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MODEL 550

Surge anticipator Valve

The Model 550 Surge Anticipator 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.

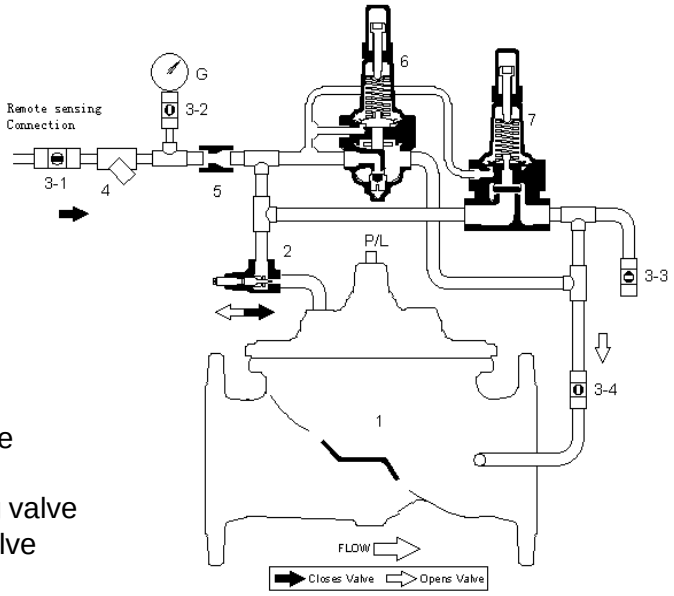
When pumping systems are started and stopped gradually, harmful surges do not occur. However, should a power failure take place, the abrupt stopping of the pump can cause dangerous surges in the system which could result in severe equipment damage. Power failure to a pump will usually result in a down 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.

Standard Features

1. Main valve
2. Needle valve
3. Ball valve
4. Strainer
5. Restriction
6. Lower pressure relief pilot
7. High pressure relief pilot

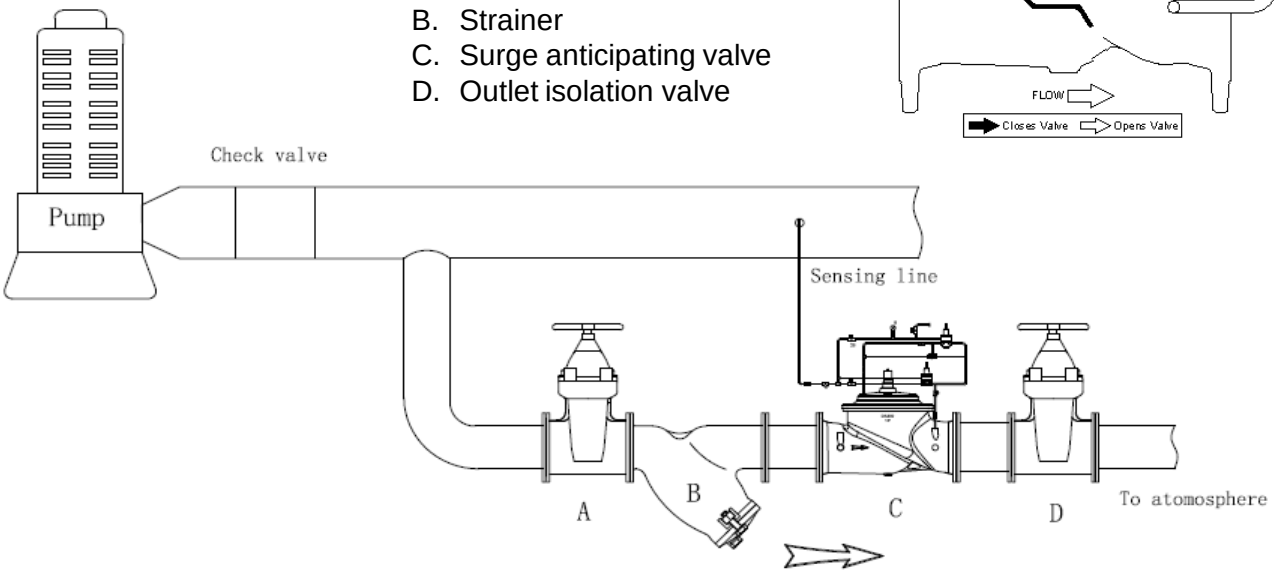
Optional Features

B. Ball valve
G Pressure Gauge
P Position indicator
L Limit switch



Typical Applications

A. Inlet isolation valve
B. Strainer
C. Surge anticipating valve
D. Outlet isolation valve



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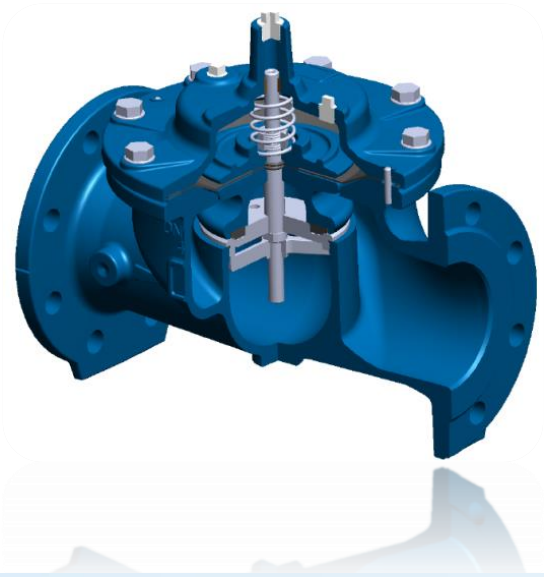
Main Valve

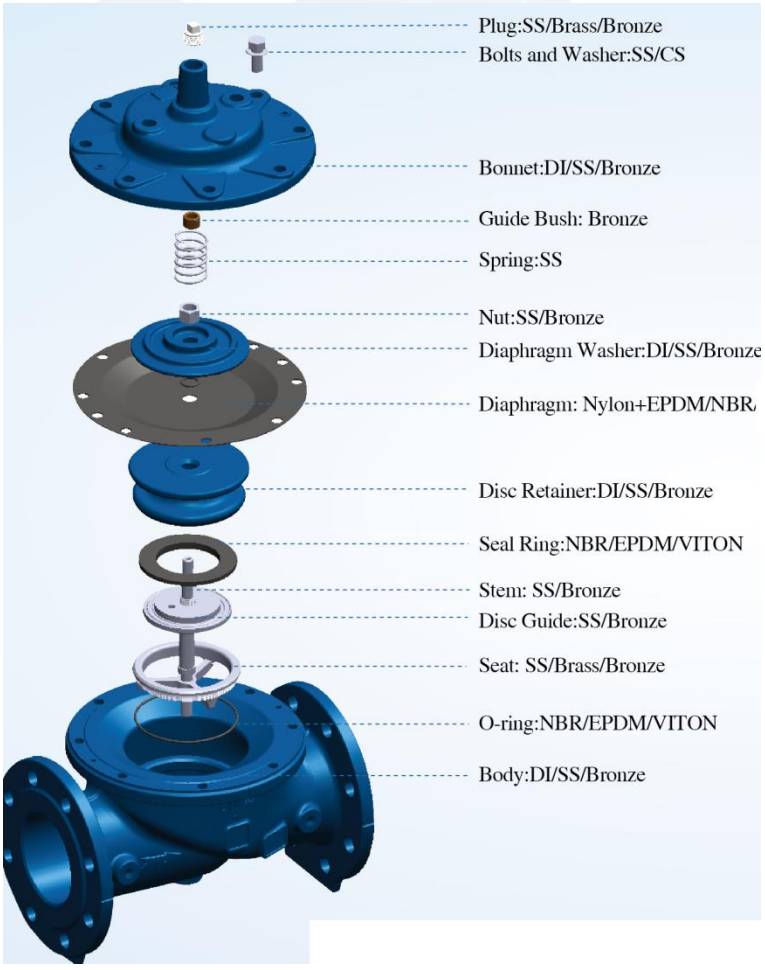
Globe type fully bore



- **Drip-Tight, Positive Seating**
- **Service Without Removal From Line**
- **Threaded, Flanged or Grooved Ends**
- **Globe or Angle Pattern**
- **100% Factory Tested**

The Model GF 900 is a hydraulically operated, diaphragm actuated, globe or angle pattern valve. It consists of three major components: body, diaphragm assembly, and bonnet. The diaphragm assembly is the only moving part. The diaphragm assembly is guided top and bottom by a precision machined stem. It utilizes a non-wicking diaphragm of nylon fabric bonded with synthetic rubber. A resilient synthetic rubber seal match the seat, make drip-tight seal,when pressure is applied above the diaphragm.

It is the valve of choice for system applications requiring remote control, pressure regulation, solenoid operation, rate of flow control, liquid level control or check valve operation. The rugged simplicity of design and packless construction assure a long life of dependable, trouble-free operation. It is available in various materials and in a full range of sizes, with either threaded, flanged or grooved ends.



Connection Standard

■ Flanged: ISO 7005-2 (ISO 10, 16 & 25)

Water Temperature

■ 0 - 80ºC

Working pressure

■ ISO PN 16: 16 bar
■ ISO PN 25: 25 bar

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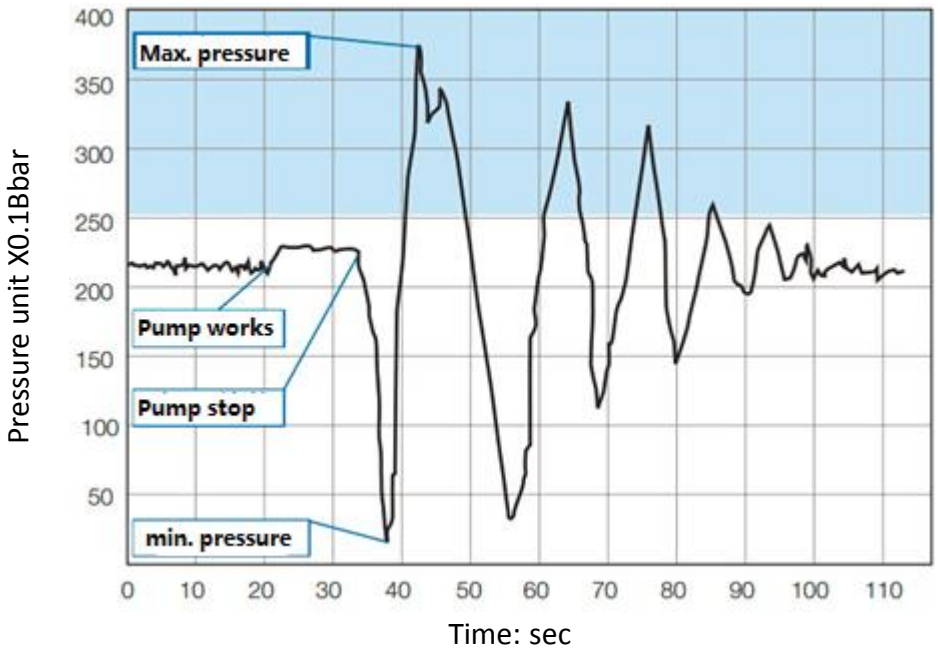
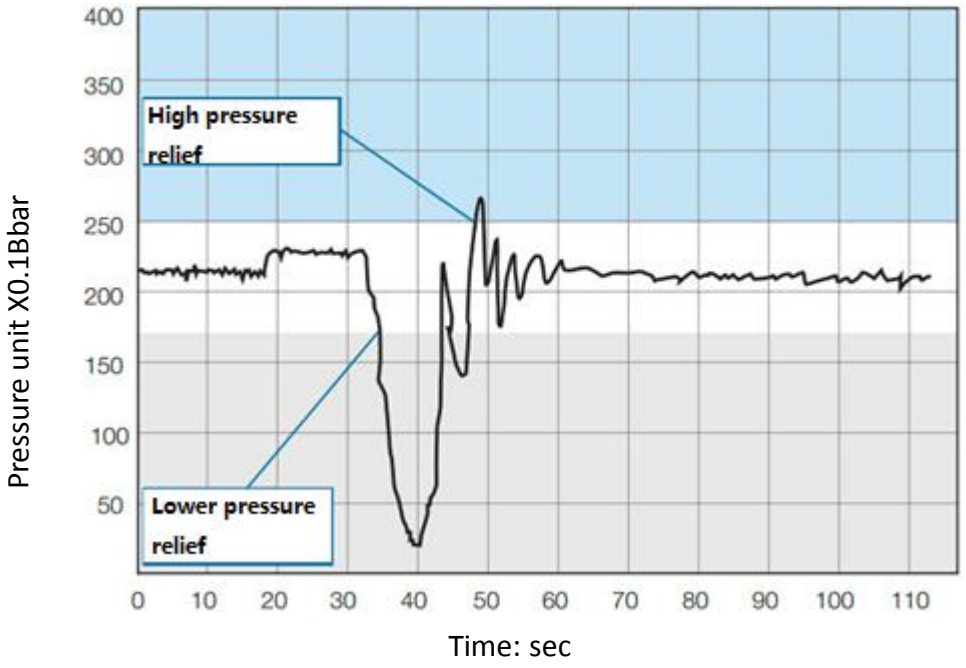
Pressure compared without & with surge anticipating valve

A. Without surge anticipating valve

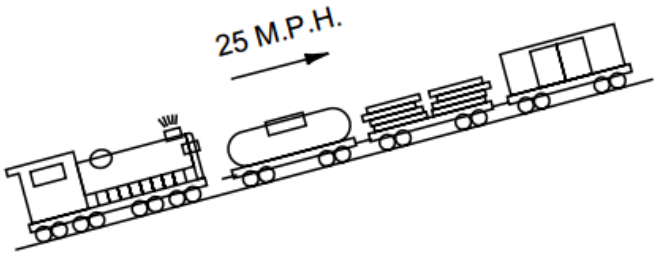


B. With surge anticipating valve, surge decreased

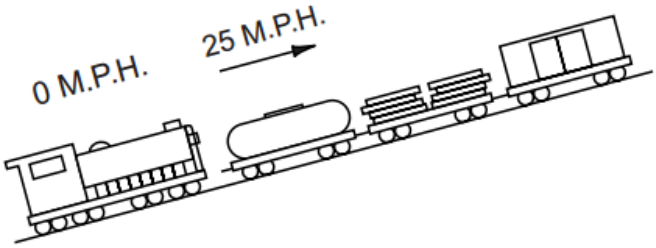


Surge simulation

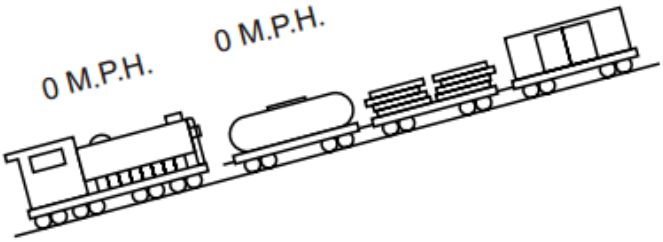
Pump works normally



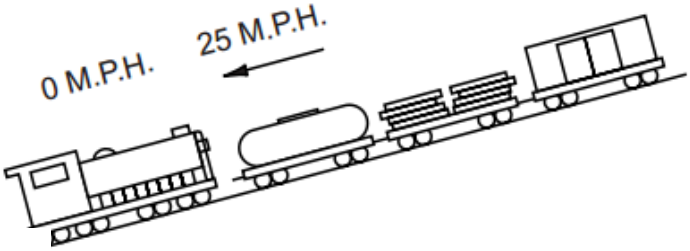
Pump stop, flow keeps going forward because of moment, the pressure in pipeline just behind pump drops, cause lower pressure relief pilot to open, and the surge anticipating opens, which is called “anticipating”



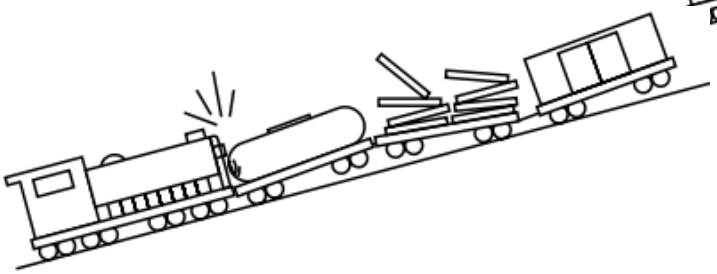
Pump stop for a while, moment energy run out and flow keep still instantaneously, because of friction and resistance of flow rate in pipeline.



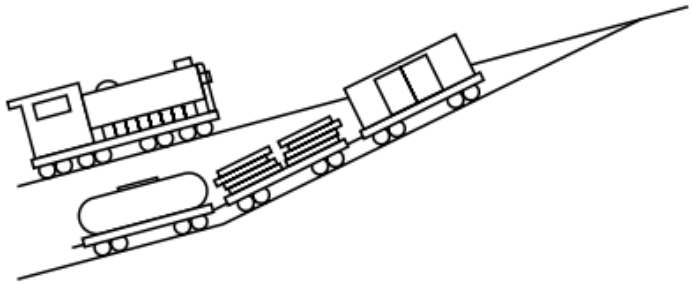
After pump stops, flow come back, surge happens , the pressure in pipeline behind pump rises, cause high pressure relief pilot open, main valve keep open.



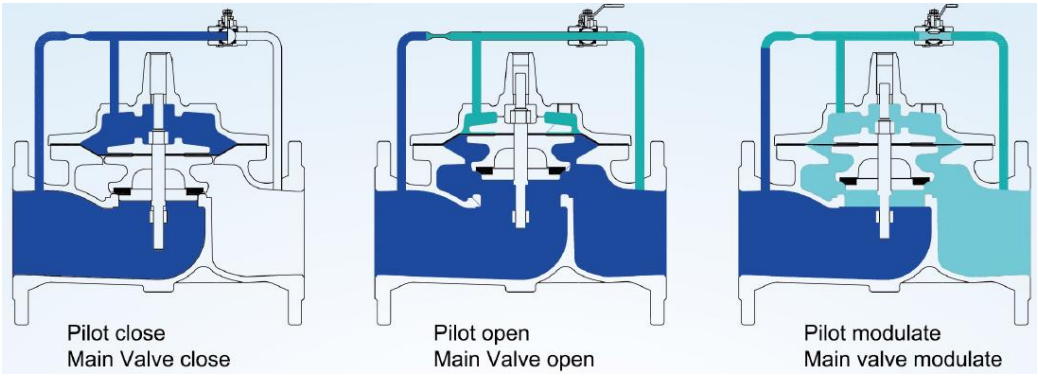
Surge destroy the equipments and pipeline



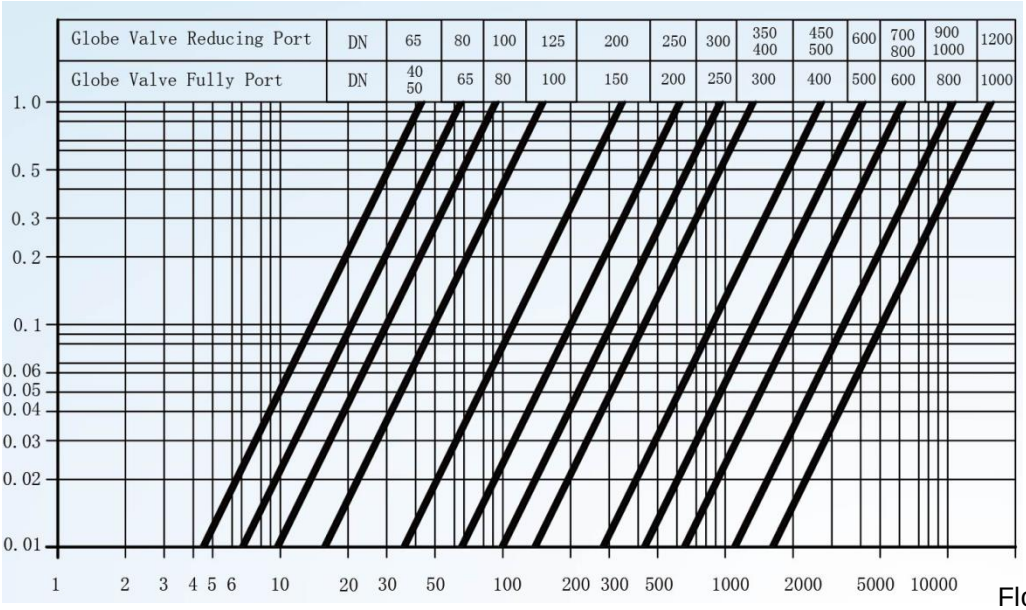
The function of surge anticipating valve is to release the surge to another way (atmosphere)

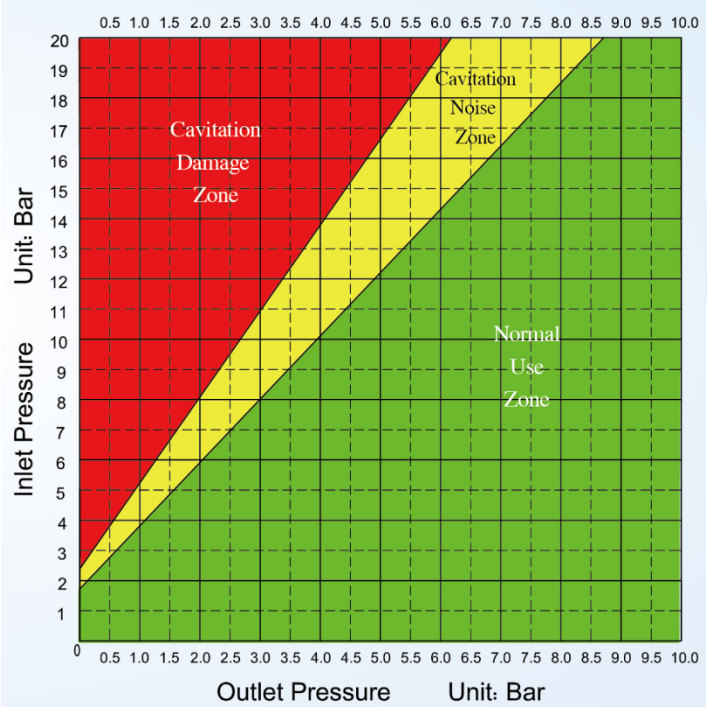


Main valve work cases and principle



Flow curve of main valve fully open





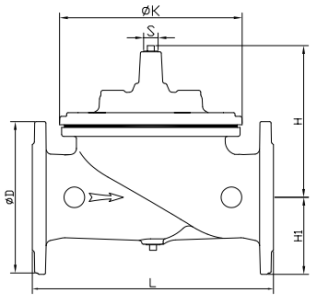
Cavitation Guide Chart

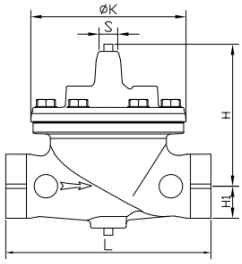
This chart used as a guide to the proper selection of the pressure drop. When pressure drop is too big, velocity of flow across the seat will be very fast, then cavitation occurs, also with shaking and noise. The valve should be used in the green zone to guarantee continue working.

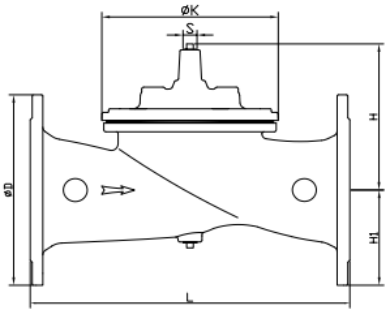
Anti-cavitation Solution

The anti-cavitation mold is designed for application where there is a high potential for damage from cavitation, which provides optimum internal pressure control through a unique anti-cavitation trim design and relieve the damage of cavitation with multi-stage pressure reducing.

Main valve dimension



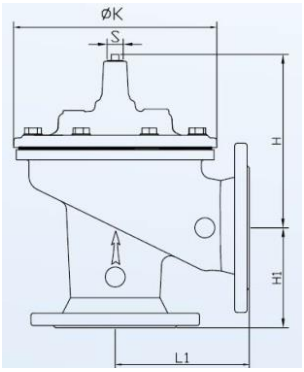




Globe type full bore						
DN	L	H	H1*	ΦK	S	W (Kg)
40	230	139	85	173	3/8"	14
50	230	139	85	173	3/8"	14
65	290	159	95	198	3/8"	19
80	310	179	102	226	3/8"	23
100	350	214	112	265	1/2"	32
125	400	278	127	307	1/2"	48
150	480	333	145	351	1/2"	68
200	600	407	172	436	3/4"	125
250	730	476	205	524	1"	200
300	850	526	232	606	1"	260
350	980	585	262	673	1"	405
400	1100	624	292	741	1"	560
500	1250	720	360	1002	1"	880
600	1450	835	425	1308	1"	1300
800	1850	1110	515	1755	1"	1950
1000	2250	1350	630	2231	1"	2456

Globe type Reduced bore						
DN	L	H	H1*	ΦK	S	W(Kg)
65	290	139	95	173	3/8"	15
80	310	159	102	198	3/8"	21
100	350	179	112	226	3/8"	27
125	400	214	127	265	1/2"	34
150	480	214	145	265	1/2"	37
200	600	333	172	351	1/2"	88
250	730	407	205	436	3/4"	144
300	850	476	232	524	1"	231
350	980	526	262	606	1"	281
400	1100	526	292	606	1"	370
450	1200	624	325	741	1"	595
500	1250	624	360	741	1"	750
600	1450	720	425	1002	1"	1150
700	1650	835	460	1308	1"	1420
800	1850	835	515	1308	1"	1510
900	2050	1110	570	1755	1"	2185
1000	2250	1110	630	1755	1"	2568
1200	2450	1350	750	2231	1"	3155

Angle type						
DN	L1	H	H1	ΦK	S	重量(Kg)
50	115	139	85	173	3/8"	13
65	145	159	95	198	3/8"	18
80	105	179	102	226	3/8"	21
100	175	214	135	265	1/2"	31
125	200	278	145	307	1/2"	46
150	240	333	150	351	1/2"	65
200	300	407	203	436	3/4"	121
250	365	476	225	524	1"	195
300	425	526	260	606	1"	253
350	490	585	305	673	1"	399



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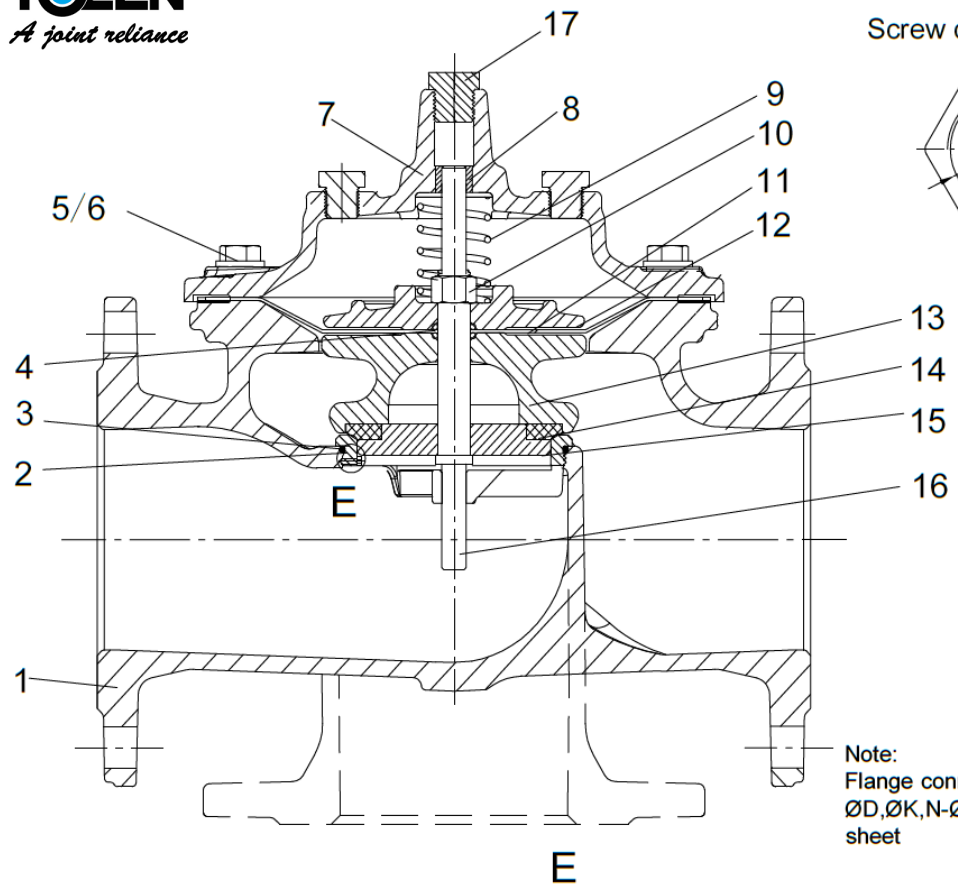
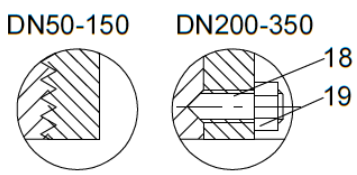
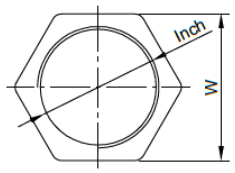
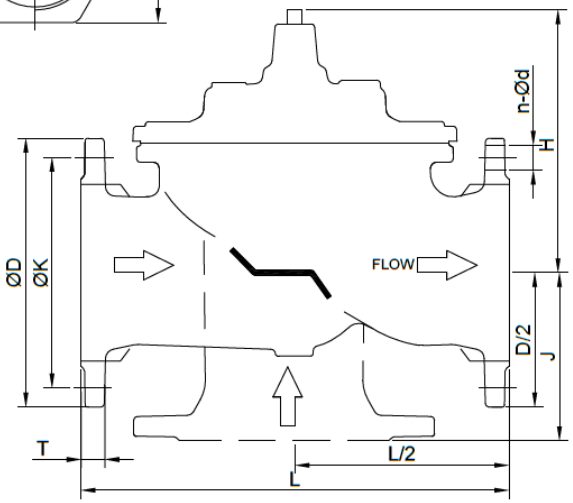




Screw connecting for PT/NPT





DN	L	H	J
50	230	139	98
65	290	159	102
80	310	179	102
100	350	214	140
125	400	265	145
150	480	333	152
200	600	407	203
250	730	476	225
300	850	526	260
350	980	620	305

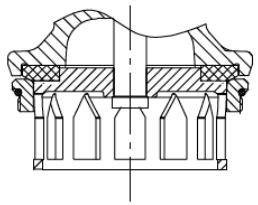
Unit:mm

DN	L	H	H1
2	9.06	5.47	3.86
2 1/2	11.42	6.26	4.02
3	12.2	7.05	4.02
4	13.78	8.43	5.51
6	15.75	10.43	5.71
6	18.9	13.11	5.98
8	23.62	16.02	7.99
10	28.74	18.74	8.86
12	33.46	20.71	10.24
14	38.58	24.41	12.01

Unit:inch

Note:
Flange connecting dimension ØD,ØK,N-Ød, see attached sheet

Optional VPort trim for high differential pressure & high velociy application, eliamting or avoiding harm of caviation



Note:
1. Main valve Test:
   1.1 Sealing test
      Low pressure: 0.5bar;
      High pressure: 1.1xPN+1 bar;
   1.2 Shell test
      1.5xPN+1 bar
2. Flange dimension according to order;
3. If need optional material or others, consult factory.

Material

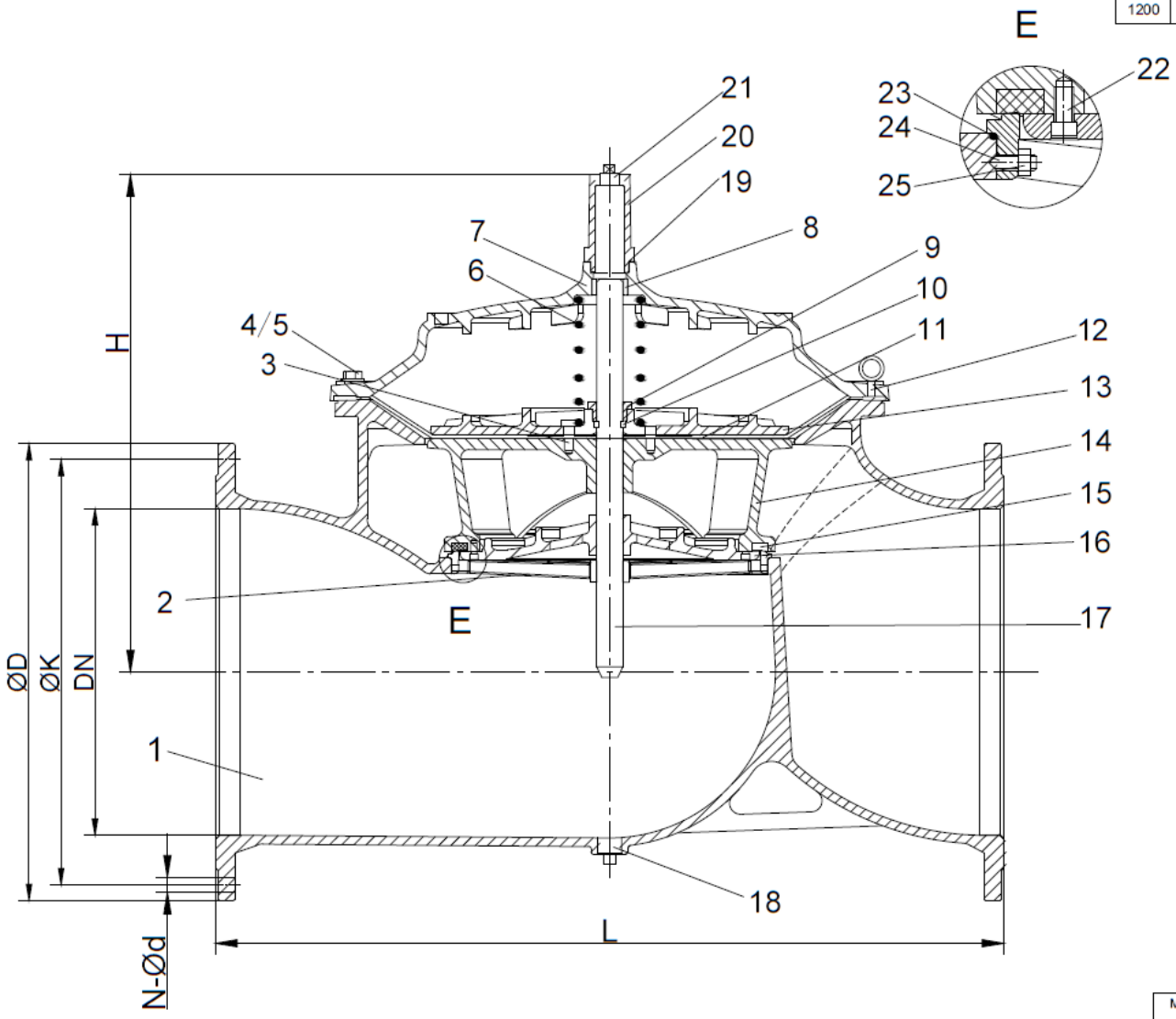
NO.	Part Name	DI Body&Bonnet ☐Standard	DI Body&Bonnet ☐ Option1	SS Body&Bonnet-Premeium ☐ Option2	SS Body&Bonnet-Premeium ☐ Option3
1	Body	ASTM A536		AISI304	316
2	Seat	AISI304	316	AISI304	316
3	O-Ring	NBR		NBR	
4	O-Ring	NBR		NBR	
5	Bolt	A2	A4	A2	A4
6	Washer	A2	A4	A2	A4
7	Bonnet	ASTM A536		AISI304	
8	Bush	Bronze/ C61900			
9	Spring	AISI304	316	AISI304	316
10	Nut	AISI304	316	AISI304	316
11	Diaphragm	NBR/EPDM+Nylon Fabric			
12	Fixing holder	ASTM A536		AISI304	
13	Disc Holder	ASTM A536		AISI304	
14	Seal	EPDM		EPDM	
15	Seat Retainer	AISI304	316	AISI304	316
16	Stem	AISI304	316	AISI304	316
17	Plug	AISI304	316	AISI304	316
18	Screw	AISI304	316	AISI304	316
19	Nut	AISI304	316	AISI304	316

Main Valve Globe&Angle type Fully bore DI/SS DN50-350

150127

DN	L	H	ØD		ØK		N-Ød	
			PN10	PN16	PN10	PN16	PN10	PN16
400	1100	670	580		515	525	16-Ø28	16-Ø31
500	1250	790	670	715	620	650	20-Ø28	20-Ø34
600	1450	930	780	840	725	770	20-Ø31	20-Ø37
800	1850	1170	1015	1025	950	950	24-Ø34	24-Ø41
1000	2250	1460	1230	1255	1160	1170	28-Ø37	28-Ø44
1200	2650	1750	1455	1485	1380	1390	32-Ø40	32-Ø49

Unit:mm



Note:
1. Main valve Test:
   1.1 Sealing test
      Low pressure: 0.5bar;
      High pressure: 1.1xPN+1 bar;
   1.2 Shell test
      1.5xPN+1 bar
2. Flange dimension according to order;
3. If need optional material or others, consult factory.

NO.	Part Name	☐ Standard
1	Body	GJS 500-7
2	Seat	AISI304
3	Screw	A2
4	Screw	A2
5	Screw	A2
6	Spring	AISI304
7	Bonnet	GJS 500-7
8	Bush	Bronze /C61900
9	Stem Nut	Bronze /C61900
10	Fix Washer	AISI304
11	Diaphragm	EPDM+Nylon Fabric
12	Eye bolts	1040
13	Fixing holder	GJS 500-7
14	Disc Holder	GJS 500-7
15	Seal	EPDM
16	Seal Retainer	GJS 500-7
17	Stem	AISI304
18	Plug	AISI304
19	O-Ring	NBR
20	Cap	AISI304
21	Plug	AISI304
22	Screw	A2
23	O-Ring	NBR
24	Screw	A2
25	Nut	A2

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Main Valve Globe type Fully bore Flange DN400-1200	
	2014-12-09