Alfa Laval Unique SSV Aseptic

Single seat valves

Introduction

The Alfa Laval Unique SSV Aseptic 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 requirements in terms of hygiene and safety. Built on the well-proven Alfa Laval Unique SSV platform, it features a one-piece diaphragm that provides hermetic sealing to prevent intrusion of contaminants from the atmosphere, ensuring full protection against the effects of microorganisms during processing. The special diaphragm can also be used with the Unique SSV Standard, Tangential, Two Step, Manual and Tank Outlet.

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 Aseptic is designed for uninterrupted production in sterile and aseptic applications across the dairy, food, beverage, brewery, biotechnology, pharmaceutical and many other industries.

Benefits

- Durable, aseptic valve design
- 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 bacterial contamination
- Easy to configure

Standard design

The Unique SSV Aseptic 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 for aseptic processing as a shutoff valve with two or three working 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 Aseptic is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks. An integrated valve plug/diaphragm secures aseptic operation. The valve can be controlled using an Alfa Laval ThinkTop®.

Certificates

Authorized to carry the 3A symbol

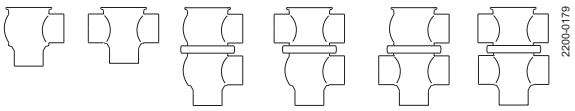
TECHNICAL DATA

Temperature	
Temperature range:	-10°C to +140°C (EPDM)
Max. sterilization temperature (<1 min):	150°C/380 kPa (3.8 bar)

Pressure	
Pressure range:	0-800 kPa (0-8 bar)
Max. sterilization temperature:	150°C/380 kPa (3.8 bar)
Air pressure:	500-700 kPa (5-7 bar)

Note! Vacuum is not recommended in aseptic applications.

Valve body combinations



Actuator function

- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).
- Pneumatic upward and downward movement (A/A).

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 seal:	EPDM
Other seals:	NBR
Diaphragm:	PTFE (Product wetted side) / EPDM

Options

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Low pressure actuator.
E. High product pressure actuator.
F. Maintainable actuator.
G. 2 step / 3 position actuator (not for DN/OD 25 / DN 25).
H. External surface bright.

Note!

For further details, see instruction ESE00529.

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.

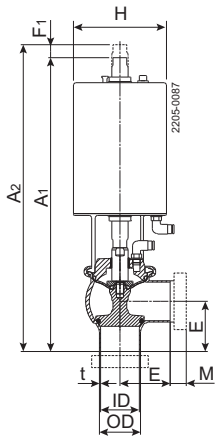
- Manually operated valve.
- Two Step valve.
- Tangential valve.
- Tank Outlet valve.

Semi-Maintainable actuator comes with 5 year warranty

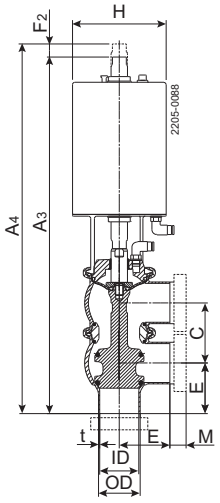
Dimensions (mm)

Nominal size	DN/OD						DIN/DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
A_1	308	314	367	394	432	482	312	316	369	397	436	484
A_2	319	325	382	409	451	501	323	327	384	412	455	503
A_3	356	375	441	480	531	606	364	380	444.5	489	543	610
A_4	364	384	454	493	547	622	372	389	458	502	559	626
C	47.8	60.8	73.8	86.3	98.9	123.6	52	64	76	92	107	126
OD	25	38	51	63.5	76.1	101.6	29	41	53	70	85	104
ID	21.8	34.8	47.8	60.3	72.9	97.6	26	38	50	66	81	100
t	1.6	1.6	1.6	1.6	1.6	2	1.5	1.5	1.5	2	2	2
E_1	50	49.5	61	81	86	119	50	49.5	61	78	86	120
E_2	50	49.5	61	81	86	119	50	49.5	61	78	86	120
F_1	11	11	15	15	19	19	11	11	15	15	19	19
F_2	8	9	13	13	16	16	8	9	13	13	16	16
H	85	85	114.9	114.9	154.3	154.3	85	85	114.9	114.9	154.3	154.3
M/ISO clamp	21	21	21	21	21	21	-	-	-	-	-	-
M/DIN clamp	-	-	-	-	-	-	21	21	21	28	28	28
M/DIN male	-	-	-	-	-	-	22	22	23	25	25	30
M/SMS male	20	20	20	24	24	35	-	-	-	-	-	-
Weight (kg)												
Shut off valve:	3.1	3.3	5.6	6.6	11.5	14	3.2	3.4	5.6	6.8	11.9	13.9
Change-over valve	3.9	4.2	7.2	8.7	14.2	18.4	4.1	4.5	7.1	9	15.1	18.3

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator



Shut-off valve



Change-over valve

Please note!

Opening/closing time will be affected by the following:

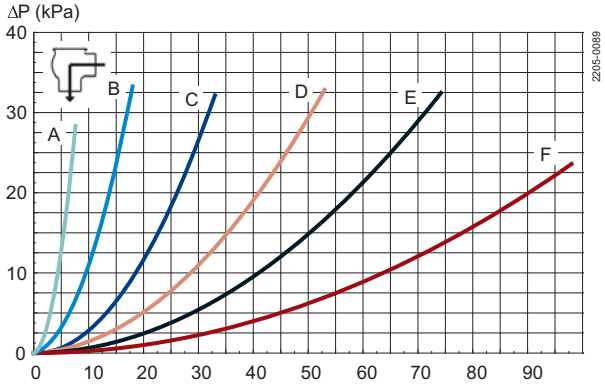
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

Air Connections Compressed air:

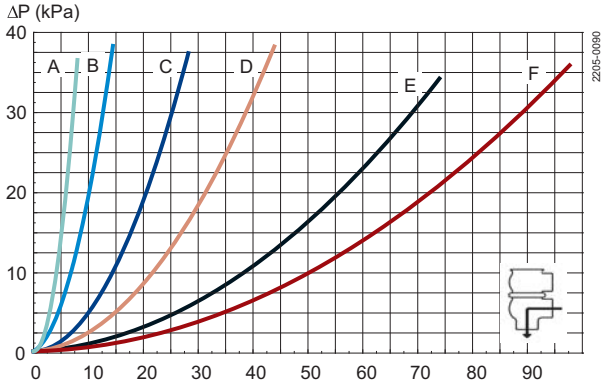
R 1/8" (BSP), internal thread.

Air consumption (litres free air) for one stroke			
Size	DN25-40	DN50-65	DN80100
	DN/OD 25-38 mm	DN/OD 51-63.5 mm	DN/OD 76.1101.6 mm
NO and NC	0.2 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]
A/A	0.5 x air pressure [bar]	1.1 x air pressure [bar]	2.7 x air pressure [bar]

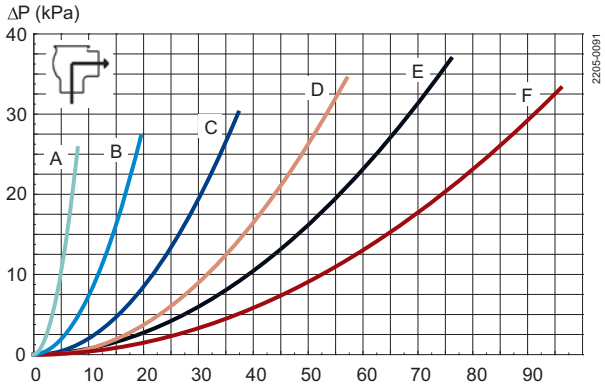
Pressure drop/capacity diagrams



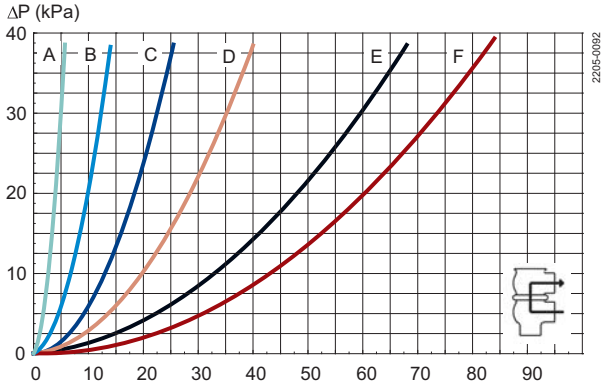
A = DN25/25 Kv 14
B = DN40/38 Kv 31
C = DN50/51 Kv 58
D = DN65/63.5 Kv 91
E = DN80/76.1 Kv 130
F = DN100/101.6 Kv 202



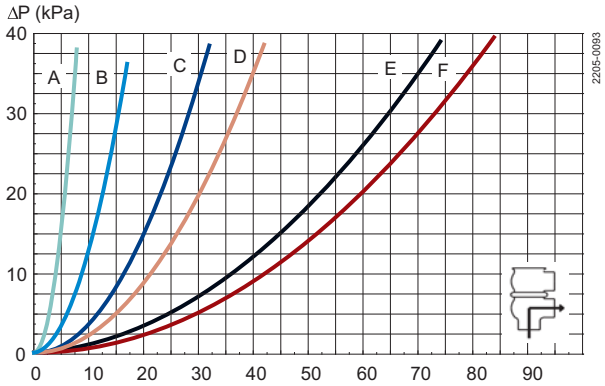
A = DN25/25 Kv 13
B = DN40/38 Kv 24
C = DN50/51 Kv 46
D = DN65/63.5 Kv 71
E = DN80/76.1 Kv 125
F = DN100/101.6 Kv 163



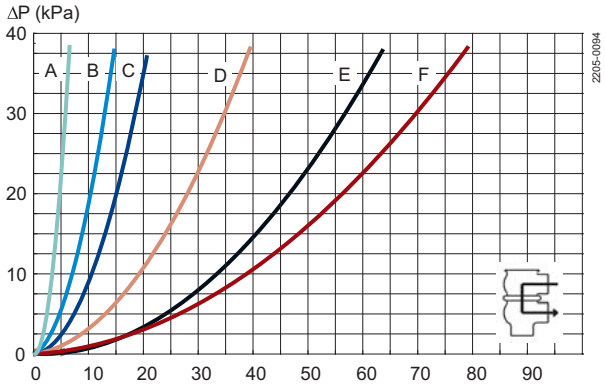
A = DN25/25 Kv 16
B = DN40/38 Kv 37
C = DN50/51 Kv 68
D = DN65/63.5 Kv 98
E = DN80/76.1 Kv 124
F = DN100/101.6 Kv 167



A = DN25/25 Kv 9
B = DN40/38 Kv 23
C = DN50/51 Kv 41
D = DN65/63.5 Kv 64
E = DN80/76.1 Kv 109
F = DN100/101.6 Kv 135



A = DN25/25 Kv 13
B = DN40/38 Kv 28
C = DN50/51 Kv 52
D = DN65/63.5 Kv 68
E = DN80/76.1 Kv 119
F = DN100/101.6 Kv 134



A = DN25/25 Kv 10
B = DN40/38 Kv 24
C = DN50/51 Kv 34
D = DN65/63.5 Kv 63
E = DN80/76.1 Kv 103
F = DN100/101.6 Kv 128

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.

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.

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

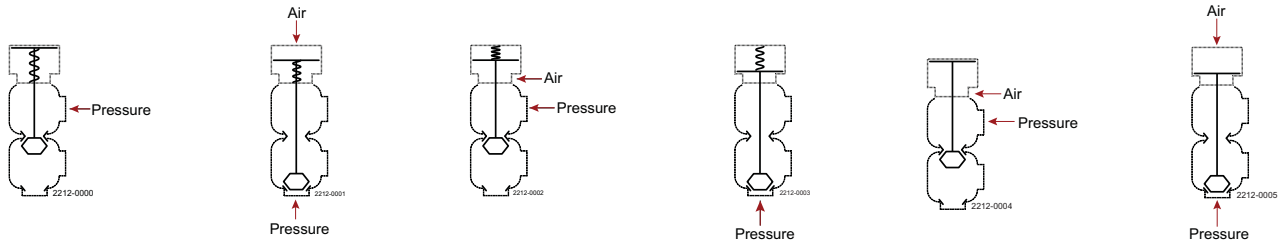
2.5" shut-off valve, where Kv = 111 (See table above).

$40 = 111 \times \sqrt{\Delta p}$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

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

Pressure data for Unique Single Seat Valve Aseptic



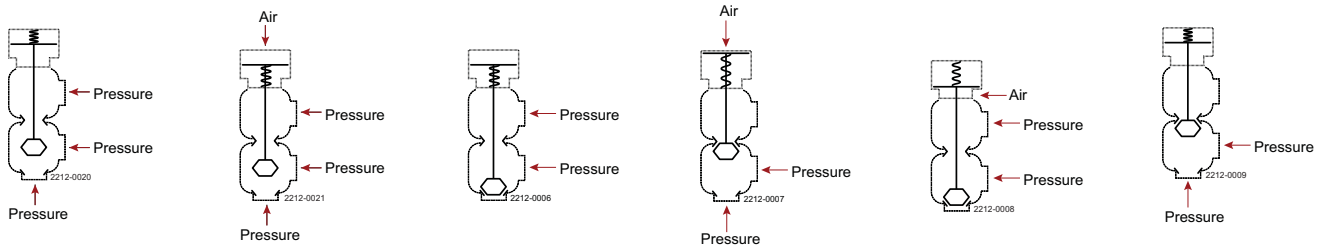
1 2 3 4 5 6

Table 1 - Shut fully closed. Max. static pressure without leakage

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 - DN/OD	DN 40 - DN/OD	DN 50 - DN/OD	DN 65 - DN/OD	DN 80 - DN/OD	DN 100 - DN/OD
			25 mm	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm
1		NO	8.0	6.0	8.0	4.4	7.5	5.5
2	6	NO	8.0	7.6	8.0	5.6	7.2	4.8
3	6	NC	8.0	8.0	8.0	6.8	7.5	5.0
4		NC	8.0	6.3	7.2	4.2	6.4	4.2
5	6	A/A	8.0	8.0	8.0	8.0	8.0	8.0
6	6	A/A	8.0	8.0	8.0	8.0	8.0	8.0

Table 2- Shut fully closed. Options with high pressure actuator - Max. static pressure without leakage

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 - DN/OD	DN 40 - DN/OD	DN 50 - DN/OD	DN 65 - DN/OD	DN 80 - DN/OD	DN 100 - DN/OD
			25 mm	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm
1		NO	8.0	8.0	8.0	8.0	-	-
2	6	NO	8.0	8.0	8.0	8.0	-	-
3	6	NC	8.0	8.0	8.0	8.0	8.0	4.1
4		NC	8.0	8.0	8.0	8.0	8.0	7.0



1 2 3 4 5 6

Table 3- Valve is closing. Approximately max. pressure in bar at which the valve can close by means of the spring or air pressure

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 - DN/OD	DN 40 - DN/OD	DN50 - DN/OD	DN 65 - DN/OD	DN 80 - DN/OD	DN 100 - DN/OD
			25 mm	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm
1		NC	6.5	6.5	8.0	8.0	7.3	7.6
2	6	NO	8.0	8.0	8.0	8.0	7.9	8.0

Table 4- Seat fully closed - Standard valve. Approximately pressure in bar, at which the valve plug can change positions by the spring or air pressure

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 - DN/OD	DN 40 - DN/OD	DN50 - DN/OD	DN 65 - DN/OD	DN 80 - DN/OD	DN 100 - DN/OD
			25 mm	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm
3		NO	8.0	8.0	8.0	8.0	8.0	8.0
4	6	NO	8.0	8.0	8.0	8.0	8.0	8.0
5	6	NC	8.0	8.0	8.0	8.0	8.0	8.0
6		NC	8.0	8.0	8.0	5.7	8.0	5.4

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 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 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 (EPDM)

Pressure	
Max. product pressure:	1000 kPa (10 bar)
Min. product pressure:	Full vacuum
Air pressure:	500 to 700 kPa (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)
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
Plug seal:	TR2 (floating PTFE design)

Options

A. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
B. Product wetted seals in HNBR/NBR or FPM.
C. External surface finish bright.

Note!

For further details, see instruction ESE00608.

Other valves in the same basic design

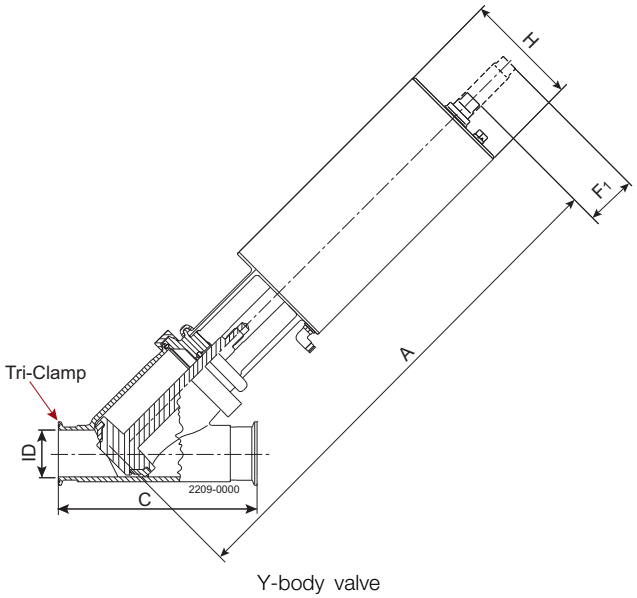
The Unique SSV valve range includes several purpose built valves. Please use the Alfa Laval Anytime configurator for full access to all models and options.

- 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



Y-body valve

Please note!

Opening/closing time will be affected by the following:

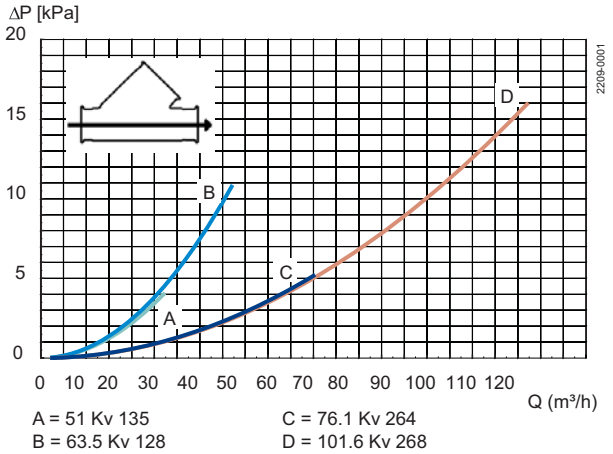
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- The number of valves connected to the same air hose.
- Use of a single solenoid valve for serial connected air actuator functions.
- Product pressure.

Air Connections Compressed air:

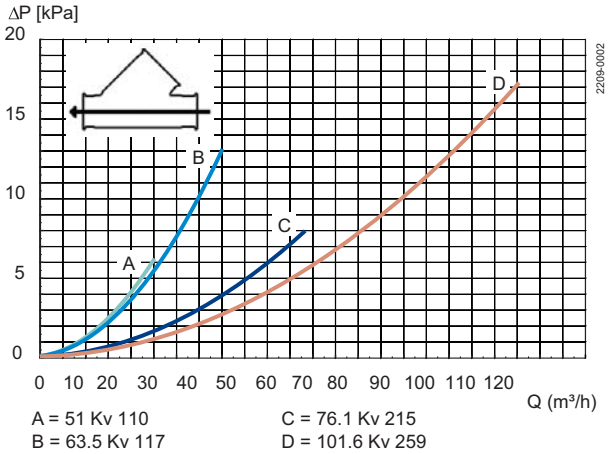
R 1/8" (BSP). internal thread.

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.

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).

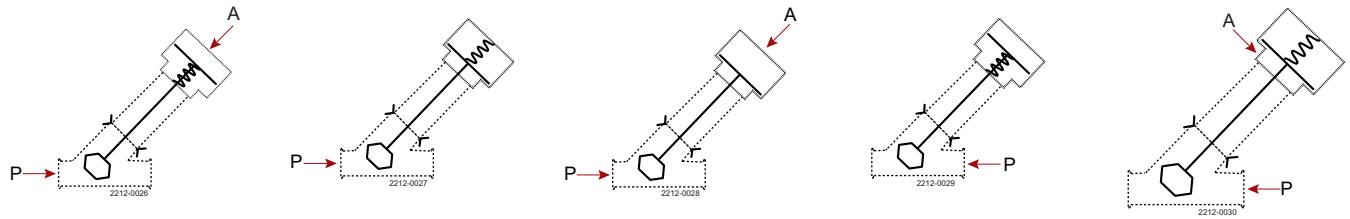
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

Pressure data for Unique Single Seat Valve Y-body



1 2 3 4 5

A = Air P= Product pressure

Table 1

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size 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
1	6	NO	4.9	2.7	3.8	2.1
2		NO	4.4	2.4	3.8	2.1
3	6	A/A	10.0	7.1	9.4	5.4

Table 2 Max. pressure in bar against which the valve can open.

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size 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
4		NO	9.2	5.1	6.5	3.7
5	6	NC	9.8	5.4	6.5	3.7

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Alfa Laval Unique SSV Two Step

Single seat valves

Introduction
The Alfa Laval Unique SSV Two Step 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 ideal for dosing and two-stage filling to ensure an exact volume or for draining of two pipes at the same time while reducing the risk of pressure shocks. Adjustable lifting height makes it possible to match specific volumes and quantities.

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
The Unique SSV Two Step is designed for dosing and filling 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 defined seal compression
- Enhances product safety due to static seal leak detection
- Protection against full vacuum due to double lip seal
- Intermediate plug position

Standard design
The Unique SSV Two Step 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 shutoff valve with two to three working ports, or as a changeover valve with up to five ports for drainage of two pipes simultaneously or in closing/filling applications.

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 degree of opening for the intermediate position can be adjusted by removing spacer rings inside the actuator.

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 Two Step is operated by means of compressed air from a remote location. The actuator smooths operation and an intermediate step protects process lines from pressure peaks while dosing and filling. The valve can be controlled using an Alfa Laval ThinkTop®.

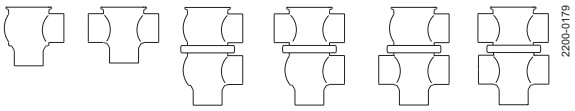
Certificates
Authorized to carry the 3A symbol

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.

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

A. Male parts or clamp liners in accordance with the required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
E. High pressure actuator (only ISO51, ISO63.5 and DN50, DN65).
F. External surface finish bright.

Note!

For further details, see instruction ESE00505.

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.

- Aseptic valve.

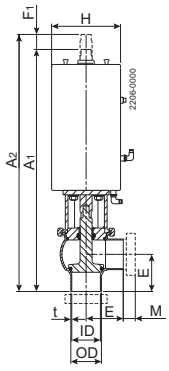
Semi-Maintainable actuator comes with 5 year warranty

Dimensions (mm)

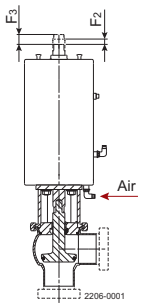
Nominal size	Inch tubes DN/OD					DIN tubes DN					High Pressure Inch tubes DN/OD		High Pressure DIN tubes DN	
	38	51	63.5	76.1	101.6	40	50	65	80	100	51	63.5	50	65
A_1 [1]	382	395	422	458	504	384	397	422	462	506	426	452	427	452
A_2 [1]	402	420	447	488	534	404	422	447	492	536	451	477	452	477
A_3 [1]	443	469	508	557	627	448	472.5	514	569	632	500	538	503	544
A_4 [1]	460	491	530	584	654	465	495	536	596	659	522	560	525	566
C	60.8	73.8	86.3	98.9	123.6	64	76	92	107	126	73.8	86.3	76	92
OD	38	51	63.5	76.1	101.6	41	53	70	85	104	51	63.5	53	70
ID	34.8	47.8	60.3	72.9	97.6	38	50	66	81	100	47.8	60.3	50	66
t	1.6	1.6	1.6	1.6	2	1.5	1.5	2	2	2	1.6	1.6	1.5	2
E	49.5	61	81	86	119	49.5	61	78	86	120	61	81	61	78
F_1	20	25	25	30	30	20	25	25	30	30	25	25	25	25
F_2 Min. Two step stroke	3	3	3	2.5	2.5	3	3	3	2.5	2.5	6	6	6	6
F_3 Max. Two step stroke	6	11	11	14	14	6	11	11	14	14	9	9	9	9
F_4	17	22	22	27	27	17	22	22	27	27	22	22	22	22
F_5 Two step stroke	6.5	11	11	14	14	6.5	11	11	14	14	9	9	9	9
H	115	115	115	154	154	115	115	115	154	154	154	154	154	154
M (ISO clamp)	21	21	21	21	21						21	21		
M (DIN clamp)	-	-	-	-	-	21	21	28	28	28			21	28
M (DIN male)	-	-	-	-	-	22	23	25	25	30			23	25
M (SMS male)	20	20	24	24	35						20	24		
Weight (kg)														
Stop valve	7	7.3	8.3	14.4	16.7	7	7.3	8.3	14.9	16.7	8.6	9.6	8.6	9.6
Change-over valve	8	8.9	10.3	17	21	8.2	8.9	10.5	17.9	21	10.2	11.6	10.2	11.8

[1] For exact A_1 - A_4 dimensions, please refer to informations in Anytime configurator.

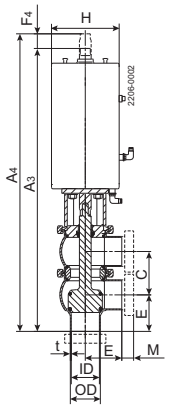
Air Connections: R 1/8" (BSP), internal thread.



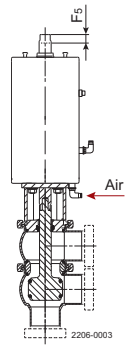
Shut-off valve closed



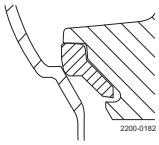
Shut-off valve with Two step stroke activated



Change-over valve closed



Change-over valve with Two step stroke activated



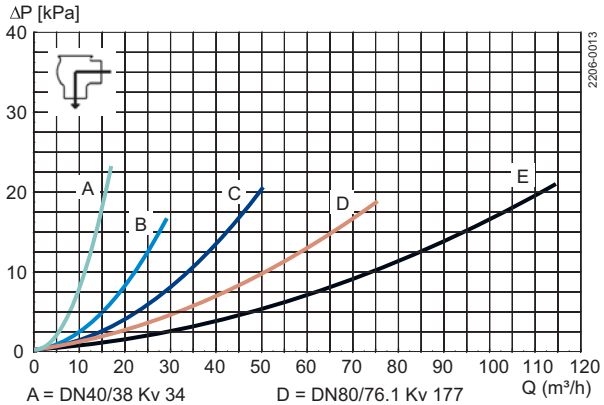
Optional PTFE plug seal (TR2)

Air consumption (litres free air) for one stroke			
Size	**DN40 - DN/OD 38 mm**	**DN50-65 - DN/OD 51-63.5 mm**	**DN80100 - DN/OD 76.1101.6 mm**
NO and NC	0.5 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]

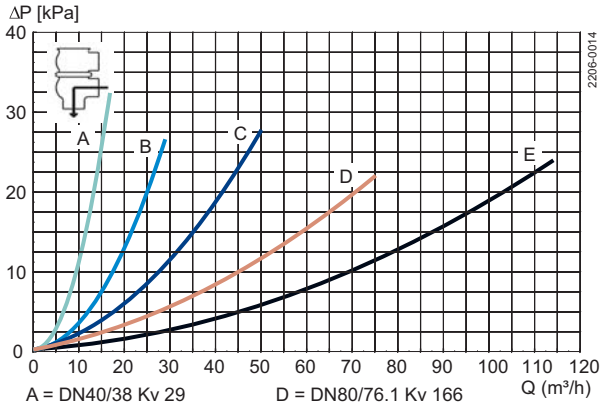
Please note!
Opening/closing time will be affected by the following:

- 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.

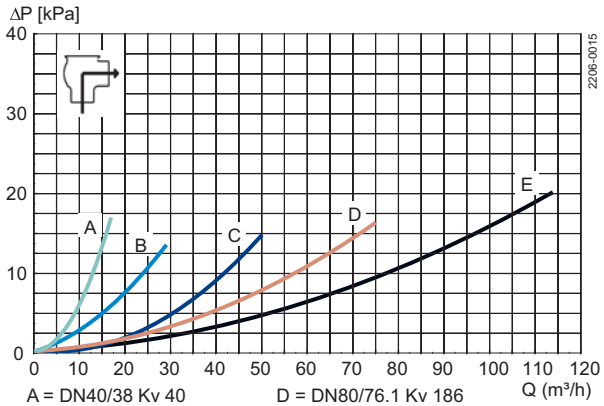
Pressure drop/capacity diagrams



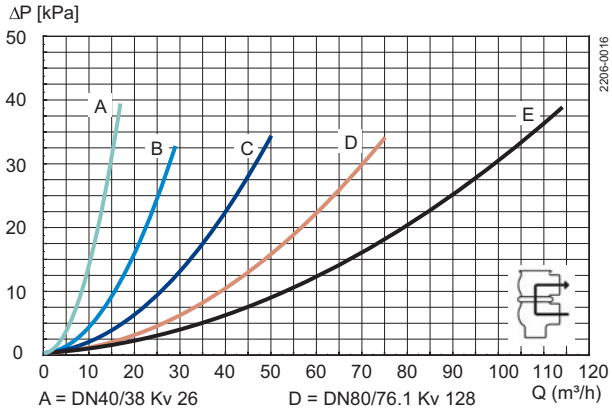
A = DN40/38 Kv 34
B = DN50/51 Kv 70
C = DN65/63.5 Kv 111
D = DN80/76.1 Kv 177
E = DN100/101.6 Kv 256



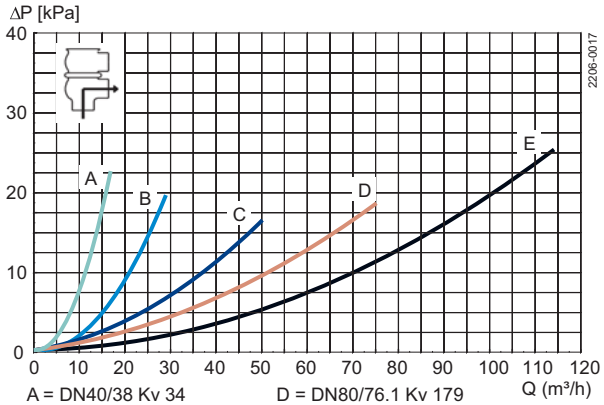
A = DN40/38 Kv 29
B = DN50/51 Kv 56
C = DN65/63.5 Kv 94
D = DN80/76.1 Kv 166
E = DN100/101.6 Kv 238



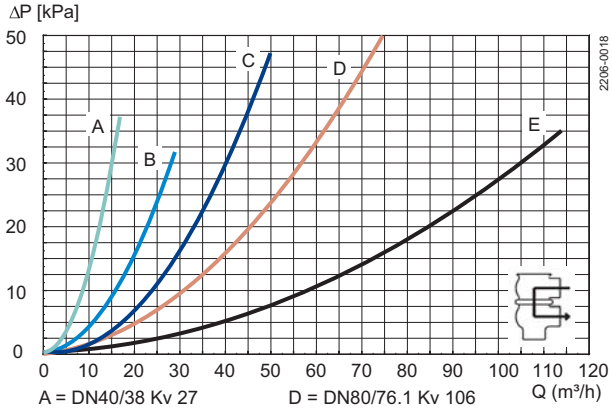
A = DN40/38 Kv 40
B = DN50/51 Kv 80
C = DN65/63.5 Kv 131
D = DN80/76.1 Kv 186
E = DN100/101.6 Kv 257



A = DN40/38 Kv 26
B = DN50/51 Kv 50
C = DN65/63.5 Kv 86
D = DN80/76.1 Kv 128
E = DN100/101.6 Kv 185



A = DN40/38 Kv 34
B = DN50/51 Kv 64
C = DN65/63.5 Kv 128
D = DN80/76.1 Kv 179
E = DN100/101.6 Kv 227



A = DN40/38 Kv 27
B = DN50/51 Kv 51
C = DN65/63.5 Kv 72
D = DN80/76.1 Kv 106
E = DN100/101.6 Kv 191

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.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m^3/h 2.5" shut-off valve, where Kv = 111 (See table above).

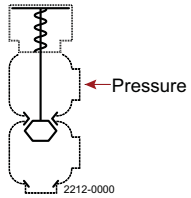
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

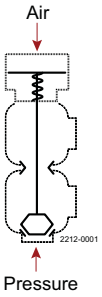
$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

Pressure data for Unique Single Seat Valve Two Step



1



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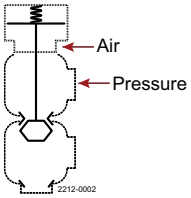

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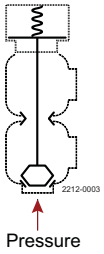

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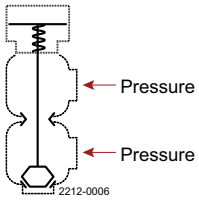
Table 1 - Shut-off and Change-over valves			Max. pressure in bar without leakage at the valve seat				
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size				
			DN 40 DN/OD 38 mm	DN50 DN/OD 51 mm	DN 65 DN/OD 63.5 mm	DN 80 DN/OD 76.1 mm	DN 100 DN/OD 101.6 mm
1		NO	10.0	8.4	4.5	6.8	4.4
2	6	NO	10.0	9.6	5.6	7.2	4.8
3	6	NC	10.0	10.0	6.1	7.7	5.0
4		NC	10.0	7.2	4.2	6.4	4.2



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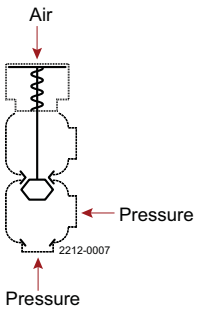

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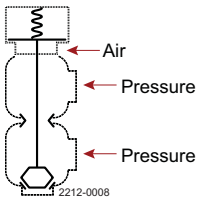

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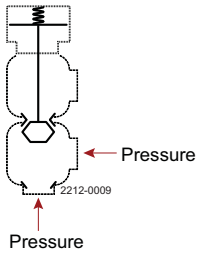

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Table 2 - Shut-off and Change-over valves			Max. pressure in bar against which the valve can open				
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size				
			DN 40 DN/OD 38 mm	DN50 DN/OD 51 mm	DN 65 DN/OD 63.5 mm	DN 80 DN/OD 76.1 mm	DN 100 DN/OD 101.6 mm
5		NO	10.0	10.0	7.4	9.7	6.3
6	6	NO	10.0	10.0	8.3	9.9	6.6
7	6	NC	10.0	10.0	9.0	10.0	6.9
8		NC	9.7	10.0	6.8	9.1	6.1

Table 3 - Shut-off and Change-over valves with high pressure actuator option (option)			Max. pressure in bar without leakage at the valve seat	
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size	
			DN50 DN/OD 51 mm	DN 65 DN/OD 63.5 mm
1		NO	10.0	10.0
2	6	NO	10.0	10.0
3	6	NC	10.0	10.0
4		NC	10.0	10.0

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ALFA LAVAL

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 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 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®.

Certificates

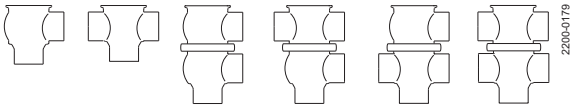
Authorized to carry the 3A symbol

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:	100 to 700 kPa (1 to 7 bar)

Valve Body Combinations



200 300 210 220 310 320

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:	12.7-19 mm
Stop valve/Change-over valve:	0.06 x Air pressure (bar)
Actuator function:	NO and NC

PHYSICAL DATA

Materials	
Product wetted steel parts:	Acid-resistant steel 1.4404 (316L)
Other steel parts:	Stainless steel 1.4307 (304L)
External surface finish:	Semi-bright (blasted)
Internal surface finish:	Ra ≤ 0.5µm
Product wetted seals:	EPDM
Other seals:	NBR
Plug:	PVDF

Options

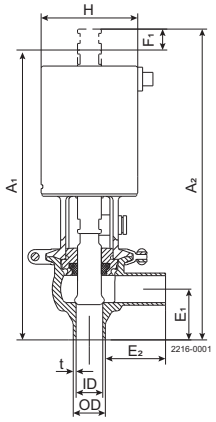
A. Adapter for IndiTop, ThinkTop and ThinkTop Basic.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals of HNBR or FPM.
D. Stainless steel seal disc replacing standard lip seal.
E. Clamp with wingnut.
F. Clamp connection.

Note!

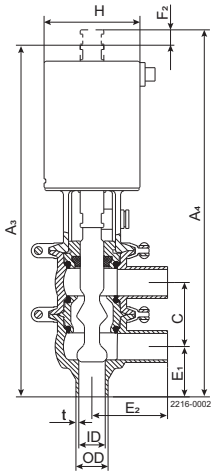
For further details, see also ESE01563 and instruction IM 70860.

Semi-Maintainable actuator comes with 5 year warranty

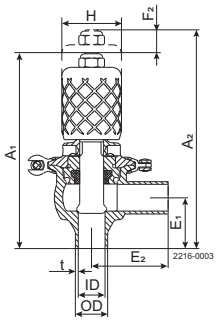
Dimensions (mm)



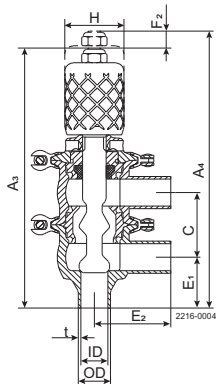
Stop valve



Change over valve



Manual stop valve



Manual change-over valve

Nominal Size	Remote-controlled DN/OD 12.7mm	Remote-controlled DN/OD 19mm	Manually operated DN/OD 12.7mm	Manually operated DN/OD 19mm
A_1	172.2	171.2	109.7	112.7
A_2	179.2	182.2	116.7	123.7
A_3	200.2	209.2	141.7	150.7
A_4	207.2	220.2	148.7	161.7
C	32.3	38.1	32.3	38.1
OD	12.7	19.0	12.7	19.0
ID	9.5	15.8	9.5	15.8
t	1.6	1.6	1.6	1.6
E_1	29.8	29.9	29.8	29.9
E_2	45.0	45.0	45.0	45.0
F_1	7.0	11.0	7.0	11.0
F_2	7.0	11.0	7.0	11.0
H	57.0	57.0	35.0	35.0
Weight (kg) - Stop valve	1.07	1.10	0.5	0.53
Weight (kg) - Change-over valve	1.36	1.41	0.8	0.85

(900-233)

Please note!

Opening/closing time will be affected by the following:

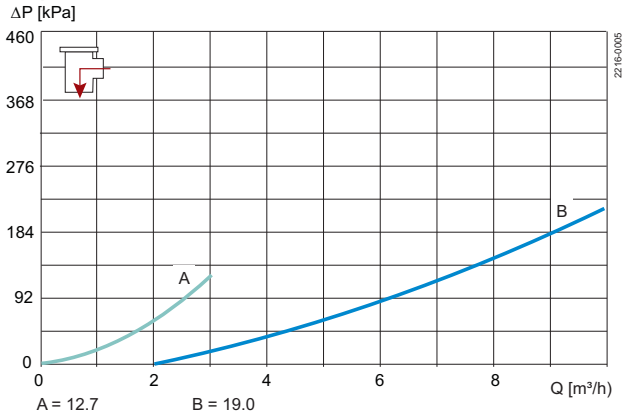
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

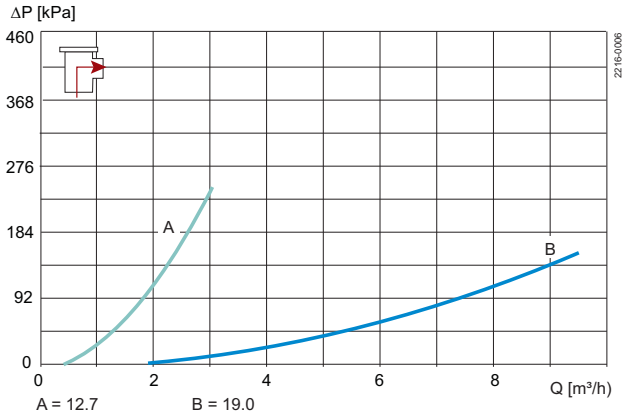
Air Connections Compressed air:

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

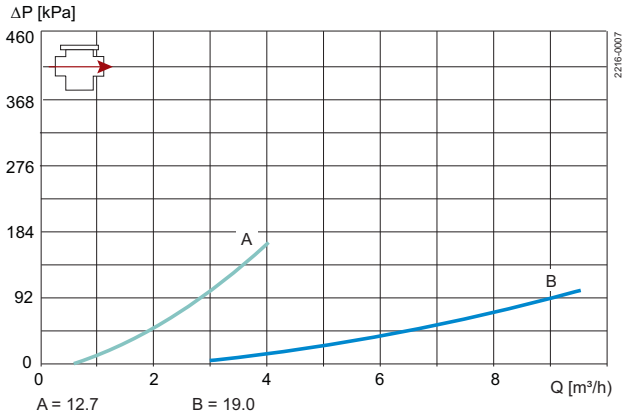
Pressure drop/capacity diagrams

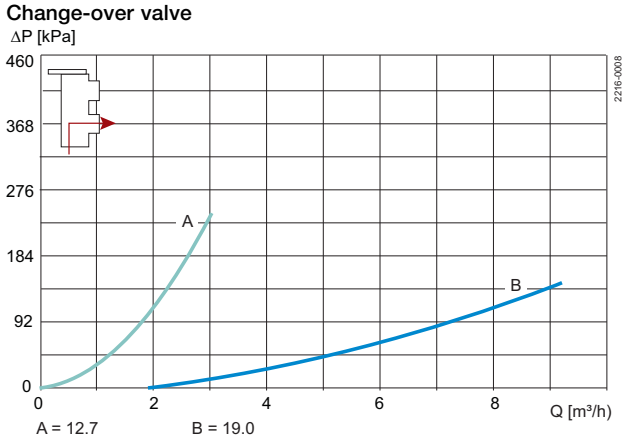
Stop valve

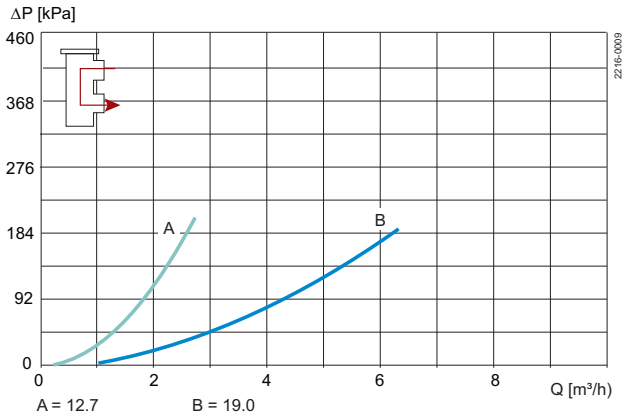


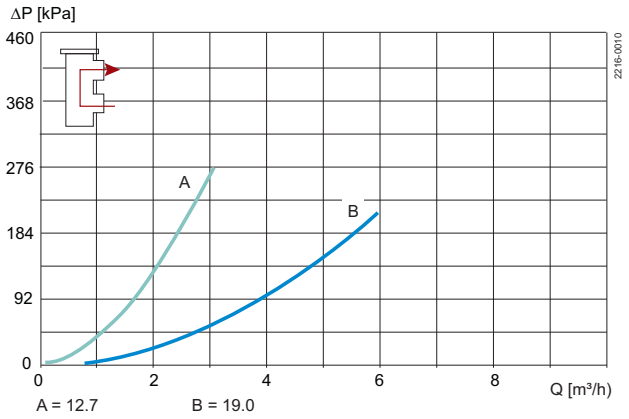


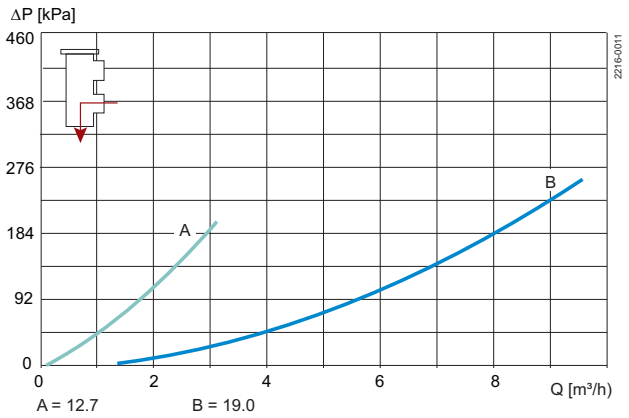
Change-over valve

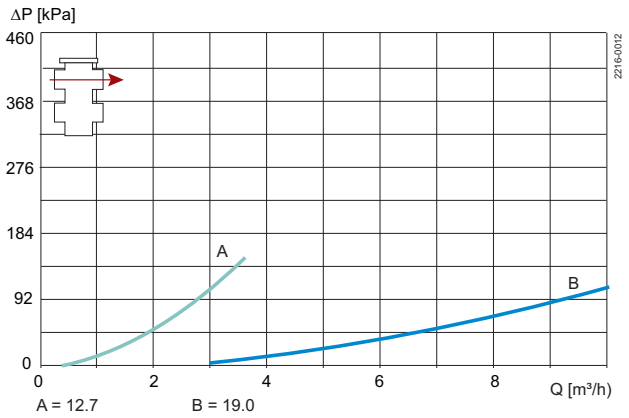












Note!

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).

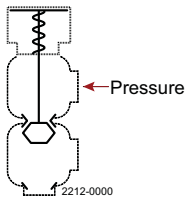
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

Pressure data for Unique Small Single Seat Valve



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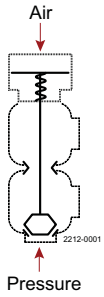

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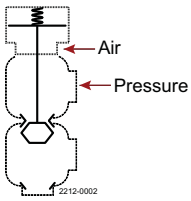

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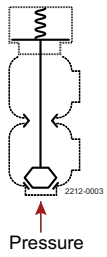

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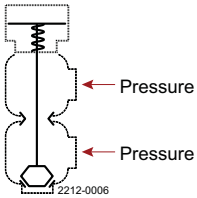
Table 1 - Shut-off and change-over valves			Max. pressure in bar without leakage at the valve seat	
			Valve size	
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	DN/OD 12.7 mm	DN/OD 19 mm
1		NO	Min. 10.0	Min. 10.0
2	2	NO	2.0	-
	3	NO	Min. 10.0	3.0
	4	NO		Min. 10.0
3	2	NC	9.0	-
	3	NC	Min. 10.0	Min. 10.0
4		NC	Min. 10.0	Min. 10.0



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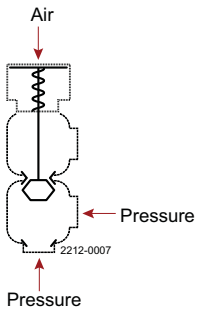

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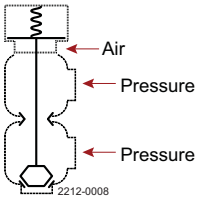

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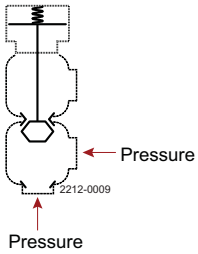

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Table 2 - Stop and change-over valve. The table shows the approx. static pressure (p) in bar against which the valve can open

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size	
			DN/OD 12.7 mm	DN/OD 19 mm
5		NO	Min. 10.0	Min. 10.0
6	2	NO	9.0	-
	3	NO	Min. 10.0	6.0
	4	NO	-	Min. 10.0
7	2	NC	Min. 10.0	Min. 10.0
8		NC	Min. 10.0	Min. 10.0

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Alfa Laval Unique SSV Standard

Single seat valves

Introduction
The Alfa Laval Unique SSV Standard 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. It is built on the well-proven Alfa Laval Unique SSV platform. 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 Standard 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 due to the static seal leak detection
- Protection against full vacuum due to the double lip seal

Standard design
The Unique SSV Standard 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 shutoff valve with two 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 Standard 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®.

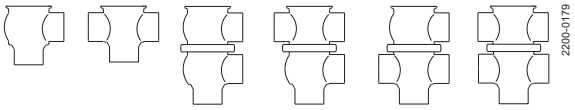
Certificates
Authorized to carry the 3A symbol

TECHNICAL DATA

Temperature	
Temperature range	-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 (A/A).

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

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
E. 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.

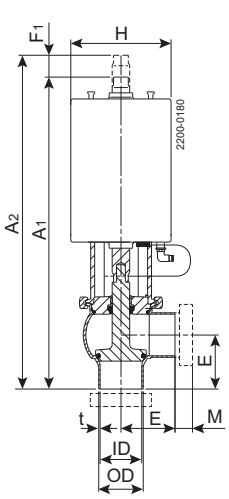
- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Tank Outlet valve.
- Two Step valve.
- Tangential valve.

Semi-Maintainable actuator comes with 5 year warranty

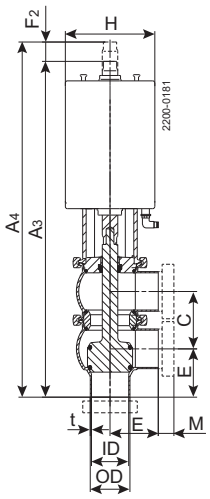
Dimensions (mm)

Nominal size	Inch tubes DN/OD						DIN tubes DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
A_1	313	314	363	389	422	467	315	315	364	389	426	470
A_2	328	334	388	414	452	497	330	335	389	414	456	500
A_3	360	374.3	436	475	521	591	367	379	439.6	481	533	596
A_4	372	391	458	497	548	618	379	396	462	503	560	623
A_1 High pressure	350	350	391	417	535	579	354	353	393	423	539	580
A_2 High pressure	364	370	416	442	563	608	368	373	418	448	567	610
A_3 High pressure	396	411	464	503	633	703	401	414	467	509	645	706
A_4 High pressure	408	428	486	525	658	728	401	414	467	509	670	732
C	47.8	60.8	73.8	86.3	98.9	123.6	52	64	76	92	107	126
OD	25	38	51	63.5	76.1	101.6	29	41	53	70	85	104
ID	21.8	34.8	47.8	60.3	72.9	97.6	26	38	50	66	81	100
t	1.6	1.6	1.6	1.6	1.6	2	1.5	1.5	1.5	2	2	2
E_1	50	49.5	61	81	86	119	50	49.5	61	78	86	120
E_2	50	49.5	61	81	86	119	50	49.5	61	78	86	120
F_1	15	20	25	25	30	30	15	20	25	25	30	30
F_1 High pressure	14	20	25	25	29	29	14	20	25	25	29	29
F_2	12	17	22	22	27	27	12	17	22	22	27	27
F_2 High pressure	12	17	22	22	26	26	-	-	-	-	26	26
H	85	85	115	115	157.5	157.5	85	85	115	115	157.5	157.5
H High pressure	115	115	157.5	157.5	157.5	157.5	115	115	157.5	157.5	157.5	157.5
M/ISO clamp	21	21	21	21	21	21	-	-	-	-	-	-
M/DIN clamp	-	-	-	-	-	-	21	21	21	28	28	28
M/DIN male	-	-	-	-	-	-	22	22	23	25	25	30
M/SMS male	20	20	20	24	24	35	-	-	-	-	-	-
Weight (kg)												
Stop valve:	3.1	3.3	5.5	6.5	11.3	13.6	3.2	3.4	5.5	6.6	11.8	13.6
Change-over valve	3.9	4.2	7.1	8.5	14	18	4.1	4.5	7.2	8.8	14.9	17.9
Stop Valve: High pressure	4.7	4.8	9.5	10.0	9.8	14.2	4.8	4.9	9.5	10.1	10.2	14.2
Change-over valve: High pressure	4.9	5.1	10.1	10.8	10.9	16.5	5.1	5.3	10.1	11.1	11.8	16.4

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator



Shut-off valve



Change-over valve

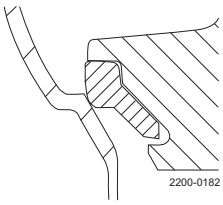
Please note!

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.

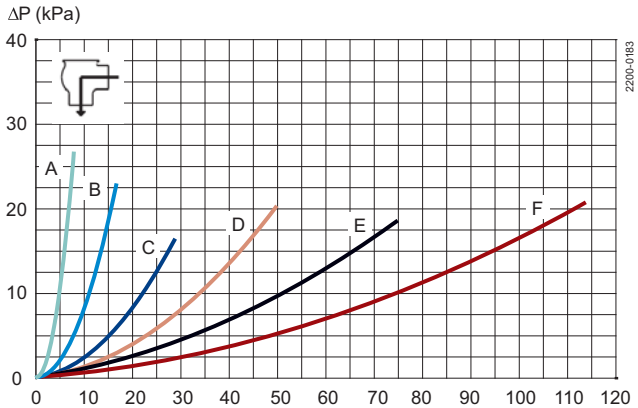


PTFE plug seal (TR2)

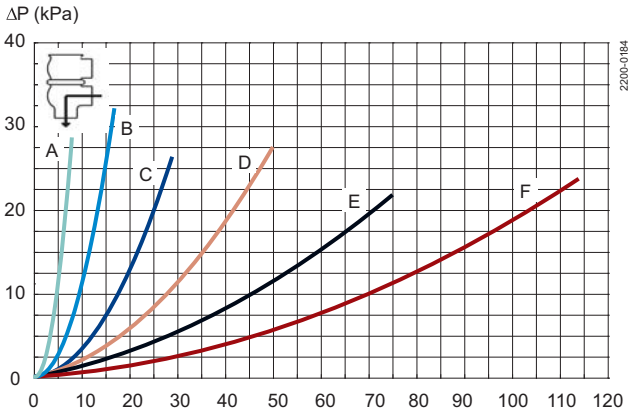
Replaceable elastomer plug seal

Air consumption (litres free air) for one stroke			
Size	DN25-40 DN/OD 25-38 mm	DN50-65 DN/OD 51-63.5 mm	DN80100 DN/OD 76.1101.6 mm
NO and NC	0.2 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]
A/A	0.5 x air pressure [bar]	1.1 x air pressure [bar]	2.7 x air pressure [bar]

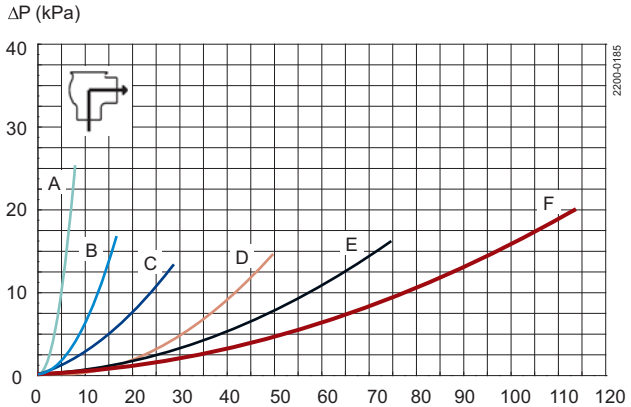
Pressure drop/capacity diagrams



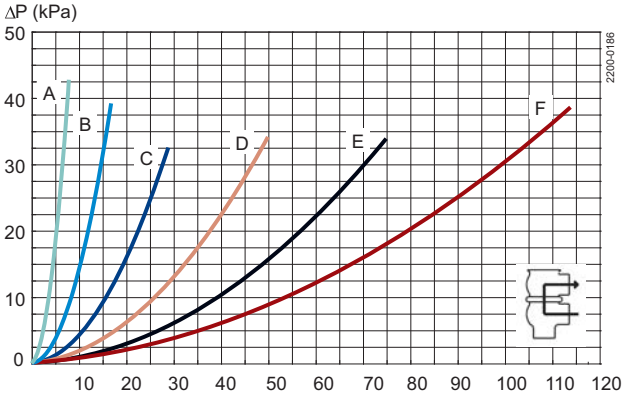
A = DN25/25 Kv 15
B = DN40/38 Kv 34
C = DN50/51 Kv 70
D = DN65/63.5 Kv 111
E = DN80/76.1 Kv 177
F = DN100/101.6 Kv 256



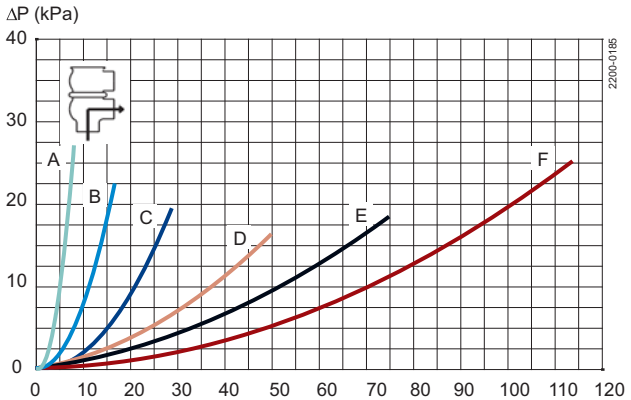
A = DN25/25 Kv 14
B = DN40/38 Kv 29
C = DN50/51 Kv 56
D = DN65/63.5 Kv 94
E = DN80/76.1 Kv 166
F = DN100/101.6 Kv 238



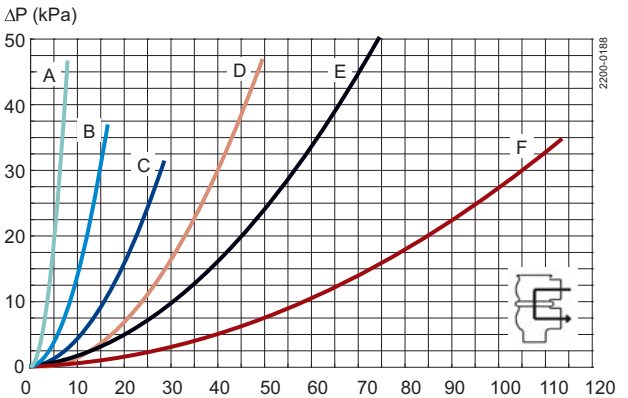
A = DN25/25 Kv 15
B = DN40/38 Kv 40
C = DN50/51 Kv 80
D = DN65/63.5 Kv 131
E = DN80/76.1 Kv 186
F = DN100/101.6 Kv 257



A = DN25/25 Kv 12
B = DN40/38 Kv 26
C = DN50/51 Kv 50
D = DN65/63.5 Kv 86
E = DN80/76.1 Kv 128
F = DN100/101.6 Kv 185



A = DN25/25 Kv 15
B = DN40/38 Kv 34
C = DN50/51 Kv 64
D = DN65/63.5 Kv 128
E = DN80/76.1 Kv 179
F = DN100/101.6 Kv 227



A = DN25/25 Kv 11
B = DN40/38 Kv 27
C = DN50/51 Kv 51
D = DN65/63.5 Kv 72
E = DN80/76.1 Kv 106
F = 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.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m^3/h 2.5" shut-off valve, where Kv = 111 (See table above).

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

$40 = 111 \times \sqrt{\Delta p}$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

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

Pressure data for Unique Single Seat Valve standard

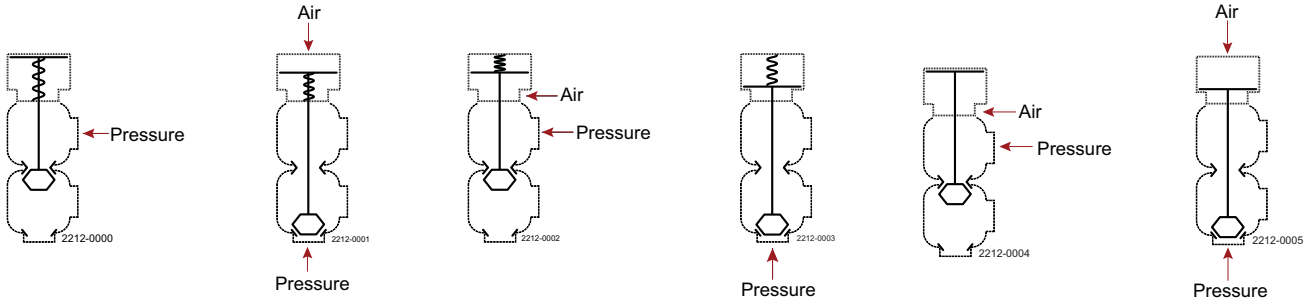


Table 1 - Shut-off and Change-over valves — Max. pressure in bar without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size DN 25 DN/OD 25 mm	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
1		NO	10.0	8.2	8.4	4.5	6.8	4.4
2	5	NO	9.2	4.4	5.9	3.4	4.4	2.9
	6		10.0	7.6	9.6	5.6	7.2	4.8
	7		10.0	10.0	10.0	7.8	10.0	6.7
3	5	NC	10.0	5.7	6.8	3.7	4.7	3.0
	6		10.0	9.8	10.0	6.1	7.7	5.0
	7		10.0	10.0	10.0	8.5	10.0	6.9
4		NC	10.0	6.3	7.2	4.2	6.4	4.2
5	5	A/A	10.0	10.0	10.0	10.0	10.0	9.4
	6		10.0	10.0	10.0	10.0	10.0	10.0
	7		10.0	10.0	10.0	10.0	10.0	10.0
6	5	A/A	10.0	10.0	10.0	10.0	10.0	9.1
	6		10.0	10.0	10.0	10.0	10.0	10.0
	7		10.0	10.0	10.0	10.0	10.0	10.0

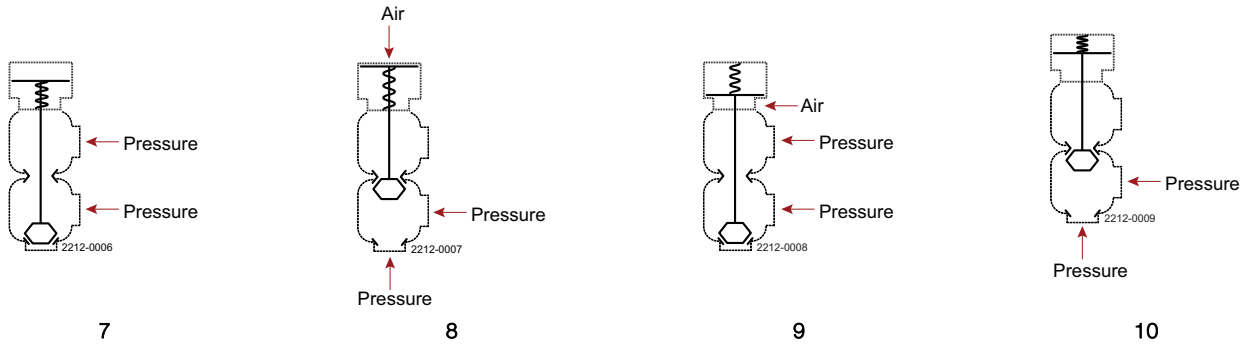


Table 2 - Shut-off and Change-over valves — Max. pressure in bar against which the valve can open

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size DN 25 DN/OD 25 mm	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
7		NO	10.0	10.0	10.0	7.4	9.7	6.3
8	5	NO	10.0	7.8	10.0	6.1	7.1	4.7
	6		10.0	10.0	10.0	8.3	9.9	6.6
	7		10.0	10.0	10.0	10.0	10.0	8.5
9	5	NC	10.0	10.0	10.0	6.6	7.5	4.9
	6		10.0	10.0	10.0	9.0	10.0	6.9
	7		10.0	10.0	10.0	10.0	10.0	8.8
10		NC	10.0	9.7	10.0	6.8	9.1	6.1

Table 3 - Shut-off and Change-over valves with high pressure actuator option			Max. pressure in bar without leakage at the valve seat					
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 DN/OD 25 mm	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
1		NO	10.0	10.0	10.0	10.0	-	-
2	6	NO	10.0	10.0	10.0	10.0	-	-
3	6	NC	10.0	10.0	10.0	10.0	5.0	3.0
4		NC	10.0	10.0	10.0	9.6	10.0	7.0

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

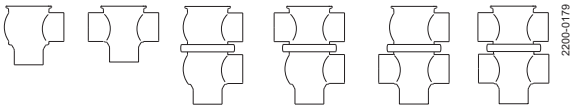
The Alfa Laval Unique SSV Tangential is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks, while directing or diverting fluids. The valve can be controlled using an Alfa Laval ThinkTop®.

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 (5-7 bar)

Valve Body Combinations



200 300 210 220 310 320

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:	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

A. Weld ends or connection types other than Tri-Clamp.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM.
D. Plug seal HNBR, FPM or TR2 (floating PTFE design).
E. High pressure actuator.
F. NO or A/A actuator.
G. Maintainable actuator.
H. External surface finish bright.

Note!

For further details, see instruction ESE00609.

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.

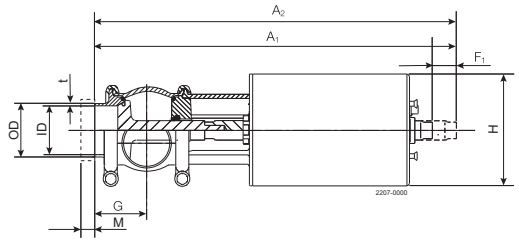
- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Aseptic valve.

Semi-Maintainable actuator comes with 5 year warranty

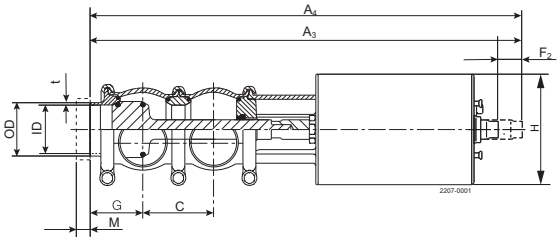
Dimensions (mm)

	Nominal Size			
	DN/OD 51 mm	DN/OD 63.5 mm	DN/OD 76.1 mm	DN/OD 101.6 mm
A_1 [1)]	361	374	409	433
A_2 [1)]	386	399	439	463
A_3 [1)]	435	460	507	557
A_4 [1)]	457	482	534	584
C	73.8	86.3	98.9	123.6
OD	51	63.5	76.1	101.6
ID	47.8	60.3	72.9	97.6
t	1.6	1.6	1.6	2
E	61	81	86	119
G	59.9	66.2	72.5	84.8
F_1	25	25	30	30
F_2	22	22	27	27
H	114.9	114.9	154.3	154.3
N	14.3	17.9	21.5	25
M/ISO Clamp	21	21	21	21
M/SMS male	20	24	24	35
Weight (kg)				
Shut-off valve	5.8	6.8	11.7	14.1
Change-over valve	7.4	9	14.5	18.8

[1)] For exact A_1 - A_4 dimensions, please refer to informations in Anytime configurator.



Shut-off valve



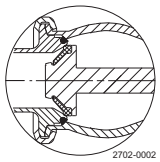
Change-over valve

Please note!

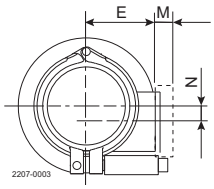
Opening/closing time will be effected by the following:

- 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.

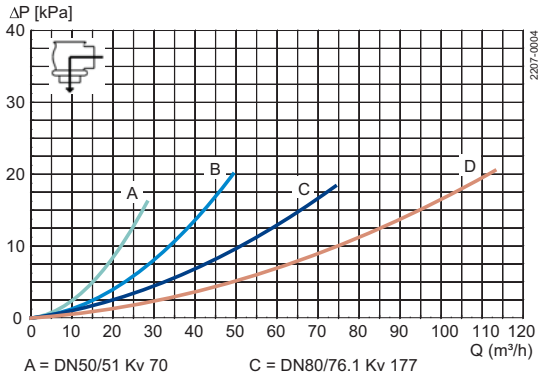


PTFE plug seal (TR2)

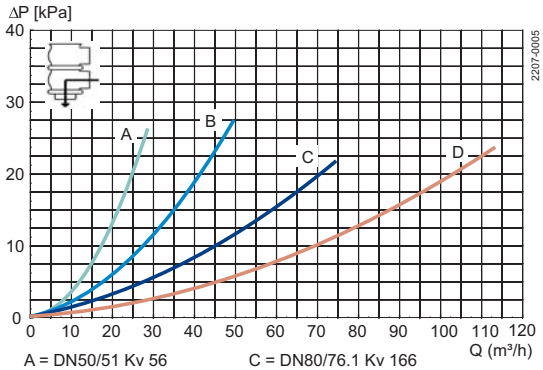


Air Consumption (Litres free air) for one stroke		
Size	**DN/OD 51 - 63.5 mm**	**DN/OD 76.1 - 101.6 mm**
NO and NC	0.15 x air pressure [bar]	1.3 x air pressure [bar]
A/A	1.1 x air pressure [bar]	2.7 x air pressure [bar]

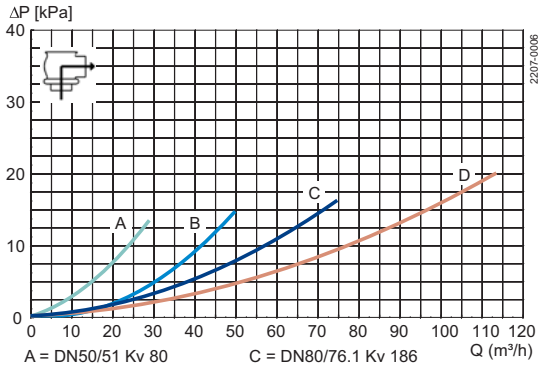
Pressure drop/capacity diagrams



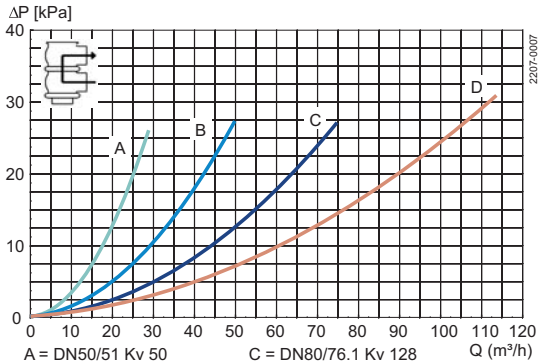
A = DN50/51 Kv 70
B = DN65/63.5 Kv 111
C = DN80/76.1 Kv 177
D = DN100/101.6 Kv 256



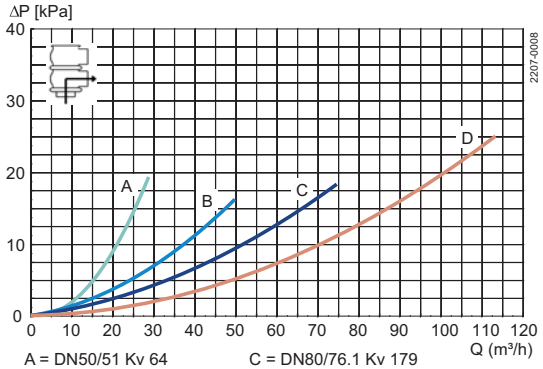
A = DN50/51 Kv 56
B = DN65/63.5 Kv 94
C = DN80/76.1 Kv 166
D = DN100/101.6 Kv 238



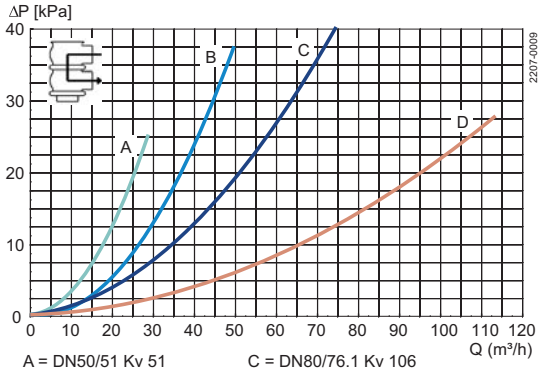
A = DN50/51 Kv 80
B = DN65/63.5 Kv 131
C = DN80/76.1 Kv 186
D = DN100/101.6 Kv 257



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 64
B = DN65/63.5 Kv 128
C = DN80/76.1 Kv 179
D = DN100/101.6 Kv 227



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).

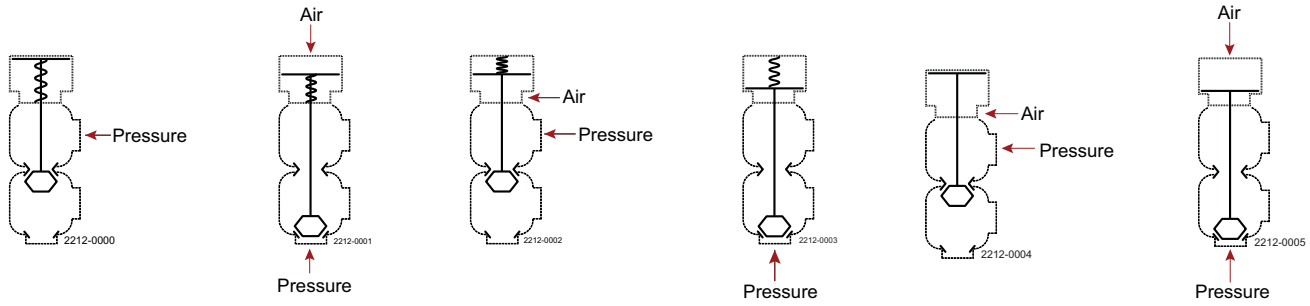
$40 = 111 \times \sqrt{\Delta p}$

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

$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

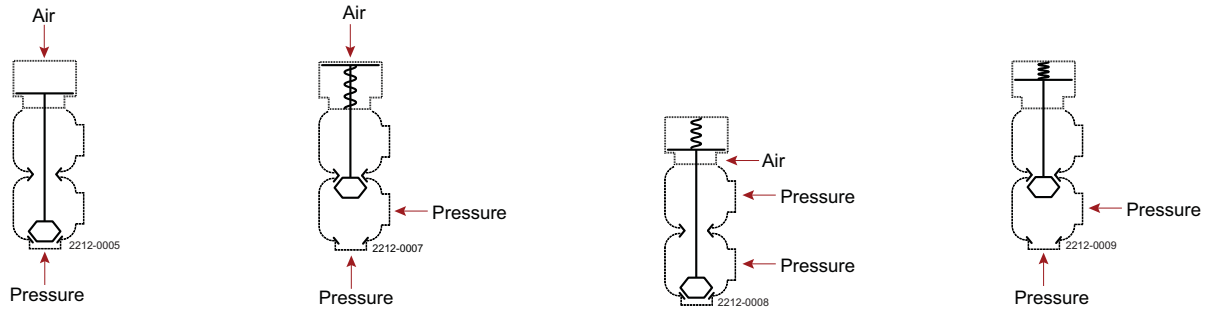
(This is approx. the same pressure drop by reading the y-axis above)

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



1 2 3 4 5 6

Table 1 - Shut-off and change-over valves			Max. pressure in bar without leakage at the valve seat			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size 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
1		NO	8.4	4.5	6.8	4.4
2	6	NO	9.6	5.6	7.2	4.8
3	6	NC	10.0	6.1	7.7	5.0
4		NC	7.2	4.2	6.4	4.2
5	6	A/A	10.0	10.0	10.0	10.0
6	6	A/A	10.0	10.0	10.0	10.0



7 8 9 10

Table 2- Shut-off and change-over valves			Max. pressure in bar against which the valve can open			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size 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
7		NO	10.0	7.7	9.7	6.3
8	6	NO	10.0	6.3	9.9	6.6
9	6	NC	10.0	9.0	10.0	6.9
10		NC	10.0	6.8	9.1	6.1

Table 3- Shut-off and change-over valves with high pressure actuator option			Max. pressure in bar against which the valve can open			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size 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
1		NO	10.0	10.0	-	-
2	6	NO	10.0	10.0	-	-
3	6	NC	10.0	10.0	5.0	3.0
4		NC	10.0	10.0	10.0	7.0

Alfa Laval Unique SSV DN125 and DN150

Single seat valves

Introduction

The Alfa Laval Unique SSV DN125 and DN150 Valves are versatile and reliable pneumatic single seat valves with a single contact surface between the plug and the seat to minimizes the risk of contamination.

With a modular, hygienic design, the single seat valve meets the highest process demands in terms of hygiene and safety. Few moving parts ensure high reliability and low maintenance costs. A wide range of optional features enables customization to specific process requirements.

Application

The Alfa Laval Unique SSV DN125 and DN 150 is designed for use in a broad range of hygienic applications across the dairy, food, beverage, brewery and many other industries.

Benefits

- Cost effective and versatile
- Easily handles highly viscous fluids and large particles
- Durable, long-lasting construction
- Compliant with 3-A and hygienic standards

Standard design

The Alfa Laval Unique SSV DN125 and DN150 range 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 shutoff valve with two or three working ports and as a changeover valve with up to four 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. The actuator is connected to the valve body using a yoke, and all components are assembled with clamp rings.

To facilitate installation the valve is partially assembled when delivered. The standard valve has weld ends; it is also available with optional fittings. Due to the valve size and weight, the use of support equipment is recommended when handling and installing the valve (see the instruction manual for guidelines). However, Alfa Laval is not able to supply the recommended support equipment.

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 Standard 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

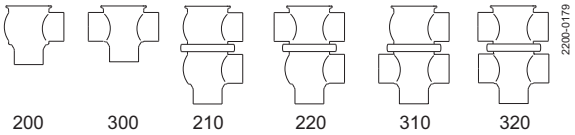
Authorized to carry the 3A symbol

TECHNICAL DATA

Temperature	
Temperature range, standard lip seal:	-10°C to +100°C (EPDM)
Temperature range, special lip seal:	-10°C to +140°C (EPDM)

Pressure	
Max. product pressure:	1000 kPa (10 bar)
Min. product pressure:	Full vacuum
Air pressure, actuator - Sizes DN125-150	600 to 800 kPa (6 to 8 bar)

Valve Body Combinations



Actuator function

- Pneumatic downward movement, spring return (NO-lower seat)
- Pneumatic upward movement, spring return (NC-lower seat)

PHYSICAL DATA

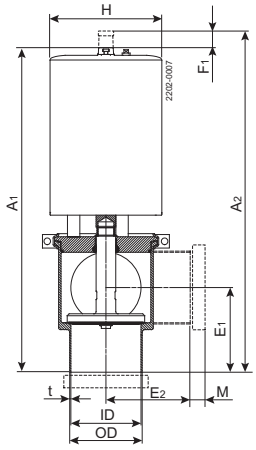
Materials	
Product wetted steel parts:	1.4401 (316L)
Other steel parts:	1.4301 (304)
Plug stem sizes DN125-150:	1.4401 (316L)
Product wetted seals:	EPDM
Other seals:	NBR

Options

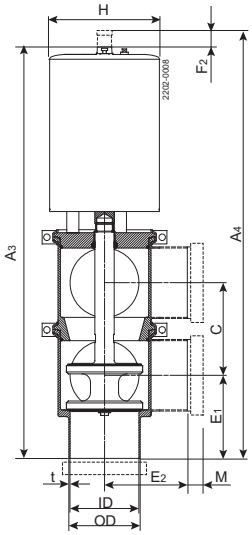
A. Male parts in accordance with required standard.
B. Control and Indication (IndiTop, ThinkTop or ThinkTop Basic).
C. Surface roughness, product wetted parts: Ra ≤ 0.8 µm.
D. Product wetted seals of NBR or FPM.
E. Service tools for actuator.
F. Plug seals NBR/FPM.

Dimensions (mm)

Nominal size	DIN DN 125		150	
	NC	NO	NC	NO
A_1	571	573	584	586
A_2	614	618	627	631
A_3	740	737	777	775
A_4	781	778	818	816
C	167	167	192	192
OD	129	129	154	154
ID	125	125	150	150
t	2.0	2.0	2.0	2.0
E_1	150	150	150	150
E_2	150	150	150	150
F_1	43	45	43	45
F_2	41	41	41	41
H	199	199	199	199
M/DIN male	46	46	50	50
Weight (kg) - Shut-off valve	40.3	40.3	40.9	40.9
Weight (kg) - Change-over valve	50	50	51.3	51.3



a. Shut-off .



b. Change-over valve.

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:

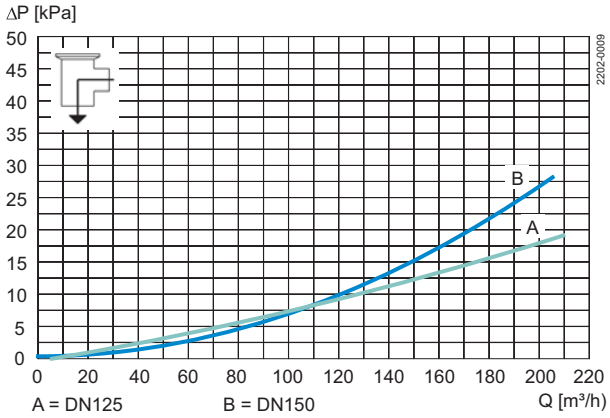
R 1/8" (BSP), internal thread.

Actuator function

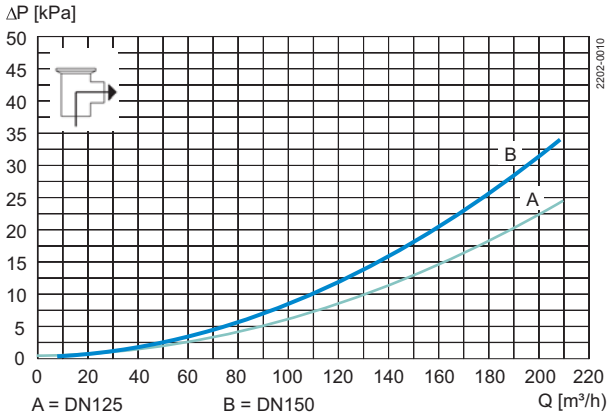
Size	Air consumption (litres free air) for one stroke DN 125-150	DN 125-150
Shut-off / Change-over valve Actuator function	1.5 x Air pressure (bar) NC	2.2 x Air pressure (bar) NO
Shut-off / Change-over valve Actuator function	3.6 x Air pressure (bar) NC (Support air for closing)	2.9 x Air pressure (bar) NO (Support air for opening)

Pressure drop/capacity diagrams

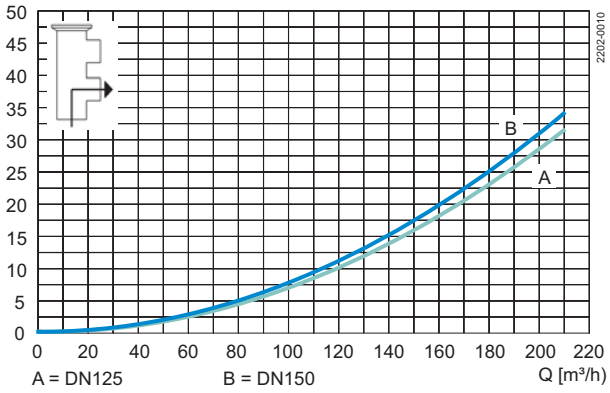
Shut-off



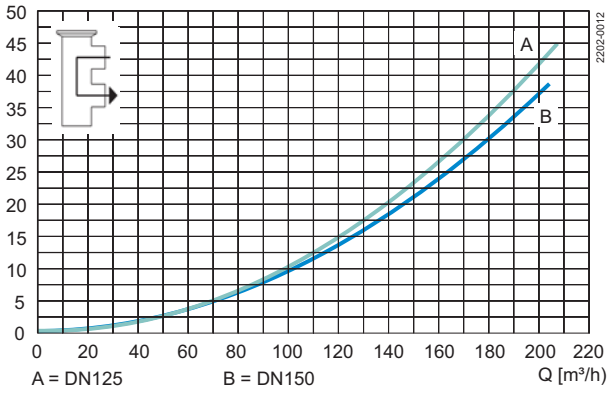
Shut-off

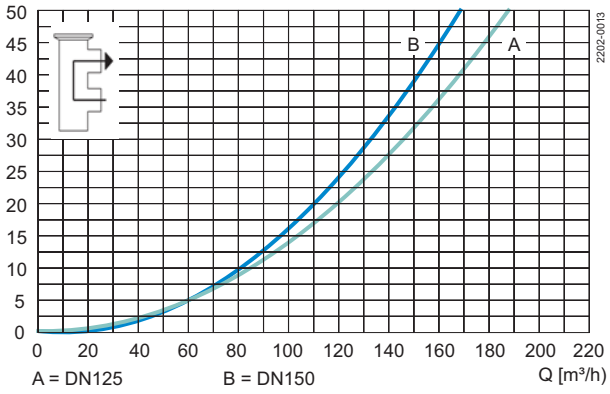


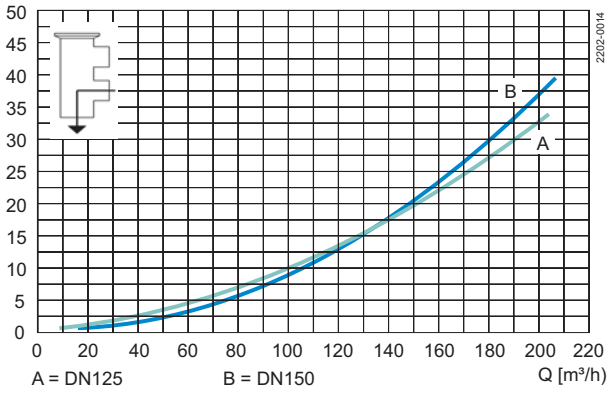
Change-over valve



Change-over valve







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.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m^3/h
2.5" shut-off valve, where Kv = 111 (See table above).

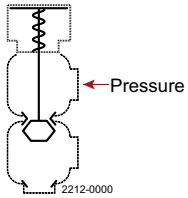
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

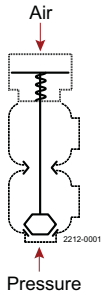
$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

Pressure data for Unique Single Seat Valve DN125 and DN150



1



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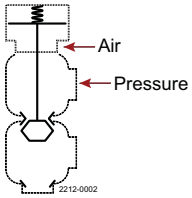

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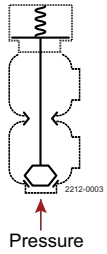
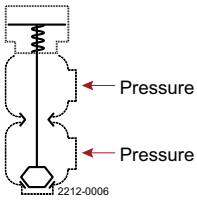


4

Actuator type / function
10. Pneumatic downward movement, spring return (NO-lower seat)
20. Pneumatic upward movement, spring return (NC-lower seat)

Table 1: Stop and change-over valves			Max. pressure without leakage at the valve seat	
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve Size	
			Type	DN 125-150
1		NO		5.2
2	5	NO	DIN	8.7
	6	NO	DIN	4.4
3	5	NC		8.1*
	6	NC		3.7
4		NC	DIN	5.2



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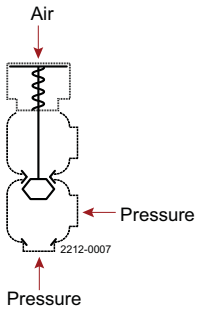

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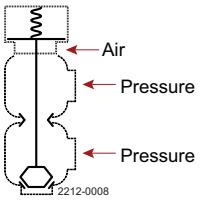

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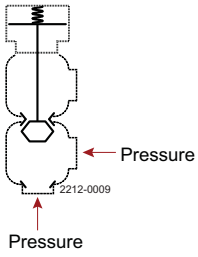


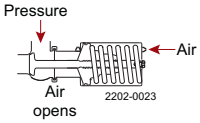
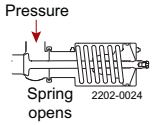
8

* = Values are valid for 8 bar air pressure
ϟ = Actual product pressure

Table 2: Stop and change-over valves	The table shows the approx. static pressure (P) in bar against which the valve can open			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Actuator type/ function	Type	DN 125-150
5		60 (NO)	DIN	8.8
6	6	10 (NO)		8.1
	6	60 (NO)		min. 10**
7	6	70 (NC)	DIN	7.8
8		20 (NC)		8.9

Table 3

Max. pressure in psi against which the valve can open.

Actuator / Valve body combination and direction of pressure	Air pressure [psi]	Plug position	Max Pressure (psi)
	87.6	NC	145.0
		NO	145.0

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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®.

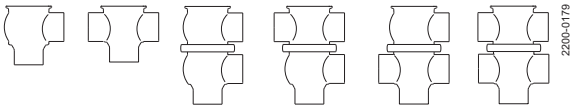
Certificates
Authorized to carry the 3A symbol

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

A. Male parts or clamp liners in accordance with required standard
B. Control and Indication: ThinkTop and ThinkTop Basic
C. Product wetted seals in HNBR or FPM
D. TR2 plug (floating PTFE design)
E. Service tool for plug seals
F. 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.

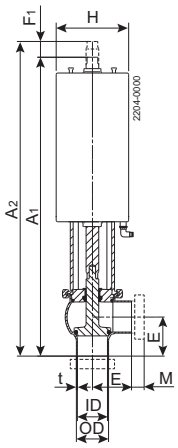
- Reverse acting valve.
- Manually operated valve.
- Tank Outlet valve.
- Tangential valve.

Semi-Maintainable actuator comes with 5 year warranty

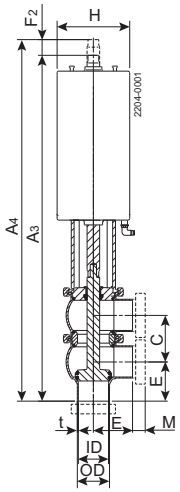
Dimensions (mm)

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



Shut-off valve.



Change-over valve.

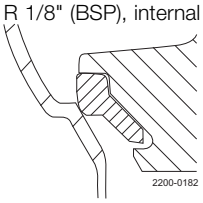
Please note!

Opening/closing time will be affected by the following:

- The air supply (air pressure).
- The length and dimensions of the air hoses.
- 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.



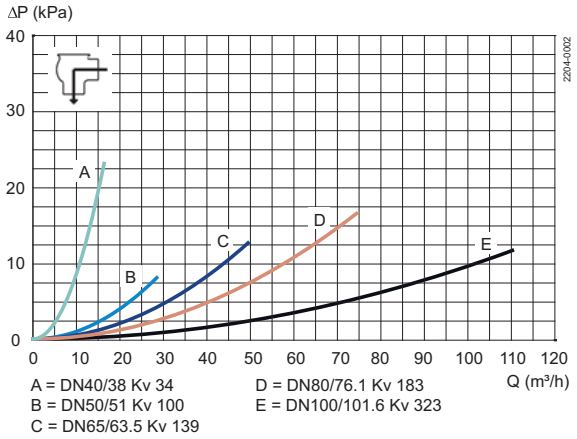
PTFE plug seal (TR2).

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)	12	15	23	30	40

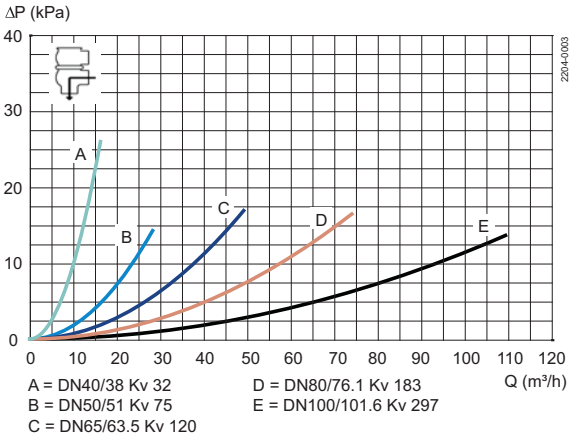
Max. size of solids (mm)	Valve size (DN/OD)				
	DN40	DN50	DN65	DN80	DN100
Shut-off valve	24	34	45	62	61
Change-over valve (plug up/lower body)	25	37	37	52	57
Change-over valve (plug down)	12	15	23	30	40

Air consumption (litres free air) for one stroke		
Size	DN40-65 DN/OD 38-63.5 mm	DN80100 DN/OD 76.1101.6 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]

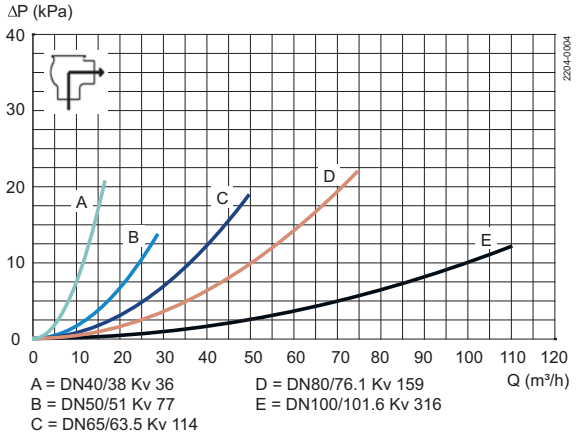
Pressure drop/capacity diagrams



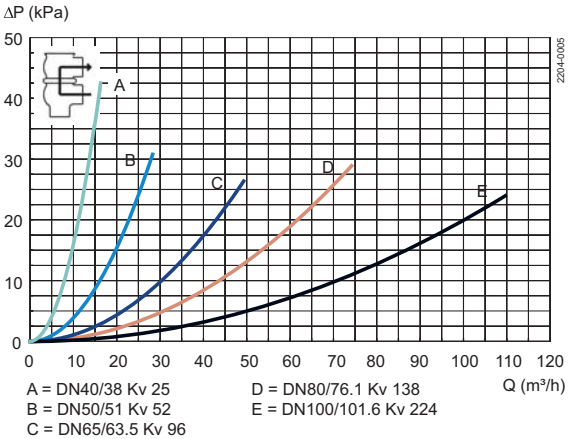
A = DN40/38 Kv 34
B = DN50/51 Kv 100
C = DN65/63.5 Kv 139
D = DN80/76.1 Kv 183
E = DN100/101.6 Kv 323



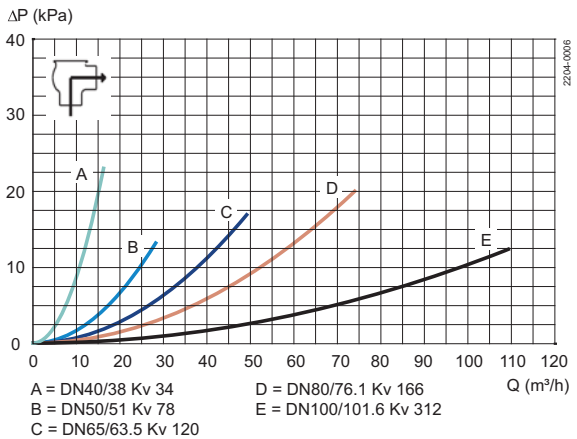
A = DN40/38 Kv 32
B = DN50/51 Kv 75
C = DN65/63.5 Kv 120
D = DN80/76.1 Kv 183
E = DN100/101.6 Kv 297



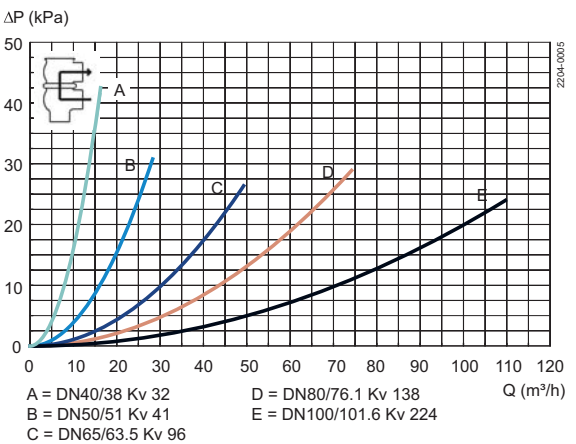
A = DN40/38 Kv 36
B = DN50/51 Kv 77
C = DN65/63.5 Kv 114
D = DN80/76.1 Kv 159
E = DN100/101.6 Kv 316



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



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



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).

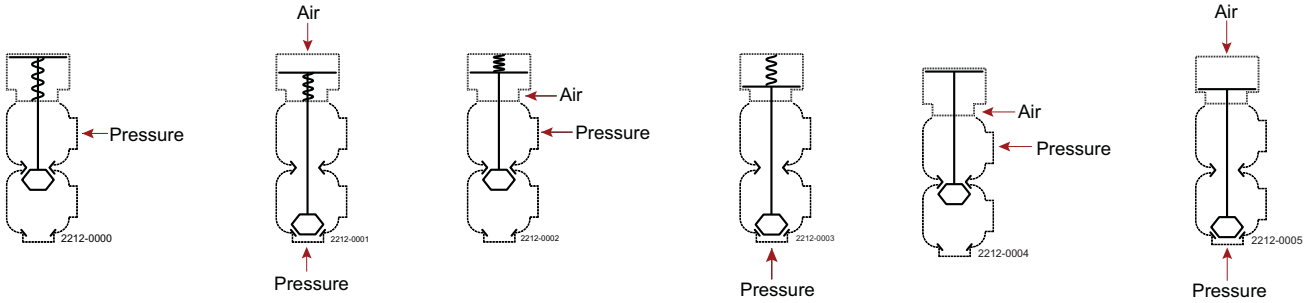
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

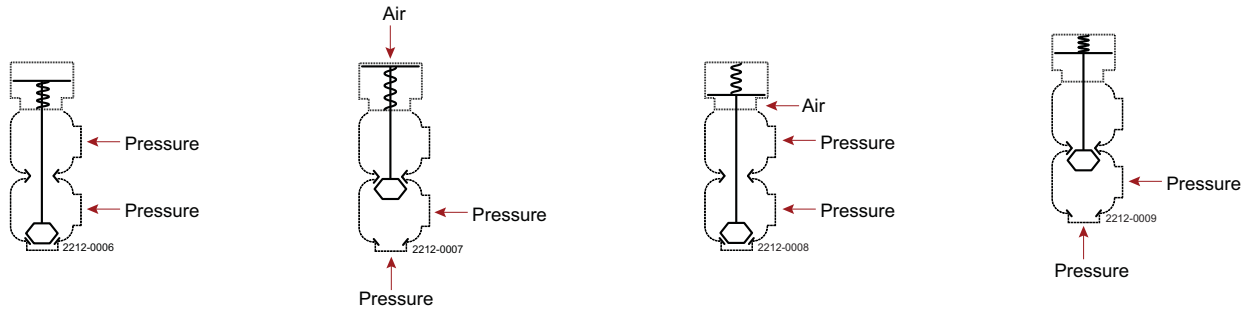
(This is approx. the same pressure drop by reading the y-axis above)

Pressure data for Unique Single Seat Valve Long Stroke



1 2 3 4 5 6

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



7 8 9 10

Table 2 Shut-off and Change-over valves			Max. pressure in bar against which the valve can open				
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size				
			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
7		NO	10.0	10.0	8.1	10.0	6.7
8	6	NO	10.0	10.0	8.0	9.7	6.5
9	6	NC	10.0	10.0	8.7	10.0	6.7
10		NC	10.0	10.0	7.5	9.6	6.4

Alfa Laval Unique SSV Reverse Acting

Single seat valve

Introduction

The Alfa Laval Unique SSV Reverse Acting 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 provides multiple solutions where the direction of the flow does not allow the use of a standard Alfa Laval Unique SSV to eliminate the risk of pressure shock.

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

The Unique SSV Reverse Acting 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 due to the static seal leak detection
- Protection against full vacuum due to the double lip seal
- Increased flexibility due to reverse-acting function

Standard design

The Unique SSV Reverse Acting is available in a two- or three-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 four working ports or as a changeover valve with three to six ports.

To ensure flexibility, the valve seat that sits between the two bodies in both the shut-off and 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

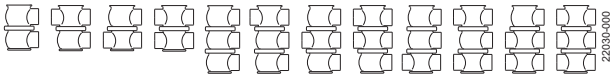
The Alfa Laval Unique SSV Reverse Acting is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop®.

TECHNICAL DATA

Temperature	
Temperature range, standard lip seal:	-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



011 012 021 022 111 112 121 122 211 212 221 222

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)
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 seal:	NBR

Options

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Product wetted seals in HNBR or FPM
D. Plug seals HNBR, FPM or TR2 plug (floating PTFE design)
E. High pressure actuator
F. Maintainable actuator
G. 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.

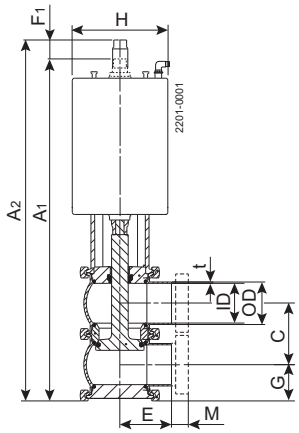
- Long stroke valve.
- Manually operated valve.

Semi-Maintainable actuator comes with 5 year warranty

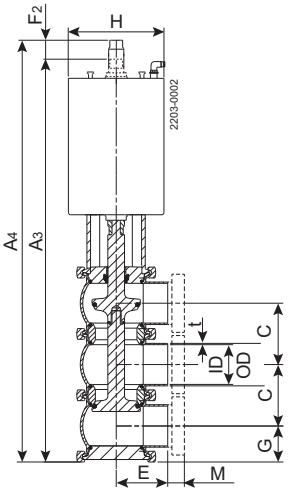
Dimensions (mm)

Nominal size	Inch tubes DN/OD						DIN tubes DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
A_1	338	355	411	436	483	532	346	361	416	448	500	538
A_2	350	376	437	462	514	563	358	382	442	474	531	569
A_3	386	420	489	526	586	660	398	429	496	544	611	668
A_4	397	436	511	548	613	687	409	445	518	566	638	695
C	47.8	60.8	73.8	86.3	98.9	123.6	52	64	76	92	107	126
OD	25	38	51	63.5	76.1	101.6	29	41	53	70	85	104
ID	21.8	34.8	47.8	60.3	72.9	97.6	26	38	50	66	81	100
t	1.6	1.6	1.6	1.6	1.6	2	1.5	1.5	1.5	2	2	2
E	50	49.5	61	81	86	119	50	49.5	62	78	87	120
F_1	12	21	26	26	31	31	12	21	26	26	31	31
F_2	11	16	22	22	27	27	11	16	22	22	27	27
G	23.9	30.4	36.9	43.15	49.45	62	26	32	38	46	53.5	63
H	ø85	ø85	ø115	ø115	ø157	ø157	ø85	ø85	ø115	ø115	ø157	ø157
H (high pressure)	ø85	ø115	ø157	ø157	ø157	ø157	ø85	ø115	ø157	ø157	ø157	ø157
M (ISO clamp)	21	21	21	21	21	21	-	-	-	-	-	-
M (DIN clamp)	-	-	-	-	-	-	21	21	21	28	28	28
M (DIN male)	-	-	-	-	-	-	22	22	23	25	25	30
M (SMS male)	20	20	20	24	24	35	-	-	-	-	-	-
Weight (kg)												
Shut-off valve	4.3	4.4	7.3	8.9	14.4	18.3	4.4	4.6	7.3	9.2	15.3	18.2
Change-over valve	5.2	5.4	8.7	11.0	17.1	22.6	5.4	5.7	8.7	11.4	18.5	22.5

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime configurator



Shut-off valve



Change-over valve

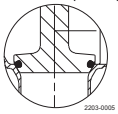
Please note!

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:

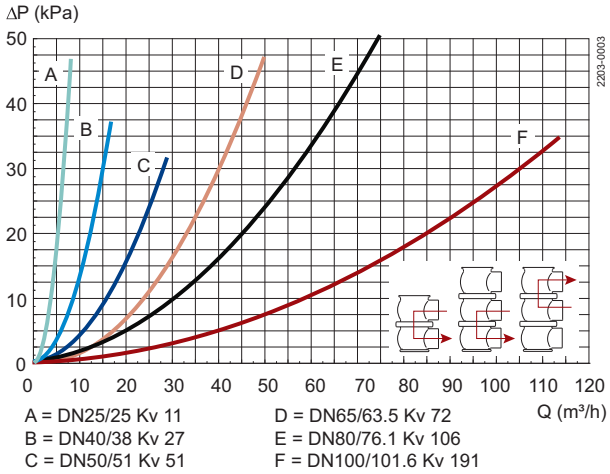
R 1/8" (BSP), internal thread.



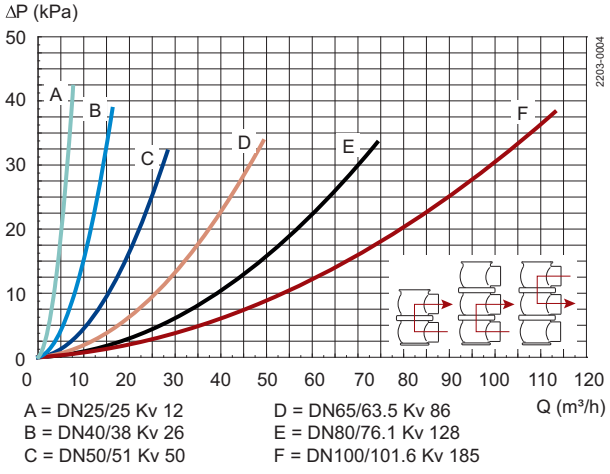
PTFE plug seal (TR2)

Air consumption (litres free air) for one stroke			
Size	DN25-40	DN50-65	DN80100
	DN/OD 25-38 mm	DN/OD 51-63.5 mm	DN/OD 76.1101.6 mm
NO and NC	0.2 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]
A/A	0.5 x air pressure [bar]	1.1 x air pressure [bar]	2.7 x air pressure [bar]

Pressure drop/capacity diagrams



A = DN25/25 Kv 11
B = DN40/38 Kv 27
C = DN50/51 Kv 51
D = DN65/63.5 Kv 72
E = DN80/76.1 Kv 106
F = DN100/101.6 Kv 191



A = DN25/25 Kv 12
B = DN40/38 Kv 26
C = DN50/51 Kv 50
D = DN65/63.5 Kv 86
E = DN80/76.1 Kv 128
F = DN100/101.6 Kv 185

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.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m^3/h 2.5" shut-off valve, where Kv = 111 (See table above).

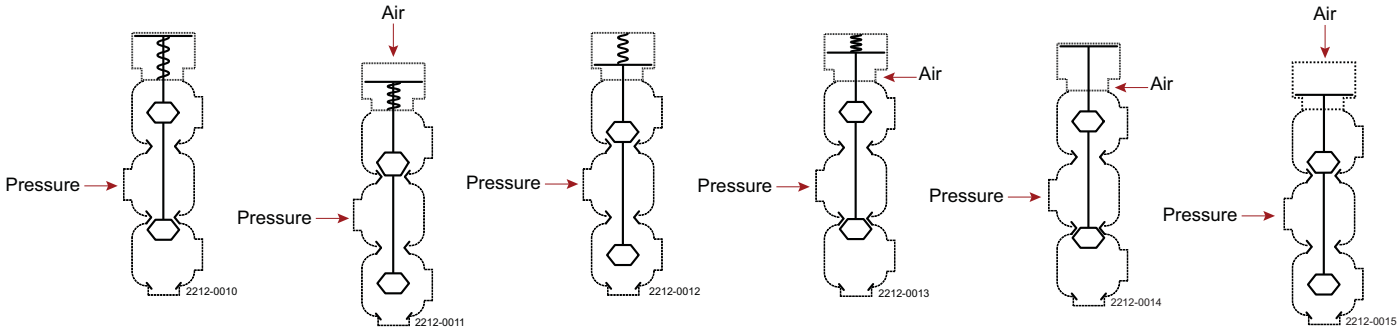
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

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

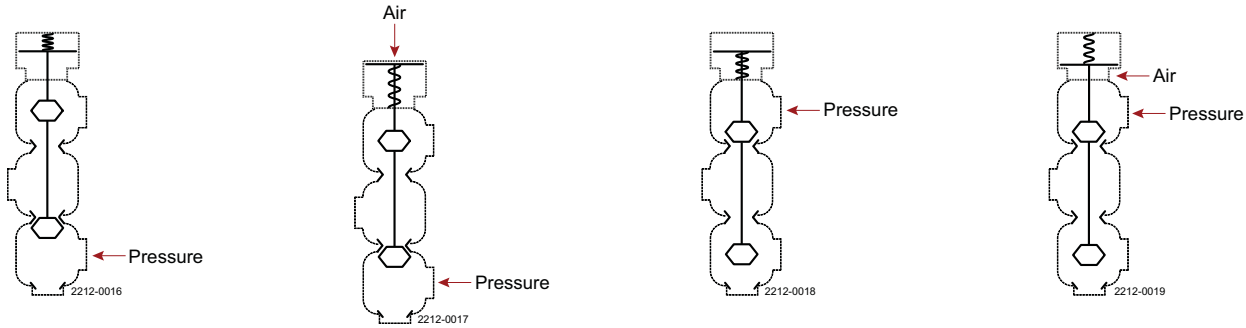
Pressure data for Unique Single Seat Valve Reverse Acting



1 2 3 4 5 6

Table 1 - Shut-off and Change-over valves. Max. pressure in bar without leakage at the valve seat

Actuator/valve body combination and direction of pressure Change-over valve	Air pressure (bar)	Plug position	Valve size DN25 DN/OD 25 mm	DN40 DN/OD 38 mm	DN50 DN/OD 51 mm	DN65 DN/OD 63.5 mm	DN80 DN/OD 76.1 mm	DN100 DN/OD 101.6 mm
1		NC	10.0	8.2	8.4	4.5	6.8	4.4
2	6	NC	10.0	7.6	9.6	5.6	7.2	4.8
3		NO	10.0	6.3	7.2	4.2	6.4	4.2
4	6	NO	10.0	10.0	10.0	6.1	7.7	5.0
5	6	A/A	10.0	10.0	10.0	10.0	9.0	5.8
6	6	A/A	10.0	10.0	10.0	10.0	8.5	5.6



7 8 9 10

Table 2 - Shut-off and Change-over valves. Max. pressure in bar against which the valve can open

Actuator/valve body combination and direction of pressure Change-over valve	Air pressure (bar)	Plug position	Valve size DN25 DN/OD 25 mm	DN40 DN/OD 38 mm	DN50 DN/OD 51 mm	DN65 DN/OD 63.5 mm	DN80 DN/OD 76.1 mm	DN100 DN/OD 101.6 mm
7		NO	10.0	9.7	10.0	6.8	4.6	3.1
8	6	NC	10.0	10.0	10.0	8.3	9.9	6.6
9		NC	10.0	10.0	10.0	7.4	4.9	3.2
10	6	NO	10.0	10.0	10.0	9.0	10.0	6.9

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

200 300

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

A. Male parts or clamp liners in accordance with required standard.
B. Weld ends or connection types other than Tri-Clamp
C. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
D. Product wetted seals in HNBR or FPM.
E. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
F. High pressure actuator.
G. Long stroke actuator (not available for Reverse Acting version).
H. Maintainable actuator.
I. 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.

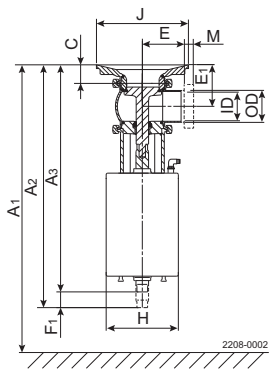
Semi-Maintainable actuator comes with 5 year warranty

Dimensions (mm)

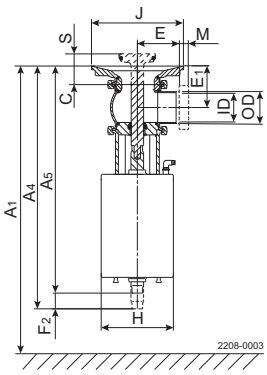
Size	51 mm	63.5 mm	76.1 mm	101.6 mm	DN 50	DN 65	DN 80	DN 100
A_1	426	439	479	503	429	445	487	506
A_2	393	406	446	470	396	412	454	473
A_3	368	381	416	440	371	387	424	443
A_4	390	403	443	467	393	409	451	470
A_5	364	377	412	436	367	383	420	439
C	30	30	30	30	30	30	30	30
OD	51	63.5	76.1	101.6	53	70	85	104
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
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

A1= 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)

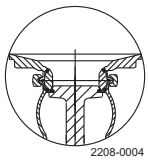
[1)] For exact A_1 - A_4 dimensions, please refer to informations in Anytime configurator.



Standard



Reverse Acting



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.

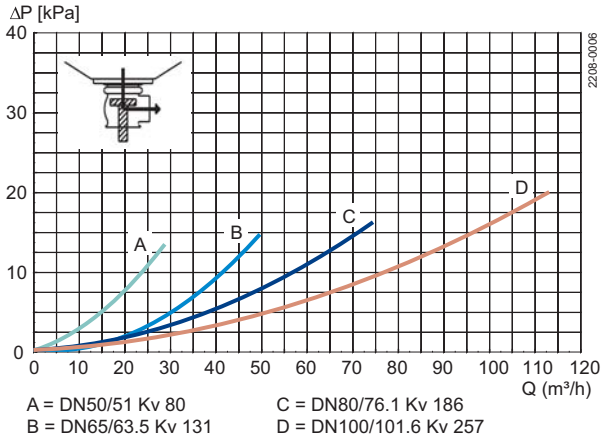
Air Connections Compressed air:

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

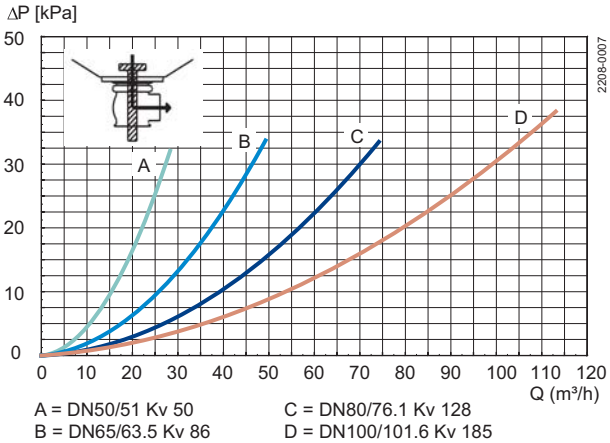
Actuator function

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

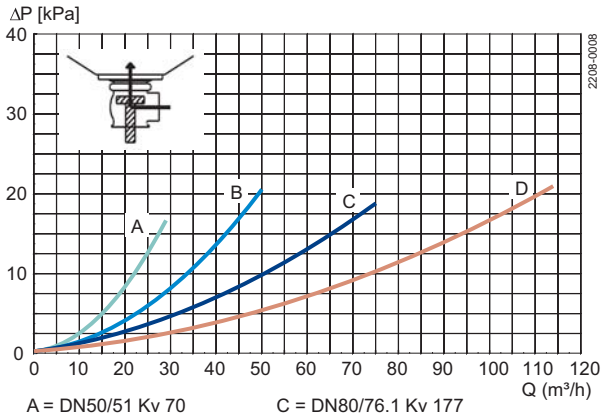
Pressure drop/capacity diagrams



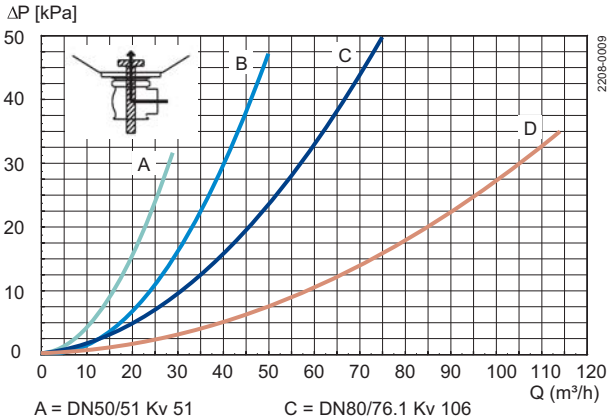
A = DN50/51 Kv 80
B = DN65/63.5 Kv 131
C = DN80/76.1 Kv 186
D = DN100/101.6 Kv 257



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).

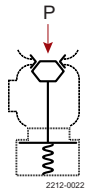
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

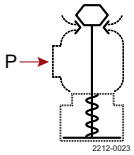
$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

Pressure data for Unique Single Seat Valve Tank Outlet



1



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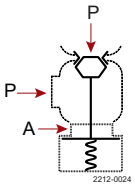
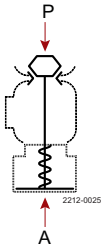


3



4

A = Air

P= Product pressure

Table 1 - Shut fully closed.	Max. pressure in bar without leakage at the valve seat			
Actuator / Valve body combination and direction of pressure	Valve size			
	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
1	7.2	4.2	6.4	4.2
2	8.4	4.5	6.8	4.4

Table 2		Max. pressure in bar against which the valve can open			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Valve size			
		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
3	6	10.0	9.0	10.0	6.9
4	6	10.0	8.3	9.9	6.6

Alfa Laval Unique SSV ATEX

Single seat valves

Introduction

The Alfa Laval Unique SSV ATEX Standard 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 is ATEX-certified for use in environments with an explosive atmosphere. Few moving parts ensure high reliability and low maintenance costs. A wide range of optional features enables customization to specific process requirements.

Application

The Unique SSV ATEX Standard is designed for safe, uninterrupted production in environments with an explosive atmosphere across the dairy, food, beverage, brewery and many other industries.

Benefits

- Supremely reliable and versatile
- Cost effective and modular design
- Extremely strong and durable
- Protection against leakage and bacterial contamination
- Certified for use by 3-A, hygienic standards and ATEX

Standard design

The Alfa Laval Unique SSV ATEX range is available in a one-, two- or three-body configuration, with easy-to-configure valve bodies, plug, sealing, actuator and clamp rings. The valve can be configured as a shutoff valve with two to four working ports or as a changeover valve with up to six 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.

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

Working principle

The Alfa Laval Unique SSV ATEX Standard is a hygienic pneumatic single seat valve that is remotely operated by means of compressed air. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop® Basic Intrinsically Safe.

Certificates

Authorized to carry the 3A symbol

TECHNICAL DATA

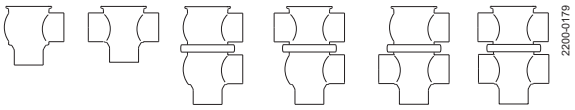
Temperature	
Temperature range:	-10°C to +135°C (EPDM)
Ambient temperature:	10°C to +40°C

Pressure	
Max. product pressure:	1000 kPa (10 bar)
Min. product pressure:	Full vacuum
Air pressure, actuator:	500 to 700 kPa (5 to 7 bar)

ATEX	
Classification:	II 2 G D c T4*

*This equipment is outside the scope of the directive 2014/34/EU and must not carry a separate CE marking according to the directive as the equipment has no own ignition source

Valve Body Combinations



Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement A/A.

PHYSICAL DATA

Materials - valve/actuator	
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
Actuator stem:	PAGG PAGI/GT, MH, 14-250, CF40
Spring:	Coated steel

Options

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: ThinkTop Basic Intrinsically Safe.
C. Product wetted seals in HNBR or FPM (Note! Temperature range 10°C to +135°C for ATEX Versions).
D. Plug seals in HNBR or FPM (Note! Temperature range 10°C to +135°C for ATEX Versions).
E. External surface finish bright.

Note!

For further details, see instruction manual ESE00674.

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.
- Tank Outlet valve.
- Tangential valve.

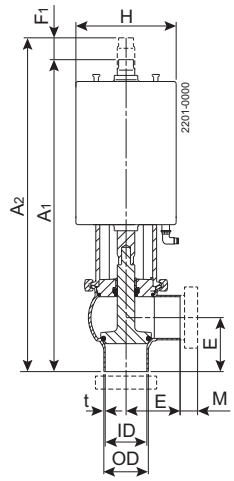
Semi-Maintainable actuator comes with 5 year warranty.

Dimensions (mm)

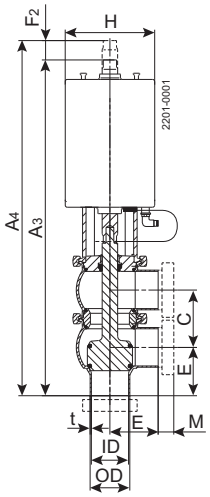
Nominal size	Inch tubes DN/OD						DIN tubes DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
$A_{1\ 1)}$	313	314	363	389	422	467	315	315	365	389	427	470
$A_{2\ 1)}$	328	334	388	414	452	497	330	335	390	414	457	500
$A_{3\ 1)}$	360*	374	436	475	521	591	367*	379	440.6	481	534	596
$A_{4\ 1)}$	372*	391	458	497	548	618	379*	396	463	503	561	623
C	47.8	60.8	73.8	86.3	98.9	123.6	52	64	76	92	107	126
OD	25	38	51	63.5	76.1	101.6	29	41	53	70	85	104
ID	21.8	34.8	47.8	60.3	72.9	97.6	26	38	50	66	81	100
t	1.6	1.6	1.6	1.6	1.6	2	1.5	1.5	1.5	2	2	2
E	50	49.5	61	81	86	119	50	49.5	62	78	87	120
F_1	15	20	25	25	30	30	15	20	25	25	30	30
F_2	12*	17	22	22	27	27	12*	17	22	22	27	27
H	85	85	ø115	ø115	ø155	ø155	85	85	ø115	ø115	ø155	ø155
H (high pressure)	85	ø115	ø155	ø155	ø155	ø155	85	ø115	ø155	ø155	ø155	ø155
M (ISO clamp)	21	21	21	21	21	21	-	-	-	-	-	-
M (DIN clamp)	-	-	-	-	-	-	21	21	21	28	28	28
M (DIN male)	-	-	-	-	-	-	22	22	23	25	25	30
M (SMS male)	20	20	20	24	24	35	-	-	-	-	-	-
Weight (kg)												
Shut-off valve	3.1	3.3	5.5	6.5	11.3	13.6	3.2	3.4	5.5	6.6	11.8	13.6
Change-over valve	3.9	4.2	7.1	8.5	14	18	4.1	4.5	7.2	8.8	14.9	17.9

* = only available with replaceable elastomer plug seal.

1) For exact A_1 - A_4 dimensions, please refer to information in Anytime configurator.



Shut-off valve



Change-over valve

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.

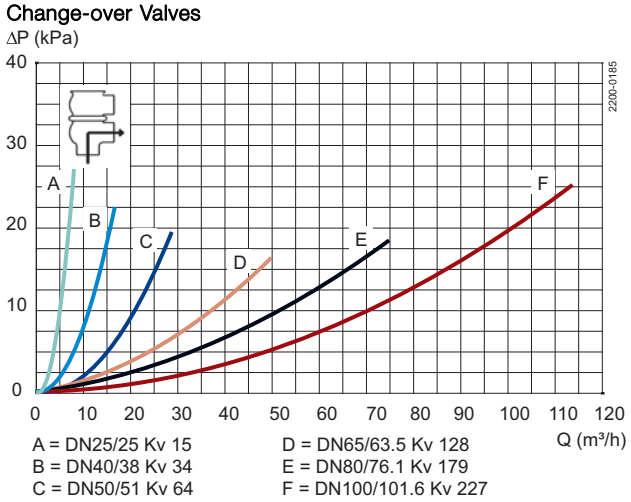
Air Connections Compressed air:

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

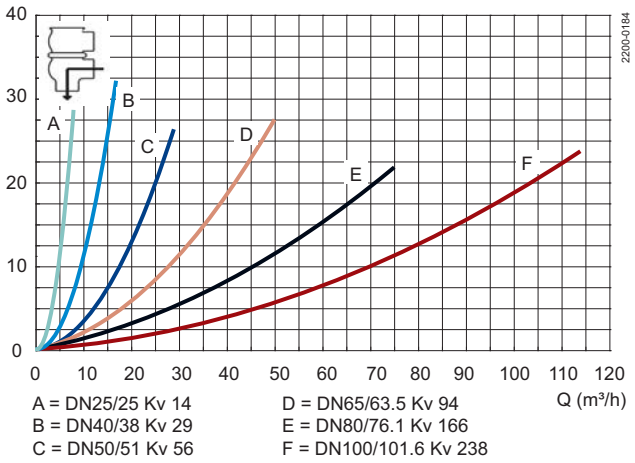
Air consumption (litres free air) for one stroke			
Size	DN25-40	DN50-65	DN80100
	DN/OD 25-38 mm	DN/OD 51-63.5 mm	DN/OD 76.1-101.6 mm
NO and NC	0.2 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]
A/A	0.5 x air pressure [bar]	1.1 x air pressure [bar]	2.7 x air pressure [bar]

Pressure drop/capacity diagrams

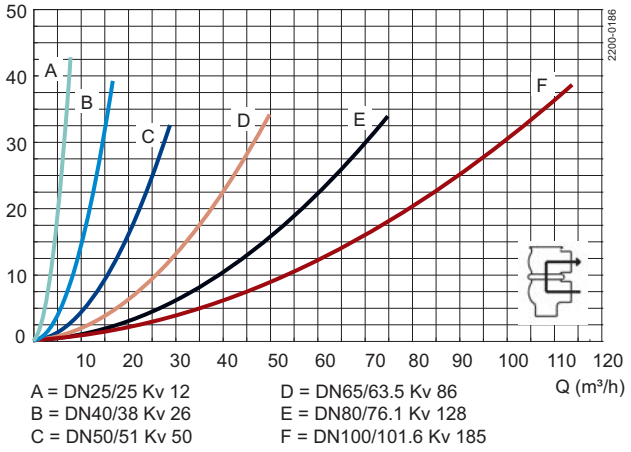
Change-over Valves



A = DN25/25 Kv 15
B = DN40/38 Kv 34
C = DN50/51 Kv 64
D = DN65/63.5 Kv 128
E = DN80/76.1 Kv 179
F = DN100/101.6 Kv 227

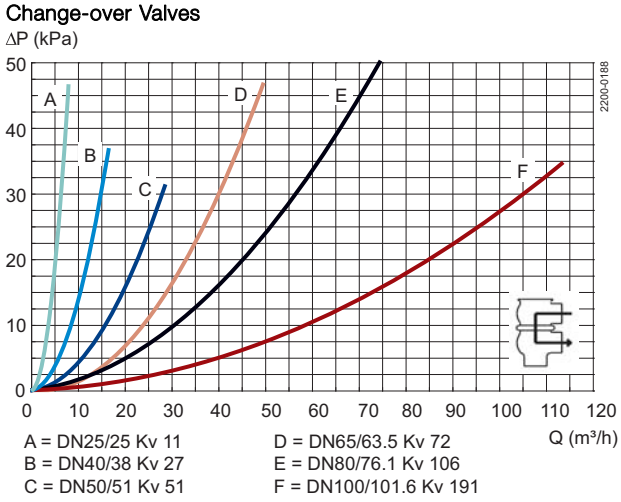


A = DN25/25 Kv 14
B = DN40/38 Kv 29
C = DN50/51 Kv 56
D = DN65/63.5 Kv 94
E = DN80/76.1 Kv 166
F = DN100/101.6 Kv 238



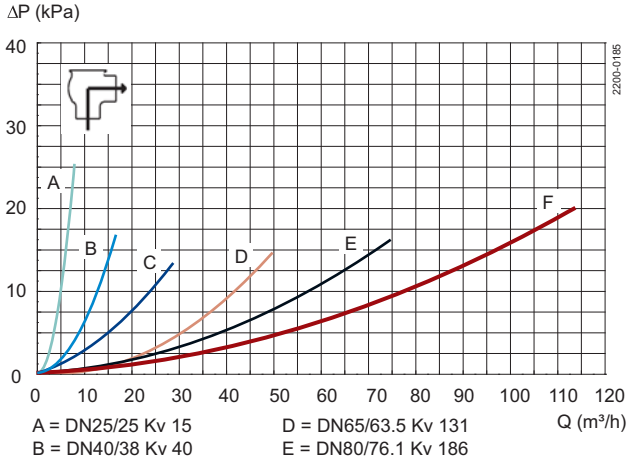
A = DN25/25 Kv 12
B = DN40/38 Kv 26
C = DN50/51 Kv 50
D = DN65/63.5 Kv 86
E = DN80/76.1 Kv 128
F = DN100/101.6 Kv 185

Change-over Valves

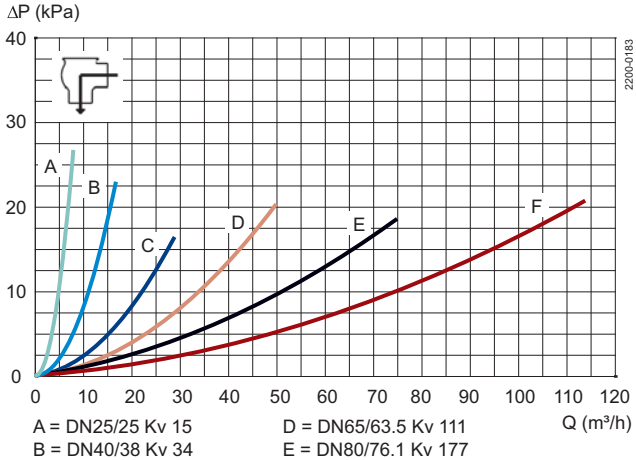


A = DN25/25 Kv 11
B = DN40/38 Kv 27
C = DN50/51 Kv 51
D = DN65/63.5 Kv 72
E = DN80/76.1 Kv 106
F = DN100/101.6 Kv 191

Shut-off Valves



A = DN25/25 Kv 15
B = DN40/38 Kv 40
C = DN50/51 Kv 80
D = DN65/63.5 Kv 131
E = DN80/76.1 Kv 186
F = DN100/101.6 Kv 257



A = DN25/25 Kv 15
B = DN40/38 Kv 34
C = DN50/51 Kv 70
D = DN65/63.5 Kv 111
E = DN80/76.1 Kv 177
F = DN100/101.6 Kv 256

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:

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

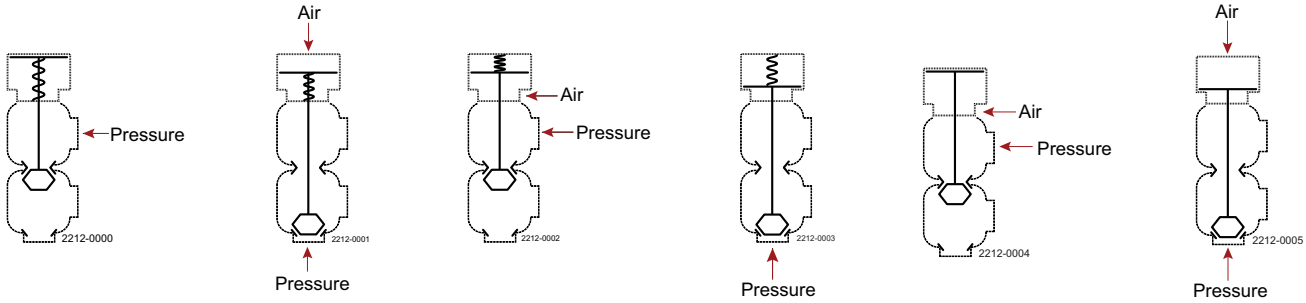
Where
Q = Flow in m^3/h.
Kv = m^3/h at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 40 m^3/h
2.5" shut-off valve, where Kv = 111 (See table above).
$Q = Kv \times \sqrt{\Delta p}$
$40 = 111 \times \sqrt{\Delta p}$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

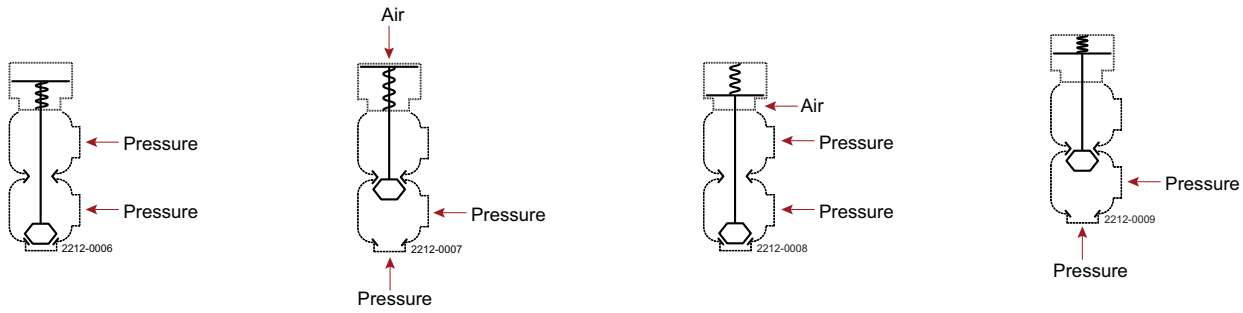
(This is approx. the same pressure drop by reading the y-axis above)

Pressure data for Unique Single Seat ATEX Valve



1 2 3 4 5 6

Table 1 - Shut-off and Change-over valves			Max. pressure in bar without leakage at the valve seat					
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 DN/OD 25 mm	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
1		NO	10.0	8.2	8.4	4.5	6.8	4.4
2	5	NO	9.2	4.4	5.9	3.4	4.4	2.9
	6		10.0	7.6	9.6	5.6	7.2	4.8
	7		10.0	10.0	10.0	7.8	10.0	6.7
3	5	NC	10.0	5.7	6.8	3.7	4.7	3.0
	6		10.0	9.8	10.0	6.1	7.7	5.0
	7		10.0	10.0	10.0	8.5	10.0	6.9
4		NC	10.0	6.3	7.2	4.2	6.4	4.2
5	5	A/A	10.0	10.0	10.0	10.0	10.0	9.4
	6		10.0	10.0	10.0	10.0	10.0	10.0
	7		10.0	10.0	10.0	10.0	10.0	10.0
6	5	A/A	10.0	10.0	10.0	10.0	10.0	9.1
	6		10.0	10.0	10.0	10.0	10.0	10.0
	7		10.0	10.0	10.0	10.0	10.0	10.0



7 8 9 10

Table 2 - Shut-off and Change-over valves			Max. pressure in bar against which the valve can open					
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size					
			DN 25 DN/OD 25 mm	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
7		NO	10.0	10.0	10.0	7.4	9.7	6.3
8	5	NO	10.0	7.8	10.0	6.1	7.1	4.7
	6		10.0	10.0	10.0	8.3	9.9	6.6
	7		10.0	10.0	10.0	10.0	10.0	8.5
9	5	NC	10.0	10.0	6.8	6.6	7.5	4.9
	6		10.0	10.0	10.0	9.0	10.0	6.9
	7		10.0	10.0	10.0	10.0	10.0	8.8
10		NC	10.0	9.7	10.0	6.8	9.1	6.1

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

200 300

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

A. Male parts or clamp liners in accordance with required standard.
B. Weld ends or connection types other than Tri-Clamp
C. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
D. Product wetted seals in HNBR or FPM.
E. Plug seals HNBR, FPM or TR2 plug (floating PTFE design).
F. High pressure actuator.
G. Long stroke actuator (not available for Reverse Acting version).
H. Maintainable actuator.
I. 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.

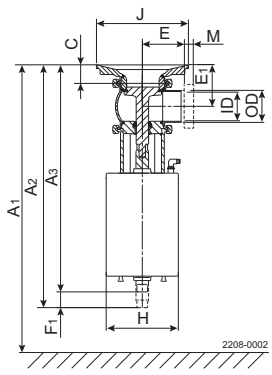
Semi-Maintainable actuator comes with 5 year warranty

Dimensions (mm)

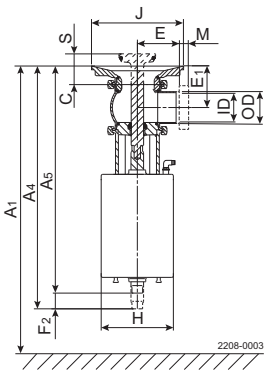
Size	51 mm	63.5 mm	76.1 mm	101.6 mm	DN 50	DN 65	DN 80	DN 100
A_1	426	439	479	503	429	445	487	506
A_2	393	406	446	470	396	412	454	473
A_3	368	381	416	440	371	387	424	443
A_4	390	403	443	467	393	409	451	470
A_5	364	377	412	436	367	383	420	439
C	30	30	30	30	30	30	30	30
OD	51	63.5	76.1	101.6	53	70	85	104
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
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

A1= 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)

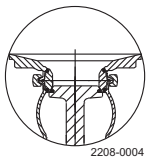
[1)] For exact A_1 - A_4 dimensions, please refer to informations in Anytime configurator.



Standard



Reverse Acting



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.

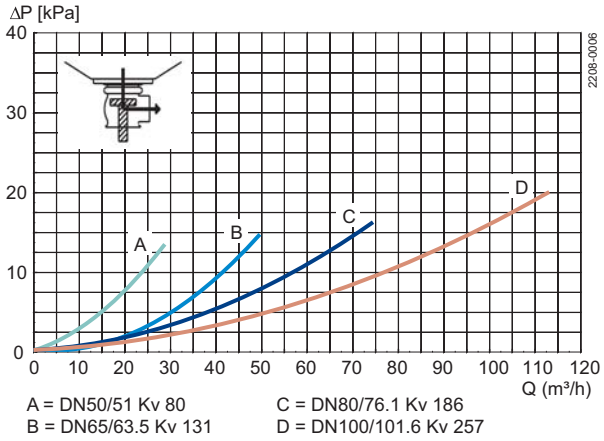
Air Connections Compressed air:

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

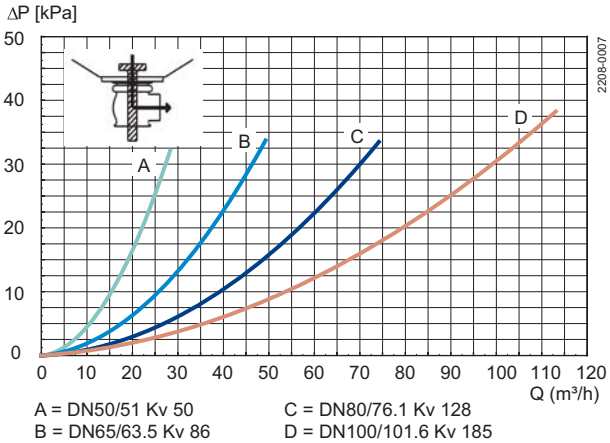
Actuator function

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

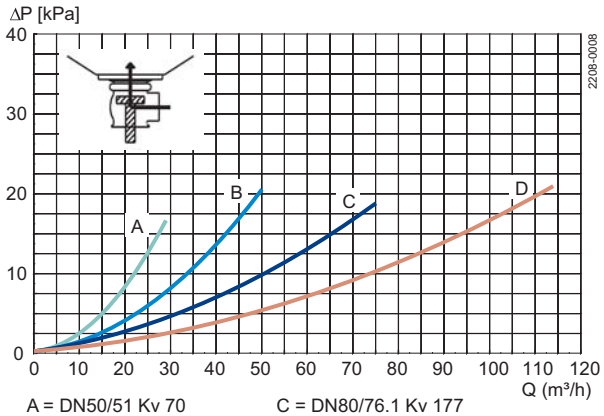
Pressure drop/capacity diagrams



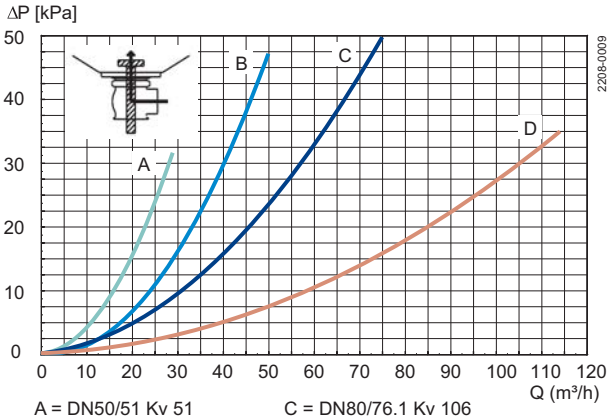
A = DN50/51 Kv 80
B = DN65/63.5 Kv 131
C = DN80/76.1 Kv 186
D = DN100/101.6 Kv 257



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).

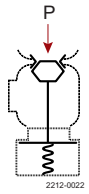
$Q = Kv \times \sqrt{\Delta p}$

$40 = 111 \times \sqrt{\Delta p}$

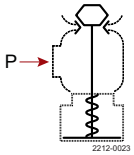
$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13$ bar

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

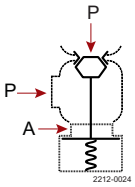
Pressure data for Unique Single Seat Valve Tank Outlet



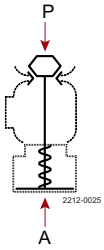
1



2



3



4

A = Air

P= Product pressure

Table 1 - Shut fully closed.	Max. pressure in bar without leakage at the valve seat			
Actuator / Valve body combination and direction of pressure	Valve size			
	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
1	7.2	4.2	6.4	4.2
2	8.4	4.5	6.8	4.4

Table 2		Max. pressure in bar against which the valve can open			
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Valve size			
		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
3	6	10.0	9.0	10.0	6.9
4	6	10.0	8.3	9.9	6.6