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

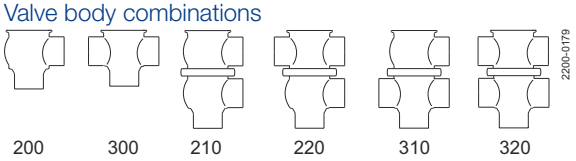
The Alfa Laval Unique SSV Standard is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop®.

TECHNICAL DATA

Temperature	
Temperature range, standard lip seal:	-10 °C to +100 °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

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

Dimensions (mm)

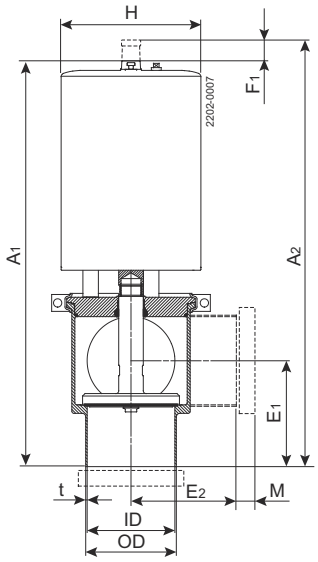


Figure 1. Shut-off

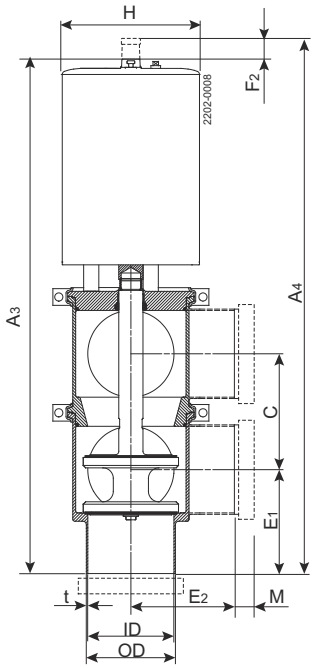


Figure 2. Change-over valve

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

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

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

Pressure drop/capacity diagrams

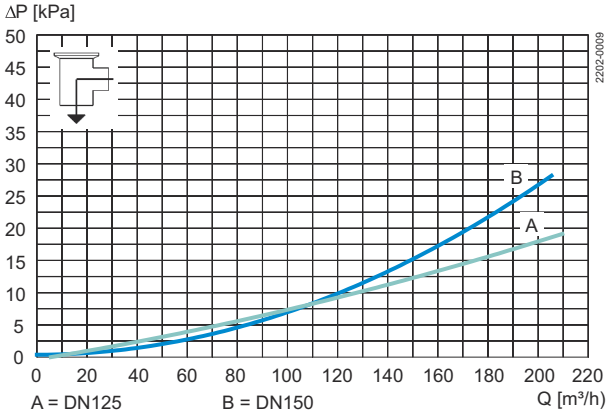


Figure 3. Shut-off

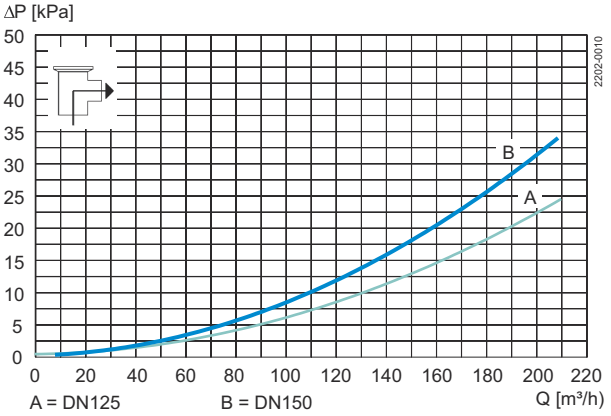


Figure 4. Shut-off

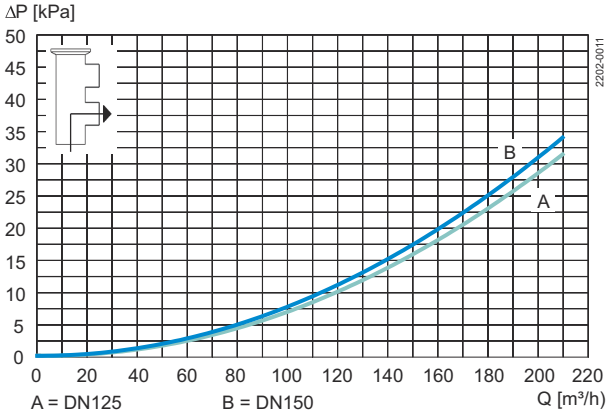


Figure 5. Change-over valve

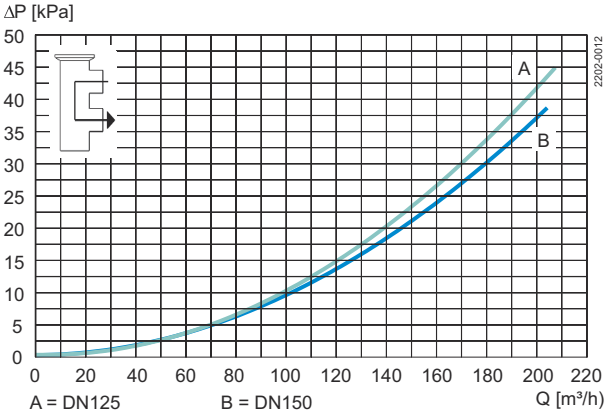


Figure 6. Change-over valve

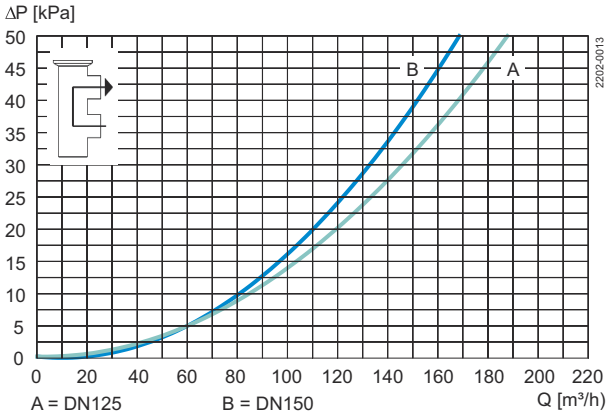


Figure 7. Change-over valve

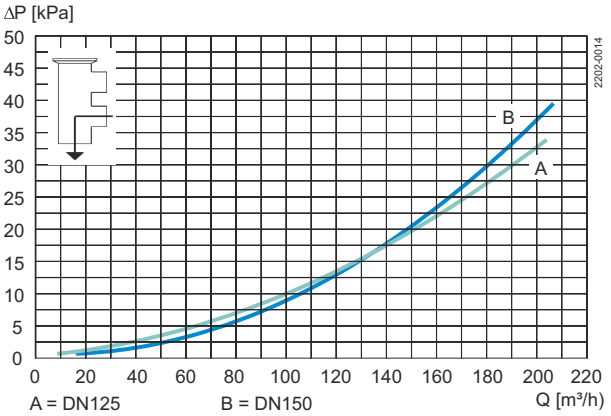


Figure 8. Change-over valve

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

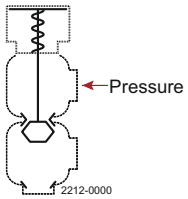


Figure 9. 1

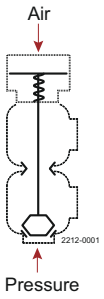


Figure 10. 2

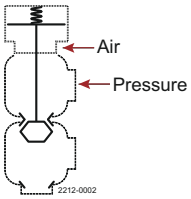


Figure 11. 3

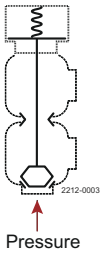


Figure 12. 4

Actuator type / function

10. Pneumatic downward movement, spring return (NO-lower seat)

20. Pneumatic upward movement, spring return (NC-lower seat)

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
Figure 9. 1		NO		5.2
Figure 10. 2	5	NO	DIN	8.7
	6	NO	DIN	4.4
Figure 11. 3	5	NC		8.1*
	6	NC		3.7
Figure 12. 4		NC	DIN	5.2

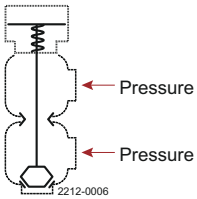


Figure 13. 5

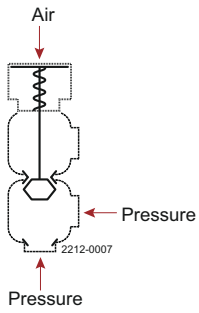


Figure 14. 6

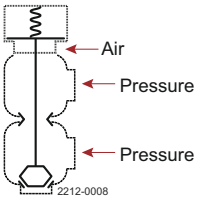


Figure 15. 7

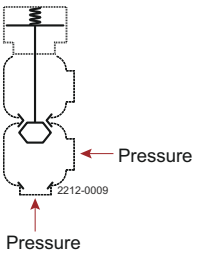


Figure 16. 8

* = Values are valid for 8 bar air pressure

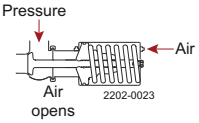
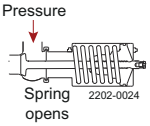
▲ = Actual product pressure

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
Figure 13. 5		60 (NO)	DIN	8.8
Figure 14. 6	6	10 (NO)		8.1
	6	60 (NO)		min. 10

	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**
Figure 15. 7	6	70 (NC)	DIN	7.8
Figure 16. 8		20 (NC)		8.9

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)
Pressure 	87.6	NC	145.0
Pressure 		NO	145.0

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com