

# Mixproof valves

Mixproof valves provide maximum flexibility and safety in sanitary flow processing by making it possible to handle two different fluids at the same time, with no risk of cross-contamination. Using two independent plugs and seals means a single mixproof valve can often replace two or more valves of other types.

Alfa Laval supplies several different designs of mixproof valves, all with leakage detection that helps boost reliability and safety levels. They enable you to design versatile set-ups that are both cost-effective and low-maintenance, as well as providing you with important new processing opportunities.

These include the Unique mixproof valve concept and the SMP range.



## Low cost of ownership

Alfa Laval mixproof valves are designed to provide the lowest possible operating costs throughout their exceptional service life.

This key advantage comes from a combination of low maintenance costs, using fewer utilities, easy repair and reduced spare parts inventory. And also from minimizing downtime and any resultant loss of earnings.

## More uptime

Alfa Laval mixproof valves are in operation more of the time, helping you avoid costly unscheduled interruptions in your processing operations.

The double-seat design, with the advanced seat lift and SpiralClean, means you can continue using one flow pass while cleaning the other.



Cut-away views of the plug and seat design in Unique mixproof valves.



**Greater flexibility**

The modular concept behind Unique mixproof valves means you only pay for the exact features and capabilities you need. This gives you rapid payback and maximum return on investment. The concept also enables easy upgrades with additional features and functionalities, if your needs change. This ensures you exceptional flexibility in designing your processing installation.

**Reliable operation**

The unique design of these mixproof valves, featuring a guided and protected radical seal, provides long-lasting, spillage-free operation. The double-acting lip seal also minimizes risk of product contamination. Alfa Laval mixproof valves can be fitted with monitoring systems for cost-effective process control.

**Optimized maintenance**

These valves are designed for rapid, easy maintenance. Cost-saving advantages include the top-loaded, easy-to-dismantle design, no adjustable parts and a maintenance-free actuator that ensures safe repair, due to the caged spring.

**Easy to clean**

Alfa Laval mixproof valves feature built-in leak detection for maximum safety. Unique mixproof valves can be fitted with the effective SpiralClean system for the plugs and leakage chamber. This provides fast, more effective cleaning even under difficult conditions, using less cleaning fluid, utilities and time. A controlled seat lift ensures individual cleaning of the plug seals, with no risk of cleaning liquids mixing with the product.

# Unique mixproof valve concept



The following selection guide illustrates the many combinations of features and equipment available with the Unique mixproof valve concept. In addition, there are different sizes and standards to comply with the full spectrum of worldwide installation standards. As a result, you can always find a configuration to meet any specific requirement. For configuration of your exact requirement, please use CAS.

## The Unique mixproof range

The Alfa Laval Unique mixproof valve concept provides modular solutions that you can easily tailor to your specific requirements. This also means you only pay for the exact features and capabilities you really need.

In addition, we provide a series of standard configurations to make selection easier. These currently include:

- Unique Basic – for low-cost and CIP applications
- Unique SeatClean – for standard applications
- Unique HighClean – for high-hygiene applications
- Unique UltraClean – for applications that involve exceptional hygiene requirements

You get the full benefit of using Unique mixproof valves by combining them with ThinkTop control and monitoring units.



Unique UltraClean mixproof valve



**Unique mixproof tank outlet valve**

Has the same advantages as Unique mixproof valves, but is specially designed for vertical or horizontal mounting in tank outlets.

## SMP mixproof range

SMP mixproof valves are a simplified alternative to Unique mixproof units designed as a cost-effective solution that still gives you the advantages of mixproof valves. These units are available in both on-off and change-over versions.

These are double-seat, self-draining units with no seat lift. They provide maximum safety with a minimum of moving parts, and are top-loaded to give easy access for dismantling and service.

**SMP-BC**

Keeps liquids separate by using two seals on the same plug, with a leakage chamber in between.

Often used as part of CIP set-ups, with leakage detection for greater safety. In such installations, seat lift is not necessary.



**SMP-BCA**

As SMP-BC, but fitted with a PTFE/ rubber diaphragm, designed for use under aseptic conditions, and sterilization involving high temperatures.

# Single seat valves

Single seat valves feature one single contact surface between the plug and the seat. They are one of the fundamental building blocks in virtually every kind of process installation. This means they have to be supremely reliable and versatile in order to maintain uninterrupted production with a high hygiene standard.

The Alfa Laval range of single seat valves bears the designations Unique SSV and Unique SSSV, and consists of large numbers of purpose-designed valve units that are particularly robust and flexible.



## **The most for your money**

You benefit from a relatively simple, straightforward design with a minimum of components and few moving parts, reducing service requirements and keeping inventory costs down. You get the best possible return on investment as a result of enhanced service life and exceptional reliability, combined with reduced product loss, greater product safety and improved hygiene.

## **Lower engineering costs**

Unique SSV valves provide full traceability in compliance with the EU Food Regulation 1935/2004. They also have EHEDG certification and can be delivered with 3A labelling. The modularity of the design, with the many combination possibilities this provides, significantly reduces the engineering costs of setting up processing plants around the world.



#### **Exceptional hygiene**

The valve body is made from a single disc of stainless steel with a  $Ra < 0.8 \mu\text{m}$  final internal surface finish. The weld-free, ball-shaped body eliminates bacterial traps, and the design of the plug and seal support more effective cleaning and exceptional hygiene.

The double-acting lip seal minimizes any risk of product contamination by air or dirt.

#### **Low cost of ownership**

The design of these valves makes them easy to clean and keep clean, with a minimum of maintainable parts. This saves you time, manpower and inventory. The costs of ownership are reduced still further by exceptional durability, reduced product loss and more processing uptime. The actuator design also provides more accurate valve performance.

#### **Greater durability**

The unique design used in Unique SSV valves, featuring defined compression of the O-rings and metal-to-metal contact between plug and seat, not only provides better sealing but also extends the service life of Unique SSV valves.

#### **Saving on resources**

The reliability of Unique SSV valves means you have less product wastage to deal with. And because they are designed with effective CIP procedures in mind, you use fewer expensive cleaning fluids, less water and fewer utilities in general, resulting in a reduced environmental impact.

# Unique SSV single seat valves

The modular basic design of Unique SSV single seat valves centres round a body deep-drawn from one single stainless steel disc, a uniquely efficient double-acting lip seal design that minimizes any risk of cross-contamination, and a valve plug with enhanced CIP capabilities.

You can also combine different configurations with different types of actuator.

This cost-effective modular design approach gives you the opportunity to build either shut-off or change-over valves, in either normal open/normal closed or reverse-acting configurations, to meet virtually any requirement.



The following selection guide illustrates the many combinations of features and types available with the Unique SSV valve range. In addition, there are different sizes and standards to comply with the full spectrum of worldwide installation standards. As a result, you can always find a configuration to meet any specific requirement. For configuration of your exact requirement, please use CAS.

**Unique SSV valve (standard configuration)**

Standard version of the Alfa Laval single seat valve design. They are used for a broad spectrum of different processing duties.



**Unique SSV aseptic valve**

A one-piece diaphragm provides hermetic sealing against intrusion from the atmosphere, ensuring full protection against the effects of micro-organisms during processing.

The special diaphragm can also be used with other Unique SSV units – including standard, tangential, two-step and tank outlet valve configurations – where aseptic processing is crucial.

**Unique SSV Y-body valve**

Normally used in installations that involve flows featuring large particles and/or high viscosity, and where the focus is on particularly gentle treatment of products and flows.





**Unique SSV tank outlet valve**

Consists of a valve body with or without a tank flange. Available in two different versions for installations that either open into the tank (reverse-acting) or close up against the tank (standard version).



**Unique SSV long-stroke valve**

Specially suitable for use with media or products that contain particles and/or suspended solids, and also with high-viscosity flows. In such cases, larger openings are needed to provide gentler, more effective flow control.

**Unique SSV tangential valve**

Features an off-centre body so that the port connection can still be drained when the valve is positioned horizontally.

Particularly suitable for use in tank openings, horizontally mounted drains and a wide range of installations where space restrictions make it difficult to install valves at other angles.



**Unique SSV two-step valve**

Lifting height can be adjusted as required to match specific volumes and quantities. This makes it especially suitable for dosing, and for two-stage filling where the focus is on ensuring an exact volume. Can also be used for draining two pipes at the same time.



**Unique SSV manually operated valve**

Small, relatively simple valves that are available with many different options and features, including lockable flights, for either regulating or dosing purposes.

**Unique SSSV small single seat valve**

Features a particularly simple design and few moving parts.

Widely used in processing food, beverages and dairy products, as well as pharmaceuticals and personal care products. Ideal for use in sampling, CIP and other contexts where only small flow rates are involved.



# Butterfly valves

Butterfly valves are relatively straightforward on/off routing valves with a substantial opening area and low flow resistance.

This makes them the workhorse solution in modern processing technology, ideal for use with low and medium-viscosity liquids.

Alfa Laval butterfly valves bear the LKB designation.



## Seal technology

The unparalleled technical resources of Alfa Laval enable us to provide you with a comprehensive range of elastomer seals to meet all requirements. Different materials and specifications can provide greater thermal stability, better chemical resistance and improved tensile strength – adding up to longer, more reliable service.

## Disc benefits

Alfa Laval butterfly valves feature a highly polished stainless steel disc with surface smoothness down to  $Ra < 0.8 \mu\text{m}$ . The disc design has been thoroughly tested. The bearing bushes are clipped onto the disc stems, avoiding any metal-to-metal abrasion and ensuring smoother disc movement.



**Strength under pressure**

Different models are available for working at pressures from full vacuum up to 10 bar.

This is one reason why Alfa Laval LKB butterfly valves feature a 12 mm stem diameter – larger and more solid than the industry norm. This additional strength helps withstand pressure shocks better, resulting in better operating safety and greater reliability.

**Wide-spectrum compatibility**

These valves are manufactured for full compatibility with both metric and imperial tubing and virtually all dimension standards, including ISO, DIN, JIS, ASME, etc. Compatibility with multiple standards also provides significant logistics advantages as well as opportunities for participation in advantageous Alfa Laval purchasing plans.

**Exceptional hygiene**

These highly reliable valves conform with FDA requirements. Alfa Laval inspection certificates and 3.1 traceability certification are also available, on request.

The benefits of Alfa Laval seal technology also play a major role in preventing any kind of contamination.

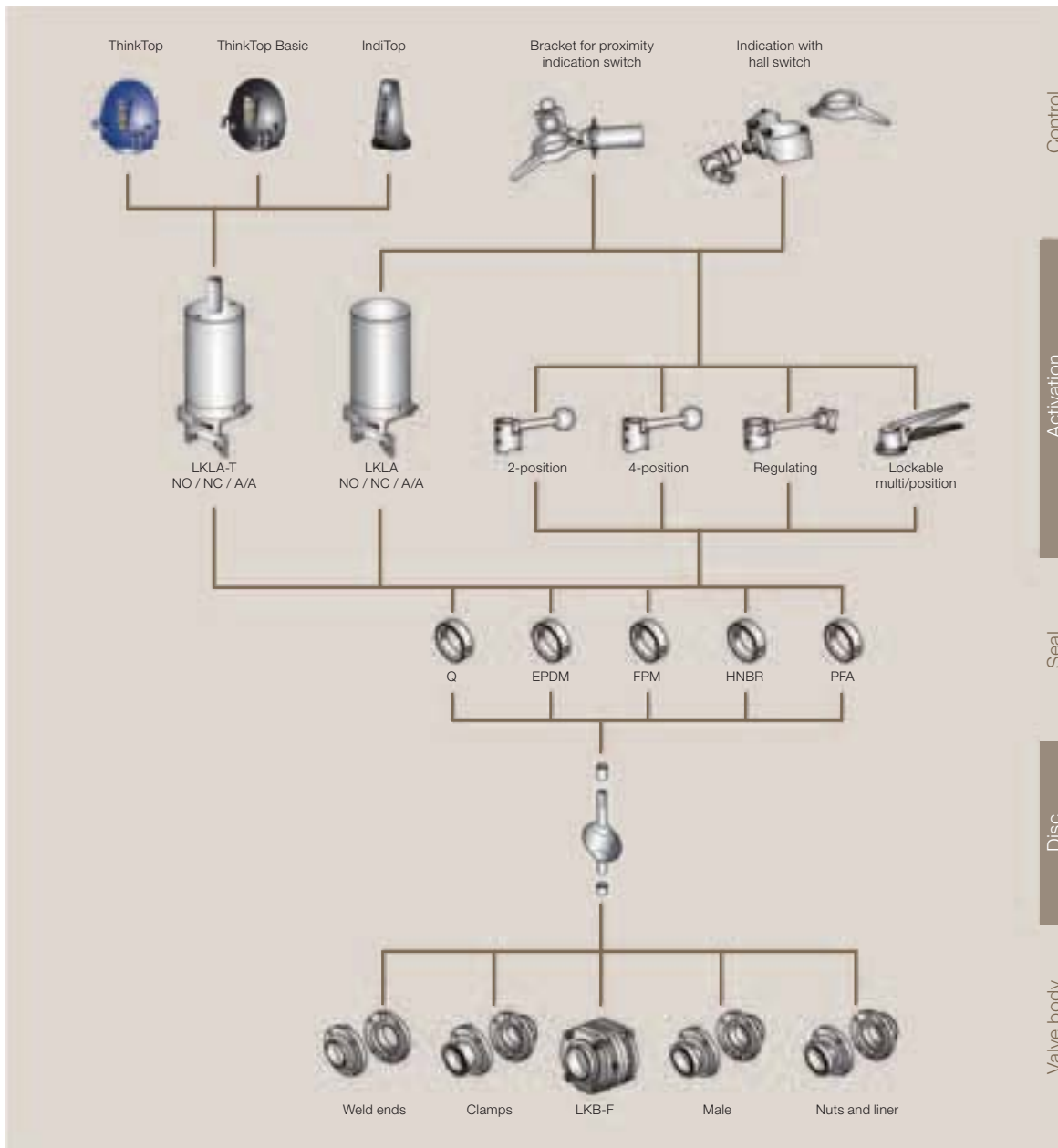
**Cluster advantage**

LKB butterfly valves can easily be mounted in even complex cluster set-ups, side-by-side with valves of other types.

Using Alfa Laval control and monitoring technologies, they can also be integrated into a broad spectrum of electronic control systems, for maximum efficiency.

# LKB butterfly valves

The Alfa Laval LKB range of butterfly valves consists of modular units designed to meet the full spectrum of requirements for effective, reliable butterfly valves at working pressures from full vacuum to 10 bar.



The following selection guide illustrates the many combinations of features and equipment available with LKB butterfly valves. In addition, there are different versions to comply with the full spectrum of worldwide installation standards. As a result, you can always find a configuration to meet any specific requirement.

### LKB with standard handle

Available with standard handle for straightforward manual operation, with a pulling/turning movement. The standard handle has a spring-locking action.



### LKB-F for flange connections

Special version that makes it easy to remove the valve body without needing to dismantle piping set-ups.

This in turn makes it easy to undertake repair, service and replacement with a bare minimum of disruption.



### LKB with actuator

A selection of different actuators is available. The special actuator design, featuring double springs, makes sure that maximum torque is applied to the valve disc at breakaway and seal positions. This results in efficient, reliable opening and closing.

Alfa Laval actuators are renowned for their exceptional reliability, regardless of operating conditions.



### LKB with lockable handle

With a range of multi-position locking operating handles to prevent unintended use of the valve. These make it possible to lock the valve in any intermediate position.

The range includes handles with either padlocks or mechanical locking mechanisms.

# Ball valves

Ball valves are constructed around a full-bore design. This makes sure the product passes through the valve with no restrictions on the flow, and that there is only minimal pressure drop.

This basic design allows cleaning using the pig method, and also makes this kind of valve ideal for use with viscous liquids and liquids containing solid or semi-solid particles.

Alfa Laval ball valves for sanitary use bear the SBV and Tri-Clover® designations.

## SBV sanitary ball valve

Alfa Laval SBV units are designed for use as a product valve, and are available with pneumatic actuators or manually-operated handles.

Ideal for applications that involve high operating pressures (up to 16 bar) and temperatures (up to 150°C), and where the use of pigging systems is required.



## Tri-Clover ball valve

Ideal for applications that require a full-flow body design to minimize line turbulence and pressure drop.

An encapsulated seat option is available for applications where it is important to reduce potential product entrapment as much as possible.

# Regulating valves

Regulating valves are normally used to adjust and monitor flow volumes and flow directions through a particular processing set-up.



## CPM-2 valve

Designed to maintain a constant pressure at the valve inlet or outlet, using different plug sizes and different Kv values. These react effectively to any changes in product pressure by shifting position against a constant air pressure.

Often used upstream of filling and bottling machines, etc.

## LKC-2 non-return valve

Non-return valve that opens when the pressure below the valve plug exceeds the combination of the pressure above the plug and the spring compression force.

The valve closes when pressure equalization is reached. Any higher pressure above the valve plug forces it to close against the seat, preventing any reverse flow.



## SPC-2 valve

Electro-pneumatic modulating valve that features an IP converter as an integrated part of the actuator. Available with a range of plug designs with different Kv values, providing different capacities.

This type is widely used for the accurate control of pressure, flow, temperature and the level of liquids in tanks.

## Unique SPC-1 valve

Different plug designs with Kv values give different capacities. This enables effective control of product flow by combining different pressure drops and stroke lengths.

Widely used as an air-pneumatic regulating valve in metering, blending, weighing and filling duties.





# Special valves

Alfa Laval provides a comprehensive selection of valves that are designed for particular purposes and to meet special requirements.

## LKAP air-operated valve

A straightforward, remotely controlled, air-operated shut-off valve widely used for small flows, and for dosing applications in the food and chemical industries.



## Sampling valve

Special valves designed to help ensure effective sterilization before and after taking each sample.

Different versions are available for high-viscosity and low-viscosity products, and for taking samples using a hypodermic needle.



## LKUV-2 air-relief valve

Double-seat automatic air-relief valve with a freely moving plastic ball that closes against the upper or lower seat, depending on pressure conditions.

Designed for use when it is important to remove any air present. Examples include vertical mounting on top of a pipe run or container, or upstream from a pump inlet.



## LKBV air-blow valve

Solenoid-operated valve for emptying liquids from pipe runs or for agitating the contents of tanks by blowing in air.

## MH shutter valve

Self-draining valves that can allow product to flow in different directions. An internal shutter closes the valve ports progressively to help minimize pressure shock and stress on both the valve and the liquids passing through.

Available in manually and single or double-acting pneumatically operated versions, and normally used in systems where it is important to contend with pressure shocks.



# Aseptic diaphragm valves

Aseptic diaphragm valves are most commonly used in the pharmaceutical industry. However, they are also ideal for use in other processing installations where it is crucial to prevent any increase in micro-organism concentrations.

Alfa Laval provides an extensive range of such valves for use in aseptic conditions and for both sterile and ultra-hygienic processes.

Alfa Laval aseptic diaphragm valves (ADV) are built around a weir-type system. This is available in a wide range of hard and soft compounds, extending from PTFE with either EPDM or silicone as backing plate to EPDM with a Kevlar core if extra mechanical stability is required.

Alfa Laval aseptic diaphragm valves can be operated by handles or pneumatic actuators. Such actuators can be fitted with an extensive range of control and monitoring equipment, including control units, position indicators, seal adjusters and stroke limiters.



The following selection guide illustrates the many combinations of features and equipment available with the aseptic diaphragm valve concept. In addition, there are different sizes and standards to comply with the full spectrum of worldwide installation standards. As a result, you can always find a configuration to meet any specific requirement.

# Valve control and monitoring

One of the most effective ways to reap full benefit from high-quality sanitary valves is to control and monitor their action as accurately, reliably and economically as possible.

Alfa Laval provides a complete range of valve-top control and monitoring equipment for use with sanitary valves.

## ThinkTop

These top-level control and indicator units provide access to the full range of electronic interfaces available for operating solenoid valves, ranging from traditional digital interfaces to AS-Interface and DeviceNet™ interfaces, or any combinations of these. These valve-top units transmit feedback signals and ensure the operator full benefit from the many technical features of Alfa Laval sanitary valves.

ThinkTop units make it possible to exploit all the advantages of automated valve monitoring and control. They also supply reliable, real-time data about their operating status at any given time. This helps ensure full traceability for each production batch.



## ThinkTop Basic

These are mid-level units that fulfil basic requirements for the automated control and monitoring of sanitary valves in installations where fewer digital inputs combined with a full range of outputs are involved. They can be applied with traditional digital interface to AS-Interface and intrinsic interface.

Installing ThinkTop Basic units is both quick and easy. They are a cost-effective way to achieve a considerable degree of flexibility in controlling both automated and semi-automated processing set-ups.

**ThinkTop Basic  
intrinsically safe  
for ATEX environment.**

