



# Alfa Laval Unique SSV ATEX

## Single seat valves

### Introduction

The Alfa Laval Unique SSV ATEX Standard is a versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination. Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety.

Built on the well-proven Unique SSV platform, it is ATEX-certified for use in environments with an explosive atmosphere. Few moving parts ensure high reliability and low maintenance costs. A wide range of optional features enables customization to specific process requirements.

### Application

The Unique SSV ATEX Standard is designed for safe, uninterrupted production in environments with an explosive atmosphere across the dairy, food, beverage, brewery and many other industries.

### Benefits

- Supremely reliable and versatile
- Cost effective and modular design
- Extremely strong and durable
- Protection against leakage and bacterial contamination
- Certified for use by 3-A, hygienic standards and ATEX

### Standard design

The Alfa Laval Unique SSV ATEX range is available in a one-, two- or three-body configuration, with easy-to-configure valve bodies, plug, sealing, actuator and clamp rings. The valve can be configured as a shutoff valve with two to four working ports or as a changeover valve with up to six ports.


To ensure flexibility, the valve seat that sits between the two bodies in the changeover version is provided for assembly. The valve seals are optimized for durability and long service life through a defined compression design. The actuator is connected to the valve body using a yoke, and all components are assembled with clamp rings.

Using the Alfa Laval Anytime configurator, it is easy to customize to meet virtually any process requirement.

### Working principle

The Alfa Laval Unique SSV ATEX Standard is a hygienic pneumatic single seat valve that is remotely operated by means of compressed air. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop® Basic Intrinsically Safe.

### Certificates

 Authorized to carry the 3A symbol



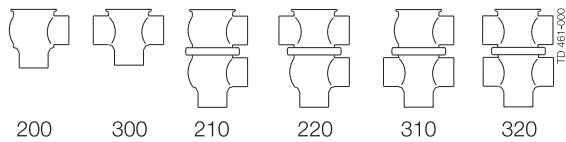
## TECHNICAL DATA

| Temperature          |                        |
|----------------------|------------------------|
| Temperature range:   | -10°C to +135°C (EPDM) |
| Ambient temperature: | 10°C to +40°C          |

| Pressure                |                             |
|-------------------------|-----------------------------|
| Max. product pressure:  | 1000 kPa (10 bar)           |
| Min. product pressure:  | Full vacuum                 |
| Air pressure, actuator: | 500 to 700 kPa (5 to 7 bar) |

### Valve Body Combinations



### Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement A/A.

## PHYSICAL DATA

| Materials - valve/actuator  |                                |
|-----------------------------|--------------------------------|
| Product wetted steel parts: | 1.4404 (316L)                  |
| Other steel parts:          | 1.4301 (304)                   |
| External surface finish:    | Semi-bright (blasted)          |
| Internal surface finish:    | Bright (polished), Ra < 0.8 µm |
| Product wetted seals:       | EPDM                           |
| Other seals:                | NBR                            |
| Actuator stem:              | PAGG PAGI/GT, MH, 14-250, CF40 |
| Spring:                     | Coated steel                   |

### Options

- A. Male parts or clamp liners in accordance with required standard.
- B. Control and Indication: ThinkTop Basic Intrinsically Safe.
- C. Product wetted seals in HNBR or FPM (Note! Temperature range 10°C to +135°C for ATEX Versions).
- D. Plug seals in HNBR or FPM (Note! Temperature range 10°C to +135°C for ATEX Versions).
- E. External surface finish bright.

### Notel

For further details, see instruction manual ESE00674.

### Other valves in the same basic design

The Unique SSV valve range includes several purpose built valves. Below are some of the valve models available, though please use the Alfa Laval Anytime configurator for full access to all models and options.

- Reverse acting valve.
- Tank Outlet valve.
- Tangential valve.

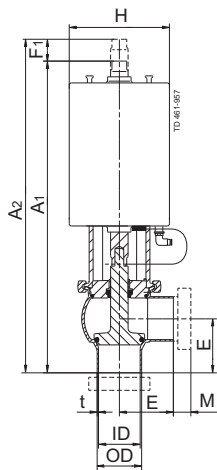
Semi-Maintainable actuator comes with 5 year warranty.

Dimensions (mm)

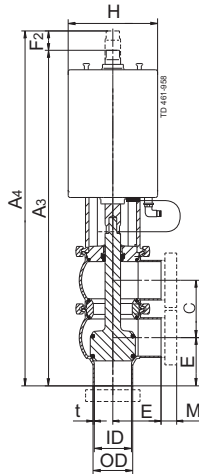
| Nominal size       | Inch tubes |      |      |      |      |       | DIN tubes |      |       |      |      |      |
|--------------------|------------|------|------|------|------|-------|-----------|------|-------|------|------|------|
|                    | DN/OD      |      |      |      |      |       | DN        |      |       |      |      |      |
|                    | 25         | 38   | 51   | 63.5 | 76.1 | 101.6 | 25        | 40   | 50    | 65   | 80   | 100  |
| A <sub>1</sub> 1)  | 313        | 314  | 363  | 389  | 422  | 467   | 315       | 315  | 365   | 389  | 427  | 470  |
| A <sub>2</sub> 1)  | 328        | 334  | 388  | 414  | 452  | 497   | 330       | 335  | 390   | 414  | 457  | 500  |
| A <sub>3</sub> 1)  | 360*       | 374  | 436  | 475  | 521  | 591   | 367*      | 379  | 440.6 | 481  | 534  | 596  |
| A <sub>4</sub> 1)  | 372*       | 391  | 458  | 497  | 548  | 618   | 379*      | 396  | 463   | 503  | 561  | 623  |
| C                  | 47.8       | 60.8 | 73.8 | 86.3 | 98.9 | 123.6 | 52        | 64   | 76    | 92   | 107  | 126  |
| OD                 | 25         | 38   | 51   | 63.5 | 76.1 | 101.6 | 29        | 41   | 53    | 70   | 85   | 104  |
| ID                 | 21.8       | 34.8 | 47.8 | 60.3 | 72.9 | 97.6  | 26        | 38   | 50    | 66   | 81   | 100  |
| t                  | 1.6        | 1.6  | 1.6  | 1.6  | 1.6  | 2     | 1.5       | 1.5  | 1.5   | 2    | 2    | 2    |
| E                  | 50         | 49.5 | 61   | 81   | 86   | 119   | 50        | 49.5 | 62    | 78   | 87   | 120  |
| F <sub>1</sub>     | 15         | 20   | 25   | 25   | 30   | 30    | 15        | 20   | 25    | 25   | 30   | 30   |
| F <sub>2</sub>     | 12*        | 17   | 22   | 22   | 27   | 27    | 12*       | 17   | 22    | 22   | 27   | 27   |
| H                  | 85         | 85   | ø115 | ø115 | ø155 | ø155  | 85        | 85   | ø115  | ø115 | ø155 | ø155 |
| H (high pressure)  | 85         | ø115 | ø155 | ø155 | ø155 | ø155  | 85        | ø115 | ø155  | ø155 | ø155 | ø155 |
| M (ISO clamp)      | 21         | 21   | 21   | 21   | 21   | 21    | -         | -    | -     | -    | -    | -    |
| M (DIN clamp)      | -          | -    | -    | -    | -    | -     | 21        | 21   | 21    | 28   | 28   | 28   |
| M (DIN male)       | -          | -    | -    | -    | -    | -     | 22        | 22   | 23    | 25   | 25   | 30   |
| M (SMS male)       | 20         | 20   | 20   | 24   | 24   | 35    | -         | -    | -     | -    | -    | -    |
| <b>Weight (kg)</b> |            |      |      |      |      |       |           |      |       |      |      |      |
| Shut-off valve     | 3.1        | 3.3  | 5.5  | 6.5  | 11.3 | 13.6  | 3.2       | 3.4  | 5.5   | 6.6  | 11.8 | 13.6 |
| Change-over valve  | 3.9        | 4.2  | 7.1  | 8.5  | 14   | 18    | 4.1       | 4.5  | 7.2   | 8.8  | 14.9 | 17.9 |

\* = only available with replaceable elastomer plug seal.

1) For exact A<sub>1</sub> - A<sub>4</sub> dimensions, please refer to information in Anytime configurator.



Shut-off valve



Change-over valve

**Please Note!**

**Opening/closing time will be effected by the following:**

- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

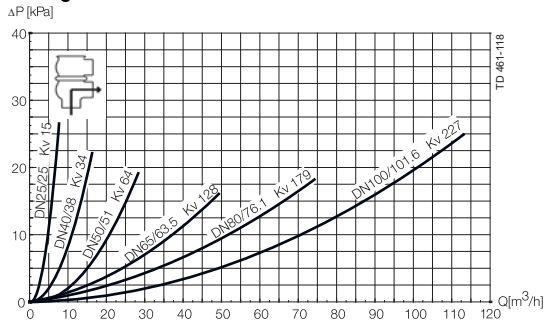
**Air Connections Compressed air:**

R 1/8" (BSP), internal thread.

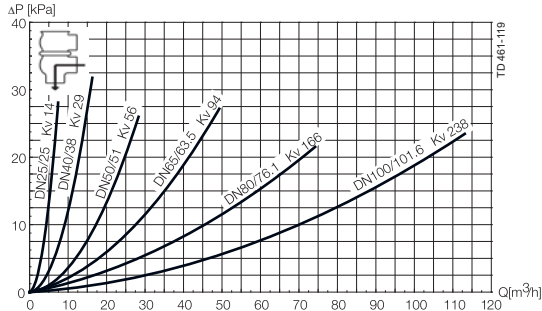
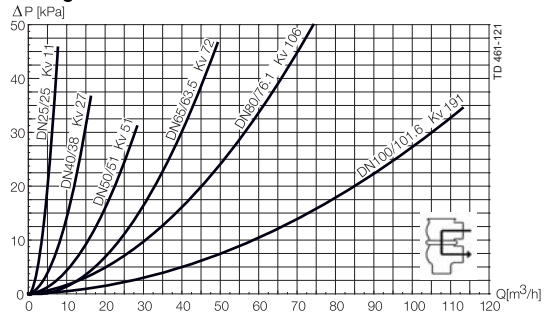
| Size      | Air consumption (litres free air) for one stroke |                          |                          |
|-----------|--|--------------------------|--------------------------|
|           | DN25-40  | DN50-65                  | DN80100                  |
|           | DN/OD 25-38 mm                                   | DN/OD 51-63.5 mm         | DN/OD 76.1-101.6 mm      |
| NO and NC | 0.2 x air pressure [bar]                         | 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |
| A/A       | 0.5 x air pressure [bar]                         | 1.1 x air pressure [bar] | 2.7 x air pressure [bar] |

## Pressure drop/capacity diagrams

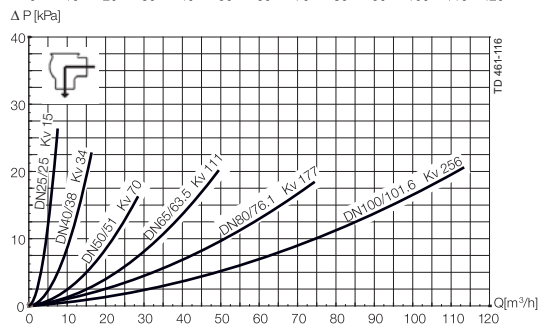
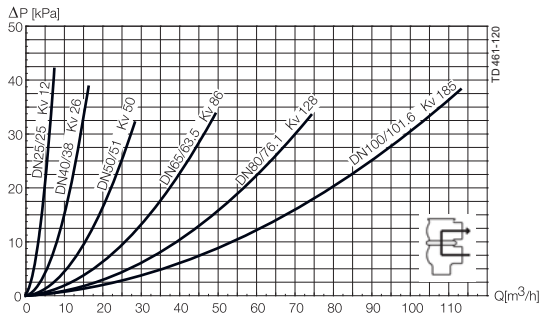
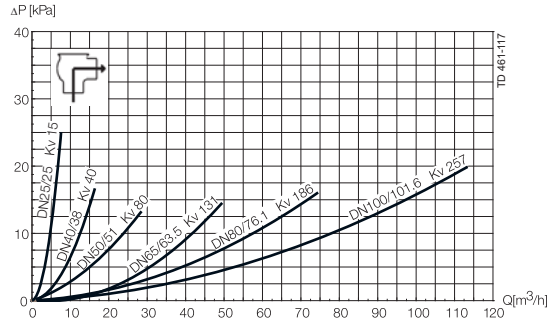
### Change-over Valves



### Change-over Valves



### Shut-off Valves



### Note!

For the diagrams the following applies:

Medium: Water (20°C)

Measurement: In accordance with VDI2173

Pressure drop can also be calculated in Anytime configurator

Pressure drop can also be calculated with the following formula:

$$Q = K_v \times \sqrt{\Delta p}$$

Where

Q = Flow in m<sup>3</sup>/h.

K<sub>v</sub> = m<sup>3</sup>/h at a pressure drop of 1 bar (see table above).

Δ p = Pressure drop in bar over the valve.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m<sup>3</sup>/h

2.5" shut-off valve, where K<sub>v</sub> = 111 (See table above).

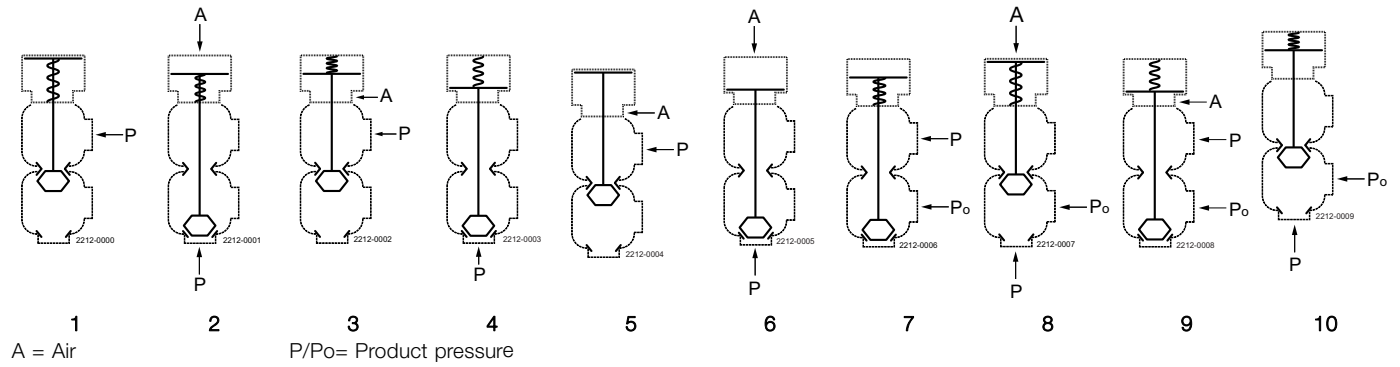
$$Q = K_v \times \sqrt{\Delta p}$$

$$40 = 111 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

(This is approx. the same pressure drop by reading the y-axis above)

Pressure data for Unique Single Seat ATEX Valve



**Table 1 - Shut-off and Change-over valves** Max. pressure in bar without leakage at the valve seat

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size     |                |                |                  |                  |                   |      |
|---|--------------------|---------------|----------------|----------------|----------------|------------------|------------------|-------------------|------|
|   |                    |               | DN 25          | DN 40          | DN50           | DN 65            | DN 80            | DN 100            |      |
|   |                    |               | DN/OD<br>25 mm | DN/OD<br>38 mm | DN/OD<br>51 mm | DN/OD<br>63.5 mm | DN/OD<br>76.1 mm | DN/OD<br>101.6 mm |      |
| 1   | 5                  | NO            | 10.0           | 8.2            | 8.4            | 4.5              | 6.8              | 4.4               |      |
|   |                    |               | 9.2            | 4.4            | 5.9            | 3.4              | 4.4              | 2.9               |      |
| 2   | 6                  | NO            | 10.0           | 7.6            | 9.6            | 5.6              | 7.2              | 4.8               |      |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 7.8              | 10.0              | 6.7  |
|   |                    |               | 5              | 10.0           | 5.7            | 6.8              | 3.7              | 4.7               | 3.0  |
| 3   | 6                  | NC            | 10.0           | 9.8            | 10.0           | 6.1              | 7.7              | 5.0               |      |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 8.5              | 10.0              | 6.9  |
|   |                    |               | 4              | 10.0           | 6.3            | 7.2              | 4.2              | 6.4               | 4.2  |
| 5   | 5                  | NC            | 10.0           | 10.0           | 10.0           | 10.0             | 10.0             | 9.4               |      |
|   |                    |               | 6              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 10.0 |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 10.0 |
| 6   | 5                  | A/A           | 10.0           | 10.0           | 10.0           | 10.0             | 10.0             | 9.1               |      |
|   |                    |               | 6              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 10.0 |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 10.0 |

**Table 2 - Shut-off and Change-over valves** Max. pressure in bar against which the valve can open

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size     |                |                |                  |                  |                   |     |
|---|--------------------|---------------|----------------|----------------|----------------|------------------|------------------|-------------------|-----|
|   |                    |               | DN 25          | DN 40          | DN50           | DN 65            | DN 80            | DN 100            |     |
|   |                    |               | DN/OD<br>25 mm | DN/OD<br>38 mm | DN/OD<br>51 mm | DN/OD<br>63.5 mm | DN/OD<br>76.1 mm | DN/OD<br>101.6 mm |     |
| 7   | 5                  | NO            | 10.0           | 10.0           | 10.0           | 7.4              | 9.7              | 6.3               |     |
|   |                    |               | 10.0           | 7.8            | 10.0           | 6.1              | 7.1              | 4.7               |     |
| 8   | 6                  | NO            | 10.0           | 10.0           | 10.0           | 8.3              | 9.9              | 6.6               |     |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 8.5 |
|   |                    |               | 5              | 10.0           | 10.0           | 6.8              | 6.6              | 7.5               | 4.9 |
| 9   | 6                  | NC            | 10.0           | 10.0           | 10.0           | 9.0              | 10.0             | 6.9               |     |
|   |                    |               | 7              | 10.0           | 10.0           | 10.0             | 10.0             | 10.0              | 8.8 |
|   |                    |               | 10             | 10.0           | 9.7            | 10.0             | 6.8              | 9.1               | 6.1 |





Alfa Laval reserves the right to change specifications without prior notification.

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