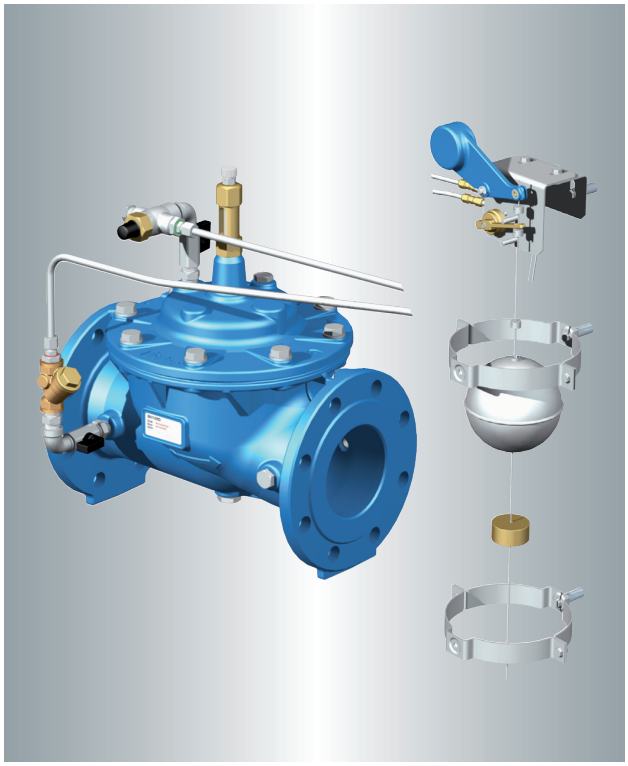
BAYARD

On-Off 2 levels float control valve, closing at high level and opening at low level.



Functions

- Prevents overflowing and closes at a constant and adjustable high level.
- Remains closed until reaching a lower and adjustable level (i.e. during consumption of a pre-determined volume).
- Opens fully at low level and remains fully opened until reaching high level.

Applications

- Filling of reservoirs with low consumption, to allow water renewal in the reservoir.
- Filling of reservoirs from pumping stations.

Tests

- Manufacturing fully tested according to ISO 5208-2.

Description

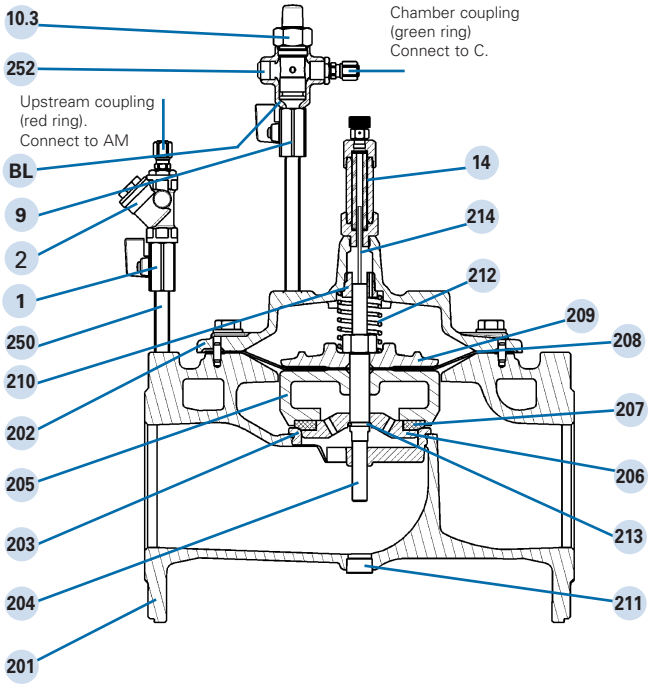
- For general information concerning the operation of a Hydrobloc control valve, please consult our general manual (series K).
- Extensive range including two different designs:
  - XG design:
    - Large flow capacity,
    - Low head loss,
    - Watertight at zero flow rate.
  - XGS design:
    - Particularly suitable to high differential pressures,
    - 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/closing speed controller "RFO" (DN 50 to 300 XG design, and DN 150 to 400 XGS design only),
  - Chamber isolating valve independent from the adjustment of the speed controller,
  - Maintenance without disassembly from the pipeline.
- Savy pilot valve located in the reservoir.
- Product according to standard EN 1074- 5.
- Drain plug (stainless steel).

Technical data

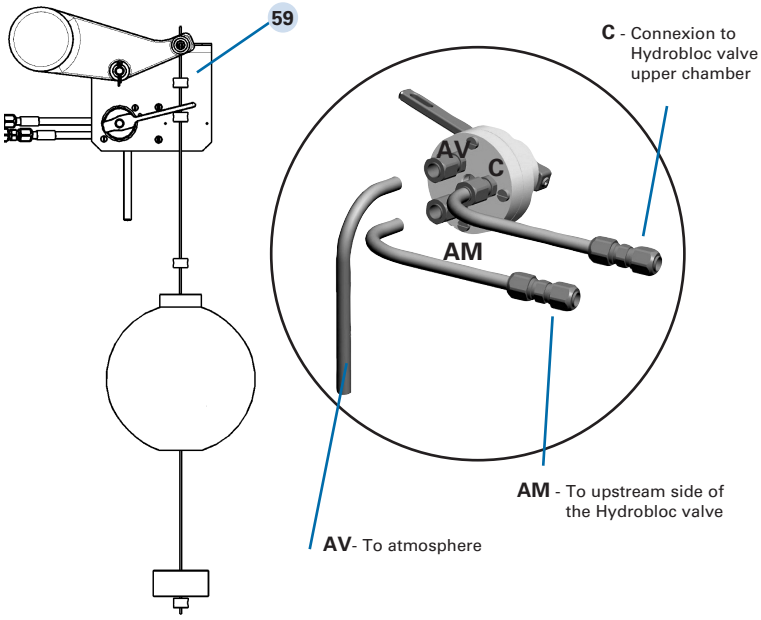
- Range:
  - DN 50 to 600 for XG design.
  - DN150 to 700 for XGS design.
  - DN 800 to 1000 XG and XGS design, please consult us.
- PN 16.
- Maximum temperature: +1°C to +65°C.
- Seating: class A according to standard ISO 5208-2.
- Face-to-face dimensions according to standards EN 558-1 series 1 (except DN 1000) and ISO 5752 series 1 (except DN 1000).
- Flange drilling according to standards EN 1092-2 and ISO 7005-2: ISO PN 10, 16 or 25 for DN 50 to 1000 (other drillings, please consult us).
- Fluid: drinking water or 2 mm filtered untreated water.

TALIS
YOUR CHOICE IN WATERFLOW CONTROL

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

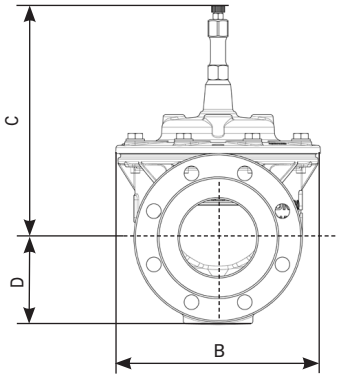


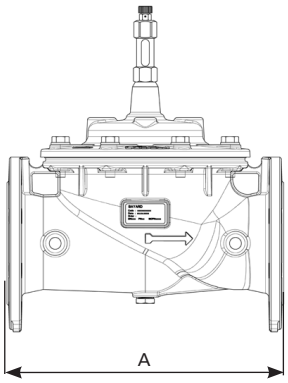
Standard connections



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**:	DN50XG to 200XG	1	Cast iron/EN-GJL-250	EN 1561
		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**:	DN50XG to 150XG	1	Cast iron/EN-GJL-250	EN 1561
		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	Indicateur 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 304L / X2CrNi 18-9	EN 10088
Pilot circuit					
1	Upstream isolating valve		1	Nickel plated Copper-alloy	
2	Strainer		1	Bronze+Copper-alloy+Stainless Steel	
9	Chamber isolating valve		1	Nickel plated Copper-alloy	
10.3	Opening/Closing speed controller		1	Copper-alloy+Stainless Steel+EPDM	
59	Savy float pilot		1	See details next page	
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*** (at the inlet only)		1	Nickel plated Copper-alloy	

Drawing and part list for DN50XG to 300XG and DN150XGS to 400XGS. Other DN, please consult us.
** Blue epoxy coating.*
*** Epoxy cataphoresis coating + blue epoxy coating.*
**** Non represented (pressure gauges optional).*





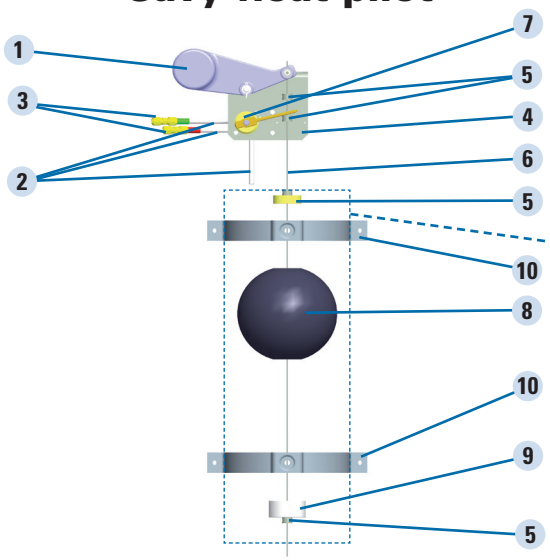
Globe pattern.
Single Chamber.
XG and XGS design
from DN 350.

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

DN	A	XGS design B**	XGS design C***	XGS design D	XGS design Weight	XG design B**	XG design C***	XG design D	XG design 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*	*717.0*	*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).*

Savy float pilot



PVC damper pipe Ø 200 (not supplied)

Item	Designation	Qty	Materials	Standards
1	Upper counterweight	1	Cast iron GL/EN-GJL250	EN 1561
2	Ø 6x8 tubing	3	Stainless steel 316L/X2CrNiMo 17-12-2	EN 10088
3	Ø 8 straight coupling	2	Copper alloy	
4	Wall bracket	1	Stainless steel 304L + non dezinc. brass/CuZn36Pb2As	EN 10088/EN 12164
5	Adjustable end stops	4	Stainless steel 420/X20Cr13	EN 10088
6	Cable	1	Stainless steel 304L/X2CrNi 18-9	EN 10088
7	3 ways Savy sub- assembly	1	Copper alloy/CuZn 39Pb3 + stainless steel 304L/X2CrNi 18-9 + POM	EN 12164 + EN 10088
8	Float	1	Stainless steel 316L/X2CrNiMo 17-12-2	EN 10088
9	Lower counterweight	1	Non dezinc. brass/CuZn36Pb2AS	EN 12164
10	1/2 pipe clamps	4	Stainless steel 302/X2CrNi 18-8	EN 10088
	Bolting	acc. DN	Stainless steel A2	EN 10088

Operating principle

- Please refer to the general manual on Hydrobloc control valves (series K) for performances, operating principle, and options available for the products.
- The Savy pilot consists basically of a 3 ways valve operated by a counterweighted lever.
  The ball float slides along a cable held taut by the lower counterweight. The cable is fitted with 2 adjustable float end stops, allowing setting of closing and opening levels. A set of pipes (not supplied) links the upstream side of the main valve to the pilot and the pilot to the main valve upper chamber.
- When the float reaches the upper level, it pushes upwards against the upper end stop. The counterweighted lever operates the 3 ways Savy valve thus connecting the upstream pressure to the main valve upper chamber. Consequently, the main valve starts to close until complete shut-off.
  Closing speed is controlled through the opening & closing speed control RFO.
- When the level drops, the float slides down the cable and the main valve remains closed until the selected low level is reached. The float pushes downwards against the lower end stop.
  The counterweighted lever operates the 3 ways Savy valve thus connecting the main valve upper chamber to atmosphere. Consequently, the main valve starts to open until fully-open position. Opening speed is controlled through the opening & closing speed control RFO.

The main valve copies the movement of the pilot valve.

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 when available differential pressure is important and when there is a risk of cavitation.
- The XG design suits better for low head loss conditions.

Recommended velocity (VE*)

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

How to choose the diameter

To size a float control valve, following information concerning the network hydraulic and reservoir operating conditions is required:

- The maximum static pressure, when valve is closed (PSM),
- The network or the upstream pipeline flow capacity, i.e. the maximum flow (QM) with end of line valve totally open to be compared with average flow required (Q) in the project.

Case 1:
If the maximum static pressure is low (PSM<1bar) or if upstream flow capacity (QM) is lower than the average flow required (Q) (even if PSM>1bar), 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:
If the PSM is high and the flow capacity (QM) is higher than the average flow required (Q), 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 flow rates (l/s)

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

Setting range

Adjusting range between opening and closing levels from 5 cm to 4.5 m.

Working conditions

Reminder:

- Hydro Savy is an "on-off" valve except when fitted with an additional function (such as pressure sustaining or flow limiting...). The flow rate through the valve may largely overpass the required flow rate (Q) and/or the maximum recommended flow rate.
- The head loss created by a Hydro Savy depends on main valve location (on top or at the bottom of the reservoir), respective positions of both main valve and pilot, type of filling (from above by swan neck pipe or from bottom) and additional function if any.

Nota: Head loss is minimum when main valve is located at the top of the reservoir.

- Hydrobloc main valve can be placed either at the top or at the bottom of the reservoir (recommended at the bottom for DN > 200). Filling can be:
  - from above (swan neck type),
  - from bottom.

1) Closing conditions at top level

Dynamic pressure must be always more important than difference of height between Savy pilot and main valve.

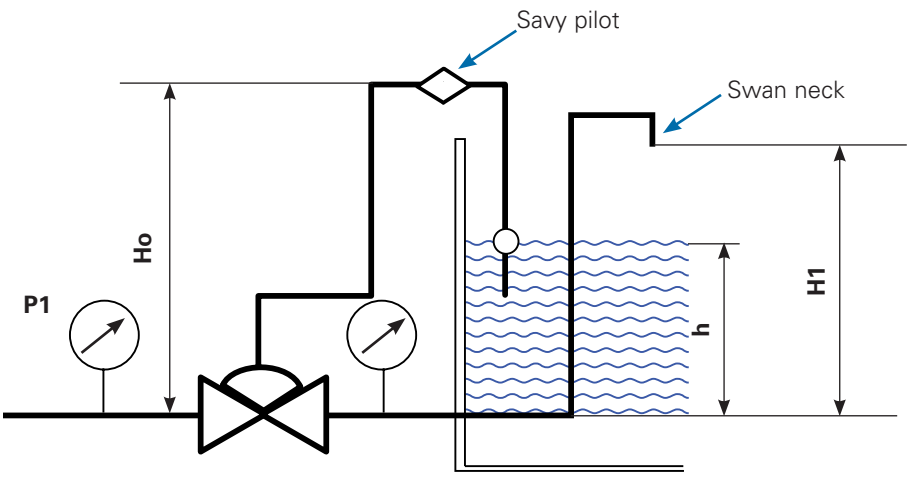
2) Opening conditions at low level

Upstream network must be pressurized to open main valve (see table hereunder).

	OPENING CONDITIONS		HEAD LOSS	
MAIN VALVE LOCATION	*Filling the reservoir*		*Filling the reservoir*	
	From above (swan neck pipe)	From bottom	From above (swan neck pipe)	From bottom
AT THE BOTTOM	P1 ≥ ΔPo + 2Ho – H1	P1 ≥ ΔPo + 2Ho - h	ΔPt = ΔPv + 2(Ho – H1)	ΔPt = ΔPv + 2(Ho – h)
AT THE TOP	P1 ≥ ΔPo		ΔPt = ΔPo	

P1 = Upstream pressure (in meters H2O).
Ho = Difference of level between Hydrobloc main valve and Savy pilot (in meters).
ΔPo = Main valve minimum head loss under free opening conditions (in meters).
ΔPt = Hydro "Savy" control valve total head loss (in meters).
ΔPv = Main valve head loss (in meters). ΔPv is the greatest of the 2 values ΔPo or k v^2 / 2g, according to flow velocity.
H1 = Difference of level between Hydrobloc main valve and swan neck top level (in meters).
h = Difference of level between Hydrobloc main valve and water level in the reservoir (in meters).

In case of additional function: hydraulic, electric or use of a relay valve, please consult us.



Installation

- Installation and maintenance manual delivered with the product, and available if necessary on request.
- Typical installation drawings are shown below.
  It is recommended to fit a strainer box (3) and upstream (2) and downstream (2) isolating valve to secure working conditions and easy maintenance.
  An air valve (1) is required upstream the device if the pipeline rises or is in a horizontal position.
- Savy float pilot to be placed in the reservoir, easy access is recommended for adjustments and maintenance of pilot and installation of the damper pipe.
- Linking lines Ø 6x8 mm (not supplied) between main valve and pilot must be as straight as possible, avoiding slope changing.
- In case of frequent stops, very low pressure, bottom filling, high air content water, Savy pilot placed above piezometric line…, please use a venting kit (please consult us).
- A pressure relief function on upstream overpressure is added in case of long length supply and/or high static pressure to insure smooth closing without excessive pressure increase (please consult us).
- In case of mounting in a manhole, there must be enough space to allow easy access to check pressure gauges (optional) and position indicator, as well as maintenance operations. Required minimum free space (to adapt according to 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 anchoring device.

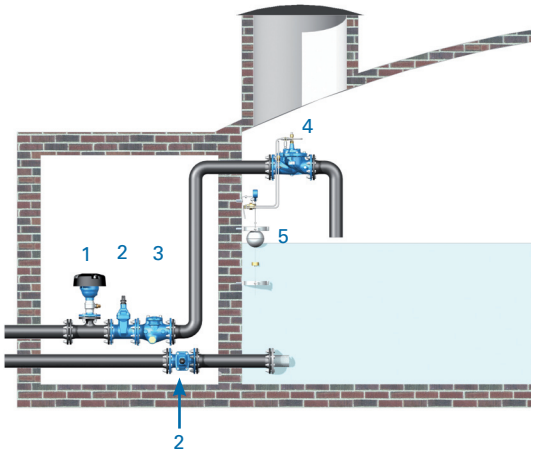


Fig.1 Filling from above, main valve at the top

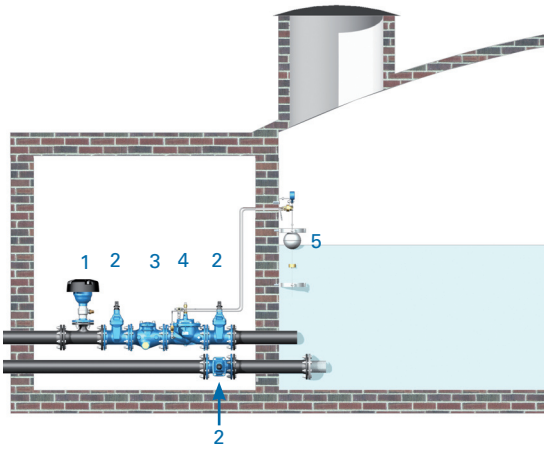


Fig. 2 Filling from bottom

1 Air release valve (single or double orifice)
2 Soft sealing gate valve
3 Strainer box
4 Hydro "Savy" control valve
5 Savy pilot control

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.).