Alfa Laval Unique SSV Y-body

Single seat valves

Introduction

The Alfa Laval Unique SSV Y-body 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, the Unique SSV Y-body provides uninterrupted flow and gentle handling of products that are highly viscous or contain large particles and require gentle product treatment.

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

Application

This robust single seat valve is designed for uninterrupted flow and gentle handling of products that are highly viscous or contain large particles in hygienic applications across the dairy, food, beverage, brewery and many other industries.

Benefits

- Exceptional valve hygiene and durability
- 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
- Gentle product handling

Standard design

The Unique SSV Y-body is available in a one-body configuration, with easy-to-configure valve bodies, plugs, actuator and clamp ring.

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 a clamp ring.

The valve can be fitted with Alfa Laval ThinkTop V-series for sensing and control of the valve. See ThinkTop datasheets for further details.



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

Working principle

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

Certificates

Authorized to carry the 3A symbol

Technical data

Temperature	
Temperature range:	-10 °C to +140 °C / 14 °F to +284 °F (EPDM)

Pressure	
Max. product pressure:	1000 kPa / 145 PSI (10 bar)
Min. product pressure:	Full vacuum
Air pressure:	500 to 700 kPa / 72.5 to 101.5 PSI (5 - 7 bar)

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) (internal Ra < 0.8 µm / Ra < 32 µinch)
Other steel parts:	1.4301 (304)
External surface finish:	Semi-bright (blasted)
Internal surface finish:	Bright (polished), Ra < 0.8 µm / Ra < 32 µinch
Product wetted seals:	EPDM
Other seals:	NBR
Plug seal:	TR2 (floating PTFE design)

Options

- Control and Indication: ThinkTop V-Series
- Product wetted seals in HNBR/NBR or FPM
- External surface finish bright

Note!
For further details, see instruction manual.

Other valves in the same basic design

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

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

Semi-Maintainable actuator comes with 5 year warranty.

Dimensions (mm)

	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

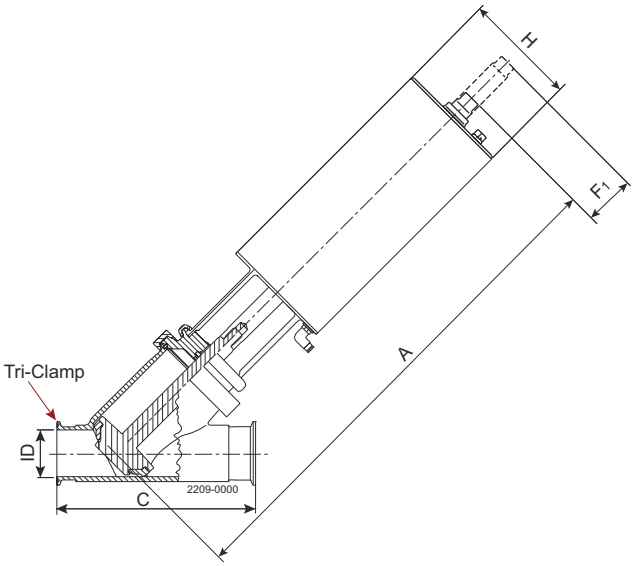


Figure 1. Y-body valve

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

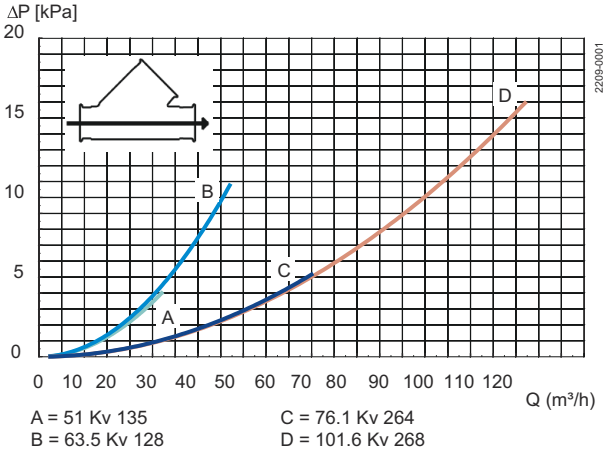
Air Connections Compressed air:

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

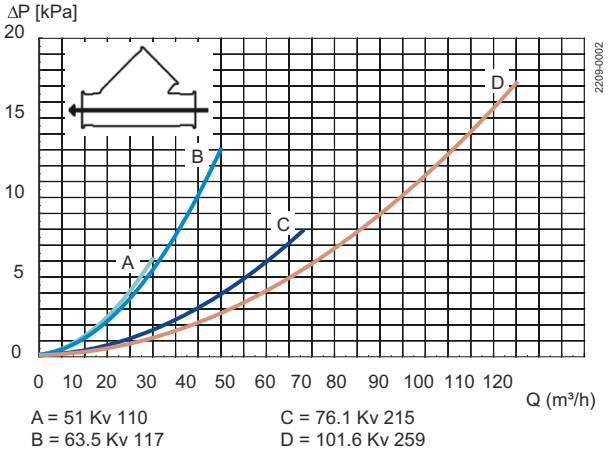
Air Consumption (Litres free air) for one stroke

Size	**DN/OD**	**DN/OD**
	51 - 63.5 mm	**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



A = 51 Kv 135
B = 63.5 Kv 128
C = 76.1 Kv 264
D = 101.6 Kv 268



A = 51 Kv 110
B = 63.5 Kv 117
C = 76.1 Kv 215
D = 101.6 Kv 259

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.

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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 Y-body

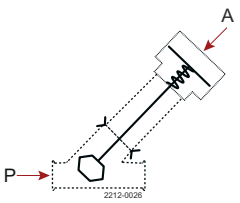

Figure 2. **1**

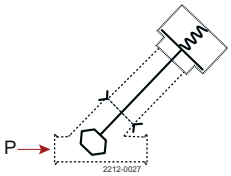

Figure 3. **2**

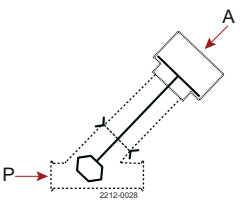

Figure 4. **3**

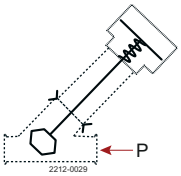

Figure 5. **4**

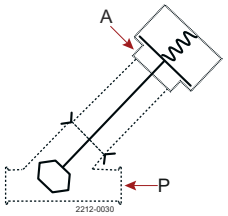

Figure 6. **5**

A = Air

P= Product pressure

			Max. pressure in bar against which the valve can open.			
			Valve size			
Actuator / Valve body combination and direction of pressure	**Air pressure (bar)**	**Plug position**	**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**
Figure 2. 1	6	NO	4.9	2.7	3.8	2.1
Figure 3. 2		NO	4.4	2.4	3.8	2.1
Figure 4. 3	6	A/A	10.0	7.1	9.4	5.4

			Max. pressure in bar against which the valve can open.			
			Valve size			
Actuator / Valve body combination and direction of pressure	**Air pressure (bar)**	**Plug position**	**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**
Figure 5. 4		NO	9.2	5.1	6.5	3.7
Figure 6. 5	6	NC	9.8	5.4	6.5	3.7

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