Pressure relief/sustaining valve in stainless steel - Mod. VSM FF

The CSA direct acting spring loaded valve Mod. VSM FF automatically maintains and sustains a minimum pre-set upstream pressure, discharging any excess downstream, regardless of variations in demand and downstream pressure fluctuations. The piston actuated VSM FF will operate in derivation from the line, as a protection from unwanted pressure rises and/or on the line as pressure sustaining valve.

Technical features and benefits

- Entirely manufactured in stainless steel machined from a solid bar, without any welding.
- Upstream pressure balanced piston technology.
- Different spring ranges available.
- Mobile block composed of stainless steel internals obtained by CNC to ensure the maximum accuracy and sliding precision, this is to ensure the best reliability and to avoid friction.
- Excellent resistance to cavitation and aggressive environments thanks to the design and the use of a wide selection of gaskets made in special materials.

Applications

- Water distribution systems.
- Fire fighting systems.
- Irrigation systems.
- Buildings and civil installations whenever stainless steel is required or advised for project requirements.
- Demineralized water and bottling plants.
- Industry and cooling systems.

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Телефоны для связи: +7 (495) 7774788, (925)7489626, 5007154, 55, 65
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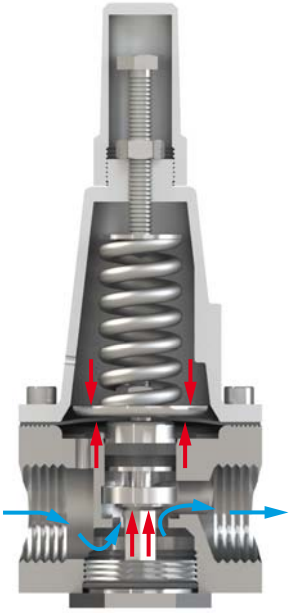
Operating principle

The operating principle of VSM FF is based on a piston sliding into the body through a drip tight lip gasket. The latter and the diaphragm on the upper part form a watertight chamber, also known as the compensation chamber.

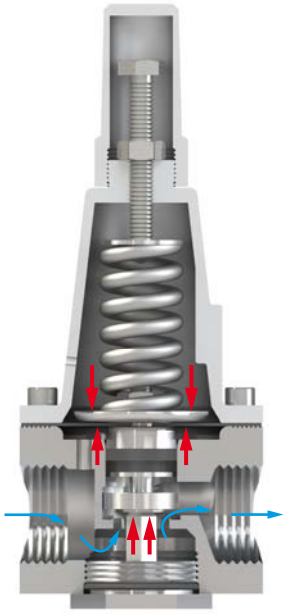
Valve normally closed

Without any incoming pressure the VSM FF is a normally closed valve, as shown in the picture, where the obturator is kept pushed down to the seat by the force of the spring.



Valve fully open

Should the upstream pressure rise above the set point of the valve, obtained by the compression of the spring, the VSM FF will open completely allowing the full passage through the seat.



Valve modulating

Should the upstream pressure fluctuate around the valve's set point the obturator, thanks to the difference in force between the spring pushing downwards and the incoming pressure underneath and through the compensation chamber pushing upwards, will move throttling the flow through the seat in order to maintain the minimum required value.

Valve fully closed (static conditions)

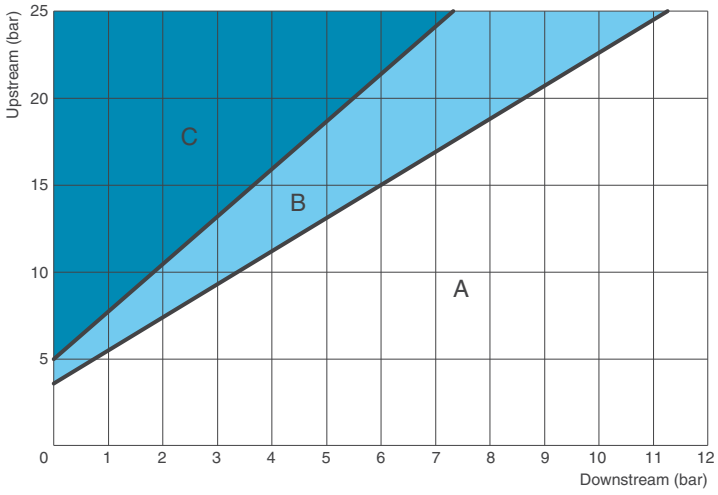
Should the water supply and upstream pressure begin to drop, the VSM FF will react immediately to maintain and stabilize the required value even in static conditions, thanks to the pressure balanced technology and compensation chamber.

Technical data

Thread (inches)	1"
Kv (m^3/h)/bar	4,95

Head loss coefficient

Kv coefficient representing the flow rate which is flowing through the valve fully open producing a head loss of 1 bar.



Cavitation chart

- A: Recommended working conditions;
- B: Incipient cavitation;
- C: Damage cavitation.

Ensure that the working point, obtained connecting upstream (y axis) and downstream (x axis) pressure conditions, falls on the A zone with the smallest valve to meet the required flow, contact CSA for further assistance. The chart is to be used for valves modulating with an opening percentage between 35-40% at standard water temperature and elevation below 300 m. For continuous pressure sustaining the maximum allowed Δp shall not exceed 17 bar. The pressure relief function will tolerate higher pressure differential values.

Working conditions

Treated water with a maximum temperature of 70°C.
Higher temperatures on request.
Upstream pressure (inlet): maximum 25 bar.

Standard

Certified and tested in compliance with EN 1074/5.
Threaded BSP connections.
Variations on the thread available on request.

Recommended flow rate - pressure sustaining

Thread (inches)	1"
Flow rate min. (l/s)	0,03
Flow rate max. (l/s)	0,8

Recommended flow rate - pressure relief

Thread (inches)	1"
Flow rate max. (l/s)	1,4

Springs pressure ranges

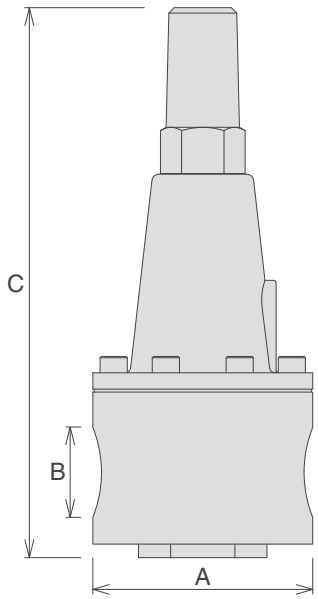
Thread (inches)	1"
Spring pressure (bar)	0,7-7
	1,5-15

Higher values available on request.

Weights and dimensions

Thread (B) inches	1"
A (mm)	81
C (mm)	205
Weight (Kg)	2,7

Values are approximate, consult CSA service for more details.



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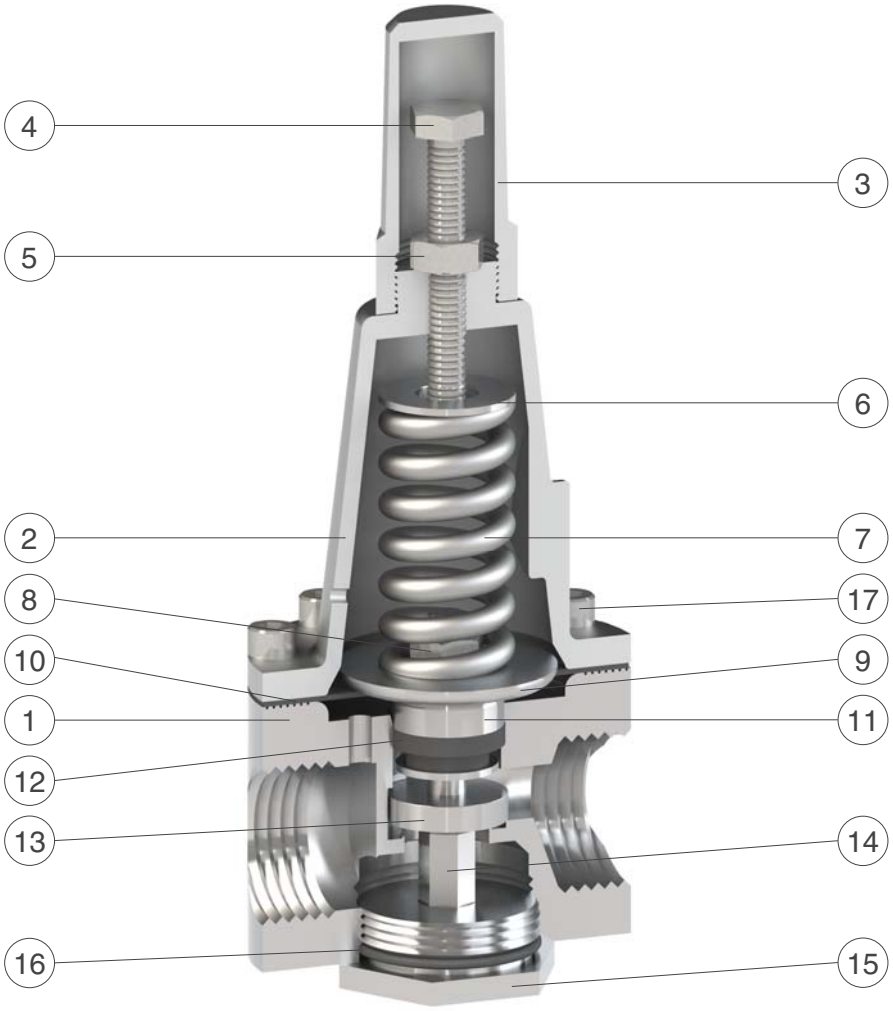
Technical details



N.	Component	Standard material	Optional
1	Body	stainless steel AISI 303	stainless steel AISI 316
2	Cover	nickel-plated bronze	stainless steel
3	Hood	stainless steel AISI 303	stainless steel AISI 316
4	Regulating screw	stainless steel AISI 304	stainless steel AISI 316
5	Nut	stainless steel AISI 304	stainless steel AISI 316
6	Spring guide	stainless steel AISI 303	stainless steel AISI 316
7	Spring	painted steel 52SiCrNi5	
8	Self-locking nut	stainless steel AISI 304	stainless steel AISI 316
9	Upper flat	stainless steel AISI 303	stainless steel AISI 316
10	Diaphragm	neoprene	
11	Piston	stainless steel AISI 303	stainless steel AISI 316
12	Lip gasket	NBR	EPDM/Viton
13	Obturator with plane gasket	stainless steel AISI 303 and polyurethane	stainless steel AISI 316
14	Blocking nut	stainless steel AISI 303	stainless steel AISI 316
15	Driving tap	stainless steel AISI 303	stainless steel AISI 316
16	O-ring	NBR	EPDM/Viton
17	Screws	stainless steel AISI 304	stainless steel AISI 316

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

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