Simply Unique Single Seat

Alfa Laval Unique SSV DN125 and DN150

Concept
Unique Single Seat DN125 and DN150 Valves are pneumatic seat valves in a hygienic and modular design giving a wide field of application, e.g. as a stop valve with two (2) or three (3) ports or as change-over valve with three (3) to five (5) ports

Working principle
The valve is 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.

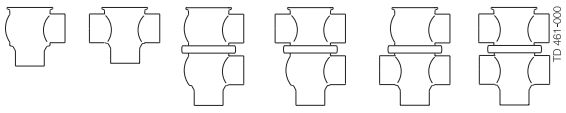
Standard Design
The Unique Single Seat DN125 and DN150 Valves come in a one or two body configuration. The actuator is connected to the valve body by means of clamp rings. To facilitate installation the valve is only partly assembled when delivered. The valve has welding ends as standard and is available with fittings as option. It is recommended, due to the valve size and weight, to use supporting equipment, handling and installing the valve. Guidelines are given in the instruction manual (ESE02590). Alfa Laval is not able to supply the recommended supporting equipment.

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)

Authorized to carry the 3A symbol

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

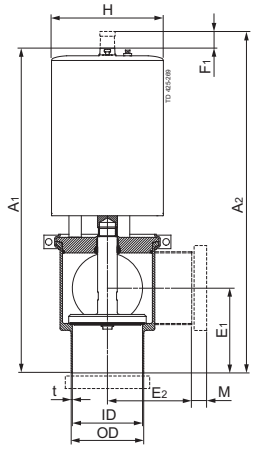
Options

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.

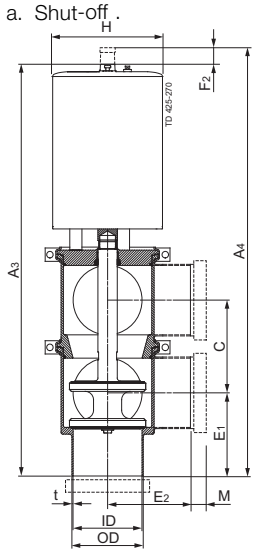
The actuator comes with a 5 years warranty

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:

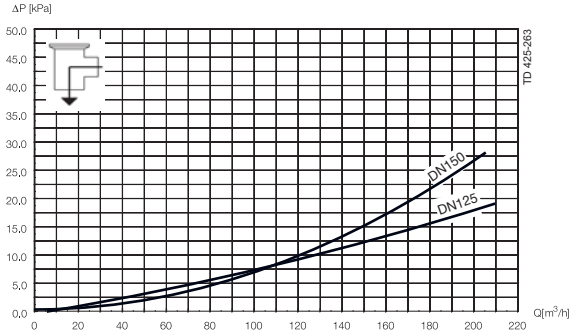
R 1/8" (BSP), internal thread.

Actuator function

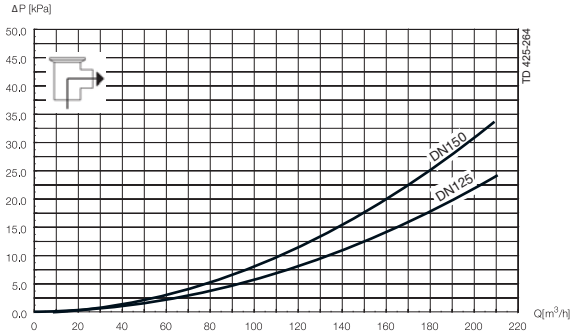
	Air consumption (litres free air) for one stroke	
Size	**DN 125-150**	**DN 125-150**
Shut-off / Change-over valve Actuator function	1.5 x Air pressure (bar) NC	2.2 x Air pressure (bar) NO
Shut-off / Change-over valve Actuator function	3.6 x Air pressure (bar) NC (Support air for closing)	2.9 x Air pressure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

Pressure drop/capacity diagrams

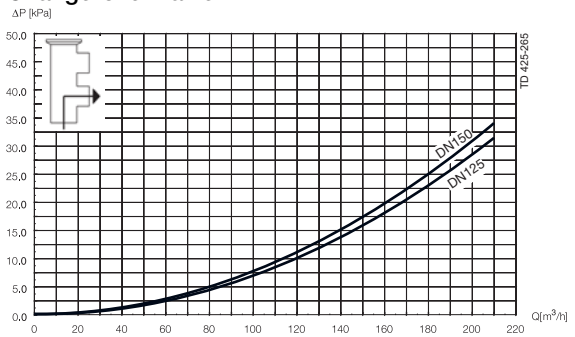
Shut-off

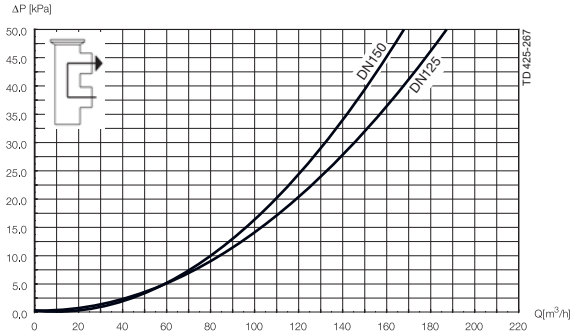


Shut-off

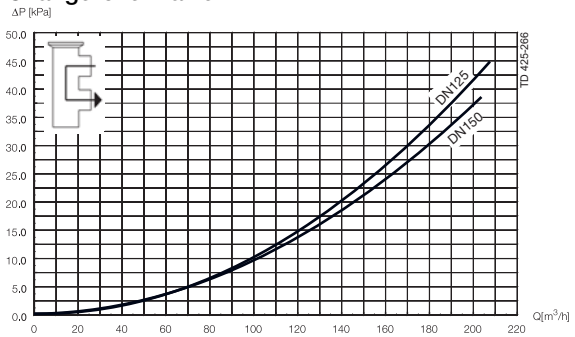


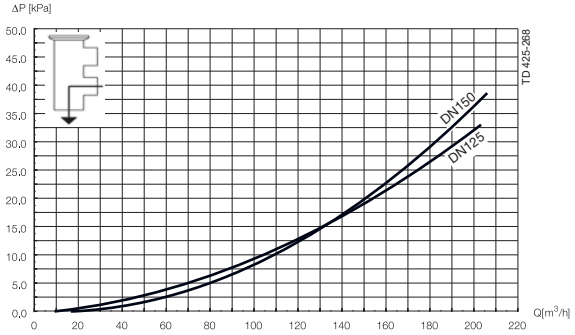
Change-over valve





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:

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

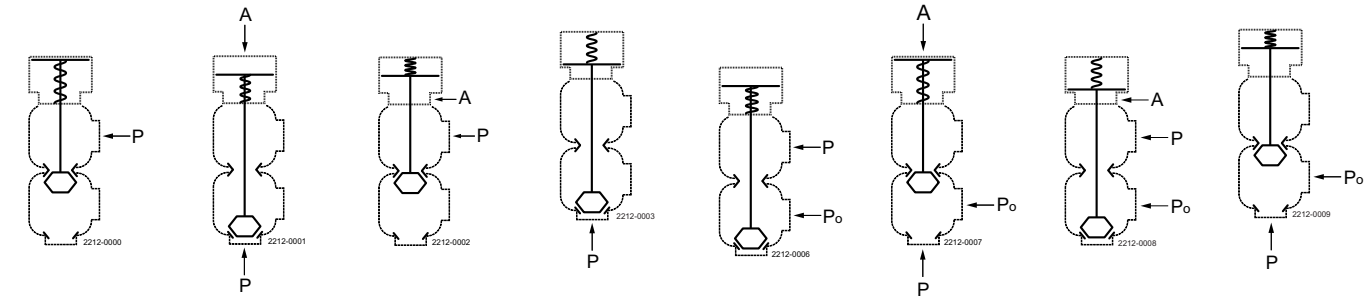
Where
Q = Flow in m^3/h.
Kv = m^3/h at a pressure drop of 1 bar (see table above).
Δ p = Pressure drop in bar over the valve.

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).
$Q = Kv \times \sqrt{\Delta p}$
$40 = 111 \times \sqrt{\Delta p}$

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

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

Pressure data for Unique Single Seat Valve DN125 and DN150



A = Air P/Po= Product pressure

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

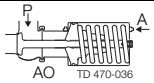
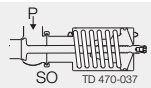
Table 1: Stop and change-over valves			Max. pressure without leakage at the valve seat	
			Valve Size	
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Type	DN 125-150
1		NO		5.2
2	5	NO	DIN	8.7
	6	NO	DIN	4.4
3	5	NC		8.1*
	6	NC		3.7
4		NC	DIN	5.2

* = Values are valid for 8 bar air pressure
† = 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 2

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

A = Air
P = Product pressure
AO = Air opens
SO = Spring opens

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