



The Latest Seat Valve Design

Unique 7000 Series - Aseptic

Concept

The Unique 7000 Series is an innovative new generation of Tri-Clover® single seat valves that are designed to meet the highest process demands of hygiene and safety. They're built on a well-proven, platform from an installed base of more than one million valves.

Working principle

Operated by means of compressed air, it can be supplied with or without spring return. Sterile stem sealing towards the atmosphere is ensured by a special designed PTFE/EPDM diaphragm and since the product-wetted part of the stem (below the diaphragm seal) never travels outside the product zone, there is no need for a steam barrier.

Standard Design

This aseptic Tri-Clover Unique 7000 valve features the same one-piece body with no weld design benefits shared by the entire series. It consists of actuator, valve bonnet, stem with diaphragm unit and valve bodies. While the bonnet and stem configurations can vary, the body(s), actuator, clamps, stem guide bushing are all standard and common interchangeable components. The change-over version is a two-body design. The valve is assembled by means of clamps and a stem clip system for easy maintenance.



TECHNICAL DATA

Temperature

Temperature range: 14 °F to 284 °F (EPDM)

Pressure

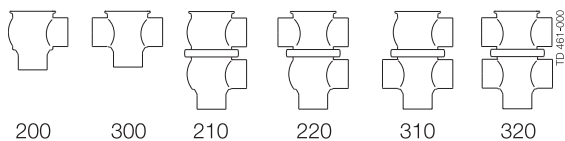
Pressure range: 0-116 psi (0-8 bar)

Max. sterilization temperature (steam - short time): 302 °F/43 psi (3.8 bar)

Air pressure: 72.5/101.5 psi (500-700 kPa)
(5-7 bar)

Note! Vacuum is not recommended in aseptic applications.

Valve body combinations



Actuator function

- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).
- Pneumatic upward and downward movement (A/A).

PHYSICAL DATA

Materials

Product wetted steel parts: AISI 316L

Other steel parts: AISI 304

Internal surface finish: Ra 32 µ inch

Product wetted seal EPDM

Optional product wetted seals: HNBR and FPM

Other seals: NBR

Diaphragm PTFE (Product wetted side) / EPDM

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. Low pressure actuator.
- E. High product pressure actuator.
- F. Maintainable actuator.
- G. 2 step / 3 position actuator (not for DN/OD 25 / DN 25).
- H. External surface bright.
- I. Tangential valve body.

Note!

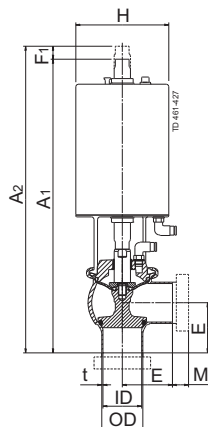
For further details, see instruction ESE00529.

Other valves in the same basic design

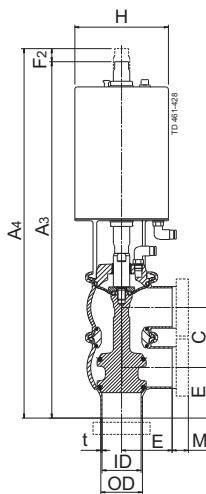
- Shut-off valve
- Change-over valve
- Reverse acting valve
- Long stroke version
- Manual operated valve
- Small Single Seat Valve (SSSV)

Dimensions (inch)

Nominal size	DN/OD					
	1"	1.5"	2"	2.5"	3"	4"
A ₁	12.14	12.38	14.46	15.50	17.01	18.99
A ₂	12.57	12.81	15.06	16.09	17.8	19.74
A ₃	14.02	14.8	17.37	18.90	20.91	23.86
A ₄	14.34	15.13	17.88	19.41	21.54	24.49
C	1.88	2.39	2.91	3.4	3.89	4.87
OD	0.98	1.5	2.01	2.5	3.0	4
ID	0.86	1.37	1.88	2.37	2.87	3.84
t	0.06	0.06	0.06	0.06	0.06	0.08
E ₁	1.97	1.95	2.40	3.19	3.39	4.69
E ₂	1.97	1.95	2.40	3.19	3.39	4.69
F ₁	0.43	0.43	0.59	0.59	0.75	0.75
F ₂	0.31	0.35	0.51	0.51	0.63	0.63
H	3.35	3.35	4.52	4.52	6.07	6.07
M/ Clamp	0.50	0.50	0.50	0.50	0.50	0.63
Weight (lb)						
Shut-off valve	6.8	7.2	12.3	14.6	25.3	30.8
Change-over valve	8.6	9.3	15.8	19.1	31.2	40.5



Shut-off valve



Change-over valve

Please note!

Opening/closing time will be affected by the following:

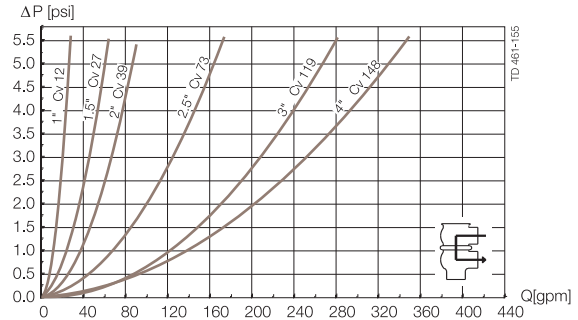
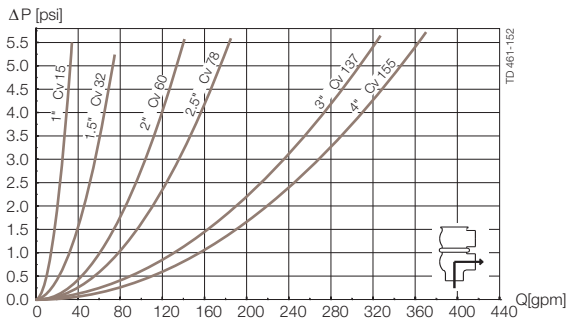
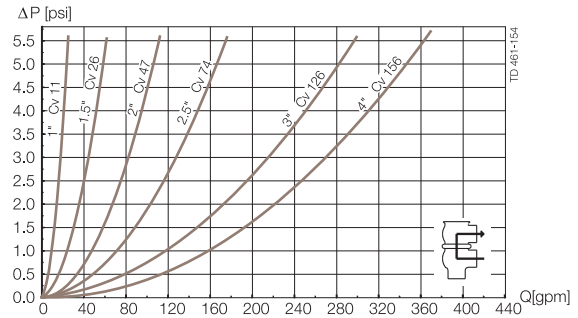
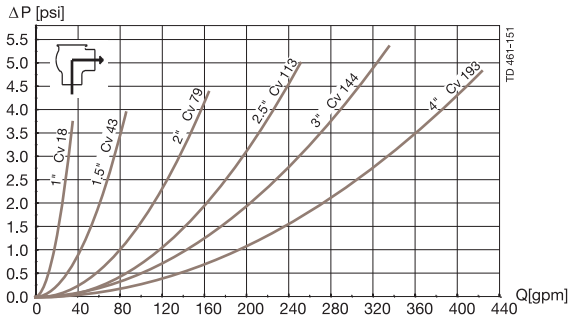
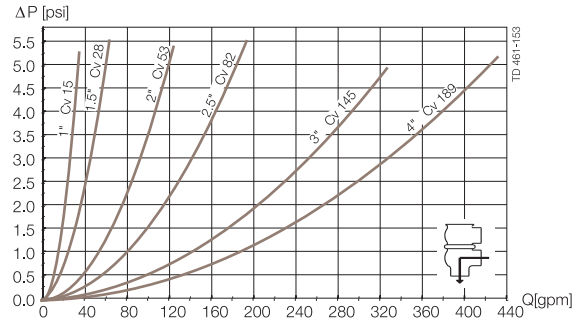
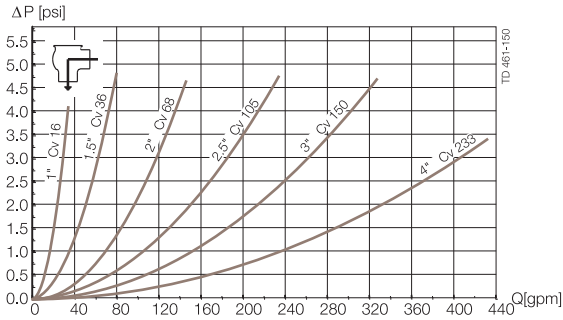
- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

Air Connections Compressed air:

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

Air Consumption (In ³ free air) for one stroke			
Size	1"-1½"	2"-2½"	3"-4"
NO and NC	0.96 x air pressure [psi]	2.17 x air pressure [psi]	5.51 x air pressure [psi]
A/A	1.94 x air pressure [psi]	4.82 x air pressure [psi]	11.15 x air pressure [psi]

Pressure drop/capacity diagrams



Note

For the diagrams the following applies:

Medium: Water (68° F/20° C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in CAS.

Pressure drop can also be calculated with the following formula:

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

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.

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

Δ p = Pressure drop in psi over the valve.

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

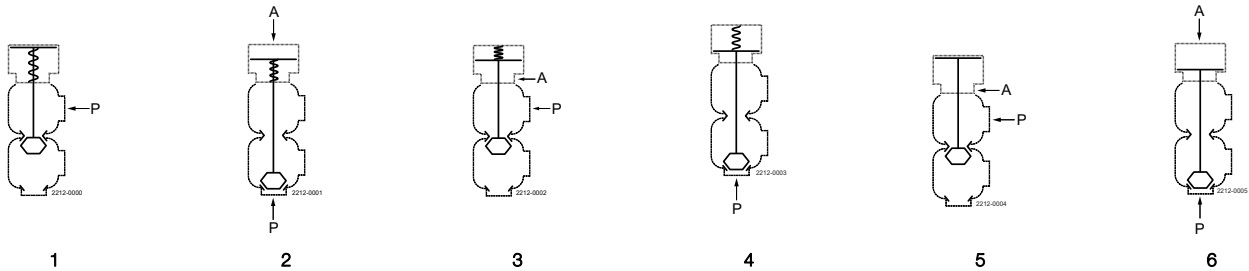
$$Q = K_v \times \sqrt{\Delta p}$$

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

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

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

Pressure data for Unique 7000 Series Aseptic



A = Air

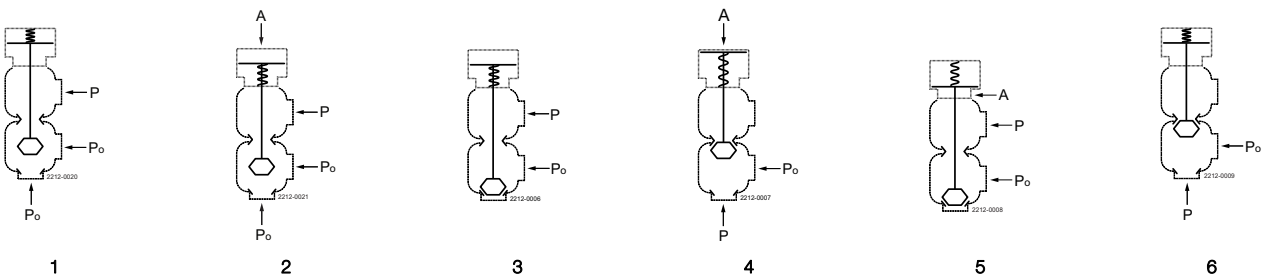
P/Po= Product pressure

Table 1 - Shut fully closed. Max. static pressure without leakage

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size					
			DN 25 - DN/OD 1"	DN 40 - DN/OD 1½"	DN 50 - DN/OD 2"	DN 65 - DN/OD 2½"	DN 80 - DN/OD 3"	DN 100 - DN/OD 4"
1		NO	116	87	116	64	109	78
2	87	NO	116	110	116	81	104	70
3	87	NC	116	116	116	6.8	109	73
4		NC	116	91	104	61	93	61
5	87	A/A	116	116	116	116	116	116
6	87	A/A	116	116	116	116	116	116

Table 2- Shut fully closed. Options with high pressure actuator - Max. static pressure without leakage

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size					
			DN 25 - DN/OD 1"	DN 40 - DN/OD 1½"	DN 50 - DN/OD 2"	DN 65 - DN/OD 2½"	DN 80 - DN/OD 3"	DN 100 - DN/OD 4"
1		NO	116	116	116	116	-	-
2	87	NO	116	116	116	116	-	-
3	87	NC	116	116	116	116	116	59
4		NC	116	116	116	116	116	102



A = Air

P/Po= Product pressure

Table 3- Valve is closing. Approximately max. pressure in bar at which the valve can close by means of the spring or air pressure

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size					
			DN 25 - DN/OD 1"	DN 40 - DN/OD 1½"	DN 50 - DN/OD 2"	DN 65 - DN/OD 2½"	DN 80 - DN/OD 3"	DN 100 - DN/OD 4"
1		NC	94	94	116	116	106	110
2	87	NO	116	116	116	116	115	116

Table 4- Seat fully closed - Standard valve. Approximately pressure in bar, at which the valve plug can change positions by the spring or air pressure

Actuator / Valve body combination and direction of pressure	Air pressure (PSI)	Plug position	Valve size					
			DN 25 - DN/OD 1"	DN 40 - DN/OD 1½"	DN 50 - DN/OD 2"	DN 65 - DN/OD 2½"	DN 80 - DN/OD 3"	DN 100 - DN/OD 4"
3		NO	116	116	116	116	116	116
4	87	NO	116	116	116	116	116	116
5	87	NC	116	116	116	116	116	116
6		NC	116	116	116	83	116	78

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