

Alfa Laval Unique Mixproof PMO[®] Plus CP

Double seat valves

Introduction

The Alfa Laval Unique Mixproof PMO[®] Plus CP is a highly flexible, easy-to-service double block-and-bleed valve specially designed for continuous production in dairy applications.

Based on the well proven and exceptionally versatile design of the Unique Mixproof valves from Alfa Laval, it enables the simultaneous flow of two different products or fluids through the same valve, or the safe handling of one product while seat-lift cleaning operations are being conducted in the other portion of the valve – without the risk of cross-contamination.

The valve provides exceptional spillage-free operation and meets international standards for hygienic dairy processing. It complies with the seat lift requirements of the 3-A Sanitary Standards, the Pasteurized Milk Ordinance and the US Food and Drug Administration, which enable seat lift cleaning in one chamber while product flows through the other, thereby eliminating downtime. All valve movements are detectable, and the area of the vent tube is equal to or greater than the connection pipe.

With its modular design, the valve can be customized to meet any process requirement regardless of dairy size or capacity. It maximizes uptime and provides low total cost of ownership.

Application

The Unique Mixproof PMO Plus CP valve is designed for continuous flow management and process safety in hygienic processes where product safety is at the top of the agenda. It is widely used across the dairy, food, and other industries.

Benefits

- Complies with the seat lift requirements of the Pasteurized Milk Ordinance (PMO), 3-A Sanitary Standards and the US Food and Drug Administration (FDA)
- Enhanced product safety
- Cost-effective, spillage-free operation
- Optimized plant efficiency and enhanced cleanability
- Leakage detection and leakage chamber cleaning



Standard design

Available in 6" tube outside diameter sizes, the Alfa Laval Unique Mixproof PMO Plus CP valve is comprised of a series of base components, including valve body, valve plug, actuator, and outside diameter (OD) balancer cleaning element for cleaning the outside soiled area of the lower seat balancer during a lower seat push operation. The valve plugs are always balanced in both upper and lower valve body, making the valve insensitive to pressure spikes. A spring return on the fail-safe actuator ensures proper closing the valve at all times. The OD balancer cleaning element enables cleaning of the outside soiled area of the lower seat balancer during a lower seat push operation. This eliminates Cleaning-in-Place downtime, enabling continuous production.

Leakage detection holes enable visual inspection without requiring valve disassembly and provide advance notification of parts wear.

Few straightforward moveable parts contribute to reliable operation and reduced maintenance costs.

The valve can be fitted with the Alfa Laval ThinkTop® V70 and a yoke-mounted external sensor for valve sensing and control, enabling detection of the upper and lower seat positions.

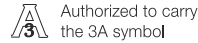
Working principle

The Alfa Laval Unique Mixproof PMO Plus CP is a normally closed (NC) valve controlled from a remote location by means of compressed air. To separate the two liquids, the valve has two independent plug seals. The space between the two seals forms an atmospheric leakage chamber. In the rare case of accidental

product leakage, the product flows into the leakage chamber and is discharged through the leakage outlet.

When the valve is open, the leakage chamber is closed. The product can then flow from one line to the other without spillage. The radial design of the valve ensures that virtually no product spillage occurs during valve operation. It is possible to adapt valve cleaning and water hammer protection to the requirements of individual process specifications.

Certificates



TECHNICAL DATA

Pressure

Max. product pressure:	145 PSI
Min. product pressure:	Full vacuum
Air pressure:	Max. 116 PSI

Temperature

Temperature range:	23 °F to +257 °F (Depending on seal material)
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PHYSICAL DATA

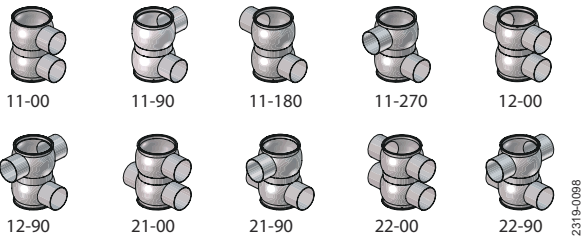
Materials

Product wetted steel parts:	Acid-resistant steel AISI 316L
Other steel parts:	Stainless steel AISI 304
Product wetted parts:	NBR (std.) EPDM, HNBR or FPM

Other seals:

CIP seals:	EPDM
Actuator seals:	NBR
Surface finish:	External bright/internal polished Ra<32µ"

Valve body combination



Valve body combinations, example: type 21-00

- 2 Number of ports - lower valve body
- 1 Number of ports - upper valve body
- 00 Angle between ports

Dimensions (inch)

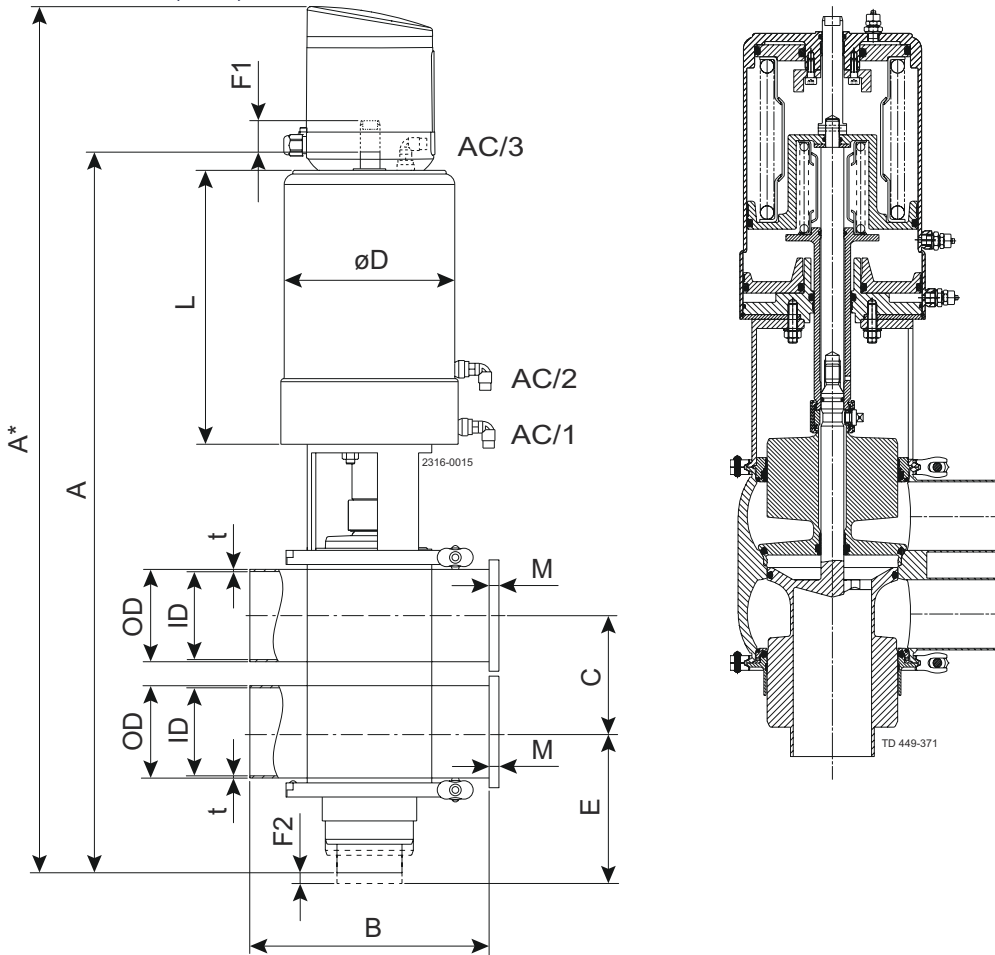


Fig. 1 Details of Unique Mixproof PMO Plus CP valve

Size	6"
A	39.449
A*	46.535
B	17.323
**C	6.798
OD	6.0
ID	5.782
t	0.109
E	8.298
F1	2.953
F2	0.197
øD	7.323
L	14.921
M/Tri-clamp	1.518
Weight (lb)	176.500



Note!

**The measure C can always be calculated by the formula $C = \frac{1}{2}ID_{upper} + \frac{1}{2}ID_{lower} + 1"$.

Build-up

This **PMO Plus® CP** edition of the Unique Mixproof valve is a high-end valve with regards to process security as well as from a hygienic point of view. The valve plugs are always balanced in both upper and lower valve body, securing no sensitivity to pressure spikes. The lower and upper seats are position-detectable by the ThinkTop® and a yoke-mounted, external sensor. The Unique Mixproof PMO Plus CP valve is provided

with an O.D. balancer cleaning element which allows cleaning of the outside soiled area of the lower seat balancer during a lower seat push operation. This provides around-the-clock production by eliminating CIP downtime.

Pressure drop/capacity diagrams

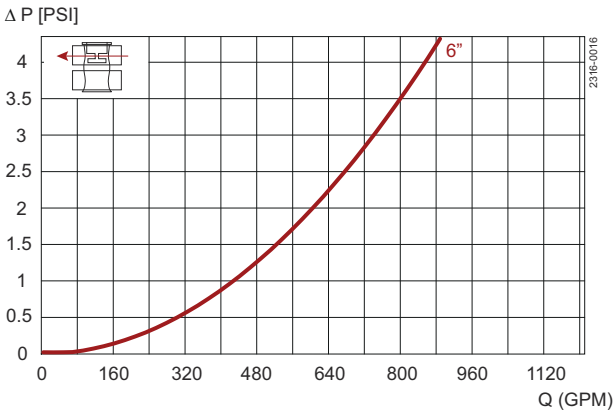


Fig. 1. Pressure drop/capacity diagram, upper bodies

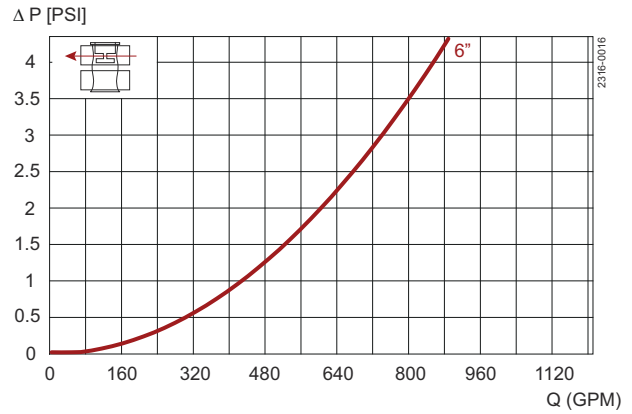


Fig. 3. Pressure drop/capacity diagram, between bodies

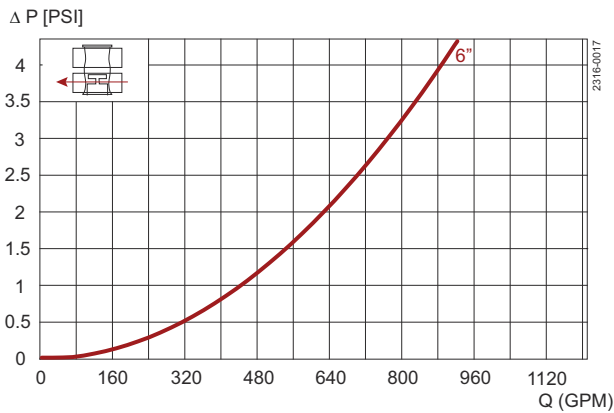


Fig. 2. Pressure drop/capacity diagram, lower body



Note!

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

Example to determine pressure drop at a given flow rate:

Upper body size:	6". Capacity = 320 gpm
Lower body size:	6". Capacity = 320 gpm
Between bodies:	6". Capacity = 320 gpm

Result:

From fig. 1, $\Delta p = 0.6$ PSI through upper body.

From fig. 3, $\Delta p = 0.8$ PSI between bodies.

From fig. 2, $\Delta p = 0.52$ PSI through lower body

Air and CIP Consumption

Cv-value

Cv-value Upper Seat-lift	[gpm/psi] 12.1
Cv-value Lower Seat-lift	[gpm/psi] 17.1

Air consumption

Air consumption Upper Seat-lift	* [cubic inches] 38
Air consumption Lower Seat-lift	* [cubic inches] 13
Air consumption Main Movement	* [cubic inches] 216

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

Q = water flow [gpm]

C_v = value from the above table.

Δ p = water pressure [psi]

Ordering

For ordering, contact Alfa Laval.

Control & Indication for both upper and lower seat lift as well as main movement, is given via the ThinkTop® control unit.

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