

Alfa Laval Unique SSV Tangential

Single seat valves

Introduction

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

Built on the well-proven Unique SSV platform, it provides complete drainability of the valve body near tank openings, on horizontally mounted ports, or wherever space restrictions make it difficult to install valves at other angles.

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

This Unique SSV Tangential is designed to provide complete drainability of the valve body when space is limited 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 thanks to the static seal leak detection
- Protection against full vacuum due to the double lip seal

Standard design

The Unique SSV Tangential valve is available in a one- or two-body configuration, with easy-to-configure valve bodies, plugs, actuator and clamp rings. The valve can be configured as a shut-off valve with two or three ports or as a changeover valve with three to five ports.

To ensure flexibility, the valve seat that sits between the two bodies in the changeover version is provided for assembly. The valve seals are optimized for durability and long service



life through a defined compression design. The actuator is connected to the valve body using a yoke, and all components are assembled with clamp rings.

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 Tangential is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks, while directing or diverting fluids. The valve can be controlled using an Alfa Laval ThinkTop®.

Certificates

 Authorized to carry the 3A symbol

TECHNICAL DATA

Temperature

Temperature range: 50°F to +284°F (EPDM)

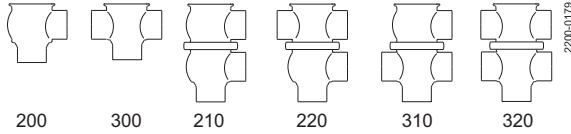
Pressure

Max. product pressure (depending on valve specifications): 145 psi (10 bar)

Min. product pressure: Full vacuum

Air pressure: 72.5 to 101.5 psi (5-7 bar)

Valve Body Combinations



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: AISI 316L (internal Ra < 32 μ inch)

Other steel parts: AISI 304

Plug seal: PTFE (TR2) (standard)

Optional elastomer plug seal: EPDM, HNBR or FPM

Other product wetted seals: EPDM

Optional product wetted seals: HNBR or FPM

Other seals: NBR

Options

- Weld ends or connection types other than Tri-Clamp.
- Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- Aseptic version.
- Product wetted seals in HNBR or FPM.
- Replaceable elastomer plug seals.
- High pressure actuator.
- Manually operated.
- NO or A/A actuator.
- Long stroke actuator.
- Maintainable actuator.
- External surface finish blasted.
- Adapter to mount to 32-154 & 32-595 tank flange “Model 7635”



Note!

For further details, see instruction ESE00586.

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.



Semi-Maintainable actuator comes with 5 year warranty.

Dimensions (inch)

| | Nominal Size | | | |
|--------------------|--------------|-------|-------|-------|
| | 2" | 2.5" | 3" | 4" |
| A ₁ | 14.23 | 14.72 | 16.08 | 17.06 |
| A ₂ | 15.21 | 15.70 | 17.26 | 18.24 |
| A ₃ | 17.13 | 18.12 | 19.98 | 21.92 |
| A ₄ | 18.00 | 18.98 | 21.04 | 22.98 |
| C | 2.91 | 3.40 | 3.89 | 4.87 |
| OD | 2 | 2.5 | 3 | 4 |
| ID | 1.88 | 2.37 | 2.87 | 3.84 |
| t | 0.06 | 0.06 | 0.06 | 0.08 |
| E | 2.40 | 3.19 | 3.39 | 4.69 |
| G | 2.36 | 2.60 | 2.85 | 3.34 |
| F ₁ | 0.98 | 0.98 | 1.18 | 1.18 |
| F ₂ | 0.87 | 0.87 | 1.06 | 1.06 |
| H | 4.52 | 4.52 | 6.07 | 6.07 |
| N | 0.56 | 0.70 | 0.85 | 0.98 |
| M/Tri Clamp | 0.5 | 0.5 | 0.5 | 0.63 |
| M/SMS male | 0.8 | 0.9 | 0.9 | 1.4 |
| P | 2.35 | 2.63 | 2.88 | 3.37 |
| S | 4.2 | 4.2 | 5.87 | 5.87 |
| R | 1.96 | 1.96 | 2.63 | 2.63 |
| Weight (lb) | | | | |
| Shut-off valve | 12.7 | 15 | 25.9 | 31.1 |
| Change-over valve | 16.3 | 19.8 | 32 | 41.4 |

M*/Tri Clamp (Inlet) is designed for use with 13 MHP clamp.

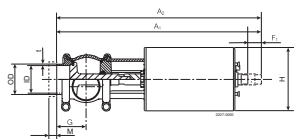


Figure 1. Shut-off valve

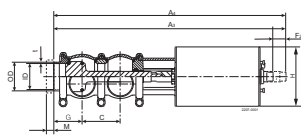


Figure 2. Change-over valve

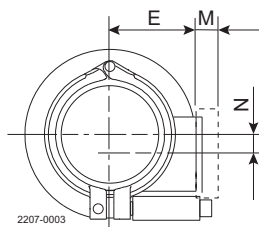
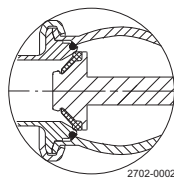


Figure 3. Replaceable elastomer plug seal

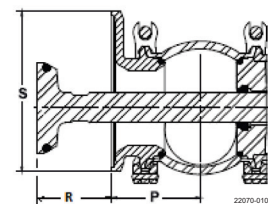


Figure 4. Flange adapter

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:

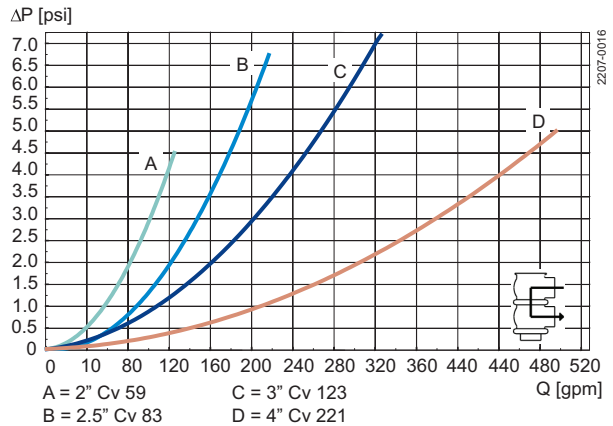
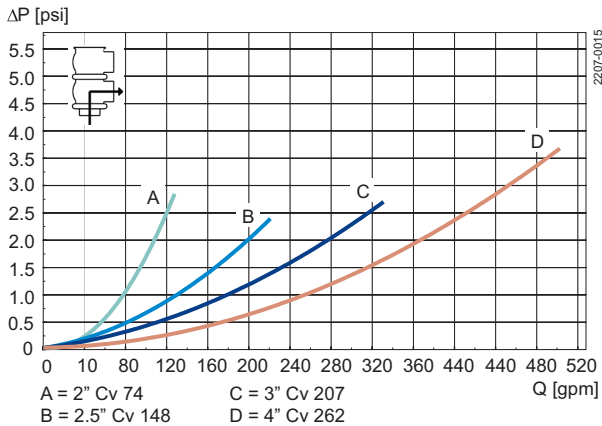
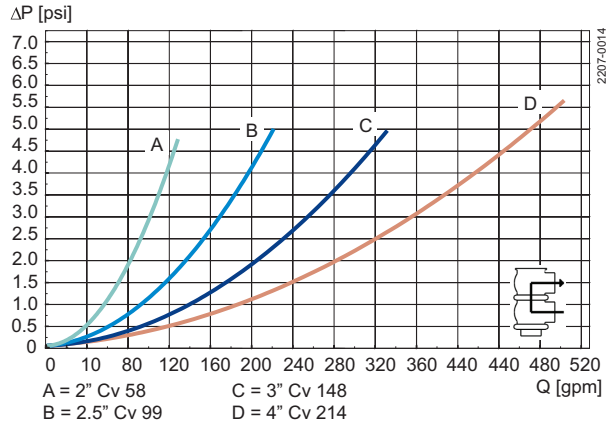
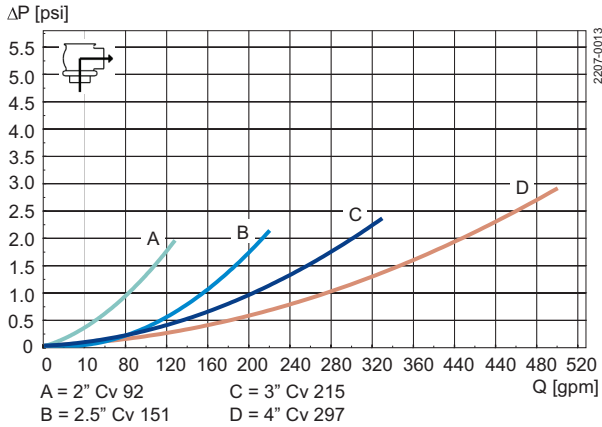
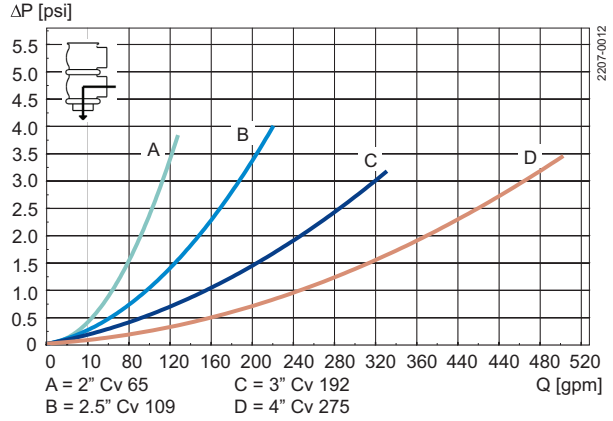
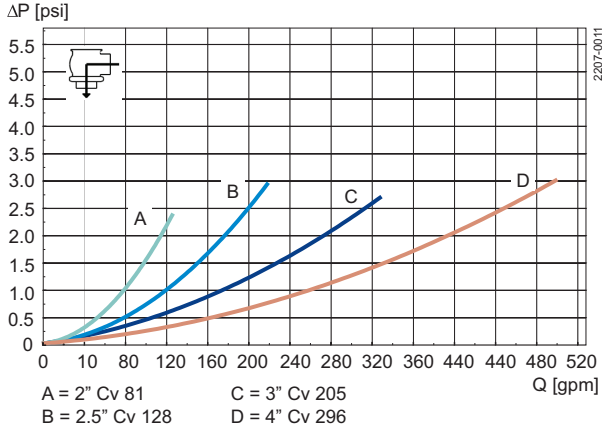
R 1/8" (BSP). Internal thread.



Air Consumption (In³ free air) for one stroke

| Size | 2"-2½" | 3"-4" |
|-----------|---------------------------|----------------------------|
| NO and NC | 2.17 x air pressure [psi] | 5.51 x air pressure [psi] |
| A/A | 4.82 x air pressure [psi] | 11.15 x air pressure [psi] |

Pressure drop/capacity diagrams



Note!

For the diagrams the following applies:
 Medium: Water (68° F/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:



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

Where

Q = Flow (gallon/minute).

Cv = gallon/minute at a pressure drop of 1 psi (see table above).

Δp = Pressure drop in psi over the valve.

Where

Q = Flow (gallon/minute).

Cv = gallon/minute at a pressure drop of 1 psi (see table above).

Δp = Pressure drop in psi over the valve.

2.5" shut-off valve, where Cv = 128 (See table above).

$$160 = 128 \times \sqrt{\Delta p}$$

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

$$\Delta p = \left(\frac{160}{128}\right)^2 = 1,6 \text{ psi}$$

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

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

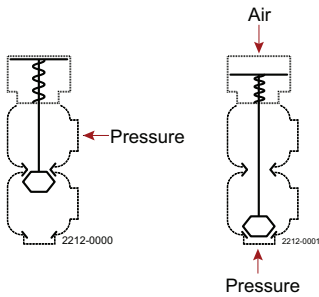


Figure 5. 1

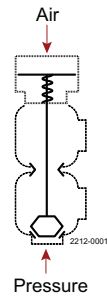


Figure 6. 2

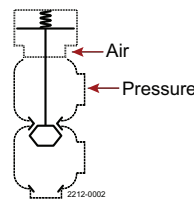


Figure 7. 3

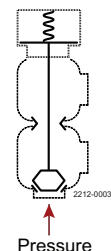


Figure 8. 4

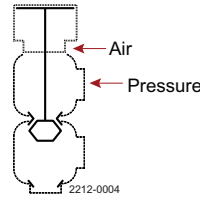


Figure 9. 5

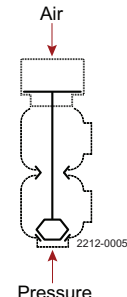


Figure 10. 6

Shut-off and change-over valves

| Actuator / Valve body combination and direction of pressure | Air pressure (PSI) | Plug position | Max. pressure in PSI without leakage at the valve seat | | | |
|-------------------------------------------------------------|--------------------|---------------|--------------------------------------------------------|-----|-----|-----|
| | | | Valve size | | | |
| | | | 2" | 2½" | 3" | 4" |
| 1 | | NO | 122 | 65 | 99 | 64 |
| 2 | 87 | NO | 139 | 81 | 104 | 70 |
| 3 | 87 | NC | 145 | 88 | 112 | 73 |
| 4 | | NC | 104 | 61 | 93 | 61 |
| 5 | 87 | A/A | 145 | 145 | 145 | 145 |
| 6 | 87 | A/A | 145 | 145 | 145 | 145 |



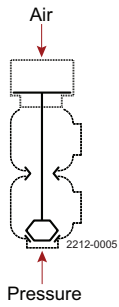


Figure 11. 7

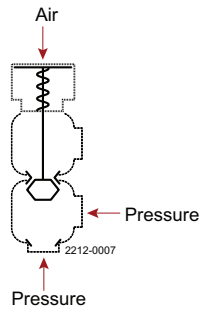


Figure 12. 8

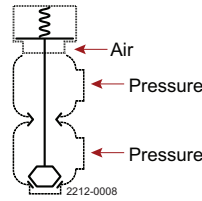


Figure 13. 9

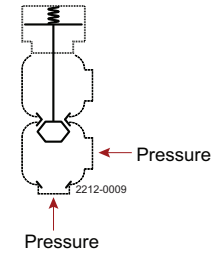


Figure 14. 10

Shut-off and change-over valves

| Actuator / Valve body combination and direction of pressure | Air pressure (PSI) | Plug position | Max. pressure in PSI against which the valve can open | | | |
|-------------------------------------------------------------|--------------------|---------------|-------------------------------------------------------|-----|-----|-----|
| | | | Valve size | | | |
| | | | 2" | 2½" | 3" | 4" |
| 7 | | NO | 145 | 107 | 141 | 91 |
| 8 | 87 | NO | 145 | 120 | 144 | 95 |
| 9 | 87 | NC | 145 | 131 | 145 | 100 |
| 10 | | NC | 145 | 99 | 132 | 88 |

Shut-off and change-over valves with high pressure actuator option

| Actuator / Valve body combination and direction of pressure | Air pressure (PSI) | Plug position | Max. pressure in PSI against which the valve can open | | | |
|-------------------------------------------------------------|--------------------|---------------|-------------------------------------------------------|-----|-----|-----|
| | | | Valve size | | | |
| | | | 2" | 2½" | 3" | 4" |
| 1 | | NO | 145 | 145 | - | - |
| 2 | 87 | NO | 145 | 145 | - | - |
| 3 | 87 | NC | 145 | 145 | 73 | 44 |
| 4 | | NC | 145 | 145 | 145 | 102 |

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