Simply Unique Single Seat

Alfa Laval Unique SSV Reverse Acting

Concept

The Unique Single Seat Reverse Acting valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique SSV platform it provides multiple solutions to prevent pressure shocks when the pipe work does not permit closing against product flow with standard single seat valves.

Working principle

The valve is a pneumatic seat valve in a hygienic and modular design for a wide field of duties, e.g. as a shut-off valve with two (2) or four (4) ports or as a change-over valve with three (3) to six (6) ports. The valve is remote-controlled by means of compressed air.

Standard Design

The Unique SSV Reverse Acting valve comes in a two or three 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

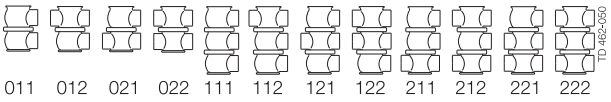
Temperature

Temperature range, 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



Actuator function

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

Authorized to carry the 3A symbol

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

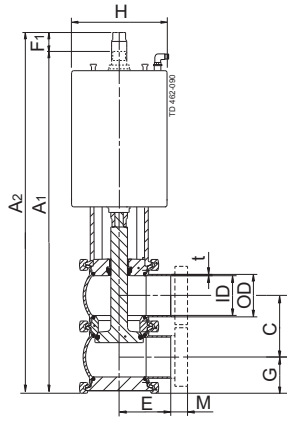
- Long stroke valve.
- Manually operated valve.
- Extended stroke available for 4"

The actuator comes with a 5 years warranty

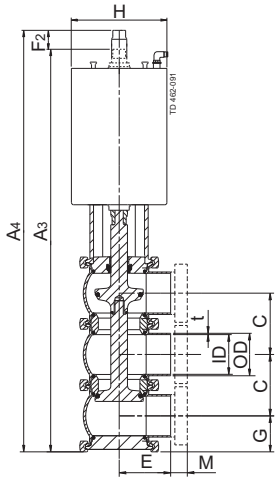
Dimensions (mm)

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

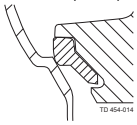
Please note!

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:

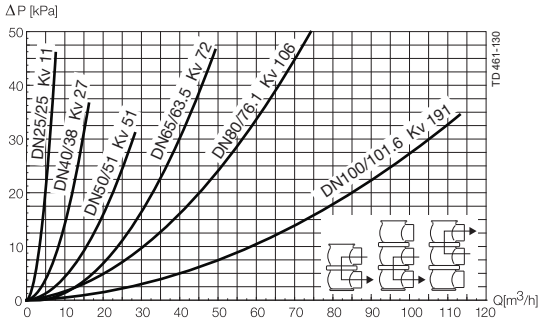
R 1/8" (BSP), internal thread.

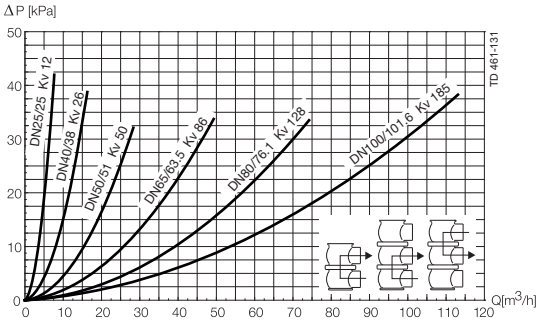


PTFE plug seal (TR2)

Size	Air consumption (litres free air) for one stroke		
	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





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).

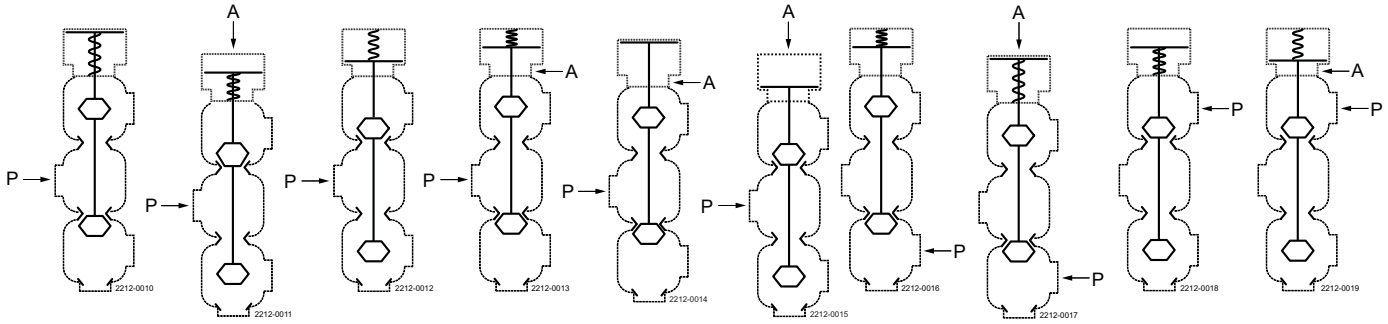
$Q = Kv \times \sqrt{\Delta p}$

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

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

(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 7 8 9 10

A = Air P= Product pressure

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

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

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