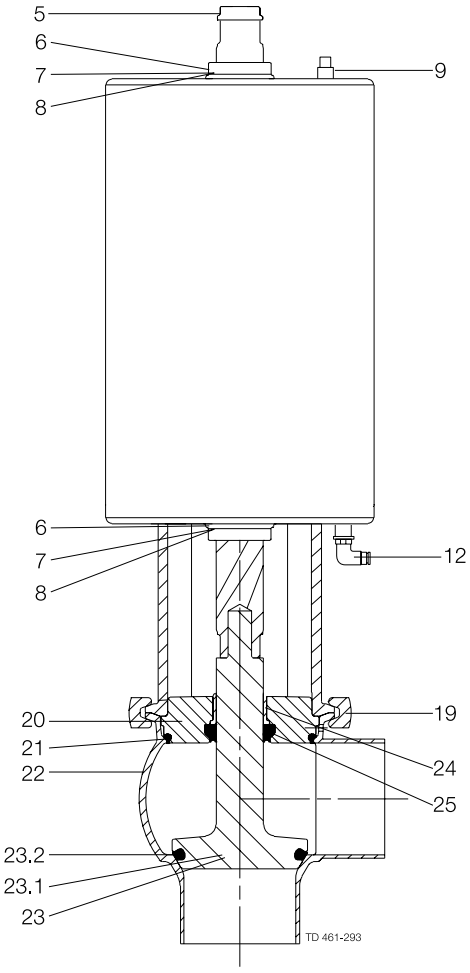
1. Unscrew and remove top and bottom bushings with O-rings.
2. Lubricate O-rings with Molykote Longterm 2 plus before fitting.
3. Fit bushings and O-rings. Be careful not to overtighten.



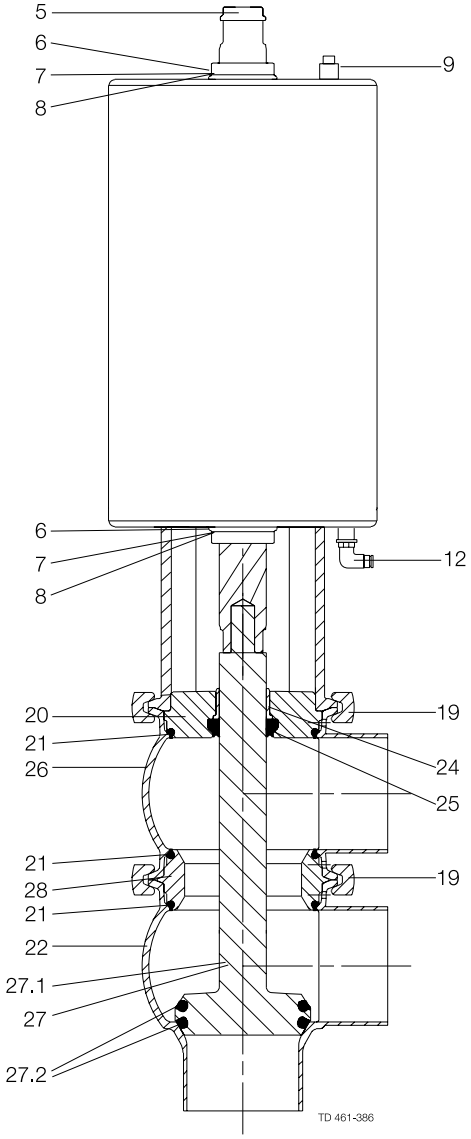
It is important to observe the technical data during installation, operation and maintenance.
Inform the personnel about the technical data.

Data - valve/actuator	
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)
Air pressure, actuator	500 to 700 kPa (5 to 7 bar)
Materials - valve/actuator	
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
Other seals	NBR

For parts lists please see section 6.1. The drawings include all items.



Shut-off valve



Change-over valve

6.1 *Unique* Single Seat Valve - Long Stroke - Shut-off DN/OD 25 mm/DN25 - DN/OD 101.6 mm/DN100

The parts list includes all items.

Parts List

Pos.	Qty.	Denomination
		Actuator, complete
5	1	Adapter
6 ●	2	Bushing
7 ●	2	O-ring
8 ●	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	1	Clamp
20	1	Bonnet
21 Δ	1	O-ring
24 Δ	1	Bushing
25 Δ	1	Lip seal
22	1	Valve body, lower, 2 ports
22	1	Valve body, lower, 3 ports
23	1	Plug, shut-off, complete
23.1	1	Plug, shut-off
23.2 Δ	1	Plug seal

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

Service Kits

Denomination	Item number
Product wetted parts (Shut-off)	
Service kit, actuator	9611-92-6500
DN/OD 25 mm / DN 25	
EPDM	9611-92-6501
HNBR	9611-92-6507
FPM	9611-92-6513
DN/OD 38 mm / DN 40	
EPDM	9611-92-6502
HNBR	9611-92-6508
FPM	9611-92-6514
DN/OD 51 mm / DN 50	
EPDM	9611-92-6503
HNBR	9611-92-6509
FPM	9611-92-6515
DN/OD 63.5 mm / DN 65	
EPDM	9611-92-6504
HNBR	9611-92-6510
FPM	9611-92-6516
DN/OD 76.1 mm / DN 80	
EPDM	9611-92-6505
HNBR	9611-92-6511
FPM	9611-92-6517
DN/OD 101.6 mm / DN 100	
EPDM	9611-92-6506
HNBR	9611-92-6512
FPM	9611-92-6518

6.1 *Unique* Single Seat Valve - Long Stroke - Change-over DN/OD 25 mm/DN25 - DN/OD 101.6 mm/DN100

The parts list includes all items.

Parts List

Pos.	Qty.	Denomination
		Actuator, complete
5	1	Adapter
6 ●	2	Bushing
7 ●	2	O-ring
8 ●	2	O-ring
9	1	Plug
12	1(2)	Air fitting
19	2	Clamp
20	1	Bonnet
21 Δ	3	O-ring
24 Δ	1	Bushing
25 Δ	1	Lip seal
28	1	Seat
26	1	Valve body, upper, 1 port
26	1	Valve body, upper, 2 ports
22	1	Valve body, lower, 2 ports
22	1	Valve body, lower, 3 ports
27	1	Plug, change-over, complete,
27.1	1	Plug, change-over
27.2 Δ	2	Plug seal

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

Service Kits

Denomination	Item number
Product wetted parts (Change-over)	
Service kit, actuator	9611-92-6500
DN/OD 25 mm / DN 25	
EPDM	9611-92-6579
HNBR	9611-92-6585
FPM	9611-92-6591
DN/OD 38 mm / DN 40	
EPDM	9611-92-6580
HNBR	9611-92-6586
FPM	9611-92-6592
DN/OD 51 mm / DN 50	
EPDM	9611-92-6581
HNBR	9611-92-6587
FPM	9611-92-6593
DN/OD 63.5 mm / DN 65	
EPDM	9611-92-6582
HNBR	9611-92-6588
FPM	9611-92-6594
DN/OD 76.1 mm / DN 80	
EPDM	9611-92-6583
HNBR	9611-92-6589
FPM	9611-92-6595
DN/OD 101.6 mm / DN 100	
EPDM	9611-92-6584
HNBR	9611-92-6590
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.