

Alfa Laval Unique SSSV

Single seat valves

Introduction

The Alfa Laval Unique SSSV is a versatile, reliable and small 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 as the well-proven Alfa Laval Unique SSV platform, it is fast-acting and handles dosing and small flow rates in hygienic applications.

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 SSSV is designed for uninterrupted production or dosing of small product flows in a broad range of hygienic applications across the dairy, food, brewery, beverage, 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
- Fast-acting

Standard design

The Alfa Laval Unique SSSV is available in a one- or two-body configuration, with easy-to-configure valve bodies, elastomer-free PVDF plugs, static sealing, actuator or manual mechanism, and clamp rings. It is available in DN/OD 12.7 mm (½") and 19 mm (¾") versions.

The valve is assembled when delivered. Valve housing is either supplied with standard weld or clamp ends, and it is assembled by means of clamp rings. The piston and valve plug in PVDF have threaded connections.



The Unique SSSV can be configured as a manually operated valve or a pneumatic valve. It can also be configured as a shutoff valve or as a changeover valve, each with two to five ports.

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 Alfa Laval ThinkTop 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 SSSV is operated either manually by means of cranking mechanism or by means of compressed air from a remote location. For a pneumatic valve, the actuator smooths operation and protects process lines against pressure

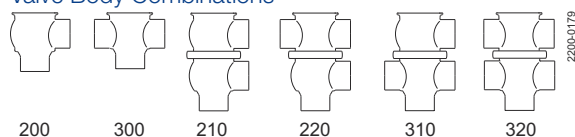
peaks. The valve can be controlled using an Alfa Laval ThinkTop®.

TECHNICAL DATA

Temperature	
Temperature range:	14 °F to + 284 °F (EPDM)

Pressure	
Max. product pressure:	145 PSI (10 bar)
Min. product pressure:	Full vacuum
Air pressure:	14.5 to 101.5 PSI (1 to 7 bar)

Valve Body Combinations



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:	½" and ¾"
Stop valve/Divert valve:	0.004 x Air pressure (PSI)
Actuator function:	NO and NC

PHYSICAL DATA

Materials	
Product wetted steel parts:	Acid-resistant steel AISI 316L (1.4404)
Other steel parts:	Stainless steel AISI 304L (1.4307)
Finish outside:	Semi bright
Finish inside:	≤ 20 µinch Ra
Product wetted seals:	EPDM
Other seals:	NBR
Alternative product wetted seals:	HNBR, FPM
Plug:	PVDF

OPTIONS

- Adapter for IndiTop, ThinkTop and ThinkTop Basic
- Control and Indication: IndiTop, ThinkTop or ThinkTop Basic
- Product wetted seals of HNBR or FPM
- Surface finish external ≤ 32 µinch Ra

Dimensions (inch)

Valve dimensions

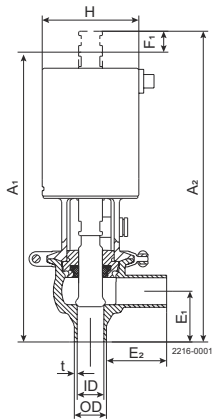


Figure 1. Stop valve

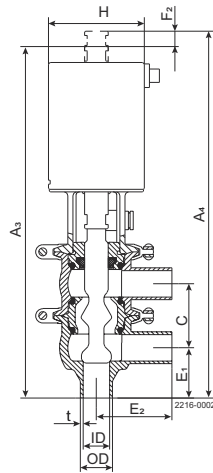


Figure 2. Divert valve

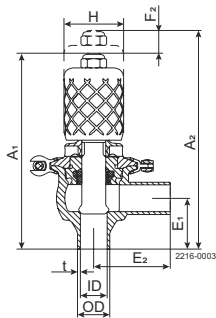


Figure 3. Manual stop valve

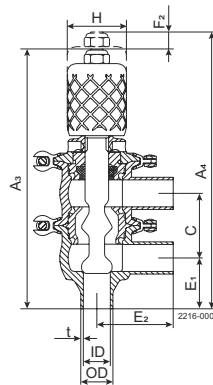


Figure 4. Manual divert valve

Nominal Size	Remote-controlled	
	OD 1/2"	OD 3/4"
A ¹	6.78	6.74
A ²	7.06	7.17
A ³	7.88	8.24
A ⁴	8.16	8.67
C	1.27	1.50
OD	0.50	0.75
ID	0.37	0.62
t	0.06	0.06
E ¹	1.17	1.18
E ²	1.77	1.77
F ¹	0.28	0.43
F ²	0.28	0.43
H	2.24	2.24
Weight (lbs) Stop valve	2.36	2.43
Weight (lbs) Change-over valve	3.00	3.11

(900-233)

*Dimensions valid for both welding ends and clamp ends.

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.

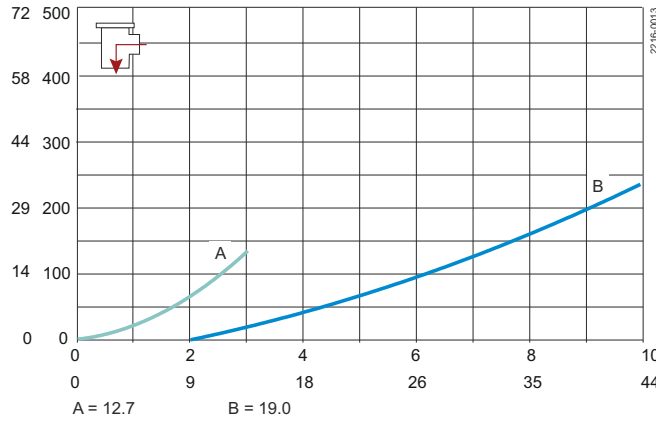
Air Connections Compressed air:

R 1/8" (BSP), internal thread

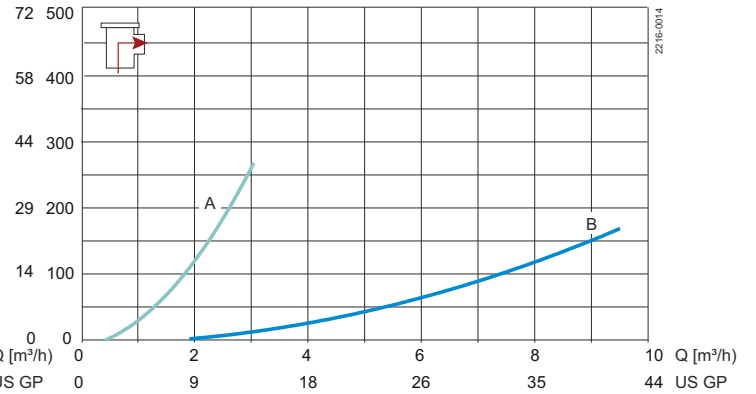
Pressure drop/capacity diagrams

Stop valve

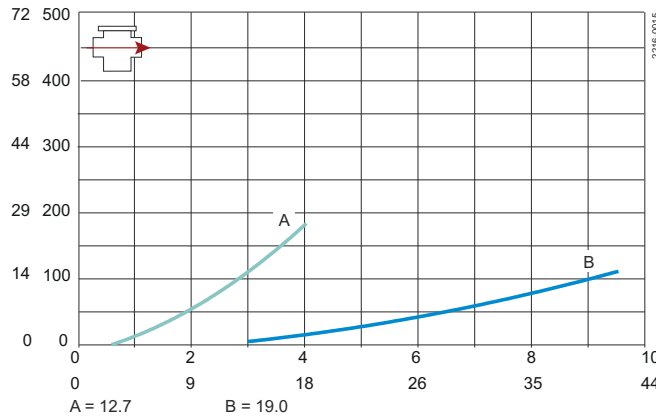
PSI ΔP [kPa]



PSI ΔP [kPa]

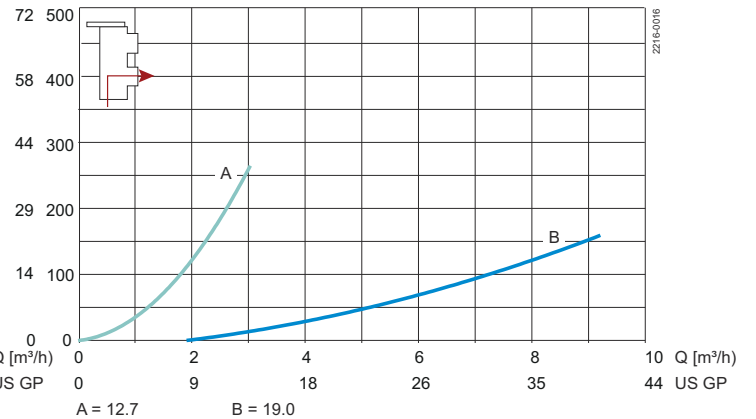


PSI ΔP [kPa]

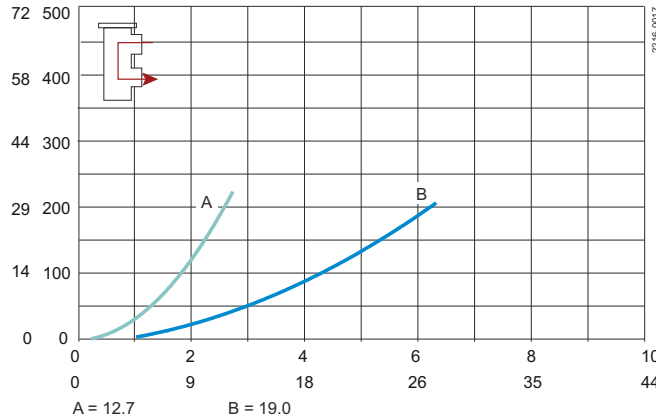


Change-over valve

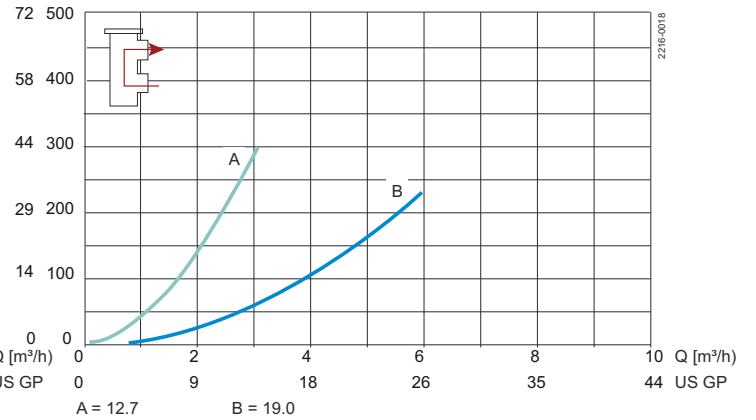
PSI ΔP [kPa]



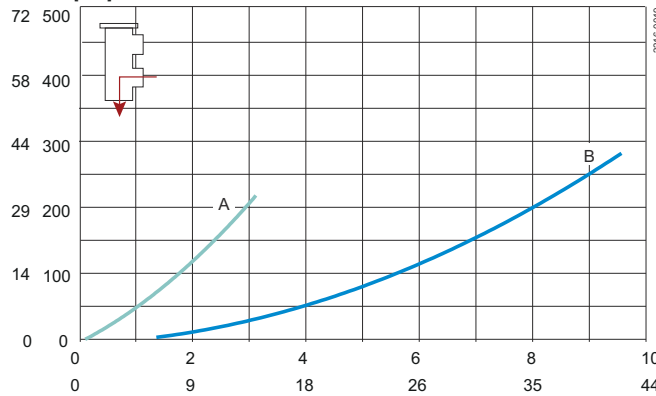
PSI ΔP [kPa]



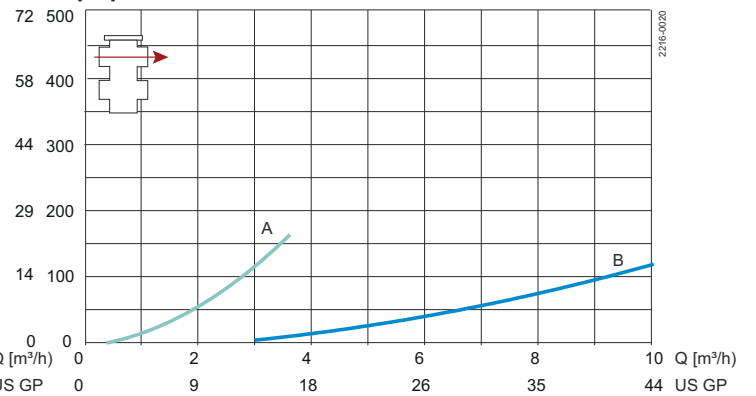
PSI ΔP [kPa]



PSI ΔP [kPa]



PSI ΔP [kPa]



**Note!**

For the diagrams the following applies:

Medium: Water (68 °F).

Measurement: In accordance with VDI2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

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

Where

Q = Flow (gallon/minute).

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

Δp = Pressure drop in psi over the valve.

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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).

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

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

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

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

Pressure data for Small Single Seat Valve

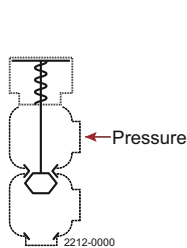


Figure 5. 1

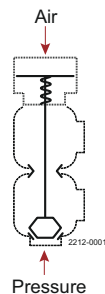


Figure 6. 2

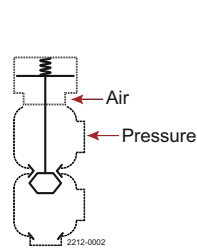


Figure 7. 3

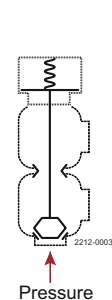


Figure 8. 4

Shut-off and change-over valves

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Max. pressure in bar without leakage at the valve seat	
			Valve size	
			DN/OD 1/2"	DN/OD 3/4"
Figure 5. 1		NO	Min. 145	Min. 145
	29	NO	29	-
Figure 6. 2	43.5	NO		43.5
	58	NO	Min. 145	Min. 145

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Max. pressure in bar without leakage at the valve seat	
			Valve size	
			DN/OD ½"	DN/OD ¾"
Figure 7. 3	29	NC	130.5	-
	43.5	NC	Min. 145	Min. 145
Figure 8. 4		NC	Min. 145	Min. 145

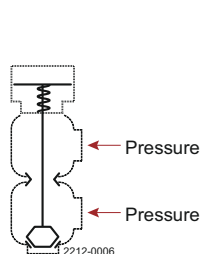


Figure 9. 5

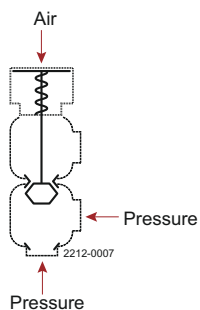


Figure 10. 6

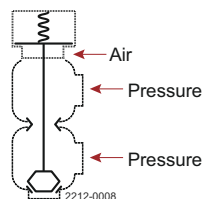


Figure 11. 7

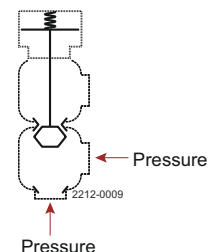


Figure 12. 8

Stop and change-over valve

Actuator / Valve body combination and direction of pressure	The table shows the approx. static pressure (p) in bar against which the valve can open			
	Air pressure (PSI)	Plug position	Valve size	
			DN/OD ½"	DN/OD ¾"
Figure 9. 5		NO	Min. 145	Min. 145
	29	NO	130.5	-
Figure 10. 6	43.5	NO	Min. 145	87
	58	NO	-	Min. 145
Figure 11. 7	29	NC	Min. 145	Min. 145
Figure 12. 8		NC	Min. 145	Min. 145

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