

# Alfa Laval Unique Mixproof High Alloy

## Double seat valves

### Introduction

The Alfa Laval Unique Mixproof High-Alloy Valve is a versatile, highly flexible double block-and-bleed valve for the safe and efficient management of fluids at intersection points in matrix piped systems. The valve enables the simultaneous flow of two different products or fluids through the same valve without the risk of cross-contamination. Modular design and a wide variety of options enable the valve to be customized to meet any process requirement, such as greater resistance to highly corrosive products.

### Application

The Alfa Laval Unique Mixproof High Alloy Valve is designed for continuous flow management and process safety that require high-grade alloys to improve corrosion resistance in the presence of abrasive products, high levels of chloride and chemicals, or low pH values across the dairy, food, beverage and many other industries.

### Benefits

- Enhanced product safety
- Spillage-free operation
- Optimized plant efficiency and enhanced cleanability
- Leakage detection
- Fast seat lift
- Easy maintenance

### Standard design

The Alfa Laval Unique Mixproof High Alloy Valve is comprised of a series of base components, including valve body, valve plug, actuator, and cleaning options and accessories that support a wide range of applications. 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 also be fitted with the Alfa Laval ThinkTop V50 and V70 for sensing and control of the valve.

### Working principle

The Alfa Laval Unique Mixproof High-Alloy Valve is a normally closed (NC) valve controlled from a remote location by means of compressed air. The valve has two independent plug seals to separate the liquids; the space between the seals forms a leakage chamber at atmospheric pressure during every working condition. Leakage rarely occurs but, should it occur,



product flows into the leakage chamber and exits through the bottom outlet for easy detection.

When the valve is open, the leakage chamber is closed. The product then flows from one line to the other. The radial seal design of the valve ensures that virtually no product spillage occurs during valve operation. It is possible to adapt valve configuration to get optimum cleaning and water hammer protection to the requirements of individual process specifications.

## TECHNICAL DATA

### Pressure

Max. product pressure:	1000 kPa (10 bar)
Min. product pressure:	Full vacuum
Air pressure:	Max. 800 kPa (8 bar)

### Temperature

Temperature range:	-5°C to +125°C (Depending on rubber quality)
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### ATEX

Classification:	II 2 G D <sup>1</sup>
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**Note!** In order to use Unique Mixproof valves in ATEX environment, the blue plastic cover at lower plug must be removed for the valve types where the valve is delivered with the cover mounted

<sup>1</sup> This equipment is outside the scope of the directive 2014/34/EU and must not carry a separate CE marking according to the directive as the equipment has no own ignition source

## PHYSICAL DATA

### Materials

Product wetted steel parts:	AL6XN or Hastelloy C22
Other steel parts:	1.4301 (304)

### Surface finish choose from the following:

Internal:	Ra< 0.8 µm
External semi-bright:	Ra< 1.6 µm
External Bright:	Ra< 0.8 µm



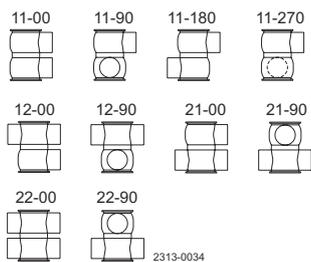
**Note!** The Ra values are only for the internal surface.

Product wetted seals:	EPDM
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### Other seals:

CIP seals:	EPDM
Actuator seals	NBR
Guide strips	PTFE

## Valve body combination



### Valve body combinations, example: type 11-00

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

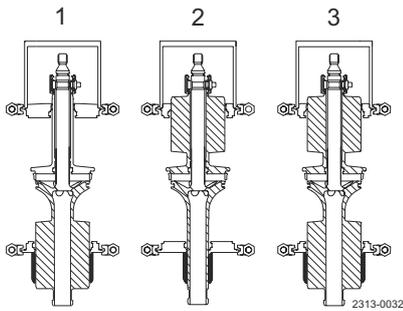
## SpiralClean

The Alfa Laval SpiralClean system to clean the upper and lower balanced plugs and leakage chamber. 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.

## Selection guide

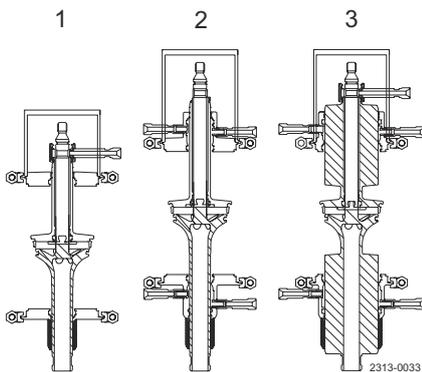
The drawings below give an overview of all options when choosing the valve to fit your process, thus demonstrating the actual flexibility of the Unique Mixproof Valve.

The Unique Mixproof concept offers balanced and unbalanced plugs, seat lift, CIP for the plugs and leakage chambers.



**Figure 1. Balancing flexibility**

1. Lower balanced plug
2. Upper balanced plug
3. Upper and lower balanced plugs



**Figure 2. Hygienic flexibility (spiral clean options)**

1. External CIP of leakage chamber
2. External CIP of upper and lower unbalanced plug
3. External CIP of leakage chamber, upper and lower balanced plug

### Standard configurations

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

- Unique Basic
- Unique SeatClean
- Unique HighClean
- Unique UltraClean

You can either choose these directly or add additional features ensuring that the valve suits your specific needs.

**Unique Basic** has the basic components, providing significant safety and leakage detection.

- Actuator without seatlift.
- Unbalanced plugs.
- No SpiralClean of leakage chamber or plugs.

**Unique SeatClean** meets the typical demands of a process valve.

- Actuator with seat lift integrated.
- Balanced lower plug, Unbalanced upper plug.
- No SpiralClean of leakage chamber or plugs.

**Unique HighClean** is sure to meet your processing needs when dealing with sticky products.

- Actuator without seatlift integrated.
- Balanced lower and upper plug.
- SpiralClean of leakage chamber as well as of upper and lower plug.

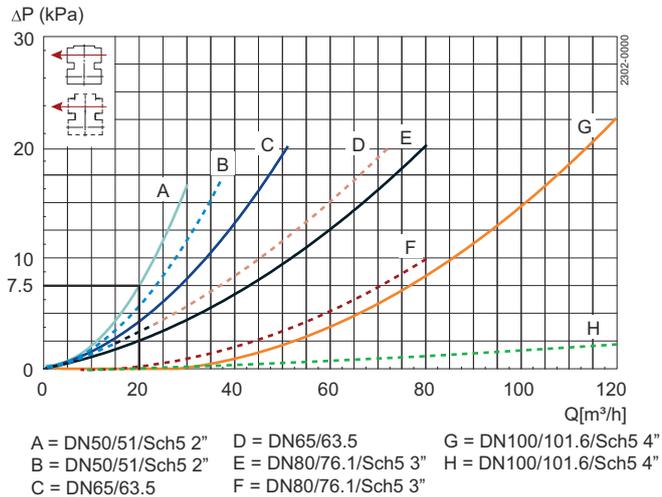
**Unique UltraClean** meets the highest demands for hygienic processing. It has:

- Actuator with seat lift integrated.
- Balanced lower and upper plug.
- SpiralClean of leakage chamber, upper and lower plug.

## Options

- Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- Side indication for detection of upper seat lift.
- Product wetted seals in HNBR, NBR or FPM.
- Various internal/external surface finish.
- 3A (hygienic standard) on request.
- Other sizes, options and configurations on request.

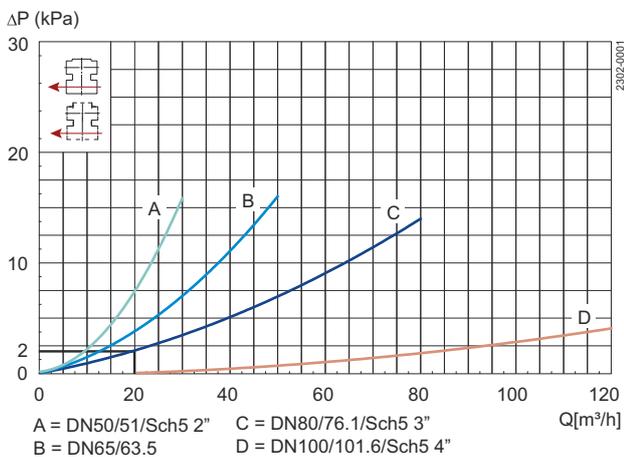
## Pressure drop/capacity diagrams



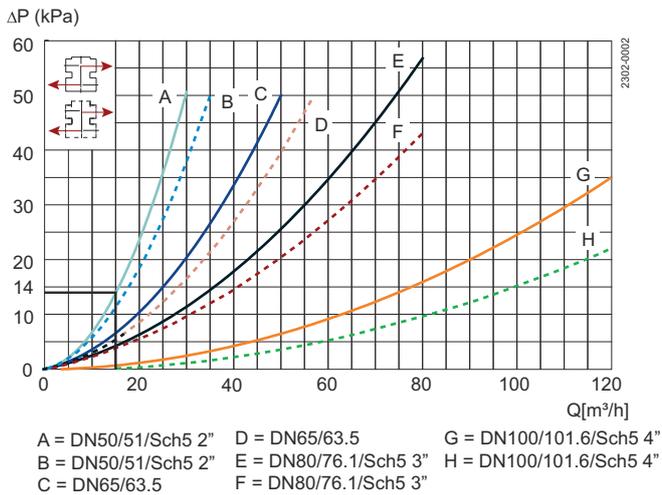
**Figure 3. Pressure drop/capacity diagram, upper body**

Full lines: Balanced upper plug.

Dotted lines: Unbalanced upper plug.



**Figure 4. Pressure drop/capacity diagram, lower body, balanced and unbalanced lower plugs**



**Figure 5. Pressure drop/capacity diagram, between bodies**

Full lines: Balanced.

Dotted lines: Unbalanced.



**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			
ISO/DIN	51	63.5	76.1	101.6	50	65	80	100
<b>Kv-value</b>								
Upper Seat-lift [m³/h]	1.5	2.5	2.5	3.1	1.5	2.5	2.5	3.1
Lower Seat-lift [m³/h]	0.9	1.9	1.9	2.5	0.9	1.9	1.9	2.5
<b>Air consumption</b>								
Upper Seat-lift * [n litre]	0.2	0.4	0.4	0.62	0.2	0.4	0.4	0.62
Lower Seat-lift * [n litre]	1.1	0.13	0.13	0.21	1.1	0.13	0.13	0.21
Main Movement * [n litre]	0.86	1.63	1.63	2.79	0.86	1.62	1.62	2.79
<b>Kv-value - SpiralClean</b>								
Spindle CIP [m³/h]	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
External CIP of leakage chamber [m³/h]	0.25	0.29	0.29	0.29	0.25	0.29	0.29	0.29



**Note!**

\* [n litre] = volume at atmospheric pressure

Recommended min. pressure for SpiralClean: 2 bar.

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

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

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

$$Q = \text{CIP - flow (m}^3\text{/h)}$$

$K_v$  =  $K_v$  value from the above table

$\Delta p$  = CIP pressure (bar)

## Actuator

		STD				STD/STD*	
		Operating pressure for SeatClean, High Clean and Ultra Clean at 6 bar air pressure				Operating pressure for Basic at 6 bar air pressure	
Actuator Type		3	4BS <sup>1</sup>	4SS <sup>2</sup>	5BS <sup>1</sup>	5SS <sup>2</sup>	
Actuator dimensions		120 x	157 x	186 x	186 x	186 x	
øD x L		230	252	281	281	379	
Connection Size							
ISO (DN/OD)	DIN (DN)						
51	50	STD <sup>3</sup>	OP <sup>4</sup>	OP <sup>4</sup>			1000 kPa
63.5	65	OP <sup>4</sup>	STD <sup>3</sup>	STD* <sup>5</sup>	OP <sup>4</sup>	OP <sup>4</sup>	1000 kPa
76.1	80	OP <sup>4</sup>	STD <sup>3</sup>	STD* <sup>5</sup>	OP <sup>4</sup>	OP <sup>4</sup>	1000 kPa
101.6	100		OP <sup>4</sup>	OP <sup>4</sup>	STD <sup>3</sup>	STD* <sup>5</sup>	1000 kPa

<sup>1</sup> BS = Basic spring

<sup>2</sup> SS = Strong spring

<sup>3</sup> STD: Normal size of actuator

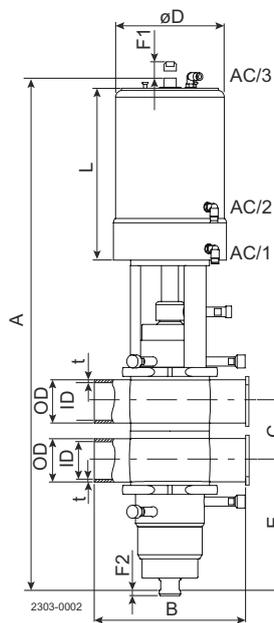
<sup>4</sup> OP: Alternative size of actuator (NB: For choice and performance of optional actuators please contact Alfa Laval or refer to the Anytime Configurator)

<sup>5</sup> STD\*: Normal size actuator if lower plug is UNBALANCED

## Radial Seat Diameter

ISO (DN/OD)	DIN (DN)	Seat
51	50	ø53.3
63.5	65	ø81.3
76.1	80	ø81.3
101.6	100	ø100.3

## Dimensions (mm)



Size	DN/OD				DN			
ISO/DIN	51	63.5	76.1	101.6	50	65	80	100
*A - BasicClean	575	699	699	899	575	699	699	899
*A - SeatClean	575	670	670	791	575	670	670	791
*A - HighClean + UltraClean	656	760	760	922	656	760	760	922
B	220	220	220	300	220	220	220	300
**C	73.8	86.3	98.9	123.6	76	92	107	126
OD	51	63.5	76.1	101.6	53	70	85	104
ID	47.8	60.3	72.9	97.6	50	66	81	100
t	1.6	1.6	1.6	2.0	1.5	2.0	2.0	2.0
E - Basic/SeatClean	121	149	142	177	119	146	138	176

ISO/DIN	Size	DN/OD				DN			
		51	63.5	76.1	101.6	50	65	80	100
E - HighClean/UltraClean		165	200	193	248	163	197	189	247
F1		31.5	38	38	59	31.5	38	38	59
F2		5	5	5	5	5	5	5	5
øD - Basic		120	186	186	186	120	186	186	186
øD - SeatClean, HighClean and UltraClean		120	157	157	186	120	157	157	186
L - Basic		230	281	281	379	230	281	281	379
L - SeatClean, HighClean and UltraClean		230	252	252	281	230	252	252	281
Weight (kg) - Basic		15	24	24	34	15	24	24	34
Weight (kg) - SeatClean		15	24	24	34	15	24	24	34
Weight (kg) - High-/UltraClean		16	27	27	38	16	27	27	38

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