# Alfa Laval Unique SSV Tank Outlet

## Single seat valves

### Introduction

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

Built on the well-proven Alfa Laval Unique SSV platform, it is designed for installations that open product flow into the tank (reverse-acting version) or close product flow from the tank (standard version).

Few moving parts ensure easy maintenance, high reliability and low total cost of ownership. A wide range of optional features enables customization to specific process requirements.

### Application

The Unique SSV Tank Outlet is designed for use as a shut-off valve when closing product flow from a tank or as a reverse-acting valve when opening product flow into a tank in hygienic applications across the dairy, food, beverage, brewery and many other industries.

### Benefits

- Exceptional valve hygiene and durability
- Superior cleanability – smooth inner valve body without crevices
- Extended seal life due to the defined seal compression
- Enhanced product safety due to the static seal leak detection
- Protection against full vacuum due to the double lip seal

### Standard design

The Alfa Laval Unique SSV Tank Outlet valve is available in a one-body configuration with plugs, actuator, clamp rings, and up to two ports.

To ensure flexibility, the valve seals are optimized for durability and long service life through a defined compression design. The actuator is connected to the valve body using a yoke, and all components are assembled with clamp rings.

An optional tank flange is available. When supplied, it is welded directly into the tank. Upon request, it can be supplied with TÜV approval AD 2000 and inspection certificate 3.1 according to EN10204.

The valve can also be fitted with the Alfa Laval ThinkTop V50 and V70 for sensing and control of the valve.

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

### Working principle

The Alfa Laval Unique SSV Tank Outlet is operated by means of compressed air from a remote location. The valve can be controlled using an Alfa Laval ThinkTop®.

## 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


## 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

- Male parts or clamp liners in accordance with required standard.
- Weld ends or connection types other than Tri-Clamp.
- Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- Product wetted seals in HNBR or FPM.
- Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
- High pressure actuator.
- Long stroke actuator (not available for Reverse Acting version).
- Maintainable actuator.
- 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 Anytime configurator for full access to all models and options.**

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

Semi-Maintainable actuator comes with 5 year warranty.

### Dimensions (mm)

| Size | 51 | 63.5 | 76.1 | 101.6 | DN | DN | DN | DN |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | 50 | 65 | 80 | 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 |

| Size | 51 | 63.5 | 76.1 | 101.6 | DN | DN | DN | DN |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | 50 | 65 | 80 | 100 |
| $F_2$ | 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 |

$A_1$ = 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.

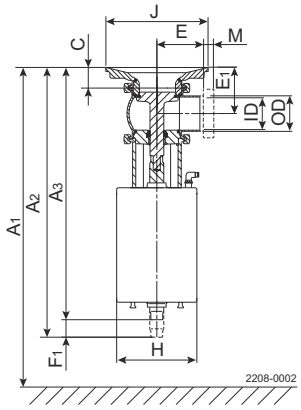



**Figure 1. Standard**

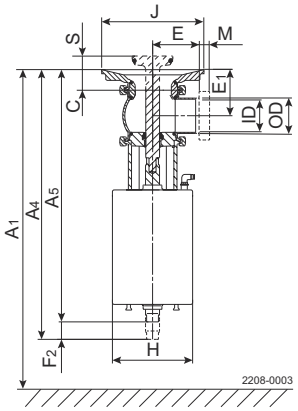



**Figure 2. Reverse Acting**


**Figure 3. 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.

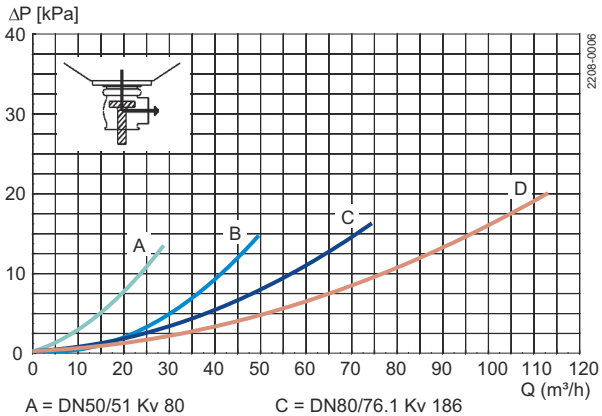
**Air Connections Compressed air:**

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

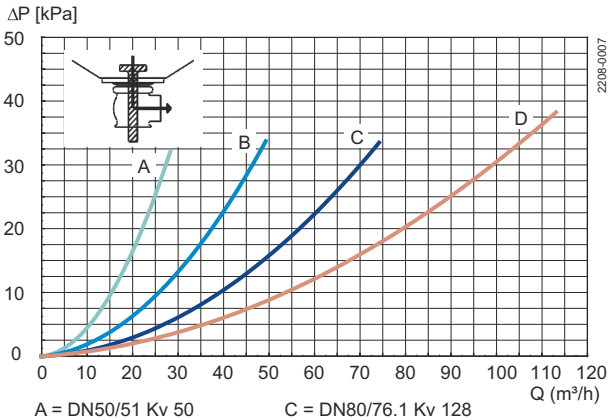
## Actuator function

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

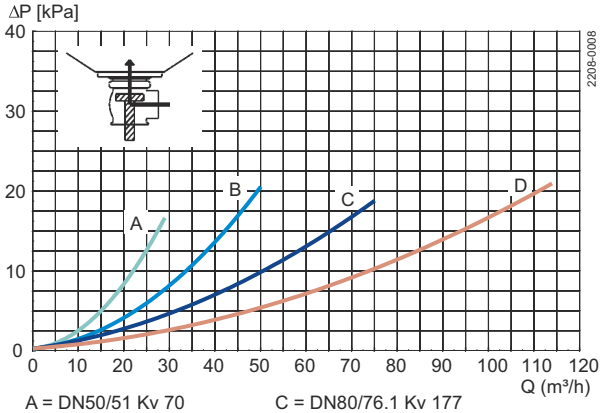
## Pressure drop/capacity diagrams



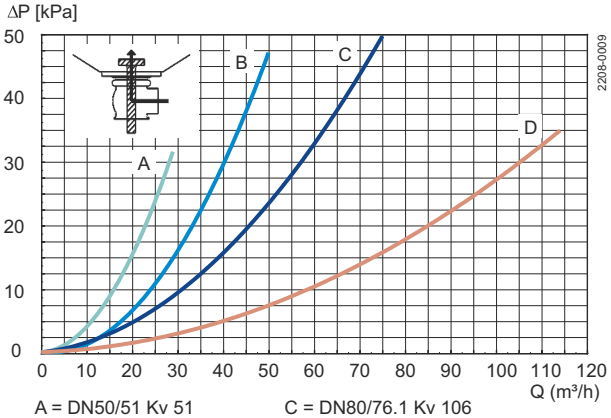

A = DN50/51 Kv 80
B = DN65/63.5 Kv 131
C = DN80/76.1 Kv 186
D = DN100/101.6 Kv 257




A = DN50/51 Kv 50
B = DN65/63.5 Kv 86
C = DN80/76.1 Kv 128
D = DN100/101.6 Kv 185




A = DN50/51 Kv 70
B = DN65/63.5 Kv 111
C = DN80/76.1 Kv 177
D = DN100/101.6 Kv 256




A = DN50/51 Kv 51
B = DN65/63.5 Kv 72
C = DN80/76.1 Kv 106
D = DN100/101.6 Kv 191

**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 Single Seat Valve Tank Outlet


Figure 4. 1

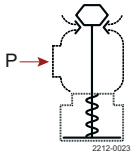



Figure 5. 2

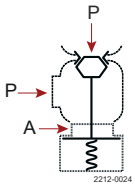



Figure 6. 3

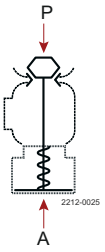



Figure 7. 4

**A = Air**

**P = Product pressure**

### Shut fully closed

| Actuator / Valve body combination and direction of pressure | Max. pressure in bar without leakage at the valve seat | | | |
|---|---|---|---|---|
| | Valve size | | | |
| | DN50 | DN 65 | DN 80 | DN 100 |
| | DN/OD 51 mm | DN/OD 63.5 mm | DN/OD 76.1 mm | DN/OD 101.6 mm |
| 1 | 7.2 | 4.2 | 6.4 | 4.2 |
| 2 | 8.4 | 4.5 | 6.8 | 4.4 |

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Max. pressure in bar against which the valve can open | | | |
|---|---|---|---|---|---|
| | | Valve size | | | |
| | | DN50 | DN 65 | DN 80 | DN 100 |
| | | DN/OD 51 mm | DN/OD 63.5 mm | DN/OD 76.1 mm | 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 |





200005490-1-EN-GB