State of the art

Unique PMO Plus® CP Mixproof Vertical Tank Valve

Compliance
Meets 3A/PMO Demands for Seat Lift compliance

Concept
This Unique PMO Plus® CP Mixproof Vertical Tank Valve is specially designed for vertical mounting under a tank.

Based on the well proven and exceptionally versatile principle of the Unique Mixproof valves, this vertical mixproof tank valve features many of the same components, such as the actuator and seals, and therefore the same spare parts. This provides the benefits of easy serviceability and low total cost of ownership.

Standard design
The Unique PMO Plus® CP Mixproof Vertical Tank Valve, which can be fitted with any level of sensing and control, complies with the 3-A standard and the Pasteurized Milk Ordinance. It meets the FDA demands for seat lift compliance, which enables handling of two different products at the same time, or safe handling of one product while seat-lift cleaning operations are being conducted in the other portion of the valve – all without any risk of cross-contamination.

TECHNICAL DATA

Max. product pressure in pipeline:	145 PSI (1000 kPa)
Min. product pressure:	Full vacuum
Temperature range:	.23°F to +257°F (depending on rubber quality)
Air pressure:	Max. 116 PSI (800 kPa)

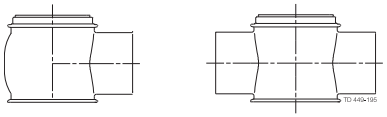
PHYSICAL DATA

Product wetted steel parts:	1.4404 (316L)
Other steel parts:	1.4301 (304)
External surface finish	Bright (polished)
Internal surface finish	Bright (polished), Ra <32 µ”
Product wetted seals:	EPDM, HNBR, NBR or FPM
Guide strips	PTFE

Other seals:

CIP seals:	EPDM
Actuator seals:	NBR

Valve body combination



Type 20 Type 30

Authorized to carry the 3A symbol

State of the art

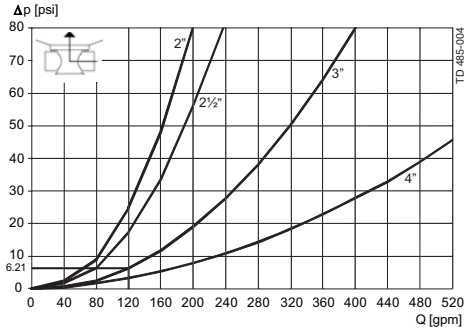
The Unique PMO Plus® CP Mixproof Vertical Tank Valve also provides a state of the art solution when there is no CIP pressure or flow from the tank side to clean the seat and plug. The valve is self-cleaning, thanks to two Clean-in-Place (CIP) nozzles. The first nozzle is designed specifically for plug cleaning. This double-acting nozzle projects cleaning solution through the tank connection, ensuring complete cleaning of the seat contact surfaces as well as the shadow area of the tank port. The second is a rotating CIP nozzle incorporated into the unit for optimum cleaning of the full-bore leakage chamber.

The valve can be connected with the tank via a weld in tank flange or a pipe end flange.

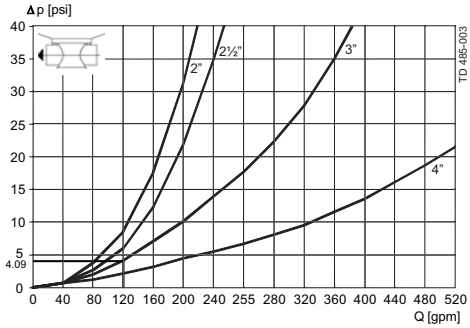
The 4" model feature a 1.77 inches opening, which enables the passage of very large particles or efficient handling of high viscosity fluids.

Pressure drop/capacity diagrams

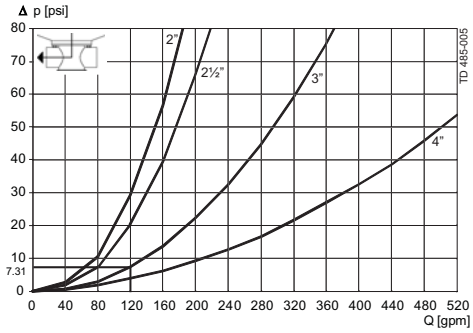
To tank (fig. 1)



Straight through (fig. 3)



From tank (fig. 2)



Example to determine pressure drop at a given flow rate:

To tank:	3". Capacity = 120 gpm.
From tank:	3". Capacity = 120 gpm.
Straight through:	3". Capacity = 120 gpm.

Result:

From fig. 1, p = 6.21 psi to tank

From fig. 2, p = 7.31 psi from tank

From fig. 3, p = 4.09 psi straight through.

Note!

For the diagrams the following applies:
Medium: Water (68°F).
Measurement: In accordance with VDI 2173.

Size inch	Max. size of particle (inch)	Max. tank pressure (PSI)	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)
2”	1.26	85	Standard		145
2½”	1.26	85	Standard		145
3”	1.26	85	Standard		145
4”	1.77	85		Long stroke	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".

Air and CIP Consumption

Size	DN/OD			
Inch	2”	2½”	3”	4”
Cv-value				
Upper Seat-lift [gpm/psi]	2.6	2.6	2.6	5.3
Lower Seat-lift (tank seat lift) [gpm/psi]	30	30	30	58.25
Air consumption				
Upper Seat-lift * [cubic inches]	24	24	24	38
Lower Seat-lift (tank seat lift) * [cubic inches]	8	8	8	13
Main Movement * [cubic inches]	99	99	99	216
Cv-value - SpiralClean				
External CIP in leakage chamber [gpm/psi]	1.59	1.59	1.59	1.59

Note

* [cubic inches] = volume at atmospheric pressure

Recommended min. pressure for External CIP in leakage chamber:
44 psi.

Formula to estimate CIP flow during seat lift:

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

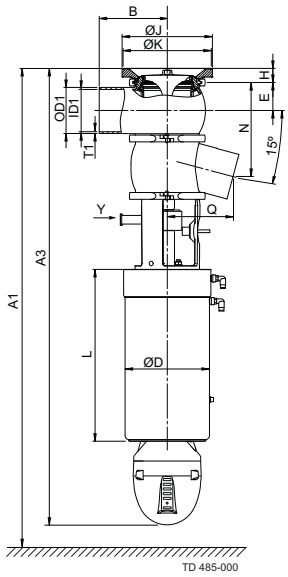
$Q = Cv \cdot \sqrt{\Delta p}$

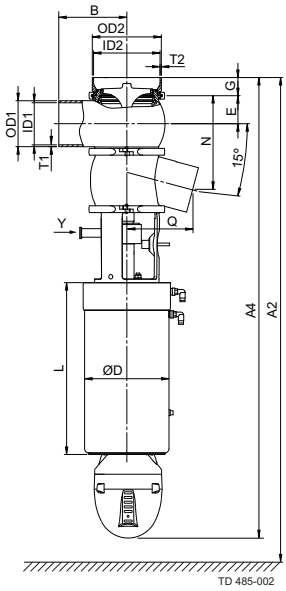
Q = CIP - flow (gpm).

Cv = Cv value from the above table.

Δp = CIP pressure (psi).

Dimensions (inch)





	2"	2.5"	3"	4"
A1	35.039	36.614	36.220	47.638
A2	35.433	37.008	36.614	48.031
A3	28.858	29.882	29.961	39.449
A4	29.252	30.276	30.354	39.843
B	4.331	4.331	4.331	5.906
OD1	2.008	2.500	2.996	4.000
ID1	1.882	2.374	2.870	3.843
t1	0.063	0.063	0.063	0.079
OD2	4.000	4.000	4.000	6.000
ID2	3.843	3.843	3.843	5.782
t2	0.079	0.079	0.079	0.109
øD	7.323	7.323	7.323	7.323
E	1.453	1.699	1.947	2.433
F1	1.496	1.496	1.496	2.953
F2 (Tank plug)	0.394	0.394	0.394	0.394
G	1.575	1.575	1.575	1.575
H	1.220	1.220	1.220	1.220
øJ	7.835	7.835	7.835	7.835
øK	7.677	7.677	7.677	7.677
L	9.921	9.921	9.921	14.921
N	4.949	5.709	5.555	8.185
Q	4.445	4.508	4.571	6.220
Y	¾" clamp ferrule	¾" clamp ferrule	¾" clamp ferrule	¾" clamp ferrule
M/Tri-clamp	0.827	0.827	0.827	0.827
Weight (lb)	26.2	27.3	28.6	88.9

A1 + A2 = min. installation measure to allow that actuator and internal parts can be lifted out of the valve body.

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