



One for All - Unique Mixproof

Unique Mixproof Tank Outlet Valve (Unique-TO)

Concept

The exceptional concept of this mixproof valve is characterized by excellent unmatched flexibility - yet still being very simple. The modular design gives you the perfect valve for your exact needs in all mixproof tank outlet operations allowing two different products in pipeline and tank.

Working Principle

Unique is remote-controlled by means of compressed air. The valve is a normally closed (NC) valve. The valve has two independent plug seals, forming a leakage chamber. In the leakage chamber there is only atmospheric pressure during every working condition. In case of rare accidental leaking of product, this will flow into the leakage chamber and be discharged through the leakage outlet. When the valve is open, the leakage chamber is closed. The product can then flow from tank to pipeline. The valve is water hammer protected in the pipeline due to the balanced plug that prevent the plug from closing too fast, when closing in the direction of product flow. The valve can be cleaned to any level according to the needs in the specific process. There is virtually no spillage of product when operating the valve.



TECHNICAL DATA

Max. product pressure in pipeline: 10 bar / 145 PSI (1000 kPa)
 Min. product pressure: .Full vacuum.
 Temperature range: 23°F to +257°F / -5°C to +125°C
 (Depending on rubber quality)
 Air pressure: Max. 8 bar / 116 PSI (800 kPa).

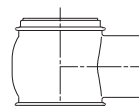
PHYSICAL DATA

Product wetted steel parts: 1.4404 (316L).
 Other steel parts: 1.4301 (304).
 Product wetted parts: EPDM, HNBR, NBR or FPM.
 Other seals: CIP seals: EPDM.
 Actuator seals: NBR.

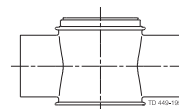
Surface finish - choose from the following:
 Internal/external Matt (blasted) Ra<1.6
 Internal Bright (polished) Ra<0.8
 Internal/external Bright (internal polished) . . Ra<0.8
Note! The Ra values are only for the internal surface.

Product wetted seals: EPDM.
 Other seals:
 CIP seals: EPDM.
 Actuator seals: NBR.
 Guide strips: PTFE


Valve Body Combinations



Type 20



Type 30

 Authorized to carry the 3A symbol

Standard design

The valve consists of one valve body, which is connected to either a tank flange or a stub flange with a clamp.
The body can be turned in any position if the clamp is slightly loosened.
The tank flange is welded directly into the tank. (Important! Observe welding guideline in instruction manual).
The tank flange is supplied with TÜV approval AD 2000 and inspection certificate 3.1 according to EN10204.
The design allows the Unique-TO to be installed in a horizontal position.

SpiralClean

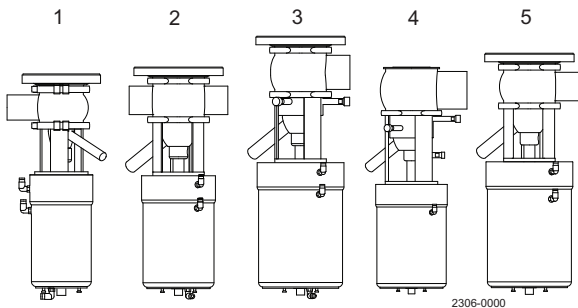
The Alfa Laval SpiralClean system to clean the balanced plug and leakage chamber.
The system cleans more efficiently, uses less cleaning fluid by ensuring that a directional flow of CIP fluid reaches all the surfaces in much less time than with conventional systems.

Selection guide

The drawings below gives an overview of all options when choosing the valve to fit your process, thus demonstrating the actual flexibility of the Unique Mixproof tank outlet valve.

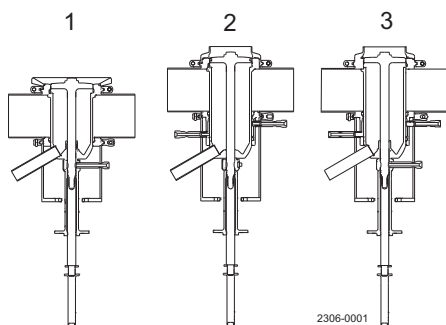
The Unique-TO concept offers balanced plug in pipe line, seat lift, CIP for the plugs and leakage chambers and any combination in between.

Unique-TO size flexibility



1. DN50 with tank flange, group 3 actuator including seat lift and seat push
2. ISO63.5 (2½") with tank flange, group 4 basic actuator including seat lift and seat push
3. ISO76.1 (3") with spiral on upper balanced plug and tank flange, group 5 basic actuator including seat lift and seat push
4. DN150 with spiralclean on leakage chamber upper balanced plug and group 4 basic actuator
5. ISO 63.5 (2½") with tank flange, group 4 basic actuator including seat lift

Unique-TO hygienic flexibility (spiral clean options)



1. External CIP of leakage chamber
2. External CIP of upper balanced plug
3. External CIP cleaning of leakage chamber and upper balanced plug

Standard configurations

To assist you in the selection we have included some standard configurations:

- Unique-TO
- Unique-TO with external cleaning.

You can either choose these directly or add additional features ensuring that the valve suits your specific needs.

Unique-TO meets the typical demands of a process valve in the food and drink industry.

- Actuator with seat lift integrated.
- Standard balanced plug in pipeline.

Unique-TO with external cleaning meets the highest demands for hygienic processing.

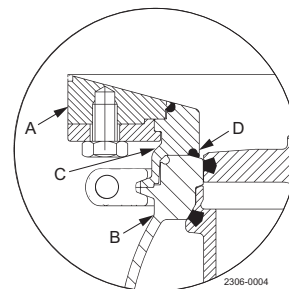
- Actuator with seat lift integrated.
- Standard balanced plug in pipeline.
- SpiralClean of leakage chamber and balanced plug

Options

- Male parts or clamp liners in accordance with required standard.
- Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- Side indication for detection of upper seat lift
- Product wetted seals in HNBR, NBR or FPM
- Various internal/external surface finish
- 3A (sanitary standard) on request
- Blind flange
- Conversion flange that enables replacement of an SMP-TO valve though reusing the existing SMP-TO tank flange - see fig. 1.
- Tank connection supplied separately

Fig. 1

Converting from SMP-TO valve to Unique-TO valve in tank flange



- A. SMP-TO tank flange
- B. Unique Mixproof TO valve
- C. Conversion flange
- D. O-ring for conversion flange

When Unique-TO is mounted on a SMP-TO flange via the Alfa Laval conversion flange add 28 mm to valve height dimensions (A1-A4)

Size		Max. size of particle (in)	Max. tank pressure (psi)	Actuator size 3-Basic (ø4.7"x9")	Actuator size 4-Basic (ø6.2"x10")	Actuator size 5-Basic (ø7.3"x11")	Opening pressure in pipe line at 87 PSI air pressure (psi)
inch	DIN						
51 - 2"	DN50	ø0.35	58	Standard			145
63.5 - 2½"	DN65	ø0.60	65		Standard		145
63.5 - 2½"	DN65	ø1.22	87			Long stroke	145
76.1 - 3"	DN80	ø0.60	65		Standard		145
76.1 - 3"	DN80	ø1.22	87			Long stroke	145
101.6 - 4"	DN100	ø1.22	65			Standard	145
101.6 - 4"	DN100	ø0.60	50		Option		145
	DN125	ø1.29	50			Standard	145
	DN125	ø0.60	36		Option		145
	DN150	ø1.29	50			Standard	145
	DN150	ø0.60	36		Option		145

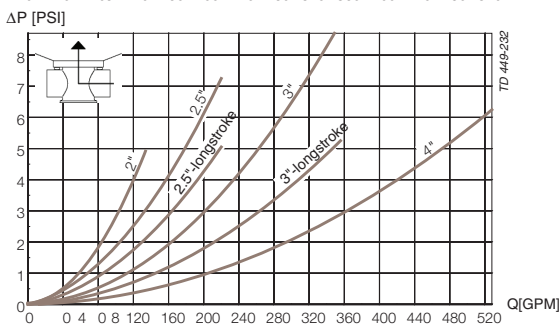
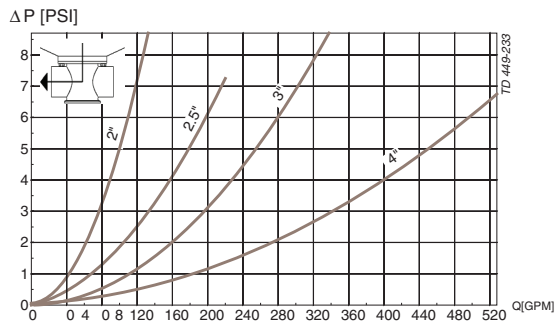
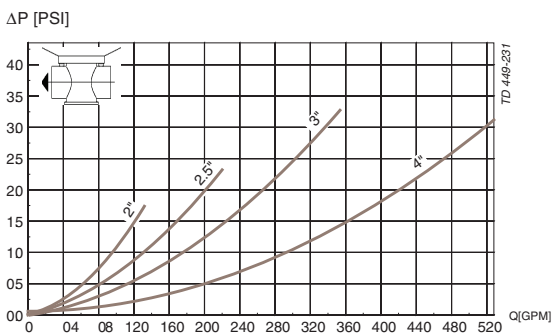
Notes:

Max. pressure in tank means that a higher pressure in tank will open the valve.

It is possible to open with 145 PSI (10 bar) (1000 kPa) in pipe line.

When closing the valve the pressure can not be higher than "Max. Tank pressure".

Pressure drop/capacity diagrams



Note!

For the diagrams the following applies:

Medium: Water 68° F (20°C)

Measurement: In accordance with VDI 2173

Air and CIP Consumption

Size ISO-DIN	Inch				DN		Longstroke	
	2"	2½"	3"	4"	125	150	2½"	3"
Air consumption for Balanced Seat-lift	0.20	0.40	0.40	0.62	0.62	0.62	0.40	0.40
Air consumption for Tank Seat-lift	1.10	0.13	0.13	0.21	0.21	0.21	0.13	0.13
Air consumption for Main Movement	0.86	1.62	1.63	2.79	2.79	2.79	1.63	1.63
Cv-value for Balanced CIP Seat-lift [gpm]	1.744	2.907	2.907	2.209	4.302	4.302	2.907	2.907
Cv-value for Tank Seat-lift [gpm]	1.047	2.209	2.209	1.628	3.605	3.605	2.209	2.209
Kv-value for SpiralClean Spindle CIP [gpm]	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
Cv-value for SpiralClean External CIP in leakage chamber [gpm]	0.291	0.337	0.337	0.337	0.337	0.337	0.337	0.337

Note:

Recommended min. pressure for SpiralClean: 29 PSI.

Formula to estimate CIP flow during seat lift:

(for liquids with comparable viscosity and density to water):

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

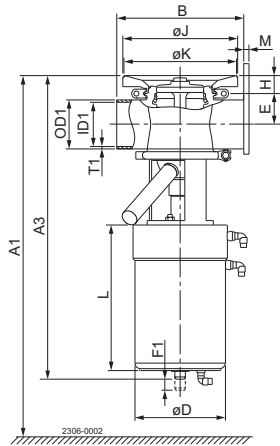
Q = CIP - flow gpm).

Cv = Cv value from the above table.

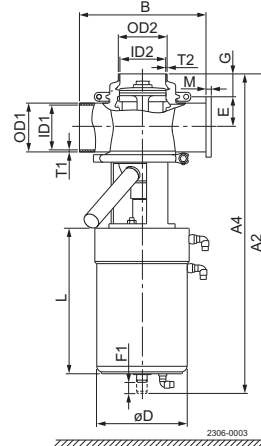
Δp = CIP pressure (psi).

Cv = US gallons/min.

Unique-TO connected to tank flange



Unique-TO connected to stub flange



A1 + A2 = Min. clearance to allow that actuator and internal valve parts can be lifted out of the valve body. If ThinkTop is mounted, add 7.09 inch.

Group	3	4	4	5	6	6	4	4
Size	DN/OD						DN - longstroke	
ISO-DIN	2"	2½"	3"	4"	125	150	2½"	3"
A1 min. dimension. Unique-TO	22.795	25.433	25.945	29.646	31.693	35.039	27.559	28.071
A1 min. dimension. Unique-TO with external cleaning	24.252	27.008	27.520	32.008	34.055	xxx	29.134	29.646
A2 min. dimension Unique-TO	23.150	25.787	26.299	30.000	32.047	35.394	27.913	28.425
A2 min. dimension Unique-TO with external cleaning	24.606	27.362	27.874	32.362	34.409	xxx	29.488	30.000
A3 Unique-TO	18.425	20.709	20.709	23.386	24.409	26.772	22.638	22.638
A3 Unique-TO with external cleaning	19.882	22.283	22.283	25.748	26.772	xxx	24.213	24.213
A4 Unique-TO	18.780	21.063	21.063	23.740	24.764	27.126	22.992	22.992
A4 Unique-TO with external cleaning	20.236	22.638	22.638	26.102	27.126	xxx	24.567	24.567
B	8.661	8.661	8.661	11.811	11.811	11.811	8.661	8.661
OD1	2.008	2.500	2.996	4.000	5.079	6.063	2.500	2.996
ID1	1.882	2.374	2.870	3.843	4.921	5.906	2.374	2.870
t1	0.063	0.063	0.063	0.079	0.079	0.079	0.063	0.063
E	1.453	1.701	1.949	2.433	2.972	3.465	1.701	1.949
F1	1.240	1.496	1.496	2.323	2.323	2.323	2.323	2.323
F2 (Tank plug)	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
G	1.575	1.575	1.575	1.575	1.575	1.575	1.575	1.575
H	1.220	1.220	1.220	1.220	1.220	1.220	1.220	1.220
øD	4.724	6.181	6.181	7.323	7.323	7.323	7.323	7.323
L	9.055	9.921	9.921	11.063	11.063	11.063	11.063	11.063
OD2	2.008	2.500	2.996	4.000	5.079	5.079	2.500	2.996
ID2	1.882	2.374	2.870	3.843	4.921	4.921	2.374	2.870
t2	0.063	0.063	0.063	0.079	0.079	0.079	0.063	0.063
øJ	6.260	7.835	7.835	7.835	7.835	7.835	7.835	7.835
øK	6.102	7.677	7.677	7.677	7.677	7.677	7.677	7.677
M/ISO clamp	0.827	0.827	0.827	0.827			0.827	0.827
M/DIN clamp					1.102	1.102		
M/ISO male	0.827	0.827	0.827	0.827			0.827	0.827
M/DIN male					1.811	1.969		
M/SMS male	0.787	0.945	0.945	1.378			0.945	0.945
M/BS male	0.866	0.866	0.866	1.063			0.866	0.866
Weight (kg)* Unique TO	27.50	49.50	49.50	72.60	79.20	83.60	61.60	61.60
Weight (kg)* Unique TO with external cleaning	28.60	51.70	51.70	74.80	81.40	xxx	63.80	63.80

* = without tank flange

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