BOMAFA®
Oil & Gas

www.bomafa.eu

SELF-OPERATED PRESSURE CONTROL VALVE (SRV)

General

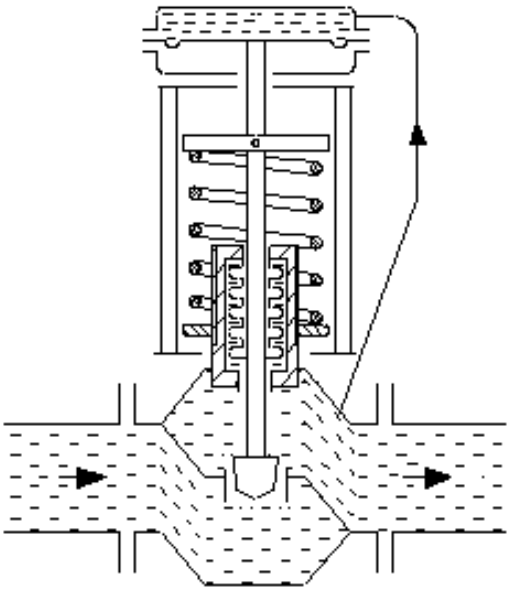
The Self-operated Control Valve there is no need for any external power source, only used fluid own energy to adjust the valve opening automatically, and pressure set value can be adjusted freely during on working condition. With advantages of quick-opening flow characteristic, flexible operation, good sealing performance, stable fluid pressure, high regulating precision level and low leakage etc. it is widely used in automatic control of the inlet-valve and outlet-valve pressure reduction, stabilization of the fluids, such as air, liquid and vapor in various industrial equipments, like Oil & Gas, Petrochemical industries, chemical engineering, Power Plant, metallurgy with the condenser, it can continuous on working under 350°C steam condition.

Characteristics

1. Without any external driving energy, low cost, Suitable for explosive environment.
2. Simple structure, little maintenance work.
3. The set point can be adjusted, and the range is wide, convenient for the user to do continuous adjustment.
4. Body pressure, convenient pipe installation
5. Using the pressure balance valve structure, no packing, frictionless movable components, sensitive control, high control precision.

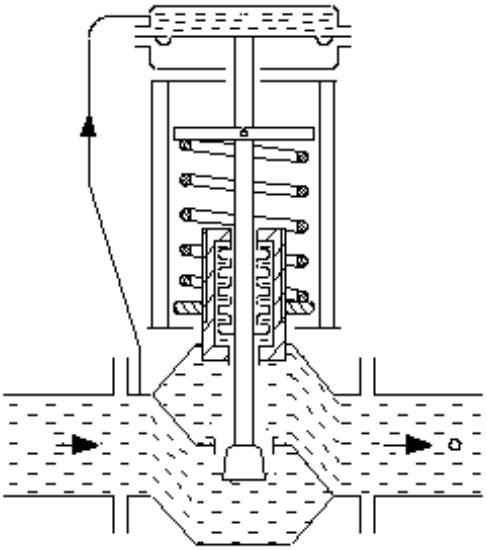
Operational principle

1. Operational principle of self-operated outlet pressure control valve:
The initial plug position is opening. When the inlet pressure P1 pass the plug and seat it changes to outlet pressure P2; P2 gets through a pressure guiding pipe input lower membrane chamber in the diaphragm; the reaction force and the spring balance spool position determines the opening level of valve and thus controls the outlet pressure.
When the outlet pressure P2 increases, the force P2 acting on the diaphragm also increased. Meanwhile, the force on the diaphragm is bigger than the spring reaction force, which makes the plug close on the seat position and decrease the valve opening level; P2 decreased until the force on the diaphragm equals to the spring reaction force and make P2 as set figure and vice versa.



Control Outlet Pressure

2. Operational principle of self-operated inlet pressure control valve:
The initial plug position is closing. When the inlet pressure P1 pass the plug and seat it changes to outlet pressure P2; P1 gets through a pressure guiding pipe input lower membrane chamber in the diaphragm; the reaction force and the spring balance spool position determines the opening level of valve and thus controls the inlet pressure.
When the inlet pressure P1 increases, the force P1 acting on the diaphragm also increased. Meanwhile, the force on the diaphragm is bigger than the spring reaction force, which makes the plug get away from the seat position and increase the valve opening level; P1 decreased until the force on the diaphragm equals to the spring reaction force and make P1 as set figure and vice versa.



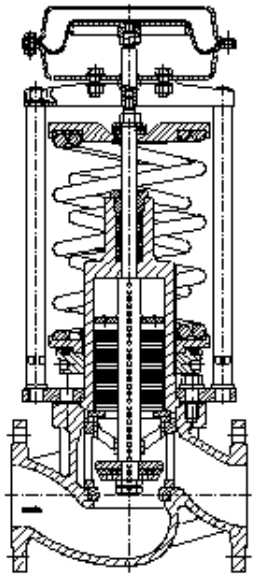
Control Inlet Pressure

Valve structure

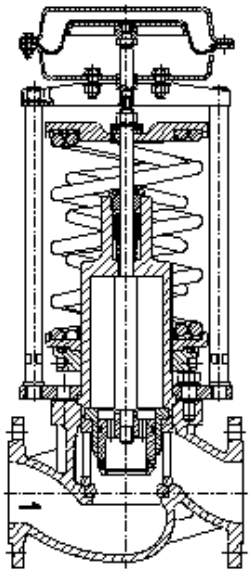
a) Structure of DN15 to DN100 (1/2" to 4"): Balance Type Single Bellows Outlet Pressure Control Valve

b）Structure of DN125 to DN300 (5" to 12"): Outlet Pressure Cage Self- Regulating Valve

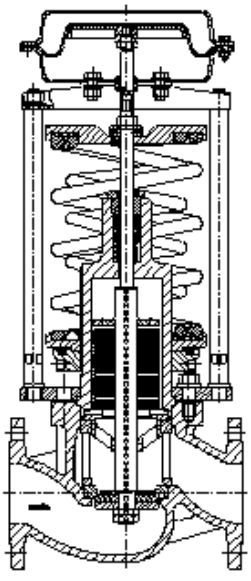
c）Structure of DN15 to DN100（1/2" to 4"): Inlet Pressure Single Balanced Bellow Valve



a) Balance Type Single- Seat Bellows Valve

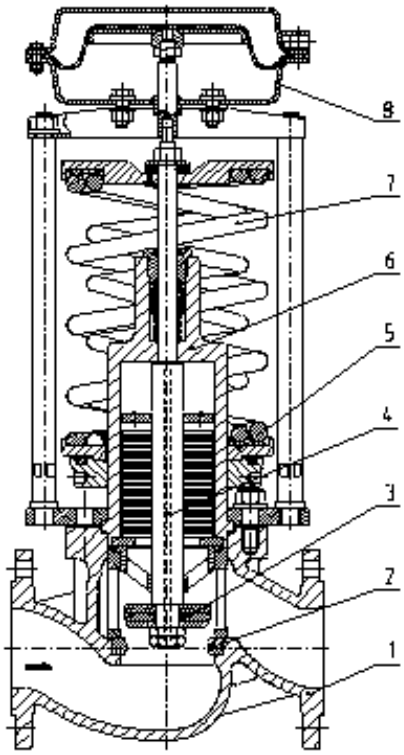


b) OutletCage Balance Type



c) Inlet Single- Seat Balanced Bellows Type

Popular materials of main parts



POS	PART NAME		MATERIAL
1	Body		WCB, CF8, CF8M
2	Seat		CF8, CF8M, CF3M
3	Plug	Soft sealing	PTFE
		Hard sealing	304, 316
4	Stem		304 316
5	Seat		HT200, WCB
6	Bonnet		WCB, CF8, CF8M
7	Spring		60Si2Mn, 50CrVA
8	Diaphragm cover		20, 304
9	Diaphragm		NBR, EPDM, FKM
10	Packing		PTFE, Flexible graphite

Specifications and technical parameters

1. Main technical parameters standard KV > 7

DN (mm)		25	32	40	50	65	80	100	125	150	200	250	300
Rated flow coefficient Kv		11	17	29	43	70	110	169	275	440	690	960	1300
Rated travel L (mm)		10		14		20		25		40		60	
Actuator type		Diaphragm type (Set pressure ≤0.7MPa), Cylinder type (Set pressure > 0.8MPa), Bellows type											
Actuator	Set point KPa	100	200	300	700	1000	1500	2000	3000	4000			
	Effective area cm^2	400	280	200	100	71	71	50	33	28			
PN (MPa)		1.6 / 4.0 / 6.4 / 10.0											
Inherent flow characteristic		Quick open											
Action type		Press to close (control outlet), Press to open (control inlet)											
Structure type		Single seat, Cage											
Inherent adjustable ratio R		30											
Reduction ratio		10:1 ~ 1.25:1											
Medium temperature (℃)		General < 120℃, With the condenser≤350℃											
Regulation accuracy (%)		±10											
Allowable leakage	Soft sealing	VI, Zero leakage											
	Hard sealing	IV, V											
Flange connection		PN1.6MPa according to ASME B16.9 / EN1092-1 RF, Raised surface. PN ≥ 4.0MPa according to ASME B16.9 / EN1092-1 FM, Female surface											
Pressure regulating range (KPa)		30 to 60, 50 to 100, 80 to 200, 120 to 350, 250 to 500, 400 to 800, 700 to 1000, 900 to 1400, 1200 to 1700, 1500 to 2000, 1800 to 2400, 2200 to 2800, 2600 to 3200, 3000 to 3600, 3500 to 4000											

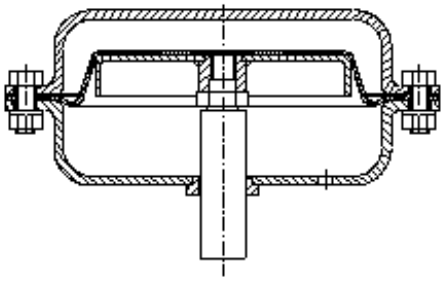
2. Main technical parameters standard KV≤7

DN (mm)	15 / 20 / 25											
Seat diameter dn (mm)	4				5	6	7	8	10	12	15	20
Rated flow coefficient Kv	0.02	0.05	0.08	0.12	0.2	0.32	0.5	0.8	1.2	2.0	3.2	7

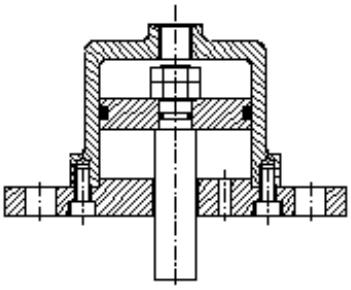
Remark:

- Production can be according to customers' special requirements
- Flange can be produced according to ANSI/ASME, DIN, JIS.

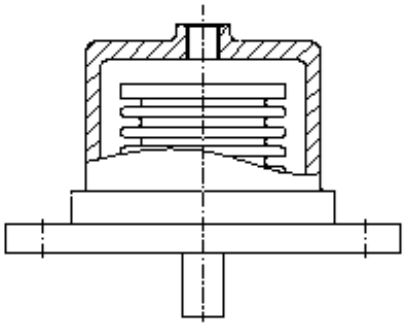
Actuator type



Diaphragm type
Pressure setting ≤0.7MPa



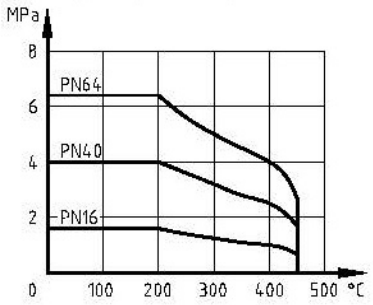
Piston type
Pressure setting＞0.8MPa



Bellows type
Applicable to special medium

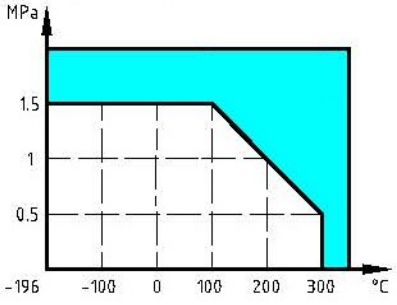
Temperature and pressure range

Body temperature-pressure curve



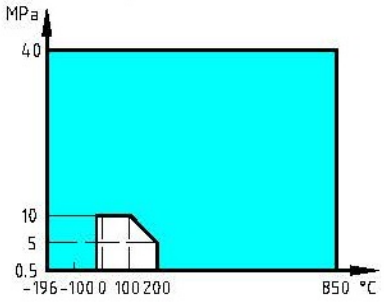
WCB

Parts temperature-pressure curve

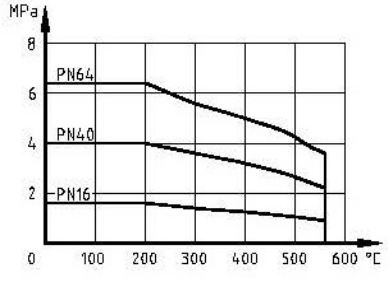


Metal Valve Plug

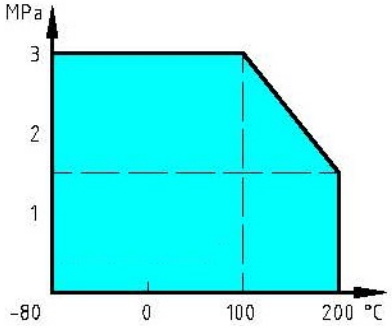
Packing temperature-pressure curve



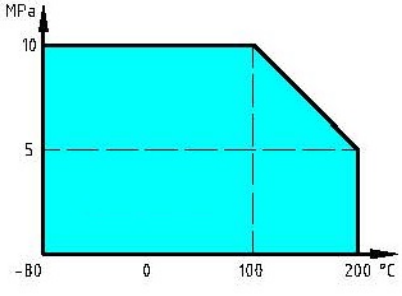
Graphite



CF8

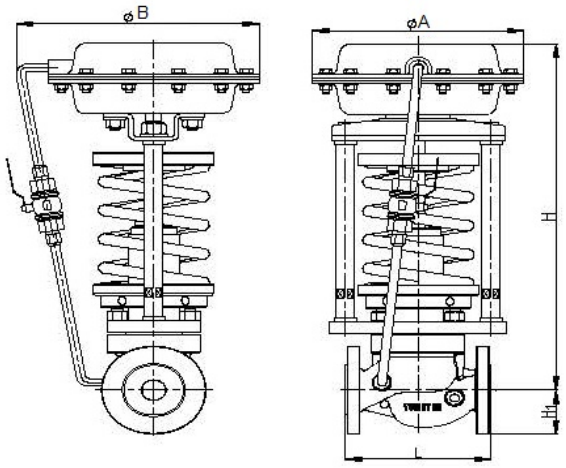


Soft sealing Plug



PTFE

Size and Weight



Unit: mm

(DN)			15	20	25	32	40	50	65	80	100	125	150	200	250	300
Structure length L			160			180	200	230	290	310	350	400	480	600	673	850
Pressure Range KPa	30 to 120	A	308						398			498				
		B	400						490			590				
	100 to 300	A	232						282			308				
		B	320						370			400				
	250 to 500	A	198						232			282				
		B	290						320			370				
	400 to 800	A	198									232			282	
		B	290									320			370	
H			460				490		660			790			860	940
H_1			47.5	52.5	57.5	70	75	82.5	92.5	100	110	125	143	170	200	230
Weight (kg)			26				37		58	72	90	114	130	156	180	210
Thread interface tubing			G1/4, G3/8													

Remark:

- Flange standard is ASME B16.9 / EN1092-1 (PN1.6MPa)
- For the steam medium, increasing the condenser, Flip-Valve
- The pressure is greater than 0.8MPa, use the piston actuator, ΦA and ΦB size are different.

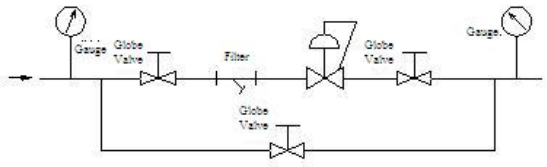
Installation, application and notice

1. Installation:

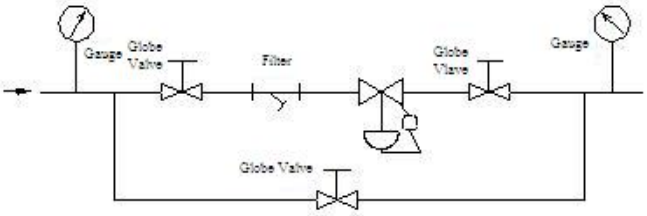
a) Before installation, clean the pipeline to make enough straight pipelines at the entrance and is equipped with filter.

b) The valve should be installed vertically upright in horizontal pipelines, inclined when necessary, try to avoid horizontal installation.

c) In order to ensure the product maintenance or faulty continuous production, should be set to bypass valve, as shown below:



d) For the use of the medium for steam, the main valve should flip, condenser shall be located above the adjustable actuator pressure valve and the lower valve pipeline. As shown below:



e) When the pressure is too large, such as pressure from 3.5MPa decompression directly to the 0.35MPa, to avoid stopping the use of the valve when the pressure increases lead to the damage of equipment, users are advised to use safety valve or front cut-off.

2. Application and notice:

a) The outlet pressure is measured to set pressure before delivery. Adjust the adjust plate to change the set pressure.

b) When the medium is steam, fill the condenser with water and at the same time open the actuator vent until there is water coming out. Tighten the exhaust gas plug, input water until full, tighten the screw injection nozzle, slowly open the front and back cut-off valves.

The information and specifications contained in this literature are considered accurate. However, they are supplied for informative purposes and should not be considered certified. The products of BOMAFA Group are continually being improved and the specifications, dimensions and information contained in this catalogue are subject to change without notice. For additional information or confirmation, please consult your BOMAFA Group representative.

Quality Management System

ISO 9001-2015

Head Office:
BOMAFA Oil & Gas GmbH
Hohensteinstr. 52
44866 Bochum / Germany

Tel: +49 (0) 2327 992 - 0
Fax: +49 (0) 2327 314 - 43
Email: sales@bomafa.eu
Website: www.bomafa.eu

BOMAFA Oil & Gas