# Large Particle - Gentle Handling

## Alfa Laval Unique Mixproof Large Particle Valve (Unique LP-F)

### Concept

This Unique Mixproof LP-F valve is based on the well proven and exceptionally flexible design of the Unique Mixproof valves. The valves are designed for gentle handling of the product containing large particulates up to 45 mm or products with high viscosity.

Additional to the Unique Mixproof Large Particle valve (LP) the LP-F is equipped with a lower flush to enable 100% cleanability of the lip seal in the lower sealing element through seat-lift cleaning alone. This an improved performance compared to Spiral clean on the lower plug and reduces the need for additional utility installations for external CIP.

### Working Principle

Unique Mixproof LP-F is remote-controlled by means of compressed air. The valve is a normally closed (NC) valve. It is as standard supplied seat lift, 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. The 6" valve is as standard also equipped with balanced lower plug to protect against the effects of high pressure and water hammer. The 4" valve is, in order to accommodate 45mm particles, not supplied with balanced lower plug. The 4" is however as standard equipped with a boost actuator to accommodate a product pressure of up to 10 bar. When seat lift of the lower plug is performed the valve will simultaneously clean the lower plug seal as well as the lover sealing element lip seal.

### Technical Data

| | |
|---|---|
| Max. product pressure: | .1000 kPa (10 bar) |
| Min. product pressure: | .Full vacuum. |
| Temperature range: | .-5 °C to +125 °C (Depending on elastomer type)<br>(For higher temperatures, please contact Alfa Laval) |
| Air pressure: | .Max. 8 bar |

Authorized to carry the 3A symbol

### Materials

| | |
|---|---|
| Product wetted steel parts: | 1.4404 (316L) |
| Other steel parts: | 1.4301 (304) |
| External surface finish | Semi-bright (blasted) |
| Internal surface finish | Bright (polished), Ra < 1.6 µm |
| Product wetted parts: | EPDM |

Other seals:

| | |
|---|---|
| CIP seals: | EPDM |
| Actuator seals: | NBR |
| Guide strips | PTFE |

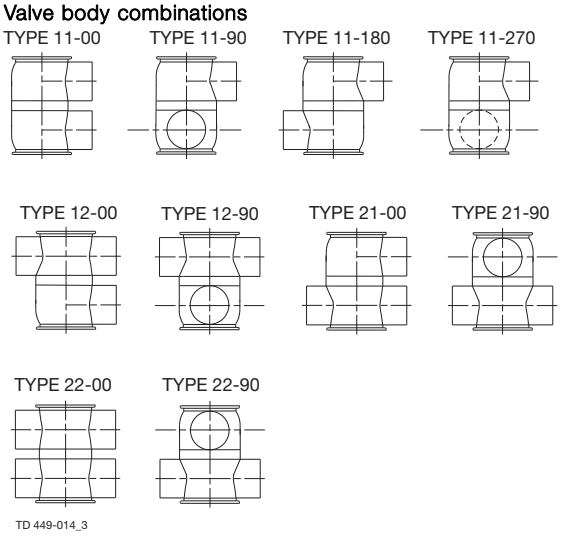
## Availability

This LP-F 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 Unique Mixproof LP-F valve is available in 4" and 6" sizes.

## Options

- Male parts or clamp liners in accordance with required standard.
- Control and Indication: ThinkTop or ThinkTop Basic.
- Side indication for detection of upper seat lift
- Product wetted seals in HNBR, NBR or FPM

## Valve body combinations




## Pressure drop/capacity diagrams

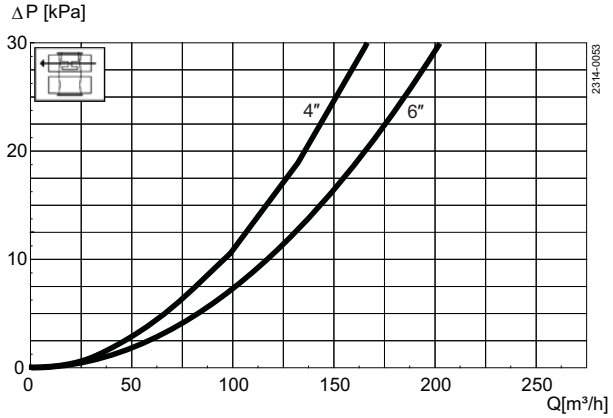



Fig. 2. Pressure drop/capacity diagram, upper bodies.

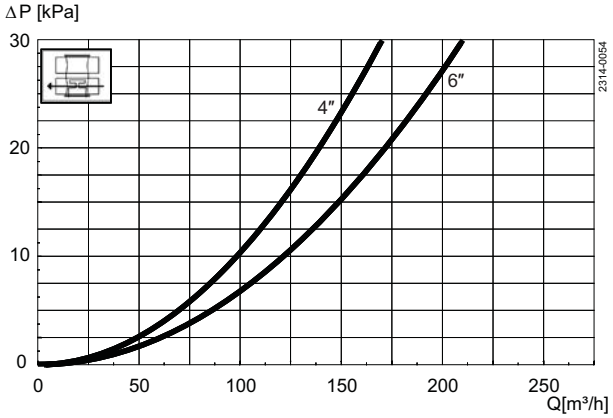



Fig. 4. Pressure drop/capacity diagram, lower body.

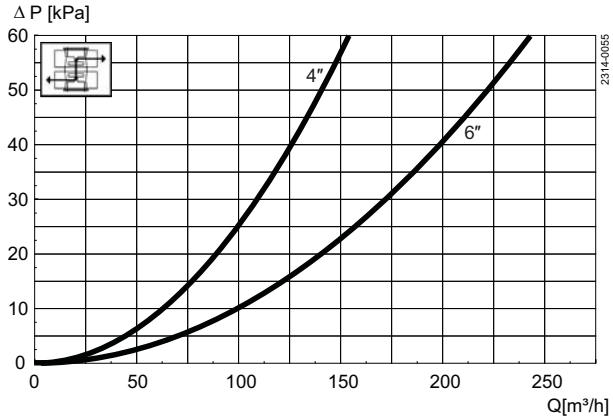



Fig. 3. Pressure drop/capacity diagram, between bodies.

## Note!

For the diagrams the following applies:
Medium: Water (20 °C).
Measurement: In accordance with VDI 2173.

## Air and CIP consumption

| Size | | OD 4" | OD 6" |
|---|---|---|---|
| **Kv-value** | | | |
| Upper Seat-lift | [$m^3$/h] | 3.2 | 7.1 |
| Lower Seat-lift | [$m^3$/h] | 3.9 | 8.9 |
| **Air consumption** | | | |
| Upper Seat-lift | * [n litre] | 0.62 | 0.62 |
| Lower Seat-lift | * [n litre] | 0.21 | 0.21 |
| Main Movement | * [n litre] | 3.54 | 3.54 |

**Note**

* [n litre] = volume at atmospheric pressure

**Formula to estimate CIP flow during seat lift:**

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

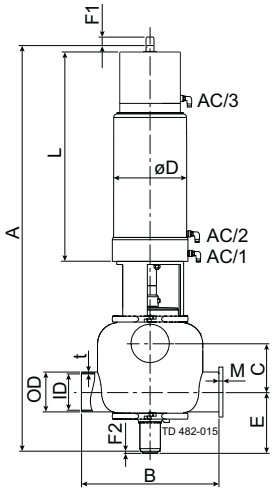
$Q = Kv \cdot \sqrt{\Delta p}$

Q = CIP - flow ($m^3$/h).

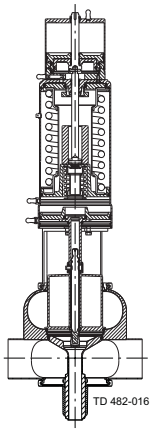
Kv = Kv value from the above table.

Δ p = CIP pressure (bar).

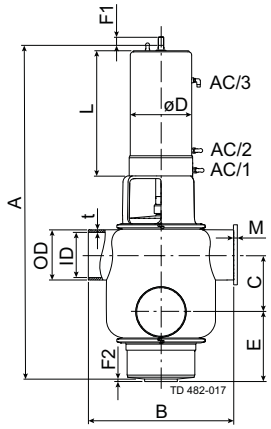
**Dimensions [mm]**



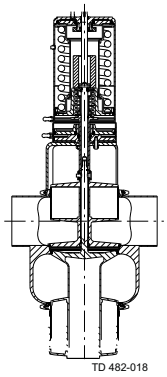

4”




4”




6”




6”

| Size | 4" | 6" |
|---|---|---|
| A | 1038.00 | 1002.00 |
| B | 350.00 | 440.00 |
| **C | 123.60 | 172.67 |
| OD | 101.60 | 152.40 |
| ID | 97.61 | 146.86 |
| t | 2.00 | 2.77 |
| E | 166.00 | 210.80 |
| F1 | 75.00 | 75.00 |
| F2 | 5.00 | 5.00 |
| øD | 186.00 | 186.00 |
| L | 534.00 | 379.00 |
| M/Tri-clamp | 21.00 | 38.60 |
| Weight (kg) | 64.90 | 86.20 |

**NOTE!**

**The measure C can always be calculated by the formula

$C = ½ID\text{-}_{upper} + ½ID\text{-}_{lower} + 26mm$.

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ESE02125EN 1507

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