Alfa Laval Unique SSV Long Stroke

Single seat valves

Introduction

The Alfa Laval Unique SSV Long Stroke is 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 is especially suitable for use with highly viscous products and products containing particles and/or suspended solids due to its larger opening.

Application

This Unique SSV Long Stroke is designed for use in a broad range of 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 Long Stroke 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 working ports or as a changeover valve with up 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 Long Stroke is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop®.

Certificates

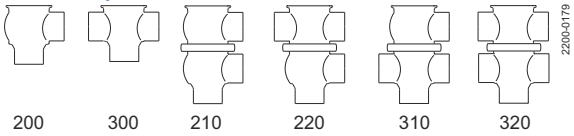
Authorized to carry the 3A symbol

TECHNICAL DATA

Temperature	
Temperature range:	-10 °C to +140 °C (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



Actuator function

- Pneumatic downward movement, spring return
- Pneumatic upward movement, spring return
- Pneumatic upward and downward movement (AA)

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

- Male parts or clamp liners in accordance with required standard
- Control and Indication: ThinkTop and ThinkTop Basic
- Product wetted seals in HNBR or FPM
- TR2 plug (floating PTFE design)
- Service tool for plug seals
- 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 Anytime configurator for full access to all models and options.

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

Semi-Maintainable actuator comes with 5 year warranty.

Dimensions (mm)

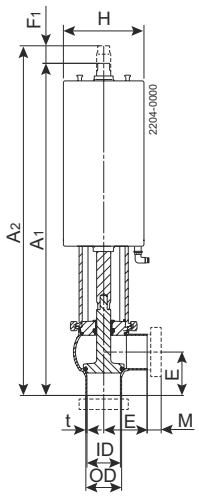


Figure 1. Shut-off valve

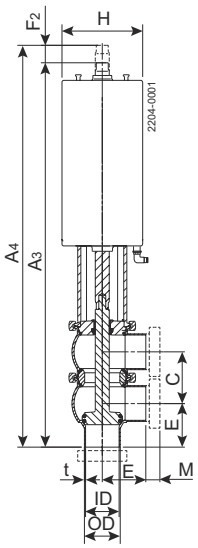


Figure 2. Change-over valve

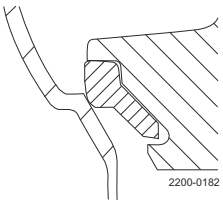


Figure 3. PTFE plug seal (TR2)

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 Anytime.

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.

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/between bodies)	12	15	23	30	40

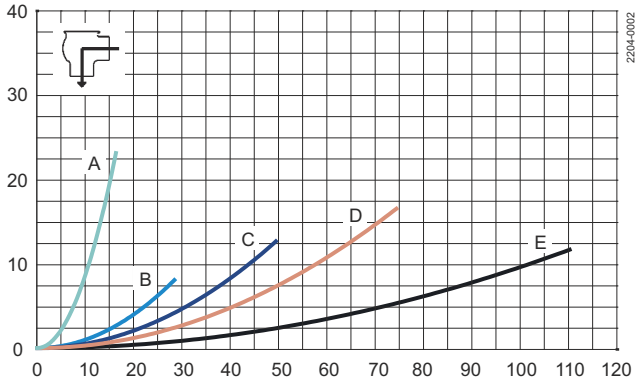
Max. size of solids (mm)	Valve size (DN/OD)				
	DN40	DN50	DN65	DN80	DN100
Shut-off valve	24	34	45	62	61
Change-over valve (plug up/lower body/between bodies)	25	37	37	52	57
Change-over valve (plug down/between bodies)	12	15	23	30	40

Air consumption (litres free air) for one stroke

Size	DN40-65 DN/OD 38-63.5 mm	DN80–100 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]

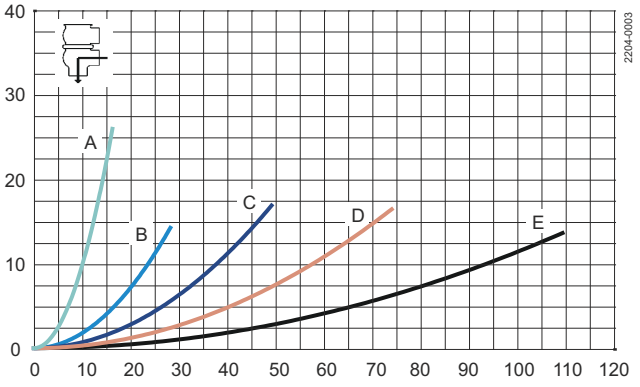
Pressure drop/capacity diagrams

ΔP (kPa)



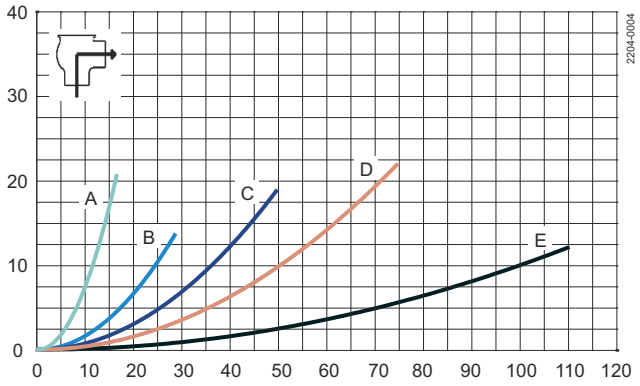
A = DN40/38 Kv 34
B = DN50/51 Kv 100
C = DN65/63.5 Kv 139
D = DN80/76.1 Kv 183
E = DN100/101.6 Kv 323

ΔP (kPa)



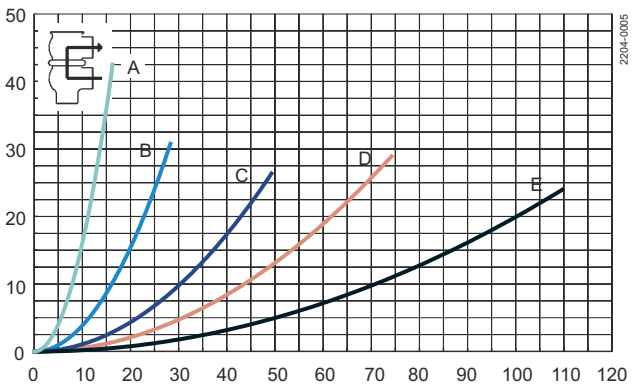
A = DN40/38 Kv 32
B = DN50/51 Kv 75
C = DN65/63.5 Kv 120
D = DN80/76.1 Kv 183
E = DN100/101.6 Kv 297

ΔP (kPa)



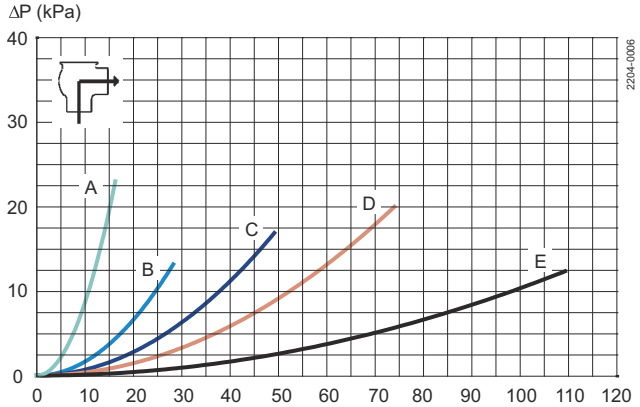
A = DN40/38 Kv 36
B = DN50/51 Kv 77
C = DN65/63.5 Kv 114
D = DN80/76.1 Kv 159
E = DN100/101.6 Kv 316

ΔP (kPa)



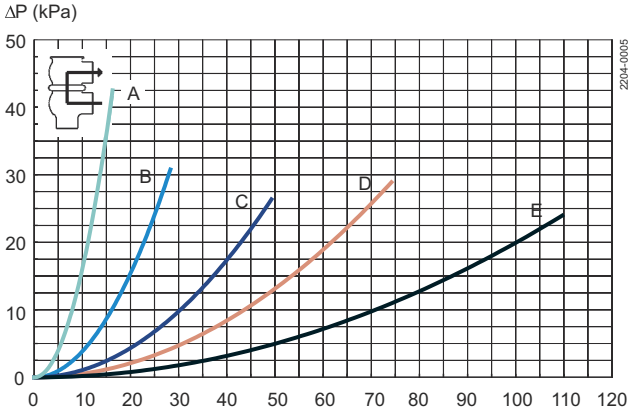
A = DN40/38 Kv 25
B = DN50/51 Kv 52
C = DN65/63.5 Kv 96
D = DN80/76.1 Kv 138
E = DN100/101.6 Kv 224

ΔP (kPa)



A = DN40/38 Kv 34
B = DN50/51 Kv 78
C = DN65/63.5 Kv 120
D = DN80/76.1 Kv 166
E = DN100/101.6 Kv 312

ΔP (kPa)



A = DN40/38 Kv 32
B = DN50/51 Kv 41
C = DN65/63.5 Kv 96
D = DN80/76.1 Kv 138
E = DN100/101.6 Kv 224

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

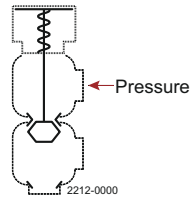


Figure 4. 1

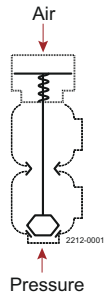


Figure 5. 2

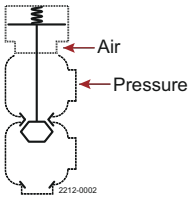


Figure 6. 3

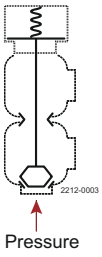


Figure 7. 4

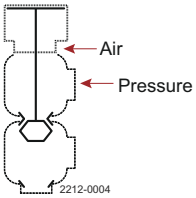


Figure 8. 5

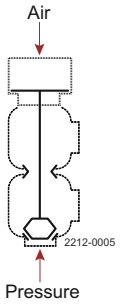


Figure 9. 6

Shut-off and Change-over valves

			Max. pressure in bar without leakage at the valve seat				
			Valve size				
Actuator / Valve body combination and direction of pressure	**Air pressure (bar)**	**Plug position**	**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**
Figure 4. 1		NO	10.0	8.9	4.8	7.1	4.6
Figure 5. 2	6	NO	10.0	8.6	5.0	6.8	4.4
Figure 6. 3	6	NC	10.0	9.9	5.4	7.2	4.6
Figure 7. 4		NC	10.0	7.6	4.4	6.7	4.4
Figure 8. 5	6	A/A	10.0	10.0	10.0	10.0	10.0
Figure 9. 6	6	A/A	10.0	10.0	10.0	10.0	10.0

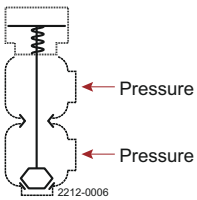


Figure 10. 7

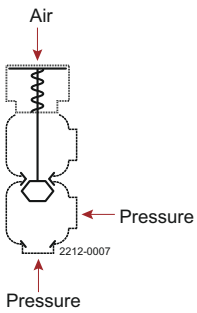


Figure 11. 8

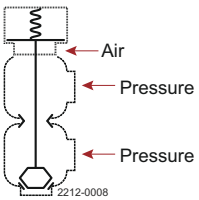


Figure 12. 9

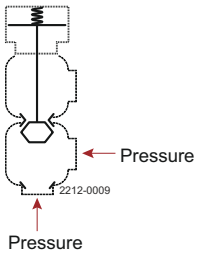


Figure 13. 10

Shut-off and Change-over valves

			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**	**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**
Figure 10. 7		NO	10.0	10.0	8.1	10.0	6.7
Figure 11. 8	6	NO	10.0	10.0	8.0	9.7	6.5
Figure 12. 9	6	NC	10.0	10.0	8.7	10.0	6.7
Figure 13. 10		NC	10.0	10.0	7.5	9.6	6.4

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How to contact Alfa Laval

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