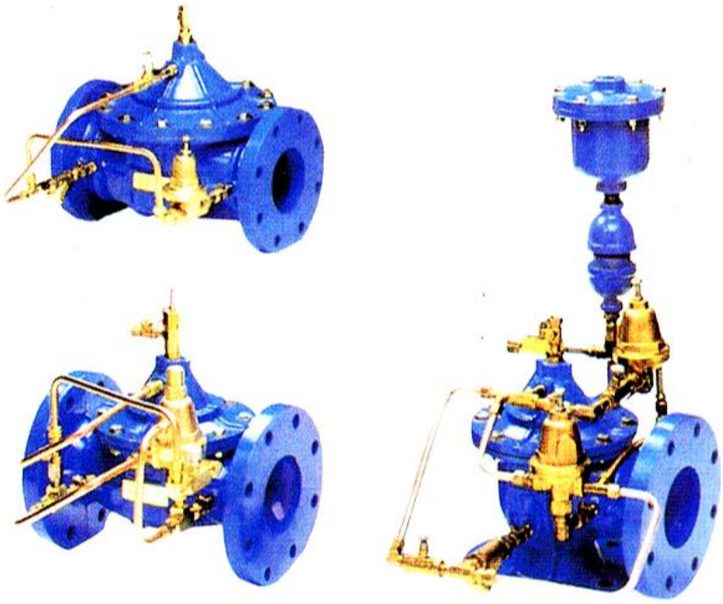
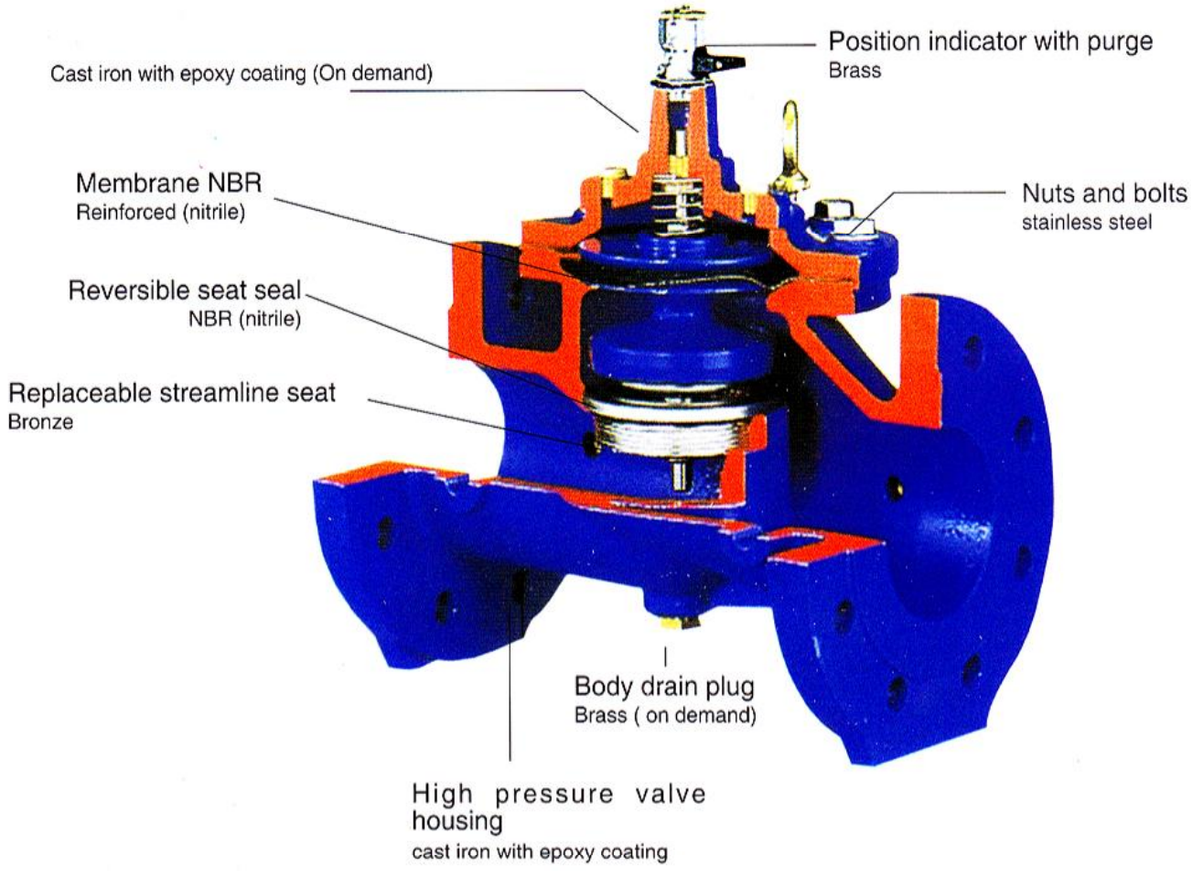
Danfoss SOCLA

CONTROL VALVE



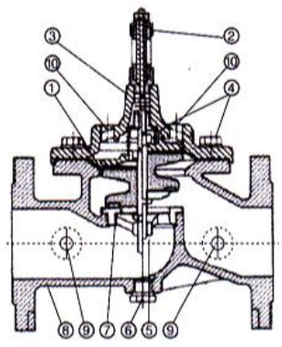
MAIN VALVE

DN 11/2" tO 300mm



MATERIALS

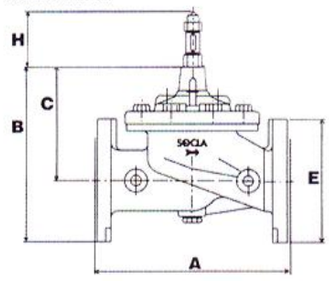
1	Membrane	Reinforced NBR
2	Drain cock on top cap	Brass
3	High pressure top cap	Cast Iron
4	Nuts, bolts screws	Stainless Steel
5	Replaceable Streamlined seat	Bronze
6	Body drain plug	Brass
7	Reversible seat seal	NBR
8	High pressure body	Cast Iron
9, 10	Holes for pressure gauges	

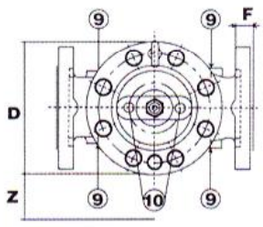


The configuration of all control valve's main valve is same, it is just to show the configuration and the detailed explanation about the pilot please refer to pages 1, 2, 3. We advice extending the exhaust tube to certain place which can drain for safety, to prevent the exhausted water to damage all the things around it, especially for the electrical drive.

TECHNICAL INFORMATION

TEMPERATURE MAXI: 90ºC
Flange: 16bar (if no indicated pressure)
Thread: 11/2' F/F





⑨ ⑩ HOLES FOR PRESSURE GAUGES

DIMENSIONS

DN	A mm	B mm	C mm	D mm	øE mm	F mm	H mm	Z mm	kg
1"1/2	236,5	168,5	124,5	169,9	87	-	76	254	7,7
2"	236,5	168,5	124,5	169,9	87	-	76	254	7,7
40	232,5	191,5	119,2	169,9	151	14,3	76	254	9,55
50	232,5	191,5	119,2	169,9	151	15,9	76	254	9,55
65	277,5	210,5	116	170,2	189	17,5	76	254	13,65
80	277,5	210,5	116	170,2	189	15,9	76	254	13,65
100	305	274,5	160	206,1	229	23,9	76	254	25,45
125	416,5	333,5	198	279,4	270	25,4	100	254	56,55
150	416,5	333,5	198	279,4	270	25,4	100	254	56,55
200	522	508	336	362	343	28,6	100	254	95
250	660	630	439,5	477,9	406	34,6	150	254	138
300	863,6	735,7	418,7	692,2	527,1	34,9	200	254	208,54

CONNECTION GN 10 - GN 16 - GN 20 flange drilling to be indicated when ordering. Threaded connection on request

ANSI-ASI driling on request

HOW TO SELECT THE RIGHT SIZE

To select the correct size and avoid undesirable operating characterristics (noise, excessive wear, poor regulation), which result from oversizing (or undersizing) use the sizing guide and choose the smallest valve size compatible with the indicated flow rates.

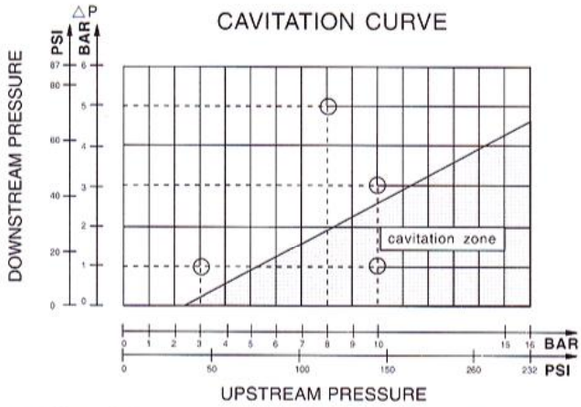
SIZING THE CONTROL VALVE		
DN	Min m³/h	Maxi m³/h
11/2'	0,5	20
50	0,5	36
65	1,15	45
80	1,15	45
100	3,45	92
125	9,15	165
150	9,15	165
200	13,7	365
250	24,7	715
300	50,6	1001,2

Note:

1.- For throttling valve application requiring a wide range of flows, a dual valve installation should be used.

2.- The maximum flow rates listed above were calculated by using a velocity of 4,5 m/second. The throttling valve is capable of handing larger flow for short periods of time;however the increase in maximum flow should be limited to 25% of the above values.

CAVITATION



Too large a differential pressure and a low downstream pressure may result in damage to the valve by cavitation

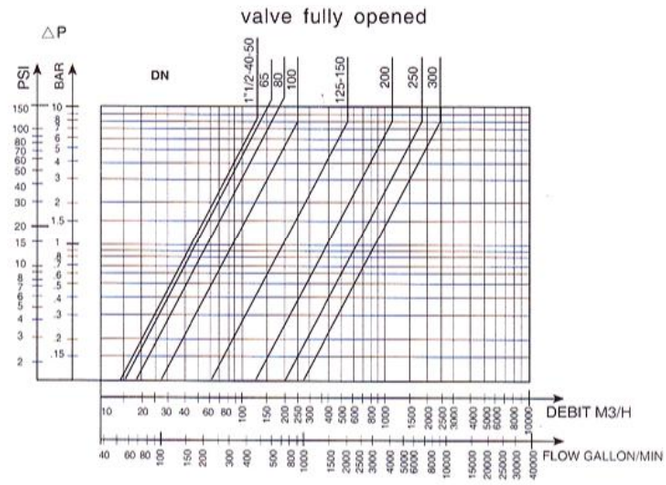
To avoid it, refer to the cavitation curve. If necessary, take the differential pressure in two or more stage by installing and connecting directly two or more control valves in tandem.

EXAMPLE:

1- To maintain a reduced downstream pressure of 5 bars with an upstream pressure of 8 bars:
Draw a vertical straight line from 8 bars on the horizontal axis to intersect with a horizontal line from 5 bars on the vertical axis.
The intersection takes place out of the "cavitation zone" indicating that this reducing in pressure through a single pressure reducing valve will not result in cavitation: only one valve is necessary.

2- Maintain a reduced down stream pressure of 1 bar with on upstream pressure of 10 bars.
Draw a vertical straight line from 10 bars on the horizontal axis to intersect with a horizontal line from 1 bar on the vertical axis. The intersection takes place within the shaded area (zone of cavitation) indicating that this reduction in pressure through a single valve, will result in cavitation. To avoid cavitation two control valves should be installed in tandem and the pressure reduction taken in two steps. the first valve should reduce the pressure from 10 bars to 3 bars and the second valve from 3 bars to 1 bar, (intersection of lines produced from these valve takes place in the unshaded portion of the caart which is out of the cavitation zone)

HEADLOSS CHART



KV FACTOR

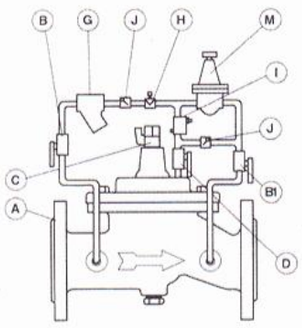
KV: quantity of flow (in m^3/h) of water at 15ºC passing through a device creating a headloss of 1 bar.

Valve size	m³/h	Maxil/s
11/2' - 40 -50	44,8	12,44
65	48,33	13,43
80	55,40	15,39
100	86,60	24,05
125	194,66	54,07
150	194,66	54,07
200	397,50	110,41
250	656,70	182,41
300	919,4	225,4

PRESSURE REDUCING VALVES CL101-CL101C TYPE

PRV CL101
Valve setting ranges:
Spring 1 : 0,1 to 2,5 bar
Spring 2 : 1,7 to 5,2 bar
Spring 3 : 5,2 to 8,6 bar
Spring 4 : 6,9 to 17,2 bar
Connection :
Flanges are drilled to PN 16 standards
Body :
Working pressure : 20 bar
Testing Pressure : 30 bar
Installation :
Horizontal and vertical installation if needed.

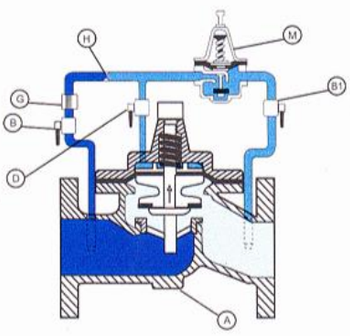
Pilot Circuit



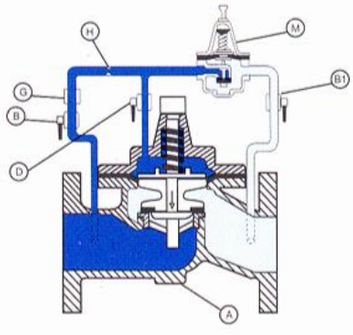
Part No.	DESCRIPTION	MATERIAL
A	MAIN VALVE	CAST IRON
B	UPSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
B1	DOWNSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
C	DRAIN COCK	BRASS
D	ISOLATION VALVE	NICKEL PLATED BRASS
G	STRAINER	BRASS
H	ORIFICE	STAINLESS STEEL
I	FLOW CONTROL	BRASS
J	CHECK VALVE (CL101C TYPE)	BRASS
M	PILOT VALVE	BRASS BRONZE

Working principle

The principle is to have the main valve reproduce the movements of a small sized pilot valve through the action of pressures.



When downstream pressure is too low, the pilot valve M opens, the pressure contained in the by-pass circuit does not apply any force on the membrane of the main valve A, the closing system is free, the valve throttles to the open position in order throttles to the open position in order to increase downstream pressure to the desired level.



When the downstream pressure is too high the pilot valve M closes, the pressure contained in the by-pass circuit exerts a force on the membrane of the main valve A which throttles to the closed position in order to reduce downstream pressure to the desired level.

This valve controls and maintains a present reduced downstream pressure to a constant value regardless of variations in upstream pressure and demand.

Provided with check valve (CL 101 C) it closes automatically in case of backflow.

This control valve reduces.

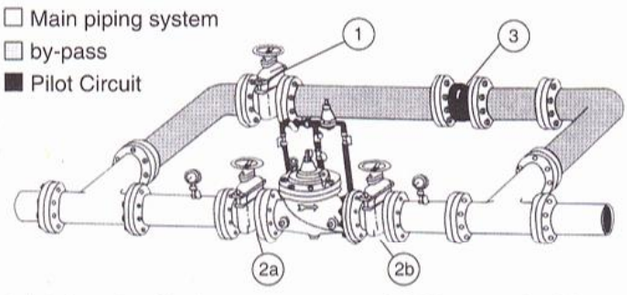
- delivery pressure when supplying by gravity from a source with a high elevation.
- Pressure to a desirable operating value within a given area,
- working pressure when the pump discharge is too high,
- pressure to an irrigation system

Other types

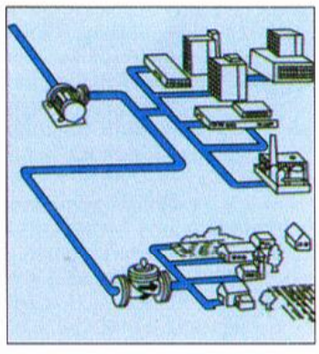
***CL 101C:** check valves
***CL 101M:** check valves+solenoid valves
***CL 101S:** two ways solenoid valve
***CL 101surge:** pressure reducing and surge protection
***CL 102:** dual pressure reducing pilot system
*Small size thread direct (DN15-DN65) acting PRV

CL101 Type Installation Scheme

☐ Main piping system
☐ by-pass
■ Pilot Circuit



1-Isolation valve of the by-pass
2a-2b Isolation valve of the main water pipe
3- Rubber expansion joints

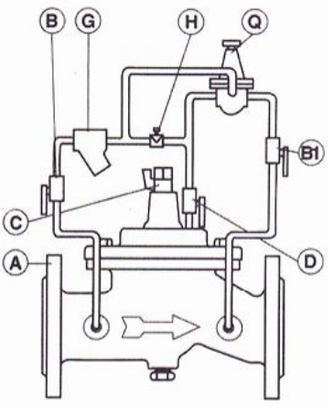


PRESSURE RELIEF VALVES CL301-CL301C TYPE

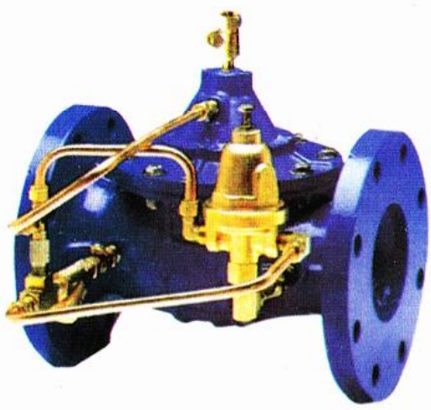
PRV CL-401
Valve setting ranges:
- 0,14 to 2,41 bar.
- 1,72 to 8,60 bar.
- 6,89 to 17,23 bar.
- 13,78 to 27,57 bar.

Connection :
Flanges are drilled to PN 16 standards
Body :
Working pressure : 20 bar .
Testing Pressure : 30 bar
Installation :
Horizontal and vertical installation if needed.

Pilot Circuit

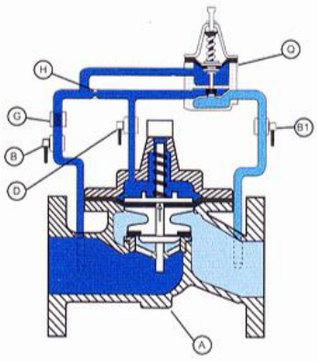


Part No.	DESCRIPTION	MATERIAL
A	MAIN VALVE	CAST IRON
B	UPSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
B1	DOWNSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
C	DRAIN COCK	BRASS
D	ISOLATION VALVE	NICKEL PLATED BRASS
G	STRAINER	BRASS
H	ORIFICE	STAINLESS STEEL
Q	PILOT VALVE	BRASS-BRONZE

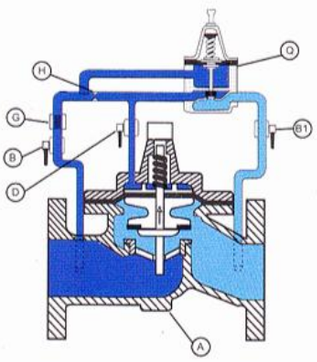


Working principle

The principle is to have the main valve reproduce the movements of a small sized pilot valve through the action of pressures.



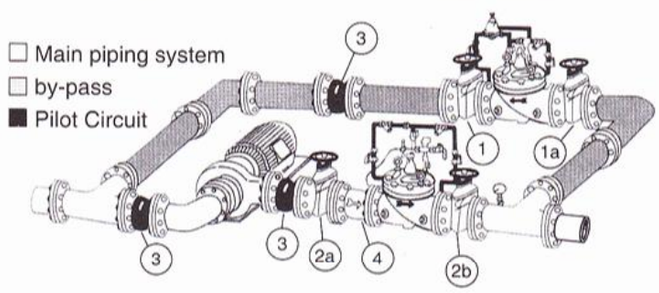
As long as upstream pressure is below the setting pressure, the pilot valve is closed, upstream pressure pushes on the membrane of the main valve which remains closed.



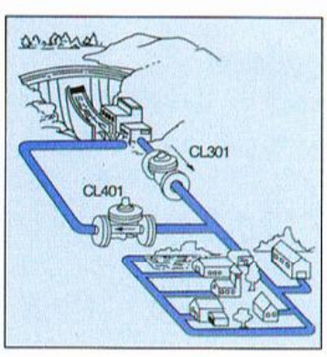
As soon as upstream pressure increases over the setting pressure, the pilot valve opens, releasing pressure from above the membrane of the main valve which opens widely to drain the overpressure.

Installed on a by-pass on the system to be protected, this valve will open as soon as pressure of this system reaches the setting pressure. It will be open as long as this overpressure exist and drain the resulting excess of water to a sewage system or a tank or a low pressure zone.
Provided with a checkvalve (CL401C) it closes automatically in case of backflow.

CL401 Type Installation Scheme



1-1a Isolation valve of the by-pass
2a-2b Isolation valve of the main water pipe
3- Rubber expansion Joint
4- Check valve



Other types

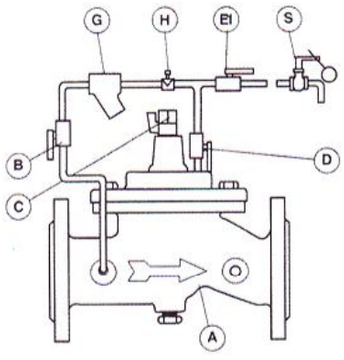
***CL 401M:**
check valves+solenoid valves
***CL 401C:** Check Valve
***CL 101S:**
two ways solenoid valve

FLOAT VALVES CL701 TYPE

With gradual opening and closing

Connection :
Flanges are drilled to PN 16 standards
Body :
Working pressure : 20 bar
Testing Pressure : 30 bar

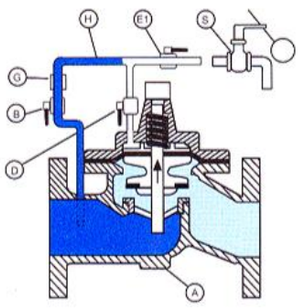
Pilot Circuit



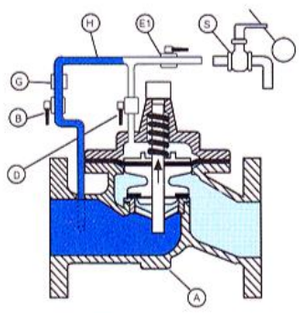
Part No.	DESCRIPTION	MATERIAL
A	MAIN VALVE	CAST IRON
B	UPSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
C	DRAIN COCK	BRASS
D	ISOLATION VALVE	NICKEL PLATED BRASS
E1	DOWNSTREAM ISOLATION VALVE	NICKEL PLATED BRASS
G	STRAINER	BRASS
H	ORIFICE	STAINLESS STEEL
S	FLOAT PILOT VALVE	BRONZE STAINLESS STEEL PLASTIC BALL

Working principle

The principle is to have the main valve reproduce the movements of a small sized pilot valve through the action of pressures.



When the water level is low in the tank, the float pilot valve is completely open, the valve is open to fill the tank.



When the float is half way, the pilot valve is half closed; the pressure above the membrane pushes the valve to the close position. The valve will be completely closed when the float pilot valve will be in the upper position.

This valve maintains a constant level in a tank and prevents overflow by means of float regulation. Opening as well as closing will be very gradual over the last few centimeters close to the wanted water level.

This valve will be preferably installed at the bottom of the tank or near the basin.

Other types

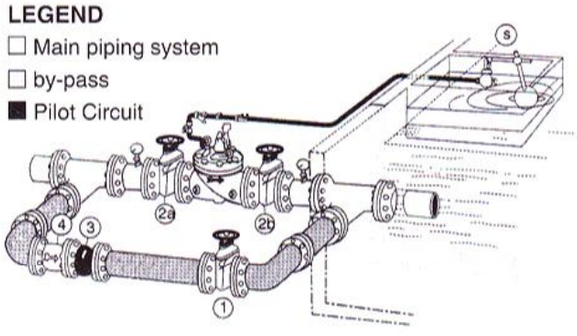
***CL 707:** electrical float valve with total opening and closing

***CL 707C:** electrical float valve with total opening and closing +check valves

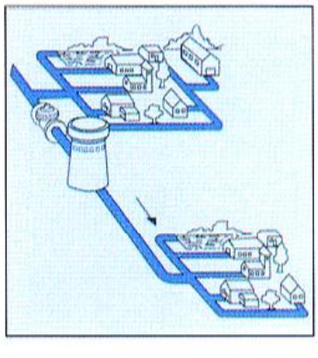
CL701 Type Installation Scheme

LEGEND

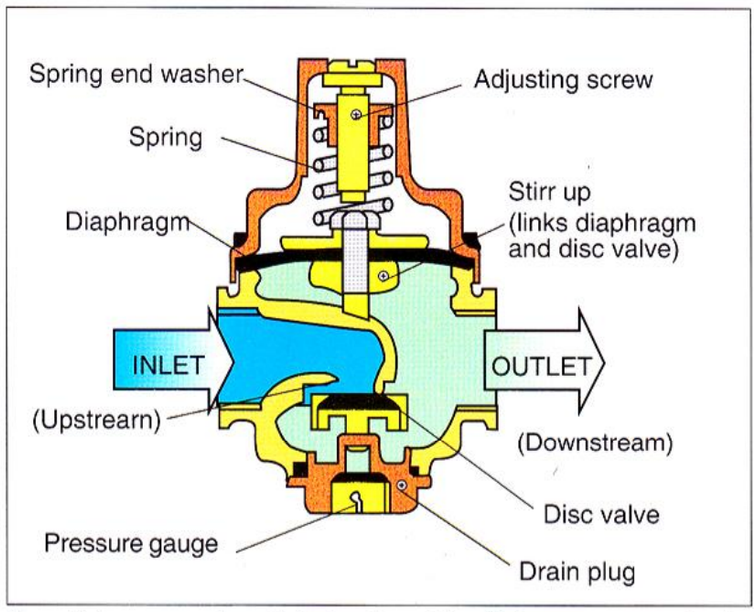
- ☐ Main piping system
- ☐ by-pass
- ■ Pilot Circuit



1-Isolation valve of the by-pass
2a-2b Isolation valve of the main water pipe
3- Rubber expansion joints
4- Check valve



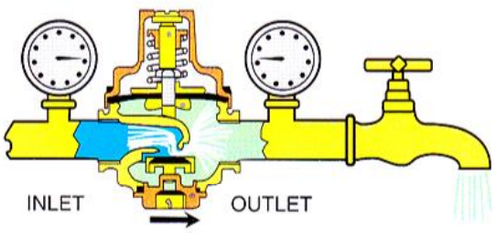
AD Pressure Reducing Valves



The outlet pressure acts on the bottom face of the diaphragm, compressing the spring when it exceeds the pre-set value and thus closing the valve(1). As long as no water is drawn off on the downstream side (no-flow condition), the outlet pressure is thus kept at the pre-set valve

When water is drawn off on the downstream side, the outlet pressure decreases and the spring pushes against the diaphragm, opening the valve. Under prolonged flow conditions, a selt-damping effect occurs in the valve opening instead of a series of jerky opening and closing movements.

Domestic and industrial water supply

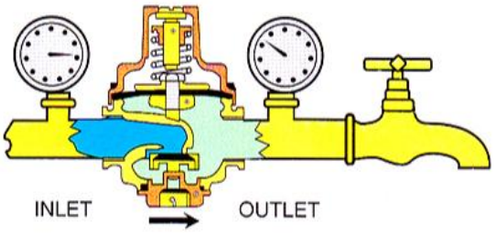


Flow downstream (open):
outlet pressure drops. Spring pushes against the diaphragm and disc and opens the valve.

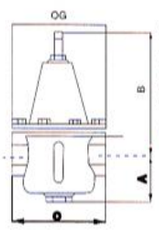
GUARANTEED UPSTREAM PRESSURE 25 Bar TC 80
Pressure gauge tap at the base of tank intended of draining compensating spring can mounted (except on 4" model). Downstream adjustments from 0.5 bar can be obtained. Setting range: 1 bar å 5.5 bar not regulated upon delivery
BODY: bronze

10 bis
DN 10
DN 15
DN 20
DN 25
DN 32
DN 40
DN 50
DN 60
DN 65
DN 80
DN 100

female/female



Flow downstream (closed):
outlet pressure goes up again. When it corresponds to the setting, diaphragms and disc, push against the spring and thus close the valve.



Type 10BIS
female/
female

Unit: mm

	1/2" 3/8"	3/4" (DN20)	1" (DN25)	1 1/4" (DN32)	1 1/2" (DN40)	2" (DN50)	2 1/2" (DN60)	2 1/2" (DN65)	3" (DN80)	4" (DN100)
A	48	55	60	77	84	105	105	118	143	120
B	120	130	160	180	205	235	235	270	300	350
C	92	108	123	155	172	198	198	215	234	250
D	92	108	123	155	172	198	198	215	234	260