Gillain & Co
HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES

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.
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.

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.

SpiralClean

The Unique mixproof concept offers the Alfa Laval SpiralClean system to clean the balanced plug and leakage chamber, helping to meet the high hygienic standards of the sanitary flow industry.
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.
All external CIP systems for Unique mixproof includes the SpiralClean design as standard. Another benefit from the SpiralClean system is that it allows the Unique-TO to run under aseptic-like conditions. If you apply steam to the CIP pipes, this will form a steam barrier to the atmosphere.



Unique Mixproof Tank Outlet Valves with a tank flange or with spiral cleaning of balanced plug and a stub flange

Options

The Unique-TO is designed with user flexibility in mind. The customer can choose additional options as required individually; for example higher hygiene demands or higher resistance against physically tough conditions.
The modular design of Unique-TO uses parts from the Unique mixproof program. This gives you less spare parts on stock, yet providing minimal service.

With the Unique-TO also come an option using a conversion flange that enables replacement of an SMP-TO valve though reusing the existing SMP-TO tank flange.

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

CERTIFIED EHEDG TYPE EL August 2004 TD 523-152

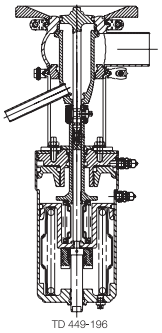
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The drawings below gives an overview of all options when choosing the valve to fit your process, thus demonstrating the actual flexibility of the Unique Mixproof tank outlet valve.

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

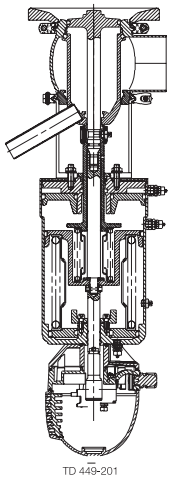
Unique-TO size flexibility

1



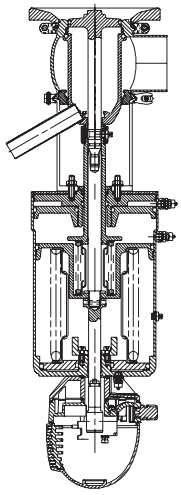
TD 449-196

2



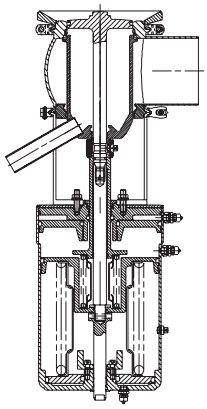
TD 449-201

3



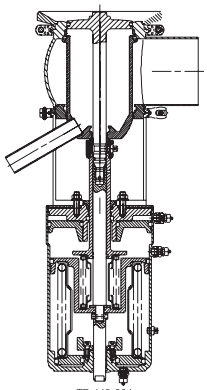
TD 449-202

4



TD 449-203

5

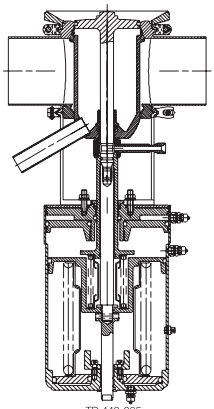


TD 449-204

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

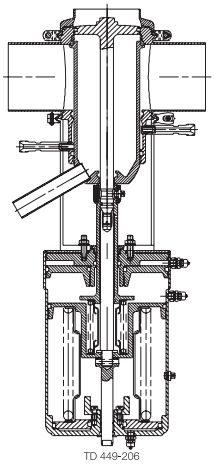
Unique-TO hygienic flexibility

1



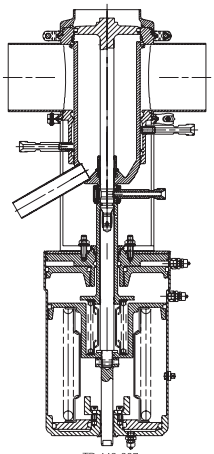
TD 449-205

2



TD 449-206

3



TD 449-207

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:

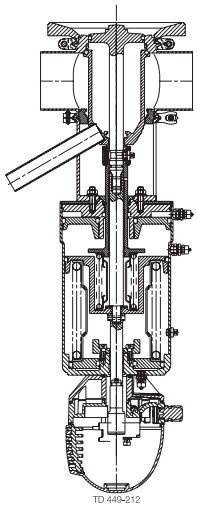
- Unique-TO
- Unique-TO with external cleaning.

You can choose Unique-TO in ordering leaflet.
Unique-TO with external cleaning can only be chosen in CAS.

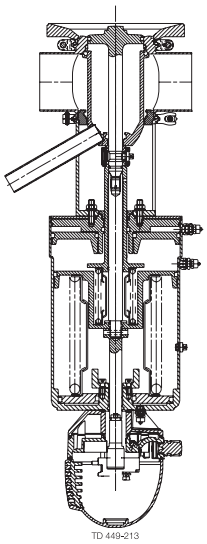
Unique-TO meets the typical demands of a process valve in the food and drink industry. It is also suitable for products with solids. Cleaning of the plugs and seats are performed by means of seatlift during normal cleaning procedure. This valve also includes a balanced plug in the pipeline that protect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

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

Unique-TO is the choice for standard solutions.



1

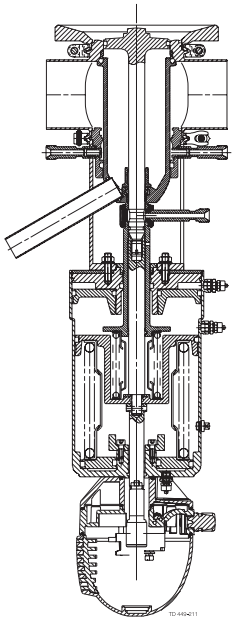


2

1. Unique-TO
2. Unique-TO long stroke (size 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 the SpiralClean system.
It has few product wetted seals and allows no product spillage during operation. Unique-TO is suitable for applications with sticky products, products with high content of solids or applications where "close to aseptic conditions" is wanted. Its features are:

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



3

3. Unique-TO with external cleaning

Technical Data

Max. product pressure in pipeline: . . . . . .1000 kPa (10 bar) (For higher pressure, please ask Alfa Laval)
Min. product pressure: . . . . . .Full vacuum.
Temperature range: . . . . . .-5°C to +125°C (Depending on rubber quality)
Air pressure: . . . . . .Max. 800 kPa (8 bar).

Materials

Product wetted steel parts: . . . . . .Acid-resistant steel 1.4404 (316L).
Other steel parts: . . . . . .Stainless steel 1.4301 (304).
Product wetted seals: . . . . . .EPDM.
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.
- Blind flange
- Product wetted seals: HNBR, NBR or FPM

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 (ø120x230)	Actuator size 4-Basic (ø157x252)	Actuator size 5-Basic (ø186x281)	Opening pressure in pipe line at 6 bar air pressure (kPa)
inch	DIN						
51	DN50	ø9	400	Standard			1000
63.5	DN65	ø15	450		Standard		1000
63.5	DN65	ø31	600			Long stroke	1000
76.1	DN80	ø15	450		Standard		1000
76.1	DN80	ø31	600			Long stroke	1000
101.6	DN100	ø31	450			Standard	1000
101.6	DN100	ø15	350		Option		1000
	DN125	ø33	350			Standard	1000
	DN125	ø15	250		Option		1000
	DN150	ø33	350			Standard	1000
	DN150	ø15	250		Option		1000

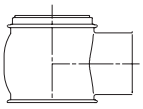
Notes:

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

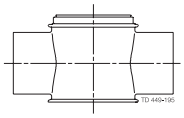
It is possible to open with 10 bar (1000 kPa) in pipe line.

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

Valve Body Combinations

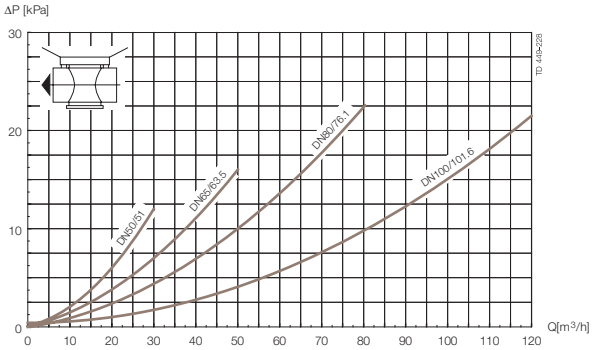


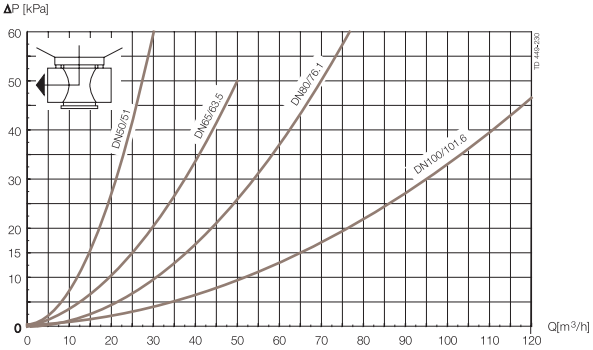
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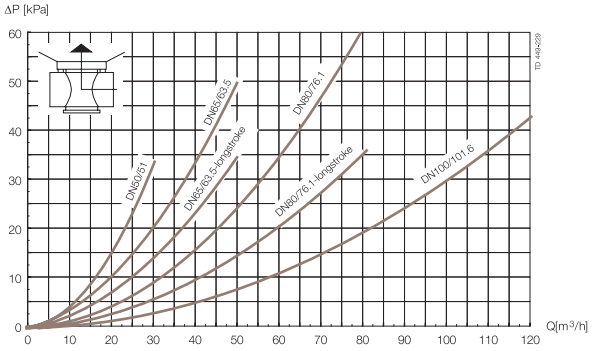


Type 30

Pressure drop/capacity diagrams







Note!

For the diagrams the following applies:

Medium: Water (20° C)

Measurement: In accordance with VDI 2173

Air and CIP Consumption

Size	DN/OD				DN						Longstroke			
											DN/OD		DN	
ISO-DIN	**51**	**63.5**	**76.1**	**101.6**	**50**	**65**	**80**	**100**	**125**	**150**	**63.5**	**76.1**	**65**	**80**
Air consumption for Balanced Seat-lift Litre = volume at atmosphere pressure	0.20	0.40	0.40	0.62	0.20	0.40	0.40	0.62	0.62	0.62	0.40	0.40	0.40	0.40
Air consumption for Tank Seat-lift Litre = volume at atmosphere pressure	1.10	0.13	0.13	0.21	1.10	0.13	0.13	0.21	0.21	0.21	0.13	0.13	0.13	0.13
Air consumption for Main Movement Litre = volume at atmosphere pressure	0.86	1.63	1.63	2.79	0.86	1.62	1.62	2.79	2.79	2.79	1.63	1.63	1.62	1.62
Kv-value for Balanced CIP Seat-lift [m^3/h]	1.50	2.50	2.50	1.90	1.50	2.50	2.50	1.90	3.70	3.70	2.50	2.50	2.50	2.50
Kv-value for Tank Seat-lift [m^3/h]	0.90	1.90	1.90	1.40	0.90	1.90	1.90	1.40	3.10	3.10	1.90	1.90	1.90	1.90
Kv-value for SpiralClean Spindle CIP [m^3/h]	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Kv-value for SpiralClean External CIP in leakage chamber [m^3/h]	0.25	0.29	0.29	0.29	0.25	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29

Note:

Recommended min. pressure for SpiralClean: 2 bar.

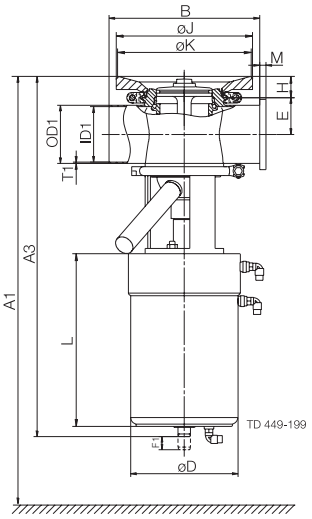
Formula to estimate CIP flow during seat lift:

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

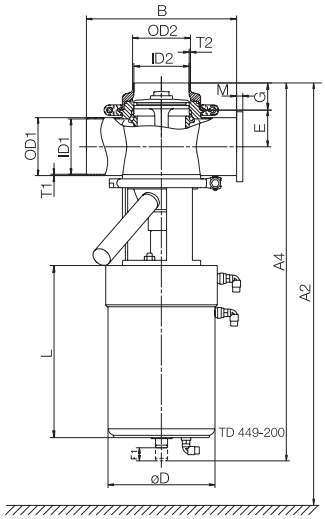
$$Q = Kv \cdot \sqrt{\Delta p}$$

Q = CIP - flow (m^3/h).
Kv = Kv value from the above table.
Δp = CIP pressure (bar).

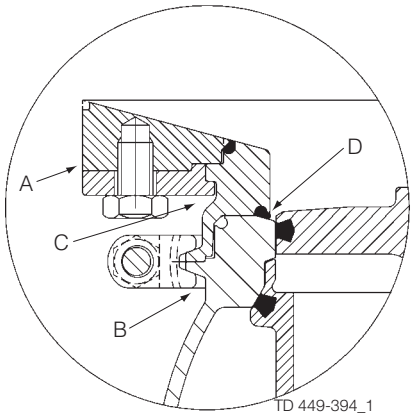
Unique-TO connected to tank flange



Unique-To connected to stub flange



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

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 180 mm.

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)

											Longstroke			
Size	**DN/OD**				**DN**						**DN/OD**		**DN**	
ISO-DIN	**51**	**63.5**	**76.1**	**101.6**	**50**	**65**	**80**	**100**	**125**	**150**	**63.5**	**76.1**	**65**	**80**
A1 min. dimension. Unique-TO	579	646	659	753	577	652	667	755	805	890	700	713	706	721
A1 min. dimension. Unique-TO with external cleaning	616	686	699	813	614	692	707	815	865	---	740	753	746	761
A2 min. dimension Unique-TO	588	655	668	762	586	661	676	764	814	899	709	722	715	730
A2 min. dimension Unique-TO with external cleaning	625	695	708	822	623	701	716	824	874	---	749	762	755	770
A3 Unique-TO	468	526	526	594	468	526	526	594	620	680	575	575	575	575
A3 Unique-TO with external cleaning	505	566	566	654	505	566	566	654	680	---	615	615	615	615
A4 Unique-TO	477	535	535	603	477	535	535	603	629	689	584	584	584	584
A4 Unique-TO with external cleaning	514	575	575	663	514	575	575	663	689	---	624	624	624	624
B	220	220	220	300	220	220	220	300	300	300	220	220	220	220
OD1	51	63.5	76.1	101.6	53	70	85	104	129	154	63.5	76.1	70	85
ID1	47.8	60.3	72.9	97.6	50	66	81	100	125	150	60.3	72.9	66	81
t1	1.6	1.6	1.6	2.0	1.5	2.0	2.0	2.0	2.0	2.0	1.6	1.6	2.0	2.0
E	36.9	43.2	49.5	61.8	38	46	53.5	63	75.5	88	43.2	49.5	46	53.5
F1	31.5	38	38	59	31.5	38	38	59	59	59	59	59	59	59
F2 (Tank plug)	5	5	5	5	5	5	5	5	5	5	5	5	5	5
G	40	40	40	40	40	40	40	40	40	40	40	40	40	40
H	31	31	31	31	31	31	31	31	31	31	31	31	31	31
øD	120	157	157	186	120	157	157	186	186	186	186	186	186	186
L	230	252	252	281	230	252	252	281	281	281	281	281	281	281
OD2	51	63.5	76.1	101.6	53	70	85	104	129	129	63.5	76.1	70	85
ID2	47.8	60.3	72.9	97.6	50	66	81	100	125	125	60.3	72.9	66	81
t2	1.6	1.6	1.6	2.0	1.5	2.0	2.0	2.0	2.0	2.0	1.6	1.6	2.0	2.0
øJ	159	199	199	199	159	199	199	199	199	199	199	199	199	199
øK	155	195	195	195	155	195	195	195	195	195	195	195	195	195
M/ISO clamp	21	21	21	21	---	---	---	---	---	---	21	21	---	---
M/DIN clamp	---	---	---	---	21	21	21	21	28	28	---	---	21	21
M/ISO male	21	21	21	21	---	---	---	---	---	---	21	21	---	---
M/DIN male	---	---	---	---	23	25	25	30	46	50	---	---	25	25
M/SMS male	20	24	24	35	---	---	---	---	---	---	24	24	---	---
M/BS male	22	22	22	27	---	---	---	---	---	---	22	22	---	---
Weight [kg]* Unique TO	12.5	22.5	22.5	33	12.5	22.5	22.5	33	36	38	28	28	28	28
Weight [kg]* Unique TO with external cleaning	13	23.5	23.5	34	13	23.5	23.5	34	37	---	29	29	29	29

* = without tank flange

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

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