# 1.11 Single Seat Valves

Alfa Laval's Single Seat Valve is an extremely reliable and hygienic design for stopping or diverting flow in single or multi-directional systems.

## Product leaflets



## Price lists

# Alfa Laval Unique SSV Standard

## Simply Unique Single Seat

### Concept
Unique SSV meets the highest demands of your process in terms of hygiene and safety. It is built on a well-proven platform from an installed base of more than one million valves.

### Working principle
The valve is a pneumatic seat valve in a hygienic and modular design for a wide field of duties, e.g. as a shut-off valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports. The valve is 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.



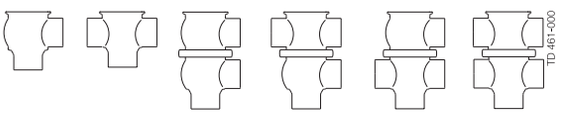
### Standard design
The Unique Single Seat Standard valve comes in a one or two body configuration. To ensure a high degree of flexibility the valve seat between the two bodies in the Change-over version is loose. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

#### Temperature
Temperature range . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max. product pressure . . . . . 1000 kPa (10 bar)
Min. product pressure . . . . . Full vacuum
Air pressure . . . . . 500 to 700 kPa (5 to 7 bar)

#### Valve Body Combinations




200 300 210 220 310 320

#### Actuator function
- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (A/A).

### PHYSICAL DATA

#### Materials
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

Authorized to carry the 3A symbol

**Options**

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
E. External surface finish bright.

**Note!**

For further details, see instruction ESE00202.

**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 computer aided selection tool (Anytime configurator) for full access to all models and options.**

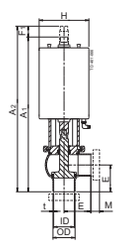
- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Tank Outlet valve.
- Two Step valve.
- Tangential valve.

The actuator comes with a 5 years warranty

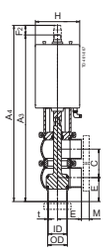
**Dimensions (mm)**

| Nominal size | Inch tubes DN/OD | | | | | | DIN tubes DN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25 | 38 | 51 | 63.5 | 76.1 | 101.6 | 25 | 40 | 50 | 65 | 80 | 100 |
| $A_1$ | 313 | 314 | 363 | 389 | 422 | 467 | 315 | 315 | 364 | 389 | 426 | 470 |
| $A_2$ | 328 | 334 | 388 | 414 | 452 | 497 | 330 | 335 | 389 | 414 | 456 | 500 |
| $A_3$ | 360 | 374.3 | 436 | 475 | 521 | 591 | 367 | 379 | 439.6 | 481 | 533 | 596 |
| $A_4$ | 372 | 391 | 458 | 497 | 548 | 618 | 379 | 396 | 462 | 503 | 560 | 623 |
| $A_1$ High pressure | 350 | 350 | 391 | 417 | 535 | 579 | 354 | 353 | 393 | 423 | 539 | 580 |
| $A_2$ High pressure | 364 | 370 | 416 | 442 | 563 | 608 | 368 | 373 | 418 | 448 | 567 | 610 |
| $A_3$ High pressure | 396 | 411 | 464 | 503 | 633 | 703 | 401 | 414 | 467 | 509 | 645 | 706 |
| $A_4$ High pressure | 408 | 428 | 486 | 525 | 658 | 728 | 401 | 414 | 467 | 509 | 670 | 732 |
| 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 |
| $E_1$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 61 | 78 | 86 | 120 |
| $E_2$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 61 | 78 | 86 | 120 |
| $F_1$ | 15 | 20 | 25 | 25 | 30 | 30 | 15 | 20 | 25 | 25 | 30 | 30 |
| $F_1$ High pressure | 14 | 20 | 25 | 25 | 29 | 29 | 14 | 20 | 25 | 25 | 29 | 29 |
| $F_2$ | 12 | 17 | 22 | 22 | 27 | 27 | 12 | 17 | 22 | 22 | 27 | 27 |
| $F_2$ High pressure | 12 | 17 | 22 | 22 | 26 | 26 | - | - | - | - | 26 | 26 |
| H | 85 | 85 | 115 | 115 | 157.5 | 157.5 | 85 | 85 | 115 | 115 | 157.5 | 157.5 |
| H High pressure | 115 | 115 | 157.5 | 157.5 | 157.5 | 157.5 | 115 | 115 | 157.5 | 157.5 | 157.5 | 157.5 |
| 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 | - | - | - | - | - | - |
| Weight (kg) | | | | | | | | | | | | |
| Stop 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 |
| Stop Valve: High pressure | 4.7 | 4.8 | 9.5 | 10.0 | 9.8 | 14.2 | 4.8 | 4.9 | 9.5 | 10.1 | 10.2 | 14.2 |
| Change-over valve: High pressure | 4.9 | 5.1 | 10.1 | 10.8 | 10.9 | 16.5 | 5.1 | 5.3 | 10.1 | 11.1 | 11.8 | 16.4 |

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator




Shut-off valve




Change-over valve

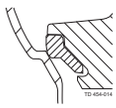
**Please note!**

**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.



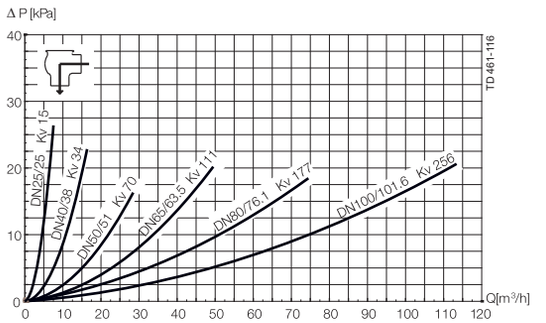
PTFE plug seal (TR2)

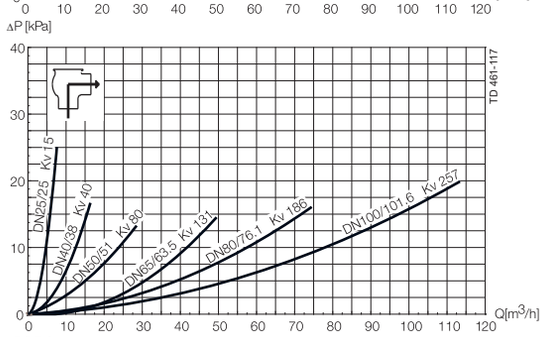
Replaceable elastomer plug seal

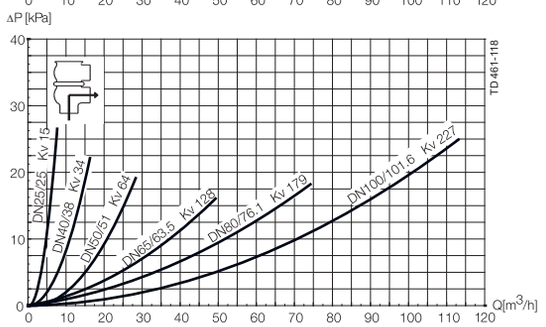
| Air consumption (litres free air) for one stroke | | | |
|---|---|---|---|
| Size | DN25-40 | DN50-65 | DN80100 |
| | DN/OD 25-38 mm | DN/OD 51-63.5 mm | DN/OD 76.1101.6 mm |
| NO and NC | 0.2 x air pressure [bar] | 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |
| A/A | 0.5 x air pressure [bar] | 1.1 x air pressure [bar] | 2.7 x air pressure [bar] |

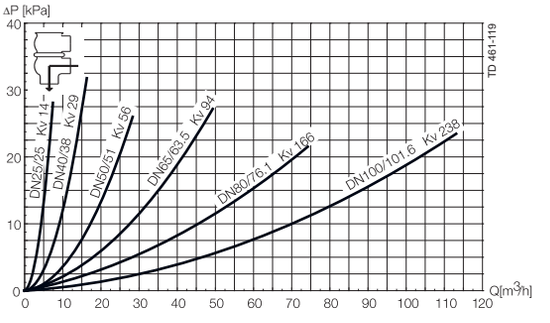


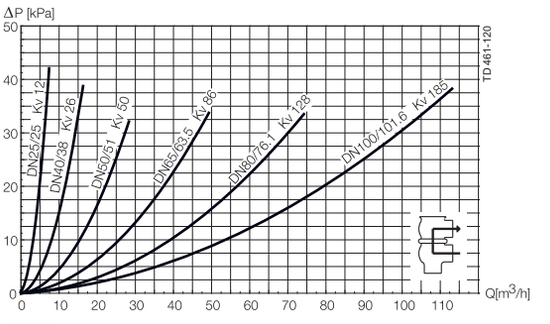
**Pressure drop/capacity diagrams**

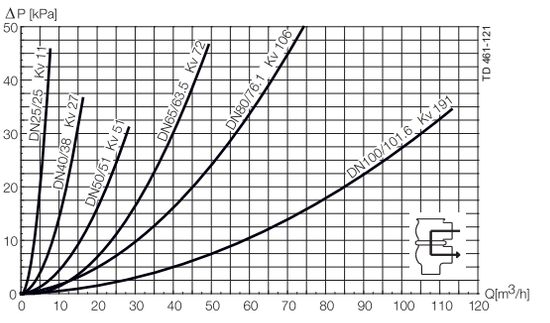



**Note!**

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:

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

Where

Q = Flow in $m^3/h$.

Kv = $m^3/h$ 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 $m^3/h$ 2.5" shut-off valve, where Kv = 111 (See table above).

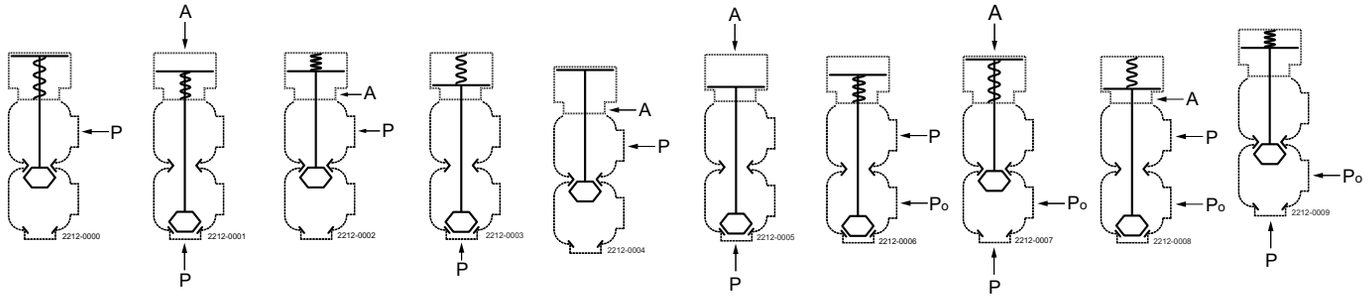
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve standard




A = Air P/Po = Product pressure



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/OD 25 mm | DN 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 8.2 | 8.4 | 4.5 | 6.8 | 4.4 |
| 2 | 5 | NO | 9.2 | 4.4 | 5.9 | 3.4 | 4.4 | 2.9 |
| | 6 | | 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 |
| 3 | 5 | NC | 10.0 | 5.7 | 6.8 | 3.7 | 4.7 | 3.0 |
| | 6 | | 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 | | NC | 10.0 | 6.3 | 7.2 | 4.2 | 6.4 | 4.2 |
| 5 | 5 | A/A | 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/OD 25 mm | DN 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 7 | | NO | 10.0 | 10.0 | 10.0 | 7.4 | 9.7 | 6.3 |
| 8 | 5 | NO | 10.0 | 7.8 | 10.0 | 6.1 | 7.1 | 4.7 |
| | 6 | | 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 |
| 9 | 5 | NC | 10.0 | 10.0 | 10.0 | 6.6 | 7.5 | 4.9 |
| | 6 | | 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 | | NC | 10.0 | 9.7 | 10.0 | 6.8 | 9.1 | 6.1 |

Table 3 - Shut-off and Change-over valves with high pressure actuator option — 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/OD 25 mm | DN 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 10.0 | 10.0 | 10.0 | - | - |
| 2 | 6 | NO | 10.0 | 10.0 | 10.0 | 10.0 | - | - |
| 3 | 6 | NC | 10.0 | 10.0 | 10.0 | 10.0 | 5.0 | 3.0 |
| 4 | | NC | 10.0 | 10.0 | 10.0 | 9.6 | 10.0 | 7.0 |

# Alfa Laval Unique SSV ATEX Standard

## ATEX Addendum to Unique SSV



### Concept

The Unique Single Seat ATEX valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it is ATEX certified to be used in environments with an explosive atmosphere.

### Working principle

The valve is a pneumatic seat valve in a hygienic and modular design for a wide field of duties, e.g. as a shut-off valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports. The valve is 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 Unique SSV ATEX valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

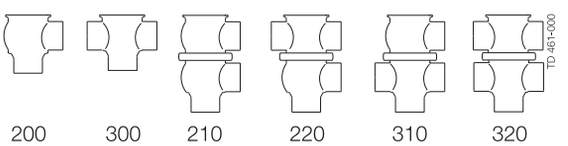
#### Temperature

| | |
|---|---|
| Temperature range | -10°C to +135°C (EPDM) |
| Air pressure, actuator | 500 to 700 kPa (5 to 7 bar) |
| Ambient temperature | 10°C to +40°C |

#### Pressure

| | |
|---|---|
| Max. product pressure | 1000 kPa (10 bar) |
| Min. product pressure | Full vacuum |

#### Valve Body Combinations




#### Actuator function

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

Authorized to carry the 3A symbol

### 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.

**Note!**

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 computer aided selection tool (Anytime configurator) for full access to all models and options.*

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

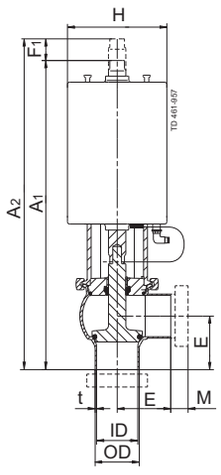
The actuator comes with a 5 years warranty

**Dimensions (mm)**

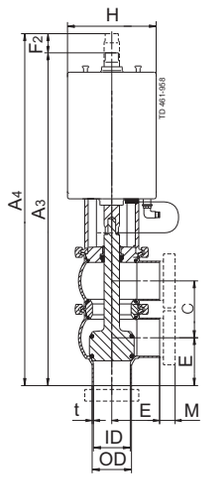
| Nominal size | Inch tubes DN/OD | | | | | | DIN tubes DN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25 | 38 | 51 | 63.5 | 76.1 | 101.6 | 25 | 40 | 50 | 65 | 80 | 100 |
| $A_{1}$ 1) | 313 | 314 | 363 | 389 | 422 | 467 | 315 | 315 | 365 | 389 | 427 | 470 |
| $A_{2}$ 1) | 328 | 334 | 388 | 414 | 452 | 497 | 330 | 335 | 390 | 414 | 457 | 500 |
| $A_{3}$ 1) | 360* | 374 | 436 | 475 | 521 | 591 | 367* | 379 | 440.6 | 481 | 534 | 596 |
| $A_{4}$ 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 |
| $F_1$ | 15 | 20 | 25 | 25 | 30 | 30 | 15 | 20 | 25 | 25 | 30 | 30 |
| $F_2$ | 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 | - | - | - | - | - | - |
| **Weight (kg)** | | | | | | | | | | | | |
| 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 $A_1$ - $A_4$ 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.

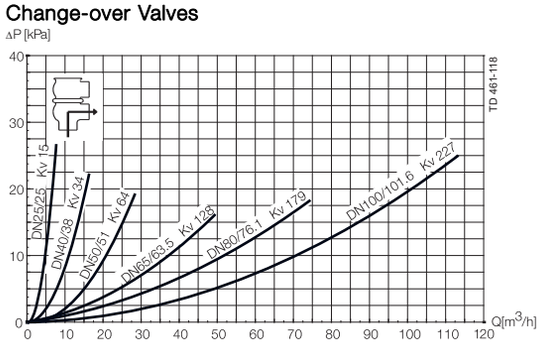
**Air Connections Compressed air:**

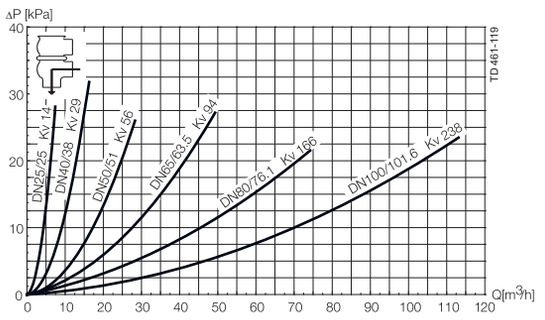
R 1/8" (BSP), internal thread.

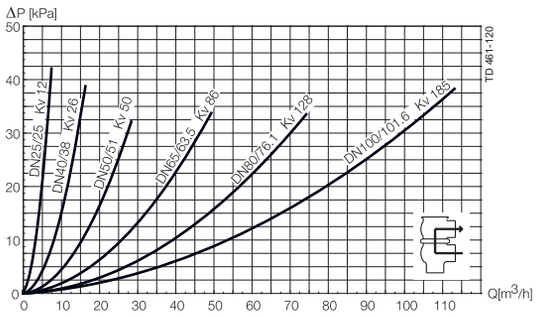
| Size | Air consumption (litres free air) for one stroke DN25-40 DN/OD 25-38 mm | DN50-65 DN/OD 51-63.5 mm | DN80100 DN/OD 76.1-101.6 mm |
|---|---|---|---|
| NO and NC | 0.2 x air pressure [bar] | 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |
| A/A | 0.5 x air pressure [bar] | 1.1 x air pressure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

## Pressure drop/capacity diagrams

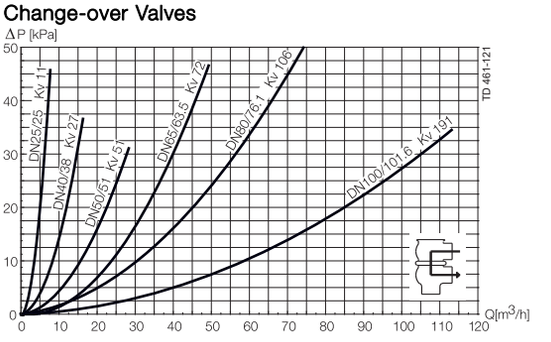
### Change-over Valves



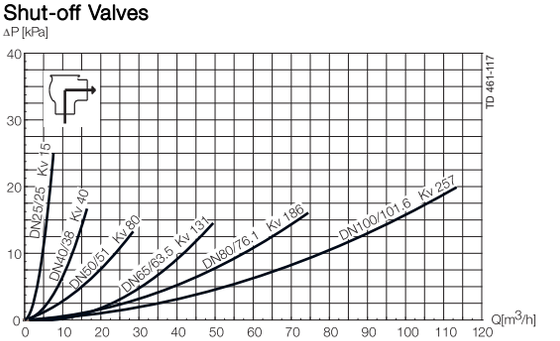



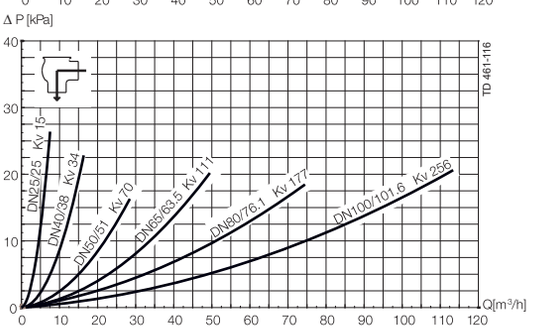




### Change-over Valves




### 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:

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

Where

Q = Flow in $m^3/h$.

Kv = $m^3/h$ 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 $m^3/h$

2.5" shut-off valve, where Kv = 111 (See table above).

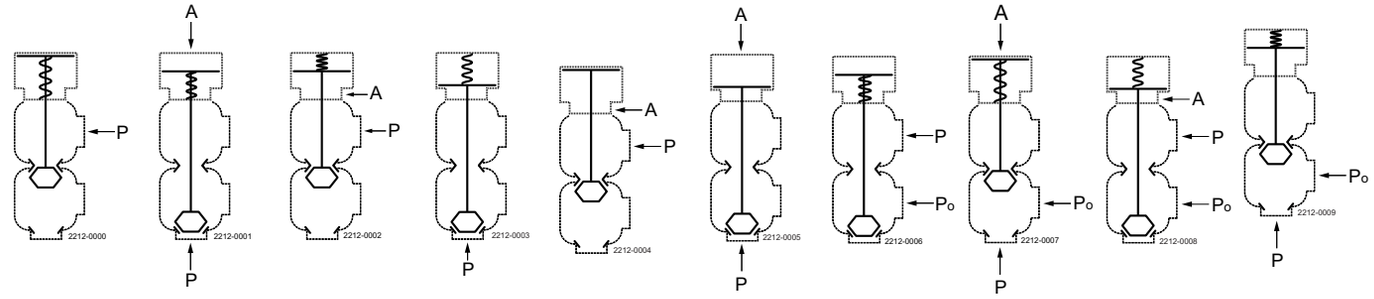
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

**Pressure data for Unique Single Seat ATEX Valve**




1 2 3 4 5 6 7 8 9 10

A = Air P/Po= Product pressure



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/OD 25 mm | DN 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 8.2 | 8.4 | 4.5 | 6.8 | 4.4 |
| | 5 | | 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 | | NC | 10.0 | 6.3 | 7.2 | 4.2 | 6.4 | 4.2 |
| | 5 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.4 |
| 5 | 6 | A/A | 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 |
| | 5 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.1 |
| 6 | 6 | A/A | 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/OD 25 mm | DN 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 7 | | NO | 10.0 | 10.0 | 10.0 | 7.4 | 9.7 | 6.3 |
| | 5 | | 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 | | NC | 10.0 | 9.7 | 10.0 | 6.8 | 9.1 | 6.1 |

# Alfa Laval Unique SSV DN125 and DN150

## Simply Unique Single Seat

### Concept
Unique Single Seat DN125 and DN150 Valves are pneumatic seat valves in a hygienic and modular design giving a wide field of application, e.g. as a stop valve with two (2) or three (3) ports or as change-over valve with three (3) to five (5) ports



### Working principle
The valve is 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.

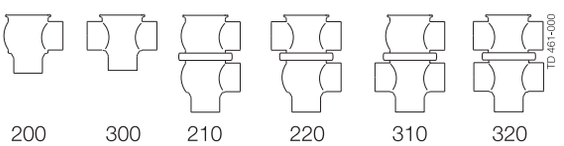
### Standard Design
The Unique Single Seat DN125 and DN150 Valves come in a one or two body configuration. The actuator is connected to the valve body by means of clamp rings. To facilitate installation the valve is only partly assembled when delivered. The valve has welding ends as standard and is available with fittings as option. It is recommended, due to the valve size and weight, to use supporting equipment, handling and installing the valve. Guidelines are given in the instruction manual (ESE02590). Alfa Laval is not able to supply the recommended supporting equipment.

## TECHNICAL DATA

### Temperature
Temperature range, standard lip seal: . -10°C to +100°C (EPDM)
Temperature range, special lip seal: . . -10°C to +140°C (EPDM)

### Pressure
Max. product pressure: . . . . . 1000 kPa (10 bar)
Min. product pressure: . . . . . Full vacuum
Air pressure, actuator
- Sizes DN125-150 . . . . . 600 to 800 kPa (6 to 8 bar)

### Valve Body Combinations




### Actuator function
- Pneumatic downward movement, spring return (NO-lower seat)
- Pneumatic upward movement, spring return (NC-lower seat)

Authorized to carry the 3A symbol

## PHYSICAL DATA

### Materials
Product wetted steel parts: . . . . . 1.4401 (316L)
Other steel parts: . . . . . 1.4301 (304)
Plug stem sizes DN125-150 . . . . . 1.4401 (316L)
Product wetted seals . . . . . EPDM
Other seals . . . . . NBR

**Options**

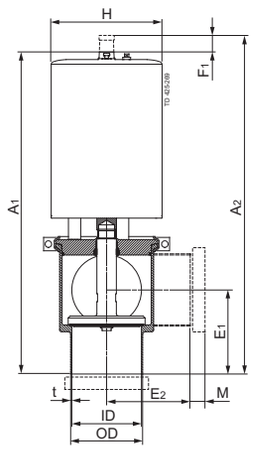
A. Male parts in accordance with required standard.
B. Control and Indication (IndiTop, ThinkTop or ThinkTop Basic).
C. Surface roughness, product wetted parts: Ra ≤ 0.8 µm.
D. Product wetted seals of NBR or FPM.
E. Service tools for actuator.
F. Plug seals NBR/FPM.

The actuator comes with a 5 years warranty

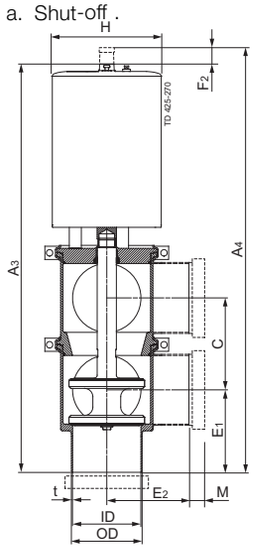
**Dimensions (mm)**

| Nominal size | DIN DN 125 | | DIN DN 150 | |
|---|---|---|---|---|
| | NC | NO | NC | NO |
| $A_1$ | 571 | 573 | 584 | 586 |
| $A_2$ | 614 | 618 | 627 | 631 |
| $A_3$ | 740 | 737 | 777 | 775 |
| $A_4$ | 781 | 778 | 818 | 816 |
| C | 167 | 167 | 192 | 192 |
| OD | 129 | 129 | 154 | 154 |
| ID | 125 | 125 | 150 | 150 |
| t | 2.0 | 2.0 | 2.0 | 2.0 |
| $E_1$ | 150 | 150 | 150 | 150 |
| $E_2$ | 150 | 150 | 150 | 150 |
| $F_1$ | 43 | 45 | 43 | 45 |
| $F_2$ | 41 | 41 | 41 | 41 |
| H | 199 | 199 | 199 | 199 |
| M/DIN male | 46 | 46 | 50 | 50 |
| Weight (kg) - Shut-off valve | 40.3 | 40.3 | 40.9 | 40.9 |
| Weight (kg) - Change-over valve | 50 | 50 | 51.3 | 51.3 |






a. Shut-off .




b. 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:**

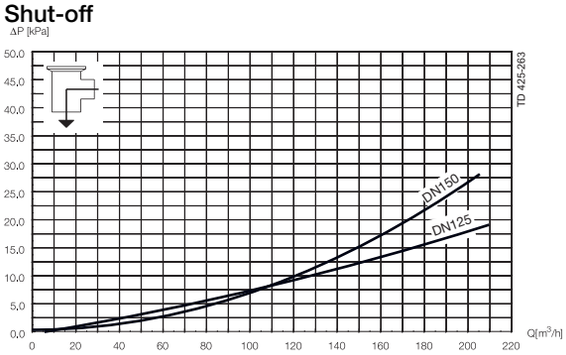
R 1/8" (BSP), internal thread.

**Actuator function**

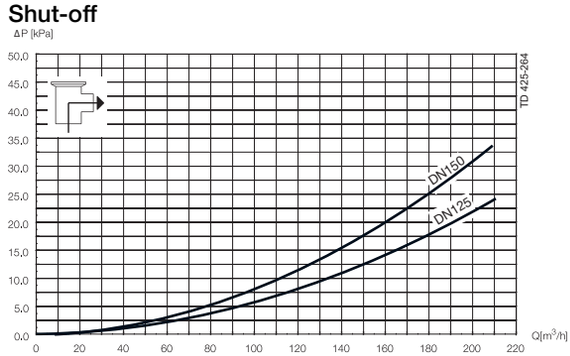
| | Air consumption (litres free air) for one stroke | |
|---|---|---|
| **Size** | **DN 125-150** | **DN 125-150** |
| Shut-off / Change-over valve Actuator function | 1.5 x Air pressure (bar) NC | 2.2 x Air pressure (bar) NO |
| Shut-off / Change-over valve Actuator function | 3.6 x Air pressure (bar) NC (Support air for closing) | 2.9 x Air pressure (bar) NO (Support air for opening) |

## Pressure drop/capacity diagrams

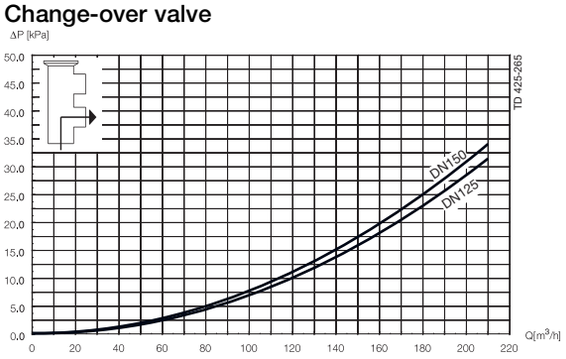
### Shut-off



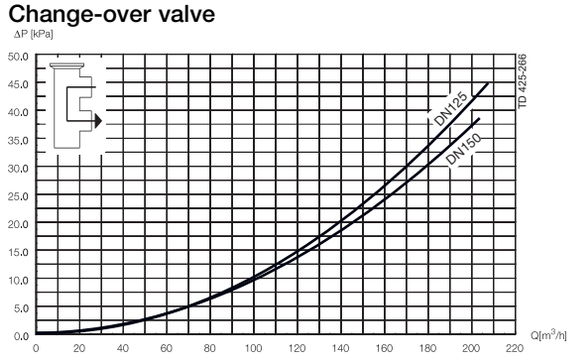

### Shut-off

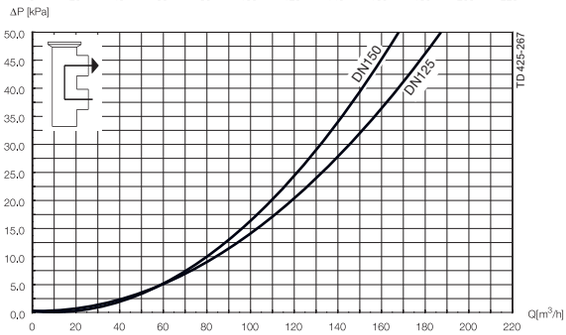


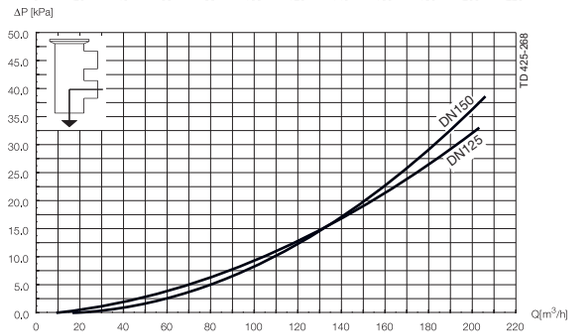

### Change-over valve




### Change-over valve




**NOTE!**
For the diagrams the following applies:
Medium: Water (20°C).
Measurement: In accordance with VDI 2173
Pressure drop can also be calculated in Anytime configurator

Pressure drop can also be calculated with the following formula:

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

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ 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 $m^3/h$
2.5" shut-off valve, where Kv = 111 (See table above).

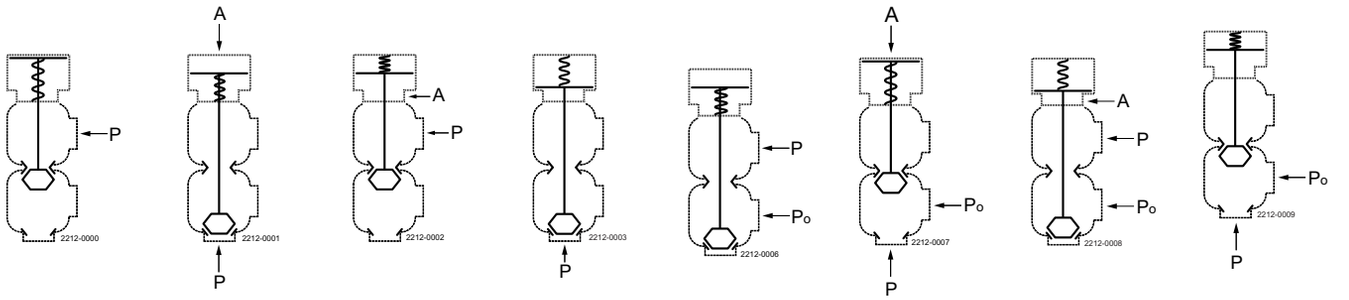
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

**Pressure data for Unique Single Seat Valve DN125 and DN150**




1 2 3 4 5 6 7 8

A = Air P/Po= Product pressure

1.11

Actuator type / function
10. Pneumatic downward movement, spring return (NO-lower seat)
20. Pneumatic upward movement, spring return (NC-lower seat)

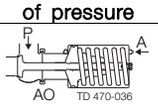
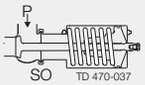
| Table 1: Stop and change-over valves | | | Max. pressure without leakage at the valve seat | |
|---|---|---|---|---|
| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve Size Type | DN 125-150 |
| 1 | | NO | | 5.2 |
| 2 | 5 | NO | DIN | 8.7 |
| | 6 | NO | DIN | 4.4 |
| 3 | 5 | NC | | 8.1* |
| | 6 | NC | | 3.7 |
| 4 | | NC | DIN | 5.2 |

* = Values are valid for 8 bar air pressure
ŧ = Actual product pressure

| Table 2: Stop and change-over valves | The table shows the approx. static pressure (P) in bar against which the valve can open | | | |
|---|---|---|---|---|
| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Actuator type/ function | Type | DN 125-150 |
| 5 | | 60 (NO) | DIN | 8.8 |
| 6 | 6 | 10 (NO) | | 8.1 |
| | 6 | 60 (NO) | | min. 10** |
| 7 | 6 | 70 (NC) | DIN | 7.8 |
| 8 | | 20 (NC) | | 8.9 |

**Table 2**

**Max. pressure in psi against which the valve can open.**

| Actuator / Valve body combination and direction of pressure | Air pressure [psi] | Plug position | Max Pressure (psi) |
|---|---|---|---|
|   | 87.6 | NC | 145.0 |
|   | | NO | 145.0 |

A = Air
P = Product pressure
AO = Air opens
SO = Spring opens

# Alfa Laval Unique SSV Reverse Acting

## Simply Unique Single Seat

### Concept
The Unique Single Seat Reverse Acting valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it provides multiple solutions to prevent pressure shocks when the pipe work does not permit closing against product flow with standard single seat valves.

### Working principle
The valve is a pneumatic seat valve in a hygienic and modular design for a wide field of duties, e.g. as a shut-off valve with two (2) or four (4) ports or as a change-over valve with three (3) to six (6) ports. The valve is remote-controlled by means of compressed air.

### Standard Design
The Unique SSV Reverse Acting valve comes in a two or three body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

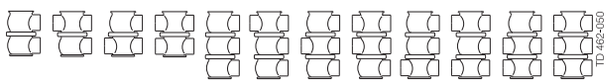
1.11

### TECHNICAL DATA

#### Temperature
Temperature range, standard lip seal: . -10°C to +140°C (EPDM)

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

#### Valve Body Combinations




011 012 021 022 111 112 121 122 211 212 221 222

#### Actuator function
- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (A/A).

Authorized to carry the 3A symbol

### PHYSICAL DATA

#### Materials
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 seal . . . . . NBR

**Options**
A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design)
E. High pressure actuator
F. Maintainable actuator
G. External surface finish bright

**Note!**
For further details, see instruction ESE00202.

**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 computer aided selection tool (Anytime configurator) for full access to all models and options.**

- Long stroke valve.
- Manually operated valve.
- Extended stroke available for 4"

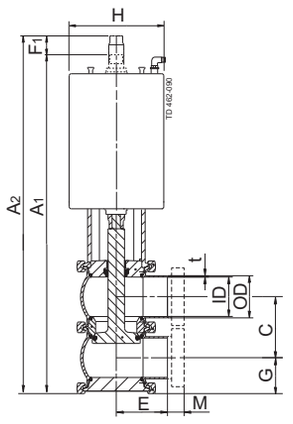
The actuator comes with a 5 years warranty

1.11

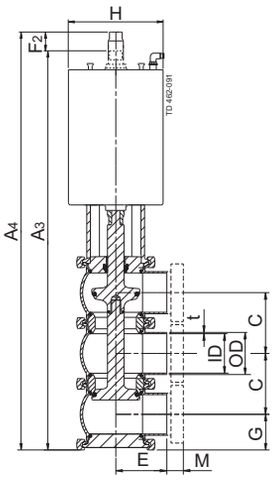
## Dimensions (mm)

| Nominal size | Inch tubes DN/OD | | | | | | DIN tubes DN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25 | 38 | 51 | 63.5 | 76.1 | 101.6 | 25 | 40 | 50 | 65 | 80 | 100 |
| $A_1$ | 338 | 355 | 411 | 436 | 483 | 532 | 346 | 361 | 416 | 448 | 500 | 538 |
| $A_2$ | 350 | 376 | 437 | 462 | 514 | 563 | 358 | 382 | 442 | 474 | 531 | 569 |
| $A_3$ | 386 | 420 | 489 | 526 | 586 | 660 | 398 | 429 | 496 | 544 | 611 | 668 |
| $A_4$ | 397 | 436 | 511 | 548 | 613 | 687 | 409 | 445 | 518 | 566 | 638 | 695 |
| 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 |
| $F_1$ | 12 | 21 | 26 | 26 | 31 | 31 | 12 | 21 | 26 | 26 | 31 | 31 |
| $F_2$ | 11 | 16 | 22 | 22 | 27 | 27 | 11 | 16 | 22 | 22 | 27 | 27 |
| G | 23.9 | 30.4 | 36.9 | 43.15 | 49.45 | 62 | 26 | 32 | 38 | 46 | 53.5 | 63 |
| H | ø85 | ø85 | ø115 | ø115 | ø157 | ø157 | ø85 | ø85 | ø115 | ø115 | ø157 | ø157 |
| H (high pressure) | ø85 | ø115 | ø157 | ø157 | ø157 | ø157 | ø85 | ø115 | ø157 | ø157 | ø157 | ø157 |
| 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 | - | - | - | - | - | - |
| **Weight (kg)** | | | | | | | | | | | | |
| Shut-off valve | 4.3 | 4.4 | 7.3 | 8.9 | 14.4 | 18.3 | 4.4 | 4.6 | 7.3 | 9.2 | 15.3 | 18.2 |
| Change-over valve | 5.2 | 5.4 | 8.7 | 11.0 | 17.1 | 22.6 | 5.4 | 5.7 | 8.7 | 11.4 | 18.5 | 22.5 |

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator



Shut-off valve



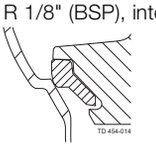
Change-over valve

**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:**

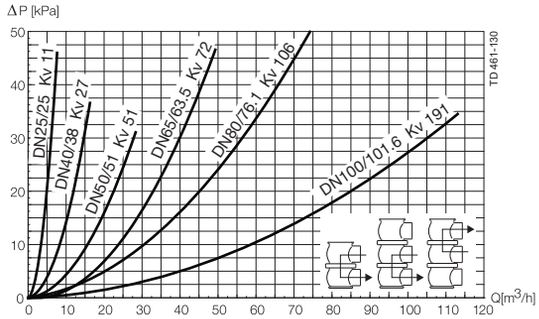
R 1/8" (BSP), internal thread.

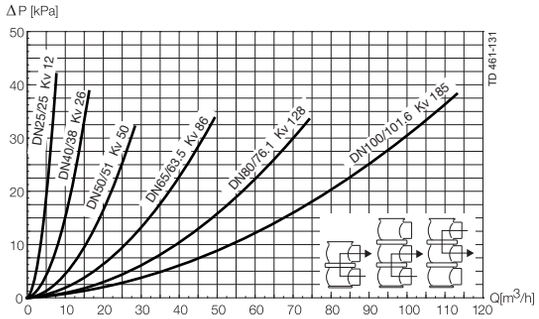


PTFE plug seal (TR2)

| 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 76.1101.6 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




**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:

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

Where

Q = Flow in $m^3/h$.

Kv = $m^3/h$ 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 $m^3/h$

2.5" shut-off valve, where Kv = 111 (See table above).

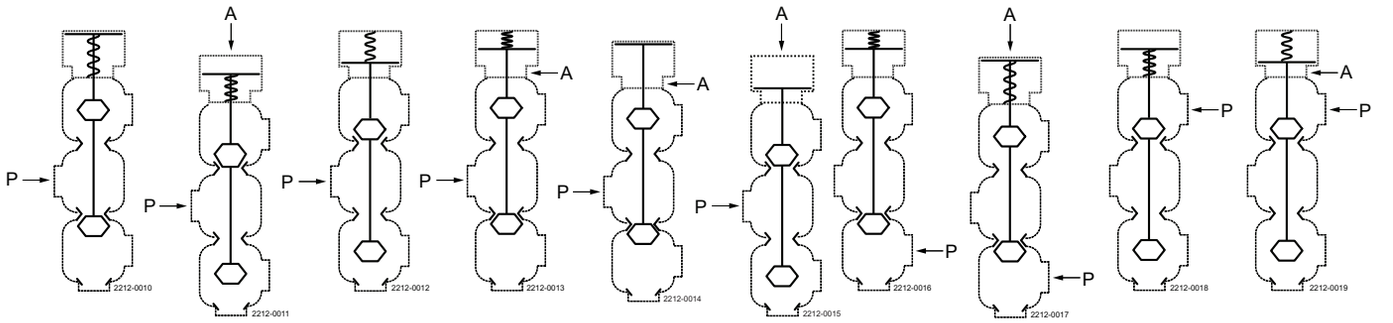
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve Reverse Acting




A = Air P= Product pressure

1.11

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 Change-over valve | Air pressure (bar) | Plug position | Valve size DN25 DN/OD 25 mm | DN40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN65 DN/OD 63.5 mm | DN80 DN/OD 76.1 mm | DN100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 1 | | NC | 10.0 | 8.2 | 8.4 | 4.5 | 6.8 | 4.4 |
| 2 | 6 | NC | 10.0 | 7.6 | 9.6 | 5.6 | 7.2 | 4.8 |
| 3 | | NO | 10.0 | 6.3 | 7.2 | 4.2 | 6.4 | 4.2 |
| 4 | 6 | NO | 10.0 | 10.0 | 10.0 | 6.1 | 7.7 | 5.0 |
| 5 | 6 | A/A | 10.0 | 10.0 | 10.0 | 10.0 | 9.0 | 5.8 |
| 6 | 6 | A/A | 10.0 | 10.0 | 10.0 | 10.0 | 8.5 | 5.6 |

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 Change-over valve | Air pressure (bar) | Plug position | Valve size DN25 DN/OD 25 mm | DN40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN65 DN/OD 63.5 mm | DN80 DN/OD 76.1 mm | DN100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|---|
| 7 | | NO | 10.0 | 9.7 | 10.0 | 6.8 | 4.6 | 3.1 |
| 8 | 6 | NC | 10.0 | 10.0 | 10.0 | 8.3 | 9.9 | 6.6 |
| 9 | | NC | 10.0 | 10.0 | 10.0 | 7.4 | 4.9 | 3.2 |
| 10 | 6 | NO | 10.0 | 10.0 | 10.0 | 9.0 | 10.0 | 6.9 |

# Alfa Laval Unique SSV Long Stroke

## Simply Unique Single Seat



### Concept
The Unique Single Seat Long Stroke valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it is especially suitable for use with products containing particles and/or suspended solids and also with high-viscosity flows.

### Working principle
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.

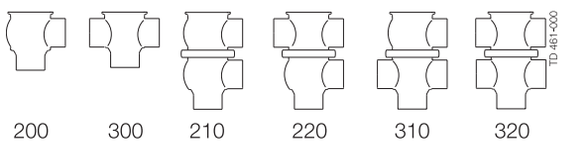
### Standard Design
The valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

#### Temperature
Temperature range . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max. product pressure . . . . . 1000 kPa (10 bar)
Min. product pressure . . . . . Full vacuum
Air pressure . . . . . 500 to 700 kPa (5 to 7 bar)

#### Valve body combinations




200 300 210 220 310 320

#### Actuator function
- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (AA).

Authorized to carry the 3A symbol

### PHYSICAL DATA

#### Materials
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

**Options**

A. Male parts or clamp liners in accordance with required standard
B. Control and Indication: ThinkTop and ThinkTop Basic
C. Product wetted seals in HNBR or FPM
D. TR2 plug (floating PTFE design)
E. Service tool for plug seals
F. External surface finish bright

**Note!**

For further details, see instruction ESE00202.

**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 computer aided selection tool (Anytime configurator) for full access to all models and options.**

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

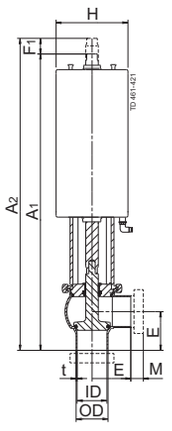
The actuator comes with a 5 years warranty

**Dimensions (mm)**

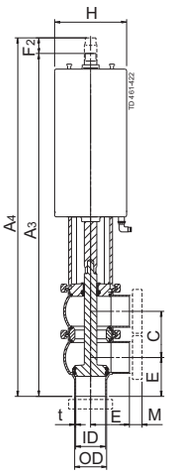


| Size | Inch tubes DN/OD | | | | | DIN tubes DN | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 38 | 51 | 63.5 | 76.1 | 101.6 | 40 | 50 | 65 | 80 | 100 |
| $A_1$ | 415 | 423 | 442 | 539 | 592 | 414 | 422 | 439 | 535 | 591 |
| $A_2$ | 440 | 460 | 486 | 597 | 656 | 442 | 461 | 488 | 597 | 657 |
| $A_3$ | 458 | 488 | 533 | 645 | 718 | 456 | 487 | 531 | 641 | 717 |
| $A_4$ | 484 | 527 | 569 | 689 | 777 | 485 | 528 | 572 | 697 | 779 |
| C | 60.8 | 73.8 | 86.3 | 98.9 | 123.6 | 64 | 76 | 92 | 107 | 126.4 |
| OD | 38 | 51 | 63.5 | 76.1 | 102 | 41 | 53 | 70 | 85 | 104 |
| ID | 34.8 | 47.8 | 60.3 | 72.9 | 97.6 | 38 | 50 | 66 | 81 | 100 |
| t | 1.6 | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 1.5 | 2 | 2 | 2 |
| $E_1$ | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 61 | 78 | 86 | 120 |
| $E_2$ | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 61 | 78 | 86 | 120 |
| $F_1$ | 25 | 37 | 44 | 58 | 64 | 28 | 39 | 49 | 62 | 66 |
| $F_2$ | 26 | 39 | 36 | 44 | 59 | 29 | 41 | 41 | 56 | 62 |
| H | 115 | 115 | 115 | 154 | 154 | 115 | 115 | 115 | 154 | 154 |
| M (ISO clamp) | 21 | 21 | 21 | 21 | 21 | - | - | - | - | - |
| M (/DIN clamp) | - | - | - | - | - | 21 | 21 | 28 | 28 | 28 |
| M (DIN male) | - | - | - | - | - | 22 | 23 | 25 | 25 | 30 |
| M (SMS male) | 20 | 20 | 24 | 24 | 35 | - | - | - | - | - |
| **Weight (kg)** | | | | | | | | | | |
| Shut-off valve | 6.1 | 6.6 | 7.5 | 14.8 | 17.2 | 6.2 | 6.6 | 7.6 | 15.3 | 17.2 |
| Change-over valve | 6.8 | 7.9 | 9.8 | 17.9 | 22.2 | 7 | 7.9 | 10.1 | 18.8 | 22.1 |

For exact high pressure actuator dimension (A and F) - please refer to information in CAS




Shut-off valve.




Change-over valve.

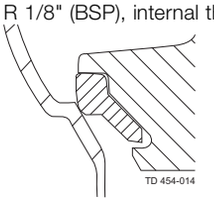
**Please note!**

**Opening/closing time will be affected 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.



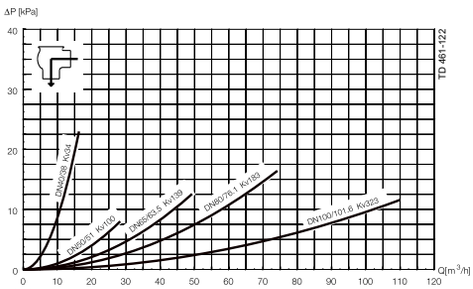

PTFE plug seal (TR2).

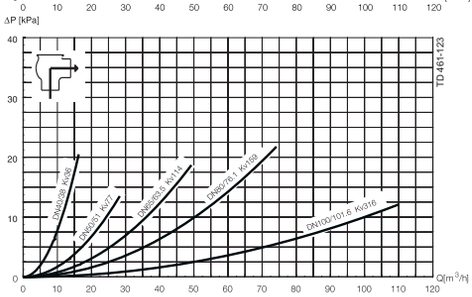
| Max. size of solids (mm) | Valve size (DN/OD) | | | | |
|---|---|---|---|---|---|
| | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| Shut-off valve | 21 | 32 | 40 | 54 | 58 |
| Change-over valve (plug up/lower body) | 22 | 35 | 32 | 43 | 54 |
| Change-over valve (plug down ) | 12 | 15 | 23 | 30 | 40 |

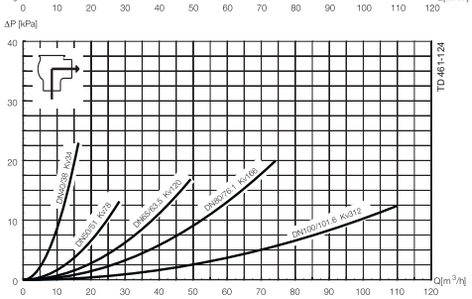
| Max. size of solids (mm) | Valve size (DN/OD) | | | | |
|---|---|---|---|---|---|
| | DN40 | DN50 | DN65 | DN80 | DN100 |
| Shut-off valve | 24 | 34 | 45 | 62 | 61 |
| Change-over valve (plug up/lower body) | 25 | 37 | 37 | 52 | 57 |
| Change-over valve (plug down ) | 12 | 15 | 23 | 30 | 40 |

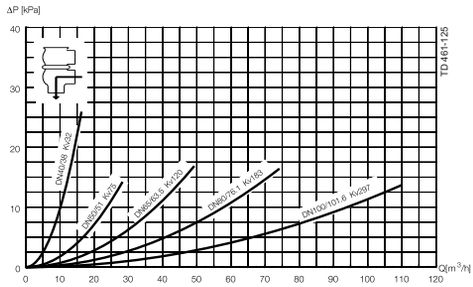
| Air consumption (litres free air) for one stroke | | |
|---|---|---|
| Size | DN40-65<br>DN/OD 38-63.5 mm | DN80100<br>DN/OD 76.1101.6 mm |
| NO and NC | 0.8 x air pressure [bar] | 2 x air pressure [bar] |
| A/A | 1.4 x air pressure [bar] | 3.9 x air pressure [bar] |

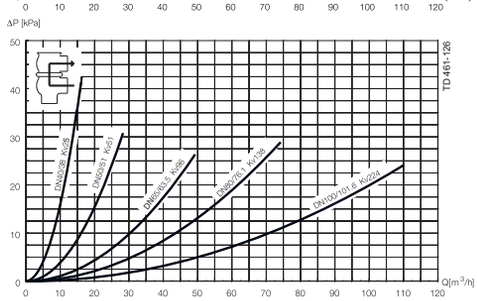
## Pressure drop/capacity diagrams

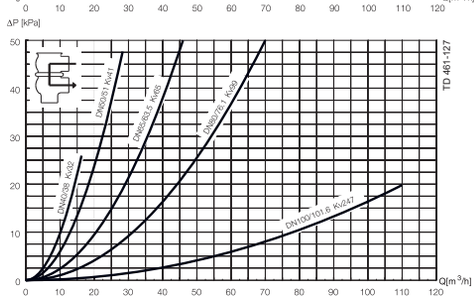



**Note!**

For the diagrams the following applies:

Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

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

Where

Q = Flow in $m^3/h$.

Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).

Δ p = Pressure drop in bar over the valve.

2.5" shut-off valve, where Kv = 111 (See table above).

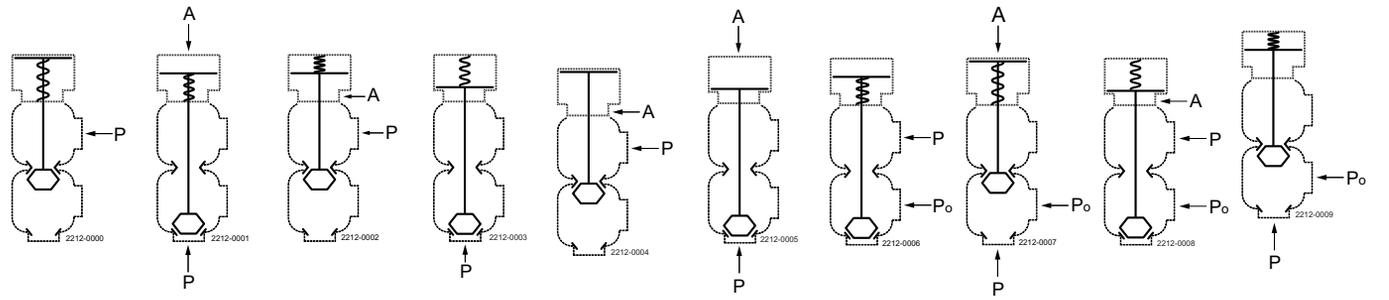
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve Long Stroke




1 2 3 4 5 6 7 8 9 10

A = Air P/Po= Product pressure

1.11

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 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 8.9 | 4.8 | 7.1 | 4.6 |
| 2 | 6 | NO | 10.0 | 8.6 | 5.0 | 6.8 | 4.4 |
| 3 | 6 | NC | 10.0 | 9.9 | 5.4 | 7.2 | 4.6 |
| 4 | | NC | 10.0 | 7.6 | 4.4 | 6.7 | 4.4 |
| 5 | 6 | A/A | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 6 | 6 | A/A | 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 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|
| 7 | | NO | 10.0 | 10.0 | 8.1 | 10.0 | 6.7 |
| 8 | 6 | NO | 10.0 | 10.0 | 8.0 | 9.7 | 6.5 |
| 9 | 6 | NC | 10.0 | 10.0 | 8.7 | 10.0 | 6.7 |
| 10 | | NC | 10.0 | 10.0 | 7.5 | 9.6 | 6.4 |

# Alfa Laval Unique SSV Aseptic

## Simply Unique Single Seat

### Concept
The Unique Single Seat Aseptic valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it features a one-piece diaphragm to ensure hermetic sealing towards the atmosphere. The valve is designed for aseptic processing and it is available as a shut-off valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports.

### Working principle
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. An integrated valve plug/diaphragm secures aseptic operation.

### Standard Design
The Unique SSV Aseptic valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

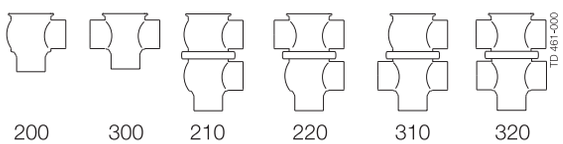


## TECHNICAL DATA

### Temperature
Temperature range: . . . . . -10°C to +140°C (EPDM)

### Pressure
Pressure range: . . . . . 0-800 kPa (0-8 bar)
Max. sterilization temperature . . . . . 150°C/380 kPa (3.8 bar)
Air pressure: . . . . . 500-700 kPa (5-7 bar)

**Note!** Vacuum is not recommended in aseptic applications.

### Valve body combinations



### Actuator function
- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).
- Pneumatic upward and downward movement (A/A).

Authorized to carry the 3A symbol

## PHYSICAL DATA

### Materials
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 seal . . . . . EPDM
Other seals: . . . . . NBR
Diaphragm . . . . . PTFE (Product wetted side) / EPDM

**Options**

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Low pressure actuator.
E. High product pressure actuator.
F. Maintainable actuator.
G. 2 step / 3 position actuator (not for DN/OD 25 / DN 25).
H. External surface bright.

**Note!**

For further details, see instruction ESE00529.

**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 computer aided selection tool (Anytime configurator) for full access to all models and options.**

- Manually operated valve.
- Two Step valve.
- Tangential valve.
- Tank Outlet valve.

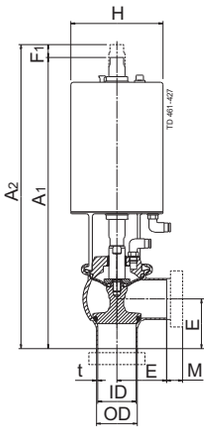
The actuator comes with a 5 years warranty

**Dimensions (mm)**

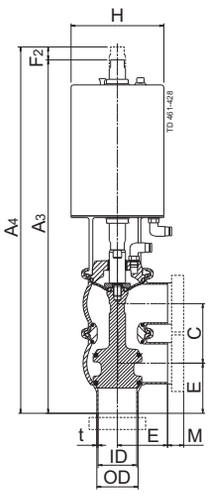


| Nominal size | DN/OD | | | | | | DIN/DN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25 | 38 | 51 | 63.5 | 76.1 | 101.6 | 25 | 40 | 50 | 65 | 80 | 100 |
| $A_1$ | 308 | 314 | 367 | 394 | 432 | 482 | 312 | 316 | 369 | 397 | 436 | 484 |
| $A_2$ | 319 | 325 | 382 | 409 | 451 | 501 | 323 | 327 | 384 | 412 | 455 | 503 |
| $A_3$ | 356 | 375 | 441 | 480 | 531 | 606 | 364 | 380 | 444.5 | 489 | 543 | 610 |
| $A_4$ | 364 | 384 | 454 | 493 | 547 | 622 | 372 | 389 | 458 | 502 | 559 | 626 |
| 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 |
| $E_1$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 61 | 78 | 86 | 120 |
| $E_2$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 61 | 78 | 86 | 120 |
| $F_1$ | 11 | 11 | 15 | 15 | 19 | 19 | 11 | 11 | 15 | 15 | 19 | 19 |
| $F_2$ | 8 | 9 | 13 | 13 | 16 | 16 | 8 | 9 | 13 | 13 | 16 | 16 |
| H | 85 | 85 | 114.9 | 114.9 | 154.3 | 154.3 | 85 | 85 | 114.9 | 114.9 | 154.3 | 154.3 |
| 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 | - | - | - | - | - | - |
| Weight (kg) | | | | | | | | | | | | |
| Shut off valve: | 3.1 | 3.3 | 5.6 | 6.6 | 11.5 | 14 | 3.2 | 3.4 | 5.6 | 6.8 | 11.9 | 13.9 |
| Change-over valve | 3.9 | 4.2 | 7.2 | 8.7 | 14.2 | 18.4 | 4.1 | 4.5 | 7.1 | 9 | 15.1 | 18.3 |

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator




Shut-off valve




Change-over valve

**Please note!**

**Opening/closing time will be affected 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.

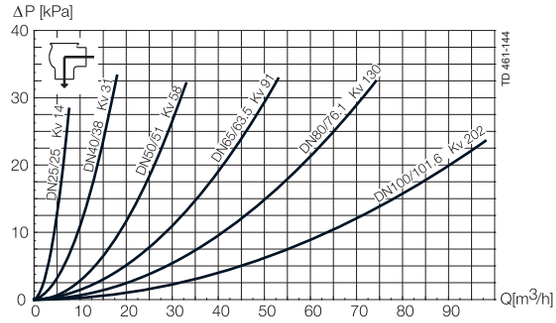
**Air Connections Compressed air:**

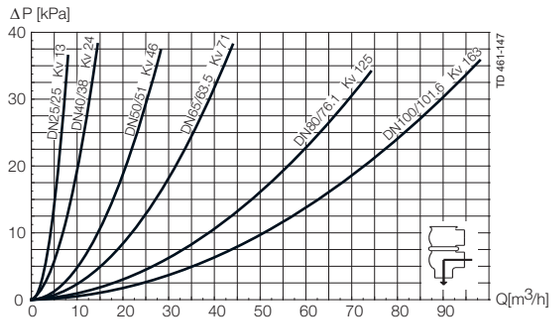
R 1/8" (BSP), internal thread.

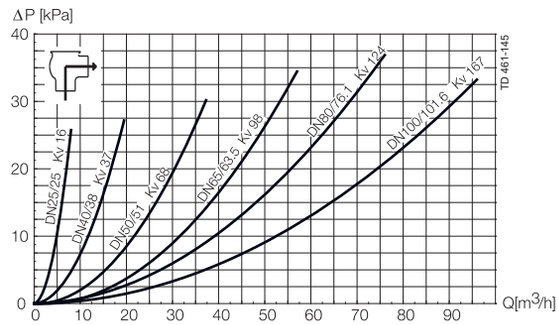
**Air consumption (litres free air) for one stroke**

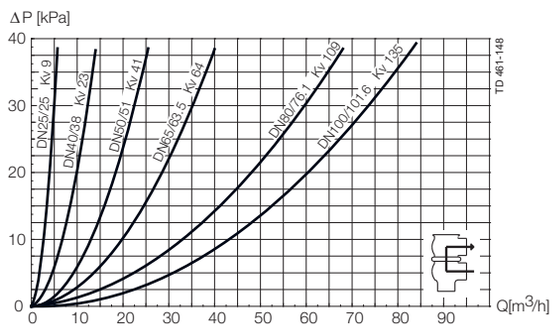
| Size | DN25-40 | DN50-65 | DN80100 |
|---|---|---|---|
| | DN/OD 25-38 mm | DN/OD 51-63.5 mm | DN/OD 76.1101.6 mm |
| NO and NC | 0.2 x air pressure [bar] | 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |
| A/A | 0.5 x air pressure [bar] | 1.1 x air pressure [bar] | 2.7 x air pressure [bar] |

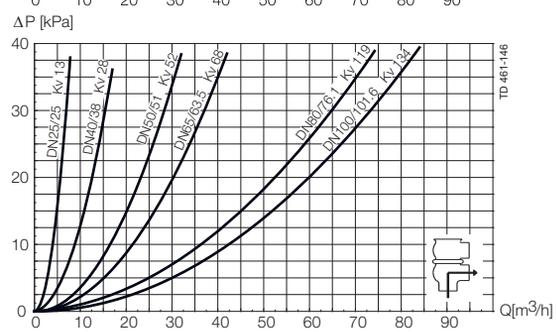
**Pressure drop/capacity diagrams**

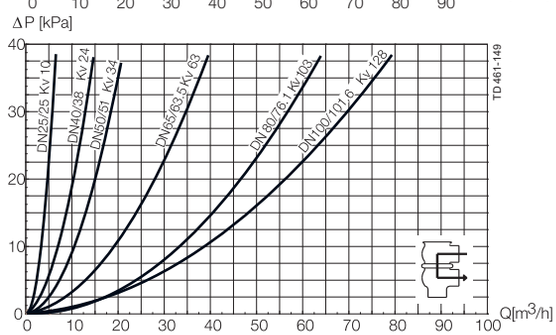



**Note!**

For the diagrams the following applies:
Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

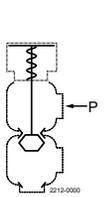
$Q = Kv \times \sqrt{\Delta p}$

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.
Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.
2.5" shut-off valve, where Kv = 111 (See table above).
$Q = Kv \times \sqrt{\Delta p}$
$40 = 111 \times \sqrt{\Delta p}$

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

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

## Pressure data for Unique Single Seat Valve Aseptic

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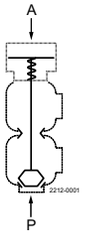


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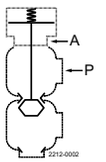


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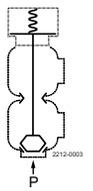


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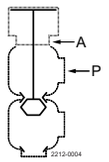


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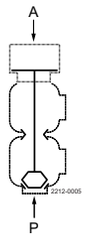



6

A = Air P/Po= Product pressure

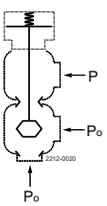
1.11

Table 1 - Shut fully closed. Max. static pressure without leakage

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DN 25 - DN/OD | DN 40 - DN/OD | DN 50 - DN/OD | DN 65 - DN/OD | DN 80 - DN/OD | DN 100 - DN/OD |
| | | | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| 1 | | NO | 8.0 | 6.0 | 8.0 | 4.4 | 7.5 | 5.5 |
| 2 | 6 | NO | 8.0 | 7.6 | 8.0 | 5.6 | 7.2 | 4.8 |
| 3 | 6 | NC | 8.0 | 8.0 | 8.0 | 6.8 | 7.5 | 5.0 |
| 4 | | NC | 8.0 | 6.3 | 7.2 | 4.2 | 6.4 | 4.2 |
| 5 | 6 | A/A | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 6 | 6 | A/A | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |

Table 2- Shut fully closed. Options with high pressure actuator - Max. static pressure without leakage

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DN 25 - DN/OD | DN 40 - DN/OD | DN 50 - DN/OD | DN 65 - DN/OD | DN 80 - DN/OD | DN 100 - DN/OD |
| | | | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| 1 | | NO | 8.0 | 8.0 | 8.0 | 8.0 | - | - |
| 2 | 6 | NO | 8.0 | 8.0 | 8.0 | 8.0 | - | - |
| 3 | 6 | NC | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 4.1 |
| 4 | | NC | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 |

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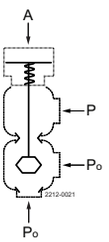


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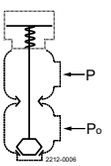


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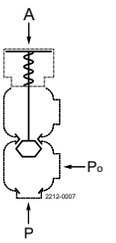


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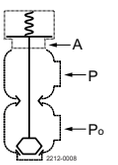


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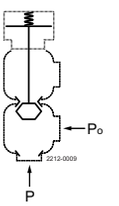



6

A = Air P/Po= Product pressure

Table 3- Valve is closing. Approximately max. pressure in bar at which the valve can close by means of the spring or air pressure

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DN 25 - DN/OD | DN 40 - DN/OD | DN50 - DN/OD | DN 65 - DN/OD | DN 80 - DN/OD | DN 100 - DN/OD |
| | | | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| 1 | | NC | 6.5 | 6.5 | 8.0 | 8.0 | 7.3 | 7.6 |
| 2 | 6 | NO | 8.0 | 8.0 | 8.0 | 8.0 | 7.9 | 8.0 |

Table 4- Seat fully closed - Standard valve. Approximately pressure in bar, at which the valve plug can change positions by the spring or air pressure

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DN 25 - DN/OD | DN 40 - DN/OD | DN50 - DN/OD | DN 65 - DN/OD | DN 80 - DN/OD | DN 100 - DN/OD |
| | | | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| 3 | | NO | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 4 | 6 | NO | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 5 | 6 | NC | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 6 | | NC | 8.0 | 8.0 | 8.0 | 5.7 | 8.0 | 5.4 |

# Alfa Laval Unique SSV Two Step

## Simply Unique Single Seat



### Concept

The Unique Single Seat Two Step valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it can be used for reducing pressure hammers and dosing e.g. in connection with filling of a vessel where an exact volume is required. The degree of opening for the intermediate position can be adjusted by removing spacer rings inside the actuator. Unique Single Seat Valve - Two Step as Change over (NC and NO) can be used for drainage of two pipes simultaneously or in closing/filling applications.

### Working principle

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 Unique SSV Two Step valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

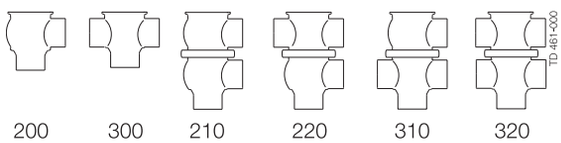
#### Temperature

Temperature range . . . . . -10°C to +140°C (EPDM)

#### Pressure

Max. product pressure . . . . . 1000 kPa (10 bar)
Min. product pressure . . . . . Full vacuum
Air pressure . . . . . 500 to 700 kPa (5 to 7 bar)

#### Valve Body Combinations




200 300 210 220 310 320

#### Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.

Authorized to carry the 3A symbol

### PHYSICAL DATA

#### Materials

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
Other product wetted seals: . . . . . EPDM
Other seals: . . . . . NBR

**Options**

A. Male parts or clamp liners in accordance with the required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
E. High pressure actuator (only ISO51, ISO63.5 and DN50, DN65).
F. External surface finish bright.

**Note!**
For further details, see instruction ESE00505.

**Other valves in the same basic design**
**The valve range includes several purpose built valves. Below are some of the valve models available, though please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.**

- Aseptic valve.
- Tank Outlet valve.

The actuator comes with a 5 years warranty

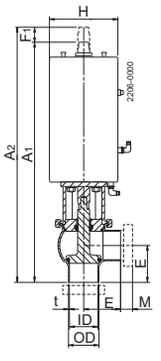
**Dimensions (mm)**



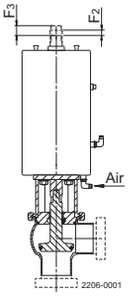
| Nominal size | Inch tubes DN/OD | | | | | DIN tubes DN | | | | | High Pressure Inch tubes DN/OD | | High Pressure DIN tubes DN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 38 | 51 | 63.5 | 76.1 | 101.6 | 40 | 50 | 65 | 80 | 100 | 51 | 63.5 | 50 | 65 |
| $A_1$ 1) | 382 | 395 | 422 | 458 | 504 | 384 | 397 | 422 | 462 | 506 | 426 | 452 | 427 | 452 |
| $A_2$ 1) | 402 | 420 | 447 | 488 | 534 | 404 | 422 | 447 | 492 | 536 | 451 | 477 | 452 | 477 |
| $A_3$ 1) | 443 | 469 | 508 | 557 | 627 | 448 | 472.5 | 514 | 569 | 632 | 500 | 538 | 503 | 544 |
| $A_4$ 1) | 460 | 491 | 530 | 584 | 654 | 465 | 495 | 536 | 596 | 659 | 522 | 560 | 525 | 566 |
| C | 60.8 | 73.8 | 86.3 | 98.9 | 123.6 | 64 | 76 | 92 | 107 | 126 | 73.8 | 86.3 | 76 | 92 |
| OD | 38 | 51 | 63.5 | 76.1 | 101.6 | 41 | 53 | 70 | 85 | 104 | 51 | 63.5 | 53 | 70 |
| ID | 34.8 | 47.8 | 60.3 | 72.9 | 97.6 | 38 | 50 | 66 | 81 | 100 | 47.8 | 60.3 | 50 | 66 |
| t | 1.6 | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 1.5 | 2 | 2 | 2 | 1.6 | 1.6 | 1.5 | 2 |
| E | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 61 | 78 | 86 | 120 | 61 | 81 | 61 | 78 |
| $F_1$ | 20 | 25 | 25 | 30 | 30 | 20 | 25 | 25 | 30 | 30 | 25 | 25 | 25 | 25 |
| $F_2$ Min. Two step stroke | 3 | 3 | 3 | 2.5 | 2.5 | 3 | 3 | 3 | 2.5 | 2.5 | 6 | 6 | 6 | 6 |
| $F_3$ Max. Two step stroke | 6 | 11 | 11 | 14 | 14 | 6 | 11 | 11 | 14 | 14 | 9 | 9 | 9 | 9 |
| $F_4$ | 17 | 22 | 22 | 27 | 27 | 17 | 22 | 22 | 27 | 27 | 22 | 22 | 22 | 22 |
| $F_5$ Two step stroke | 6.5 | 11 | 11 | 14 | 14 | 6.5 | 11 | 11 | 14 | 14 | 9 | 9 | 9 | 9 |
| H | 115 | 115 | 115 | 154 | 154 | 115 | 115 | 115 | 154 | 154 | 154 | 154 | 154 | 154 |
| M (ISO clamp) | 21 | 21 | 21 | 21 | 21 | | | | | | 21 | 21 | | |
| M (DIN clamp) | - | - | - | - | - | 21 | 21 | 28 | 28 | 28 | | | 21 | 28 |
| M (DIN male) | - | - | - | - | - | 22 | 23 | 25 | 25 | 30 | | | 23 | 25 |
| M (SMS male) | 20 | 20 | 24 | 24 | 35 | | | | | | 20 | 24 | | |
| **Weight (kg)** | | | | | | | | | | | | | | |
| Stop valve | 7 | 7.3 | 8.3 | 14.4 | 16.7 | 7 | 7.3 | 8.3 | 14.9 | 16.7 | 8.6 | 9.6 | 8.6 | 9.6 |
| Change-over valve | 8 | 8.9 | 10.3 | 17 | 21 | 8.2 | 8.9 | 10.5 | 17.9 | 21 | 10.2 | 11.6 | 10.2 | 11.8 |

1) For exact $A_1$ - $A_4$ dimensions, please refer to informations in Anytime configurator.

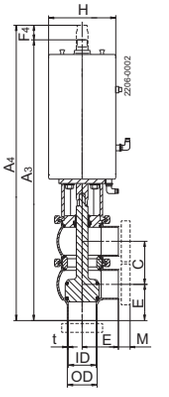
**Air Connections:** R 1/8" (BSP), internal thread.



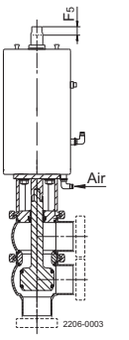

Shut-off valve closed



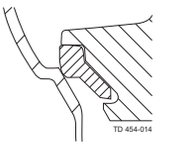

Shut-off valve with Two step stroke activated




Change-over valve closed




Change-over valve with Two step stroke activated



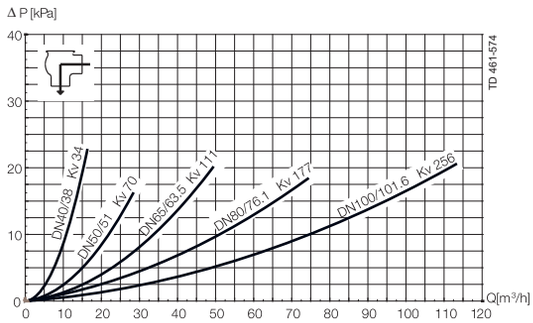

Optional PTFE plug seal (TR2)

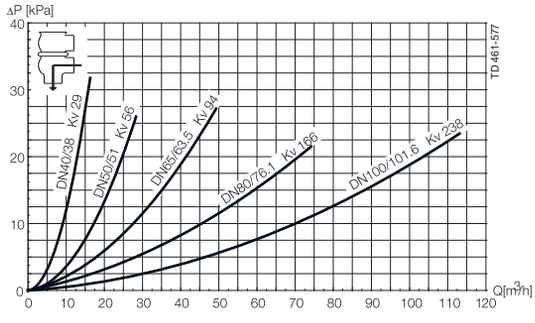
| Air consumption (litres free air) for one stroke | | | |
|---|---|---|---|
| **Size** | **DN40 - DN/OD 38 mm** | **DN50-65 - DN/OD 51-63.5 mm** | **DN80100 - DN/OD 76.1101.6 mm** |
| NO and NC | 0.5 x air pressure [bar] | 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |

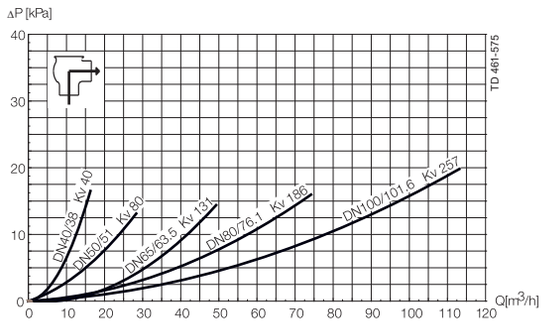
**Please note!**
**Opening/closing time will be affected by the following:**

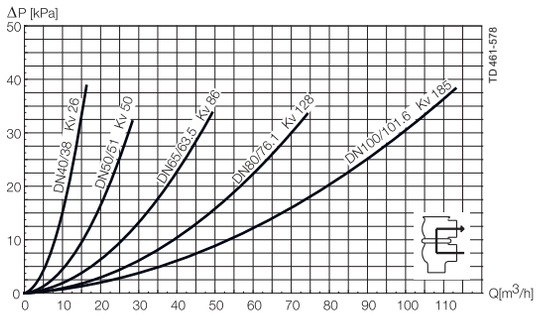
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- The number of valves connected to the same air hose.
- Use of a single solenoid valve for serial connected air actuator functions.
- Product pressure.

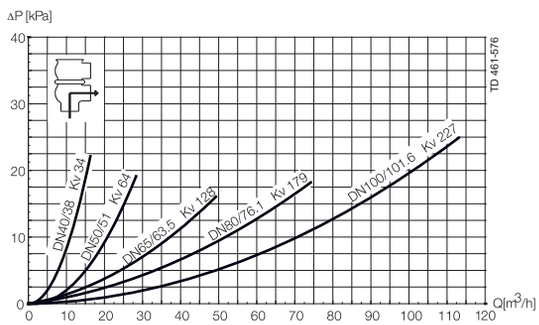
## Pressure drop/capacity diagrams

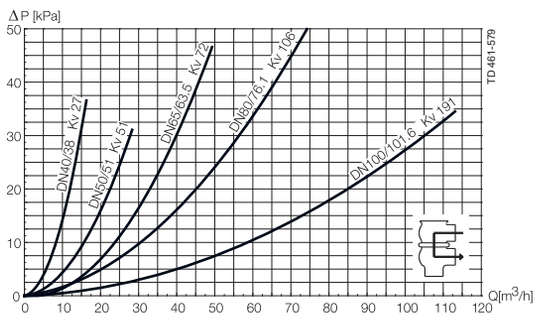



**Note!**

For the diagrams the following applies:

Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

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

Where

Q = Flow in $m^3/h$.

Kv = $m^3/h$ 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 $m^3/h$

2.5" shut-off valve, where Kv = 111 (See table above).

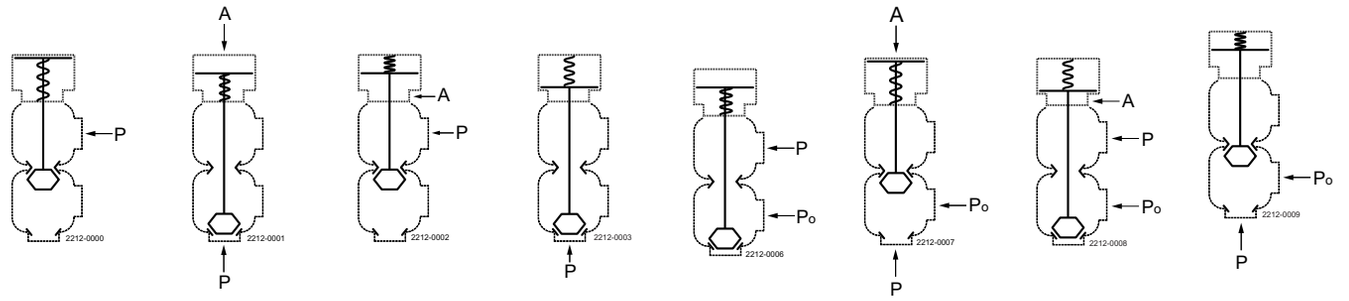
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve Two Step




1 2 3 4 5 6 7 8

A = Air P/Po= Product pressure

1.11

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 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 8.4 | 4.5 | 6.8 | 4.4 |
| 2 | 6 | NO | 10.0 | 9.6 | 5.6 | 7.2 | 4.8 |
| 3 | 6 | NC | 10.0 | 10.0 | 6.1 | 7.7 | 5.0 |
| 4 | | NC | 10.0 | 7.2 | 4.2 | 6.4 | 4.2 |

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 40 DN/OD 38 mm | DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|---|
| 5 | | NO | 10.0 | 10.0 | 7.4 | 9.7 | 6.3 |
| 6 | 6 | NO | 10.0 | 10.0 | 8.3 | 9.9 | 6.6 |
| 7 | 6 | NC | 10.0 | 10.0 | 9.0 | 10.0 | 6.9 |
| 8 | | NC | 9.7 | 10.0 | 6.8 | 9.1 | 6.1 |

Table 3 - Shut-off and Change-over valves with high pressure actuator option (option) 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 DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm |
|---|---|---|---|---|
| 1 | | NO | 10.0 | 10.0 |
| 2 | 6 | NO | 10.0 | 10.0 |
| 3 | 6 | NC | 10.0 | 10.0 |
| 4 | | NC | 10.0 | 10.0 |

# Alfa Laval Unique SSV Tangential

## Simply Unique Single Seat



### Concept

The Unique Single Seat Tangential valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it offers complete drainability of the valve body on horizontally mounted valves. It can be configured as a shut-off valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports.

### Working principle

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 Unique SSV Tangential valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

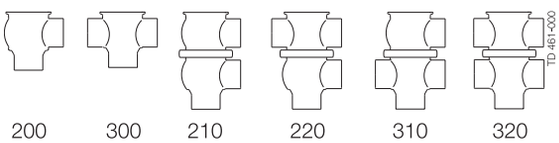
#### Temperature

Temperature range: . . . . . -10°C to +140°C (EPDM)

#### Pressure

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

#### Valve Body Combinations




200 300 210 220 310 320

#### Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (A/A).
- Actuator for intermediate position of the valve plug (optional)

### PHYSICAL DATA

#### Materials

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
Other product wetted seals: . . . . . EPDM
Other seals: . . . . . NBR

**Options**

A. Weld ends or connection types other than Tri-Clamp.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seal HNBR, FPM or TR2 (floating PTFE design).
E. High pressure actuator.
F. NO or A/A actuator.
G. Maintainable actuator.
H. External surface finish bright.

**Note!**

For further details, see instruction ESE00609.

**Other valves in the same basic design**

**The valve range includes several purpose built valves. Below are some of the valve models available, though please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.**

- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Aseptic valve.

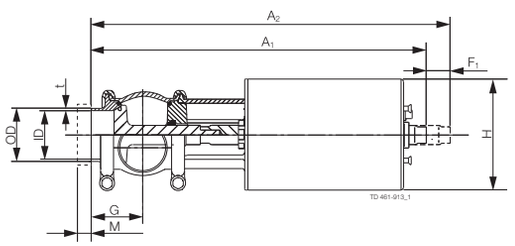
The actuator comes with a 5 years warranty

**Dimensions**

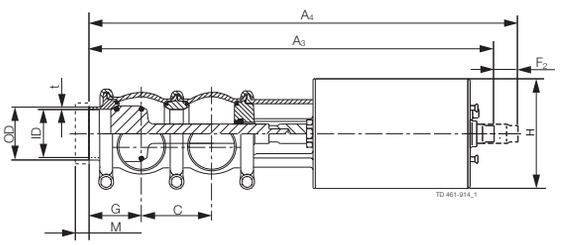


| | Nominal Size | | | |
|---|---|---|---|---|
| | DN/OD 51 mm | DN/OD 63.5 mm | DN/OD 76.1 mm | DN/OD 101.6 mm |
| $A_1$ [1)] | 361 | 374 | 409 | 433 |
| $A_2$ [1)] | 386 | 399 | 439 | 463 |
| $A_3$ [1)] | 435 | 460 | 507 | 557 |
| $A_4$ [1)] | 457 | 482 | 534 | 584 |
| C | 73.8 | 86.3 | 98.9 | 123.6 |
| OD | 51 | 63.5 | 76.1 | 101.6 |
| ID | 47.8 | 60.3 | 72.9 | 97.6 |
| t | 1.6 | 1.6 | 1.6 | 2 |
| E | 61 | 81 | 86 | 119 |
| G | 59.9 | 66.2 | 72.5 | 84.8 |
| $F_1$ | 25 | 25 | 30 | 30 |
| $F_2$ | 22 | 22 | 27 | 27 |
| H | 114.9 | 114.9 | 154.3 | 154.3 |
| N | 14.3 | 17.9 | 21.5 | 25 |
| M/ISO Clamp | 21 | 21 | 21 | 21 |
| M/SMS male | 20 | 24 | 24 | 35 |
| **Weight (kg)** | | | | |
| Shut-off valve | 5.8 | 6.8 | 11.7 | 14.1 |
| Change-over valve | 7.4 | 9 | 14.5 | 18.8 |

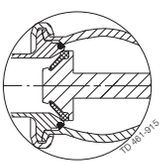
[1)] For exact $A_1$ - $A_4$ dimensions, please refer to informations in Anytime configurator.

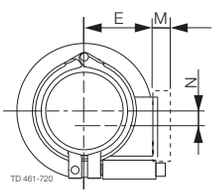



Shut-off valve




Change-over valve




PTFE plug seal (TR2)

**Please note!**

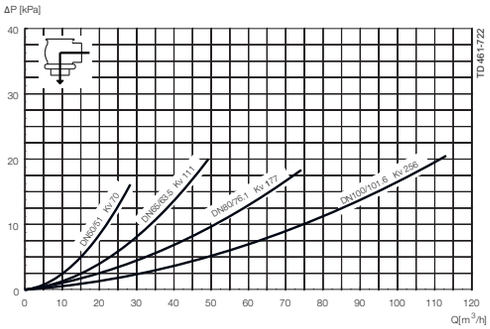
**Opening/closing time will be effected by the following:**

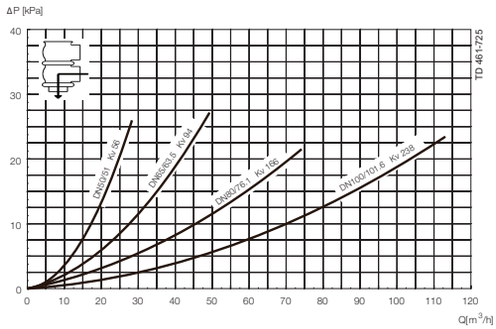
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

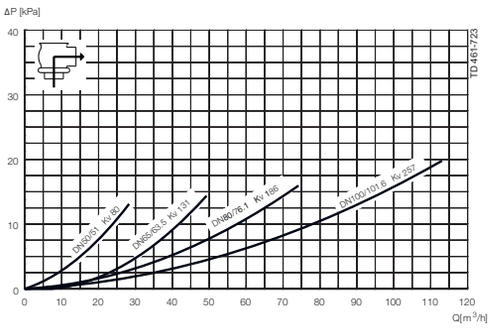
**Air Connections Compressed air:** R 1/8" (BSP). Internal thread.

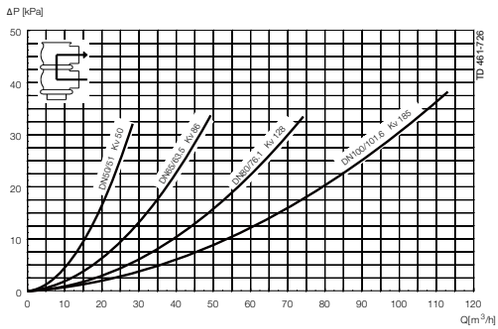
| Air Consumption (Litres free air) for one stroke | | |
|---|---|---|
| **Size** | **DN/OD 51 - 63.5 mm** | **DN/OD 76.1 - 101.6 mm** |
| NO and NC | 0.15 x air pressure [bar] | 1.3 x air pressure [bar] |
| A/A | 1.1 x air pressure [bar] | 2.7 x air pressure [bar] |

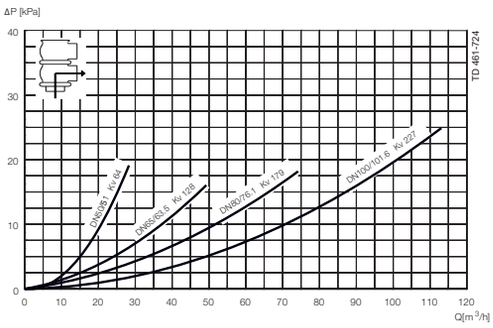
## Pressure drop/capacity diagrams

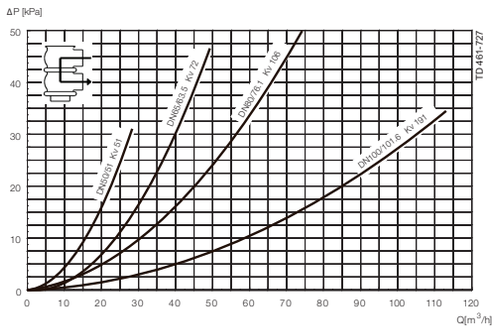



**Note!**

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:

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

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.
2.5" shut-off valve, where Kv = 111 (See table above).

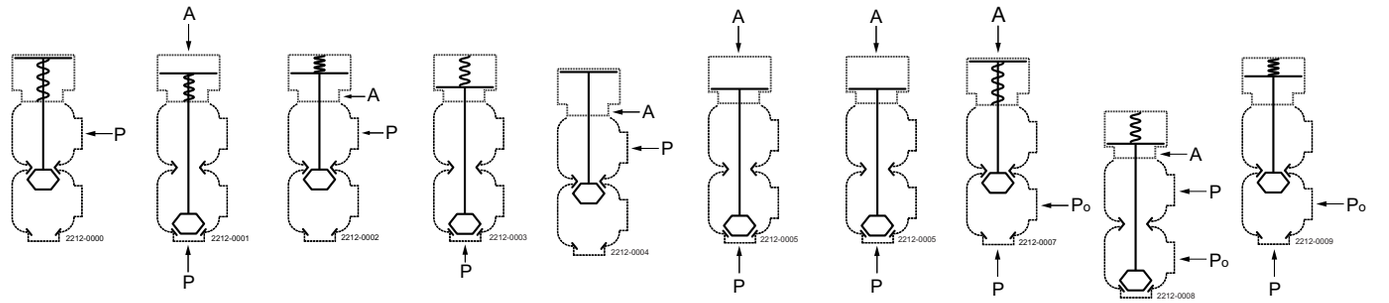
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve Tangential body/Tank valve




A = Air P/Po= Product pressure

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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 DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|
| 1 | | NO | 8.4 | 4.5 | 6.8 | 4.4 |
| 2 | 6 | NO | 9.6 | 5.6 | 7.2 | 4.8 |
| 3 | 6 | NC | 10.0 | 6.1 | 7.7 | 5.0 |
| 4 | | NC | 7.2 | 4.2 | 6.4 | 4.2 |
| 5 | 6 | A/A | 10.0 | 10.0 | 10.0 | 10.0 |
| 6 | 6 | A/A | 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 DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|
| 7 | | NO | 10.0 | 7.7 | 9.7 | 6.3 |
| 8 | 6 | NO | 10.0 | 6.3 | 9.9 | 6.6 |
| 9 | 6 | NC | 10.0 | 9.0 | 10.0 | 6.9 |
| 10 | | NC | 10.0 | 6.8 | 9.1 | 6.1 |

Table 3- Shut-off and change-over valves with high pressure actuator option — 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 DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|
| 1 | | NO | 10.0 | 10.0 | - | - |
| 2 | 6 | NO | 10.0 | 10.0 | - | - |
| 3 | 6 | NC | 10.0 | 10.0 | 5.0 | 3.0 |
| 4 | | NC | 10.0 | 10.0 | 10.0 | 7.0 |

# Alfa Laval Unique SSV Tank Outlet

## Simply Unique Single Seat

### Concept
The Unique Single Seat Tank Outlet valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it is suitable for a wide field of applications, e.g. as a shut-off version closing up against the tank or as a reverse acting valve opening into the tank.

### Working principle
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 Unique SSV Tank Outlet valve comes in a one body configuration, which can be delivered with or without a tank flange. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings. The body can be turned in any position if the clamps are slightly loosened. The tank flange is welded directly into the tank.

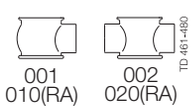
The tank flange can be supplied with TÜV approval AD 2000 and inspection certificate 3.1 according to EN10204 upon request.

### TECHNICAL DATA

#### Temperature
Max. product pressure in tank: 750 kPa (7.5 bar) if max. 20°C
. . . . . 650 kPa (6.5 bar) if max. 100°C
. . . . . 450 kPa (4.5 bar) if max. 150°C
Temperature range: . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max. product pressure in pipeline: . . . . . 1000 kPa (10 bar)
Min. product pressure: . . . . . Full vacuum
Air pressure: . . . . . 500 to 700 kPa (5 to 7 bar)

#### Valve Body Combinations




001 010(RA) 002 020(RA)

### PHYSICAL DATA

#### Materials
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
Other product wetted seals: . . . . . EPDM
Other seals . . . . . NBR

### Options

A. Male parts or clamp liners in accordance with required standard.
B. Weld ends or connection types other than Tri-Clamp
C. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
D. Product wetted seals in HNBR or FPM.
E. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
F. High pressure actuator.
G. Long stroke actuator (not available for Reverse Acting version).
H. Maintainable actuator.
I. External surface finish bright.

### Note!

For further details, see instruction ESE00305.

### Other valves in the same basic design

**The valve range includes several purpose built valves. Below are some of the valve models available, though please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.**

- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Aseptic valve.
- Tangential valve.

The actuator comes with a 5 years warranty

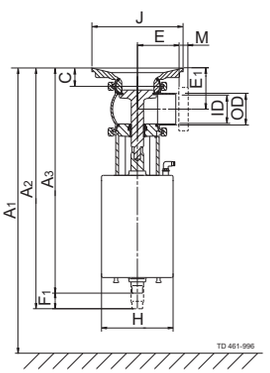
### Dimensions (mm)

1.11

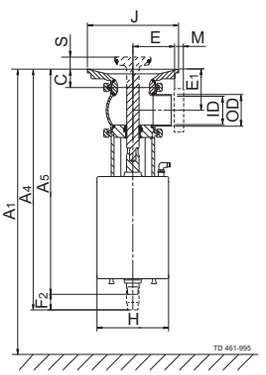
| Size | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | DN 50 | DN 65 | DN 80 | DN 100 |
|---|---|---|---|---|---|---|---|---|
| $A_1$ | 426 | 439 | 479 | 503 | 429 | 445 | 487 | 506 |
| $A_2$ | 393 | 406 | 446 | 470 | 396 | 412 | 454 | 473 |
| $A_3$ | 368 | 381 | 416 | 440 | 371 | 387 | 424 | 443 |
| $A_4$ | 390 | 403 | 443 | 467 | 393 | 409 | 451 | 470 |
| $A_5$ | 364 | 377 | 412 | 436 | 367 | 383 | 420 | 439 |
| C | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| OD | 51 | 63.5 | 76.1 | 101.6 | 53 | 70 | 85 | 104 |
| ID | 47.8 | 60.3 | 72.9 | 97.6 | 50 | 66 | 81 | 100 |
| t | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 2 | 2 | 2 |
| E | 61 | 81 | 86 | 119 | 62 | 82 | 87 | 120 |
| $E_1$ | 67 | 73 | 79 | 92 | 68 | 76 | 84 | 93 |
| $F_1$ | 25 | 25 | 30 | 30 | 25 | 25 | 30 | 30 |
| $F_2$ | 26 | 26 | 31 | 31 | 26 | 26 | 31 | 31 |
| H | 114.9 | 114.9 | 154.3 | 154.3 | 114.9 | 114.9 | 154.3 | 154.3 |
| J | 148 | 163 | 178 | 198 | 148 | 163 | 178 | 198 |
| S | 16 | 16 | 21 | 21 | 16 | 16 | 21 | 21 |
| M/ISO clamp | 21 | 21 | 21 | 21 | - | - | - | - |
| M/DIN clamp | - | - | - | - | 21 | 28 | 28 | 28 |
| M/DIN male | - | - | - | - | 23 | 25 | 25 | 30 |
| M/SMS male | 20 | 24 | 24 | 35 | - | - | - | - |
| Weight (kg) | | | | | | | | |
| Standard | 7.1 | 8.3 | 13.3 | 15.9 | 7.1 | 8.5 | 13.8 | 15.9 |
| Reverse Acting | 7.2 | 8.4 | 13.5 | 16.1 | 7.2 | 8.6 | 14 | 16 |

A1= min. Installation measure to allow that valve can be lifted out of the tank flange / valve body (if Indication Unit is mounted, height must be added)

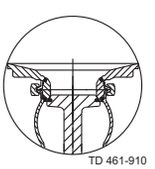
[1] For exact $A_1$ - $A_4$ dimensions, please refer to informations in Anytime configurator.



Standard



Reverse Acting



PTFE plug seal (TR2)

### Please note!

**Opening/closing time will be affected 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.

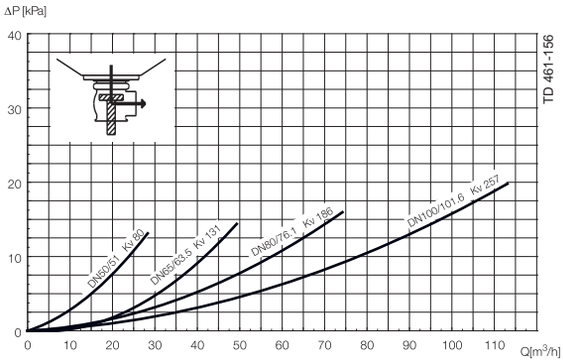
**Air Connections Compressed air:**

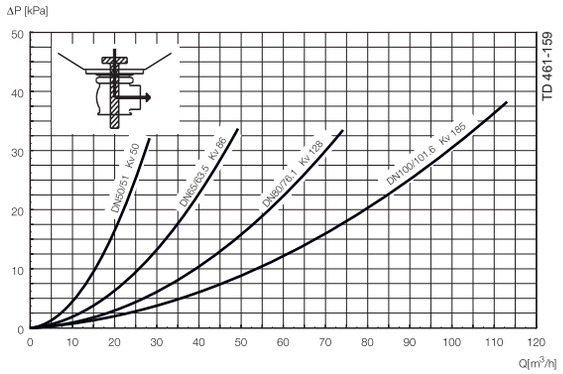
R 1/8" (BSP), internal thread.

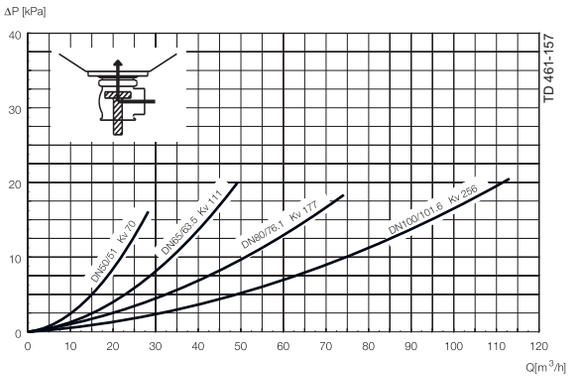
### Actuator function

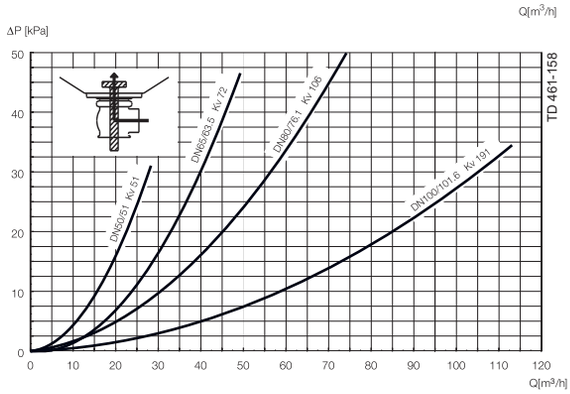
| Air consumption (litres free air) for one stroke | |
|---|---|
| **DN50-65 DN/ OD 51-63.5 mm** | **DN80100 DN/ OD 76.1101.6 mm** |
| 0.5 x air pressure [bar] | 1.3 x air pressure [bar] |

### Pressure drop/capacity diagrams




**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:

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

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.
2.5" shut-off valve, where Kv = 111 (See table above).

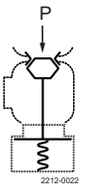
$Q = Kv \times \sqrt{\Delta p}$

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

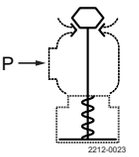
$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

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

Pressure data for Unique Single Seat Valve Tank Outlet




1

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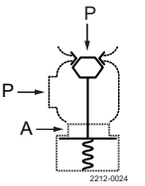
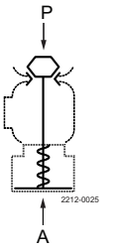



3




4

A = Air

P= Product pressure

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Table 1 - Shut fully closed. Max. pressure in bar without leakage at the valve seat

| Actuator / Valve body combination and direction of pressure | Valve size DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|
| 1 | 7.2 | 4.2 | 6.4 | 4.2 |
| 2 | 8.4 | 4.5 | 6.8 | 4.4 |

Table 2 Max. pressure in bar against which the valve can open

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Valve size DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|
| 3 | 6 | 10.0 | 9.0 | 10.0 | 6.9 |
| 4 | 6 | 10.0 | 8.3 | 9.9 | 6.6 |

# Alfa Laval Unique SSV Y-body

## Simply Unique Single Seat



### Concept
The Unique Single Seat Y-body valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform the Y-body version offers a straight through product flow path and is designed for gentle product treatment. The main use for these valves is in applications involving high viscosity or large particulates.

### Working principle
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. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

### TECHNICAL DATA

#### Temperature
Temperature range: . . . . . -10°C to +140°C (EPDM)

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

#### Actuator function
- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (A/A).

Authorized to carry the 3A symbol

### PHYSICAL DATA

#### Materials
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
Plug seal: . . . . . TR2 (floating PTFE design)

**Options**

A. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
B. Product wetted seals in HNBR/NBR or FPM.
C. External surface finish bright.

**Note!**

For further details, see instruction ESE00608.

**Other valves in the same basic design**

The Unique SSV valve range includes several purpose built valves. Please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.

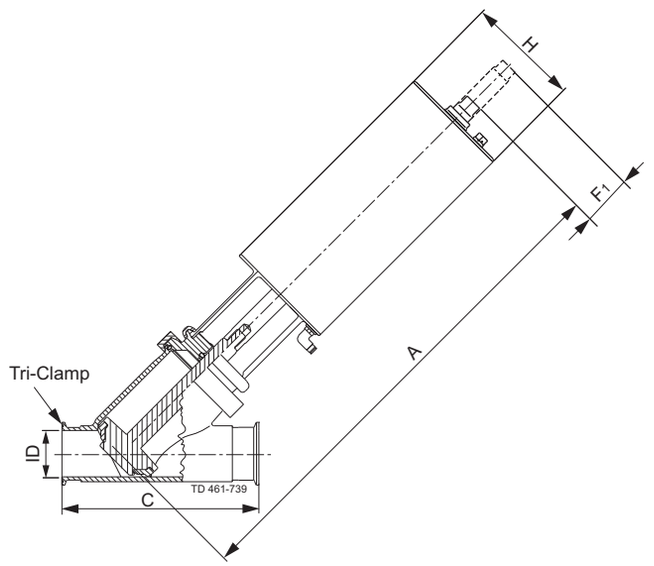
- Single seat valve.
- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Aseptic valve.



The actuator comes with a 5 years warranty

**Dimensions**

| | Nominal Size | | | |
|---|---|---|---|---|
| | DN/OD 51 mm | DN/OD 63.5 mm | DN/OD 76.1 mm | DN/OD 101.6 mm |
| A | 440 | 456 | 560 | 620 |
| C | 200 | 235 | 264 | 321 |
| ID | 47 | 60 | 73 | 97 |
| $F_1$ | 50 | 50 | 67 | 67 |
| H | 115 | 115 | 156 | 156 |
| Weight (kg) | 8.6 | 11.1 | 18.6 | 27.1 |




Y-body valve

**Please note!**

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

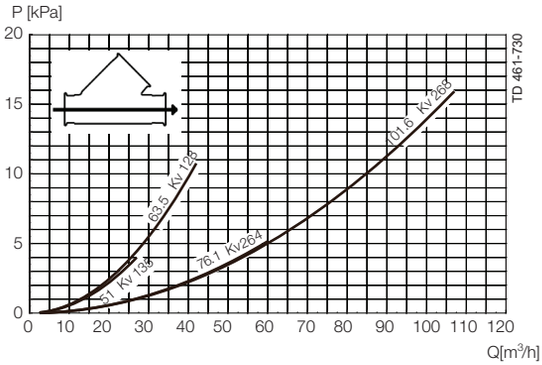
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- The number of valves connected to the same air hose.
- Use of a single solenoid valve for serial connected air actuator functions.
- Product pressure.

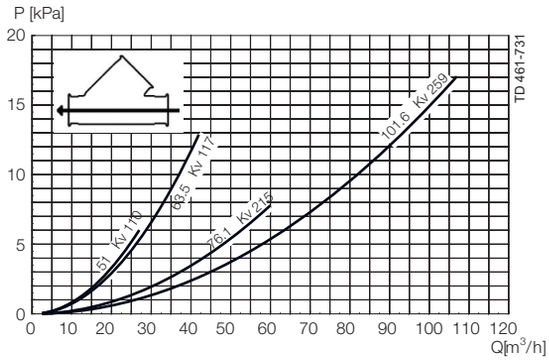
**Air Connections Compressed air:**

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

| | Air Consumption (Litres free air) for one stroke | |
|---|---|---|
| **Size** | **DN/OD 51 - 63.5 mm** | **DN/OD 76.1 - 101.6 mm** |
| NO and NC | 0.8 x air pressure [bar] | 2 x air pressure [bar] |
| A/A | 1.4 x air pressure [bar] | 3.9 x air pressure [bar] |

**Pressure drop/capacity diagrams**




**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:

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

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

2.5" shut-off valve, where Kv = 111 (See table above).

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

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

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

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

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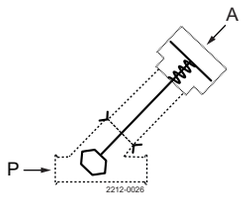
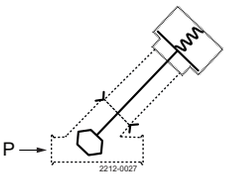
Pressure data for Unique Single Seat Valve Y-body




1

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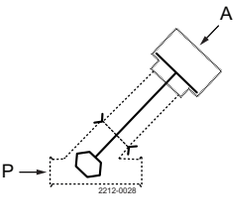


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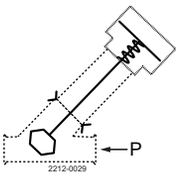
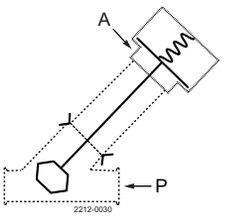



4




5

A = Air

P= Product pressure

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Table 1

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|
| 1 | 6 | NO | 4.9 | 2.7 | 3.8 | 2.1 |
| 2 | | NO | 4.4 | 2.4 | 3.8 | 2.1 |
| 3 | 6 | A/A | 10.0 | 7.1 | 9.4 | 5.4 |

Table 2 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 DN50 DN/OD 51 mm | DN 65 DN/OD 63.5 mm | DN 80 DN/OD 76.1 mm | DN 100 DN/OD 101.6 mm |
|---|---|---|---|---|---|---|
| 4 | | NO | 9.2 | 5.1 | 6.5 | 3.7 |
| 5 | 6 | NC | 9.8 | 5.4 | 6.5 | 3.7 |

# Alfa Laval Unique SSV Manually Operated/Manually Regulating Valve

## Simply Unique Single Seat



### Concept
The Unique Single Seat valve meets the highest demands of your process in terms of hygiene and safety. It is built on a well-proven platform, from an installed base of more than one million valves.

### Working principle
The manual regulated Unique Single Seat Valve is a regulating valve used for manual control of pressure and flow. The valves permit gradual opening and the few and simple moving parts result in very reliable valves easy to dismantle. The plug can be fixed in the adjusted position with a lock screw. The valve is based on the modular platform of the Unique Single Seat Valve.

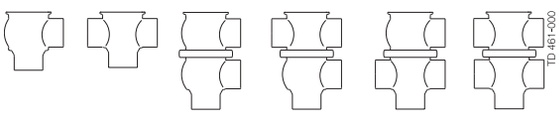
### Standard Design
The manual operated valve can easily be converted to a pneumatic operated valve by replacing the crank mechanism with an actuator. The other parts are identical.

### TECHNICAL DATA

#### Temperature
Temperature range: . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max product pressure: . . . . . 1000 kPa (10 bar)
Min. product pressure: . . . . . Full vacuum

#### Valve Body Combinations




Authorized to carry the 3A symbol

### PHYSICAL DATA

#### Materials
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
Other product wetted seals . . . . . EPDM

**Options**

A. Male parts or clamp liners in accordance with required standard.
B. Product wetted seals in HNBR or FPM.
C. Plug seal HNBR, FPM or TR2 plug (floating PTFE design - only for Manual Operated Valve).
D. External surface finish bright.

**Note**

For further details, see instruction ESE00307.

**Other valves in the same basic design**

**The valve range includes several purpose built valves. Below listed are some of the valve models available, though please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.**



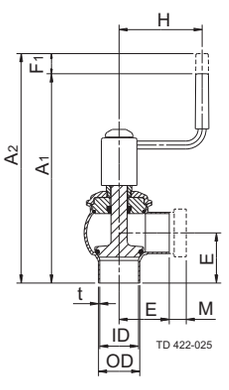
- Standard valve.
- Reverse acting valve.
- Aseptic valve.
- Long Stroke valve.
- Tank Outlet valve.

The actuator comes with a 5 years warranty

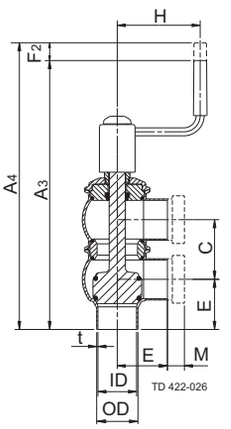
**Dimensions (mm) - Unique Manually Operated Valves**

| Size | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | DN 25 | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ [1] | 245 | 245 | 259 | 285 | 291 | 337 | 247 | 247 | 260 | 284 | 295 | 338 |
| $A_2$ [1] | 260 | 265 | 284 | 310 | 321 | 367 | 262 | 267 | 285 | 309 | 325 | 368 |
| $A_3$ [1] | 291 | 307 | 332 | 371 | 390 | 460 | 297 | 312 | 336 | 376 | 402 | 464 |
| $A_4$ [1] | 303 | 324 | 354 | 393 | 417 | 487 | 309 | 329 | 358 | 398 | 429 | 491 |
| 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 |
| $E_1$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 62 | 78 | 87 | 120 |
| $E_2$ | 50 | 49.5 | 61 | 81 | 86 | 119 | 50 | 49.5 | 62 | 78 | 87 | 120 |
| $F_1$ | 15 | 20 | 25 | 25 | 30 | 30 | 15 | 20 | 25 | 25 | 30 | 30 |
| $F_2$ | 12 | 17 | 22 | 22 | 27 | 27 | 12 | 17 | 22 | 22 | 27 | 27 |
| H | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| 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 | - | - | - | - | - | - |
| Weight (kg) | | | | | | | | | | | | |
| Shut off valve | 1.8 | 2.0 | 2.6 | 3.6 | 4.6 | 7.0 | 1.9 | 2.1 | 2.5 | 3.7 | 5.0 | 6.9 |
| Change-over valve | 2.6 | 3.0 | 4.2 | 5.6 | 7.3 | 11.4 | 2.8 | 3.2 | 4.2 | 5.9 | 8.2 | 11.2 |

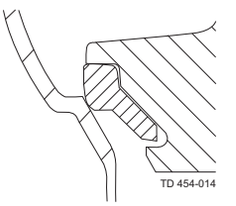
[1] For exact $A_1$ - $A_4$ dimensions, please refer to informations in Anytime configurator.




Shut off valve




Change-over valve




PTFE plug seal (TR2)

Fig. 2. Dimensions.

**Kv-Factors**

| Valve size | Kv |
|---|---|
| 38mm/DN40 | 14*/44 |
| 51mm/DN50 | 75 |
| 63.5mm/DN65 | 106 |
| 76.1mm/DN80 | 171 |
| 101.6mm/DN100 | 250 |

* optional

Kv = $m^3$/h at a pressure drop of 1 bar.

For other pressure drops than 1 bar the flow can be calculated with the following formula:

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

Where
Q = Flow in $m^3$/h.
Kv = See above.
Δ p = Pressure drop in bar over the valve.

**Example:**

Plug Kv 75
Q to be calculated at Δp = 2 bar:
$Q = 75 \times \sqrt{2} = 106$ $m^3$/h
or at 50% stroke:
$Q = 0.5 \times 75 \times \sqrt{2} = 53$ $m^3$/h

**Pressure drop/capacity diagram:**

The plugs have linear characteristics. This means that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

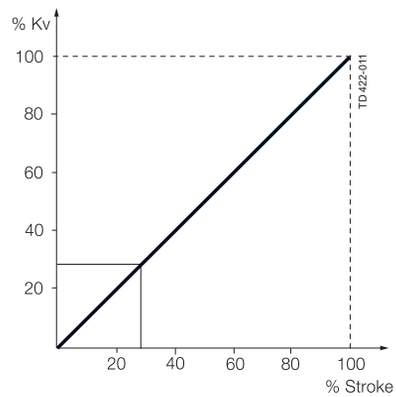



Fig. 3. The flow in % of the total flow at a pressure drop of 1 bar.

**Dimensions (mm) - Unique Manually Regulating Valve**

| Size | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ | 176 | 189 | 215 | 221 | 267 | 178 | 191 | 215 | 226 | 269 |
| $A_2$ | 196 | 214 | 240 | 251 | 297 | 198 | 216 | 240 | 256 | 299 |
| OD | 38 | 51 | 63.5 | 76.1 | 101.6 | 41 | 53 | 70 | 85 | 104 |
| ID | 34.8 | 47.8 | 60.3 | 72.9 | 97.6 | 38 | 50 | 66 | 81 | 100 |
| t | 1.6 | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 1.5 | 2 | 2 | 2 |
| $E_1$ | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 62 | 78 | 87 | 120 |
| $E_2$ | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 62 | 78 | 87 | 120 |
| $F_1$ | 20 | 25 | 25 | 30 | 30 | 20 | 25 | 25 | 30 | 30 |
| H | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| M/ISO clamp | 21 | 21 | 21 | 21 | 21 | - | - | - | - | - |
| M/DIN clamp | - | - | - | - | - | 21 | 21 | 28 | 28 | 28 |
| M/DIN male | - | - | - | - | - | 22 | 23 | 25 | 25 | 30 |
| M/SMS male | 20 | 20 | 24 | 24 | 35 | - | - | - | - | - |
| Weight (kg) - Shut-off valve | 2.1 | 2.9 | 4.0 | 5.4 | 8.2 | 2.2 | 2.9 | 4.1 | 5.9 | 8.1 |

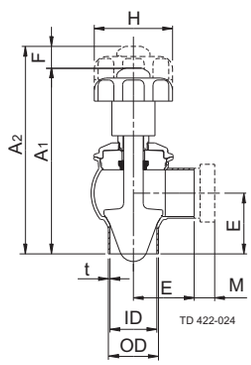



Fig. 4. Dimensions

# Alfa Laval Unique SSV Aseptic Manually Operated Valve

## Simply Unique Single Seat



### Concept

The Unique Single Seat Aseptic Manual Valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it features a one-piece diaphragm to ensure hermetic sealing towards the atmosphere. The valve is designed for aseptic processing and it is available in a one or two body configuration as well as an tank outlet valve configuration.

### Working principle

The valve is a manual operated seat valve in an aseptic and modular design for a wide field of duties, e.q. as a shut-off valve, as a change–over valve, as a tank outlet valve or as regulating valve. The Regulating Valve is used for control of pressure and flow and the plug can be fixed in the adjusted position with a lock screw.

### Standard design

The Unique SSV Aseptic Manual Valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator (Anytime configurator).

The Unique SSV Aseptic Manual Tank Outlet Valve comes in a one body configuration, which can be delivered with or without a tank flange. The valve body is clamped to the tank flange and can be turned in any position if the clamps are slightly loosened. The tank flange is welded directly into the tank.

## TECHNICAL DATA

### Temperature

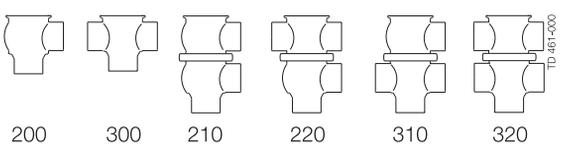
Temperature range: . . . . . -10°C to +140°C (EPDM)

### Pressure

Pressure range: . . . . . 0-800 kPa (0-8 bar)
Max. sterilization temperature . . . . . 150°C/380 kPa (3.8 bar)

**Note!** Vacuum is not recommended in aseptic applications.

### Valve body combinations




Authorized to carry the 3A symbol

## PHYSICAL DATA

### Materials

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 seal . . . . . EPDM
Other seals: . . . . . HNBR
Diaphragm . . . . . PTFE (Product wetted side) / EPDM

**Options**

A. Male parts or clamp liners in accordance with required standard
B. Product wetted seals in HNBR or FPM
   (only for Unique SSV aseptic manually tank outlet valve)
C. Plug seal HNBR, FPM
D. Tangential bodys
   (only for Unique SSV aseptic manually tank outlet valve and for Unique SSV aseptic manually operated valve)
E. External surface bright

**Note!**

For further details, see instruction ESE02414.

**Other valves in the same basic design**

The Unique SSV valve range includes several purpose built valves. Please use the Alfa Laval computer aided selection tool (Anytime configurator) for full access to all models and options.

**Pressure drop/capacity diagram:**

The plugs have linear characteristics. This means that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

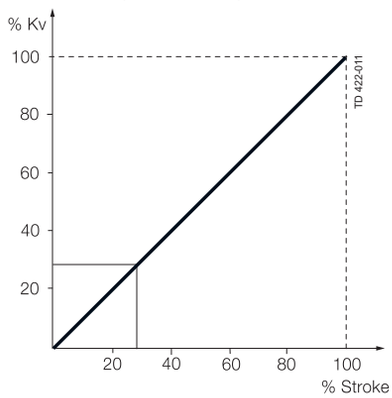



Fig. 3. The flow in % of the total flow at a pressure drop of 1 bar.

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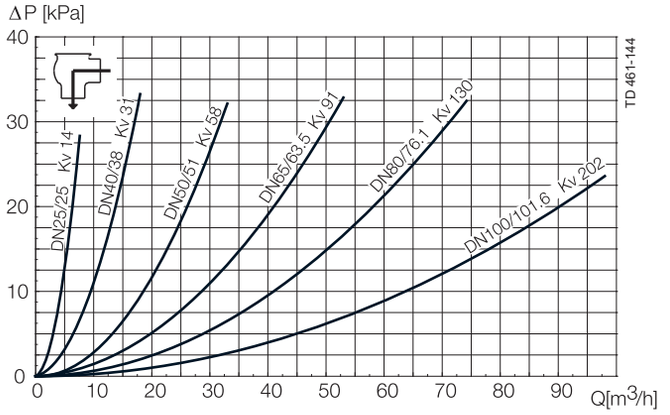
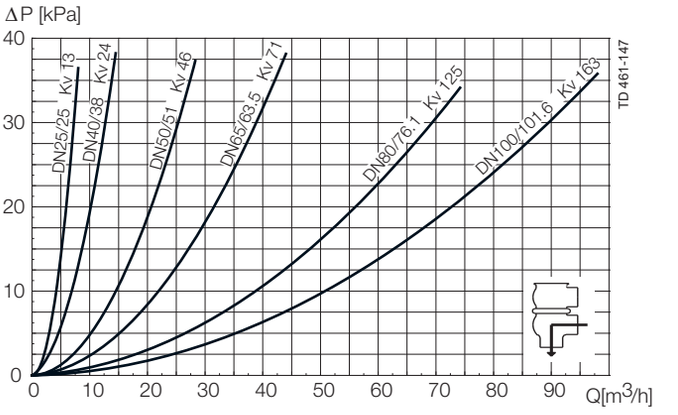
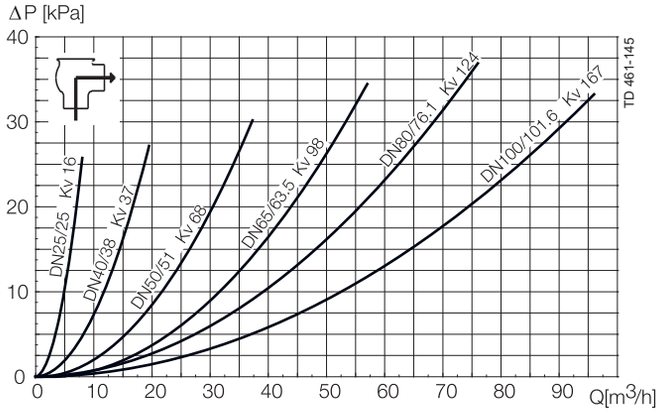
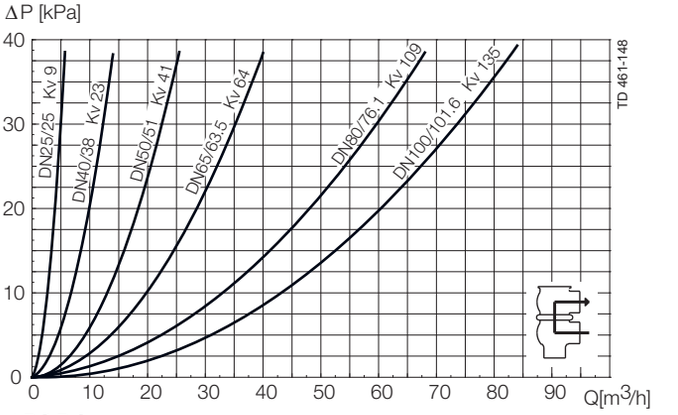
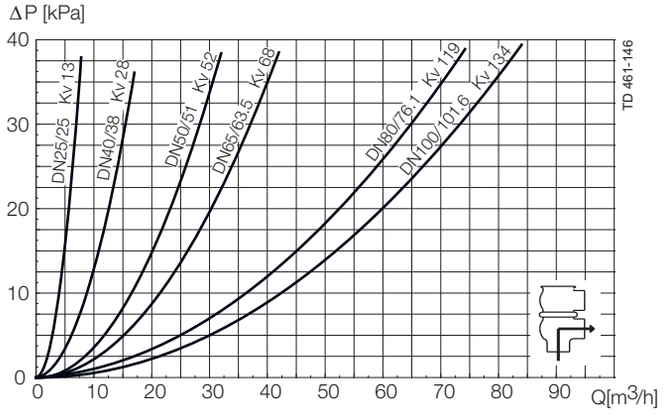
**Pressure drop/capacity diagrams**

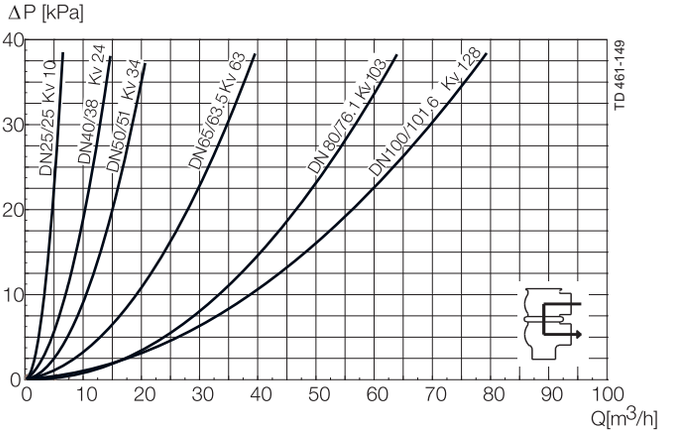



**Note!**

For the diagrams the following applies:
Medium: Water (20°C)

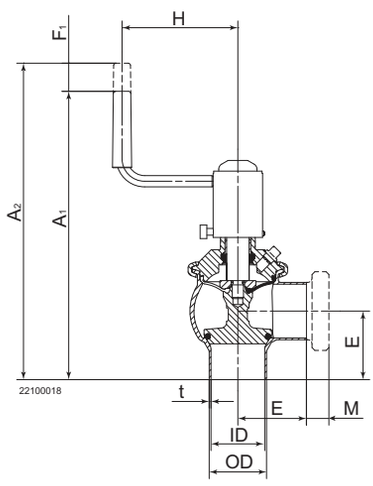
Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

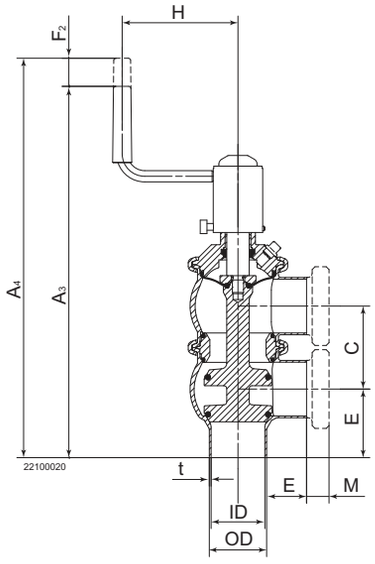
**Dimensions for Unique SSV aseptic manually operated valve**

| Size | 25 mm | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | DN 25 | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 235 | 242 | 258 | 284 | 293 | 344 | 247 | 245 | 260 | 290 | 301 | 345 |
| A2 | 245 | 252 | 272 | 298 | 310 | 360 | 262 | 255 | 274 | 304 | 318 | 362 |
| A3 | 284 | 303 | 331 | 369 | 392 | 466 | 284 | 309 | 336 | 380 | 408 | 470 |
| A4 | 293 | 312 | 343 | 382 | 407 | 482 | 293 | 318 | 348 | 393 | 423 | 486 |
| 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 |
| F1 | 11 | 11 | 14 | 15 | 17 | 17 | 11 | 11 | 14 | 15 | 17 | 17 |
| F2 | 9 | 9 | 12 | 13 | 15 | 15 | 9 | 9 | 12 | 13 | 15 | 15 |
| H | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| 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 | | | | | | |
| Weight (kg) | | | | | | | | | | | | |
| Shut off valve: | 1.8 | 2.0 | 2.6 | 3.6 | 4.6 | 7.0 | 1.9 | 2.1 | 2.5 | 3.7 | 5.0 | 6.9 |
| Change-over valve: | 2.6 | 3.0 | 4.2 | 5.6 | 7.3 | 11.4 | 2.8 | 3.2 | 4.2 | 5.9 | 8.2 | 11.2 |






Shut-off valve

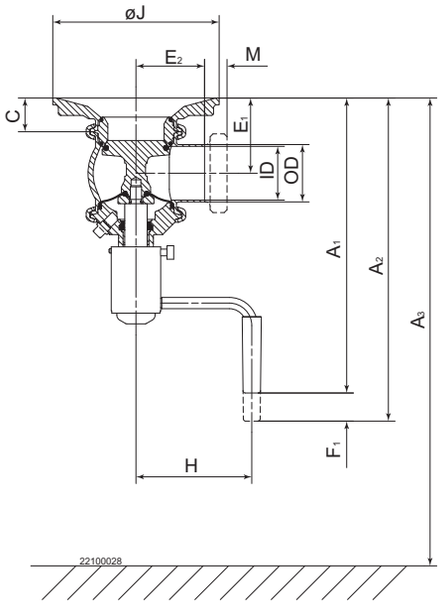



Change-over valve

**Dimensions for Unique SSV aseptic manually tank outlet valve**

| Size | 51<br>mm | 63.5<br>mm | 76.1<br>mm | 101.6<br>mm | DN<br>50 | DN<br>65 | DN<br>80 | DN<br>100 |
|---|---|---|---|---|---|---|---|---|
| A1 | 264 | 276 | 283 | 309 | 266 | 282 | 298 | 311 |
| A2 | 276 | 289 | 303 | 328 | 278 | 295 | 311 | 331 |
| A3 | 340 | 380 | 390 | 440 | 340 | 385 | 400 | 440 |
| C | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| OD | 51 | 63.5 | 76.1 | 101.6 | 53 | 70 | 85 | 104 |
| ID | 47.8 | 60.3 | 72.9 | 97.6 | 50 | 66 | 81 | 100 |
| t | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 2 | 2 | 2 |
| E1 | 61 | 81 | 86 | 119 | 62 | 78 | 87 | 120 |
| E2 | 67 | 73 | 79.5 | 92 | 68 | 76.5 | 83.5 | 93 |
| F | 14 | 15 | 17 | 17 | 14 | 15 | 17 | 17 |
| H | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| øJ | 148 | 163 | 178 | 198 | 148 | 163 | 178 | 198 |
| M/ISO clamp | 21 | 21 | 21 | 21 | | | | |
| M/DIN clamp | | | | | 21 | 28 | 28 | 28 |
| M/DIN male | | | | | 23 | 25 | 25 | 30 |
| M/SMS male | 20 | 24 | 24 | 35 | | | | |
| Weight (kg) | | | | | | | | |
| Shut off valve: | 3.9 | 5.1 | 6.3 | 8.8 | 3.8 | 5.2 | 6.7 | 8.8 |






Shut-off valve

**Kv-Factors**

| Valve size | Kv |
|---|---|
| 51mm/DN50 | 60 |
| 63.5mm/DN65 | 95 |
| 76.1mm/DN80 | 125 |
| 101.6mm/DN100 | 180 |

Kv = $m^3$/h at a pressure drop of 1 bar.

For other pressure drops than 1 bar the flow can be calculated with the following formula:

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

Where

Q = Flow in $m^3$/h.

Kv = See above.

Δ p = Pressure drop in bar over the valve.

**Example:**

How to calculate the pressure drop for an ISO 63.5 tank outlet valve if the flow is 40 $m^3$/h

ISO 63.5 tank outlet valve where Kv = 95 (See table above)

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

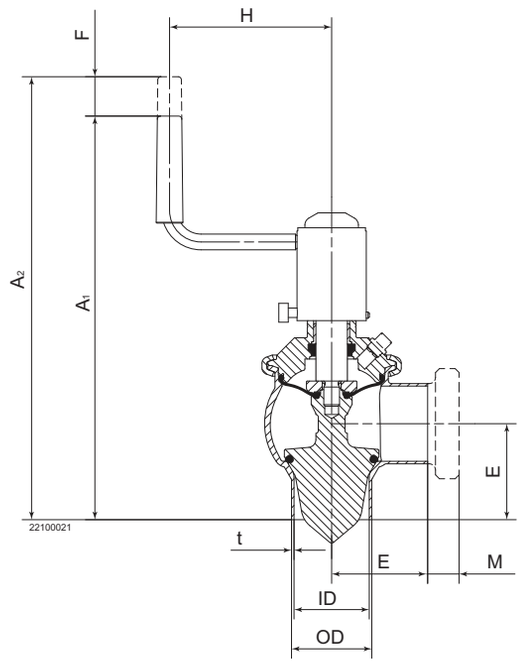
$40 = 95 \times \sqrt{\Delta p}$

$$\Delta p = \left(\frac{40}{95}\right)^2 = 0.18 \text{ bar}$$

**Dimensions for Unique SSV aseptic manual regulating valve**

| Size | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 242 | 258 | 284 | 293 | 344 | 245 | 260 | 290 | 301 | 345 |
| A2 | 252 | 272 | 298 | 310 | 360 | 255 | 274 | 304 | 318 | 362 |
| OD | 38 | 51 | 63.5 | 76.1 | 101.6 | 41 | 53 | 70 | 85 | 104 |
| ID | 34.8 | 47.8 | 60.3 | 72.9 | 97.6 | 38 | 50 | 66 | 81 | 100 |
| t | 1.6 | 1.6 | 1.6 | 1.6 | 2 | 1.5 | 1.5 | 2 | 2 | 2 |
| E | 49.5 | 61 | 81 | 86 | 119 | 49.5 | 62 | 78 | 87 | 120 |
| F | 11 | 14 | 15 | 17 | 17 | 11 | 14 | 15 | 17 | 17 |
| H | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| M/ISO clamp | 21 | 21 | 21 | 21 | 21 | | | | | |
| M/DIN clamp | | | | | | 21 | 21 | 28 | 28 | 28 |
| M/DIN male | | | | | | 22 | 23 | 25 | 25 | 30 |
| M/SMS male | 20 | 20 | 24 | 24 | 35 | | | | | |
| Weight (kg) | | | | | | | | | | |
| Stut-off valve | 2.1 | 2.9 | 4.0 | 5.4 | 8.2 | 2.2 | 2.9 | 4.1 | 5.9 | 8.1 |






Shut-off valve

**Kv-Factors**

| Valve size | Kv |
|---|---|
| 38mm/DN40 | 21 |
| 51mm/DN50 | 40 |
| 63.5mm/DN65 | 90 |
| 76.1mm/DN80 | 90 |
| 101.6mm/DN100 | 130 |

For other pressure drops than 1 bar the flow can be calculated with the following formula:
$Q = Kv \times \sqrt{\Delta p}$
Where
Q = Flow in $m^3/h$.
Kv = See above.
Δ p =Pressure drop in bar over the valve.

**Example:**

Plug Kv 40
Q to be calculated at $\Delta p = 2$ bar:
$Q = 40 \times \sqrt{2} = 56\ m^3/h$
or at 50% stroke:
$Q = 0.5 \times 56 = 28\ m^3/h$

# Alfa Laval Unique Single Seat Valve - manually regulating RF

## Simply Unique Single Seat

### Concept
From the Unique Single Seat Valve family the Unique SSV RF is a fine regulating valve that meets the highest demands of your process in terms of hygiene and safety. The valve is based on the modular platform of the Unique Single Seat Valve.

1.11

### Working principle
The manual regulated Unique SSV RF is used for fine regulation of flow. The valve permits gradual opening and the few and simple moving parts result in a very reliable valve easy to dismantle.

### Standard Design
Available in one size Unique SSV RF comes with a fixed Kv value. The plug has close to linear characteristic meaning that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

### TECHNICAL DATA

#### Temperature
Temperature range: . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max product pressure: . . . . . 1000 kPa (10 bar)
Min. product pressure: . . . . . Full vacuum

#### Valve Body Combinations


200

### PHYSICAL DATA

#### Materials
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
Other product wetted seals . . . . . EPDM

**Options**
A. Product wetted seals in HNBR or FPM.

**Kv-Factors**

| Valve size | Kv |
|---|---|
| 38mm | 11 |

* optional

Kv = $m^3$/h at a pressure drop of 1 bar.

For other pressure drops than 1 bar the flow can be calculated with the following formula:

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

Where
Q = Flow in $m^3$/h.
Kv = See above.
Δ p = Pressure drop in bar over the valve.

**Dimensions (mm) - Unique Manually Regulating Valve**

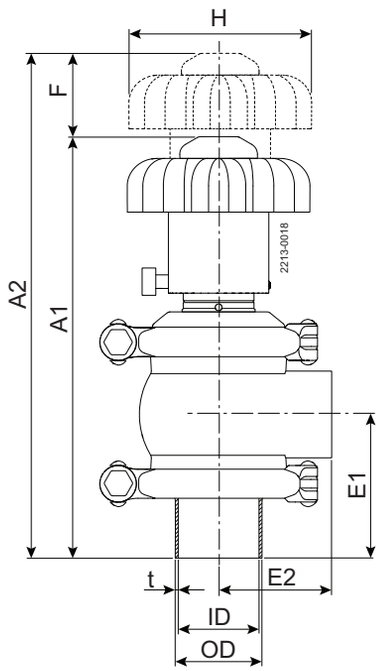



Fig. 4. Dimensions

**Pressure drop/capacity diagram:**

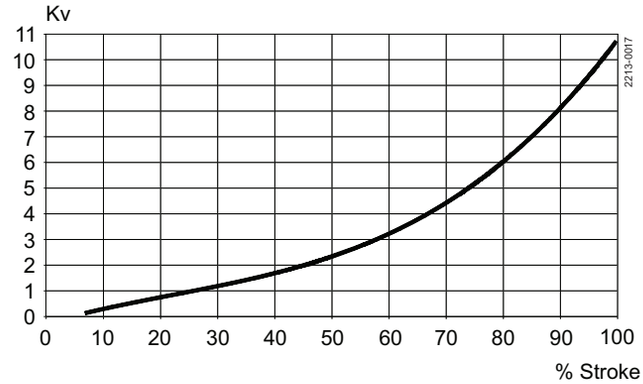



Fig. 3. The flow in % of the total flow at a pressure drop of 1 bar.

| Size | 38 mm |
|---|---|
| $A_1$ | 178.8 |
| $A_2$ | 205.4 |
| OD | 38 |
| ID | 34.8 |
| t | 1.6 |
| $E_1$ | 62.9 |
| $E_2$ | 49.5 |
| $F_1$ | 26.6 |
| H | 80 |

# Alfa Laval Unique SSSV

## When Size Matters



### Concept
The Small Single Seat Valve with its hygienic and modular design is applicable for a wide range of tasks either as a stop valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports. The valve is suitable for use in food, beverage, dairy and pharmaceutical industries.

### Working principle
The valve is remote-controlled by means of compressed air or manually operated. The small single seat valve is very reliable due to its simple design and few moving parts.

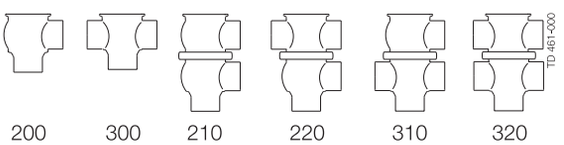
### Standard Design
The Small Single Seat Valve comes as a pneumatic or manual operated in either a one or two body configuration. The plug is a PVDF plug. All components are assembled by means of clamp rings, whereas the piston and valve plug have a threaded connection. In order to facilitate installation the valve is only partly assembled when delivered. The valve has welding or clamp ends as standard. The Unique Small Single Seat Valve range covers the sizes DN/OD 12.7 mm and 19 mm.

### TECHNICAL DATA

#### Temperature
Temperature range: . . . . . -10°C to +140°C (EPDM)

#### Pressure
Max. product pressure: . . . . . 1000 kPa (10 bar)
Min. product pressure: . . . . . Full vacuum
Air pressure: . . . . . 100 to 700 kPa (1 to 7 bar)

#### Valve Body Combinations




200 300 210 220 310 320

#### Actuator function
- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).
- Manually operated.

| Air consumption (litres free air) for one stroke | |
|---|---|
| Size | 12.7-19 mm |
| Stop valve/Change-over valve | 0.06 x Air pressure (bar) |
| Actuator function | NO and NC |

### PHYSICAL DATA

Product wetted steel parts: . . . Acid-resistant steel 1.4404 (316L)
Other steel parts: . . . . . Stainless steel 1.4307 (304L)
External surface finish . . . . . Semi-bright (blasted)
Internal surface finish: . . . . . Ra ≤ 0.5µm
Product wetted seals: . . . . . EPDM
Other seals: . . . . . NBR
Plug: . . . . . PVDF

Authorized to carry the 3A symbol

**Options**

A. Adapter for IndiTop, ThinkTop and ThinkTop Basic.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals of HNBR or FPM.
D. Stainless steel seal disc replacing standard lip seal.
E. Clamp with wingnut.
F. Clamp connection.

**Note!**

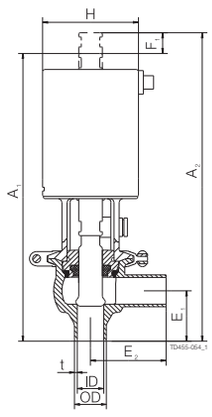
For further details, see also ESE01563 and instruction IM 70860.

The actuator comes with a 5 years warranty

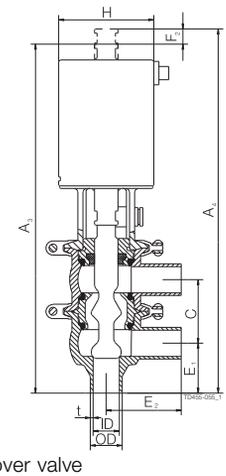
**Dimensions (mm)**

| Nominal Size | Remote-controlled DN/OD 12.7mm | Remote-controlled DN/OD 19mm | Manually operated DN/OD 12.7mm | Manually operated DN/OD 19mm |
|---|---|---|---|---|
| $A_1$ | 172.2 | 171.2 | 109.7 | 112.7 |
| $A_2$ | 179.2 | 182.2 | 116.7 | 123.7 |
| $A_3$ | 200.2 | 209.2 | 141.7 | 150.7 |
| $A_4$ | 207.2 | 220.2 | 148.7 | 161.7 |
| C | 32.3 | 38.1 | 32.3 | 38.1 |
| OD | 12.7 | 19.0 | 12.7 | 19.0 |
| ID | 9.5 | 15.8 | 9.5 | 15.8 |
| t | 1.6 | 1.6 | 1.6 | 1.6 |
| $E_1$ | 29.8 | 29.9 | 29.8 | 29.9 |
| $E_2$ | 45.0 | 45.0 | 45.0 | 45.0 |
| $F_1$ | 7.0 | 11.0 | 7.0 | 11.0 |
| $F_2$ | 7.0 | 11.0 | 7.0 | 11.0 |
| H | 57.0 | 57.0 | 35.0 | 35.0 |
| Weight (kg) - Stop valve | 1.07 | 1.10 | 0.5 | 0.53 |
| Weight (kg) - Change-over valve | 1.36 | 1.41 | 0.8 | 0.85 |

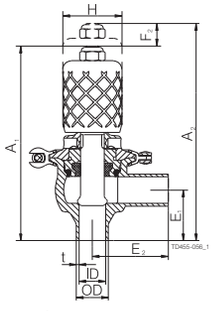
(900-233)



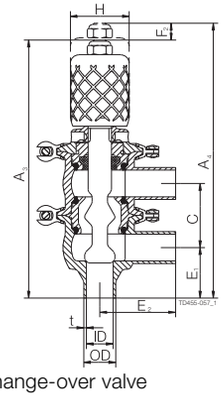

Stop valve




Change over valve




Manual stop valve




Manual change-over valve

**Please note!**

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

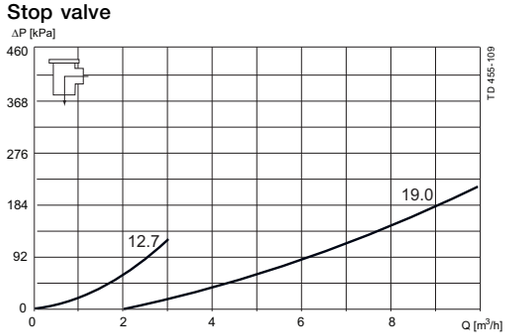
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

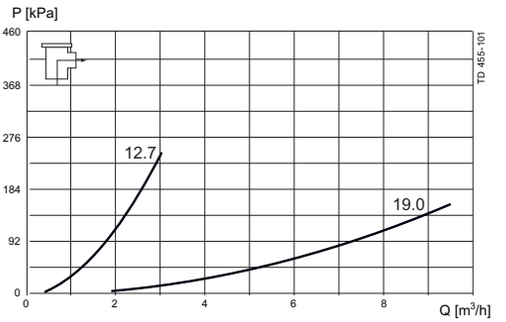
**Air Connections Compressed air:**

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

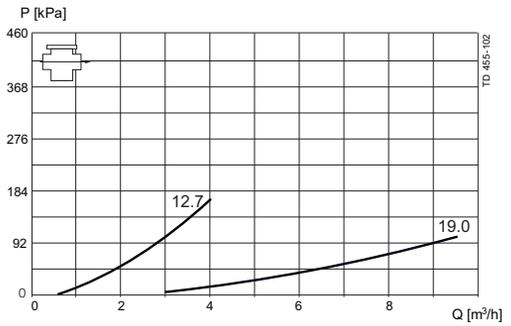
## Pressure drop/capacity diagrams

### Stop valve

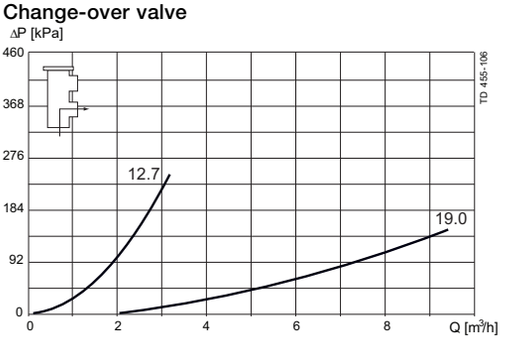


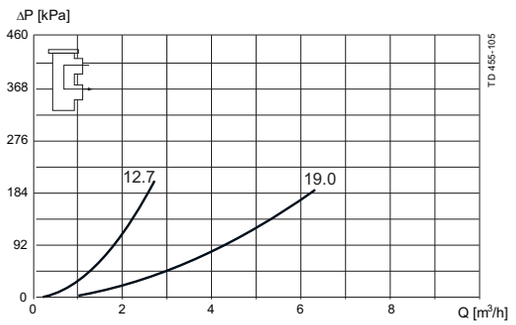



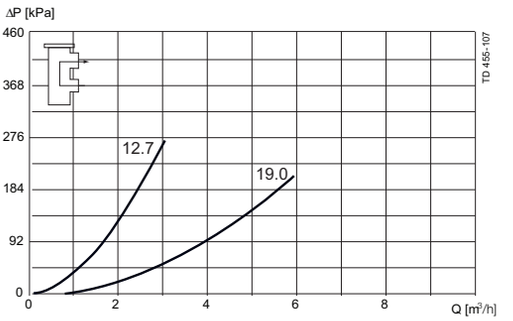


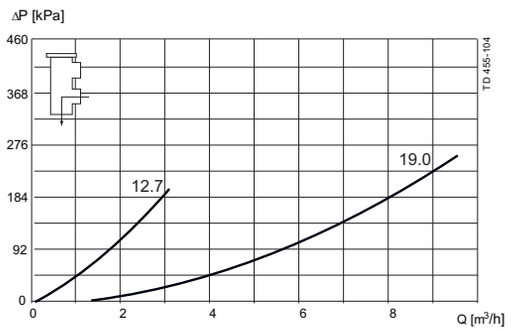



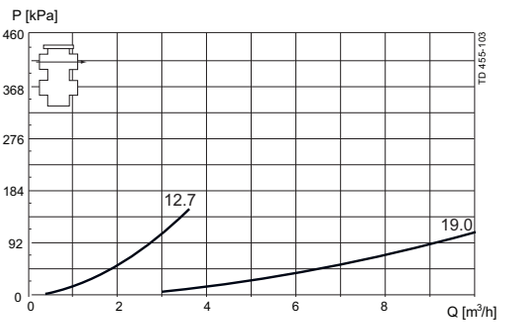

### Change-over valve




**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:

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

Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

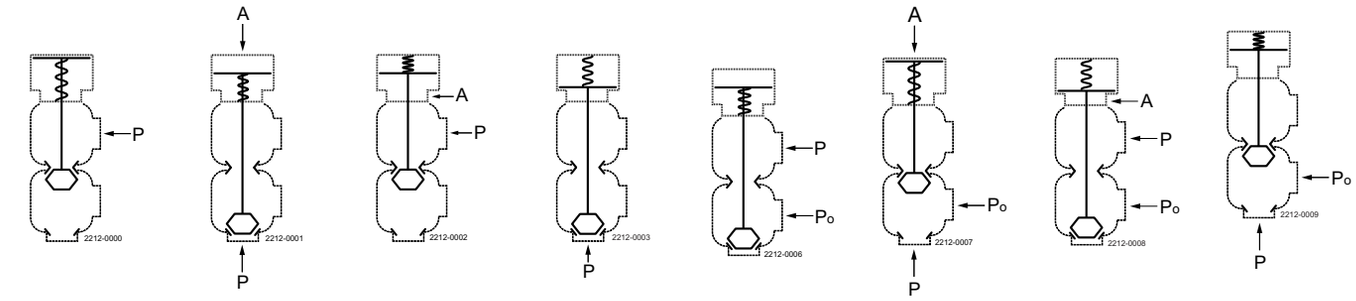
Where
Q = Flow in $m^3/h$.
Kv = $m^3/h$ at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.
2.5" shut-off valve, where Kv = 111 (See table above).

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

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

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

**Pressure data for Unique Small Single Seat Valve**




1 2 3 4 5 6 7 8

A = Air P/Po = Product pressure



**Table 1 - Shut-off and change-over valves**

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Max. pressure in bar without leakage at the valve seat<br>Valve size<br>DN/OD 12.7 mm | <br><br>DN/OD 19 mm |
|---|---|---|---|---|
| 1 | | NO | Min. 10.0 | Min. 10.0 |
| 2 | 2 | NO | 2.0 | - |
| | 3 | NO | Min. 10.0 | 3.0 |
| | 4 | NO | | Min. 10.0 |
| 3 | 2 | NC | 9.0 | - |
| | 3 | NC | Min. 10.0 | Min. 10.0 |
| 4 | | NC | Min. 10.0 | Min. 10.0 |

**Table 2 - Stop and change-over valve.**

The table shows the approx. static pressure (p) in bar against which the valve can open

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size<br>DN/OD 12.7 mm | <br>DN/OD 19 mm |
|---|---|---|---|---|
| 5 | | NO | Min. 10.0 | Min. 10.0 |
| 6 | 2 | NO | 9.0 | - |
| | 3 | NO | Min. 10.0 | 6.0 |
| | 4 | NO | - | Min. 10.0 |
| 7 | 2 | NC | Min. 10.0 | Min. 10.0 |
| 8 | | NC | Min. 10.0 | Min. 10.0 |

# Alfa Laval LKAP Air-Operated Valve

## Small & Reliable



### Concept
The LKAP pneumatic valve is a remote-controlled shut-off valve, widely used for small flows and for dosing applications in food, chemical and other industries.

### Working principle
The valve is operated by means of compressed air and has spring return. It has few and simple moving parts which results in a very reliable valve.

### Standard Design
LKAP consists of actuator with air cylinder and piston, double lipseal for stem, stem unit with replaceable O-ring in the plug, and valve body with welding connections. It has visual indication of the valve position and is available with 2 (LKAP-V) or 3 ports (LKAP-T). A reed switch unit for indication of open and closed positions is available. The valve can be ordered as normally open (NO) or normally closed (NC) versions. NC is standard.

The LKAP valve come in DN/OD 25 mm.

The LKAP valve come in DN/OD 1".

### TECHNICAL DATA

#### Temperature
Max. temperature: . . . . . .130 °C (EPDM)
Min. temperature: . . . . . .10 °C

#### Pressure
Kv value = 9 (9 $m^3/h$ for $\Delta p$ = 1 bar with the valve open).

Max. product pressure under the plug (NC): .600 kPa (6 bar)
Min. air pressure: . . . . . .500 kPa (5 bar)
Max. prod. pressure: . . . . . .1000 kPa (10 bar)

### PHYSICAL DATA

#### Materials
Product wetted steel parts: . . . . . 1.4404 (316L)
Other steel parts: . . . . . 1.4301 (304)
Surface finish inside . . . . . Ra ≤ 1.6 µm
Other seals: . . . . . NBR

**Options**

A. Male parts or clamp liners according to required standard.
B. Position indication of open and closed positions.
C. Bracket for standard M12 sensors. Please see chapter 3.7 Automation for bracket code number.
D. Product wetted seals of FPM or EPDM.

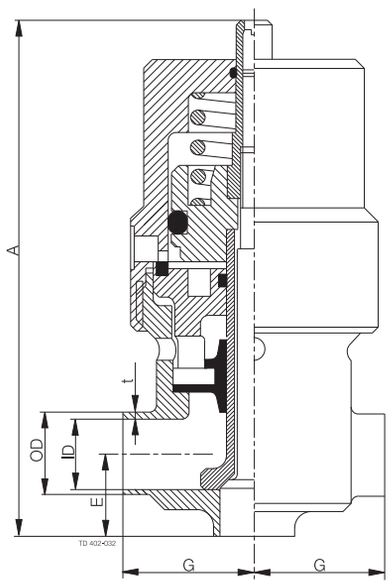
**Note!**

For further details, see also IM 70805.

The actuator comes with a 5 years warranty.

**Dimensions (mm)**

| Size | 25 mm |
|---|---|
| G | 40 |
| E | 24 |
| A | 170 |
| OD | 25 |
| ID | 22 |
| t | 1.5 |
| Weight (kg) | 2.5 |




**Connections**

Compressed air: R1/8" (BSP), internal thread.

# Alfa Laval SB Mini Flow Valve

## Mini Flow

**Concept**
The valve program, which comprises of angle and change over valves, is designed for working in a gas and liquid environment, where shut off and change-over functions are required under hygienic conditions.

**Working principle**
The valves are in pneumatic or manual execution.

**Standard design**
The valves are supplied with threaded pipe couplings for 6/8 mm pipe.

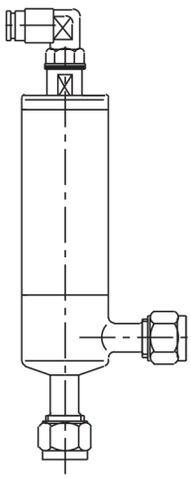
1.11

### TECHNICAL DATA

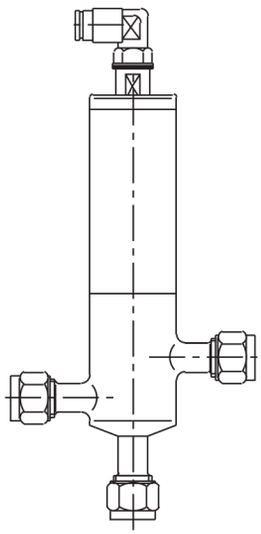
Max. product pressure: . . . . . 6 bar
Process air pressure: . . . . . 6 - 8 bar

### PHYSICAL DATA

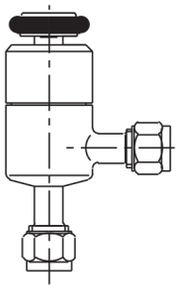
**Material Specifications**
Product wetted steel surfaces: . EN 1.4404 (AISI 316L)
Product wetted seals: . . . . . EPDM
Product wetted polymers: . . . . PTFE



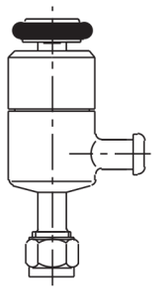
Pneumatic angle valve



Pneumatic 2-way valve



Drain valve with fittings



Drain valve with fittings/clip-on