Simply Unique Single Seat

Unique SSV Two Step

General Information

The new generation that meets the highest demands of your process in terms of hygiene and safety. Unique Single Seat Valves are built on a well-proven, platform from an installed base of more than one million valves.

Application

Unique Single Seat Two Step Valve is a pneumatic seat valve in a hygienic and modular design for a wide field of applications, e.g. 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.

Unique Single Seat Valve - Two Step as shut off (only as NC) can be used for reducing pressure hammers and dosing e.g. in connection with filling of a vessel where an exact volume is required. The degree of opening for the intermediate position can be adjusted by removing spacer rings inside the actuator.
Unique Single Seat Valve - Two Step as Change over (NC and NO) can be used for drainage of two pipe simultaneously or in closing / filling applications.

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 Two Step Valve comes in a one or two body configuration. To ensure a high degree of flexibility the valve seat between the two bodies in the Change-over version is loose. 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.

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.

The Unique Single Seat Two Step Valve range covers the sizes from DN40 to DN100 and DN/OD 38 mm to 101.6 mm.

The valve always comes with a maintainable actuator.

Other valves in the same basic design

The Unique SSV valve range includes several purpose built valves. Below listed 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.

- Aseptic valve.
- Tank Outlet valve.

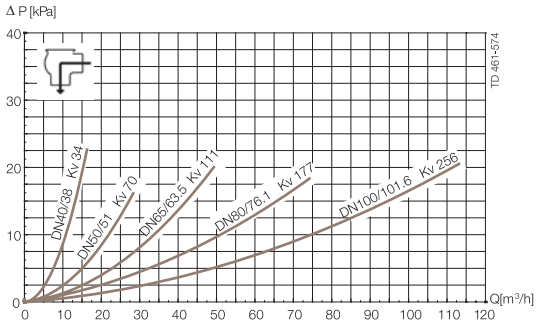
Unique Single Seat Valve is designed, tested and approved according to EHEDG guidelines.

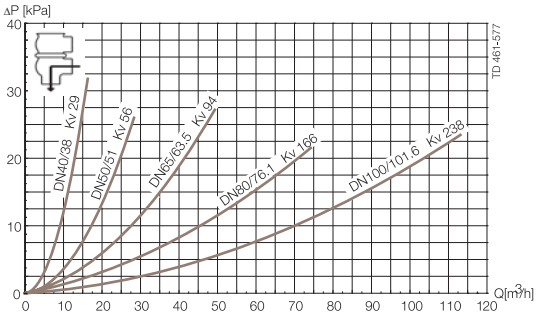


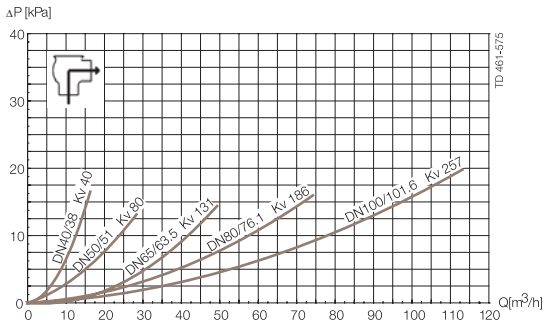
Unique Single Seat Two Step Change-over and Shut-off Valve

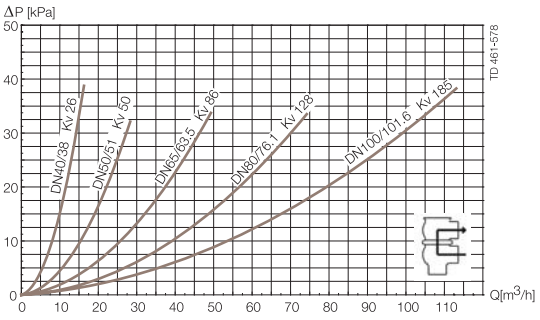
Gillain & Co NV | Boomsesteenweg 85, B-2630 Aartselaar | Tel. +32 3 870 60 80, Fax +32 3 870 60 89 | advice@gillain.com | www.gillain.com

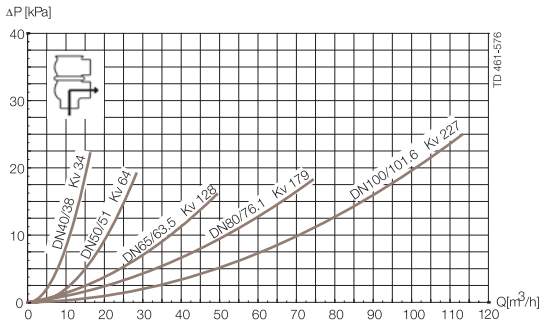
Pressure drop/capacity diagrams

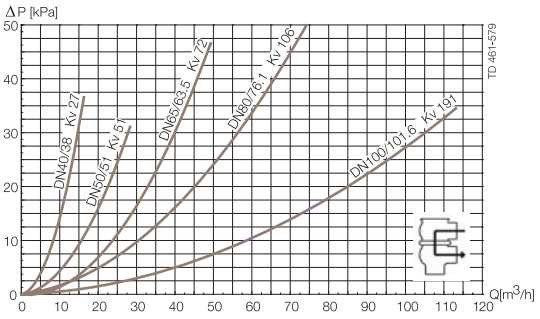












Note!

For the diagrams the following applies:

Medium: Water (20° C)

Measurement: In accordance with VDI2173

Pressure drop can also be calculated in 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).
$Q = Kv \times \sqrt{\Delta p}$
$40 = 111 \times \sqrt{\Delta p}$

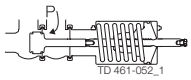
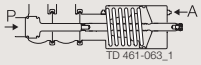
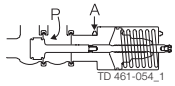
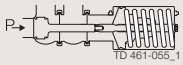
$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

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

Pressure data for Unique Single Seat Valve Two Step

Table 1 - Shut-off and Change-over valves

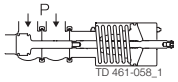
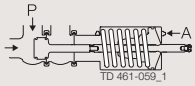
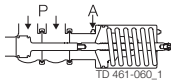
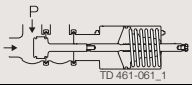
Max. pressure in bar without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size				
			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
		NO	10	8.4	4.5	6.8	4.4
	6	NO	10	9.6	5.6	7.2	4.8
	6	NC	10	10.0	6.1	7.7	5.0
		NC	10	7.2	4.2	6.4	4.2

A = Air
P = Product pressure

Table 2 - Shut-off and Change-over valves

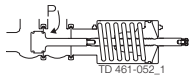
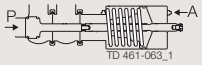
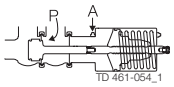
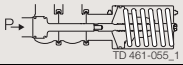
Max. pressure in bar against which the valve can open.

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size				
			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
		NO	10.0	10.0	7.4	9.7	6.3
	6	NO	10.0	10.0	8.3	9.9	6.6
	6	NC	10.0	10.0	9.0	10.0	6.9
		NC	9.7	10.0	6.8	9.1	6.1

A = Air
P = Product pressure

Table 3 - Shut-off and Change-over valves with high pressure actuator option (option)

Max. pressure in bar without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Plug position	Valve size	
			DN50 DN/OD 51 mm	DN 65 DN/OD 63.5 mm
		NO	10.0	10.0
	6	NO	10.0	10.0
	6	NC	10.0	10.0
		NC	10.0	9.6

A = Air

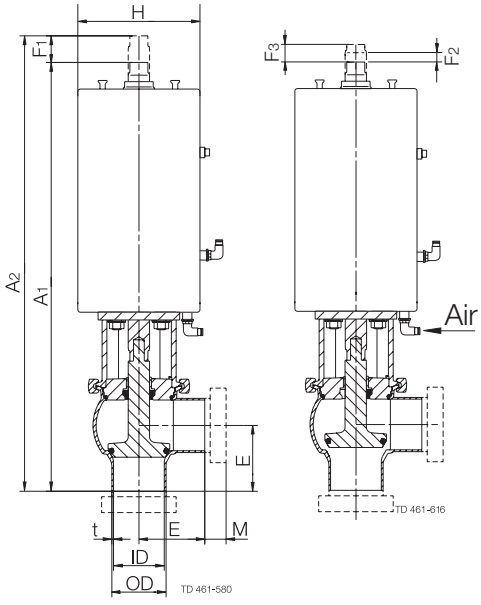
P = Product pressure

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Dimensions (mm)

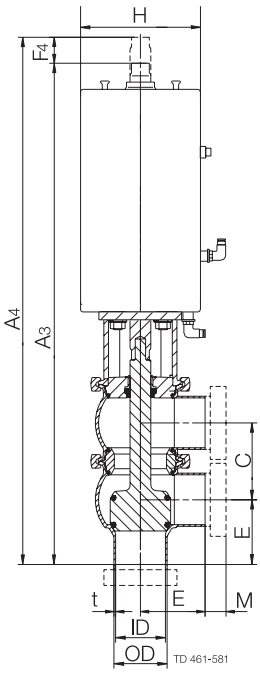
Nominal size	Inch tubes DN/OD					DIN tubes DN					High Pressure: Inch tubes DN/OD		High Pressure: DIN tubes DN	
	38	**51**	**63.5**	**76.1**	**101.6**	**40**	**50**	**65**	**80**	**100**	**51**	**63.5**	**50**	**65**
A_1	382	396	423	459	505	384	398	422	463	506	427	453	428	452
A_2	402	421	448	489	535	404	423	447	493	536	452	478	453	477
A_3	443	470	509	558	628	448	473,5	514	570	632	501	539	504	544
A_4	460	492	531	585	655	465	496	536	597	659	523	561	526	566
C	60,8	73,8	86,3	98,9	123,6	64	76	92	107	126	73,8	86,3	76	92
OD	38	51	63,5	76,1	101,6	41	53	70	85	104	51	63,5	53	70
ID	34,8	47,8	60,3	72,9	97,6	38	50	66	81	100	47,8	60,3	50	66
t	1,6	1,6	1,6	1,6	2	1,5	1,5	2	2	2	1,6	1,6	1,5	2
E	49,5	62	82	87	120	49,5	62	78	87	120	62	82	62	78
F_1	20	25	25	30	30	20	25	25	30	30	25	25	25	25
F_2 Min. Two step stroke	3	3	3	2,5	2,5	3	3	3	2,5	2,5	6	6	6	6
F_3 Max. Two step stroke	6	11	11	14	14	6	11	11	14	14	9	9	9	9
F_4	17	22	22	27	27	17	22	22	27	27	22	22	22	22
F_5 Two step stroke	6,5	11	11	14	14	6,5	11	11	14	14	9	9	9	9
H	115	115	115	154	154	115	115	115	154	154	154	154	154	154
M (ISO clamp)	21	21	21	21	21	-	-	-	-	-	21	21	-	-
M (DIN clamp)	-	-	-	-	-	21	21	28	28	28	-	-	21	28
M (DIN male)	-	-	-	-	-	22	23	25	25	30	-	-	23	25
M (SMS male)	20	20	24	24	35	-	-	-	-	-	20	24	-	-
Weight (kg)														
Stop valve	7	7.3	8.3	14.4	16.7	7	7.3	8.3	14.9	16.7	8.6	9.6	8.6	9.6
Change-over valve	8	8.9	10.3	17	21	8.2	8.9	10.5	17.9	21	10.2	11.6	10.2	11.8

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

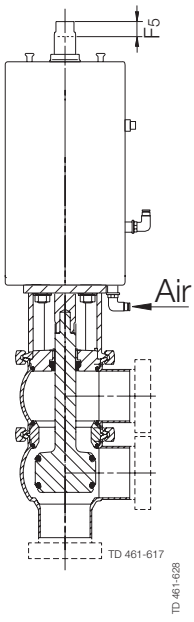


Shut-off valve closed

Shut-off valve with
Two step stroke activated

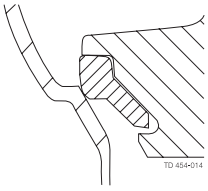


Change-over valve closed



Change-over valve with
Two step stroke activated

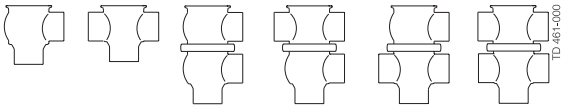
Optional PTFE plug seal (TR2)



Technical Data

Max. product pressure (depending on valve specifications) . . . . . .1000 kPa (10 bar).
Min. product pressure . . . . . .Full vacuum.
Temperature range . . . . . .-10°C to +140°C (EPDM).
Air pressure . . . . . .500 to 700 kPa (5 to 7 bar)

Valve Body Combinations



200 300 210 220 310 320

Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.

Air consumption (litres free air) for one stroke			
Size	**DN40** **DN/OD 38 mm**	**DN50-65** **DN/OD 51-63.5 mm**	**DN80-100** **DN/OD 76.1-101.6 mm**
NO and NC	0.5 x air pressure [bar]	0.5 x air pressure [bar]	1.3 x air pressure [bar]

Caution, opening/closing time:
Opening/closing time will be affected by the following:

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

Materials

Product wetted steel parts: . . . . . .1.4404 (316L) (internal Ra < 0.8 µm)
Other steel parts: 1.4301 (304)
Plug seal: . . . . . .EPDM
Other product wetted seals: . . . . . .EPDM (standard)
Other seals: . . . . . .NBR

Options

A. Male parts or clamp liners in accordance with the 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 (only ISO51, ISO63.5 and DN50, DN65).
F. External surface finish bright.

Ordering

Please state the following when ordering:

- Size.
- Connections if not welding ends.
- Valve body combination.
- NC or NO
- Options.

Note!

For further details, see instruction ESE00505.

The information contained herein is correct at the time of issue, but may be subject to change without prior notice.

Gillain & Co NV | Boomsesteenweg 85, B-2630 Aartselaar | Tel. +32 3 870 60 80, Fax +32 3 870 60 89 | advice@gillain.com | www.gillain.com