Downstream pressure reducer/stabilizer Mod. VRCD

The CSA valve Mod. VRCD reduces and stabilizes the downstream pressure regardless of flow rate and upstream pressure variations. It can be used for water, air and fluids in general with a maximum working pressure of 40 bar.

Technical features and benefits

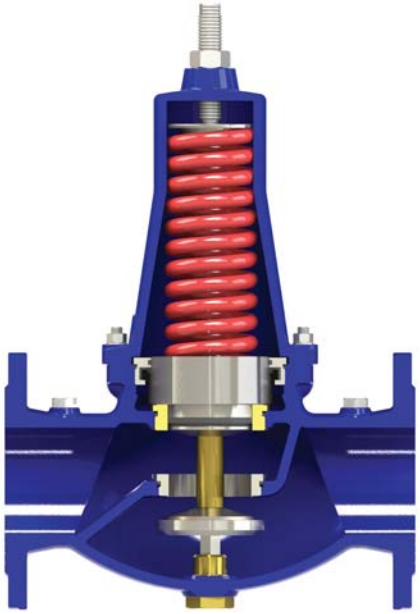
- Flanged version DN 50-150.
- Upstream and downstream pressure balanced, to stabilize the downstream pressure to a preset (and adjustable) value regardless of upstream pressure variations without creating unwanted upsurges.
- Ductile cast iron for body and cap, piston in stainless steel, seat in stainless steel, guiding bushing in stainless steel as well as bolts and nuts.
- Innovative self cleaning piston technology, pat. pending, to improve performances reducing maintenance operations.
- Mobile block composed of three components in gun metal / stainless obtained by CNC to ensure the maximum accuracy and sliding precision, this is to avoid friction and unexpected leakage.
- Upstream/downstream pressure outlets for gauges.
- Large expansion chamber to increase the allowable pressure ratio, in order to reduce the risk of cavitation also in case of high Dp across the valve itself.
- Epoxy powder applied using FBT technology.

Applications

- Water distribution systems.
- Buildings and civil installations.
- Irrigations.
- Cooling systems.
- Fire protection systems and in general whenever the pressure reduction has to be ensured.

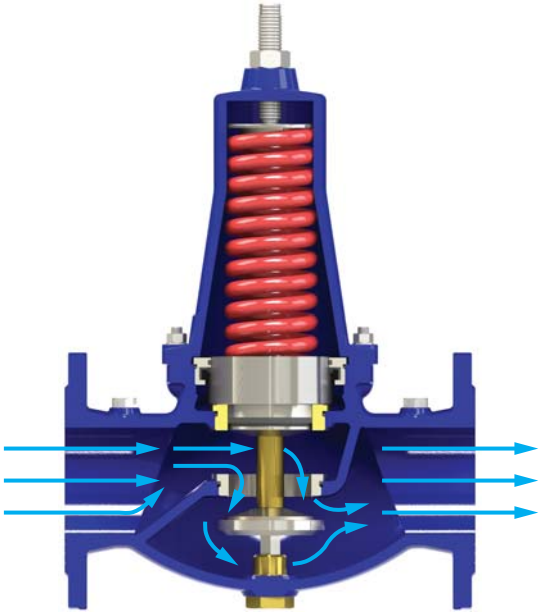
Operating principle

The operating principle of VRCD is based on a piston sliding into two rings in stainless steel/bronze of different diameters. These rings, tightly connected to the body, form a watertight chamber also known as the compensation chamber which is necessary for the accuracy and stability of the valve.



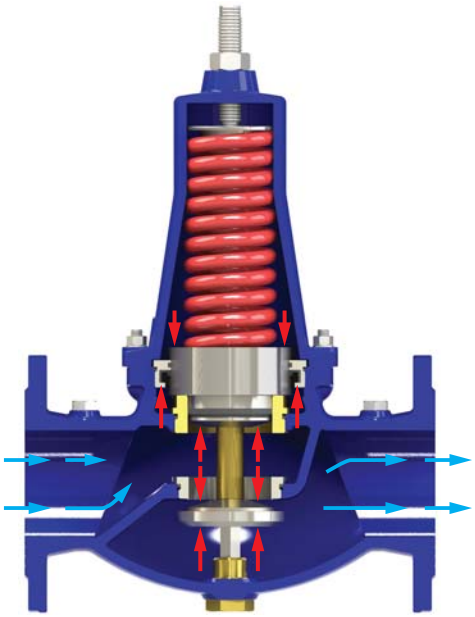
Valve normally open

Without any pressure the VRCD is a normally open valve, where the piston is kept pushed down by the force of the spring located in the cover.



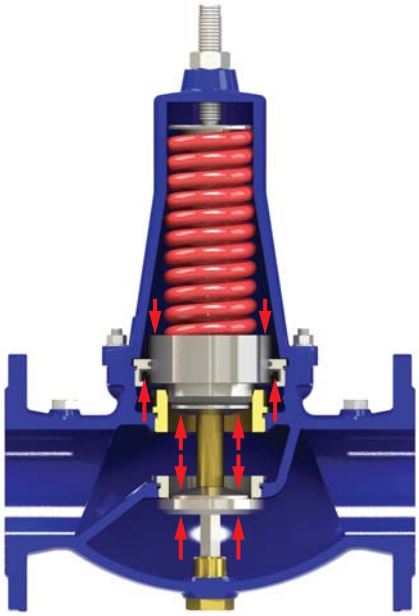
Valve fully open

During working conditions, should the downstream pressure drop below the valve's set point obtained by the compression of the spring, the VRCD will open completely allowing the full passage.



Valve modulating

Should the downstream pressure rise above the valve's set point the resultant of the force obtained by the downstream pressure, acting on the mobile block and the compensation chamber against the spring pushing downwards, will raise the obturator producing the required head loss to stabilize the downstream pressure.



Valve fully closed (static conditions)

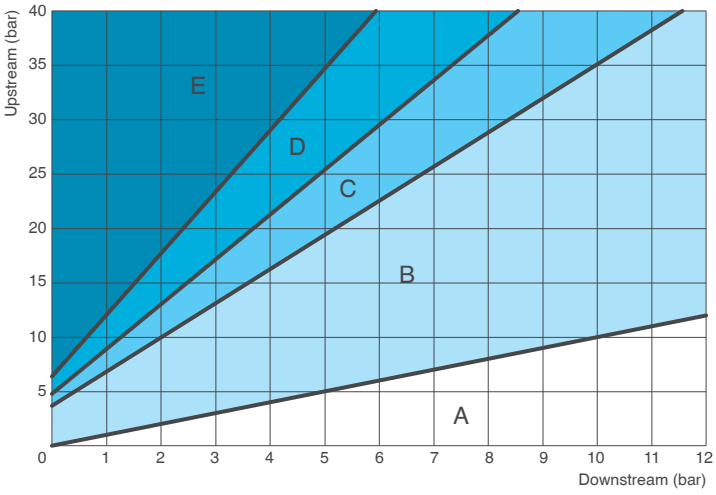
In case of downstream pressure rise above the valve's set point, should the modulating phase of the valve not be enough to stabilize the pressure, the valve will close maintaining the required downstream pressure value even in static conditions.

Technical data

DN mm	50	65	80	100	125	150
Kv (m^3/h)/bar	20	47	72	116	147	172

Head loss coefficient

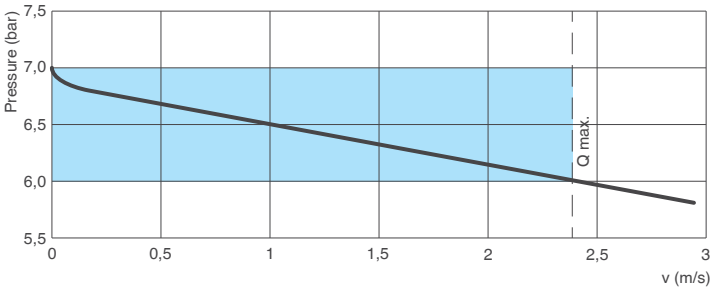
Kv coefficient representing the flow rate which is flowing through the valve fully open, and producing a head loss of 1 bar.



Cavitation chart

The cavitation phenomenon is very important during the proper valve sizing process since it may lead to substantial damages, in addition to vibration and noise. The cavitation chart has to be used to determine whether the intersection of the line, connecting upstream and downstream pressure conditions, lies within one of the 5 zones to be identified as follows:

- A: Out of the possible working conditions;
- B: Recommended working conditions;
- C: Incipient cavitation;
- D: Damage cavitation;
- E: Choked and unpredictable conditions, please consult CSA for further assistance.



Reduced pressure falloff

The plot is showing the reduced pressure falloff that occurs through the valve when the flow increases. The area depicted in blue includes the recommended working range and maximum velocity.

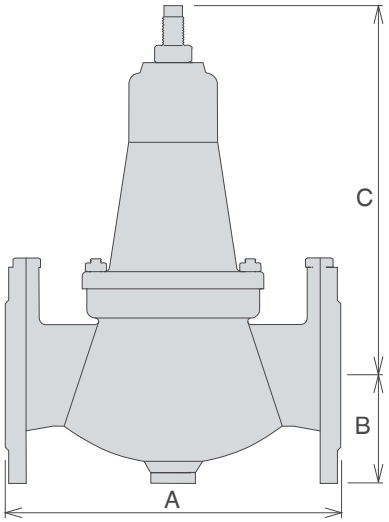
Working conditions

Treated water with a maximum temperature of 70°C.
Upstream pressure (inlet): maximum 40 bar.
Downstream pressure (outlet): adjustable from 1,5 to 6 bar or from 5 to 12 bar.
Higher downstream pressure values on request.

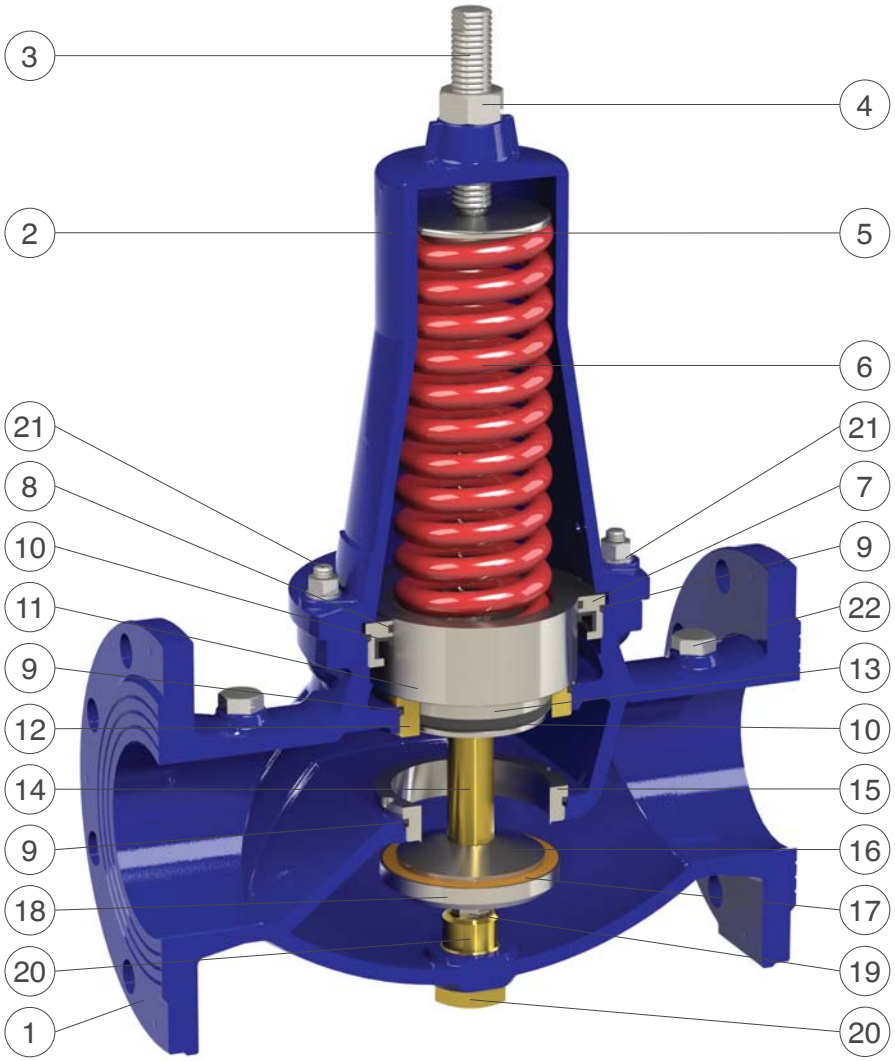
Standard

Designed in compliance with EN-1074/4.
Flanges according to EN 1092/2.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.

DN mm	50	65	80	100	125	150
A mm	230	290	310	350	400	450
B mm	83	93	100	117	135	150
C mm	280	320	350	420	590	690
Weight Kg	12	19	24	34	56	74



Technical details



N.	Component	Material	Standard
1	Body	ductile cast iron	GJS 500-7
2	Cap	ductile cast iron	GJS 500-7
3	Driving screw	stainless steel	AISI 304/316
4	Nut	stainless steel	A2/A4/AISI 316
5	Spring guide	stainless steel	AISI 304/316
6	Spring	spring steel	Si -Cr
7	Main bush	stainless steel	AISI 304/316
8	Sliding ring	PTFE	
9	O-ring	NBR/EPDM	
10	Gasket	NBR/EPDM	
11	Upper piston	stainless steel	AISI 304/316
12	Lower ring	bronze/stainless steel	AISI 304/316
13	Lower piston	stainless steel	AISI 304/316
14	Spacer	brass/stainless steel	OT58/AISI 304/316
15	Obturator sealing seat	stainless steel	AISI 304/316
16	Gasket support	stainless steel	AISI 304/316
17	Plane gasket	NBR/polyurethane	
18	Gasket holder	stainless steel	AISI 304/316
19	Guiding shaft	stainless steel	AISI 304/316
20	Driving tap	brass/stainless steel	OT58/AISI 304/316
21	Studs, nuts and washers	stainless steel	A2/A4/AISI 316
22	Taps for pressure gauges	stainless steel	A2/A4/AISI 316