

C 501

Control valves

Anti-water hammer

Technical Data Sheet



Description

The control valves C 501 eliminates all pressure fluctuations which occur when pump starts, during electric power failure or pump failure. Always installed on a by-pass, its drains a certain quantity of water to the sewage pipe or at the pump suction into a tank... This in two stages : at first anticipation of the water-hammer in using the pressure drop preceding and secondly reaction at real time against a possible overpressure (in so far as the first operation is not sufficient).



C 501

Control valves - Anti-water hammer

DN "	mm	PN	PFA in bar	PS				Cat	Ref.	Weight* Kg
				L1	L2	G1	G2			
1 1/2		10/16/25	25	25	25	x	x	4.3	149B012947	8
	40	10/16/25	25	25	25	x	x	4.3	149B008219	12
	50	10/16/25	25	25	25	x	x	4.3	149B008220	13
	65	10/16/25	25	25	25	x	x	4.3	149B50106N	21
	80	10/16/25	25	20	25	x	x	4.3	149B50108N	26
	100	10/16	16	16	16	x	x	4.3	149B50110N	39
	125	10/16	16	16	16	x	x	4.3	149B50111N	59
	150	10/16	16	16	16	x	x	4.3	149B50112N	73
	200	10	10	10	10	x	x	4.3	149B50114N	122
	250	10	10	10	10	x	x	I	149B50115N	208
	300	10	10	10	10	x	x	I	149B50116N	328

* Weight of valve alone

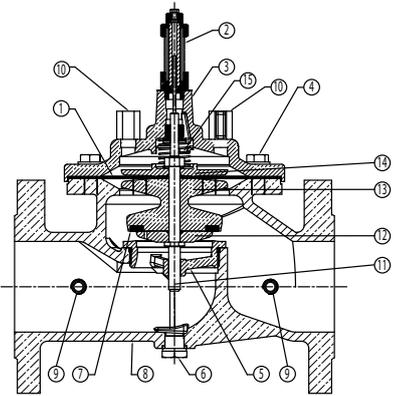
Important notice :

The indicated pressure for the different categories of fluids (L1/L2/G1/G2) is under no condition a guarantee of use. Therefore, it is essential to validate the use of products under given operating conditions.

Technical features	
Operating temperature	-10 °C to 90 °C
Upstream pressure	Mini. : 1 bar / Maxi. : 25 bar (voir tableau ci-dessus)
Connection	DN 40 to 300 mm : with flange PN (see table above) DN 1"1/2 : threaded F/F
Mediums	Clear water 2 mm
Vertical mounting	In optional

Nomenclature and materials

N°	Description	Materials	EURO	ANSI
1	Membrane	EPDM / Polyamide		
2	Position indicator with purge	Brass and stainless steel	EN 12164-CuZn39Pb3-R360min EN 10088-3-X5CrNi18-10 EPDM Cu	ASTM B36 / ASTM B121 AISI 304 / ASTM A240
3	Valve head high pressure	Ductile iron / Epoxy Int/Ext	EN 1563 EN-GJS-400-15 except DN 125 : EN 1561-EN-GJL-300	ASTM A536 60-40-18 ASTM A48 class 45B
4	Nuts and bolts	Stainless steel	EN 10088-3-X5CrNi18-10	AISI 304 / ASTM A240
5	Removable streamlined	Stainless steel	EN 10213-GX5CrNi19-10+AT	AISI 304 / ASTM A240
6	Body drain plug	Brass	EN 12164-CuZn39Pb3-R360min	ASTM B36 / ASTM B121
7	Reversible seal	EPDM		
8	Body high pressure	Ductile iron / Epoxy Int/Ext 150µ ± 50µ	EN 1563 EN-GJS-400-15 except DN 125 : EN 1561-EN-GJL-300	ASTM A536 60-40-18 ASTM A48 class 45B
9-10	Valve	Chromed brass		
11	Stem	Stainless steel	EN10213-GX5CrNi19-10-AT	AISI 304 / ASTM A240
12	Flange	Stainless steel	EN10088-3X5CrNi18-10	AISI 304 / ASTM A240
13	Seal carrier	Bronze (DN40-50) Cast iron / Epoxy	EN1982 CuSn5Zn5Pb2-C GS EN1561-EN-GJL-250	ASTM A 48 35 B
14	Plate	Bronze (DN40-50) Cast iron / Epoxy	EN1982 CuSn5Zn5Pb2-C GS EN1561-EN-GJL-250	ASTM A 48 35 B
15	Spring	Stainless steel	EN10270-3 X10CrNi18-8	AISI 302



standard flow valve

Approvals

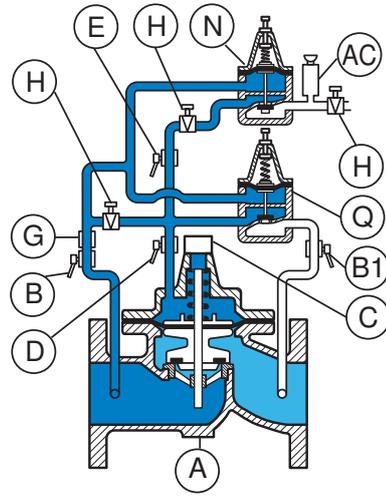
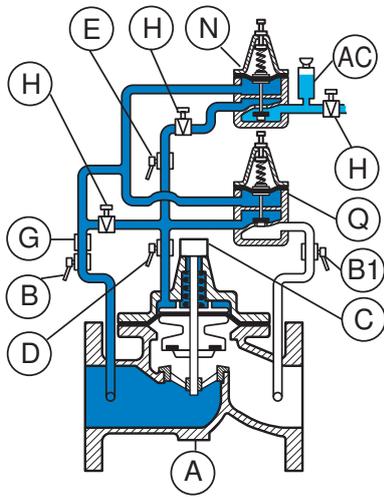
ACS  PED 2014/68/UE

International construction Standards :

Directive 2014/68/UE

Connection with flange PN according to EN 1092-2

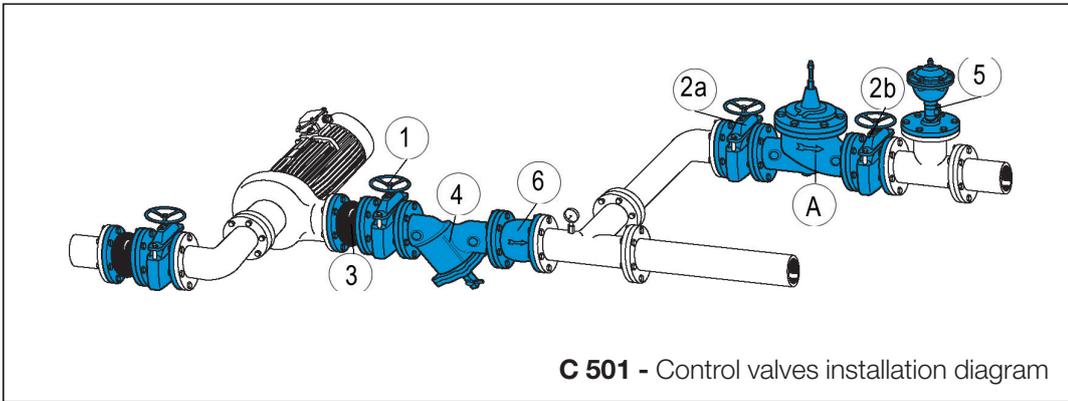
Operation



A pressure drop precedes the water-hammer, pilot (N) opens, water flows from the upper chamber of valve (A) to the accumulator (AC).
The valve (A) opens and water flows out.

Water flows quickly from the accumulator (AC) into the upper chamber, the valve (A) and the pilot valve (N) close. If the quantity of water drained is not sufficient to avoid water-hammer, the valve will discharge thanks to pilot valve (Q), just like the valve C401.

Installation



C 501 - Control valves installation diagram

N°	Description
A	Main valve
AC	Accumulator
B	Upstream isolation valve
B1	Downstream isolation valve
C	Position indicator with drain
D	Chamber isolation valve
E	Isolation valve of pilot C108
G	Filter
H	Orifice-needle valve
I	Flow control
N	Pilot C108
Q	Pilot C301
1	Isolation valve of the pump
2a	Upstream isolation valve of the by-pass
2b	Downstream isolation valve of the by-pass
3	Rubber expansion joint
4	Filter
5	Single function air valve
6	Check valve of the pump

Pilot setting ranges upstream :

- 1 to 2,41 bar
- 1,72 to 8,6 bar (standard)
- 6,89 to 17,24 bar
- 13,78 to 25 bar

Pilot setting ranges in full aperture :

- 1 to 2,41 bar (standard)
- 1,72 to 8,6 bar
- 6,89 to 17,24 bar
- 13,78 to 25 bar

Installation :

- Install a strainer upstream
- Install an air relief valve down-stream or at the high point near the control valve
- Horizontal setting up : the cap of the valve should be oriented to the top and inclined at 45° maximum
- Vertical setting up : change the spring of the main valve (option 7)

Other types :

- C502, C503
- FKM seals in the main valve and in the pilot

Maintenance

We recommend a maintenance programme of between 6 to 12 months according to the quality of the water and to the pressure :

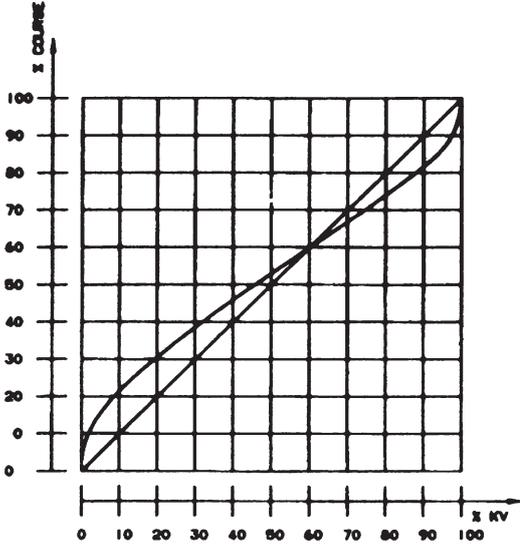
- Purging the upper chamber
- Flushing the valves not frequently used
- Checking and cleaning filters of the pilot circuit and main piping system.
- Checking the working (pressures)

Every 5 years, general maintenance is advisable :

- Dismantling
- Cleaning of main valve and pilot valve
- Preventive removing of the seals (set available - please consult us)
- Reassembling and tests.

Operating characteristics

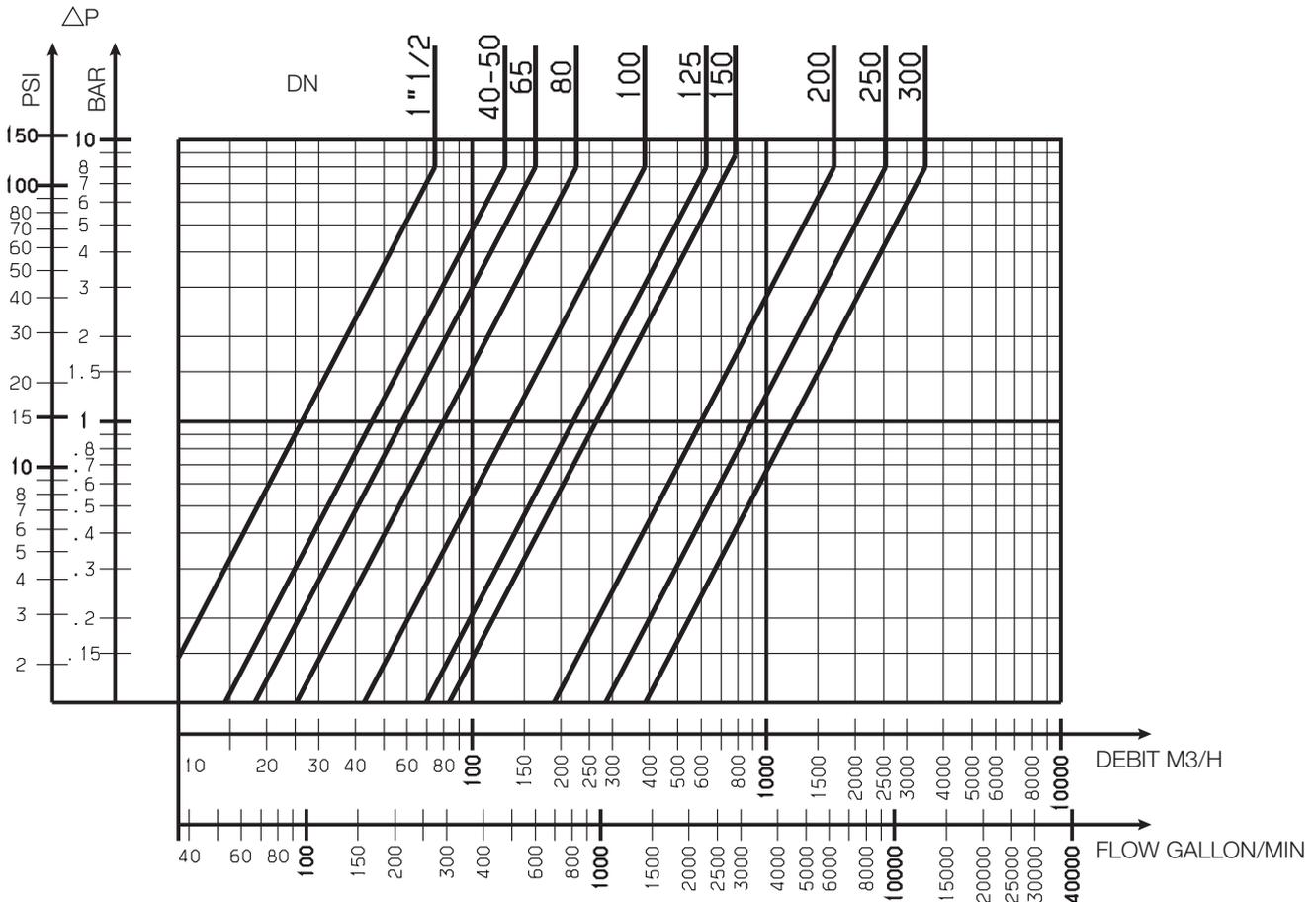
Choice of base valve



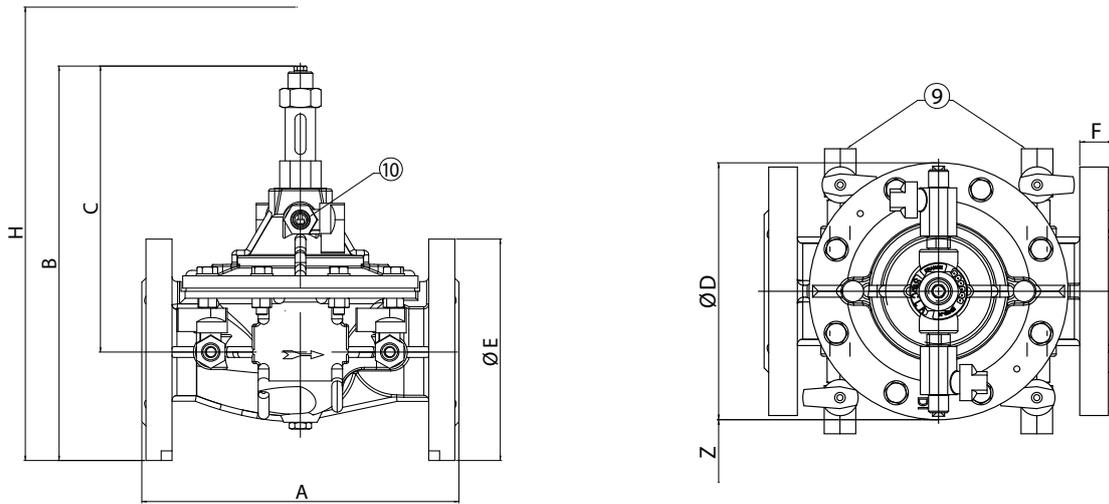
DN	Mini	Maxi	KV		ζ	PN	PFA	PN	PFA	PN	PFA
			m ³ /h	L/s							
1" 1/2	0,520	20,34	26,35	7,32	5,78	10/16	16	25	25	-	-
40	0,675	32,00	45,66	12,68	1,93	10/16	16	25	25	-	-
50	0,675	32,00	45,66	12,68	4,70	10/16	16	25	25	-	-
65	0,855	54,00	57,75	16,08	8,39	10/16	16	25	25	-	-
80	1,600	82,00	80,00	22,22	10,00	10/16	16	25	25	-	-
100	2,720	127,00	136,00	37,78	8,47	10/16	16	25	25	-	-
125	4,400	199,00	220,00	61,11	7,90	10/16	16	25	25	-	-
150	5,280	286,00	264,00	73,33	11,38	10/16	16	25	25	-	-
200	13,500	509,00	600,00	66,67	6,96	10	10	25	25	16	16
250	25,000	795,00	900,00	50,00	7,56	10	10	25	25	16	16
300	40,900	1145,00	1224,00	40,00	8,47	10	10	25	25	16	16

Headloss chart

Solid line: Base valve completely open



Sizing



standard flow valve

DN	A	B	C	Ø D	Ø E	F	H	Z	9	10
”	mm	mm	mm	mm	mm	mm	mm	mm	”	”
1 1/2(F/F)	230	267	210	170	6 pans ⁽¹⁾	-	800	254	1/4	3/8
40	230	285	210	170	152	23	800	254	1/4	3/8
50	230	285	210	170	161	23	800	254	1/4	3/8
65	290	352	257	200	185	24	770	254	3/8	1/4
80	310	372	272	217	200	26	790	254	3/8	3/8
100	350	423	302	241	235	28	810	254	3/8	3/8
125	400	506	371	296	270	30	870	254	3/8	3/8
150	480	551	401	363	300	20	1070	254	3/8	3/8
200	600	709	529	467	360	22	1150	254	3/8	3/8
250	730	844	631	587	425	24	1260	254	1/2	1/2
300	850	975	730	680	486	27	1370	254	1/2	1/2

(1) 78/plats

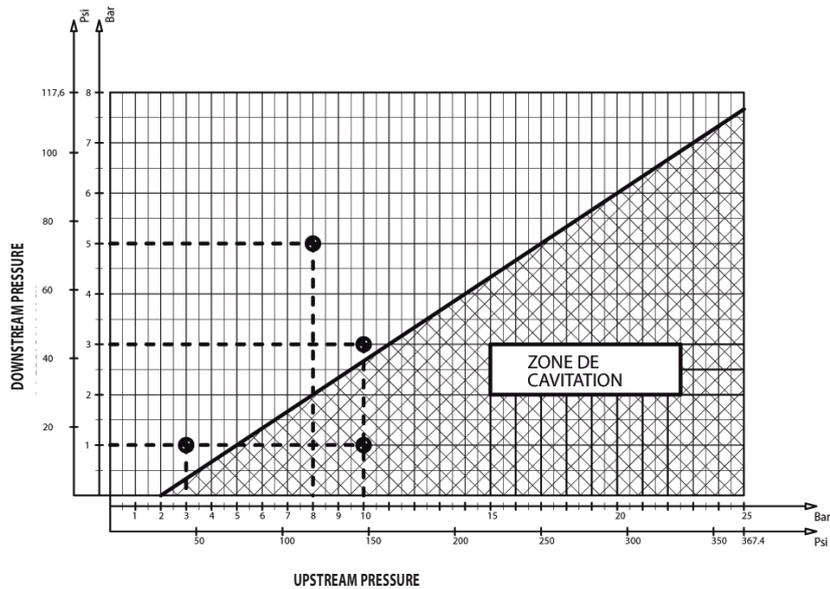
Other operating characteristics

Cavitation

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

To avoid it, refer to the cavitation curve and if needed, reduce the differential pressure by installing and connecting two or more control valves in same line (consult us).

Stainless steel seat and counter seat are standard.



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