Simply Unique Single Seat

Unique SSV Aseptic

Concept

The Unique Single Seat Aseptic valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it features a one-piece diaphragm to ensure hermetic sealing towards the atmosphere. The valve is designed for aseptic processing and it is available as a shut-off valve with two (2) or three (3) ports or as a change-over valve with three (3) to five (5) ports.

Working principle

The valve is a pneumatic seat valve in a hygienic and modular design remote-controlled by means of compressed air. It has few and simple moveable parts which results in a very reliable valve and low maintenance cost. An integrated valve plug/diaphragm secures aseptic operation.

Standard Design

The Unique SSV Aseptic valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator. The valve features an optimized life span of the seals through a defined compression design. The actuator is connected to the valve body using a yoke and all components are assembled with clamp rings.

TECHNICAL DATA

Temperature

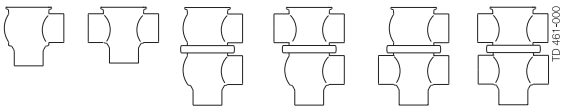
Temperature range: . . . . . -10°C to +140°C (EPDM)

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



200 300 210 220 310 320

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

Authorized to carry the 3A symbol

CERTIFIED HYGIENIC ENGINEERING & DESIGN EUROPEAN EHEDG TYPE EL OCTOBER 2008

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 computer aided selection tool (CAS) for full access to all models and options.

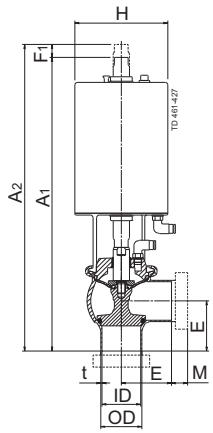
- Manually operated valve.
- Two Step valve.
- Tangential valve.
- Tank Outlet valve.

The actuator comes with a 5 years warranty

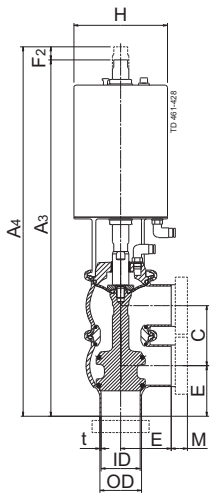
Dimensions (mm)

Nominal size	DN/OD						DIN/DN					
	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
A_1 [1]	308	314	366	393	431	481	312	316	369	397	436	484
A_2 [1]	319	325	381	408	450	500	323	327	384	412	455	503
A_3 [1]	356	375	440	479	530	605	364	380	444,5	489	543	610
A_4 [1]	364	384	453	492	546	621	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	62	78	87	120
E_2	50	49.5	61	81	86	119	50	49,5	62	78	87	120
F_1	11	11	14	15	17	17	11	11	14	15	17	17
F_2	8	9	12	13	15	15	8	9	12	13	15	15
H	85	85	ø115	ø115	ø155	ø155	85	85	ø115	ø115	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	5.6	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

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



Shut-off valve



Change-over valve

Please note!

Opening/closing time will be affected by the following:

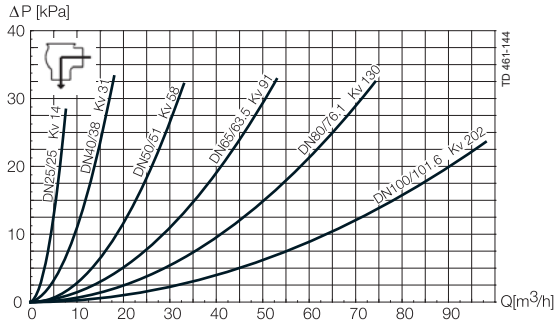
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

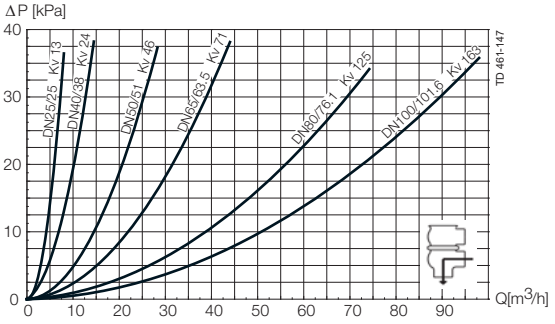
Air Connections Compressed air:

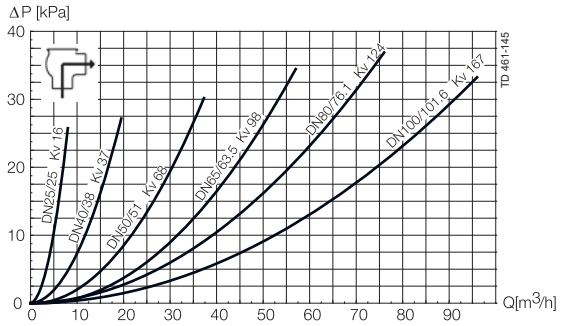
R 1/8" (BSP), internal thread.

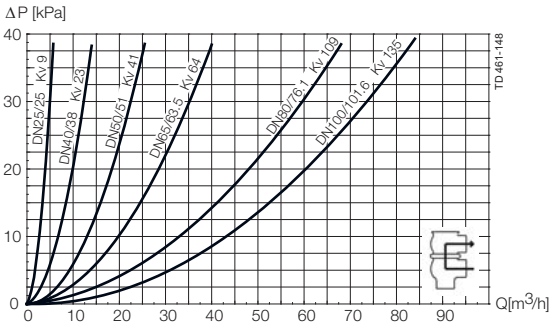
Air consumption (litres free air) for one stroke			
Size	**DN25-40** **DN/OD 25-38 mm**	**DN50-65** **DN/OD 51-63.5 mm**	**DN80-100** **DN/OD 76.1-101.6 mm**
NO and NC	0.2 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]
A/A	0.5 x air pressure [bar]	1.1 x air pressure [bar]	2.7 x air pressure [bar]

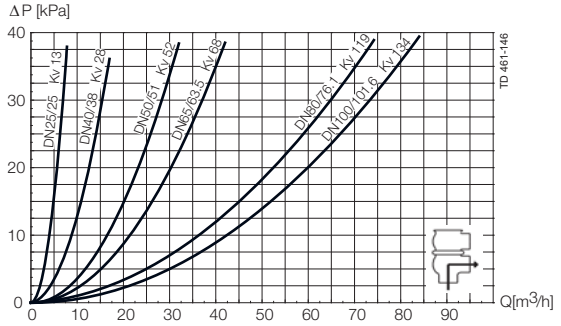
Pressure drop/capacity diagrams

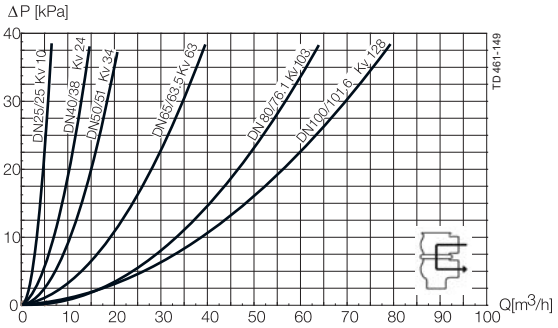












Note!

For the diagrams the following applies:

Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in CAS.

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).

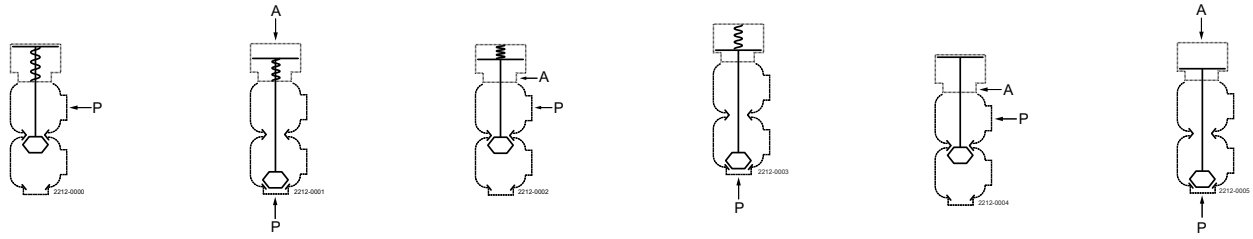
$Q = Kv \times \sqrt{\Delta p}$

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

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

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

Pressure data for Unique Single Seat Valve Aseptic



1 2 3 4 5 6

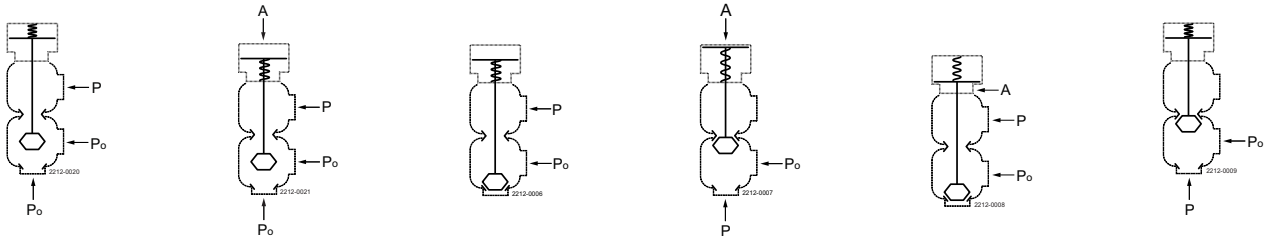
A = Air P/Po= Product pressure

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 25 mm	DN 40 - DN/OD 38 mm	DN 50 - 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	8.0	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 25 mm	DN 40 - DN/OD 38 mm	DN 50 - 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	8.0	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

A = Air P/Po= Product pressure

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 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		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 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
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

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