



Control valve enabling reduction and stabilisation of the downstream pressure.



Functions

- Reduces and stabilises a higher inlet pressure to a steady lower downstream pressure regardless of variations of flow and/or inlet pressure.
- Closes/opens and puts into regulation with hand drive.

Applications

- To regulate multi pressure level networks,
- To supply water to a low pressure level network from a high pressure level network,
- To protect a device, private consumers installations, or sections of the network against excessive pressure and high upstream pressure variations,
- To reduce leakage thanks to the control of the supplying pressure,
- To save water consumption by a reduction in pressure, etc...

Tests

- Manufacturing fully tested according to ISO 5208-2.

Description

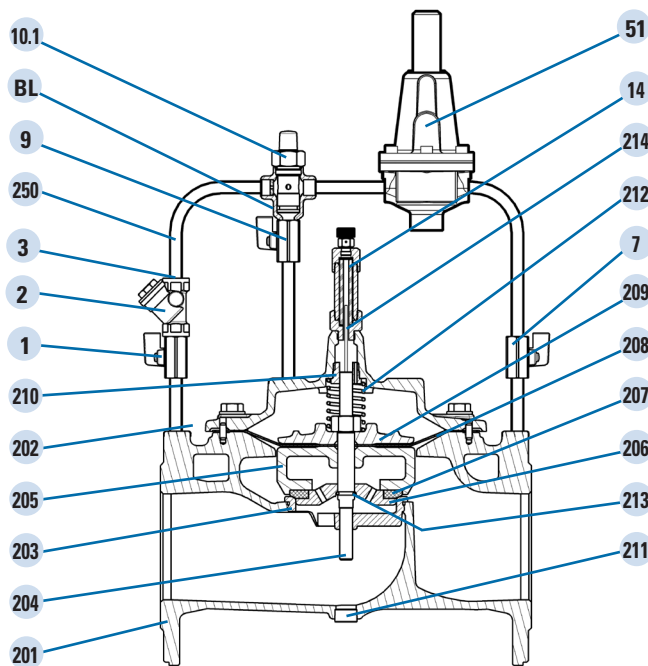
- For general information concerning the operation of a Hydrobloc control valve, please consult our general manual (series K).
- Extensive range including two different designs:
 - XG design:
 - Large flow capacity,
 - Low head loss,
 - Watertight at zero flow rate.
 - XGS design:
 - Particularly suitable for pressure reduction,
 - Better cavitation resistance,
 - Watertight at zero flow rate.
- Construction:
 - Self-lubricated double guided mobile unit,
 - Ductile iron body and bonnet,
 - Stainless steel seat for standard version until DN 400 XG design and DN 600 XGS design,
 - Powder epoxy coating,
 - Stainless steel bolting,
 - Stainless steel pilot circuit tube and fittings,
 - Pilot circuit strainer with screen in stainless steel,
 - Individually packed.
- Easy operation and maintenance:
 - Visual position indicator with manual drain,
 - Including isolating valve(s) for pressure gauges,
 - Equipped with opening speed controller "RO" (DN50 to 300 XG design, and DN150 to 400 XGS design only),
 - Chamber isolating valve independent from the adjustment of the speed controller,
 - Maintenance without disassembly from the pipeline.
 - Easy dismantling from the top.
 - Drain plug (stainless steel).
- Product according to standard EN 1074- 5.

Technical data

- Range:
 - DN 50 to 600 for XG design.
 - DN 150 to 700 for XGS design.
 - DN 800 to 1000 XG and XGS design, please consult us.
- PN 25.
- Maximum temperature: +1°C to +65°C.
- Seating: class A according to standard ISO 5208-2.
- Face-to-face dimensions according to standards EN 558-1 series 1 (except DN1000) and ISO 5752 series 1 (except DN1000).
- Flange drilling according to standards EN 1092-2 and ISO 7005-2: ISO PN 10, 16 or 25 for DN50 to 1000 (other drillings, please consult us).
- Fluid: drinking water or 2 mm filtered untreated water.
- Adjustment range: 1 to 20 bar.



DN 50XG to 300XG and DN 150XGS to 400 XGS



Item	Designation	Qty	Materials	Standards
Main Valve				
201	Body*	1	Ductile iron/EN-GJS-450-10	EN 1563
202	Bonnet**	1	Ductile iron/EN-GJS-450-10	EN 1563
203	Seat	1	Stainless Steel 316 / X5CrNiMo17-12-2	EN 10088
204	Stem	1	Stainless Steel 420 / X20Cr13	EN 10088
205	Valve disc holder**:	1	Cast iron/EN-GJL-250	EN 1561
	DN50XG to 200XG		Ductile iron/EN-GJS-450-10	EN 1563
	DN250XG to 300XG		Ductile iron/EN-GJS-450-10	EN 1563
	DN150XGS to 250XGS		Cast iron/EN-GJL-250	EN 1561
	DN300XGS to 400XGS		Ductile iron/EN-GJS-450-10	EN 1563
206	Valve disc fastener	1	Stainless Steel 316 / X5CrNiMo17-12-2	EN 10088
207	Resilient valve disc	1	Elastomer / EPDM	
208	Diaphragm	1	Textile reinforced elastomer / CR	
209	Upper diaphragm holder**:	1	Cast iron/EN-GJL-250	EN 1561
	DN50XG to 150XG		Ductile iron/EN-GJS-450-10	EN 1563
	DN200XG to 300XG		Ductile iron/EN-GJS-450-10	EN 1563
	DN150XGS to 200XGS		Cast iron/EN-GJL-250	EN 1561
	DN250XGS to 400XGS		Ductile iron/EN-GJS-450-10	EN 1563
210	Guide bushing	1	Bronze / CuSn12	EN 1982
211	Drain plug	1	Stainless Steel 316L/ X2CrNiMo17-12-2	EN 10088
212	Spring	1	Stainless Steel 302 / X10CrNi18-08	EN 10088
213	Stop ring	1	Stainless Steel 302 / X10CrNi18-08	EN 10088
214	Indicator stem	1	Stainless Steel 321 / X6CrNiTi18-10	EN 10088
14	Visual position indicator	1	Copper-alloy+Glass+Elastomer / CuZn39Pb3+Glass+EPDM	EN 12164
	O-ring	acc/DN	Elastomer / EPDM	
	Bolting and washers	acc/DN	Stainless Steel A2	EN 10088
Pilot circuit				
1	Upstream isolating valve	1	Nickel plated Copper-alloy	
2	Strainer	1	Bronze+Copper-alloy+Stainless Steel	
3	Small orifice plate / Restrictor	1	Stainless Steel 303 / X8CrNiS18-9	EN 10088
7	Downstream isolating valve	1	Nickel plated Copper-alloy	
9	Chamber isolating valve	1	Nickel plated Copper-alloy	
10.1	Opening speed controller	1	Copper-alloy+Stainless Steel+EPDM	
51	3/8" Pressure reducing pilot valve	1	See details opposite	
BL	Chamber feed box / Combi bloc	1	Bronze / CuSn12	EN 1982
250	Pilot circuit tube	acc/DN	Stainless Steel 316L/ X2CrNiMo17-12-2	EN 10088
	Pilot circuit fittings***	acc/DN	Stainless Steel 316L/ X2CrNiMo17-12-2	EN 10088
	Isolating valve for pressure gauges***	2	Nickel plated Copper-alloy	

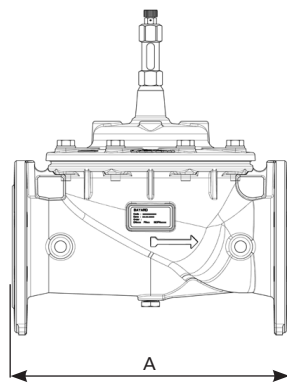
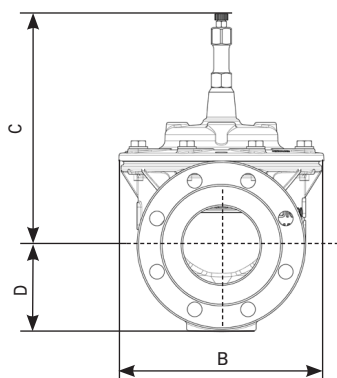
Drawing and part list for DN 50XG to 300XG and DN 150XGS to 400XGS. Other DN, please consult us.

* Blue epoxy coating.

** Epoxy cataphoresis coating + blue epoxy coating.

*** Non represented (pressure gauges optional).

"HYDROSTAB" PRESSURE REDUCING VALVE DN 50 to 1000 - Series K1 10



Globe pattern.
Single Chamber.
XG and XGS design
from DN 350.



Globe pattern.
Single Chamber.
XGS design
until DN 300.

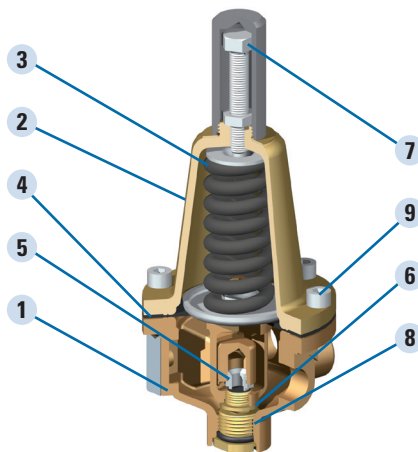
DN	XGS design					XG design				
	A	B**	C***	D	Weight	B**	C***	D	Weight	
	mm	mm	mm	mm	kg	mm	mm	mm	kg	
50*	230	-	-	-	-	173	238	84.5	14.2	
65*	290	-	-	-	-	198	257	94.5	18.7	
80*	310	-	-	-	-	226	277	102	22.6	
100	350	-	-	-	-	265	302	120	35.1	
125	400	-	-	-	-	307	396	137	42.7	
150	480	265	302	140	43.2	351	443	152	67.9	
200	600	351	443	182	80.8	436	567	182	116.8	
250	730	436	580	212	134.9	524	609	212	156.7	
300	850	524	631	242	193.3	606	657	242	219.0	
350	980	606	657	278	249.3	-	-	-	-	
400	1100	606	657	312	270.4	835	847	355	540.0	
500	1250	835	847	367	600.0	-	-	-	-	
600	1450	835	847	422.5	717	1085	1229	422.5	1205.0	
700	1650	1085	1229	480	1421	-	-	-	-	

* Double drilling on DN 50. 65. 80 ISO PN16 flanges. respectively 40/50. 60/65. 80-4/8 holes. Simple drilling. please consult us.

*** Add 100 mm on both sides to B for pilot circuit dimension on standard product. pressure gauges excluded (other construction. please consult us).

*** Add 150 mm to C for pilot circuit height on standard product (other construction. please consult us).

3/8" pressure reducing pilot valve



Item	Designation	Qty	Materials	Standards
1	Body	1	Bronze/CuSn5Pb5Zn5	EN 1982
2	Bonnet	1	Copper-alloy/CuZn39Pb1A1	EN 1982
3	Spring: 1 to 20 bar	1	Steel/CrSi	DIN 17223
	0.2 to 2 bar*		Stainless steel 302/X10CrNi18-08	EN 10088
	15 to 25 bar*		Steel/CrSi	DIN17223
4	Diaphragm	1	Textile reinforced elastomer/EPDM	
5	Seat	1	Steel/X2CrNiMo17-12-2	EN 10088
6	Valve holder+valve disc	1	Bronze/CuSn12 + Viton	EN 1982
7	Setting screw	1	Stainless steel/X2CrNi18-09	EN10088
8	Lower guide	1	Bronze/CuSn12	EN 1982
9	Screw	6/8	Stainless steel/X2CrNi18-09	EN 10088

* Special requirement

Drawing and part list for 3/8" pressure reducing pilot valve. Other sizes, please consult us.

Operating principle

• Please refer to the general manual on Hydrobloc control valves (series K) for performances, operating principle, and options available for the products.

• **Pressure reducing function:**

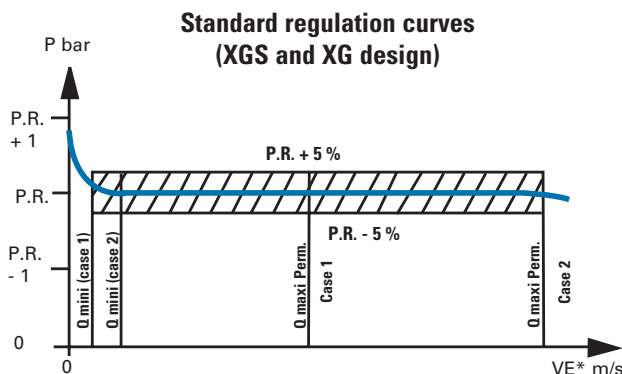
When the downstream pressure increases, above the set value, the pilot valve (item 51) tends to close which operates closing of the main valve. On the contrary, when the downstream pressure decreases, below the set value, the pilot valve (item 51) tends to open, which operates opening of the main valve.

The main valve copies the movement of the pilot valve.

• **Performances:**

- The operating principle guarantees a very accurate control of the downstream pressure: generally $\pm 5\%$ of the set value within the recommended flow range (see table below).
- With clean water, the valve is watertight at zero flow rate for a downstream pressure less than 1 bar higher than the set value.

• If the inlet pressure drops close to the set value, the Hydrostab fully opens thus creating a very low head loss.



Sizing of the hydrobloc

How to choose the design

Up from DN150 the Bayard range offers two different versions: XG and XGS design. The decision which design to take depends on the required application and on the pressure and flow rate conditions.

- The XGS design specially fits for a pressure reducing application and when there is a risk of cavitation.
- The XG design suits better for low head loss conditions.

How to choose the diameter

The diameter of the valve must be chosen according to the flow rate and pressure conditions on the valves. Generally two cases are to be considered.

Case 1:

At the maximum flow (during peak hours or high consumption periods), if the upstream pressure drops close to the downstream pressure set value (difference < 1 bar), we advise to «oversize» the valve. A maximum equivalent speed (VE) of 2 m/s is recommended for XGS design, and 2.5 m/s for XG design. At this speed the minimum pressure drop of the open main valve is:

- Between 3 and 5 mWH for XGS design (depending on the DN),
- Between 2 and 3 mWH for XG design (depending on the DN).

Case 2:

At the maximum flow, if the upstream pressure is important compared to the downstream pressure set value (high available head loss), then higher velocities can be admitted (beforehand check that the available head loss is higher than the head loss through the fully open valve at the maxi considered flow rate):

- 4 m/s for permanent maxi velocity, and 6 m/s for exceptional maxi velocity on XGS design,
- 5 m/s for permanent maxi velocity, and 7 m/s for exceptional maxi velocity on XG design.

Recommended velocity (VE*)

	XGS design XG design	
	m/s	m/s
Permanent maxi velocity	4	5
Exceptional maxi velocity	6	7

Minimum flow rate:

For flow rates lower than those we recommend, downstream pressure accuracy can exceed the $\pm 5\%$ tolerance of the set value.

When a device may have to operate below the minimum flow rate value (see table below) for long periods of time (irrigation networks, staggered projects, etc...), we strongly recommend the installation of a second smaller diameter device in parallel. The maximum flow for the small device would correspond to the minimum flow for the larger device, and the smaller device would be set at a pressure 0.5 bar above that of the larger device.

Recommended flow rates (l/s)

		VE*/ DN	50	65	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000
XGS Design	Case 1 Mini flow rate	0.2	-	-	-	-	-	3.5	6.3	9.8	14	19	25	39	57	77	-	127	157
	Case 1 Maxi permanent flow rate	2	-	-	-	-	-	35	63	98	141	192	251	393	565	770	-	1272	1571
XGS Design	Case 2 Mini flow rate	0.4	-	-	-	-	-	7.1	13	20	28	38	50	79	113	154	-	254	314
	Case 2 Maxi permanent flow rate	4	-	-	-	-	-	71	126	196	283	385	503	785	1131	1539	-	2545	3142
XG Design	Case 1 Mini flow rate	0.2	0.4	0.7	1	1.6	2.5	3.5	6.3	9.8	14	-	25	-	57	-	101	-	-
	Case 1 Maxi permanent flow rate	2.5	4.9	8.3	13	20	31	44	79	123	177	-	314	-	707	-	1257	-	-
XG Design	Case 2 Mini flow rate	0.4	0.8	1.3	2	3.1	4.9	7.1	13	20	28	-	50	-	113	-	201	-	-
	Case 2 Maxi permanent flow rate	5	9.8	17	25	39	61	88	157	245	353	-	628	-	1414	-	2513	-	-

* VE (m/s) = Equivalent velocity: average velocity in the inlet section (DN).

Cavitation

It is recommended to use the cavitation diagram which is included in the general manual for Hydrobloc control valves (series K) in order to check for safe operation area.

Adjustment ranges

The following table shows the adjustment range in function of the diameter (DN) and the type of pilot.

DN		Pilot	Springs adjustment range
XGS design	XG design		
150 to 400	50 to 300	3/8"	1 to 20 bar - standard
			0.2 to 2 bar - on request
			15 to 25 bar - on request
500 to 700	400 to 600	3/4"	1 to 20 bar - standard
			0.2 to 2 bar - on request

Installation

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- Installation and maintenance manual delivered with the product, and available if necessary on request.
- Installation should be carried out as shown in the general manual for Hydrobloc control valves (series K). In the case of a parallel installation, the by-pass should include the same components than the main line. Install an air valve; upstream the pressure reducing valve if the pipeline is horizontal, or slopes upwards; and downstream the device if the pipeline slopes downwards.
- The pressure-reducing valve is a control valve. If the downstream networks includes fragile components (old pipes or devices, elements with maximum working pressure close to set value of downstream pressure...), install a safety relief valve («DJET» relief valve, «HYDROSTAB» surge valve...).
- Sand presence can spoil seat components at zero flow rate, with a risk of loss of water tightness. Thus, we recommend the installation of a small safety relief valve downstream the pressure-reducing valve. Please, consult us.
- The manhole must be sufficient spacious and accessible to allow easy checking of the pressure gauges (optional) and position indicator, as well as maintenance operations. Required minimum space (to adapt in function of the valve diameter):
 - All around the device and above: 1 m,
 - Below the device: 0.20 m.
- The manhole must be fitted with draining or water evacuation facilities.
- The pressure difference between the upstream and downstream creates a thrust which can be quite powerful. Therefore, in order to ensure no movement of the valve and pipeline, it is necessary then to install a chocking device.

Maintenance

Please refer to installation and maintenance manual delivered with the product.

Particular applications

For the options available with the main valve or the pilot circuit, check the general manual for Hydrobloc control valves (series K).

Please contact us for specific applications, mentioning the conditions of use (upstream and downstream pressures, minimum and maximum flow rates, height and level of the reservoir, type and conditions of installation, required functions, etc.).