PROCESS EQUIPMENT

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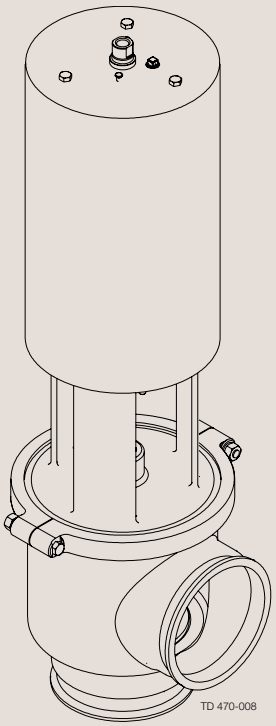
Instruction Manual

Unique 7000 Series 6-inch Valve



ESE00774ENUS1 2008-10

Tri-Clover®

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	6-inch	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

1. Safety 6
1.1 Important information 6
1.2 Warning signs 6
1.3 Safety precautions 7

2. Installation 8
2.1. Unpacking/Delivery 8
2.2. General installation 9
2.3. Welding 10

3. Operation 11
3.1 Operation 11
3.2 Trouble shooting 13
3.3 Recommended cleaning 14

4. Maintenance 16
4.1 General maintenance 16
4.2 Dismantling of valve 18
4.3 Plug seal replacement 18
4.4 Assembly of valve 18
4.5 Actuator bushing replacement 18

5. Technical data 19
5.1 Technical data 19

6. Parts List and Service Kits 21
6.1 Unique 7000 Series 6-inch Valve 21

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

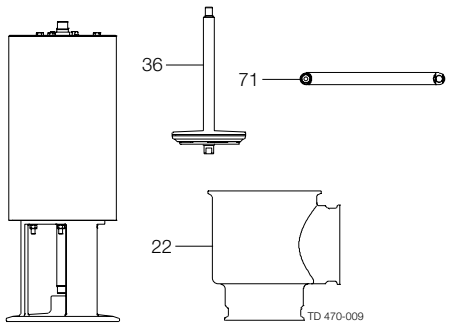
- **Always** read the technical data thoroughly (see chapter 5).
- **Always** release compressed air after use.
- **Never** service the valve when it is hot.
- **Never** service the valve with valve and pipelines under pressure.
- **Never** stick your fingers through the valve ports if the actuator is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

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

Check the delivery for:
1. Complete valve, shut off valve.
2. Delivery note.
3. Instruction Manual.

Step 2
Shut-off valve:
Complete actuator.
Clamp (71).
Valve plug (36).
Valve body (22).



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.

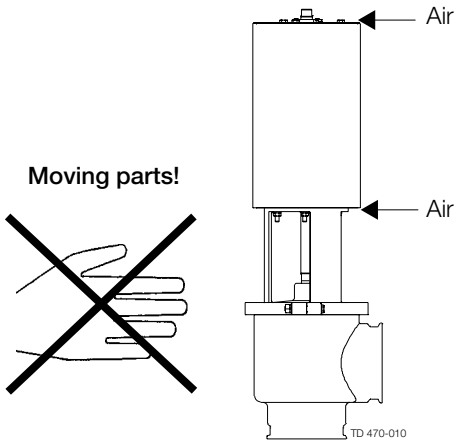
Step1

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

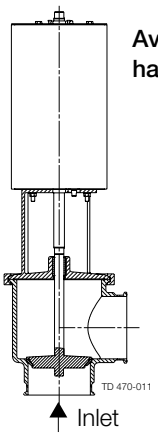
CAUTION!
Alfa Laval cannot be held responsible for incorrect installation.

Step 2

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

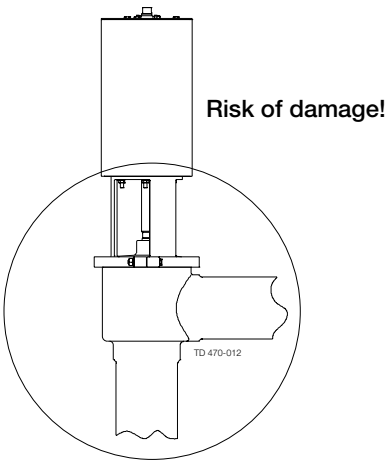


Step 3
It is recommended to install the valve so that the flow is against the closing direction to avoid water hammer.



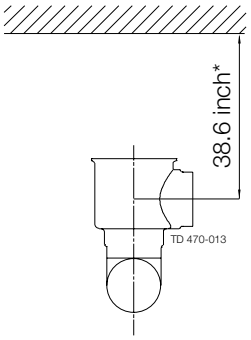
Step 4
Avoid stressing the valve.
Pay special attention to:

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



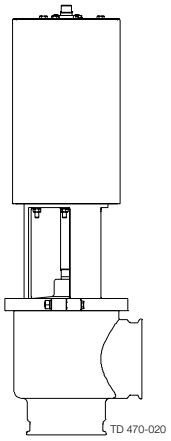
Study the instructions carefully.
The valve is supplied as separate parts to facilitate the welding.
The items refer to the parts list and service kits section.
Check the valve for smooth operation after welding.

Step 1



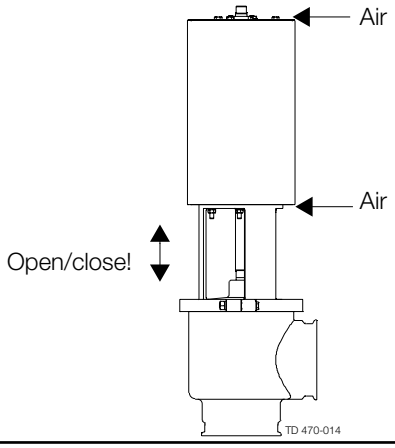
* If ThinkTop is mounted, add 9.8 inch.

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.

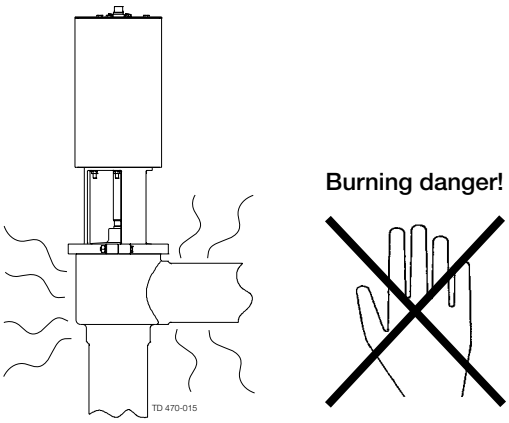
Step 1

- **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.

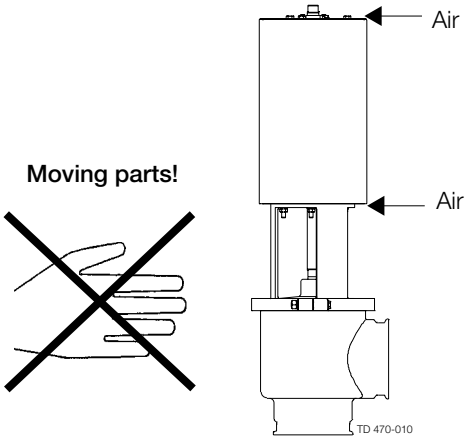
Step 2

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



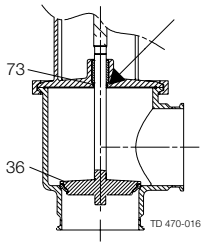
Step 3

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



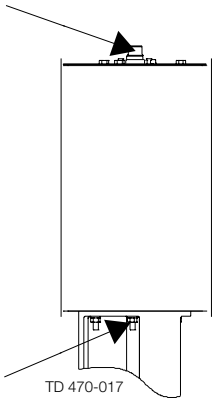
Step 4
Lubrication of valves:

1. Ensure smooth movement between O-ring (73) and plug stem (36).
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 O-ring and/or gasket	- Replace the seals - Replace with seals of a different rubber grade
Internal product leakage	- Worn or product affected plug seal	- Replace the seal/plug - Replace with a plug of a different rubber grade
	- Product deposits on the seat and/or plug	- Frequent cleaning
	- Product pressure exceeds actuator specification	- 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	- 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.

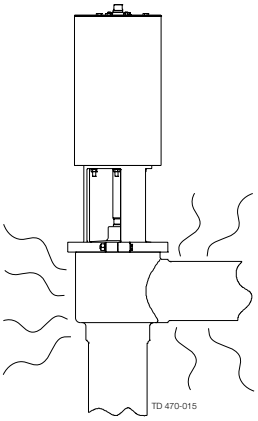
Caustic danger!

Always use rubber gloves!

Always use protective goggles!

Step 2

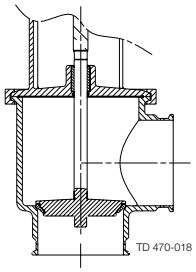
Never touch the valve or the pipelines when sterilizing.



Burning danger!

Step 3

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



Step 4

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

1. 1% by weight NaOH at 158°F

2.2 lb NaOH	+	26.4 gal water	=	Cleaning agent.
0.6 gal 33% NaOH	+	26.4 gal water	=	Cleaning agent.

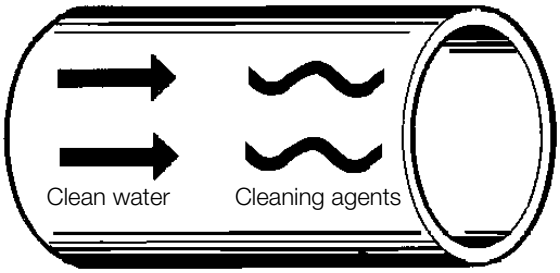
2. 0.5% by weight HNO_3 at 158°F

0.2 gal 53% HNO_3	+	26.4 gal 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.

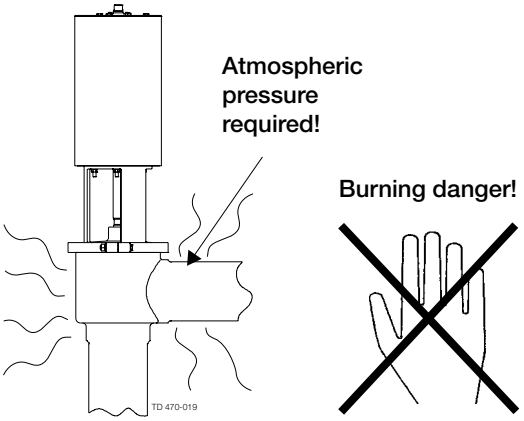
Step 1

- **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.

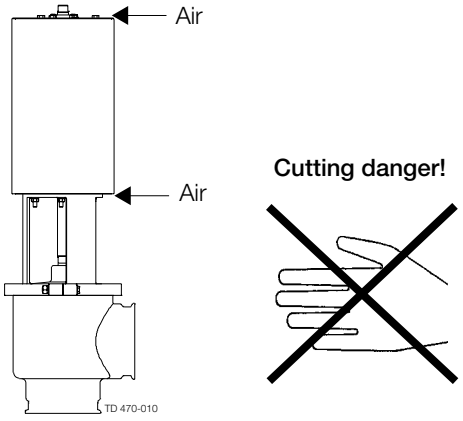
Step 2

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



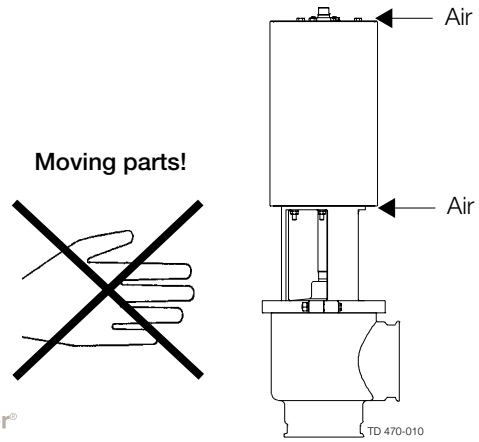
Step 3

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.

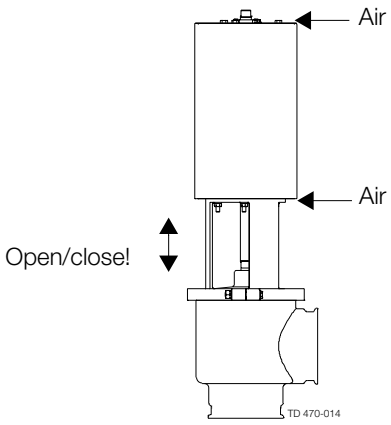


Maintain the valve regularly.
Study the instructions carefully.
Always keep spare rubber seals and lip seals stock.
Check the valve for smooth operation after service.

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)

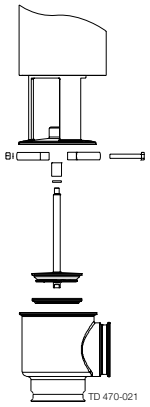
4.2 Dismantling of valve
4.3 Plug seal replacement
4.4 Assembly of valve
4.5 Actuator bushing replacement

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

4.2
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 gasket, O-ring and bushing in yoke.

Pay special attention to the warnings!

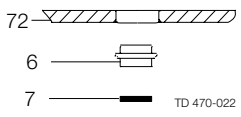
Note! For plug seal replacement please see section 4.3.



4.3
TR2 seat ring replacement
1. Place the plug element on a firm support.
2. Using a utility knife, partially AND CAREFULLY cut through the upper ring portion of the TR2 plug avoiding contact with stainless steel stem.
3. Force apart both cut ends of the plug for removal from stem.
4. TR2 plugs are installed by applying pressure. (Pressure can be applied by hand.)
5. Pressure until the TR2 plug snap on to the stem.
6. Examine seat assembly to be sure the TR2 plug is properly mounted, holding the seat assembly in one hand - rotate the TR2 plug. (For proper CIP cleaning the TR2 plug should turn freely on the stem.)

4.4
Assembly of valve
Reverse order of 4.2, Dismantling of valve.
Lubricate gasket (21) and O-ring (25) with Klüber Paraliq GTE 703.

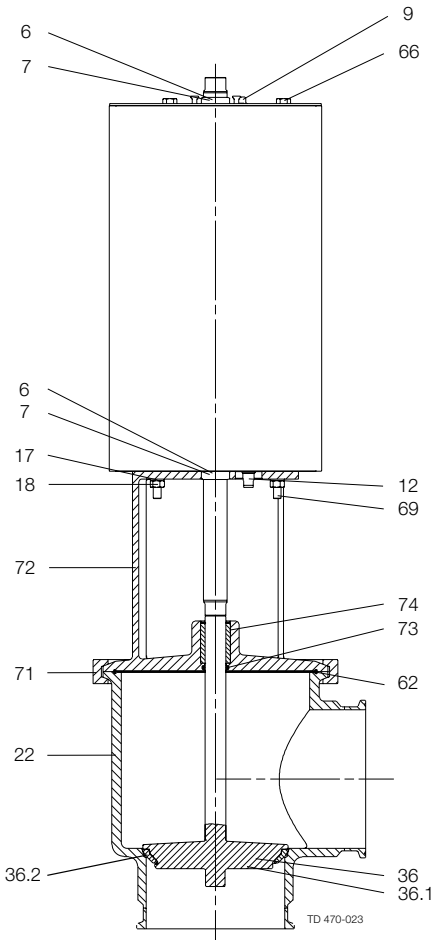
4.5
1. Unscrew and remove top plate and yoke.
2. Remove bushings and O-rings.
3. Lubricate O-rings with Molykote Longterm 2 plus before fitting.
4. Fit bushings and O-rings.



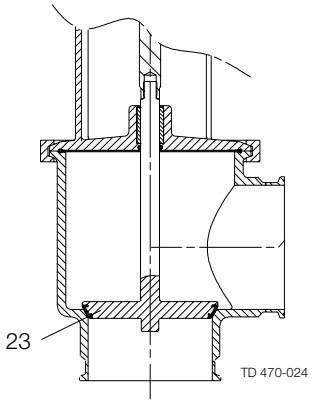
It is important to observe the technical data during installation, operation and maintenance.
Inform the personnel about the technical data.

Data - valve/actuator	
Max. product pressure	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)
	14° F to + 170° F (TR2 seal)
Air pressure, actuator	72.5 to 101.5 psi (500 to 700 kPa) (5 to 7 bar)
Materials - valve/actuator	
Product wetted steel parts	AISI 316L (internal Ra < 32 µ inch)
Other steel parts	AISI 304
Plug seal	EPDM / PTFE (TR2)
Optional elastomer plug seal	EPDM / Buna, SFY
Other product wetted seals	EPDM (standard)
Optional product wetted seals	Buna and SFY
Other seals	Buna

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

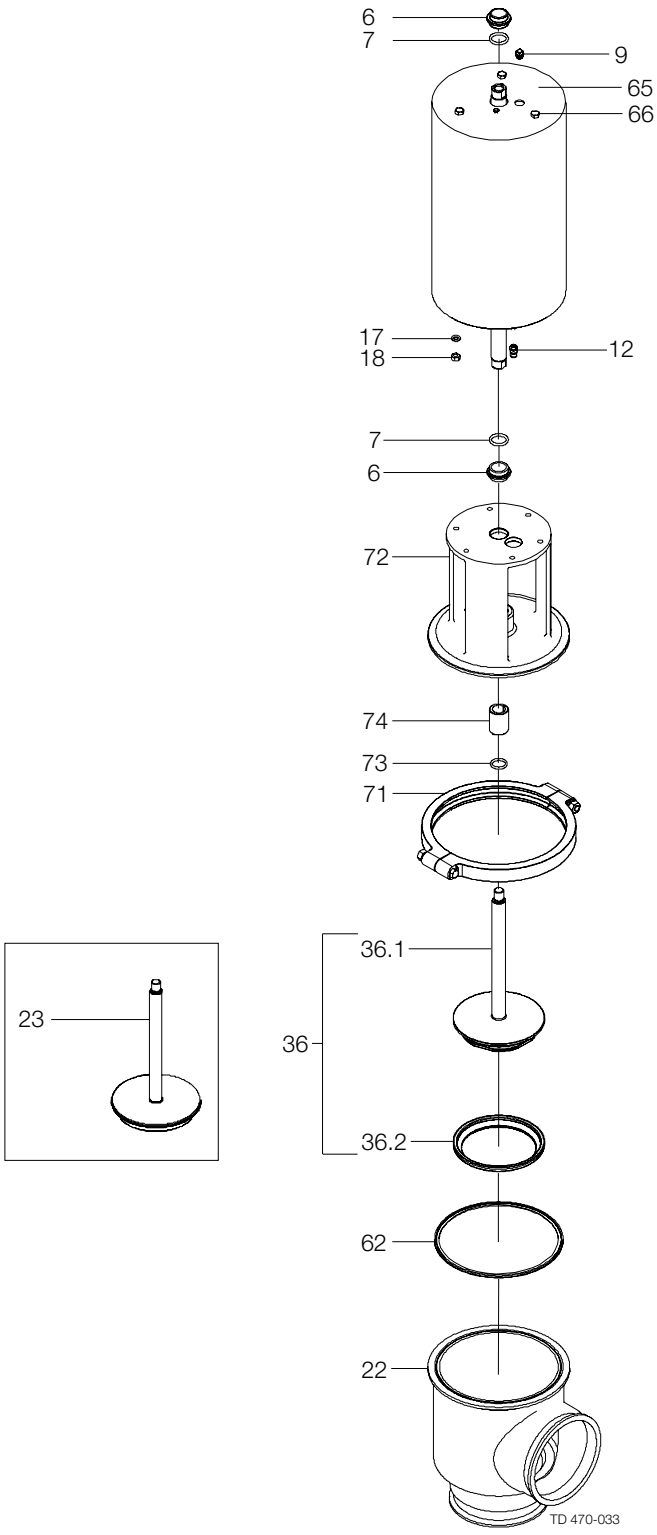


Shut-off valve (TR2)



Shut-off valve (elastomer)

This page shows an exploded drawing of Unique 7000 Series 6-inch Valve.



The parts list includes all items.

Parts List

Pos.	Qty.	Denomination
		Actuator, complete
6	2	Bushing
7	2	O-ring
9	1	Plug
12	1	Air fitting
17	6	Washer
18	6	Nut
22	1	Valve body
62 Δ	1	Gasket, Buna
	1	Gasket, EPDM
65		
66	3	Screw
69	6	Pin bolt
71	1	Clamp
72	1	Yoke
73 Δ	1	O-ring, EPDM
	1	O-ring, SFY
	1	O-ring, Buna
74	1	Bushing for yoke
		TR2 seal ring
36	1	Plug, complete
36.1	1	Plug
36.2 Δ	1	Plug seal, PTFE
		Low profile plug
23	1	LP plug, complete

Δ: Service kits - EPDM
Δ: Service kits - Buna
Δ: Service kits - SFY/EPDM

Service Kits

Denomination	Item number
TR2	
Service kit, EPDM	9611-92-6839
Service kit, SFY/EPDM	9611-92-6840
Service kit, Buna	9611-92-6841
Elastomer	
Service kit, EPDM	9611-92-6842
Service kit, SFY/EPDM	9611-92-6843
Service kit, Buna	9611-92-6844

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.