GEA ASEPTOMAG® LEAKAGE VALVES LV/LVBS

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Engineering for a better world.

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Optimized product and process safety – one more reason to smile

GEA Aseptomag® Leakage Valves LV/LVBS leave nothing to be desired for ESL/UltraClean processes. These valves combine the economic advantages of hygienic double-seat valves with the safety of uncompromising hermetic sealing of the product-wetted area.

The leakage valve is a classic double-seat valve in which the leakage chamber is open to the atmosphere, thus ensuring easy installation in the processing plant. Leakage valves are used for the mixproof shut-off of incompatible media at pipe junctions. The leakage chamber enables safe separation of the product lines and is separated on both sides by a valve seat seal.

The product-wetted area is sealed off from outside contamination by two stainless steel bellows. Thanks to the hermetically sealing stainless steel bellows, the valves achieve a higher standard of hygiene and thus contribute to improved product quality and a longer minimum shelf life.

UltraClean applications – for quality products with extended shelf-life

With the described features, the leakage valves LV and LVBS enable a simplified process compared to aseptic processing plant, but still offer increased product safety. This makes them ideal for UltraClean applications in the food, beverage and dairy industry.

The most important product parameter for UltraClean applications is shelf life. It is mainly determined by the pH value and the aw value of the product.

In addition, sensory properties need to be considered as well as the logistical chain of distribution. One of the advantages of UltraClean processing is the reduced quantity of preservatives needed for maintaining the shelf-life of the product.

Application examples

Dairy industry

- Milk-based and lactic acid products (e.g. ESL milk, dessert products, crystallizing products such as lactose)

Beverage industry

- Water-based mixed beverages (e.g. soft drinks, fruit juice and fruit-based beverages, concentrates, beverages with pulp)

Pharmaceutical industry

- WFI handling (e.g. CIP installations, injectables)

Food industry

- Sauces and delicacies

Brewery industry

- Beer and mixed beer beverages (e.g. pure yeast cultivation)

Design characteristics

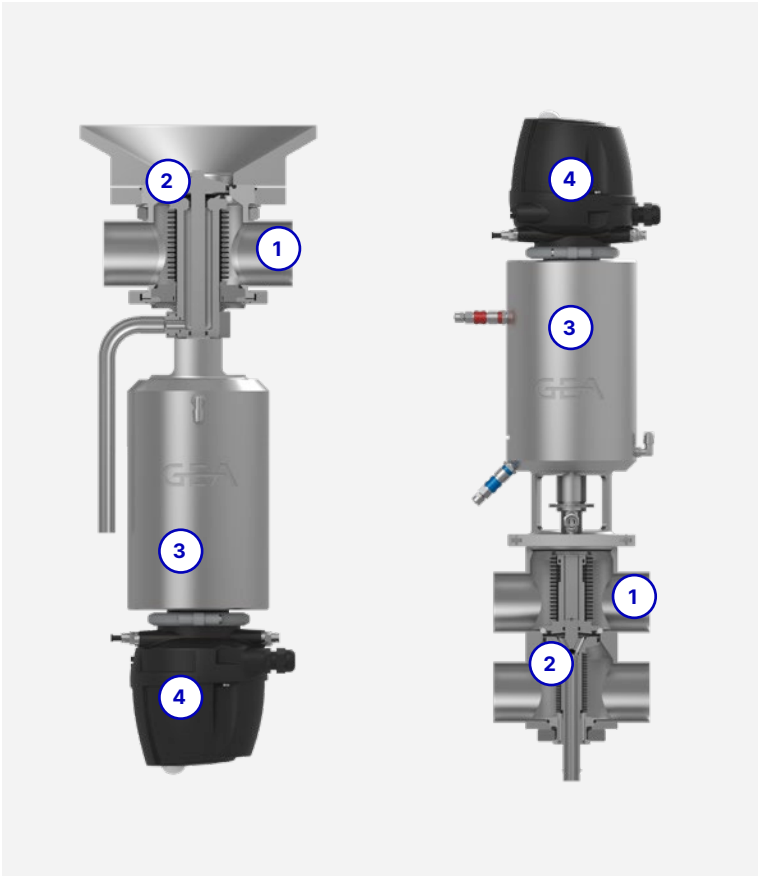
1. Housing
Housings for leakage valves are available with two, three, or four connection ports. In addition to the regular bottom-seat version with pipe connections, the options with welded (BSS) or screwed flange (BSO) connection are also available.
The valves are produced with butt-weld connections by default. Mixed port connection sizes as well as various pipe connection fittings are available upon request.

2. Internal Assembly
The internal assembly in its standard execution is equipped with a hard GEA TEFASEP® seal for the axial, and an EPDM seal for the radial valve seat. In addition to the standard sealing material, an o-ring made of PTFE is also available for the axial valve seat seal.

3. Actuator
The pneumatic actuator for the leakage valves LV and LVBS is made of stainless steel and designed to be spring-closing/air-opening (NC).
In addition to the full stroke, the standard design allows both valve seats to be lifted independently (EA). Optionally, the valve can be configured with an actuator where only the radial valve seat A can be lifted independently (AZ).

4. Clamp
Due to its solid construction, the GEA Aseptomag® Leakage Valves LV/LVBS clamp enables a pressure stable and safe connection of the main components. The special design with three segments allows a servicefriendly handling of the component, even under tight space conditions.

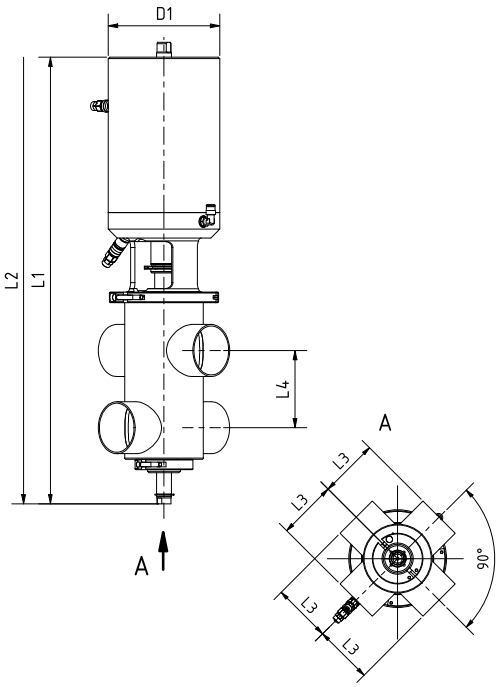
5. Feedback system
UltraClean leakage valves can be either equipped with open feedback units or GEA T.VIS® feedback systems by default. Feedback units from third party suppliers can be mounted via special adaptors.



At a glance
- Hermetic sealing by stainless steel bellows
- Uncompromising detection possibilities
- Easy and safe maintenance
- Ideal fit for UltraClean mixproof applications

Valve and system solutions from a single source
GEA valves are key components in fixed piped processing plants. The extensive valve portfolio includes, among others, the four globally renowned valve lines GEA VARIVENT®, GEA D-tec®, GEA VESTA® and GEA Aseptomag® Leakage Valves LV/LVBS. The different valve lines offer all process-relevant options and can be easily combined with each other. For instance, Aseptomag® leakage valves can be used in a process together with GEA D-tec®, GEA Aseptomag® or even GEA VESTA® single-seat valves.
All GEA valves are designed according to the highest hygiene standards and, thanks to their modular structure, can be adapted to individual customer requests or special process requirements (higher closing pressures, special materials, special design, etc.). The GEA Aseptomag® Leakage Valves are no exception to that.
In addition to single valve components, we offer both standardized and individually tailored system solutions. We design, plan and manufacture valve manifolds with a special focus on product and process safety as well as ease of maintenance.

GEA Aseptomag® Leakage Valve LV



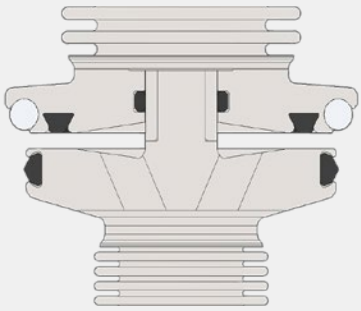
Technical data of the standard execution

Recommended flow direction		From seat A to seat B
Materials	Housing	AISI 316L
	Bellows	AISI 316TI
	Valve seat seal	EPDM/TEFASEP®
	Housing seal	EPDM
	Non product-wetted	AISI 304
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for max. 30 minutes
Control air pressure		6 bar (87 psi)
Nominal pressure		10 bar (145 psi)
Closing pressure		6 bar (87 psi)
Surface quality product-wetted		Ra ≤ 0.8 µm
Surface finish housing outside		Electrochemically polished
Type of actuation		Pneumatic actuator air/spring, independent seat lifting
Control and feedback system		Without control top
Port connections		Weld end
Labeling		1. Sticker for valve serial number 2. Laser marking for main components

		Pipe				Valve dimension			Valve
Nominal width		Ø [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	D1 [mm]	Stroke [mm]	Weight [mm]
DN	25	29.0 × 1.50	573	808	75	70.5	112.0	17	15
DN	40	41.0 × 1.50	573	808	75	70.5	112.0	17	15
DN	50	53.0 × 1.50	602	901	100	104.0	150.0	20	24
DN	65	70.0 × 2.00	602	901	90	104.0	150.0	20	24
DN	80	85.0 × 2.00	659	985	150	107.0	189.5	25	33
OD	1"	25.4 × 1.65	573	808	75	70.5	112.0	17	15
OD	1 ½"	38.1 × 1.65	573	808	75	70.5	112.0	17	15
OD	2"	50.8 × 1.65	602	901	100	104.0	150.0	20	24
OD	2 ½"	63.5 × 1.65	602	901	90	104.0	150.0	20	24
OD	3"	76.2 × 1.65	659	985	150	107.0	189.5	25	41

Position	Description of order code				
1	Valve type				
	LV	UltraClean Leakage Valve			
2	Nominal width				
	DIN 11866 A	DIN 11866 B	DIN 11866 C		
	DN 25	OD 1"	ISO 33.7		
	DN 40	OD 1 ½"	ISO 42.2		
	DN 50	OD 2"	ISO 48.3		
	DN 65	OD 2 ½"	ISO 60.3		
	DN 80	OD 3"	ISO 76.1		
	DN 100	OD 4"	ISO 88.9		
3	Housing combination				
	E/E 90°	E/E 180°	E/T	T/E	T/T
					
4	Hermetic sealing				
	KLF	Stainless steel bellows			
5	Valve seat sealing valve seat A / housing seals				
	VRE*1	EPDM radial seal (v-ring) / EPDM housing seals (standard)			See Fig. 1
	TVE*2	Divisible, EPDM radial seal / EPDM housing seals			See Fig. 2
6	Valve seat sealing valve seat B				
	T*3	TEFASEP® valve seat seal (standard)			
	P	Virginal PTFE valve seat seal			
7	Type of actuation*4				
	PA EA	Pneumatic actuator NC, seat lift seat A+B (spring closing / air opening) (standard)			
	PA AZ	Pneumatic actuator NC, seat lift seat A (spring closing / air opening)			
8	Options				
	–	Standard execution			
	DA	Steam connection for leakage chamber flushing			

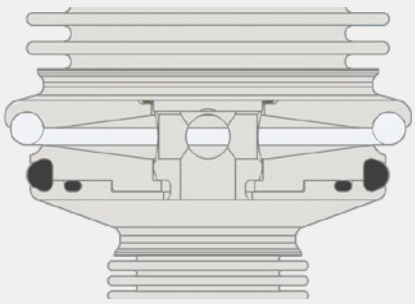
Fig. 1 VRE/P, VRE/T



Seat B

Seat A

Fig. 2 TVE/P, TVE/T



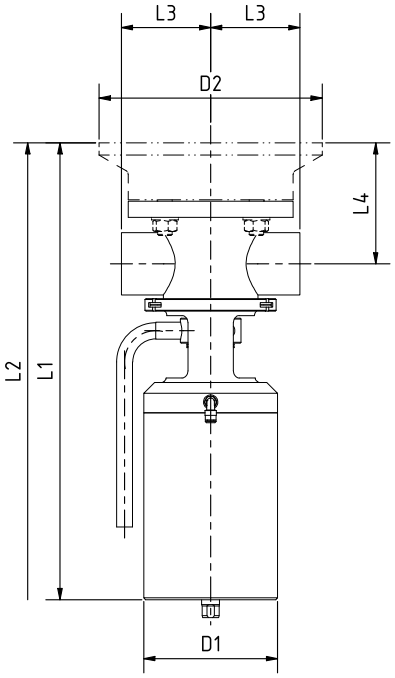
The code is composed as following, depending on the chosen configuration:

Position	1		2		3		4	5	6		7		8
Code	LV	-		-		-	KLF			-		-	

Certificates and customized solutions are available upon request.

*1 Selection VRE only available in combination with actuator type PA EA
*2 Selection TVE only available in combination with actuator type PA AZ
*3 Only applicable for processes with steam sterilization > 121 °C
*4 Actuator rating for closing pressures up to 6 bar by default

GEA Aseptomag® Leakage Valve LVBS



Technical data of the standard execution		
Recommended flow direction		From seat A to seat B
Materials	Housing	AISI 316L
	Bellows	AISI 316TI
	Valve seat seal	EPDM/TEFASEP®
	Housing seal	EPDM
	Non product-wetted	AISI 304
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for max. 30 minutes
Control air pressure		6 bar (87 psi)
Nominal pressure		10 bar (145 psi)
Closing pressure		6 bar (87 psi)
Surface quality product-wetted		Ra ≤ 0.8 µm
Surface finish housing outside		Electrochemically polished
Type of actuation		Pneumatic actuator air/spring, independent seat lifting
Control and feedback system		Without control top
Port connections		Weld end
Labeling		1. Sticker for valve serial number 2. Laser marking for main components

		Pipe					Valve dimension			Valve
Nominal width		Ø [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	D1 [mm]	D2 [mm]	Stroke [mm]	Weight [mm]
DN	25	29.0 × 1.50	509	650	75	124	112.0	170	20	21
DN	40	41.0 × 1.50	509	650	75	118	112.0	170	20	21
DN	50	53.0 × 1.50	512	670	105	144	150.0	250	20	33
DN	65	70.0 × 2.00	512	670	100	136	150.0	250	20	33
DN	80	85.0 × 2.00	535	720	150	129	189.0	250	24	46
OD	1"	25.4 × 1.65	509	650	75	126	112.0	170	20	21
OD	1 ½"	38.1 × 1.65	509	650	75	120	112.0	170	20	21
OD	2"	50.8 × 1.65	512	670	105	145	150.0	250	20	33
OD	2 ½"	63.5 × 1.65	512	670	100	139	150.0	250	20	33
OD	3"	76.2 × 1.65	535	720	150	133	189.5	250	24	46

Position	Description of order code										
1	Valve type										
	LVBS	UltraClean Leakage Bottom-Seat Valve									
2	Nominal width										
	DIN 11866 A	DIN 11866 B	DIN 11866 C								
	DN 25	OD 1"	ISO 33.7								
	DN 40	OD 1 ½"	ISO 42.2								
	DN 50	OD 2"	ISO 48.3								
	DN 65	OD 2 ½"	ISO 60.3								
	DN 80	OD 3"	ISO 76.1								
	DN 100	OD 4"	ISO 88.9								
3	Housing combination										
	E BSO[*1]	T BSO[*1]	E BSS	T BSS	E BSR	T BSR	E/E 90°	E/E 180°	E/T[*2]	T/E	T/T[*2]
											
4	Hermetic sealing										
	KLF	Stainless steel bellows									
5	Valve seat sealing valve seat A / housing seals										
	VRE[*3]	EPDM radial seal (v-ring) / EPDM housing seals (standard)								See Fig. 1	
	TVE[*4]	Divisible, EPDM radial seal / EPDM housing seals								See Fig. 2	
6	Valve seat sealing valve seat B										
	T[*5]	TEFASEP® valve seat seal (standard)									
	P	Virginal PTFE valve seat seal									
7	Type of actuation[*6]										
	PA EA	Pneumatic actuator NC, seat lift seat A+B (spring closing / air opening) (standard)									
	PA AZ	Pneumatic actuator NC, seat lift seat A (spring closing / air opening)									
8	Options										
	–	Standard execution									
	DA	Steam connection for leakage chamber flushing									

Fig. 1 VRE/P, VRE/T

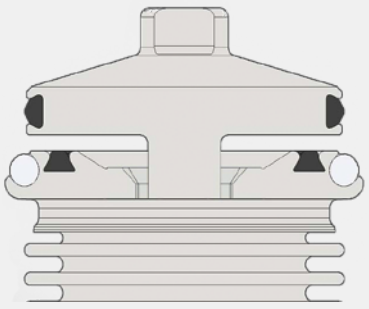
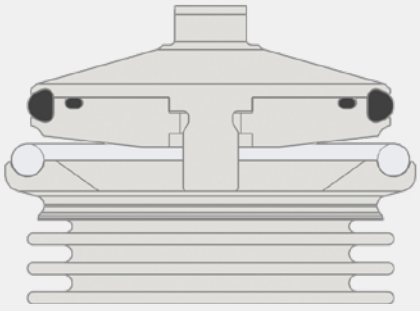


Fig. 2 TVE/P, TVE/T



The code is composed as following, depending on the chosen configuration:

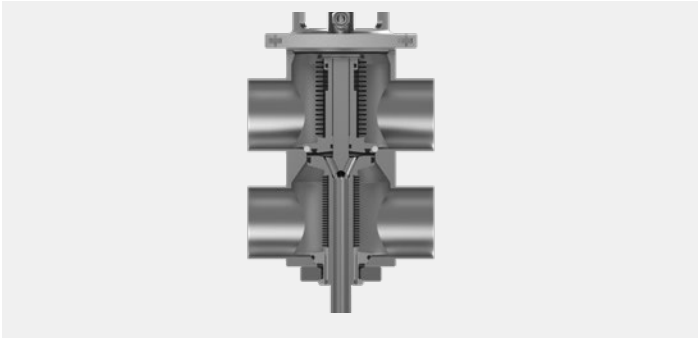
Position	1		2		3		4	5	6		7		8
Code	LVBS	-		-		-	KLF			-		-	

Certificates and customized solutions are available upon request.

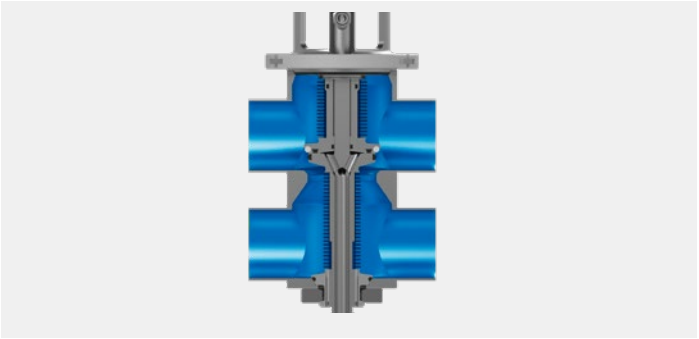
[*1] Welded flange not part of the valve, must be ordered separately
[*2] Housing combination also available as piggable solution upon request
[*3] Selection VRE only available in combination with actuator type PA EA
[*4] Selection TVE only available in combination with actuator type PA AZ
[*5] Only applicable for processes with steam sterilization > 121 °C
[*6] Actuator rating for closing pressures up to 6 bar by default

Operating mode of the GEA Aseptomag® Leakage Valve LV

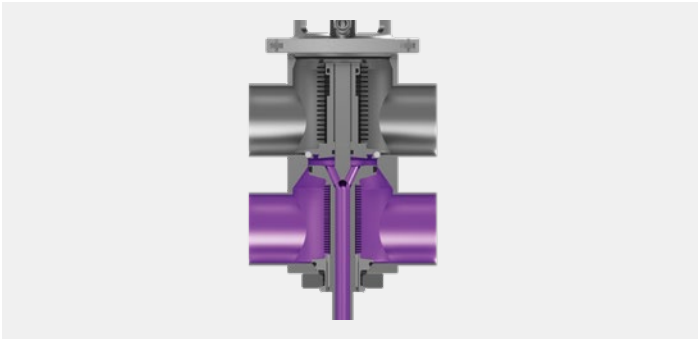
From the safe separation of foreign media to impeccable CIP cleaning and steam flushing: All valve operations are implemented via the pneumatically controlled switching sequences - including individual seat lifting for the cleaning of all product-wetted surfaces.



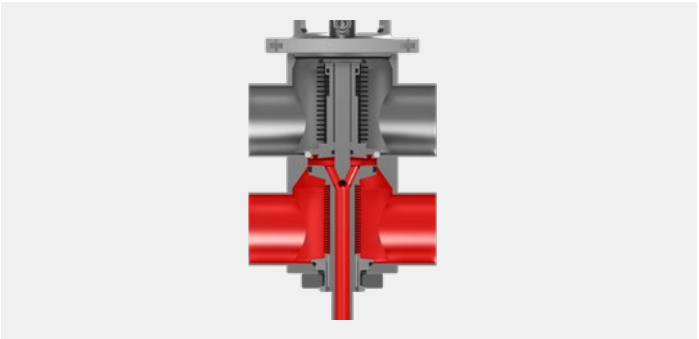
1. Basic position / fail-safe position
Safe media separation.



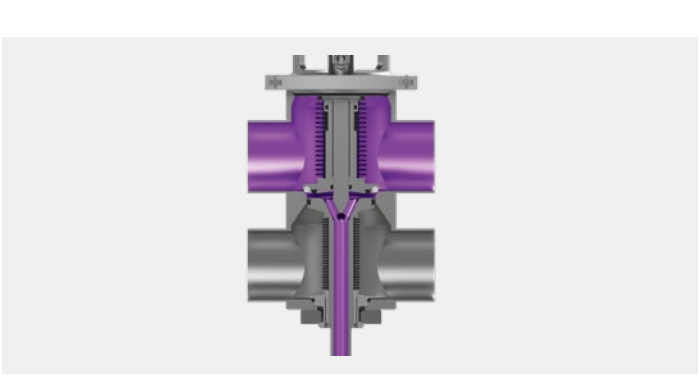
2. Transfer
Product transfer through the valve.



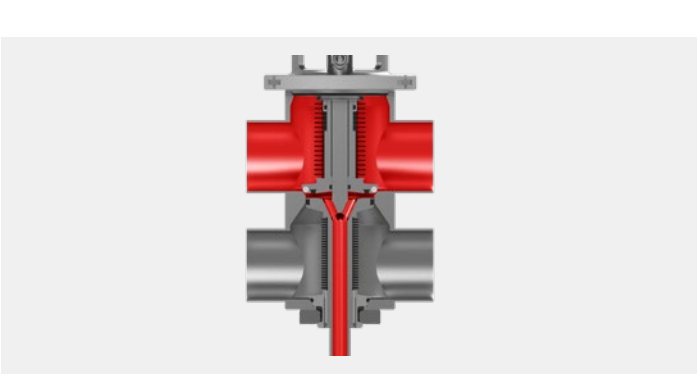
3a. CIP cleaning valve seat A
Rinse of cleaning liquid via leakage chamber.
Pulsated lifting of valve seat.



3b. SIP steam flush valve seat A
Rinse of steam via leakage chamber.
Pulsated lifting of valve seat.



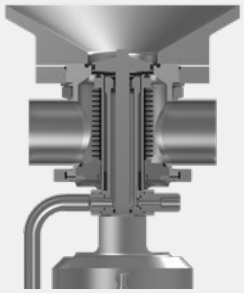
4a. CIP cleaning valve seat B
Rinse of cleaning liquid via leakage chamber.
Pulsated lifting of valve seat.



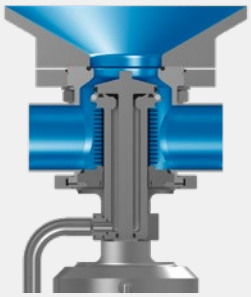
4b. SIP steam flush valve seat B
Rinse of steam via leakage chamber.
Pulsated lifting of valve seat.

Operating mode of the GEA Aseptomag® Leakage Valve LVBS

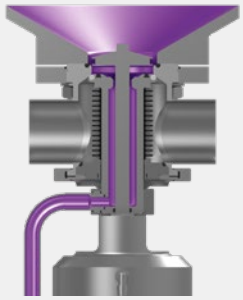
The GEA Aseptomag® Leakage Valve LVBS in bottom-seat execution is primarily used to shut-off pipelines at tank applications. The possibility of independent seat lifting and the compact valve design increase the flexibility in plant design.



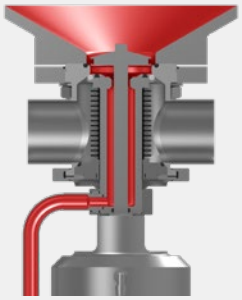
1. Basic position / fail-safe position
Safe media separation.



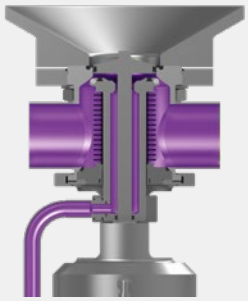
2. Transfer
Product transfer through the valve.



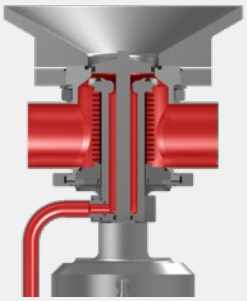
3a. CIP cleaning valve seat A
Rinse of cleaning liquid via leakage chamber.
Pulsated lifting of valve seat.



3b. SIP steam flush valve seat A
Rinse of steam via leakage chamber.
Pulsated lifting of valve seat.



4a. CIP cleaning valve seat B
Rinse of cleaning liquid via leakage chamber.
Pulsated lifting of valve seat.



4b. SIP steam flush valve seat B
Rinse of steam via leakage chamber.
Pulsated lifting of valve seat.

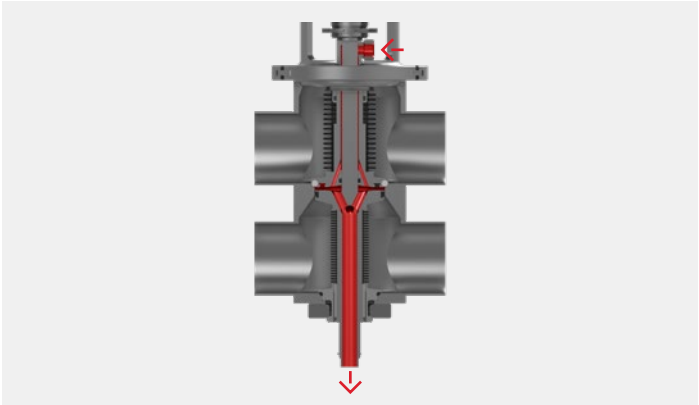
Steam connection DA

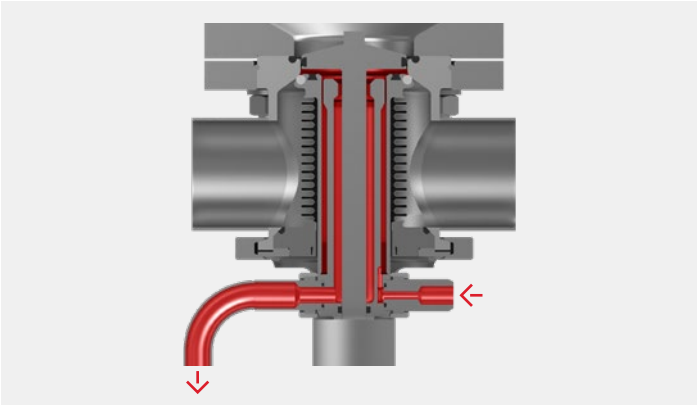
The GEA Aseptomag® Leakage Valves LV/LVBS combine the best of two worlds. On the one hand, it impresses with the reliable prevention of the notorious elevator effect by means of proven stainless steel bellows technology. On the other hand, it stands out with its simplicity in terms of installation and maintenance due to the open leakage chamber design, which allows leakage to be drained safely without the need for additional components.

At the same time, the open leakage chamber design harbors a certain remaining risk, because where something can be drained in a barrier-free manner, it is also possible that harmful substances such as germs can unintentionally get into your high-hygienic process.

With the steam connection DA, both the leakage valve LV as well as the bottom-seat execution LVBS offer the possibility of additional protection of the leakage chamber by means of steam flushing. For this purpose, steam is introduced into lantern area via an additional connection, which is then fed into the leakage chamber via specially designed channels in the relevant components. The steam discharge is done via the regular leakage hole from the valve.

Steam flushing can be used for instance after a long production run, when having standing product or after a product transfer through the valve housing and positively contributes to your product and process safety.





Backstroke barrier RSS

Pressure hammers can massively endanger the product and process safety in a plant. The backstroke barrier RSS is an option available for LV and LVBS valves which can significantly reduce the damaging consequences of pressure hammers up to 50 bar.

The heart of the backstroke barrier RSS is a locking pin which, when the valve is in closed position, engages in the respective taper in the piston rod extension and thus mechanically locks the valve seat A. In the event of a pressure hammer, the mechanical barrier prevents uncontrolled upward movement of valve seat A and thus also the unintentional contact with valve seat B. The safe separation of the two product lines by means of two independent valve seats and a leakage chamber in between is therefore given even under exceptional circumstances.

Thanks to the intelligent design of the unlocking process, it is possible to move the locking pin backwards and thereby releasing the actuator for the switching process without additional pilot valves or compressed air sources being required. For this purpose the pneumatic tubing for the full stroke connection on the actuator simply has to be routed over the backstroke barrier, that's all.

The backstroke barrier RSS is designed to work with all available valve sizes and can also be easily retrofitted. Thanks to a respective connection at the top end of the unit, all valve feedback options remain available.

Valve automation for increased process reliability, efficiency and flexibility

GEA's valve technology sets the standards for reliable, safe and permanently efficient liquid processes. Leading-edge control and automation options enable operators to achieve optimum control and monitoring of the valve – thereby realizing state-of-the-art, highly flexible operating and automation concepts. The key component is the latest generation of GEA T.VIS® control tops with reliable, groundbreaking control and feedback technology. Mechanical valve components and a control top specified for the particular application together to form a finely tuned valve unit capable of realizing advanced system concepts and enhancing process options.

The control top – integral part of the valve unit

The GEA T.VIS® feedback system enables optimized production and cleaning processes with less effort in terms of personnel, energy and time. Valve functions can be automatically and continuously monitored, recorded, evaluated and, if necessary, corrected. Detectable valve positions make a decisive contribution to optimal system operation. This ensures smooth processes and maximum product safety.

The control top offers the best protection to components against adverse ambient conditions such as moisture, dust, liquids of any kind, vibrations and other mechanical impact.

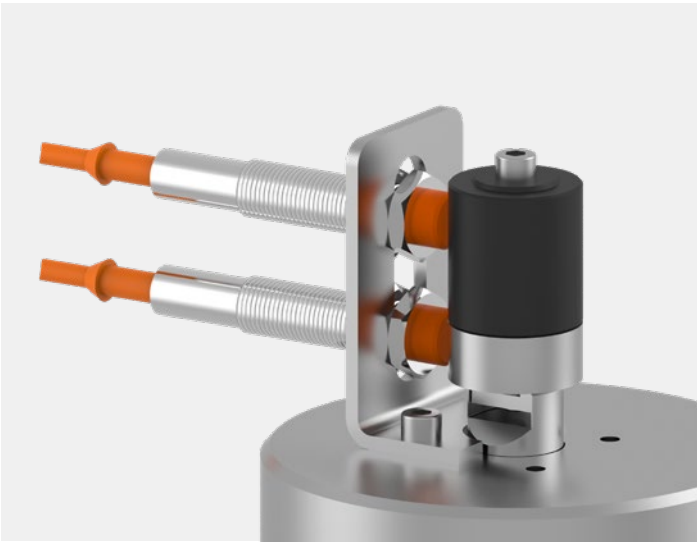
More information and details regarding the T.VIS® portfolio can be found within the GEA valve automation catalog – control and feedback systems.

RM – Sensor holder on the actuator

As an alternative to the GEA T.VIS® valve control top program, the sensor holder (RM) offers another possibility to mount proximity switches on the leakage valve. The direct wiring to a PLC system enables an automated feedback of the valve position without the need for intermediate electronics. The slotted hole can fit up to two M12 sensors which can be infinitely adjusted to the corresponding valve stroke and thus monitor the failsafe and end position.

RMEA – Sensor holder for the lantern

The sensor holder RMEA is used to insert an M12 initiator into the lantern, which allows the position of the upper valve disc (seat B) to be reliably monitored at valves with independent seat lifting. The sensor holder RMEA can be used with GEA T.VIS® feedback systems and as well as in combination with the sensor holder RM.



Engineering for a better world.

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GEA Schweiz
GEA Aseptomag AG
Industrie Neuhof 28
3422 Kirchberg, Schweiz

Tel +41 34 4262929
GEA.com/schweiz

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