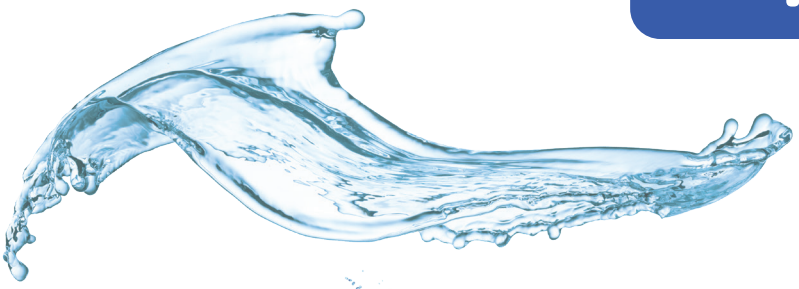
ŌMEAX

Specialist in industrial valves

Automatic Control Valve

Neptune



Presentation

COMING SOON: UL/FM, PN40, PN63

Advantages

1. Two designs of body
   - Full bore (FB)
     - Large flow capacity
     - Low head loss
     - Seal at Zero flow rate
   - Reduce bore (RB)
     - Lower flow capacity, suitable for building services and pressure reduction
     - Cavitation resistance
     - Seal at Zero flow rate
2. Large choices of valve body material: SS304, SS316, SS316L, Duplex, Carbon steel, Bronze, Aluminium
3. Large choices of pilot material: SS304, SS316, SS316L, Brass, Bronze
4. Stainless steel 304 or 316 pilot circuit and valves.
5. Robust design: seat in stainless steel.
6. High flow capacity thanks to larger diameter of seat.
7. Stable working even if the flow is close to Zero.
8. High performance and strength Nylon enforced diaphragm.
9. Personalized product: functions, color...
10. Easy operation and maintenance: without disassembly from the pipeline

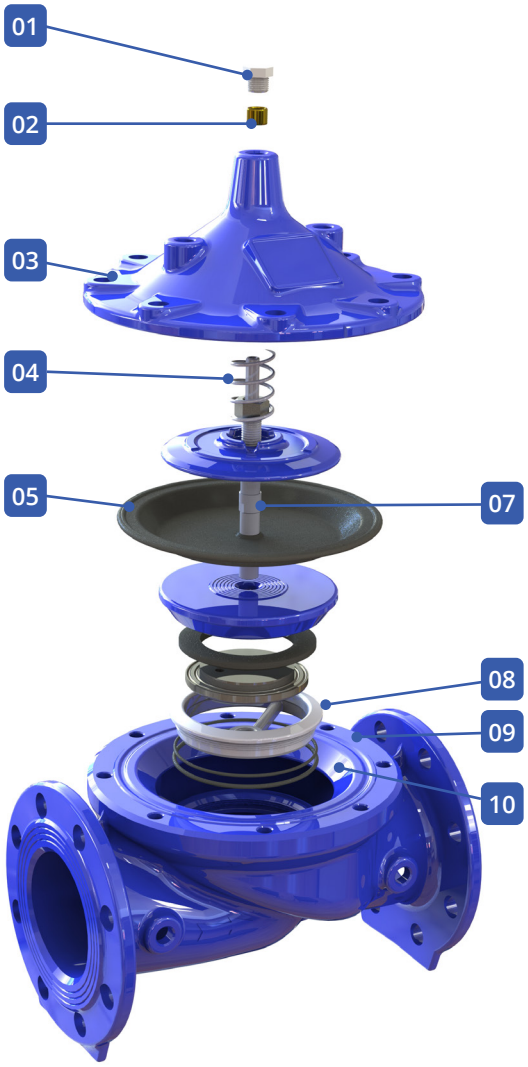
Specifications

Design and technical data

DN mm	DN 40 - DN1600
DN inch	1"½ - 64"
Temperature	Water: 0°C - 70°C Fuel: -40°C - 70°C
Type of connection	Threaded and flanged
Application	• Pressure, Flow, Level control, Smart control in municipality • Water, pumping station, building, fire protection, irrigation, water treatment • Fuel • Sea water • Clear water
Pressure range	• ISO PN10/ PN16/PN25 • ANSI Class 125/150/300 • JIS 10K/16K • KS Table D/E, • KS4087 PN16
Flange standard	• EN 1092-2 • ISO 7005-2 • ANSI or JIS • KS2129 or KS4087
Design standard	EN 1074-5
Test standard	ISO 5208 and EN12266-1*

* Resistance and tightness of the body (1.5 x allowable operating pressure), Tightness of the seat, (1.1 x allowable operating pressure)

Main valve



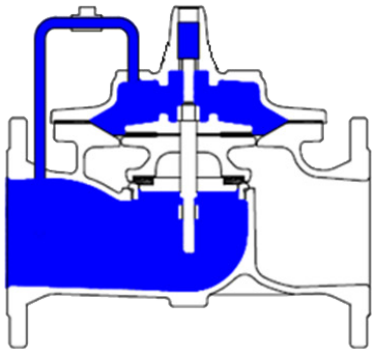
01 Different indicators

Structure for main valve

1. Position indicator: stainless steel 304 (316 in option)
2. Bush: bronze
3. Bonnet pagoda shape for highest mechanical resistance
4. Spring: stainless steel 304 and best working zone under 20 % and 80 % compression (316 in option)
5. Diaphragm: bowl shape, integrated sealing rings for both bonnet and shaft
6. Counter seat different design against cavitation and small valve opening
7. Shaft: bigger diameter for highest mechanical resistance
8. Counter seat: no shaking even for small opening
9. Seat: Full bore as DN+2mm - DN40 - DN300)
10. No rust water between the seat ring and body because of the double O-ring

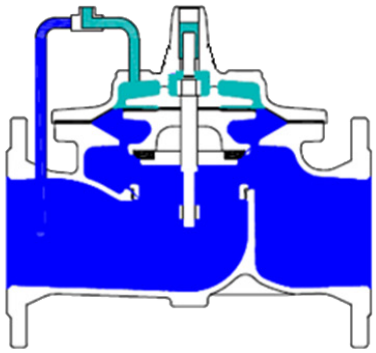
Option

Working principle



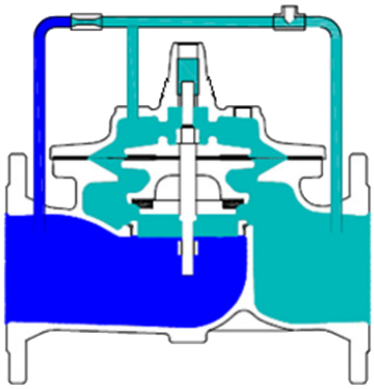
Tight Closing Operation:

When pressure from the inlet pressure is applied to the cover chamber, the valve closes driptight.



Full Open Operation:

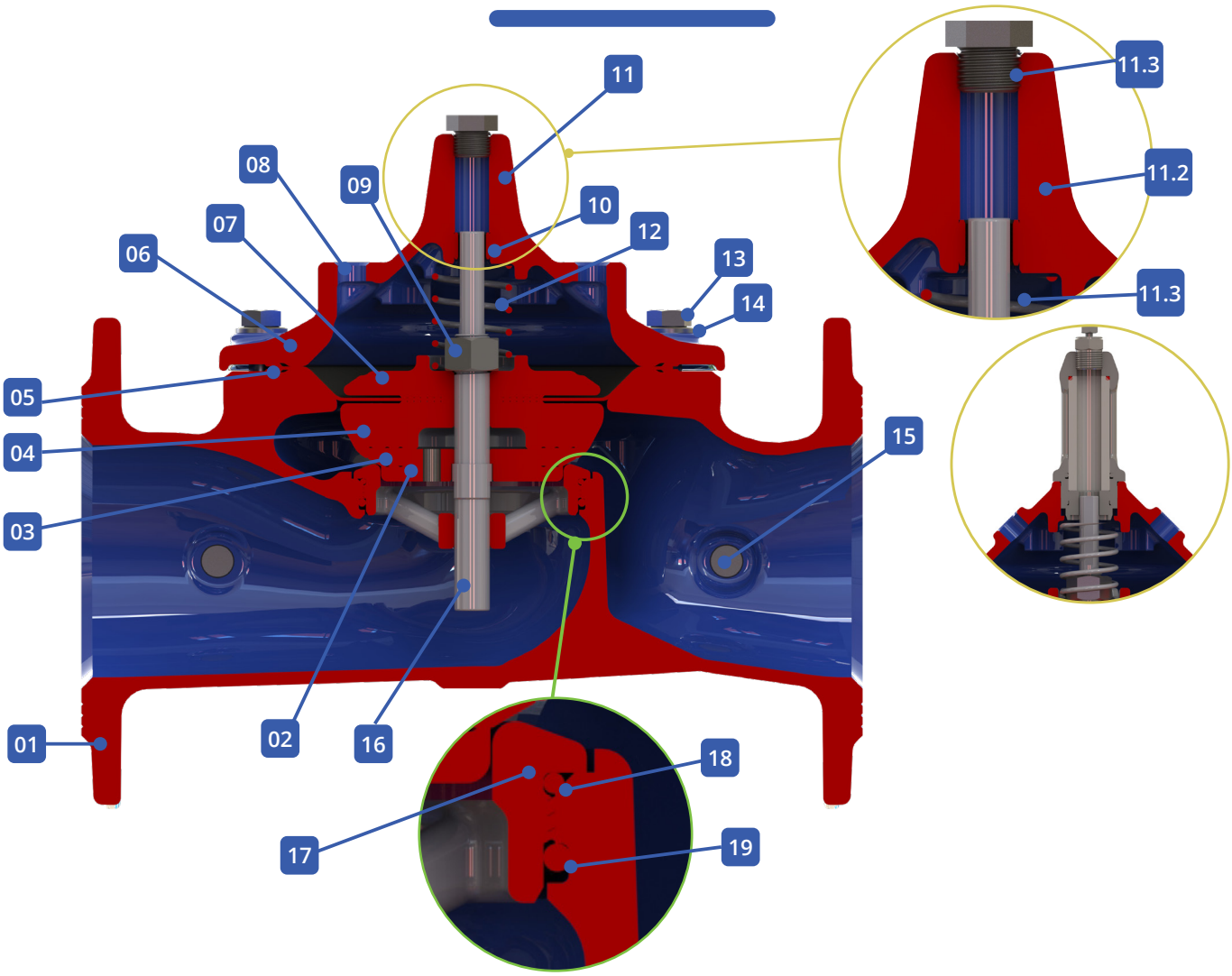
When pressure in the cover chamber is relieved to a lower pressure or to atmosphere, the pressure inlet opens the valve.



Modulation Control:

The valve is pressure operating balanced.
The controls will allow the valve to automatically compensate for pressure changes.

Part list



Item	Part name	No.	Materials		Norme
01	Body	1	Ductile iron GLS-500-7	Option*	NF EN 1563
02	Seal guide	1	Stainless steel 316/1.4401		NF EN 10088
03	Seal	1	EPDM		
04	Seal retainer	1	Stainless steel 316 DN50-150 DN 200-DN1600: DI+ epoxy coating		
05	Diaphram	1	EPDM		
06	Valve bonnet	1	Ductile iron GLS-500-7	Option*	NF EN 1563
07	Diaphram plate	1	Stainless steel 316 DN50-150 DN200-DN1600: DI+ epoxy coating		
08	Plug	1	Stainless steel/1.4310		NF EN 10088
09	Stem nut	1	Stainless steel/1.4310		NF EN 10088
10	Oring	1	EPDM		
11	Cap	1	Composite		
11.1	Guide brushing	1	Bronze CuSn5Zn5Pb5-C		EN 1503-4
11.2	Cap	1	Stainless steel/CF8		EN 10213-4
11.3	ARV	1	Stainless steel 316/1.4401	Option**	NF EN 10088
12	Spring	1	Stainless steel 316/1.4401	Option**	NF EN 10088
13	Bolt	1	Stainless steel 316/1.4401	Option**	NF EN 10088
14	Washer	1	Stainless steel 316/1.4401	Option**	NF EN 10088
15	Plug	1	Stainless steel 316/1.4401	Option**	NF EN 10088
16	Stem	1	Stainless steel 420		
17	Seat	1	Stainless steel/CF8		EN 10213-4
18	Oring NBR	1	EPDM		
19	Oring NBR	1	EPDM		

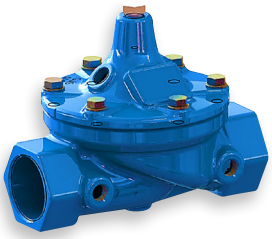
*** Option body and bonnet:**
- Stainless steel 304
- Stainless steel 316
- Stainless steel 316L
- Duplex
- Carbon Steel: DN40 - DN400
- Bronze: DN40 - DN400
- Aluminium (AL): DN40 - DN200

**** Option internal mobile parts:**
- Stainless steel 304
- Stainless steel 316
- DUPLEX

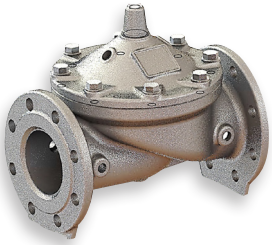
Type of main valve body

Main valve with plug:
Ductile iron body,
PN16, PN25 flange

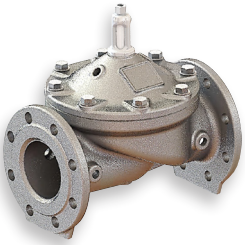
Main valve with position indicator:
Ductile iron body,
PN16, PN25 flange



Main valve threaded connection:
Ductile iron body

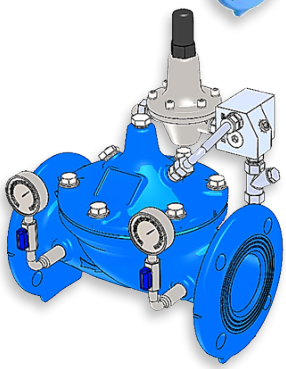


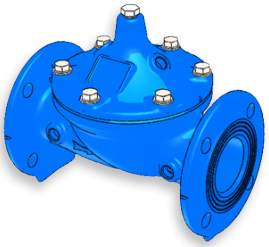
Main valve with plug:
Stainless steel 304/316,
PN16, PN25 flange

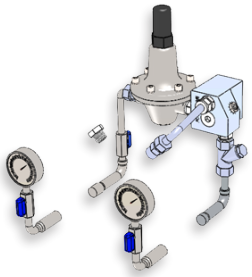


Main valve with position indicator:
Stainless steel 304/316,
PN16, PN25 flange

Pilot circuit:
SS304 fittings, SS316 fittings,
pilot, SS316, SS316L







Pilot circuit with speed controller:
SS304 fittings, SS316 fittings, pilot

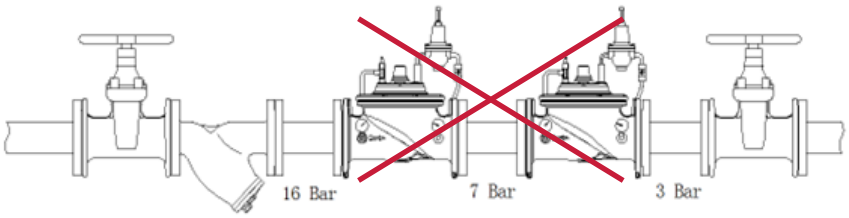
Anti-cavition option

Anti-cavitation cage:

Optimized design of anti cavitation case assure execution for low flow and cavitation prevention, to avoid 2 stages reductions.

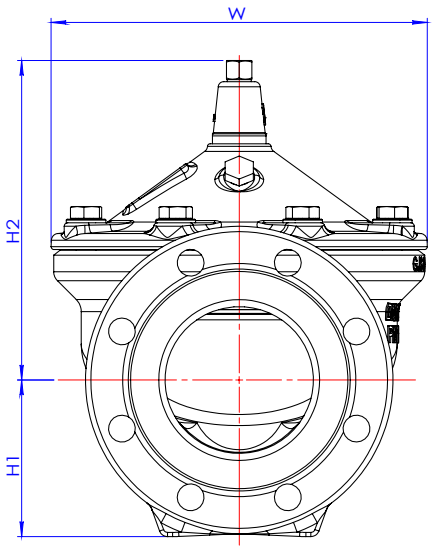
Applications:

- Low flow installation
- Noise reduction
- Reservoir filling
- Avoid cavitation



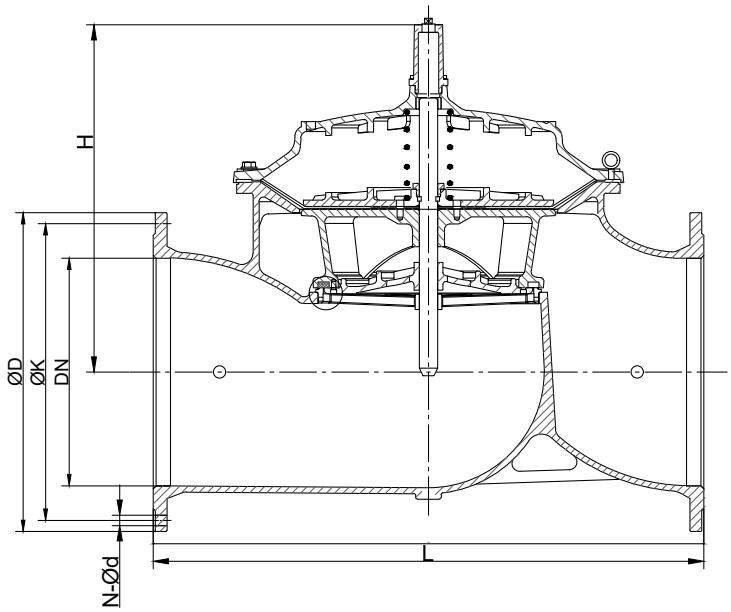
2 pressure reducing valves = 1 pressure reducing valve with anti-cavitation cage.

Overall dimension



Main valve - Full Bore (FB) and Reduce Bore (RB)

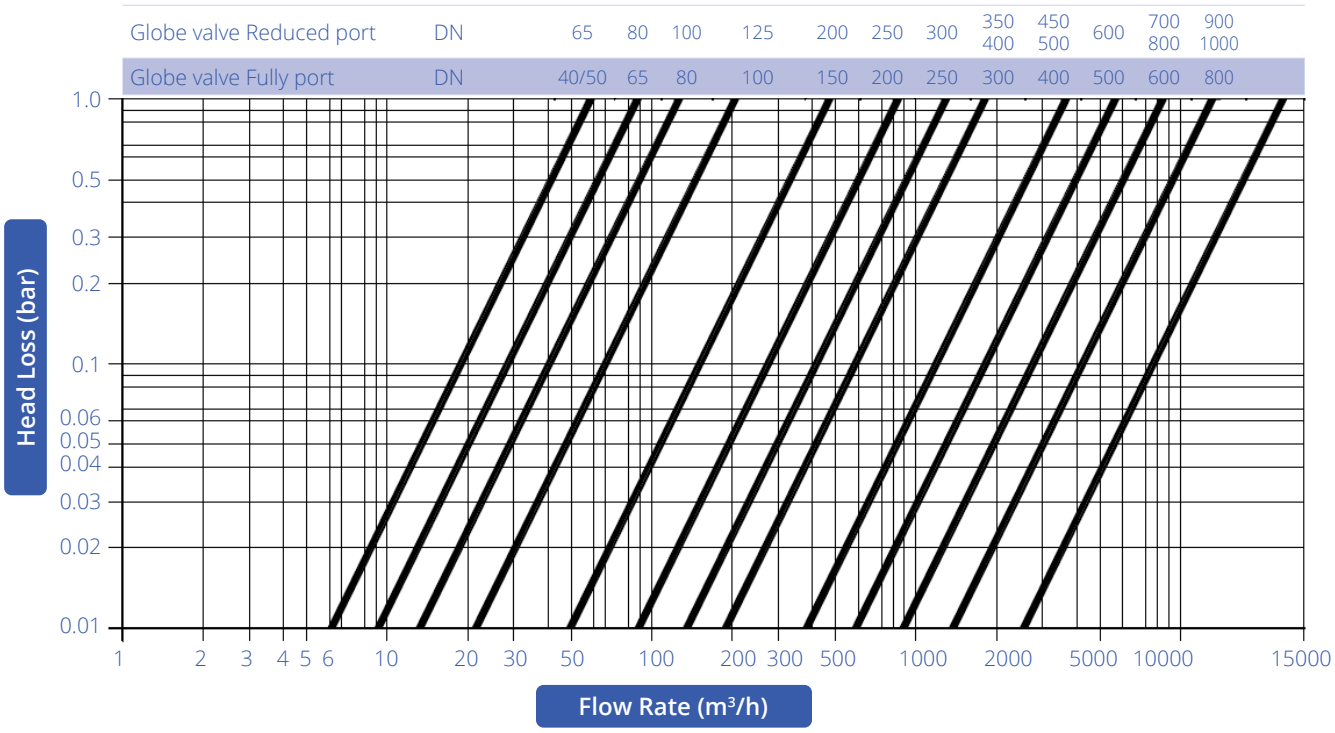
DN	L mm	Ø D mm	H1 mm	H2 mm		W mm	
				FB	RB	FB	RB
40	200	165	85	150	-	155	-
50	230	165	85	170	150	165	155
65	290	185	95	185	170	205	165
80	310	200	102	220	185	230	205
100	350	220	112	230	220	270	230
125	400	250	127	-	(230)	-	(270)
150	480	285	145	300	230	355	270
200	600	340	172	405	300	455	355
250	730	405	205	530	405	530	455
300	850	460	232	510	460	620	530



Main valve - Full Bore (FB) - Reduce Bore (RB)

DN	H		Seat/DN		L	ØD			ØK			N-Ød		
	FB	RB	FB	RB		PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25
400	670	580	400	300	1100	580	580	620	515	525	550	16-Ø28	16-Ø31	16-Ø37
450	-	670	-	400	1200	640	640	670	565	585	600	20-Ø28	20-Ø31	20-Ø37
500	790	670	500	400	1250	715	715	730	620	650	660	20-Ø28	20-Ø34	20-Ø37
600	930	790	600	500	1450	780	840	845	725	770	770	20-Ø31	20-Ø37	20-Ø40
700	1000	930	700	600	1650	910	910	-	840	840	-	24-Ø31	24-Ø37	-
800	1170	930	800	600	1850	1025	1025	-	950	950	-	24-Ø34	24-Ø41	-
900	-	1170	-	800	1850	1115	1125	-	1050	1050	-	28-Ø34	28-Ø41	-
1000	1460	-	1000	-	2250	1230	1255	-	1160	1170	-	28-Ø37	28-Ø44	-
1200	1750	1460	1200	1000	2450	1455	1485	-	1380	1390	-	32-Ø40	32-Ø49	-
1400	-	1750	-	1200	2650	1685	1685	-	1590	1590	-	36-Ø43	36-Ø49	-
1600	-	1750	-	1200	2850	1930	1930	-	1820	1820	-	40-Ø49	32-Ø56	-

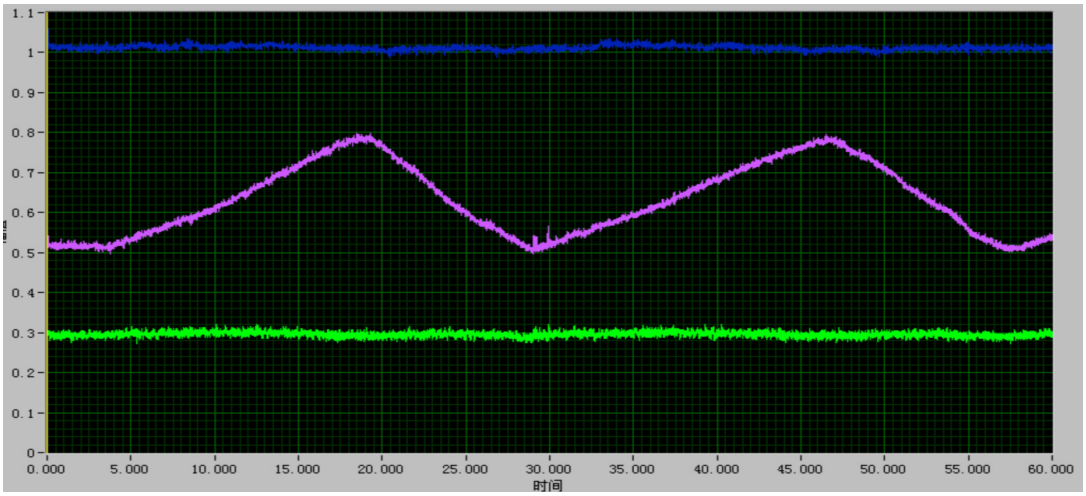
Head loss for fully open main valve



How to use (Cross dot method)

Step 1: Draw the abscissa vertical straight line with the pipeline flow and the intersection of the straight line with DN.
Step 2: Draw a horizontal straight line to the left according to the intersection and find the intersection with the ordinate.
The position of the intersection is the head loss when the valve is fully open.

Performance Test



: Flow is 1000 L/min
: Inlet pressure is 5 to 8 bar
: Outlet pressure is 3 bar

Sampling frequency:

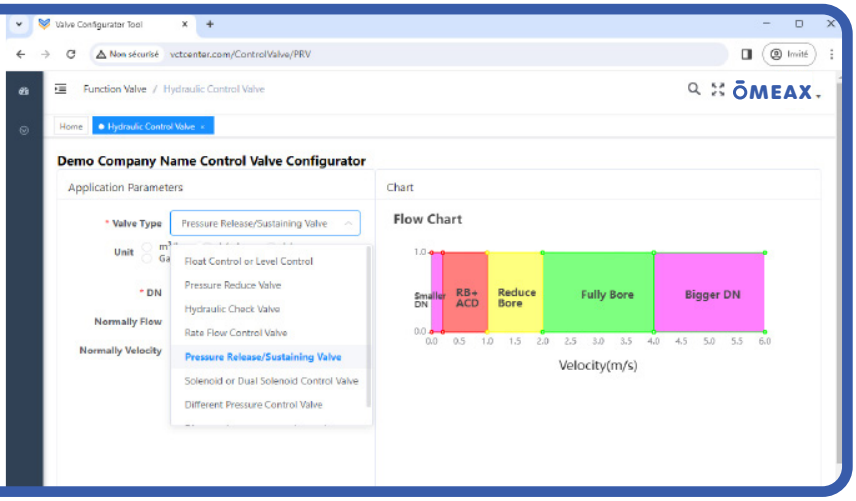
- Pressure is 1000Hz
- Flow is 100Hz

Commentary

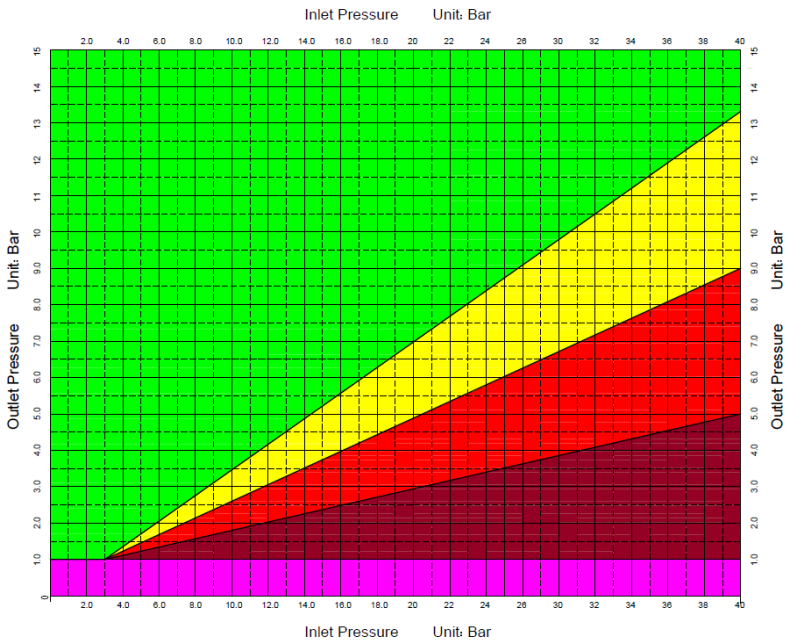
1. Between 4s to 19s or 29s to 47s, inlet pressure increase from 5 bar to 8 bar, outlet pressure stay between 2.9 bar and 3.1 bar.
2. Between 19s to 29s or 47s to 58s, inlet pressure decrease from 8 bar to 5 bar, outlet pressure stay between 2.9 bar and 3.1 bar.

Online sizing

With this app, you can set up your automatic control valve



Cavitation Zone



Notes: If the outlet pressure is less than 1 Bar, please inform manufacture

Method 1 - Inlet and outlet pressure tracing:

Step 1 - Draw the vertical line of the ordinate with the inlet pressure first, and then draw the horizontal line of the abscissa with the outlet pressure. The intersection of the two lines.

Step 2 - Select the valve type according to the dot position:

- 2.1 Dot in green area: Full Bore (FB)
- 2.2 Dot in yellow area: Reduce Bore (RB)
- 2.3 Dot in the red area: FB + Anti-cavitation device (KCD or U / V Port)
- 2.4 Dot in the brown area: RB + Anti cavitation device (KCD or U / V Port)

Method 2 - Coefficient of Inlet / Outlet pressure:

Step 1 - Inlet pressure / Outlet pressure = coefficient

Step 2 - Select the valve:

- 2.1 Coefficient ≤ 4: Fully Bore (FB)
- 2.2 4 < coefficient ≤ 6: Reduce Bore (RB)
- 2.3 6 < coefficient ≤ 8: FB+ KCD or U / V Port
- 2.4 Coefficient > 8: RB + KCD or U / V Port

Method 3 - Flow Velocity:

Step 1 - Flow velocity V = ? m/s

Step 2 - Select the valve:

- 2.1 V ≥ 1m/s: FB
- 2.2 0.5 < V ≤ 1 m/s: RB
- 2.3 0.2 < V ≤ 0.5 m/s: FB+ KCD or U / V Port
- 2.4 V ≤ 0.2 m/s: RB + KCD or U / V Port

Most common associated functions

	One function	Two functions	Three or more functions
Pressure	Neptune pressure reducing valves	Neptune pressure reducing valves - return function	
		Neptune pressure reduce valve with small flow by pass	
		Neptune pressure reducing valves - solenoid-operated closing	Neptune pressure sustaining/reducing valves - electric remote
		Neptune two-stage pressure reducing valves with solenoid selection	
		Neptune pressure reducing valves non-return function	Neptune pressure reducing valves - flow limiting - non-return function
		Neptune slow filling pressure reducing valves	Neptune slow filling pressure sustaining/reducing valves
	Neptune pressure relief/sustaining valve	Neptune pressure sustaining/reducing valves	Neptune pressure sustaining/reducing valves - flow limiting
			Neptune pressure sustaining/reducing valves - electric remote
	Neptune pressure differential valves		
Level	Neptune altitude valves	Neptune altitude flow limiting valves	Neptune altitude flow limiting valves - motorised - solenoid - operated closing
		Neptune altitude pressure sustaining valves	
		Neptune altitude valves - electric remote control	
	Neptune float valves	Neptune float valves - pressure sustaining	Neptune float valves - pressure sustaining/relief
		Neptune float valves - pressure relief	
		Neptune float valves - flow limiting	
	Neptune float valves		
	Neptune proportional float valves		
Flow	Neptune flow limiting valves	Neptune flow limiting valves - pressure reducing	Neptune flow limiting valves - solenoid-controlled closing - pressure relief
		Neptune flow limiting valves - pressure sustaining	
		Neptune two-stage flow limiting valves with solenoid selection	
	Neptune overspeed valves	Neptune overspeed - pressure reducing valves	
		Neptune overspeed - non-return function valves	
Pumping station	Neptune non-return valve with slow opening valves		
	Neptune differential for booster pump valves		
	Neptune pump control valves	Neptune pump control pressure sustaining valves	Neptune pump control valves - two-step opening/ closing - pressure sustaining
		Neptune pump control pressure reducing valves	
	Neptune Surge anticipating valves		
	Neptune pressure relief and air entry/exhaust valves		

Pressure control series
Pressure reducing series

N: Full Bore - NR: Reduce Bore

N200/NR200 - Pressure reducing valve FB/RB

Pipeline systems need to provide a stable pressure to users
Pressure reducing valve automatically reduces a higher of inlet pressure to a stable lower outlet pressure, regardless of changing flow rate and/or varying inlet pressure.
Static pressure reducing: Even the flow is Zero and no user is using.
Less than 10% for one year acc. UL static test.
Regulation accuracy: ± 5 %.
Inlet pressure need be 1.5 bar higher than outlet.

N20B/NR20B - Pressure reduce valve with small flow by pass

Add the by pass pressure reduce pipe line with the main pressure reduce valve.
In the middle night or the ender user just need very small flow, the main valve is close, only the by pass pressure reduce pipeline is opening to control the stable outlet pressure.

N20D/NR20D - Dual stage pressure reducing valve

The valve could setting two outlet pressure, high demand with pressure, low demand with low pressure. Solenoid valve change the channel. Reducing leakage and pipe burst risks. Only high pressure/low pressure can be chosen for each period.

N20M/NR20M - Pressure management valve

Electronic actuator drive the pressure reduce pilot, change the setting pressure timely according to user requirement. IP68 approval.

N20L/NR20L - Low outlet pressure reduce valve

Main function is same as N200, but the outlet pressure can be 0.1-1.0 bar.

Pressure control series
Overpressure protection and water hammer prevention

D500 - Direct acting safety valve

Screwed angle type safety valve, pipeline overpressure protection.
The safety valve opens to discharge excess pressure when the pressure in the pipeline exceeds the setting value, when the pipeline pressure drops to preset pressure, the safety valve is close.

DN: 15- 50 Pressure Range: PN10/16/25
Material Option: SUS304/SUS316/SAF2205 - Seals: PTFE/PCTFE

N500 - Pressure sustaining / Relief valve

It is used to discharge excess pressure and keep the pressure as setting requirement in the upstream.
Pressure control accuracy:
Opening pressure: + 0.2 bar; Opening speed: < 0.5 seconds
Full close Pressure: -1 bar

N520 - Pressure sustaining and reduce valve

When the inlet pressure is exceed the setting of sustaining pilot, the valve is open, then pressure reduce pilot keep the outlet setting pressure.

N550 - Surge anticipation valve

Surge Anticipation Valve is indispensable for protecting pumps, pumping equipment and all applicable pipelines from dangerous pressure surges caused by rapid changes of flow velocity within a pipeline.
When pumping systems are started and stopped gradually, harmful surges do not occur. However, should a power failure take place, the abrupt stopping of the pump can cause dangerous surges in the system which could result in severe equipment damage. Power failure to a pump will usually result in a down surge in pressure, followed by an up surge in pressure. The surge control valve opens on the initial low pressure wave, diverting the returning high pressure wave from the system. In effect, the valve has anticipated the returning high pressure wave and is open to dissipate the damage causing surge. The valve will then close slowly without generating any further pressure surges.

Solenoid Control series

N600 - Solenoid control valve

Solenoid Control Valve is an on-off control valve that either opens or closes upon receiving an electrical signal to the solenoid pilot control. This valve consists of a main valve and a two-way solenoid valve that alternately applies pressure to or relieves pressure from the diaphragm chamber of the main valve. It is furnished either normally open (de-energized solenoid to open) or normally closed (energized solenoid to open).

N660 - Dual solenoid control valve and manual by pass

The inlet and outlet end of control chamber are equipped with two solenoid valve to the upper cavity.
Also it can keep the main valve quickly open or close, adjust the opening, keep the opening in a fixed position.
Work with PLC, pressure sensor, flow meter and pumps, the dual solenoid valve could meet all the control function of pipe system.

N66M - All function control valve

The valve also have straight stroke sensor for valve opening as 4-20 mA or 0.5-4.5V.
Combine with variable frequency pump, flow meter, pressure sensor, PLC, it can realize all functions such as close, flow regulation and pressure regulation, fixed opening control, rough instantaneous flow value of cumulative flow.

Power: DC/AC, 12V/24V/220V
When selecting and ordering, according to the use time to decide whether normally open (NO) or normally closed (NC)

Level control series

N: Full Bore - NR: Reduce Bore

N100/NR100 - Float control valve

Level control of water tanks, reservoirs, pools and other storage devices
The Model N100 Level Control Valve is a modulating valve that accurately controls the water level in tanks. This valve is designed to open when the water level reaches a preset low point, and close drip-tight when the level reaches a preset high point.
The float pilot cloud be installed separately in the tank or together with the main valve.
Water level difference: 20 mm.

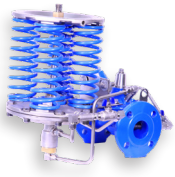
N10B/NR10B - Bi-level control valve

The main function same as N100. But there is no back pressure in the control chamber of the main valve. And the main valve can be fully open.
Water level difference: 100-1000 mm adjustable.

N160/NR160 - Float and solenoid control valve

The main function same as N100. But when the float pilot fails, it can open/close through the solenoid valve.

N10A/NR10A - Altitude control valve



Level control of high water tower
The altitude control valve close drip-tight and stop filling water in the water tower when the water level reaches a high level. And opens automatically and filling water when the water level lower than the low level setting.
The altitude difference is setting by the height of the water tower (5-150 mm) and the water level control height (20-1000 mm).

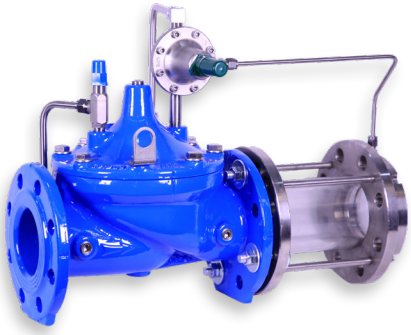
Flow control series

N: Full Bore - NR: Reduce Bore

N400/NR400 - Flow control valve

Rate of Flow Control Valve prevents excessive flow by limiting flow to a preselected maximum rate, regardless of changing line pressure.
The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve.
The valve includes an orifice plate with a holder that should be installed one to five pipe diameters downstream of the valve.

N420/NR420 - Flow control and pressure reducing valve



Providing preset flow rate and then keep the outlet setting pressure.

N800/NR800 - Different pressure control valve

In HVAC system, keep the differential pressure between the supply pipe and return pipe.

Pump station check valve

N300 - Check valve

Installed on the outlet of the water pump on the line, check and prevent water hammer.

N745 - Multi-function pump control valve

The double-chamber multi-function pump control valve is installed at the outlet of the pump to prevent and eliminate pipeline surges caused by the starting and stopping of the pump.
When the water pump is opened, the inlet pressure gradually enters the valve cavity, so that the valve opens slowly, and the opening speed can be adjusted by the needle valve. When the pump suddenly loses power or stops. The main disc closes quickly under the combined action of its own gravity and the water hammer.
The secondary disc closes slowly to prevent the damage of the high-pressure water hammer at the rear end to the front pump. It can be fully opened with less pressure loss.

Pressure control series
Direct acting pressure reducing valve

D200 - Direct acting pressure reducing valve

It is using for pipeline systems need to provide a stable pressure to users
The Model D200 Pressure Reducing Valve automatically reduces a higher inlet pressure to a stable lower outlet pressure, even if changing flow rate and/or varying inlet pressure.
Change of outlet pressure/change of inlet pressure < 0.1.
The setting pressure can be adjusted by adjusting the screw, and when there is no user using water at the outlet end, it is immediately closed to achieve hydrostatic sealing.
Regulation accuracy: ± 5 %.
Outlet pressure must higher than 1 bar.

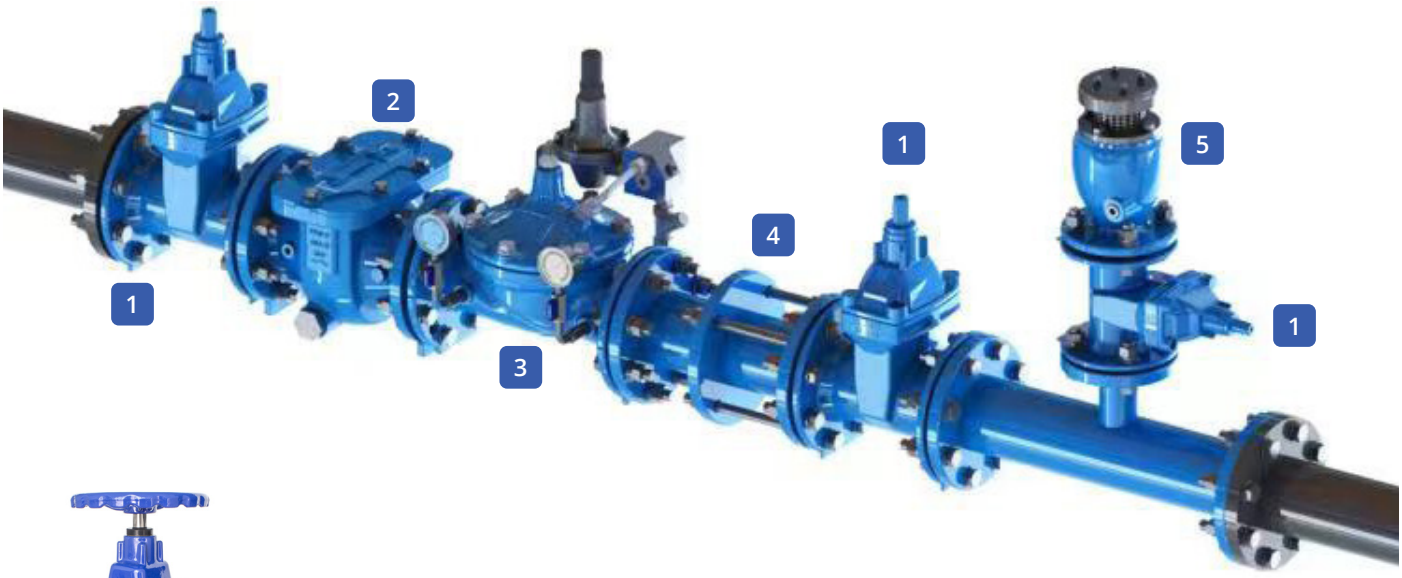
Installation

The installation

• The recommended equipment is vital for safety during filing and maintenance, as well as for the satisfactory opera of the valve.
• For the purposes of illustration, we will look at the case of a Neptune pressure reducing valve. In the case, the air valve is fitted downstream if the pipe runs downwards to the stabiliser or upstream if the pipe runs upwards to the stabiliser.

2 Mud boxes - basket strainers

3 Control valves



1 Gate valves

5 Air valves

4 Dismantling joints

Additional products

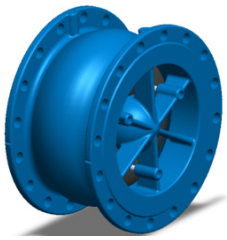
Check valves

Silent check valve so that the flow can be smooth and silent.
Head loss is only 0.6WMC with 2m/s
The velocity of backflow is only 0.2s
Stainless steel +EPDM Dise.
Epoxy coated Ductile iron body & diffuser.
EN-GJS 500-7 or stainless valve body.

Nozzle check valve

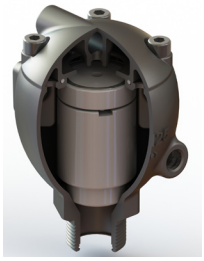
There is a diffuser in the nozzle check valve so that the flow can be more smooth and silent.
Head loss is only 0.5WMC with 2m/s
The velocity of backflow is only 0.2s
Stainless steel +EPDM Dise.
Epoxy coated Ductile iron body & diffuser.
EN-GJS 500-7 or stainless valve body.

Big size nozzle check valve



It is horizontally loaded.
With a channel nozzle design inside and outside to avoid turbulence and reduce pressure loss.
With a front and bronze bush guide stem replacing the old structure, which had only one side bush guide stem. In the previous design, the valve disc acted as a single-arm beam when installed horizontally, causing a slow closing speed when the valve stopped. Additionally, the disc could not reset properly, leading to leakage.
With an anti-cavitation design in the internal flow channel.

Micro air valve - 2F1F or 3F2F



2F1F:
Air release
Air breath into and protect pipeline
One level PP float
Flush port

3F2F:
Mass air release
Micro air release
Air breath into and protect pipeline
Two level PP float
Flush port

Air valve - 3F2F or 4F3F

3F2F:
Mass air release
Micro air release
Air breath into and protect pipeline
Two level PP float
Flush port

4F3F:
Mass air release
Micro air release
Anti-hammer
Air breath into and protect pipeline
Three level PP float
Flush port

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