

Non slam surge prevention check valve

Mod. Protector



The CSA Non-slam check valve protector are designed specifically to ensure a drop tight back prevention mitigating surge events . As their name implies, these valves close without slamming, meaning no excess pressure spikes are created. The obturator of CSA a non-slam check valve protector has an internal spring opposing the opening fluid flow pressure. When the flow of a media is strong enough, the spring compresses and the valve opens; the disc is smoothly pushed back toward the seating surface in the valve by the spring as the flow decreases and stops, but before flow direction reverses thus avoiding water hammer. The needle shaped body ensures the maximum resistance to cavitation, noise and reduced headloss.

Applications

- Downstream of pumps
- Installed in derivation from the main line to prevent backflow from downstream
- Downstream of control valves
- Main supply lines of buildings and cooling applications
- Between two separate systems to ensure the separation

Accessories

- Pressure measurement kit.

Note to the engineer

- Inlet and outlet pressure, and flow rate are required for the proper sizing.
- The valve can be installed in horizontally or in a vertical position, above 200 mm the horizontal position is recommended
- A minimum length of 3 DN downstream of the valve is recommended for the best accuracy.

Additional features

- AC system for low flow stability and increased resistance to cavitation
- CP system with triple stage energy dissipation for low flow stability and severe cavitation

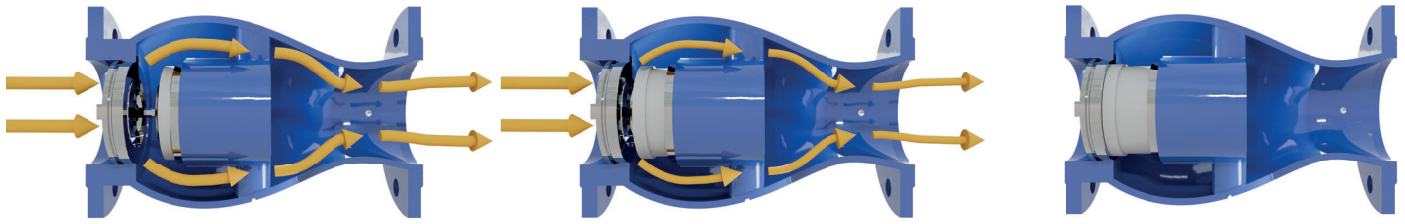
Working conditions

- Fluid: treated water.
- Maximum operating pressure: 25 bar.
- Maximum temperature: 70°C

Downstream pressure pilot adjustment range

- Blue spring: 0,7 to 7 bar.
- Red spring: 1,5 to 15 bar.
- Values lower than 0,7 available with high sensitivity pilots.

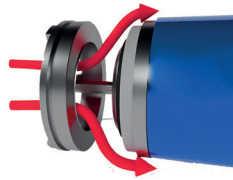
Operating principle



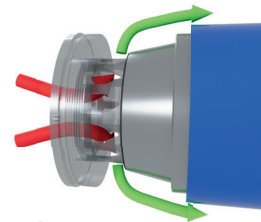
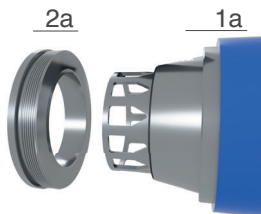
When the flow is according to the direction of the design the spring is pushed accordingly opening the full passage through the valve. The needle shaped body ensures the maximum resistance to cavitation, noise and reduced headloss.

The valve is maintained open by means of a pressure differential which ensure the perfect drop tight performance also in case of low working pressure and the absence of water hammer. That is due for example when used closed to pumps in case of power failure.

Should the flow tend to come backwards the spring pushes the obturator against the seat ensure a perfect drip tight performance. The fast closing is anticipating the water column preventing water from creating momentum thus mitigating water hammer.

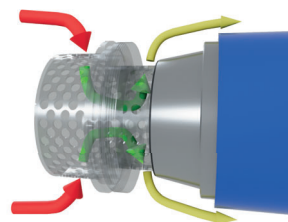
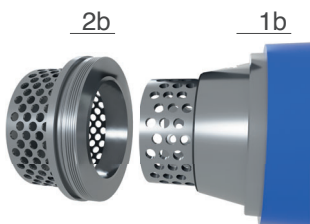


Standard version



AC version for low flow stability and cavitation prevention

The anti-cavitation trim AC mobile block includes seat and a gasket holder (1a, 2a) designed to increase the allowable pressure ratio and resistance to cavitation, improving at the same time the valve's stability to guarantee the maximum accuracy also in case of no flow.

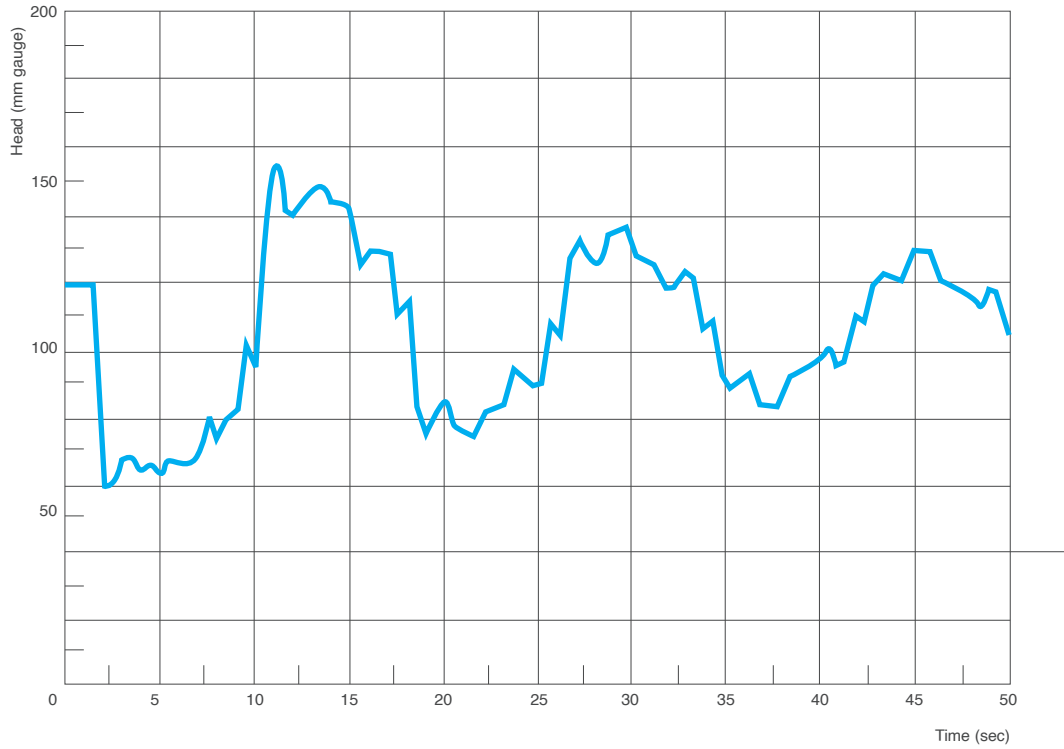


CP anti-cavitation version

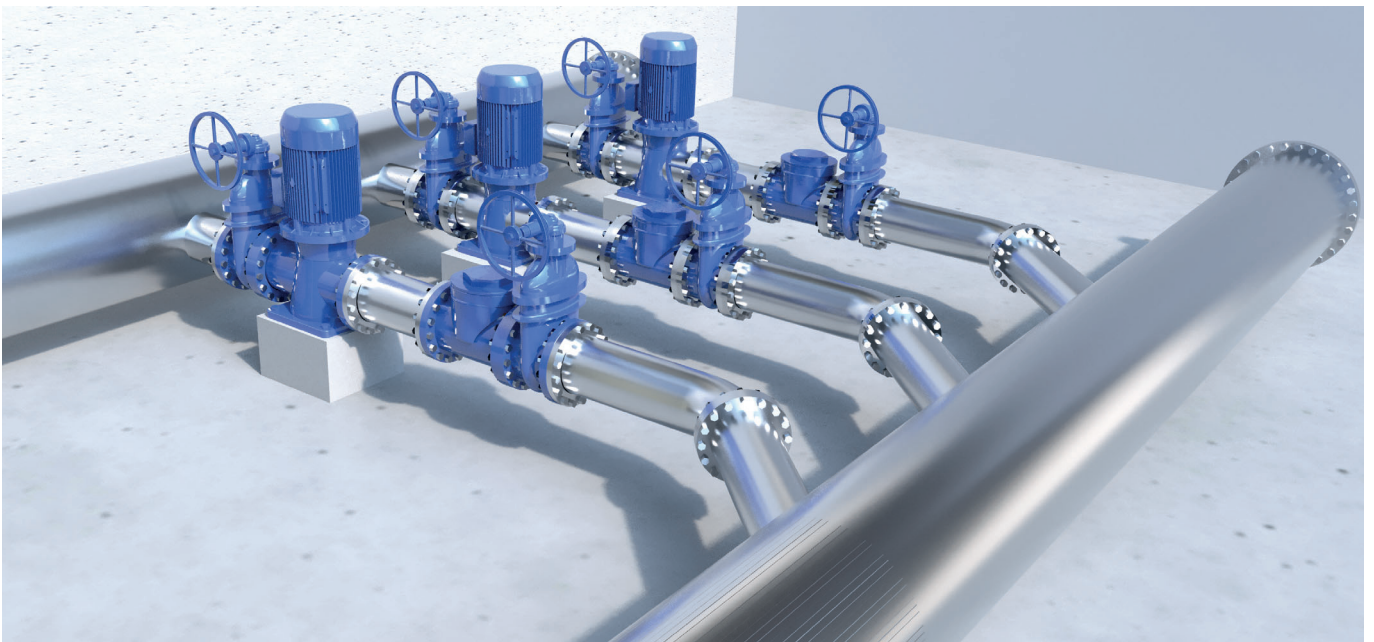
The CP system includes a different seat and gasket holder (1b, 2b) engineered for double energy dissipation between upstream and downstream, whose holes can be customized according to the project in hand and required performances

Installation layout conventional check valve

An installation lay-out with conventional check valve not anti-slam is depicted below. We can see sectioning devices for maintenance.



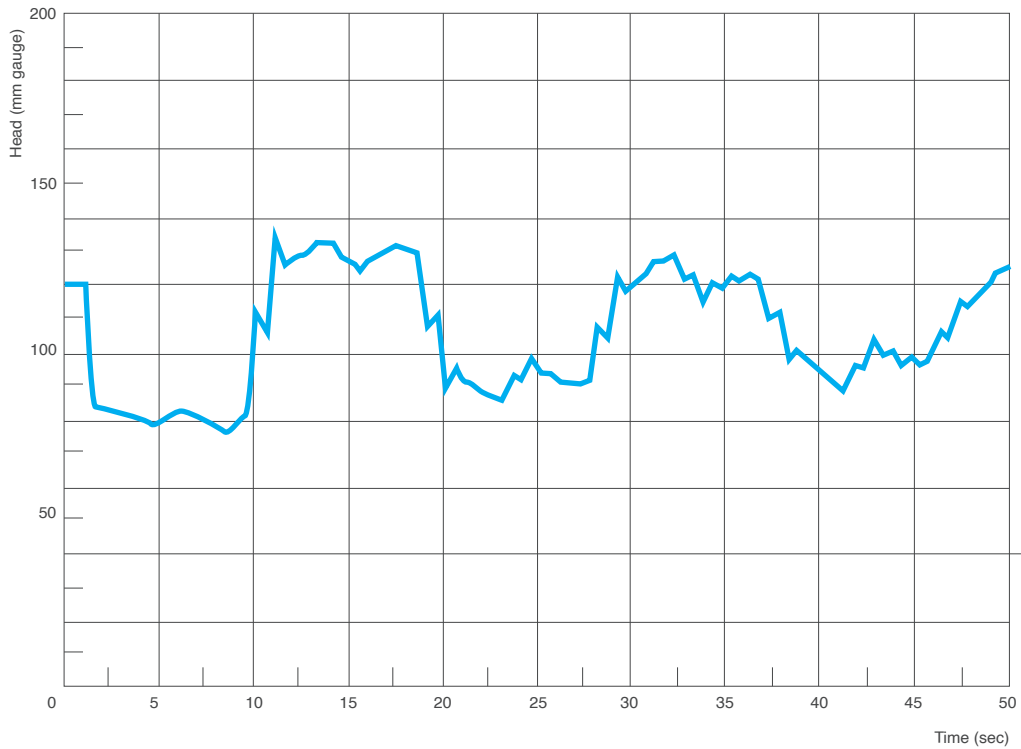
The plot shows an example of power failure In a pumping station where traditional non anti-slam check valves were installed, we can see the devastating effect of water hammer with serious danger for the system and equipment connected to it.



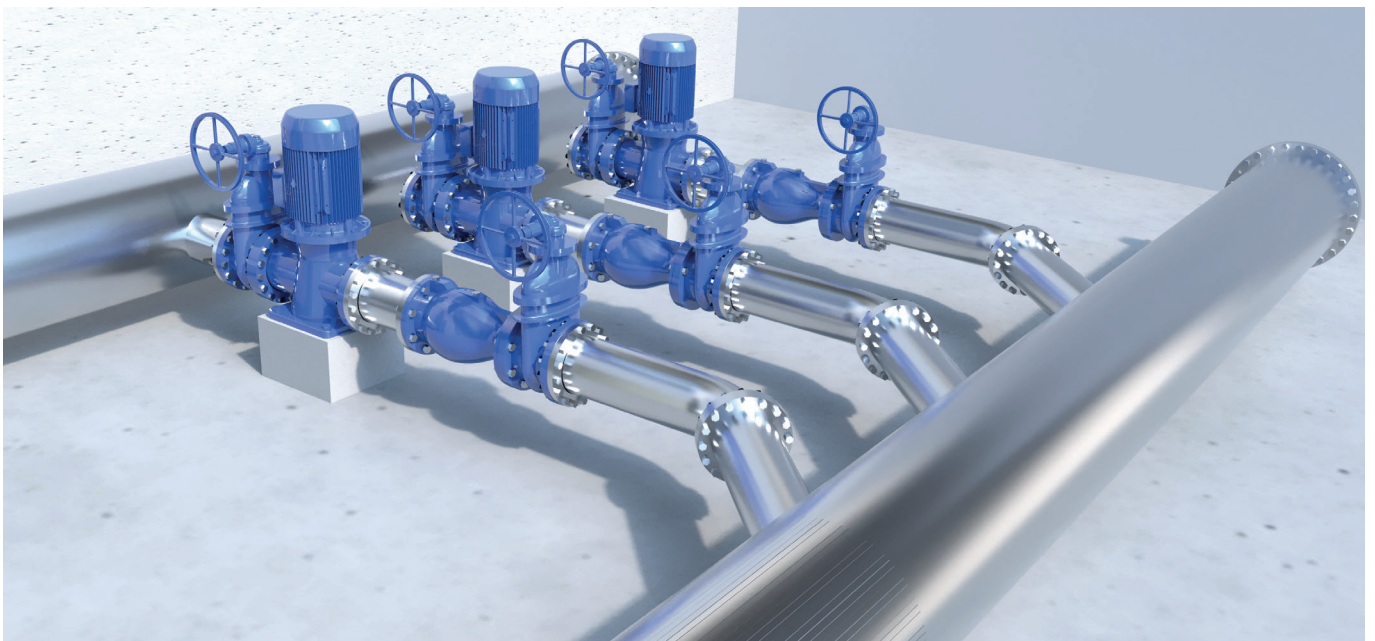


Installation layout

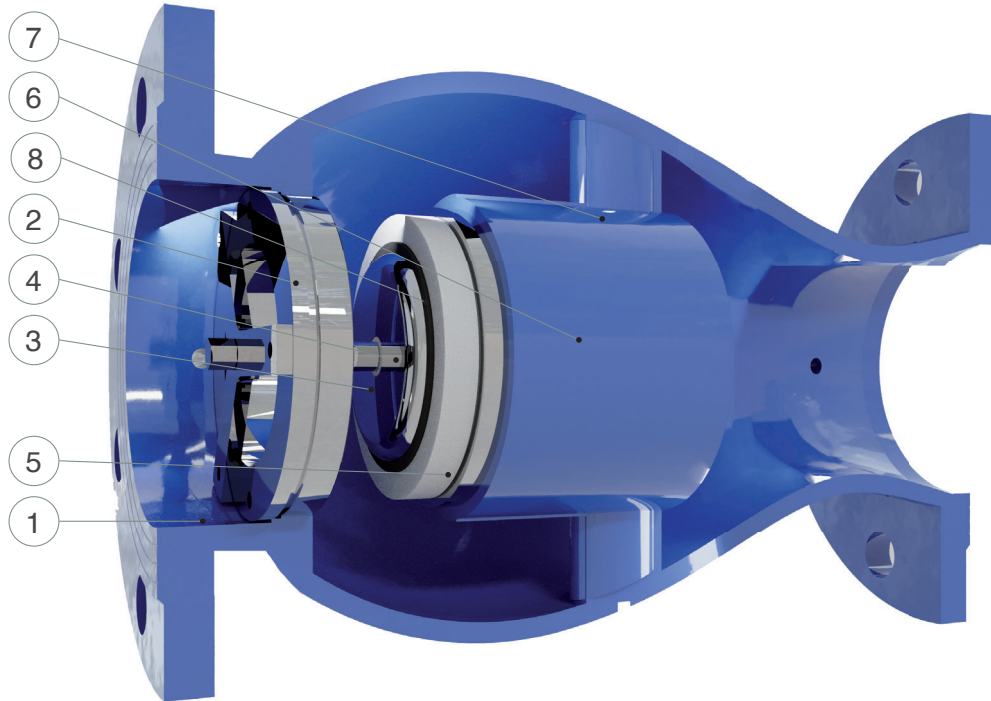
The CSA protector non slam check valve recommended lay-out is depicted below. We recommend sectioning devices for maintenance and in any case filter to prevent dirt and foreign bodies from reaching the inner part of the valves



The plot shows an example of power failure In a pumping station where CSA non slam protector check valves were installed, we can appreciate the mitigation of the water hammer event thanks to the proper working and special features of the valve.



Protector - Standard version - Technical details



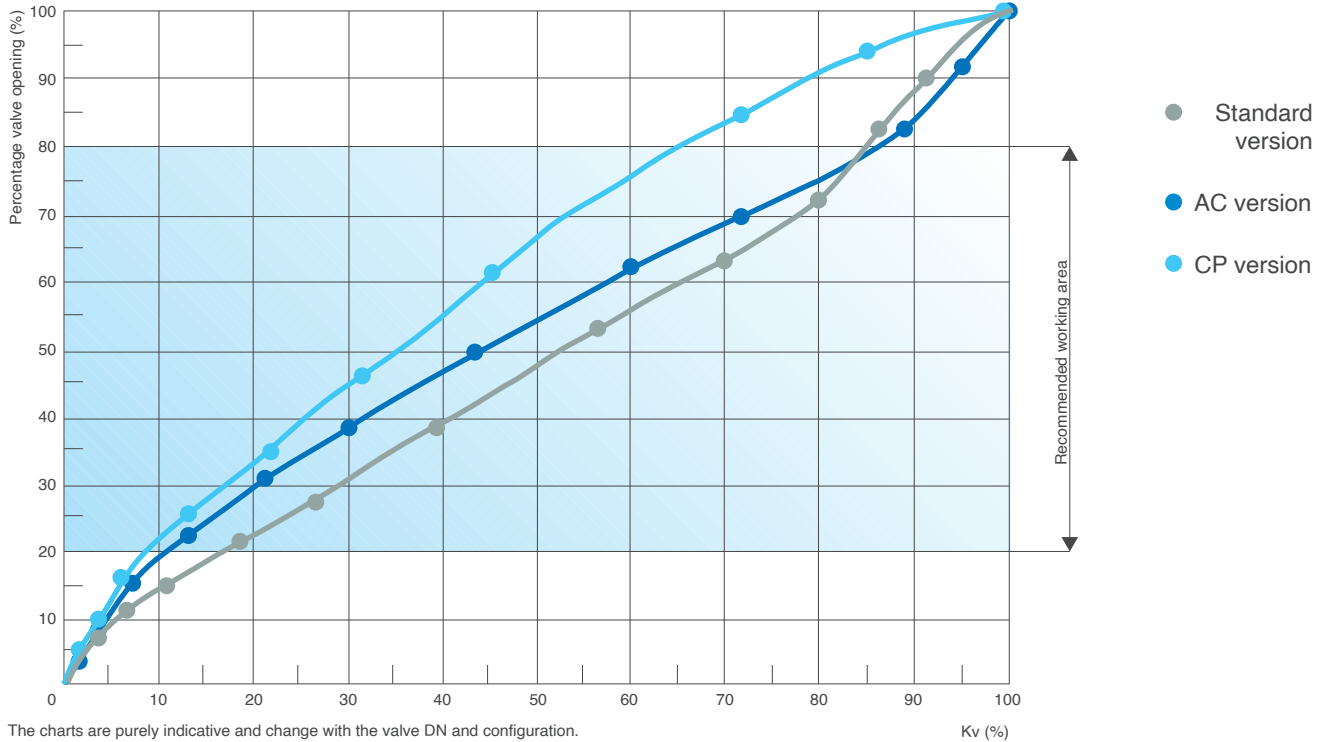
N.	Component	Standard material	Optional
1	Body	ductile cast iron GJS 450-10	
2	Seat	stainless steel AISI 316	
3	Standard system	stainless steel AISI 304/303	stainless steel AISI 316
4	Piston	stainless steel AISI 304/303	stainless steel AISI 316
5	Guiding bush	Bronze	
6	Control chamber	ductile cast iron GJS 450-10	
7	Pressure ports	stainless steel AISI 304	
8	Plane gasket	EPDM	

The list of materials and components is subject to changes without notice.

Protector - Standard, AC and CP versions - Technical data

Kv to valve opening chart

The following chart shows the opening percentage of Protector standard, AC and CP versus the Kv.



The charts are purely indicative and change with the valve DN and configuration.

Working conditions

Treated filtered water.
 Maximum temperature: 70°C.
 Minimum pressure on the pilot : 0,5 bar plus head loss.
 Maximum pressure : 25 bar.

Standard

Certified and tested in compliance with EN 1074/5.
 Pressure rating 25 bar.
 Flanges according to EN 1092/2 (different drilling on request).
 Epoxy painting applied through FBT technology blue RAL 5005.

Weights and dimensions

DN (mm)	A (mm)	B (mm)	C (mm)	Weight (Kg)	
				Body	Total
50	230	165	117	10,5	12
80	310	200	170	20	23
100	350	220	219	24,5	27
150	480	300	275	45	60
200	600	340	330	74,5	85
250	730	405	403	142	157
300	850	485	453	200	225
400	1100	645	637	430	480
500	1250	715	715	760	900
600	1450	840	922	1160	1350

All values are approximate, consult CSA service for more details.

