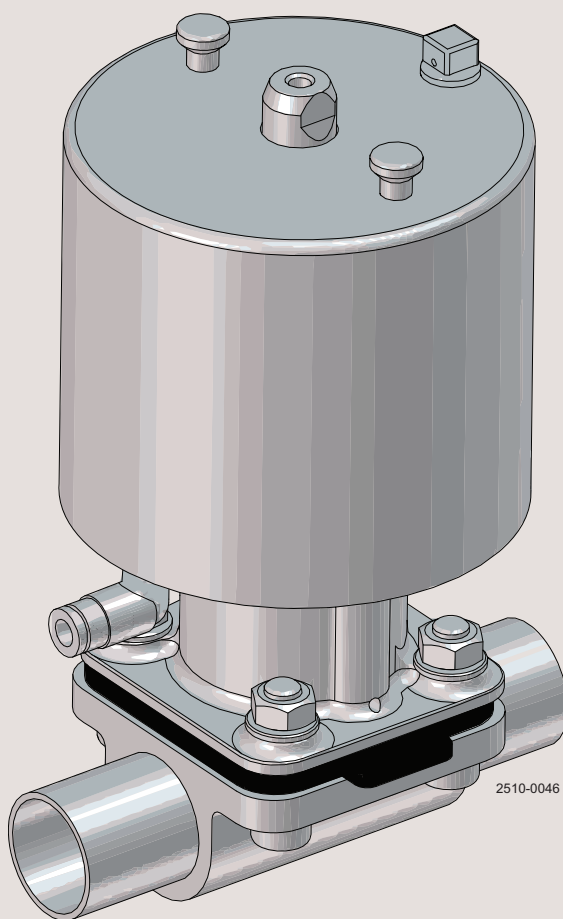




## Instruction Manual

**Unique DV-ST UltraPure - pneumatic: for valve sizes DN8-DN80 (1/4" to 3")**



ESE03511-EN1

2017-05

Original manual



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

<b>1. EC Declaration of Conformity</b>	<b>4</b>
<b>2. General information</b>	<b>5</b>
2.1. General information	5
2.2. Valve design	5
<b>3. Safety</b>	<b>6</b>
3.1. Important information	6
3.2. Warning signs	6
3.3. Safety precautions	7
<b>4. Installation</b>	<b>8</b>
4.1. Unpacking/delivery	8
4.2. Unpacking/intermediate storage	8
4.3. General installation	10
4.4. Installation angle on self-draining position	10
4.5. Drainability	11
4.6. Minimum free space above actuator	11
4.7. Welding	12
4.8. Mounting of the actuator	12
4.9. Recycling information	12
<b>5. Operation</b>	<b>13</b>
5.1. Operation	13
5.2. Operation	15
5.3. Recommended cleaning	15
<b>6. Maintenance</b>	<b>16</b>
6.1. Replacing the diaphragms and seals	16
6.2. Replacing the diaphragm	17
6.3. Fasteners for assembly - actuator with intermediate part in stainless steel	21
<b>7. Technical data</b>	<b>22</b>
7.1. Technical data	22
7.2. Automatic operation	25
7.3. Control diagram/modes	26
7.4. Size	27
7.5. Product pressure versus control pressure	28
<b>8. Parts list and service kits</b>	<b>30</b>
8.1. Actuator DN8-DN80	30

# 1 EC Declaration of Conformity

Revision of Declaration of Conformity: 2012-01-01

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 DV-ST UltraPure

Type

From serial number Q 000001- 999999

From serial number for actuator KS1705900000 to KS9936524595

is in conformity with the following directive with amendments:

- Machinery Directive 2006/42/EC

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

2015-09-11  
Date



Signature



### 2.1 General information

---

The compact diaphragm valve requires low maintenance, has a non-maintainable pneumatic actuator and is available in normally closed, normally open and air/air modes of operation.

The pneumatic actuator is only available in stainless steel. The actuator has been reduced in size, without compromising on strength or endurance, making it especially suited to applications where space is limited.

A wide range of accessories such as an electrical feedback unit, positioner, BUS systems, allow optimal adaption to all types of control tasks.

Selection of the diaphragm with regard to the medium and temperature is the responsibility of the customer.

We highly recommend additional test(s) for any known special operating conditions. The customer is responsible for carrying out these tests.

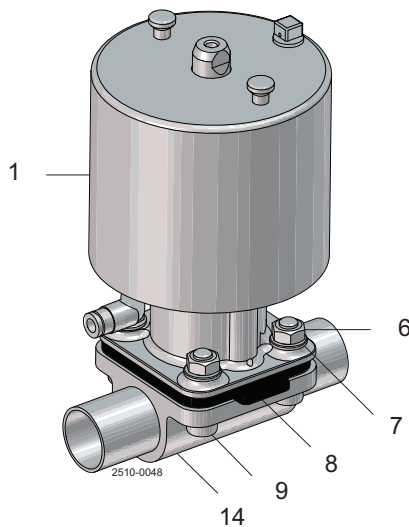
The hazards caused by chemical reactions between parts of the valve and the chemical mediums used must be clarified between the manufacturer and customer.

These valves are intended to close the medium (on/off or control) after installation into a pipeline.

Where defects appear on the product during the warranty period, Alfa Laval will take back the product and correct the problem. Should the equipment be modified or not kept in the manner prescribed within this manual, the warranty will become null and void.

### 2.2 Valve design

---



- 1. Actuator
- 6. Nut
- 7. Washer
- 8. Diaphragm
- 9. Screw
- 14. Valve body

## 3 Safety

---

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

---

### 3.1 Important information

---

**Always read this 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.

---

### 3.2 Warning signs

---

General warning:



Caustic agents:



Hot surfaces:



Risk of pinching:



Preloaded spring:



All warnings in the manual are summarised on this page.

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

### 3.3 Safety precautions

#### Installation:

**Always** read the technical data thoroughly (see chapter 7 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 sterilising

**Never** dismantle the valve with valve and pipelines under pressure

**Never** dismantle the valve when it is hot

Connect air supply hose to push-in fitting. Make sure that air supply hose is fitted properly.

Do **not** pressurise spring side of actuator.



#### 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 7 Technical data)

**Always** release compressed air after use

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

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

**Always** rinse well with clean water after the cleaning

Connect air supply hose to push-in fitting. Make sure that air supply hose is fitted properly.

Do **not** pressurise spring side of actuator.

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



#### Maintenance:

**Always** read the technical data thoroughly (See chapter 7 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** put 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

NON-MAINTAINABLE actuator: **Never** disassemble the actuator

Connect air supply hose to push-in fitting. Make sure that air supply hose is fitted properly.

Do **not** pressurise spring side of actuator.



#### Transportation:

**Always** secure that compressed air is released

**Always** check that all connections are disconnected before attempting to remove the valve from the installation

**Always** drain liquid from valves before transportation

**Always** ensure that the valve is adequately secured during transportation - if specially designed packaging material is available, it must be used



## 4 Installation

*The instruction manual is part of the delivery. Study the instructions carefully.  
The items refer to the parts list and service kits section.  
The valve is supplied as separate parts as standard (for welding).  
If it is supplied with fittings, the valve is assembled before delivery.*

### 4.1 Unpacking/delivery

#### Step 1

##### CAUTION

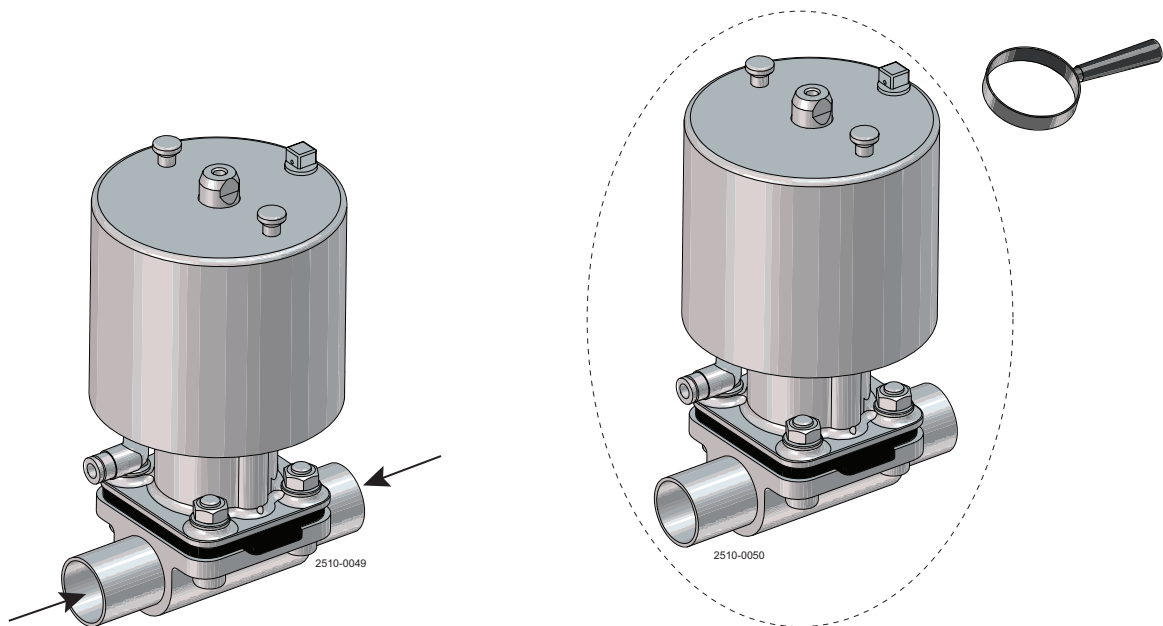
Alfa Laval cannot be held responsible for incorrect unpacking.

##### Check the delivery for:

1. Complete valve.
2. Delivery note.

#### Step 2

1. Remove any packing materials from the valve/valve parts.
2. Inspect the valve/valve parts for visible transportation damage.
3. Avoid damaging the valve/valve parts.



### 4.2 Unpacking/intermediate storage

#### Step 1

##### CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

##### Check the delivery for:

1. Complete valve
2. Delivery note
3. Warning label

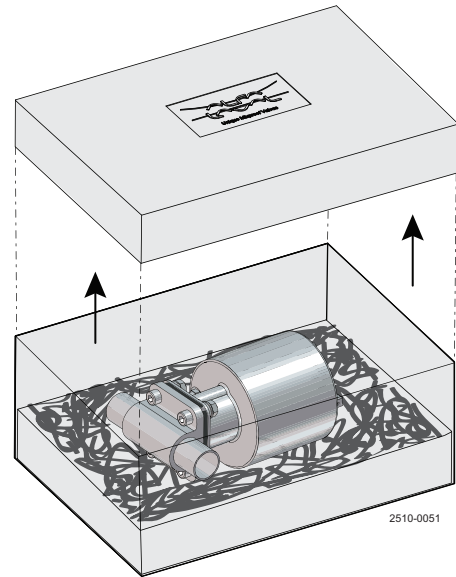


## 4 Installation

*The instruction manual is part of the delivery. Study the instructions carefully.  
The items refer to the parts list and service kits section.  
The valve is supplied as separate parts as standard (for welding).  
If it is supplied with fittings, the valve is assembled before delivery.*

### Step 2

Remove upper support.

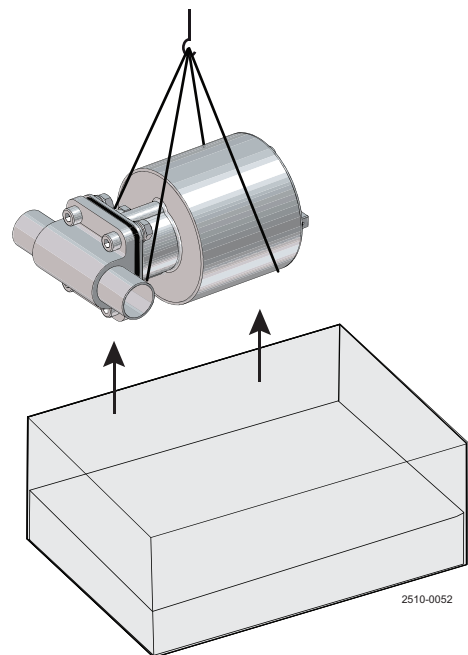


### Step 3

Lift out the valve.

#### NOTE

Please note weight of valve as printed on box.



### Step 4

Remove any packing materials from the valve ports.

## 4 Installation

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.

Weight - kg (lbs)

	8 (¼")	10 (3/8")	15 (½")	20 (¾")	25 (1")	40 (1½")	50 (2")	65 (2½")	80 (3")
2-way - forged	0.9 (2.0)	0.9 (2.0)	1.0 (2.2)	3.5 (7.5)	3.9 (8.6)	10.3 (22.7)	12.7 (28.0)	31.5 (69.4)	38.7 (85.3)
2-way - cast	0.9 (2.0)	0.9 (2.0)	1.0 (2.2)	3.3 (7.3)	3.8 (8.4)	10.0 (22.0)	11.7 (25.8)	29.9 (65.9)	36.2 (79.8)
T-block equal port sizes	0.9 (2.0)	0.9 (2.0)	1.1 (2.4)	3.5 (7.5)	4.2 (9.3)	11.3 (24.9)	14.4 (31.7)	34.0 (75.0)	45.0 (99.2)
Tank outlet - block	-	-	1.2 (2.6)	3.6 (7.9)	4.2 (9.3)	11.3 (24.9)	13.0 (28.7)	32.5 (71.7)	42.1 (92.8)

### 4.3 General installation

#### Step 1



**Always** read the technical data thoroughly.

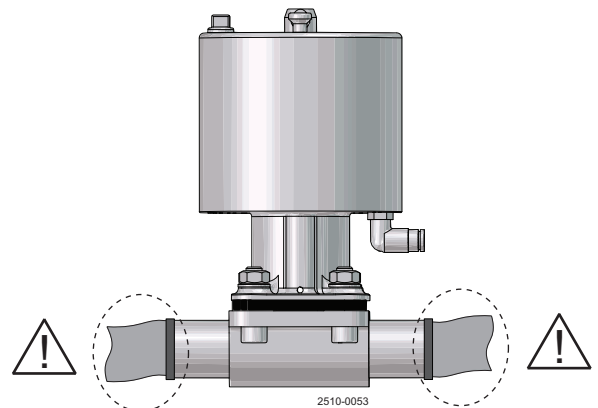
#### CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

Avoid stressing the valve.

Pay special attention to:

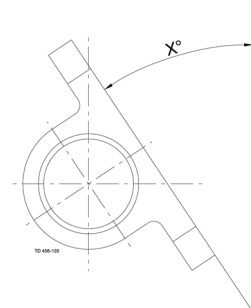
- Vibrations.
- Thermal expansion of the pipelines.
- Excessive welding.
- Overloading of the pipelines.



**Risk of damage!**

- When draining the diaphragm valve and pipeline, ensure that there is a suitable installation position.
- Variable installation position for self-draining, see data on the installation angle.
- For diaphragm valves with weld ends, remove the actuator and diaphragm from the valve body before welding.
- For applications in ex-proof areas, the composite actuator should only be wiped with a moist cloth.

### 4.4 Installation angle on self-draining position



Port size		ASME BPE	ISO 2037	Series A/ DIN11866	Series B/ ISO 1127
DN	Inch				
8	¼"	37°	27°	27°	22°
10	¾"	33°	28°	28°	31°
15	½"	32°	23°	23°	18°
20	¾"	26°	23°	23°	15°
25	1"	22°	25°	21°	20°
40	1½"	24°	24°	22°	18°
50	2"	24°	24°	23°	20°
65	2½"	20°	22°	19°	15°
80	3"	22°	25°	22°	15°

*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.*

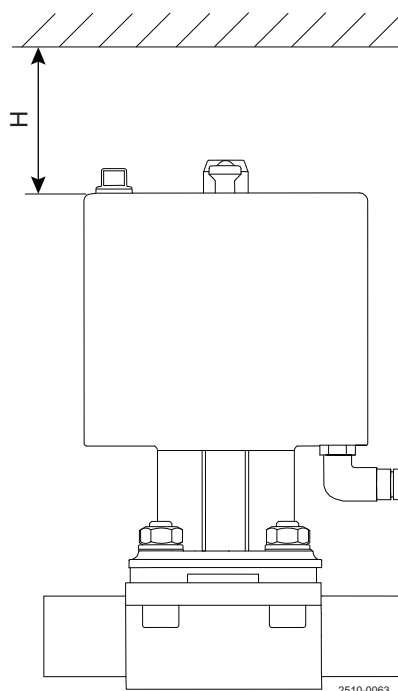
### 4.5 Drainability

Proper drainability in horizontally installed pipes requires mounting of the valve at the correct angle, see section 4.4 Installation angle on self-draining position

To ensure proper drainability, the valve must be mounted at the correct angle. Proper installation is the responsibility of the system installer and/or user.

### 4.6 Minimum free space above actuator

When installing an actuator without indication unit (for example a Thinktop unit), a minimum distance above the actuator is required to ensure no pinching of a hand placed on top of the actuator.



Size			H <sup>1)</sup>
			mm (in)
DN8-10	1/4"		119 (4.685)
DN15	1/2"		122 (4.803)
DN20	3/4"		128 (5.039)
DN25	1"		131 (5.167)
DN40	1 1/2"		149 (5.866)
DN50	2"		149 (5.866)
DN65	2 1/2"		168 (6.614)
DN80	3"		174 (6.850)

<sup>1)</sup> Clearance according to ISO13854

## 4 Installation

---

*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.*

---

### 4.7 Welding

---

#### Step 1

**All welding should be done by qualified personnel.**

Disassemble the actuator from the valve body. See Replacing the Diaphragm for details.

---

#### Step 2

Perform the welding procedure on the body according to standard industrial practices.

---

#### Step 3

Reassemble the actuator to the valve body.

---

#### Step 4

Test the valve for correct operation before installing.

---

### 4.8 Mounting of the actuator

---

For T-valves, tandem valves, tank outlet valves and block valves please note that the bonnet is mounted using studs and nuts instead of bolts and nuts.

---

### 4.9 Recycling information

---

#### Unpacking

- Packing material consists of wood, plastics, cardboard boxes and in some cases metal straps
- Wood and cardboard boxes can be re-used, 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 disposed of in accordance with local regulations

#### Scrapping

- At end of use, the equipment must be recycled according to relevant local regulations. Besides the equipment, any hazardous residues from the process liquid must be taken into consideration 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
  - Recycling must be undertaken with caution, due to the pre-compressed spring inside the actuator. With disposal, the actuator can be returned to Alfa Laval for scrapping in a safe and secure manner.
-

*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.*

### 5.1 Operation



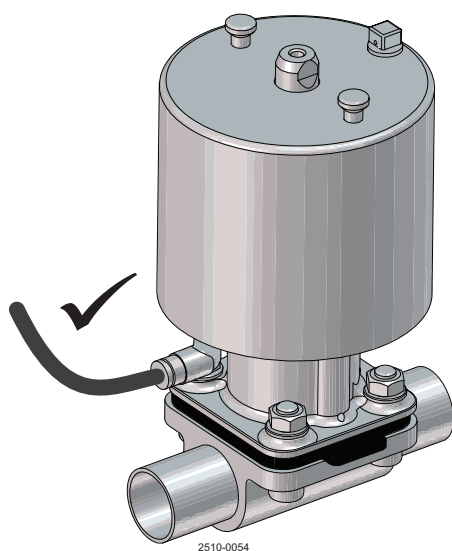
**Always** read the technical data carefully.  
See chapter 7 Technical data



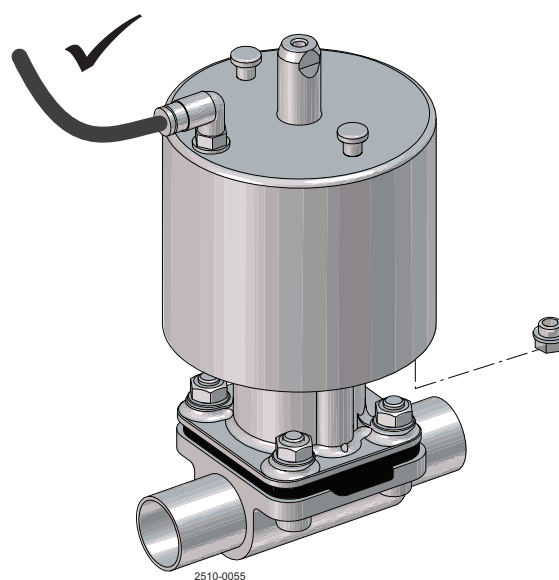
**Always** release compressed air after use.

Connect air supply hose to push-in fitting  
Make sure that the air supply hose is fitted properly.  
Do **not** pressurise the spring side of actuator.

Normally closed (NC)



Normally open (NO)



#### CAUTION

Connect air supply hose to push-in fitting. Make sure that the air supply hose is fitted properly. Do not pressurise the spring side of the actuator.

Alfa Laval cannot be held responsible for incorrect operation.

## 5 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.*

### Fig. 1 - Function NC: Normally Closed

In de-energised status, the valve is closed by spring force. When the control medium is admitted to the actuator (connection below), the valve opens; when the control medium escapes, the valve is closed via spring force.

### Fig. 2 - Function NO: Normally open

In de-energised status, the valve is opened by spring force. When the control medium is admitted to the actuator (connection above), the valve closes; when the control medium escapes, the valve is opened via spring force.

### Fig. 3 - Function AA: Air/Air (double acting)

The valve has no defined basic position. The valve is opened and closed by applying control pressure to the corresponding control connection. Connection below: open, connection above: close.

Fig. 1 - Function NC: Normally closed

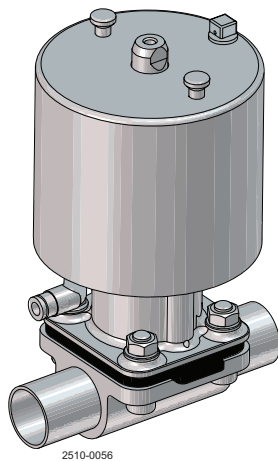


Fig. 2 - Function NO: Normally open

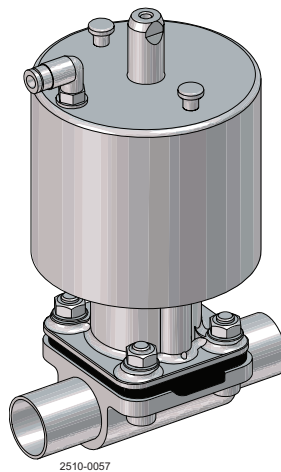
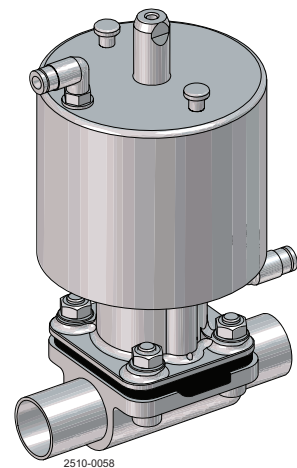


Fig. 3 - Function AA: Air/Air (double acting)



The valve is tested before delivery.  
Study the instructions carefully and pay special attention to the warnings!  
Pay attention to possible faults.  
The items refer to the parts list and service kits section.

### 5.2 Operation

#### Step 1



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

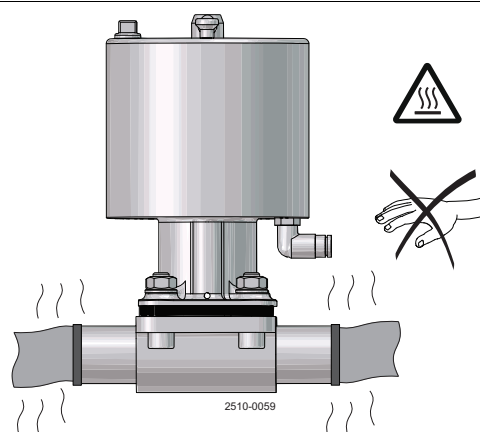
#### CAUTION!

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.



### 5.3 Recommended cleaning

#### Step 1



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

**Caustic danger!**



**Always** use rubber gloves!

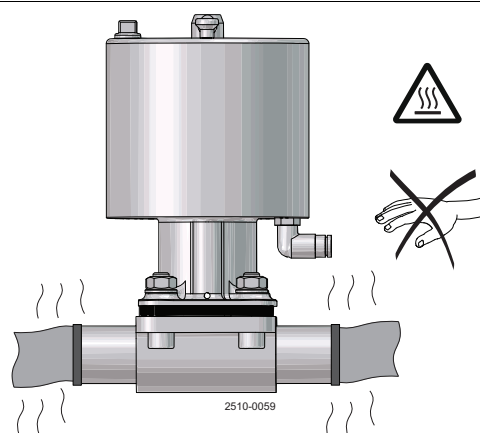


**Always** use protective goggles!

#### Step 2



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



## 6 Maintenance

---

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

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

---

### 6.1 Replacing the diaphragms and seals

---

Generally, the only routine maintenance required is the replacement of the diaphragm. The diaphragm replacement routine, depending on the medium, pressure, temperature and cycle (duration and temperature) of steam sterilisation between process runs, determines the optimum change cycle of the diaphragm.

As with all diaphragm valves, the diaphragm itself is the component most exposed to wear. In addition to mechanical stress and temperature range, the diaphragm is subject to wear resulting from the media. Alfa Laval recommend that the diaphragm is replaced once a year or more frequently depending on operating conditions and media. See section 6.2 Replacing the diaphragm.



#### NOTE

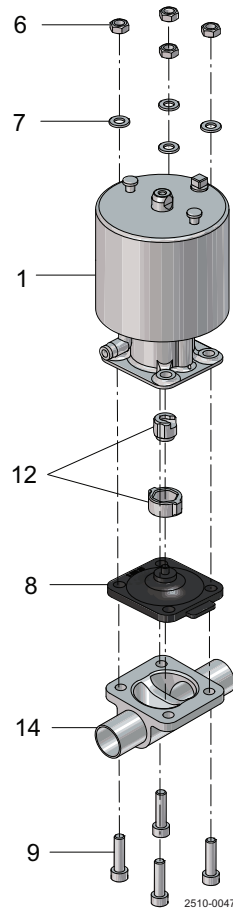
The actuator is non-serviceable. With malfunction the complete actuator must be replaced.  
**DO NOT DISASSEMBLE THE ACTUATOR DUE TO PRE-COMPRESSED SPRINGS.**

---



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

### 6.2 Replacing the diaphragm



**Before servicing any installed valve, you must:**

- depressurise the system
- open the valve
- purge the valve

**Note:** The diaphragm can be replaced without removing the valve body



**Risk of pinching fingers during mounting of diaphragm**

#### Step 1

Only use Alfa Laval diaphragms

#### Step 2

Actuate the valve to the “open” position for:

- Normally closed and air/air actuators, apply air pressure of the lower actuator port
- Normally open actuator, disconnect control air supply

## 6 Maintenance

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

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

### Step 3

Remove the body fasteners (6, 7 & 9) using a cross-wise sequence.

### Step 4

Actuate the valve in the “closed” position for:

- Normally closed actuators, disconnect air supply
- Normally open and air/air actuators, apply control pressure to the lower actuator port

### Step 5

Remove the diaphragm from the actuator

#### Button-style compressor:

- Remove the diaphragm (8) by pulling it out slightly (see fig. 1).

#### Threaded-style compressor:

- Rotate the diaphragm (8) 90° and remove (see fig. 2).

#### Bayonet-style compressor:

- Rotate the diaphragm 90° and remove (see fig. 3).

**NOTE!:** see figs. 1-3, reverse action of step 9.

### Step 6

Check and clean threads and bayonets (12) of the compressor.

### Step 7

Make sure that the new diaphragm (8) and the contact area on the valve body (14) are clean and dry.

### Step 8

Make sure the actuator compressor (12) matches the connection on the diaphragm (8). Should this not be the case, replace the compressor.

### Step 9

With the actuators in “closed” position, install diaphragm as follows:

- For button-style compressors, insert the diaphragm with a push and slight rotation. Rotate the diaphragm until the screw holes match (fig 1).
- For threaded-style compressors, thread the diaphragm into the compressor in a clockwise direction (fig. 2). Do **not** overtighten! Then, if necessary, turn the diaphragm in a counter-clockwise direction until the screw holes match.
- For bayonet-style compressor insert the diaphragm with bayonet into the deepening of the compressor. Rotate the diaphragm 90° (fig. 3). Screw holes must match.

Fig.1

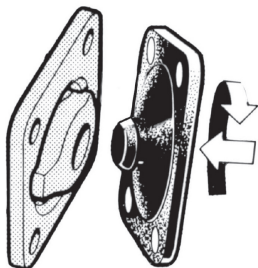


Fig.2

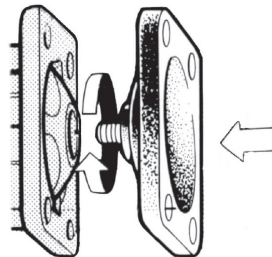
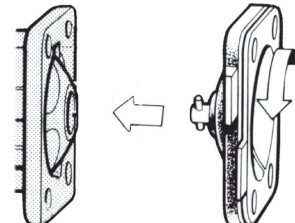


Fig.3



#### WARNING

Do **not** overtighten!



Risk of pinching fingers during mounting of diaphragm.

---

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

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

---

### Step 10

Actuate the valve to the "open" position - see step 2

Make sure the compressor (12) is positioned and aligned with the guide slots in the yoke (1).

---

### Step 11

Align the to the valve body (14) using fasteners (9). Assemble the nuts and washers (6 & 7). To secure the actuator and body, tighten the fasteners (6) by hand.

Ensure all four bolts (9) are used. Lubricating the threads with an anti-seizing grease is recommended prior to mounting!

---

### Step 12

Actuate the valve to the "closed" position, so that the diaphragm can properly fit to the weir - see step 4. Tighten the body fasteners (6) cross-wise using a wrench.

---

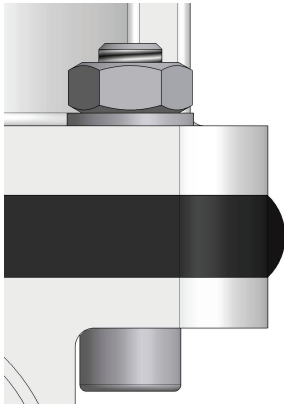
### Step 13

Actuate the valve to the "open" position - see step 2. Slightly re-tighten the body fasteners (6) cross-wise with a wrench.

**Note:** Proper assembly extends the life of the diaphragm. Correctly assembled diaphragms have a crescent-shaped bulge in the diaphragm edge which can be observed from the side (fig. 4).

---

Fig 4



### Step 14

Test the valve for proper function

**NOTE!** Check the fasteners (6) 24 hours after operation of the valves. In case of leakage from the body, depressurise the system and, if necessary, tighten the fasteners (6) again as described. If leakage continues, replace the diaphragm.

---

## 6 Maintenance

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

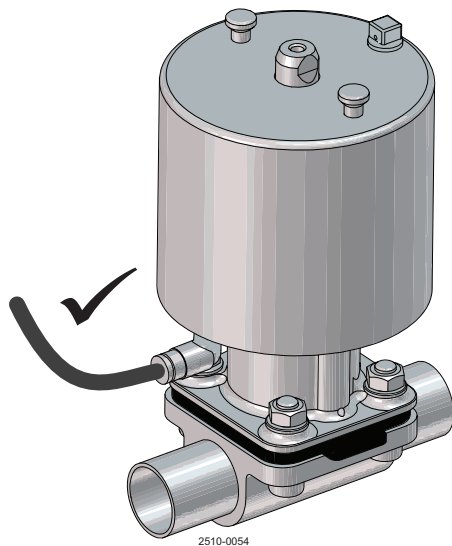
*HNO<sub>3</sub> = Nitric acid.*

### Step 15

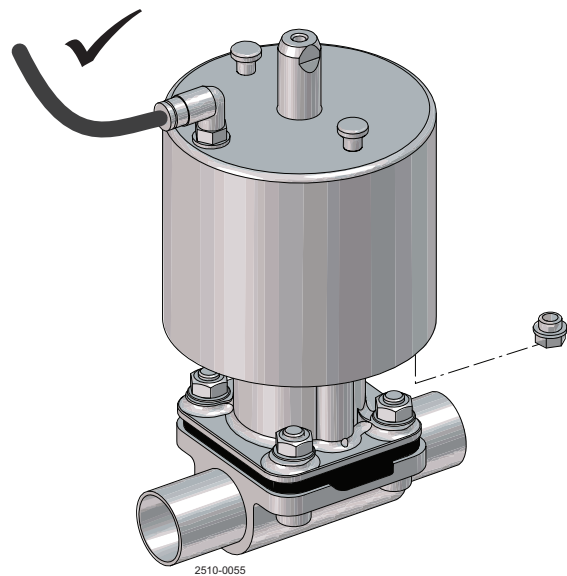
Connect air supply hose to push-in fitting. Make sure that the air supply hose is fitted properly.

Do not pressurise the spring side of the actuator.

Normally closed (NC)



Normally open (NO)



The valve is designed for cleaning in place (CIP).

Study the instructions carefully and pay special attention to the warnings!

NaOH = Caustic soda.

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

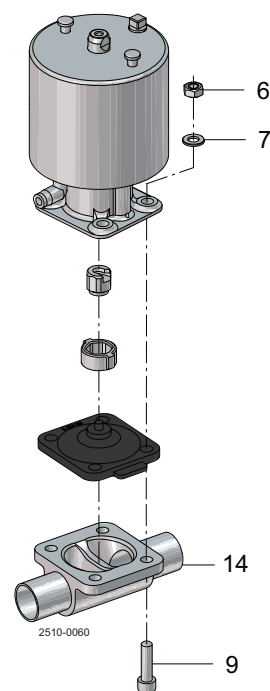
### 6.3 Fasteners for assembly - actuator with intermediate part in stainless steel

- Pos. 6 4 nuts DIN 934 ST  
 Pos. 7 4 Washer DIN 125 ST A-2  
 Pos. 9 4 cylindrical hexagon fasteners DIN 912 ST-A2  
 Pos. 14 2-way body

DN	Inch	EPDM	PTFE
8	¼	M4 x 14	M4 x 14
15	½	M6 x 30	M6 x 30
20	¾	M6 x 25	M6 x 25
25	1	M8 x 30	M8 x 30
40	1½	M10 x 35	M10 x 35
50	2"	M10 x 35	M10 x 35
65	2½	M12 x 45	M12 x 45
80	3"	M16 x 55	M16 x 55

- Pos. 14 Tank outlet, T-Valve and block bodies

DN	Inch	EPDM	PTFE
8	¼	M4 x 12	M4 x 12
15	½	M6 x 25	M6 x 25
20	¾	M6 x 20	M6 x 20
25	1	M8 x 25	M8 x 25
40	1½	M10 x 30	M10 x 30
50	2"	M10 x 30	M10 x 30
65	2½	M12 x 40	M12 x 40
80	3"	M16 x 50	M16 x 50



#### NOTE

Tighten the 4 fasteners cross-wise according to section 6 steps 11 to 14

## 7 Technical data

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

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

### 7.1 Technical data

Actuator	
Temperature range	-10°C (14°F) to 80°C (176°F).
Air quality	ISO 8573-1, Class 0.2.4
Control air pressure	Max. 7 bar (102 psi) <sup>1)</sup>

<sup>1)</sup> Maximum control air pressure for actuator. For maximum control air pressure in regards to diaphragm endurance, please refer to tables 2 to 4

#### Product wetted area

Table 1. Diaphragm properties

Description	Temperature recommendations		
	Liquid		Steam
	Min.	Max.	Max.
EPDM	-40°C/-40°F	130°C/266°F	150°C/302°F <sup>1)</sup>
PTFE/EPDM	-5°C/23°F	175°C/347°F	150°C/302°F <sup>2)</sup>
TFM/EPDM	-5°C/23°F	175°C/347°F	150°C/302°F <sup>2)</sup>

<sup>1)</sup> Continuous temperature

<sup>2)</sup> 40 min. steam sterilisation

Chemical compatibility:

Please contact Alfa Laval for information.

The valve is designed for cleaning in place (CIP).

Study the instructions carefully and pay special attention to the warnings!

NaOH = Caustic soda.

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

### Maximum working pressure

Table 2. Actuator NC (Normally closed):

Product pressures and recommended control air pressures

Size		Control Air pressure <sup>1)</sup>	EPDM		PTFE/EPDM		TFM/EPDM	
			$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$
DN	Inch	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)
8-10	1/4"-3/8"	Min. 3.1 (45)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
15	1/2"	Min. 5.5 (80)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
20	3/4"	Min. 3.2 (47)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
25	1"	Min. 5.7 (83)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
40	1 1/2"	Min. 3.1 (45)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
50	2"	Min. 5.1 (74)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
65	2 1/2"	Min. 4.1 (60)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
80	3"	Min. 5.1 (60)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)

<sup>1)</sup> Minimum air pressure at product pressure 0 bar. See chapter 7.6 for further information.

<sup>2)</sup> See diagram below for further information.

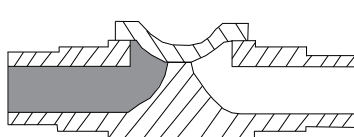
Table 3. Actuator NO (Normally open):

Product pressures and recommended control air pressures

Size		Control Air pressure <sup>1)</sup>	EPDM		PTFE/EPDM		TFM/EPDM	
			$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$
DN	Inch	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)
8-10	1/4"-3/8"	Max. 5.7 (83)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
15	1/2"	Max. 5.5 (80)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
20	3/4"	Max. 5.5 (80)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
25	1"	Max. 5.2 (76)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
40	1 1/2"	Max. 5.2 (76)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
50	2"	Max. 5.2 (76)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
65	2 1/2"	Max. 4.5 (65)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
80	3"	Max. 4.4 (64)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)

<sup>1)</sup> Maximum air pressure at product pressure 10 bar. See chapter 7.6 for further information.

<sup>2)</sup> See diagram below for further information.



$\Delta p = 100\%$



$\Delta p = 0\%$

2510-0064

## 7 Technical data

The valve is designed for cleaning in place (CIP).

Study the instructions carefully and pay special attention to the warnings!

NaOH = Caustic soda.

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

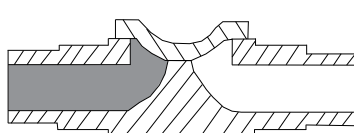
Table 4. Actuator AA (Air/Air):

Product pressures and recommended control air pressures

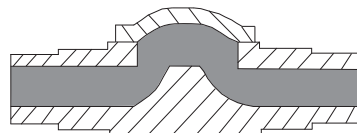
Size		Control Air pressure <sup>1)</sup>	EPDM		PTFE/EPDM		TFM/EPDM	
			$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$	$\Delta p = 100\%^{2)}$	$\Delta p = 0\%^{2)}$
DN	Inch	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)	Bar (psi)
8-10	1/4"-3/8"	Max. 3.2 (46)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
15	1/2"	Max. 4,0 (59)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
20	3/4"	Max. 2,1 (31)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
25	1"	Max. 2,9 (42)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
40	1 1/2"	Max. 2,1 (31)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
50	2"	Max. 3,1 (45)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
65	2 1/2"	Max. 2.1 (31)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)
80	3"	Max. 3,3 (48)	10 (145)	10 (145)	10 (145)	10 (145)	6 (87)	6 (87)

<sup>1)</sup> Maximum air pressure at product pressure 10 bar. See chapter 7.6 for further information.

<sup>2)</sup> See diagram below for further information.



$\Delta p = 100\%$



$\Delta p = 0\%$

2510-0064



## 7 Technical data

*The valve is designed for cleaning in place (CIP).*

*Study the instructions carefully and pay special attention to the warnings!*

*NaOH = Caustic soda.*

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

**Weight** - kg (lbs)

	8 (¼")	10 (3/8")	15 (½")	20 (¾")	25 (1")	40 (1½")	50 (2")	65 (2½")	80 (3")
2-way - forged	0.9 (2.0)	0.9 (2.0)	1.0 (2.2)	3.5 (7.5)	3.9 (8.6)	10.3 (22.7)	12.7 (28.0)	31.5 (69.4)	38.7 (85.3)
2-way - cast	0.9 (2.0)	0.9 (2.0)	1.0 (2.2)	3.3 (7.3)	3.8 (8.4)	10.0 (22.0)	11.7 (25.8)	29.9 (65.9)	36.2 (79.8)
T-block equal port sizes	0.9 (2.0)	0.9 (2.0)	1.1 (2.4)	3.5 (7.5)	4.2 (9.3)	11.3 (24.9)	14.4 (31.7)	34.0 (75.0)	45.0 (99.2)
Tank outlet - block	-	-	1.2 (2.6)	3.6 (7.9)	4.2 (9.3)	11.3 (24.9)	13.0 (28.7)	32.5 (71.7)	42.1 (92.8)

### 7.2 Automatic operation

The actuator controls the axial movement of a piston, thereby opening or closing the valve depending on the actuator function. Closing the valve will push the compressor downwards on the diaphragm, pressing the diaphragm against the weir of the valve body thereby closing the valve.

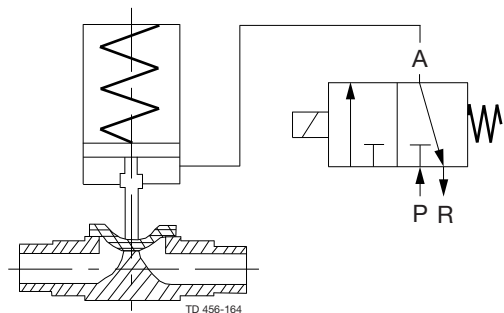
## 7 Technical data

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

### 7.3 Control diagram/modes

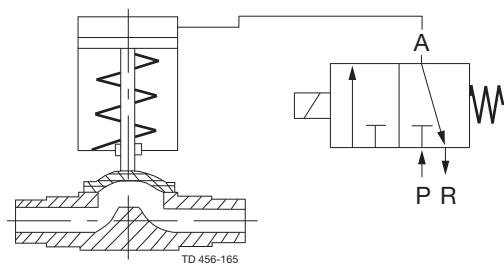
- a) **Function NC: normally closed** with a solenoid valve 3/2 way for connection below

Fig. a



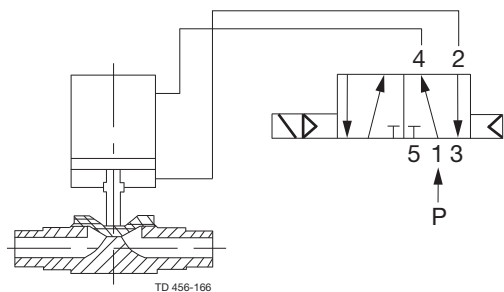
- b) **Function NO: normally open** with a solenoid valve 3/2 way for connection above

Fig. b



- c) **Function AA: air/air** with a solenoid valve 4/2 and 5/2 way for connection below and above

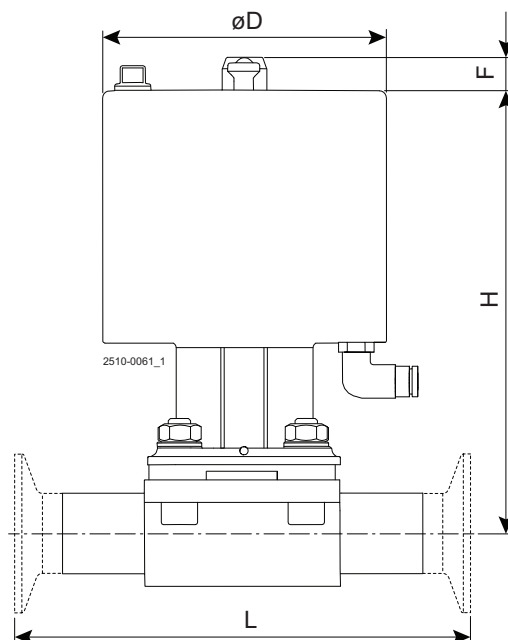
Fig. c



## 7 Technical data

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

### 7.4 Size



Size		$\varnothing D$	H	Max. F	L (weld end)	L (clamp end)
DN	Inch	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
8-10	1/4"-3/8"	54 (2.125)	105 (4.134)	19 (0.748)	89 (3.504)	89 (3.504)
15	1/2"	54 (2.125)	118 (4.646)	22 (0.866)	110 (4.331)	108 (4.252)
20	3/4"	102 (4.000)	151 (5.937)	28 (1.102)	119 (4.685)	118 (4.646)
25	1"	102 (4.000)	159 (6.260)	31 (1.220)	129 (5.079)	127 (5.000)
40	1 1/2"	156 (6.142)	231 (9.091)	49 (1.929)	161 (6.339)	159 (6.260)
50	2"	156 (6.142)	236 (9.291)	49 (1.929)	192 (7.559)	191 (7.520)
65	2 1/2"	222 (8.740)	360 (14.173)	68 (2.677)	218 (8.583)	216 (8.504)
80	3"	222 (8.740)	368 (14.488)	74 (2.913)	256 (10.079)	254 (10.000)

## 7 Technical data

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

### 7.5 Product pressure versus control pressure

#### Description:

The diagrams state the required control pressure on the actuator at a given product pressure in the system.

#### NC (Normally Closed):

Control pressure is used for opening the valve. Here the required control pressure is reduced when the product pressure is increased. At interruption of air supply the actuator will close the valve.

Control pressure bar (psi)

6 (87)

5 (72.5)

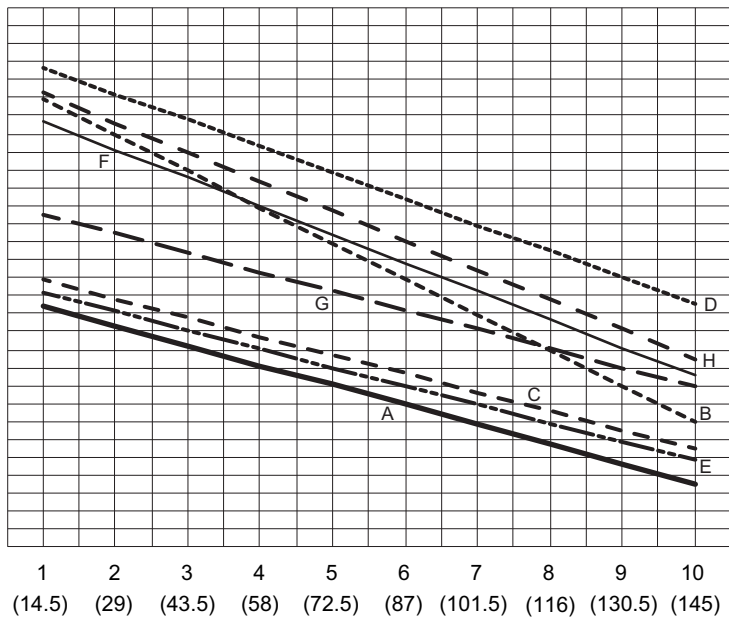
4 (58)

3 (43.5)

2 (29)

1 (14.5)

0



A = DN8/10 - ( $\frac{1}{4}$ " /  $\frac{3}{8}$ " )

B = DN15 - ( $\frac{1}{2}$ " )

C = DN20 - ( $\frac{3}{4}$ " )

D = DN25 - (1" )

E = DN40 - ( $1\frac{1}{2}$ " )

F = DN50 - (2" )

G = DN65 - ( $2\frac{1}{2}$ " )

H = DN80 - (3" )

Product pressure in bar (psi)

#### NO (Normally Open):

Control pressure is used for closing the valve. Here the required control pressure is increased when the product pressure is increased. With interruption of air supply, the actuator will open the valve.

Control pressure bar (psi)

6 (87)

5 (72.5)

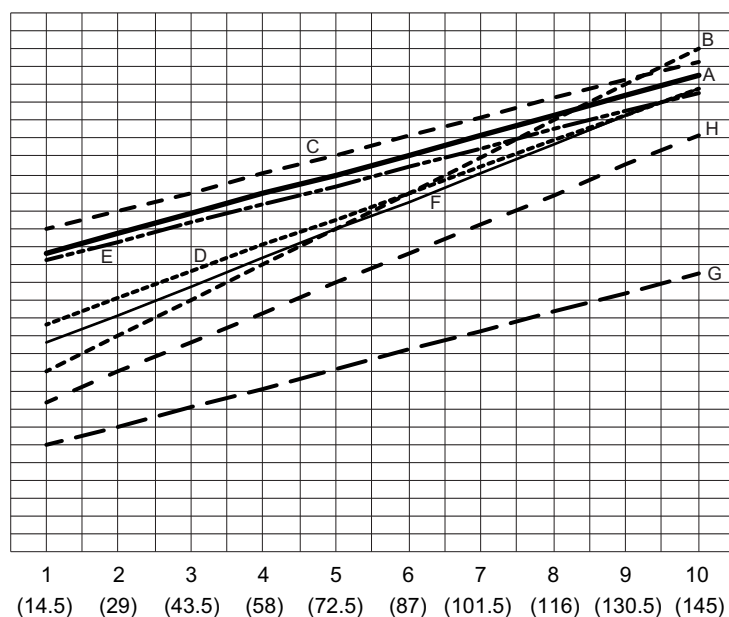
4 (58)

3 (43.5)

2 (29)

1 (14.5)

0



A = DN8/10 - ( $\frac{1}{4}$ " /  $\frac{3}{8}$ " )

B = DN15 - ( $\frac{1}{2}$ " )

C = DN20 - ( $\frac{3}{4}$ " )

D = DN25 - (1" )

E = DN40 - ( $1\frac{1}{2}$ " )

F = DN50 - (2" )

G = DN65 - ( $2\frac{1}{2}$ " )

H = DN80 - (3" )

Product pressure in bar (psi)

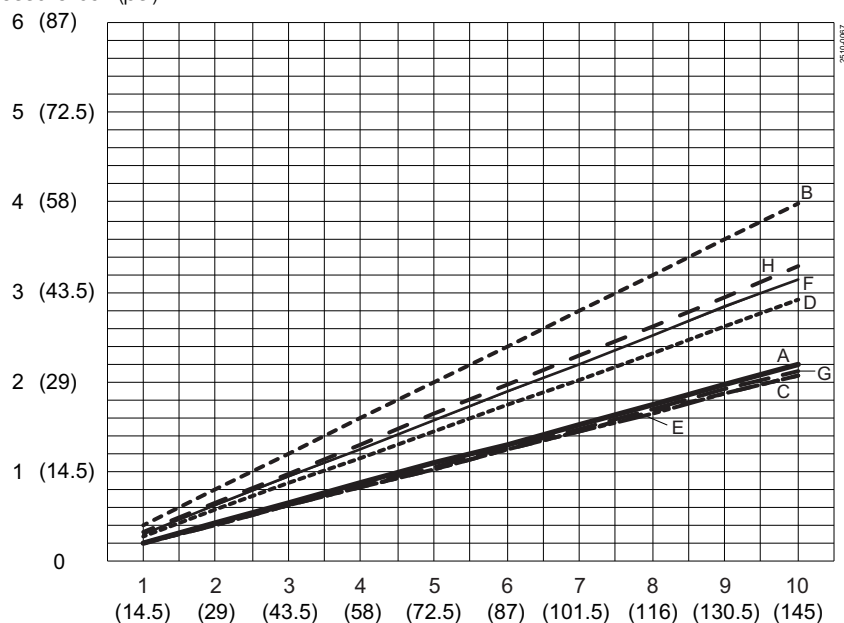
*It is important to observe the technical data during installation, operation and maintenance.  
Inform personnel about the technical data.*

### A/A (Air/Air):

Control pressure is used for both opening and closing of the valve. Here the required control pressure is increased when the product pressure is increased.

With interruption of air supply, the valve will open at positive product pressure and close at negative product pressure.

Control pressure bar (psi)



A = DN8/10 - ( $\frac{1}{4}$ " /  $\frac{3}{8}$ " )

B = DN15 - ( $\frac{1}{2}$ " )

C = DN20 - ( $\frac{3}{4}$ " )

D = DN25 - (1" )

E = DN40 - ( $1\frac{1}{2}$ " )

F = DN50 - (2" )

G = DN65 - ( $2\frac{1}{2}$ " )

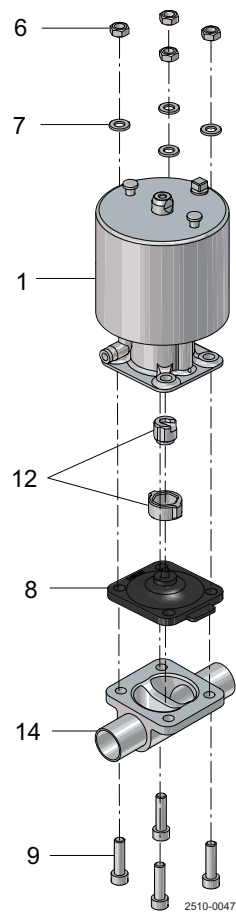
H = DN80 - (3" )

Product pressure in bar (psi)

## 8 Parts list and service kits

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

### 8.1 Actuator DN8-DN80



## 8 Parts list and service kits

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

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### Parts list

Pos.	Qty	Denomination
1	1	Actuator
8	1	Diaphragm
9+6+7	1	Nut, washer, screw set
12	1	Compressor kit
14	1	Valve body

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**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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