



Unique-TO - One for All

Unique-TO Mixproof Tank Outlet Valve

Concept

Unmatched flexibility is the concept of this simple mixproof valve. Its modular design provides the perfect solution for all mixproof tank outlet applications involving non-compatible fluids within the pipeline and tank.

The body / outlet can be easily positioned by the loosening of a single clamp. The body is connected to a flange that is welded directly to the tank. (Important! Please consult the instruction manual for proper welding guidelines).

The tank flange maintains TÜV approval AD 2000 and comes with an EN10204 (3.1) inspection certificate 3.1. The Unique-TO is available in 2" – 4" outlet (ISO tube) sizes.

The design of the valve allows it to be installed in a horizontal configuration.

Working Principle

The Unique-TO is remotely controlled by means of compressed air. The valve is supplied in a normally-closed (NC) configuration.

The valve maintains two (2) independent plug seals, forming a leakage chamber which is open to the atmosphere at all times. In the unlikely event of a leak, product will enter into the leakage chamber and be discharged through a leakage chamber outlet. As the valve opens, the leakage chamber closes allowing product to flow from the tank to the pipeline.

The valve is protected from any pipeline water hammer thanks to a balanced plug design that limits the speed of the seating of valve plug when closing with the direction of the product flow.

The valve has multiple cleaning options, configurable to the needs of the specific application. There is practically no spillage of product when operating the valve.

SpiralClean

The Unique-TO offers the Alfa Laval SpiralClean system to clean the balanced plug and leakage chamber, helping to meet the high hygienic standards of the sanitary industry. All external CIP systems for Unique include the SpiralClean design as standard. Another benefit of the SpiralClean system is that it allows the Unique-TO to operate under near-aseptic conditions by applying steam to the CIP pipes, thereby forming a steam barrier to the atmosphere.

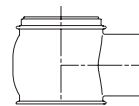
Options

The Unique-TO is designed with user flexibility in mind. The user can choose additional options as warranted by the application (i.e. stricter hygienic requirements, challenging downstream flow characteristics). The modular design of Unique-TO uses common components from the Unique valve family, reducing the requirement for spare parts inventory while providing an extremely serviceable valve. The valve design consists of a single valve body, connected to either a tank flange or a stub flange via a clamp.

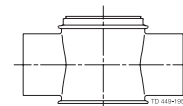


Unique-TO Tank Outlet Valve.

Valve Body Combinations



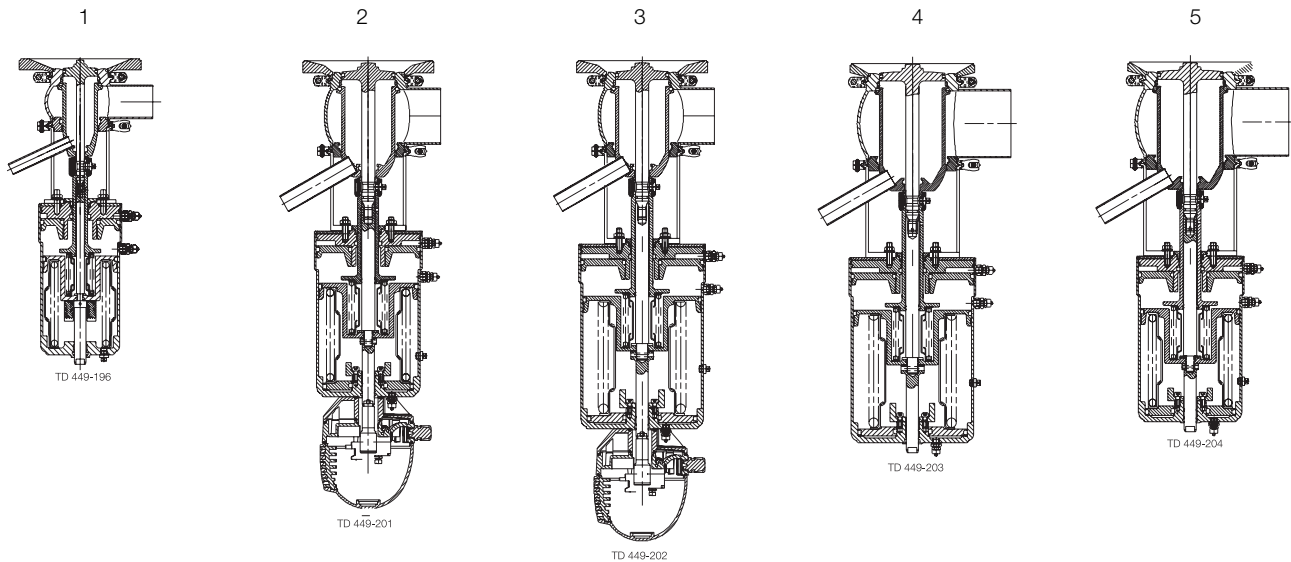
Type 20



Type 30

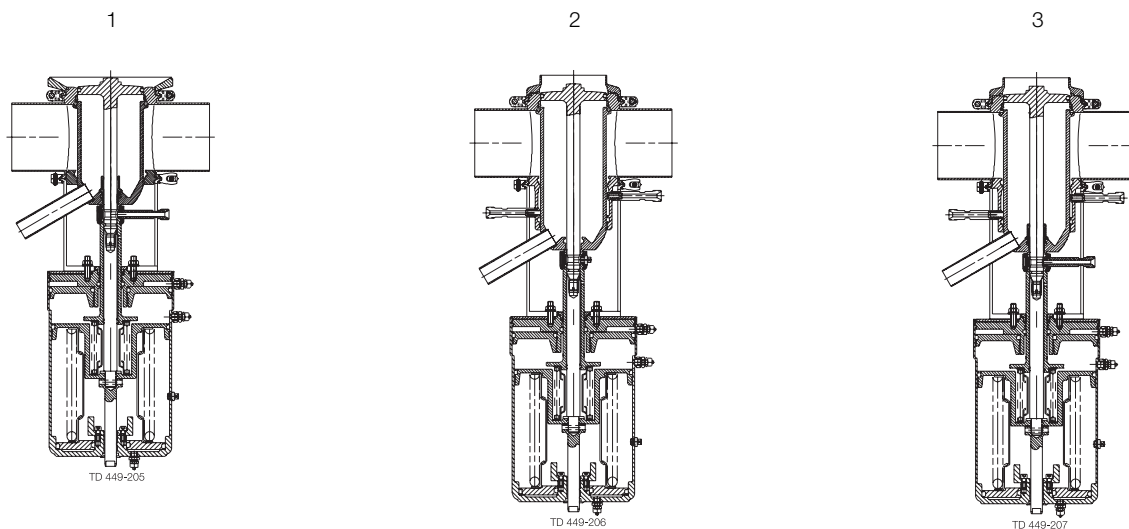
The drawings below give an overview of all options when choosing the valve to fit your process, thus demonstrating the actual flexibility of the Unique Mixproof tank outlet valve.

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. 2" - ISO51 and DN50 with size 3-Basic actuator
2. 2½"-3" - ISO63.5-ISO76.1 and DN65-DN80 with size 4-Basic actuator
3. 2½"-3" - ISO63.5-ISO76.1 and DN65-DN80 with size 5-Basic actuator
4. 4" - ISO101.6, DN100, DN125 and DN150 with size 4-Basic actuator
5. 4" - ISO101.6, DN100, DN125 and DN150 with size 5-Basic actuator (eg. tank filling valve)



Unique-TO hygienic flexibility

1. CIP in leakage chamber by use of spiral clean
2. With external CIP cleaning in sealing element by use of spiral clean
3. With external CIP cleaning in sealing element and CIP in leakage chamber by use of spiral clean

Selection guide

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

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

You can choose Unique-TO in ordering leaflet.

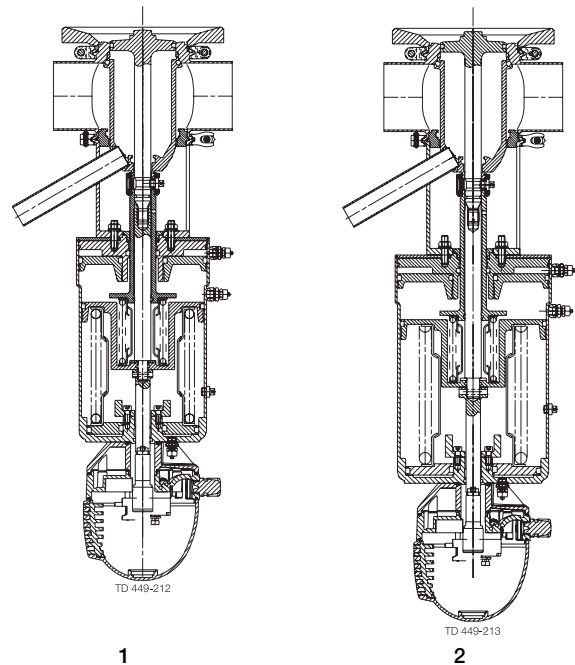
Unique-TO with external cleaning can only be chosen in CAS.

Unique-TO meets the typical demands of a process valve in the sanitary industry. It is also suitable for products with solids. Cleaning of the plugs and seats are performed by means of seat lift during normal cleaning procedure. This valve also includes a balanced plug in the pipeline that protect against pressure shock in the pipeline when closing in the direction of product flow. Its features are:

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

Unique-TO is the choice for standard solutions.

1. Unique-TO
2. Unique-TO long stroke (size 2½" - 3" (ISO63.5-ISO76.1) and DN65-DN80)

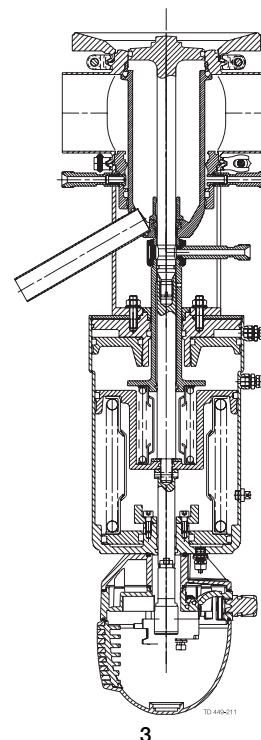


Unique-TO with external cleaning meets the highest demands for hygienic processing. During the cleaning process, the plugs can be lifted independently to ensure cleaning of plugs and seats together with their corresponding pipe. At the same time or separately the leakage chamber and balanced plugs can be cleaned with our SpiralClean system. It has few product wetted seals and allows no product spillage during operation. This valve is the choice for solutions requiring the highest level of hygiene and is suitable for applications with sticky products, products with high content of solids or applications where "close to aseptic conditions" are wanted. Its features include:

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

Unique-To with external cleaning is the choice for highest hygienic cleaning

3. Unique-TO with external cleaning



Technical Data

Max. product pressure in pipeline: .10 bar / 145 PSI (1000 kPa) (For higher pressure, please ask Alfa Laval)
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).

Materials

Product wetted steel parts: .Acid-resistant steel 1.4404 (316L).
Other steel parts: .Stainless steel 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.

Options

- For Control & Indication of both upper and lower seat lift as well as main movement, please refer to index in Product Catalogue.
- 3A (Sanitary Standard) labelling on request.

Ordering

For ordering, either refer to CAS configurator or see ordering leaflet that contains article numbers for the standard valves.

Size		Max. size of particle (mm)	Max. tank pressure (kPa)	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 (kPa)
inch	DIN						
51 - 2"	DN50	ø0.35	58	Standard			145
63.5 - 2 1/2"	DN65	ø0.60	65		Standard		145
63.5 - 2 1/2"	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

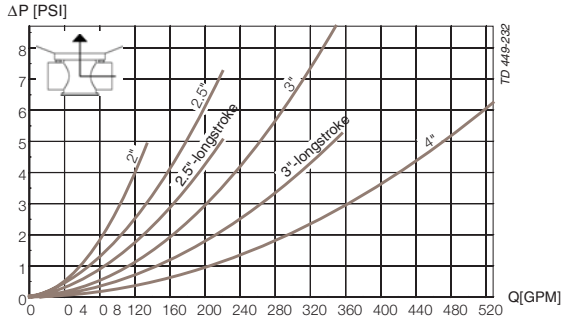
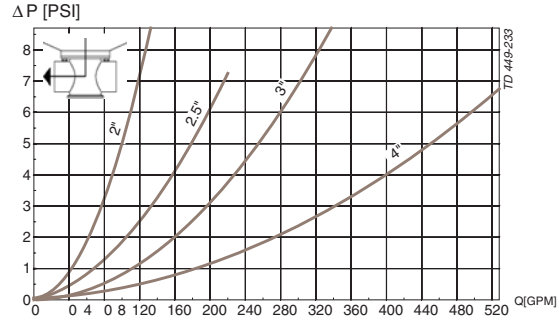
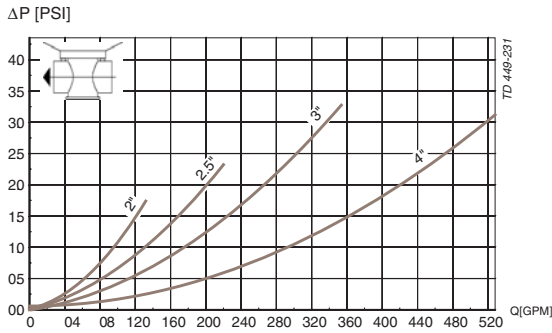
Notes:

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	Inch				DN		Longstroke	
	2"	2½"	3"	4"	125	150	2½"	3"
ISO-DIN								
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	1.744	2.907	2.907	2.209	4.302	4.302	2.907	2.907
[gpm]								
Cv-value for Tank Seat-lift	1.047	2.209	2.209	1.628	3.605	3.605	2.209	2.209
[gpm]								
Kv-value for SpiralClean Spindle CIP	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
[gpm]								
Cv-value for SpiralClean External CIP in leakage chamber	0.291	0.337	0.337	0.337	0.337	0.337	0.337	0.337
[gpm]								

Note:

Recommended min. pressure for SpiralClean: 2 bar.

Formula to estimate CIP flow during seat lift:

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

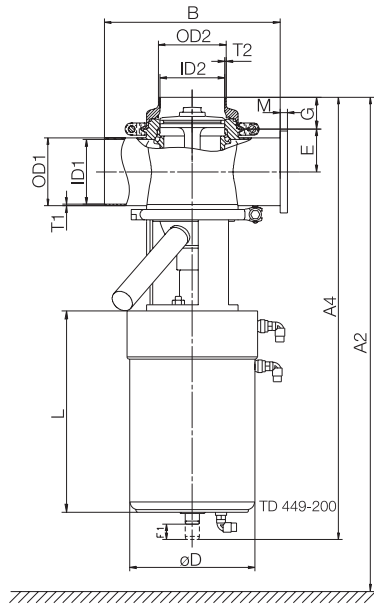
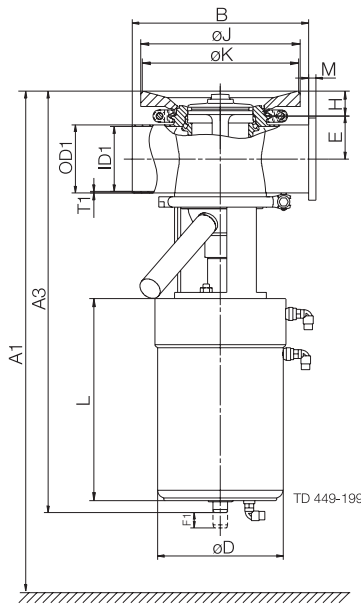
$$Q = K_v \cdot \sqrt{\Delta p}$$

Q = CIP - flow gpm).

Cv = Cv value from the above table.

Δ p = CIP pressure (psi).

Cv = US gallons/min.



A1 + A2 = Min. installation measure to allow that actuator and internal valve parts can be lifted out of the valve body
(if ThinkTop is mounted, add 180 mm).

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

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

