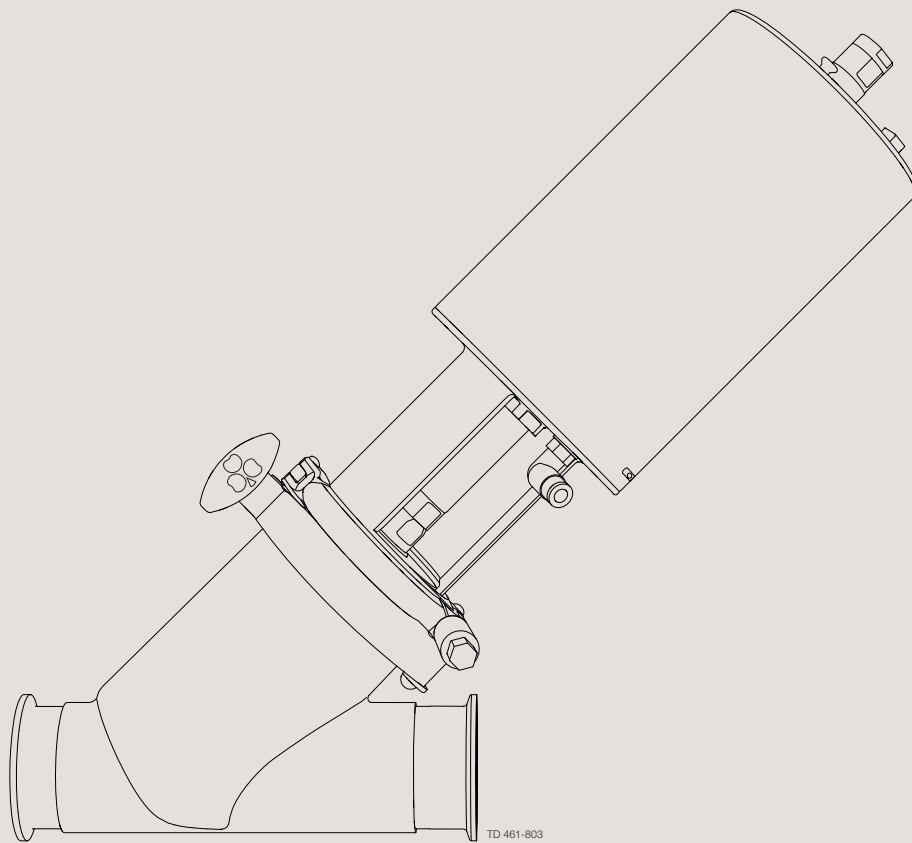




# Instruction Manual

## Unique Single Seat Valve Y-body



ESE00691-EN5 2016-03

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

Revision of Declaration of Conformity 2009-12-29

The Designated Company

Alfa Laval Kolding A/S

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Valve

Designation

Unique SSV LS PN10

Type

From serial number 5099880 to 29999999999

is in conformity with the following directive with amendments:

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive 2014/68/EU category 1 and subjected to assessment procedure Module A.

The person authorised to compile the technical file is the signer of this document

Global Product Quality Manager  
Pumps, Valves, Fittings and Tank Equipment

Title

Lars Kruse Andersen

Name

Kolding

Place

2013-12-03

Date

Signature



*Unsafe practices and other important information are emphasised in this manual.  
Warnings are emphasised 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 summarised on this page.

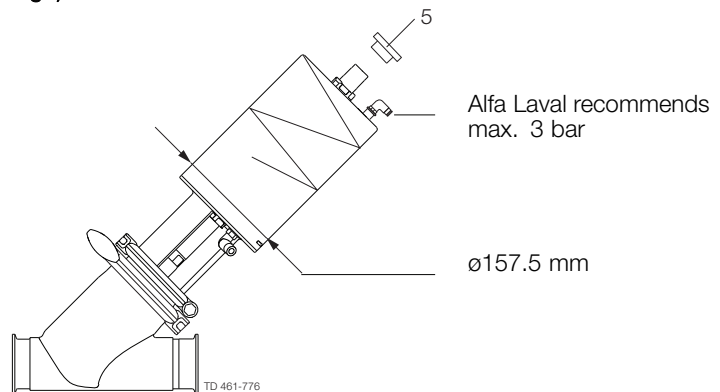
Pay special attention to the instructions below so that severe personal injury and/or damage to the valve are avoided.

### 2.3 Safety precautions

#### Actuators marked with year 2012 (new actuator design):

Alfa Laval recommends not to exceed 3 bar support air on the spring side in all the Unique SSV actuators, to ensure 10 bar product pressure without leakage.

Plastic adapter (pos. 5) is always used on the new design.



#### Actuators marked with year 2006-2011 (old actuator design):

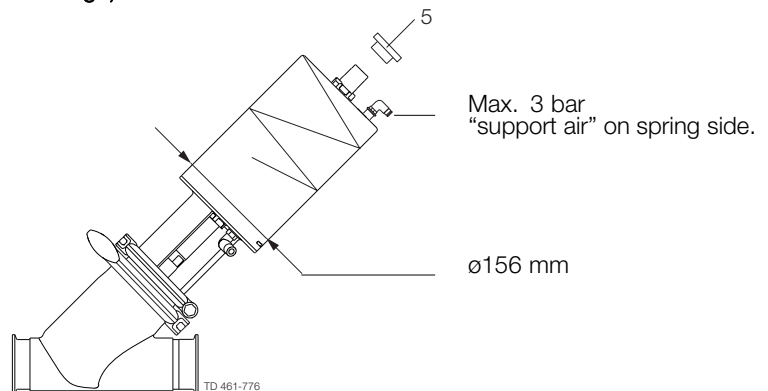


#### WARNING!

When using "support air" on spring side in all the Unique SSV actuators, the pressure must **NOT** exceed 3 bar.

When using Unique SSV actuators with ø156 mm with support air, **always** use the "steel adapter" (pos. 5). Tighten the "steel adapter" with torque of 30 Nm and use Loctite 243.

The actuator with ø156 mm is mainly used on valves ISO76/DN80 – ISO101/DN100. The outer actuator diameter = ø156 mm.



All warnings in the manual are summarised 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 6 Technical data)  
**Always** release compressed air after use  
**Never** touch moving parts if the actuator is supplied with compressed air  
**Never** touch the valve or the pipelines when processing hot liquids or when sterilising  
**Never** dismantle the valve with valve and pipelines under pressure  
**Never** dismantle the valve when it is hot  
**Never** cut the actuator open, due to spring under load - if marked with this warning



---

### 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 sterilising  
**Never** touch moving parts if the actuator is supplied with compressed air  
**Always** rinse well with clean water after 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 moving parts if the actuator is supplied with compressed air  
**Never** cut the actuator open, due to spring under load - if marked with this warning



---

### Transportation:

**Always** ensure that compressed air is released  
**Always** ensure that all connections are disconnected before attempting to remove the valve from the installation  
**Always** drain liquid out of valves before transportation  
  
**Always** use predesigned lifting points if defined  
**Always** ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available, it must be used

### 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:

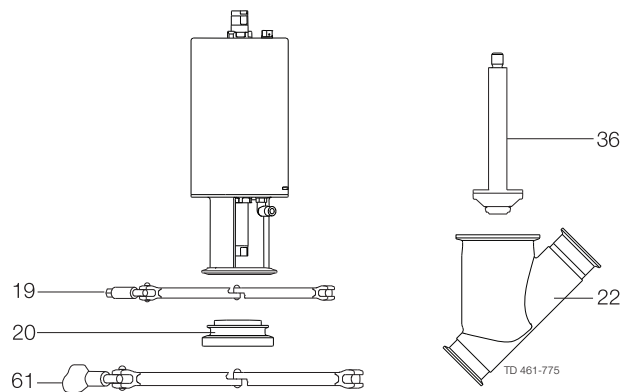
1. Complete valve, shut-off valve (RA) or change-over valve (RA) (see steps 2a, 2b, 2c and 2d).
2. Delivery note.
3. Instruction Manual

##### 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 damage.  
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 carefully.  
(See chapter 5)



**Always** release compressed air after use.

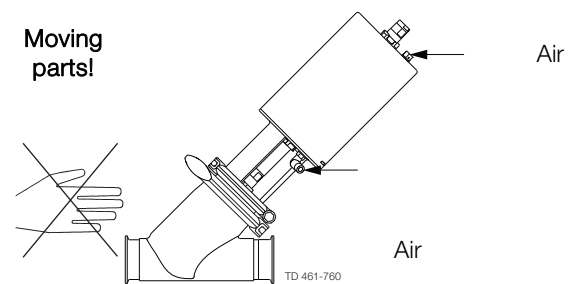
### CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

### Step 2



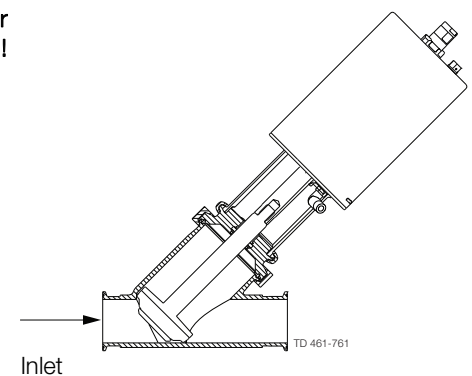
**Never** touch moving parts if the actuator is supplied with compressed air.



### Step 3

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

**Avoid water hammering!**



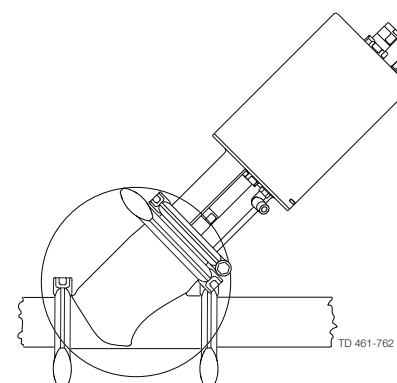
### Step 4

Avoid stressing the valve.

**Pay special attention to:**

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

**Risk of damage!**



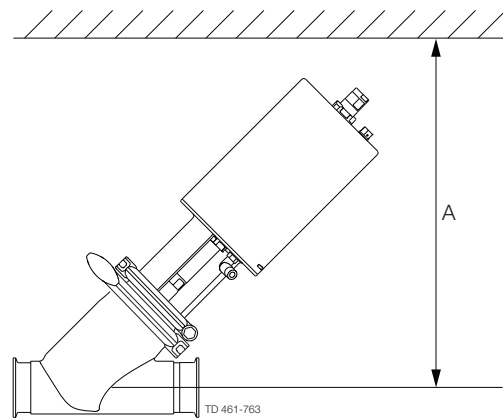
### 3 Installation

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

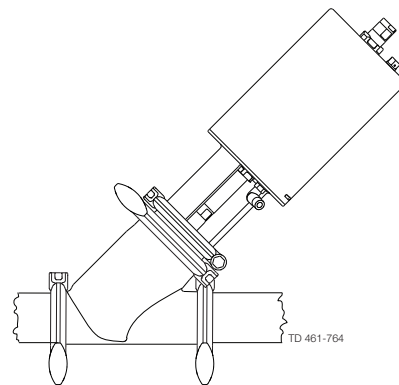


A = Incl. top unit

##### Step 2

Assemble the valve in accordance with the steps in section 5.4 Valve assembly.

**Pay special attention to the warnings!**

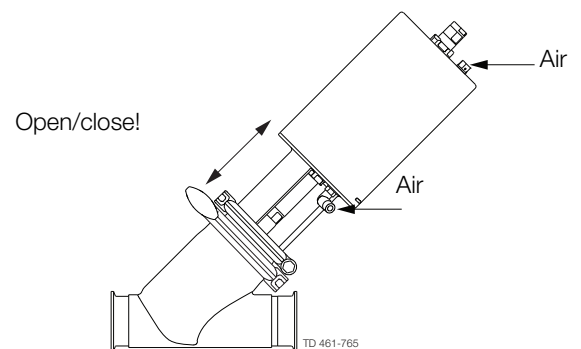


##### Step 3

###### 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 wearing 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 wearing parts must be disposed of in accordance with local regulations

- **Scrapping**

- At end of use, the equipment must be recycled in accordance with the relevant local regulations. Besides 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 your local Alfa Laval sales company. If the actuator is marked with a danger warning, do not attempt to cut the actuator open.
-

## 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 carefully.  
(See chapter 6 Technical data).



**Always** release compressed air after use.

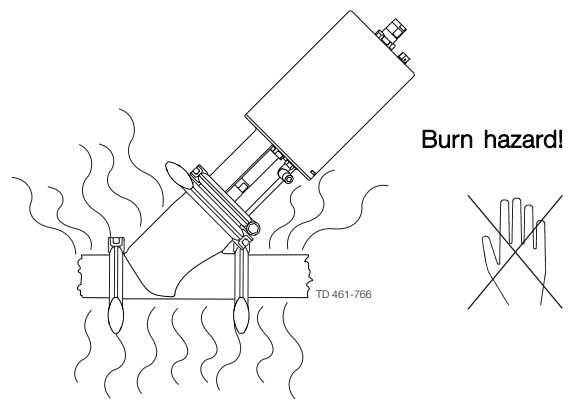
#### CAUTION

Alfa Laval cannot be held responsible for incorrect operation.

#### Step 2



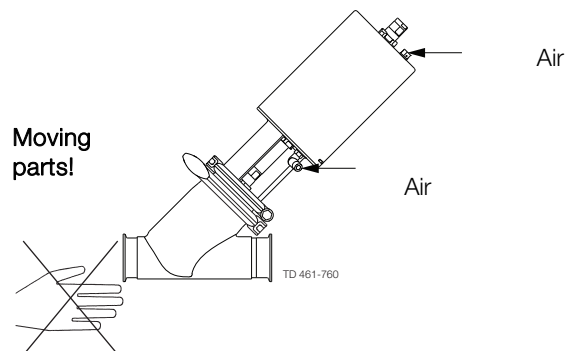
**Never** touch the valve or the pipelines when processing hot liquids or when sterilising.



#### Step 3



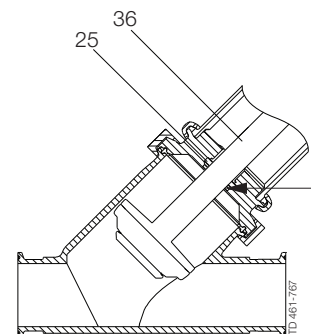
**Never** touch moving parts if the actuator is supplied with compressed air.



#### Step 4

##### Lubrication of valves:

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



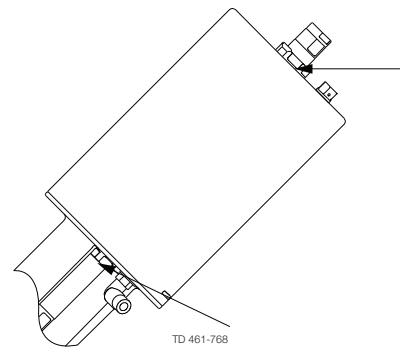
*Study the instructions carefully and pay special attention to the warnings!  
Ensure that the valve operates smoothly.  
The items refer to the parts list and service kits section.*

---

### Step 5

#### Lubrication of actuator

1. Ensure smooth movement of the actuator (the actuator is lubricated before delivery).
2. Lubricate all seals 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 damaged lip seal and/or O-ring	<ul style="list-style-type: none"><li>- Replace the seals</li><li>- Replace with seals of a different rubber grade</li></ul>
Internal product leakage	<ul style="list-style-type: none"><li>- Worn or product affected plug seal</li><li>- Product deposits on the seat and/or plug</li><li>- Product pressure exceeds actuator specification</li></ul>	<ul style="list-style-type: none"><li>- Replace the seal</li><li>- Replace with a seal of a different rubber grade</li><li>- Frequent cleaning</li><li>- Replace with a high pressure actuator</li><li>- Use auxiliary air on the spring side (do not exceed 3 bar). Alfa Laval article number = 9611995903. See section and section ,</li><li>- Reduce product pressure</li></ul>
Water hammer	The flow direction is the same as the closing direction	<ul style="list-style-type: none"><li>- The flow direction should be against the closing direction. See section ,</li><li>- Throttle air release of solenoid in top unit</li></ul>
The valve does not open/close	Product pressure exceeds actuator specification	<ul style="list-style-type: none"><li>- Replace with a high pressure actuator</li><li>- Reduce product pressure</li><li>- Use auxiliary air on the spring side. Always use the pressure relief fittings (3 bar) on support side. Alfa Laval article number = 9611995903</li></ul>

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<sub>3</sub> = Nitric acid.

### 4.3 Recommended cleaning

#### Step 1



**Always** handle lye and acid with great care.

**Caustic danger!**



**Always** use  
rubber gloves!

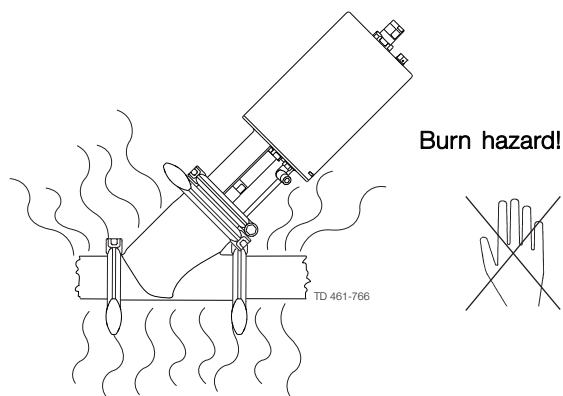


**Always** use  
protective goggles!

#### Step 2



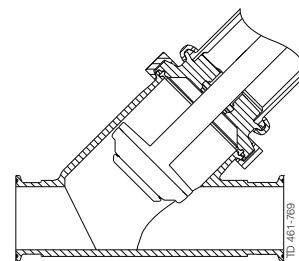
**Never** touch the valve or the pipelines when sterilising.



**Burn hazard!**

#### 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 HNO<sub>3</sub> at 70° C

0.7 l  
53% HNO<sub>3</sub> + 100 l  
water = Cleaning agent.

## 4 Operation

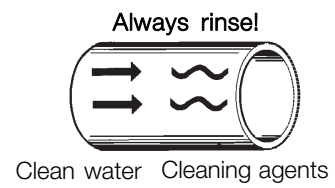
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The valve is designed for cleaning in place (CIP). CIP = Cleaning In Place.  
Study the instructions carefully and pay special attention to the warnings!  
NaOH = Caustic Soda.  
HNO<sub>3</sub> = Nitric acid.

---

### 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 off 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 carefully.  
(See chapter 5.)



Always release compressed air after use.

NOTE

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

Step 2

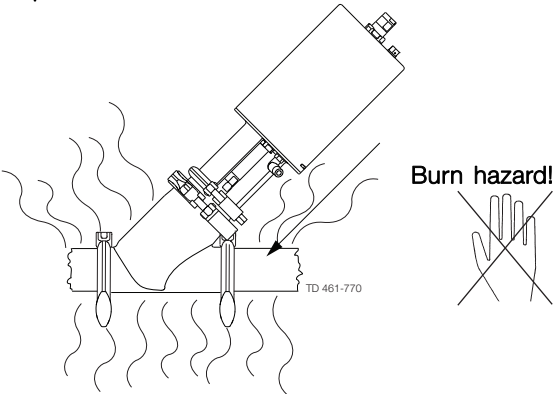


Never service the valve when it is hot.



Never service the valve with valve and pipelines under pressure.

Atmospheric pressure required!



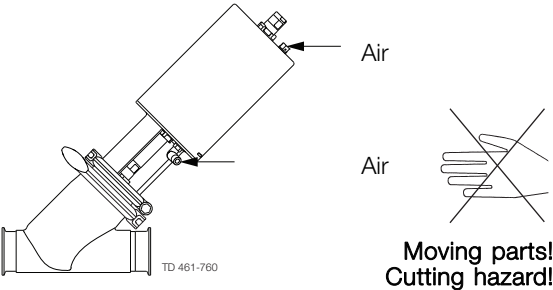
Step 3



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



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.

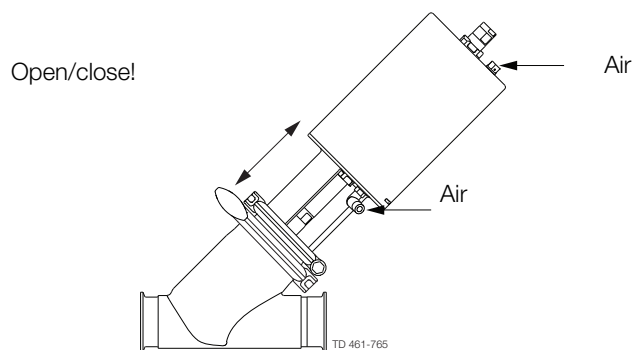
Below are some guidelines for maintenance and lubrication intervals. Please note that the guidelines are for normal working conditions in one shift.

	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"> <li>- Regular inspection for leakage and smooth operation</li> <li>- Keep a record of the valve</li> <li>- Use the statistics for inspection planning</li> </ul> <b>Replace after leakage</b>	<ul style="list-style-type: none"> <li>- Regular inspection for leakage and smooth operation</li> <li>- Keep a record of the actuator</li> <li>- Use the statistics for inspection planning</li> </ul> <b>Replace after leakage</b>
Lubrication	<b>Before fitting</b> Klüber Paraliq GTE 703 or similar USDA H1 approved oil/grease	<b>Before fitting</b> 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.

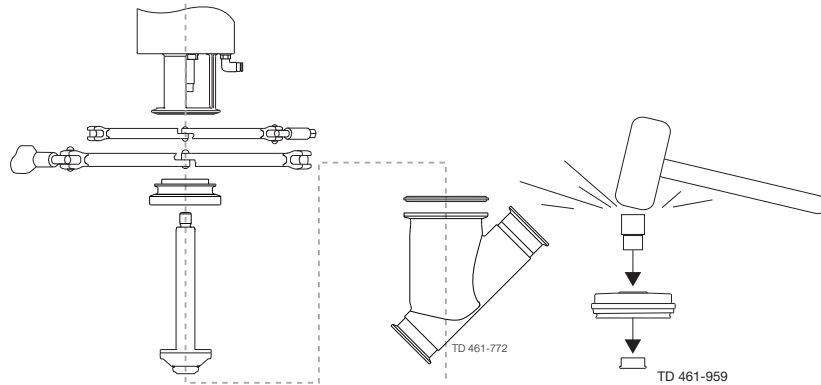
A/A = Air/air activated.

### 5.2 Dismantling the 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.

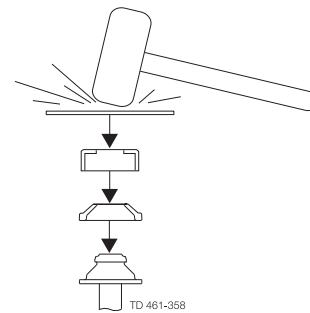
**Pay special attention to the warnings!**

### 5.3 TR2 seal ring replacement

**Note!** For plug seal replacement

please see section 5.3 TR2 seal 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 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 Valve assembly

---

Reverse order of .

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

Remember to tighten spindle and plug to a torque of **30 Nm** (use two 17 mm spanners).

If there are vibrations in the pipeline, Alfa Laval recommends the use of Loctite no. 243.

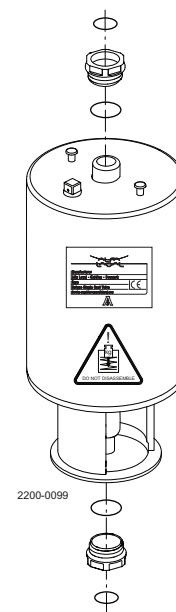
The clamps' thread must be lubricated before tightening - max. torque for the clamps is 10-12 Nm.

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### 5.5 Actuator bushing replacement (non-maintainable actuator)

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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 bushing to a torque of 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

The valve is a pneumatic seat valve in a hygienic and modular design remote-controlled by means of compressed air. It has few and simple moveable parts which results in a very reliable valve and low maintenance cost.

Standard design The valve is designed to deliver years of reliability and performance as can be expected from all Alfa Laval products.

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.

#### Weight (kg)

	Nominal Size			
	DN/OD 51 mm	DN/OD 63.5	DN/OD 76 mm	DN/OD 101.6 mm
Weight (kg)	8.6	11.1	18.6	27.1

#### Noise

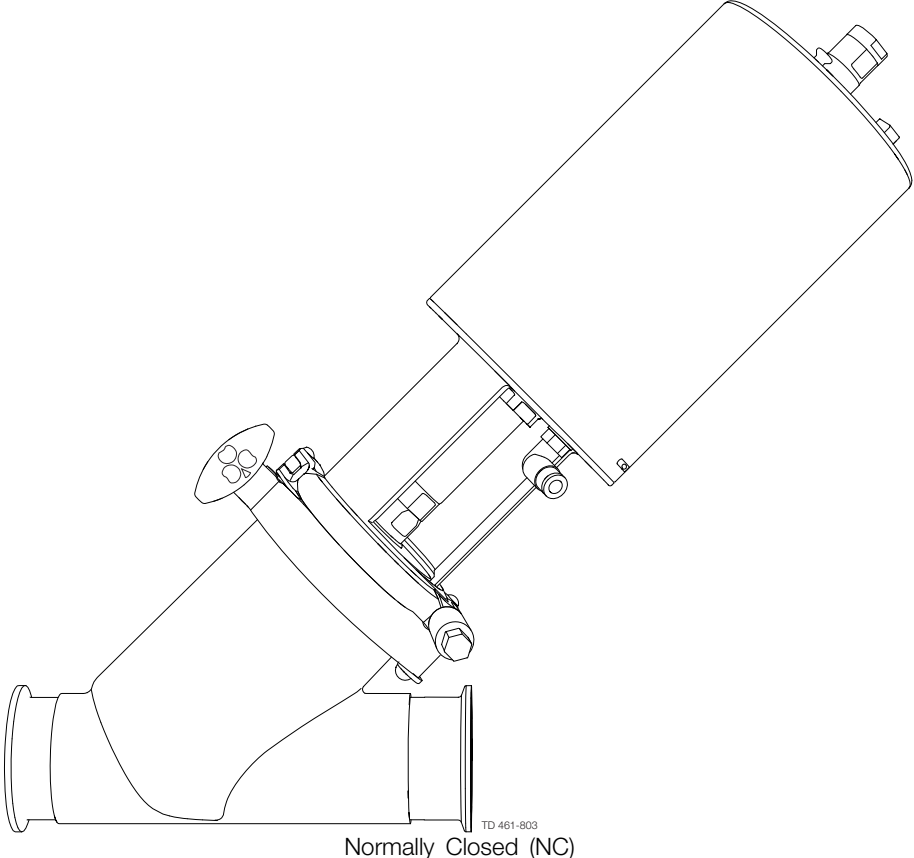
One metre away from and 1.6 metres above the exhaust the noise level of a valve actuator will be approximately 77db (A) without noise damper and approximately 72 db (A) with damper - measured at 7 bar air-pressure.



# 7 Parts list and Service Kits

The drawing shows Unique Single Seat Valve - Y-body. The items refer to the parts list in the following sections

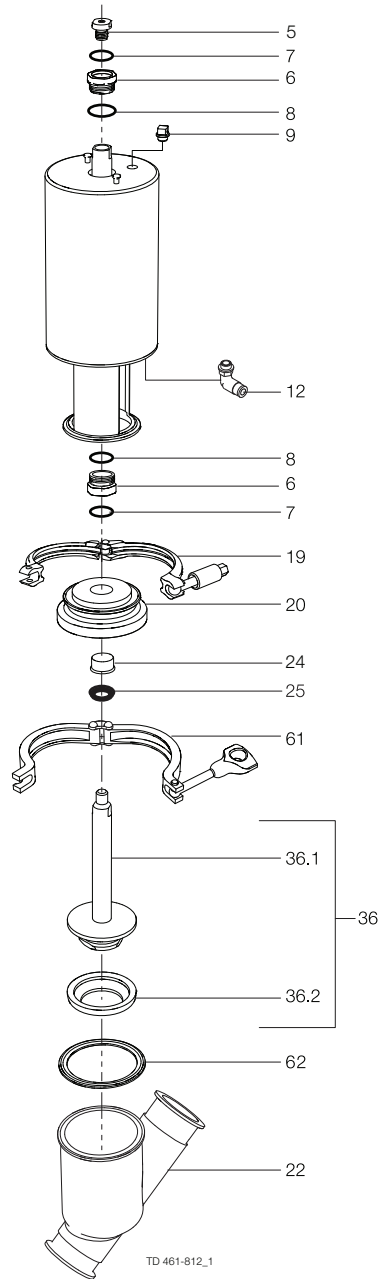
## 7.1 Drawing



## 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
<b>Service kit for Actuator</b>				
□ Service kit .....	9611926500	9611926500	9611926500	9611926500
<b>Service kit for Product wetted parts, standard</b>				
♦ Service kit, EPDM .....	9611926815	9611926816	9611926817	9611926818
♦ Service kit, HNBR/NBR .....	9611926819	9611926820	9611926821	9611926822
♦ Service kit, FPM .....	9611926823	9611926824	9611926825	9611926826

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](http://www.alfalaval.com) to access the information directly.

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