



Simply Unique

Unique 7000 Two Step

Concept

The Unique 7000 Two Step valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique 7000 platform it 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 7000 - Two Step as Change over (NC and NO) can be used for drainage of two pipes 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 7000 valve is designed to deliver years of reliability and performance you've come to expect with all Tri-Clover® products. Its flexible design consists of either one or two bodies that are clamped together. The TR2 seat ring with enhanced CIP capabilities and hygiene comes standard with all Unique 7000 series valves. For added confidence, the valve can be supplied with a controlled compression elastomer seat ring. The actuator is always maintainable. The Unique 7000 Two Step valve sizes range from 1½" to 4".

TECHNICAL DATA

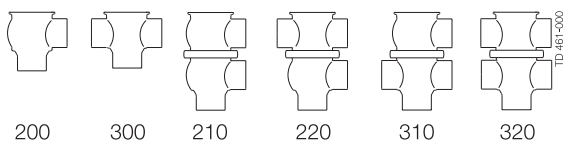
Temperature

Temperature range 14°F to +284°F (EPDM).

Pressure

Max. product pressure (depending on valve specifications) 145 psi (1000 kPa(10 bar)).
Min. product pressure Full vacuum
Air pressure 72.5 to 101.5 psi (5 to 7 bar)

Valve Body Combinations



Actuator function

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



PHYSICAL DATA

Materials

Product wetted steel parts: AISI 316L (internal Ra < 32 µinch)
Other steel parts AISI 304
Plug seal: PTFE (TR2) (standard)
Optional plug seal: EPDM, HNBR or FPM
Other product wetted seals: EPDM (standard)
Optional product wetted seals: HNBR and FPM
Other seals: NBR

Options

- A. Weld ends or connection types other than Tri-Clamp
- B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- C. Product wetted seals in HNBR or FPM.
- D. Replaceable elastomer plug seals
- E. High pressure actuator (only 2" - 2.5")
- F. External surface finish blasted

Note

For further details, see instruction ESE00505.

Other valves in the same basic design

The 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 (CAS) for full access to all models and options.

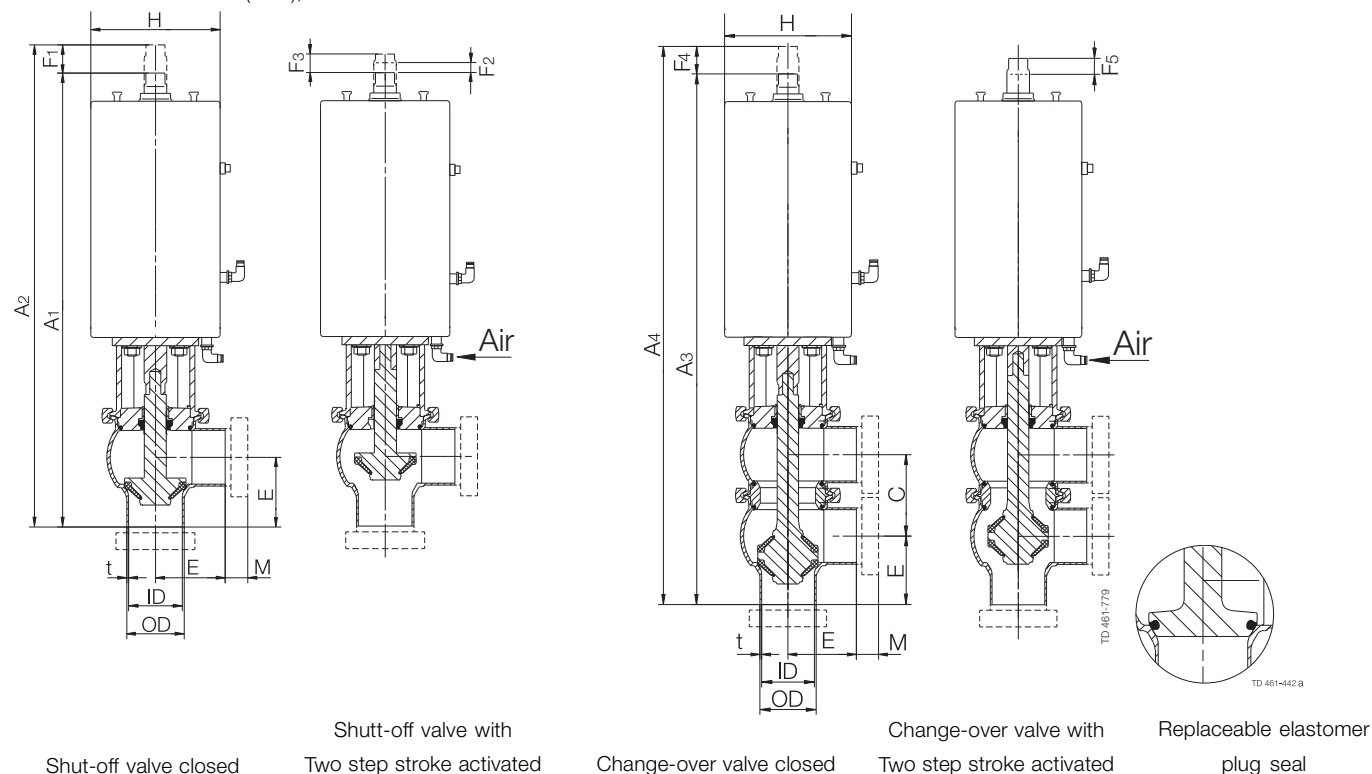
- Aseptic valve.
- Tank Outlet valve.

The actuator comes with a 5 years warranty

Dimensions

Nominal size	Inch tubes DN/OD					High pressure	
	1.5"	2"	2.5"	3"	4"	2"	2.5"
A ₁	15.06	15.57	16.60	18.04	19.83	16.76	17.79
A ₂	15.84	16.6	17.58	19.2	21.01	17.74	18.78
A ₃	17.4	18.47	20.00	21.94	24.69	19.67	21.19
A ₄	18.12	19.34	20.86	23.00	25.76	20.53	22.06
C	2.39	2.91	3.4	3.89	4.87	2.91	3.4
OD	1.5	2.01	2.5	3	4	2.01	2.5
ID	1.37	1.88	2.37	2.87	3.84	1.88	2.37
t	0.06	0.06	0.06	0.06	0.08	0.06	0.06
E	1.95	2.40	3.19	3.39	4.69	2.40	3.19
F ₁	0.79	0.98	0.98	1.18	1.18	0.98	0.98
F ₂ Min. Two step stroke	0.12	0.12	0.12	0.10	0.10	0.24	0.24
F ₃ Max. Two step stroke	0.24	0.43	0.43	0.55	0.55	0.35	0.35
F ₄	0.67	0.87	0.87	1.06	1.06	0.87	0.87
F ₅ Two step stroke	0.26	0.43	0.43	0.55	0.55	0.35	0.35
H	4.53	4.53	4.53	6.06	6.06	6.06	6.06
M (clamp)	0.5	0.5	0.5	0.5	0.63	0.5	0.5
Weight (lb)							
Stop valve	15.43	16.09	18.30	31.75	36.82	18.96	21.16
Change-over valve	17.64	19.62	22.71	37.48	46.30	22.49	25.57

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



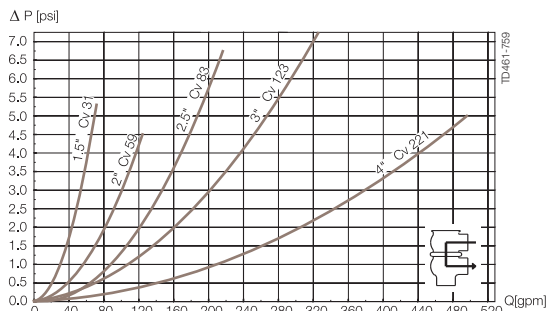
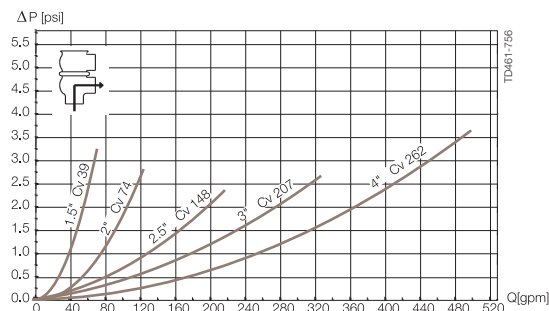
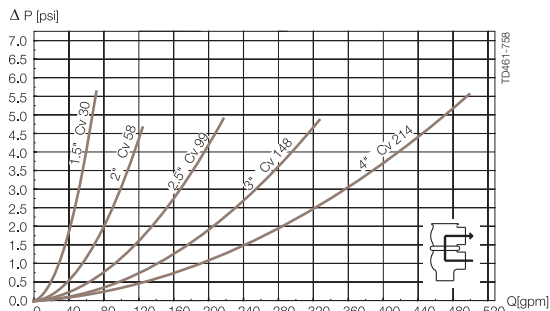
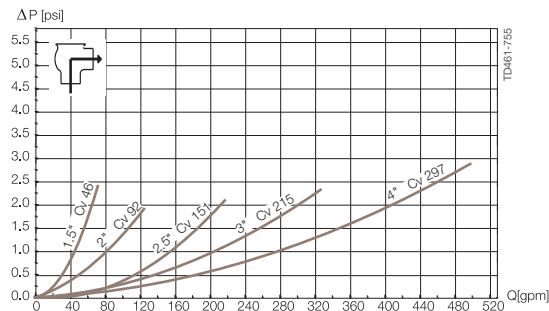
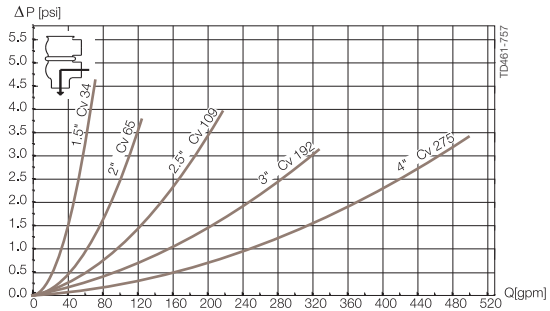
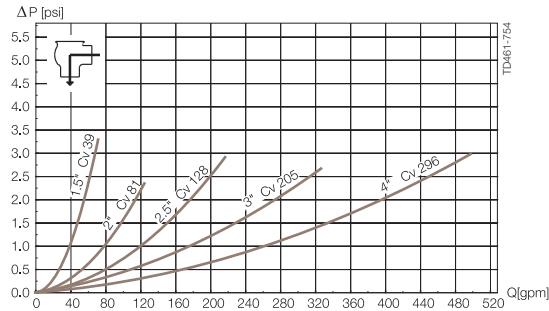
Air consumption (ln ³ free air) for one stroke			
Size	1.5"	2 - 2.5"	3" - 4"
NO and NC	2.17 x air pressure [psi]	2.17 x air pressure [psi]	5.51 x air pressure [psi]

Please note!

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.

Pressure drop/capacity diagrams



Note!

For the diagrams the following applies:

Medium: Water (68°F)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in CAS.

Pressure drop can also be calculated with the following formula:

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

Where

Q = Flow (gallon/minute).

Cv = gallon/minute at a pressure drop of 1 psi (see table above).

Δ p = Pressure drop in psi over the valve.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if the flow is 160 gallon/minute.

2.5" shut-off valve, where Cv = 128 (See table above).

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

$$160 = 128 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{160}{128}\right)^2 = 1,6 \text{ psi}$$

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

Pressure data for Unique 7000 Two Step

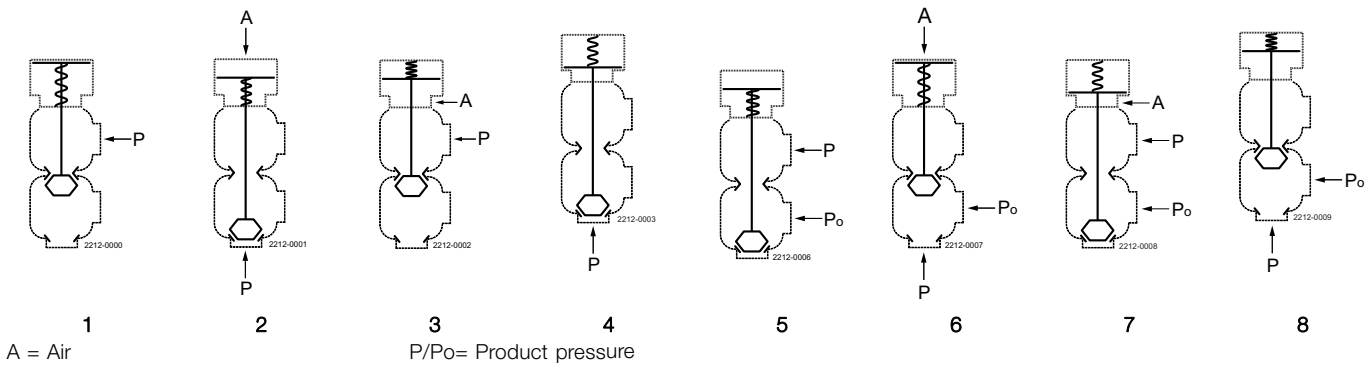


Table 1 - Shut-off and Change-over valves Max. pressure in PSI without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size				
			DN/OD 1½"	DN/OD 2"	DN/OD 2½"	DN/OD 3"	DN/OD 4"
1		NO	145	122	65	99	64
2	87	NO	145	139	81	104	70
3	87	NC	145	145	88	112	73
4		NC	145	104	61	93	61

Table 2 - Shut-off and Change-over valves Max. pressure in PSI against which the valve can open

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size				
			DN 40 DN/OD 1½"	DN50 DN/OD 2"	DN 65 DN/OD 2½"	DN 80 DN/OD 3"	DN 100 DN/OD 4"
5		NO	145	145	68	141	91
6	87	NO	145	145	120	145	96
7	87	NC	145	145	131	145	100
8		NC	145	145	99	132	88

Table 3 - Shut-off and Change-over valves with high pressure actuator option (option) Max. pressure in PSI without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size	
			DN/OD 2"	DN/OD 2½"
1		NO	145	145
2	87	NO	145	145
3	87	NC	145	145
4		NC	145	145

Alfa Laval reserves the right to change specifications without prior notification. ALFA LAVAL is a trademark registered and owned by Alfa Laval Corporate AB.

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