

Alfa Laval Unique SSV Aseptic Manually Operated

Single seat valves

Introduction

The Alfa Laval Unique SSV Aseptic Manually Operated is a versatile, reliable 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 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 Manually Operated is designed for production in sterile process 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
- Protection against bacterial contamination for enhanced product safety
- Easy to configure

Standard design

The Unique SSV Aseptic Manually Operated is available in a one- or two-body configuration, with easy-to-configure valve bodies, plugs, and clamp rings. The valve can be configured for aseptic processing as a shut-off 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.

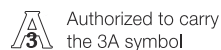
The valve can also be fitted with the Alfa Laval ThinkTop V50 and V70 for sensing and control of the valve.

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 Manually Operated uses a crank mechanism to control flow by manually opening and closing the valve.

Certificates



TECHNICAL DATA

Temperature

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

Pressure

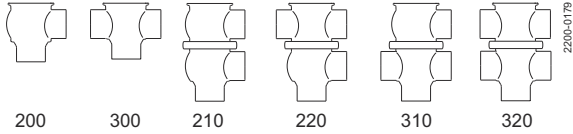
Pressure range:	0-800 kPa (0-8 bar)
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Note!

Vacuum is not recommended in aseptic applications.

Valve body combinations



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:	HNBR
Diaphragm:	PTFE (Product wetted side) / EPDM

Options

- Male parts or clamp liners in accordance with required standard
- Product wetted seals in HNBR or FPM (only for Unique SSV aseptic manually tank outlet valve)
- Plug seal HNBR, FPM
- Tangential bodys (only for Unique SSV aseptic manually tank outlet valve and for Unique SSV aseptic manually operated valve)
- External surface bright



Note!

For further details, see instruction ESE02414.

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.

Pressure drop/capacity diagram:

The plugs have linear characteristics. This means that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

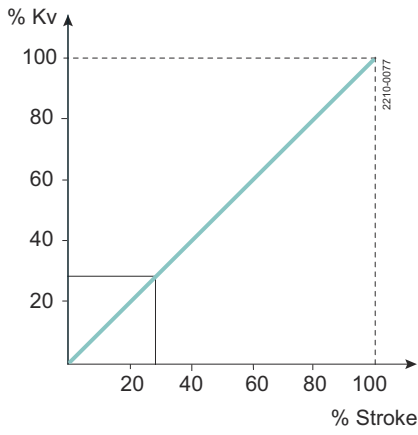
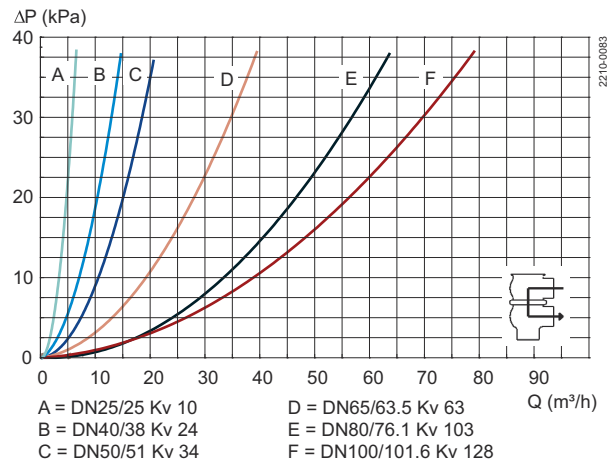
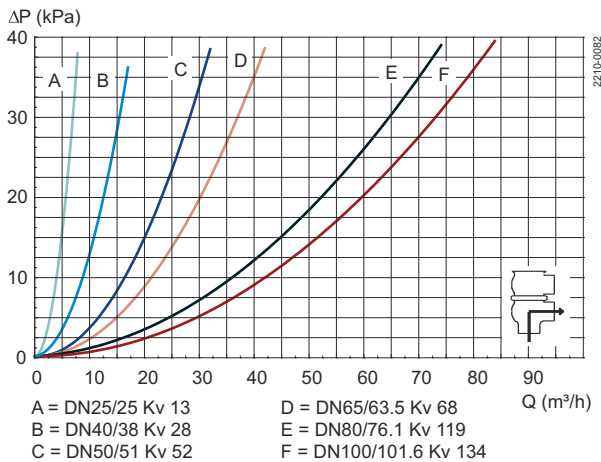
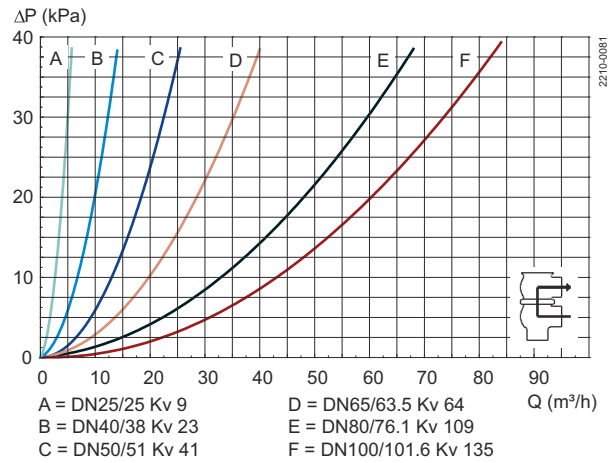
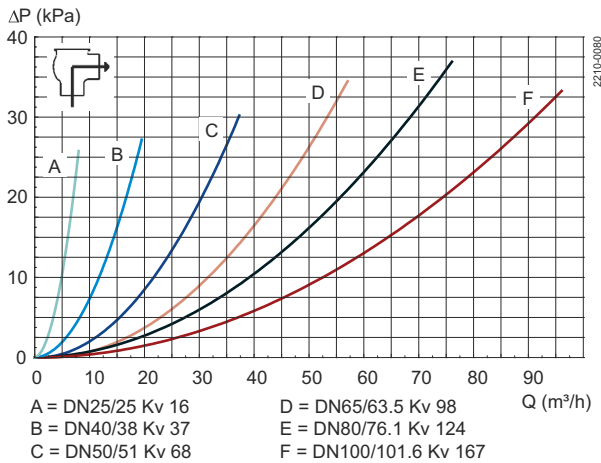
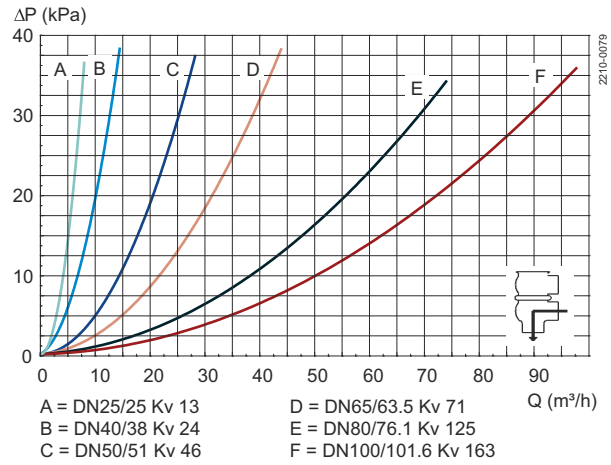
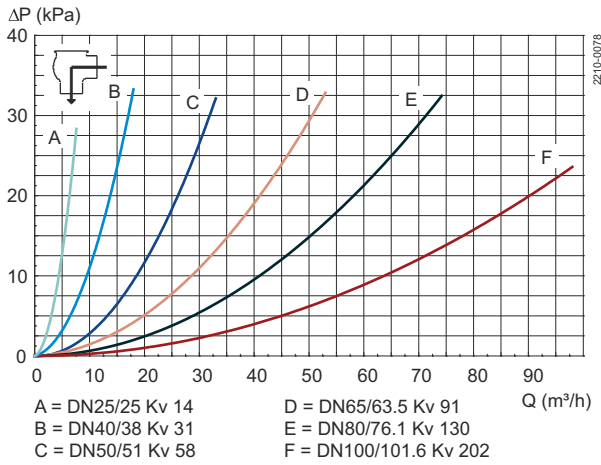


Figure 1. The flow in % of the total flow at a pressure drop of 1 bar

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 Anytime configurator.

Dimensions (mm)

Dimensions for Unique SSV aseptic manually operated valve

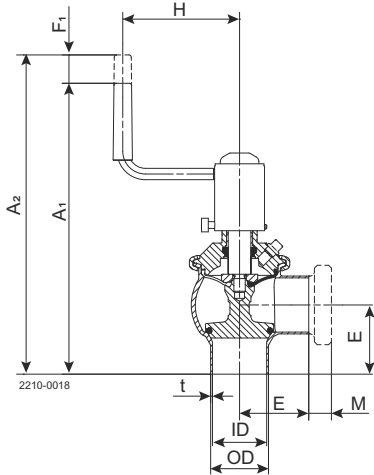


Figure 2. Shut-off valve

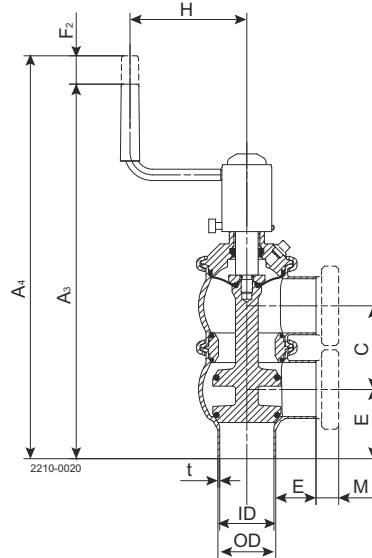


Figure 3. Change-over valve

Size	25	38	51	63.5	76.1	101.6	DN	DN	DN	DN	DN	DN
	mm	mm	mm	mm	mm	mm	25	40	50	65	80	100
A1	235	242	258	284	293	344	247	245	260	290	301	345
A2	245	252	272	298	310	360	262	255	274	304	318	362
A3	284	303	331	369	392	466	284	309	336	380	408	470
A4	293	312	343	382	407	482	293	318	348	393	423	486
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
F1	11	11	14	15	17	17	11	11	14	15	17	17
F2	9	9	12	13	15	15	9	9	12	13	15	15
H	105	105	105	105	105	105	105	105	105	105	105	105
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:	1.8	2.0	2.6	3.6	4.6	7.0	1.9	2.1	2.5	3.7	5.0	6.9
Change-over valve:	2.6	3.0	4.2	5.6	7.3	11.4	2.8	3.2	4.2	5.9	8.2	11.2

Dimensions for Unique SSV aseptic manually tank outlet valve

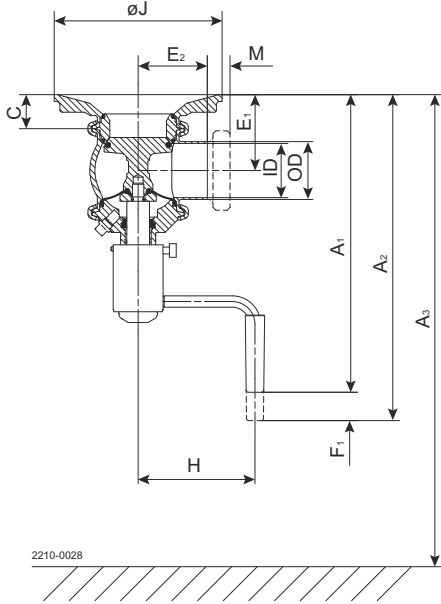


Figure 4. Shut-off valve

Size	51	63.5	76.1	101.6	DN	DN	DN	DN
	mm	mm	mm	mm	50	65	80	100
A1	264	276	283	309	266	282	298	311
A2	276	289	303	328	278	295	311	331
A3	340	380	390	440	340	385	400	440
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
E1	61	81	86	119	62	78	87	120
E2	67	73	79.5	92	68	76.5	83.5	93
F	14	15	17	17	14	15	17	17
H	105	105	105	105	105	105	105	105
øJ	148	163	178	198	148	163	178	198
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)								
Shut off valve:	3.9	5.1	6.3	8.8	3.8	5.2	6.7	8.8

Kv-Factors

Valve size	Kv
51 mm/DN50	60
63.5 mm/DN65	95
76.1 mm/DN80	125
101.6 mm/DN100	180

$Kv = m^3/h$ at a pressure drop of 1 bar.

For other pressure drops than 1 bar the flow can be calculated with the following formula:

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

Where

Q = Flow in m^3/h

Kv = See above

Δp = Pressure drop in bar over the valve

Example:

How to calculate the pressure drop for an ISO 63.5 tank outlet valve if the flow is 40 m³/h

ISO 63.5 tank outlet valve where Kv = 95 (See table above)

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

$$40 = 95 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{40}{95}\right)^2 = 0.18 \text{ bar}$$

Dimensions for Unique SSV aseptic manual regulating valve

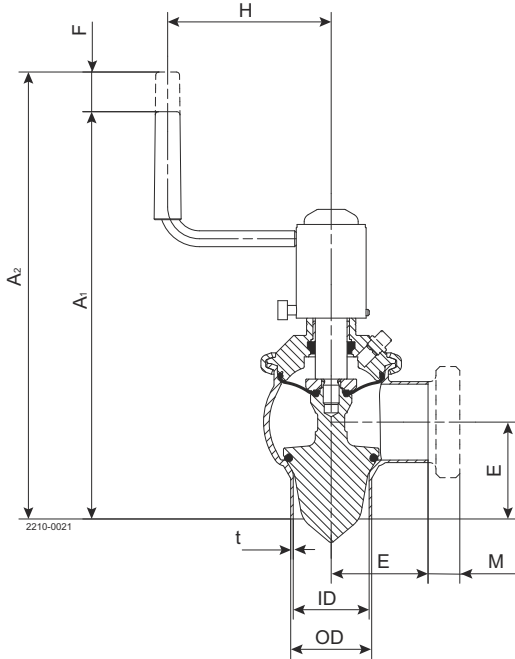


Figure 5. Shut-off valve

Size	38	51	63.5	76.1	101.6	DN	DN	DN	DN	DN
	mm	mm	mm	mm	mm	40	50	65	80	100
A1	242	258	284	293	344	245	260	290	301	345
A2	252	272	298	310	360	255	274	304	318	362
OD	38	51	63.5	76.1	101.6	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	49.5	61	81	86	119	49.5	62	78	87	120
F	11	14	15	17	17	11	14	15	17	17
H	105	105	105	105	105	105	105	105	105	105
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	2.1	2.9	4.0	5.4	8.2	2.2	2.9	4.1	5.9	8.1

Kv-Factors

Valve size	Kv
38 mm/DN40	21
51 mm/DN50	40
63.5 mm/DN65	90
76.1 mm/DN80	90
101.6 mm/DN100	130

For other pressure drops than 1 bar the flow can be calculated with the following formula:

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

Where

Q = Flow in m³/h

K_v = See above

Δ p = Pressure drop in bar over the valve

Example:

Plug K_v 40

Q to be calculated at Δp = 2 bar:

$$Q = 40 \times \sqrt{2} = 56 \text{ m}^3/\text{h}$$

or at 50% stroke:

$$Q = 0.5 \times 56 = 28 \text{ m}^3/\text{h}$$

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