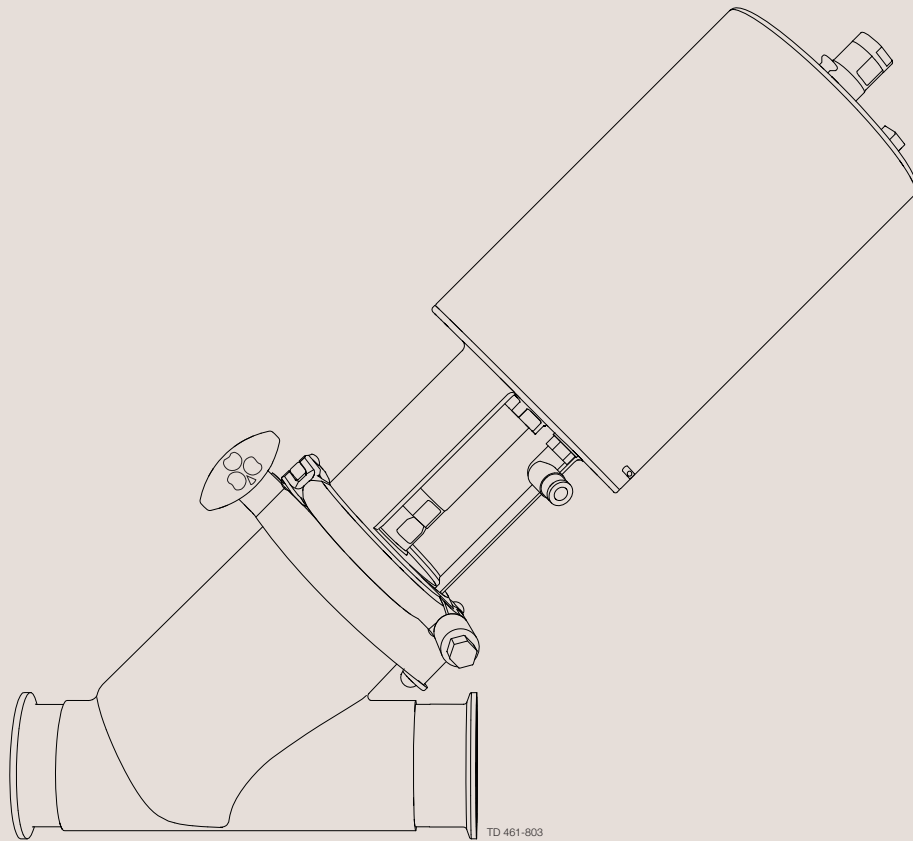




Instruction Manual

Unique Single Seat Valve Y-body



ESE00691-EN2 2011-10

Original manual

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

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1 EC 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 Single Seat Valve

Denomination

Y-body

Type

Year

is in conformity with the following directives:

- 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

Company



Signature

Designation



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

2.1 Important information

Always read the manual before using the valve!

WARNING

Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION

Indicates that special procedures must be followed to avoid damage to the valve.

NOTE

Indicates important information to simplify or clarify procedures.

2.2 Warning signs

General warning:



Caustic agents:



2 Safety

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.

2.3 Safety precautions

Installation:

Always read the technical data thoroughly (See chapter 6 Technical data)

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 6 Technical data)

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 6 Technical data)

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



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

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.

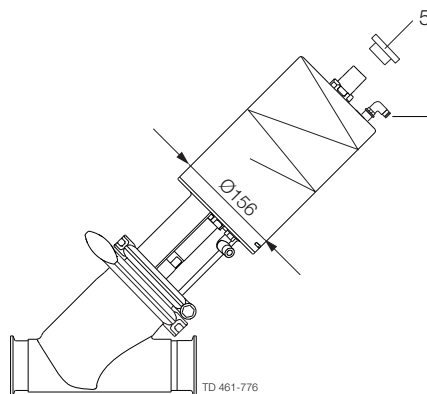


WARNING!

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 adapter” (pos. 5). Tighten the “steel adapter” 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.



Max. 3 bar (43.5 PSI) “support air” on spring side

Ø156 (6 1/7 inch)

3 Installation

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, if it is supplied with fittings.

3.1 Unpacking/delivery

Step 1

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

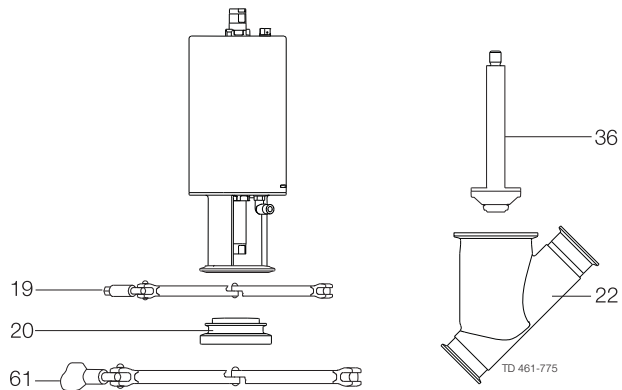
1. Complete valve, shut off valve (RA) or change-over valve (RA) (see steps 2a, 2b, 2c and 2d).
 2. Delivery note.
 3. Instruction Manual
-

Step 2

2

Complete actuator:

1. Bonnet (20).
2. Upper clamp (19).
3. Valve plug (36).
4. Valve body (22).
5. Lower clamp (61)



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!

3.2 General installation

Step 1



Always read the technical data thoroughly.
(See chapter 5)



Always release compressed air after use.

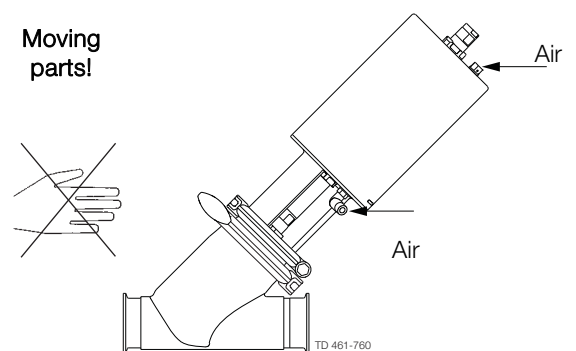
CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

Step 2



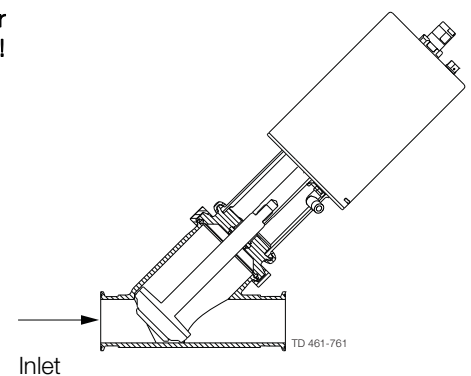
Never touch the moving parts if the actuator is supplied with compressed air.



Step 3

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

Avoid water hammering!



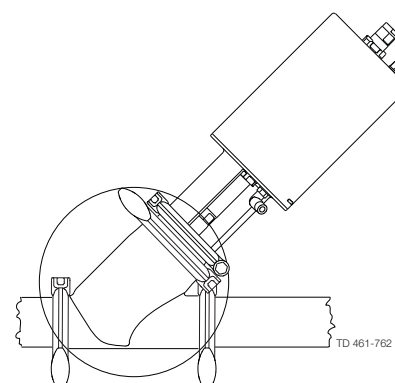
Step 4

Avoid stressing the valve.

Pay special attention to:

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

Risk of damage!



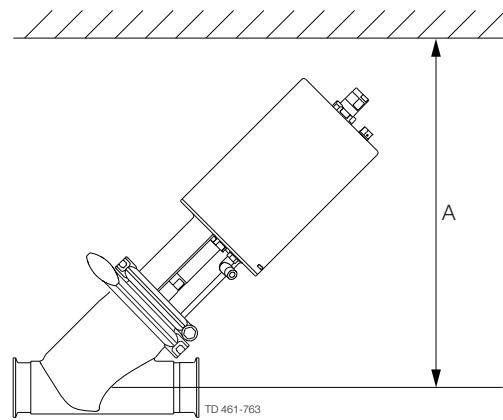
3 Installation

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

3.3 Welding

Step 1

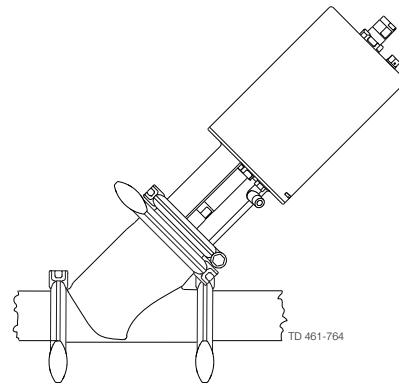
Valve size	A (mm)
DN50/51 mm	478
DN65/63.5 mm	490
DN80/76.1 mm	564
DN100/101.6 mm	605



A = Incl. top unit

Step 2

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

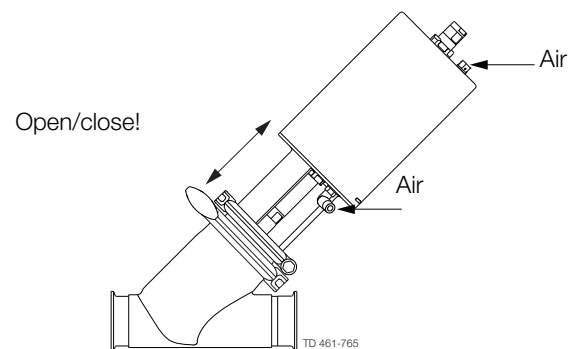


Step 3

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.

The items refer to the parts list and service kits section.

3.4 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
-

4 Operation

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.

4.1 Operation

Step 1



Always read the technical data thoroughly.
(See chapter 5.)



Always release compressed air after use.

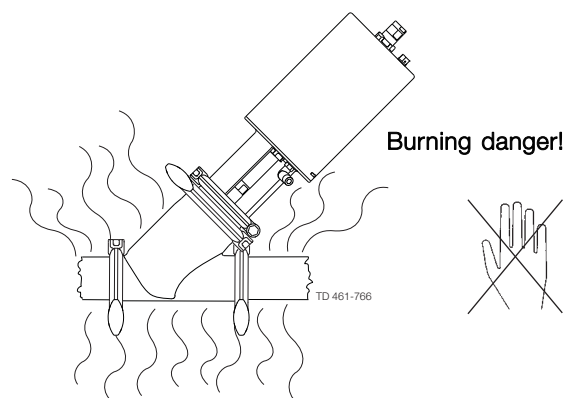
CAUTION

Alfa Laval cannot be held responsible for incorrect operation.

Step 2



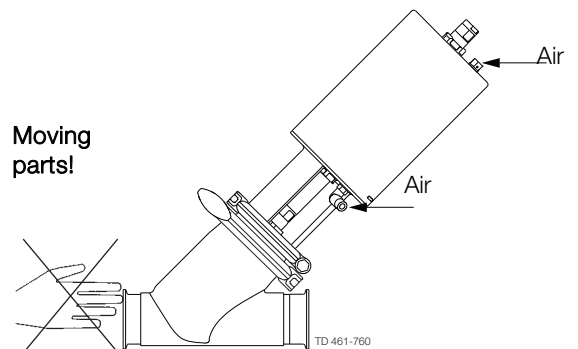
Never touch the valve or the pipelines when processing hot liquids
or when sterilizing.



Step 3



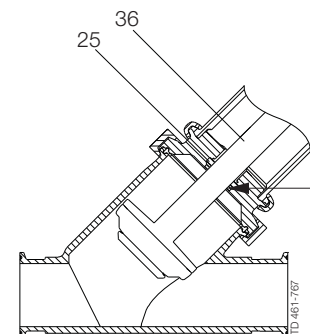
Never touch the moving parts if the actuator is supplied with
compressed air.



Step 4

Lubrication of valves:

1. Ensure smooth movement between lip seal (25) and plug stem (367).
2. Lubricate with Klüber Paraliq GTE 703 if necessary (see section 4.1).

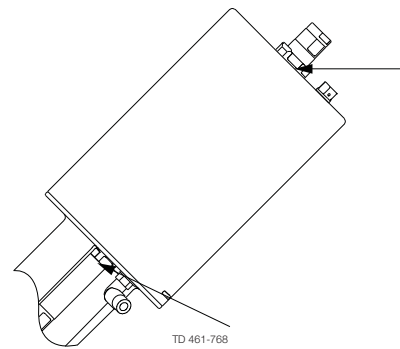


*Study the instructions carefully and pay special attention to the warnings!
Ensure that the valve operates smoothly.
The items refer to the parts list and service kits section.*

Step 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.



4 Operation

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

4.2 Troubleshooting

NOTE!

Study the maintenance instructions carefully before replacing worn parts. - See section 4.11

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 (do not exceed 3 bar)- Reduce product pressure
Water hammer	The flow direction is the same as the closing direction	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- 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.
 HNO₃ = Nitric acid.

4.3 Recommended cleaning

Step 1



Always handle lye and acid with great care.

Caustic danger!



Always use
rubber gloves!

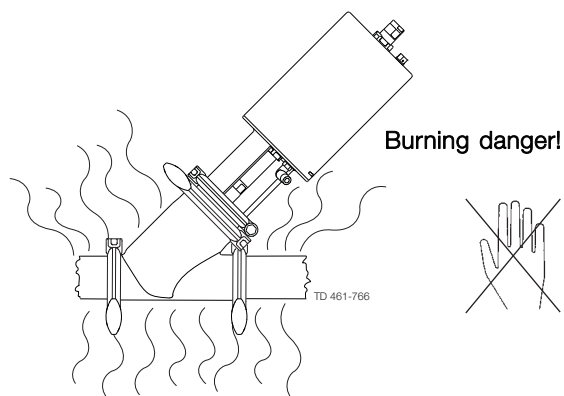


Always use
protective goggles!

Step 2

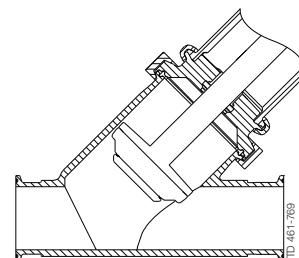


Never touch the valve or the pipelines when sterilizing.



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 chlorides.

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 HNO₃ at 70° C

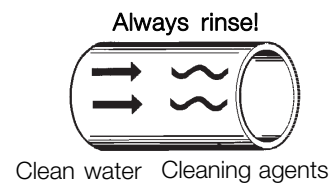
0.7 l
53% HNO₃ + 100 l
water = Cleaning agent.

4 Operation

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 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.



Step 6

NOTE

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

5.1 General maintenance

Step 1



Always read the technical data thoroughly.
(See chapter 5.)



Always release compressed air after use.

NOTE

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

Step 2

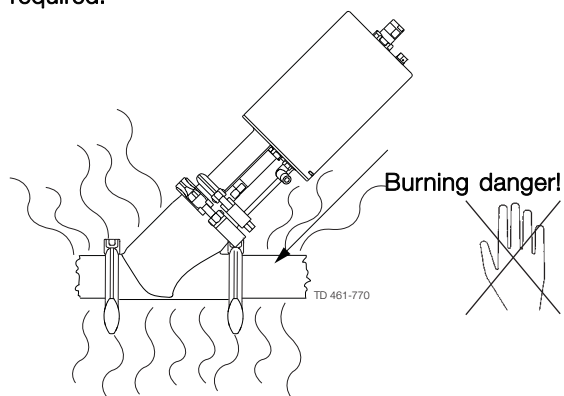


Never service the valve when it is hot.



Never service the valve with valve and pipelines under pressure.

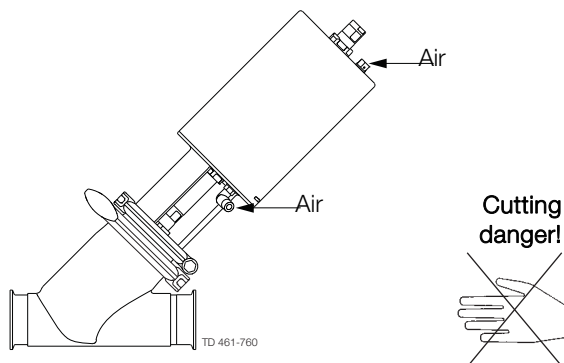
Atmospheric pressure required!



Step 3



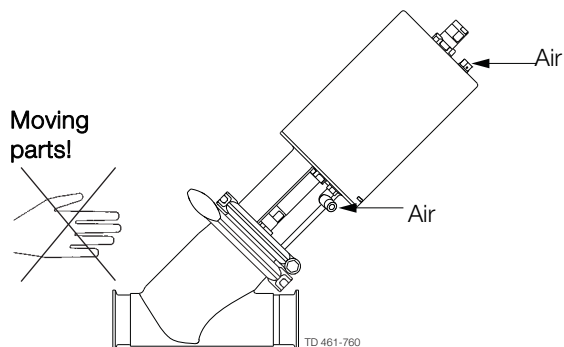
Never stick your fingers through the valve ports if the actuator is supplied with compressed air.



Step 4



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



5 Maintenance

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.

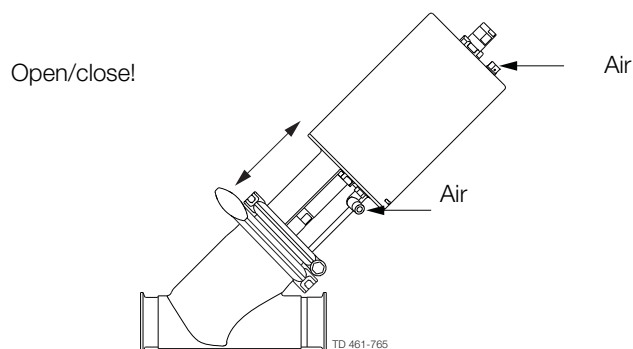
Below are some guidelines for maintenance and lubrication intervals. Please note that the guidelines are for normal working conditions in one shift.

	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	<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	<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 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.

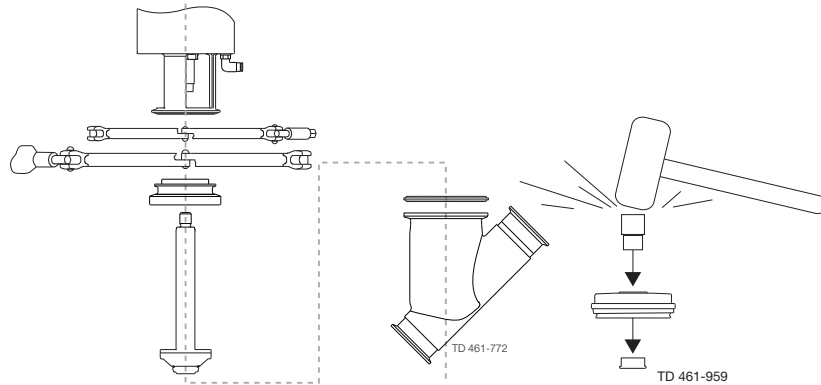
A/A = Air/air activated.

5.2 Dismantling of valve

Step 1

1 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. Remove body gasket.
6. Unscrew and remove valve plug.
7. Loosen and remove upper clamp.
8. Remove O-ring, lip seal and bushing in bonnet.
(Use bushing tool and rubber mallet. See drawing).



Note!

Be careful not to damage the bushing.

Pay special attention to the warnings!

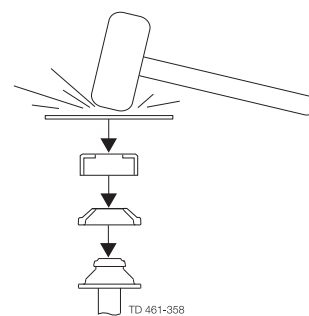
4.3 TR2 seal ring replacement:

Note! For plug seal replacement

please see section 4.3.

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 uniform pressure on all sides.
(Pressure can be applied by using the seal assembly tool).
5. Using a piece of metal and a rubber mallet, place a precise tap to madke the TR2 plug snap on to the stem. Reverse the tool and tap again to secure proper fit.
6. Examine seal assembly to be sure the TR2 plug is properly mounted, holding the seal assembly in one hand - rotate the TR2 plug.
(For proper CIP cleaning the TR2 plug should turn freely on the stem.)

For more explicit instructions, please refer to the maintenance video.



5 Maintenance

Study the instructions carefully.

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

AVA = Air/air activated.

Service tool: See Spare Parts.

5.4 Assembly of valve

Reverse order of 4.2, Dismantling of valve.

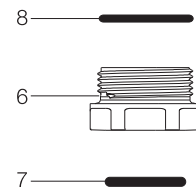
Lubricate gasket (62) and lip seal (25) with Klüber Paraliq GTE 703.

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

If there are vibrations in the pipeline Alfa Laval recommend to use loctite nr. 243.

5.5 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. Tighten brushing with a torque = 10Nm.
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.*

6.1 Technical data

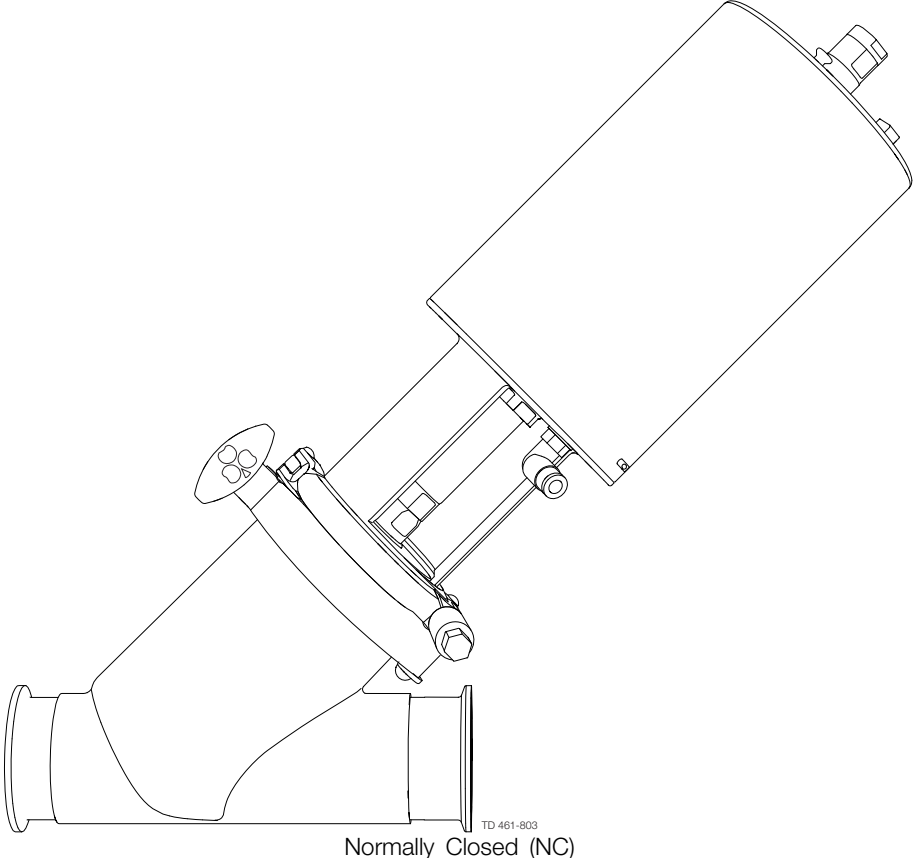
Data - valve/actuator	
Max. product pressure	1000 kPa (10 bar).
Min. product pressure	Full vacuum (depending on product specifications).
Temperature range	-10° C to + 140° C (standard EPDM seal).
Air pressure, actuator	500 to 700 kPa (5 to 7 bar).
Materials - valve/actuator	
Product wetted steel parts	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.

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.

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

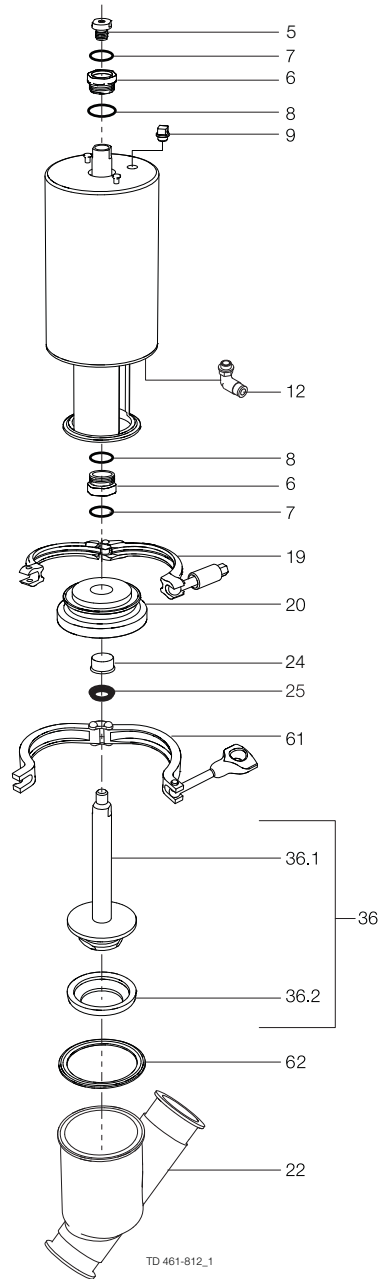
7.1 Drawing



7 Parts list and Service Kits

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

7.2 Unique Single Seat Valve - Y-body



7 Parts list and Service Kits

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

Parts list

Pos.	Qty	Denomination
		Actuator
		Lip seal set (10 pcs.) EPDM
		Lip seal set (10 pcs.) HNBR
		Lip seal set (10 pcs.) FPM
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
22	1	Valve body
24	1	Bushing
25 ♦	1	Lip seal
36	1	Plug, complete
36.1	1	Plug
36.2 ♦	1	Plug seal, PTFE
61	1	Clamp, body
62 ♦	1	Gasket

Service kits

Denomination	2" 51 mm	2½" 63.5 mm	3" 76.1 mm	4" 101.6 mm
--------------	-------------	----------------	---------------	----------------

Service kit for Actuator

□ Service kit	9611-92-6500	9611-92-6500	9611-92-6500	9611-92-6500
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Service kit for Product wetted parts, standard

♦ Service kit, EPDM	9611-92-6815	9611-92-6816	9611-92-6817	9611-92-6818
♦ Service kit, HNBR/NBR	9611-92-6819	9611-92-6820	9611-92-6821	9611-92-6822
♦ Service kit, FPM	9611-92-6823	9611-92-6824	9611-92-6825	9611-92-6826

Parts marked with □♦ are included in the service kits.

Recommended spare parts: Service kits.

TD-900-480/1

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.

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