

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ  
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## Automatic Hydraulic Control Valve





## ACV Series Automatic Hydraulic Control Valve

» Brand new products of Kc-Val (Shanghai) Co., Ltd, which designed for the toughest application. The latest innovations of control valve, top level of the world.

### Features:

- Fully bore globe pattern design, lowest head loss while fully open
- Keep stable working condition even the flow rate close to zero
- High sensitive and strength fabric reinforced diaphragm
  - 1000000 cycles test between fully close and open with working pressure
  - 5 times of working pressure destructive test
- Most components are machined by CNC
- Fusion bonded epoxy coating process is based on GSK & WIS standard
- Different materials with WRAS/KTW/NSF/FDA/ACS certification to meet different market
- High standard production test
  - Seal test: Low pressure 0.5 bar
  - High pressure 1.1xPN+1 bar
  - Shell test: 1.5xPN+1 bar
  - Pressure modulated vibration: +/-0.2 bar
- Data collected automatically 1000 times/sec, display with static or dynamic chart
- Easy installation, operation and free maintenance





## Basic Information of ACV

Medium	Standards	Connection
Medium: Water / Oil Temp: -41—220 ° C	Design Standards CJ/T 219 JB/T 10674 EN 1074-5 BS EN 1567	Face to Face GB 12221 / EN 558-1 / ISO 5752 Series 1
Pressure Range: ISO EN PN10, PN16, PN25 ANSI CL125/150/300 JIS 10K/16K AS Table D, Table E	Test Standard GB/T 13927 ISO 5208 EN 12266-1	Flange Drilling GB 17241.6 EN 1092-2 ISO 7005-2 ANSI / JIS / AS2129

Fully Bore Type			
DN	PN10/TD	PN16/TE/ CL125/150	PN20/PN25/ PN40/CL300
40	Female Screw Type		
50			
50			
65			
80			
100			
150			
200			
250			
300			
400			
500			
600			
800			
1000	Only For Special Order		

Reducing Bore Type				
DN	Seat dia. approx.	PN10/TD	PN16/ TE/ CL125/150	PN20/PN25/ PN40/CL300
65	50			
80	65			
100	80			
125	100			
150	100			
200	150			
250	200			
300	250			
350	300			
400	300			
450	400			
500	400			
600	500			
700	600			
800	600			
900	800			
1000	800			
1200	1000			Only For Special Order







## Parts List of Main Valve



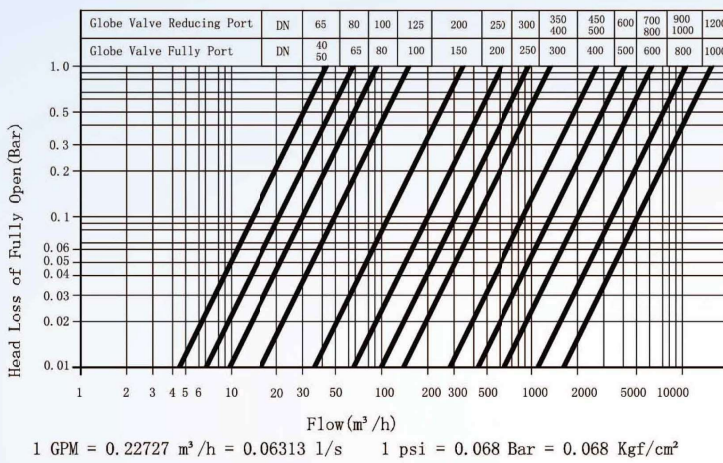
NOTE: SS could be 304,316,316L, Duplex, etc.





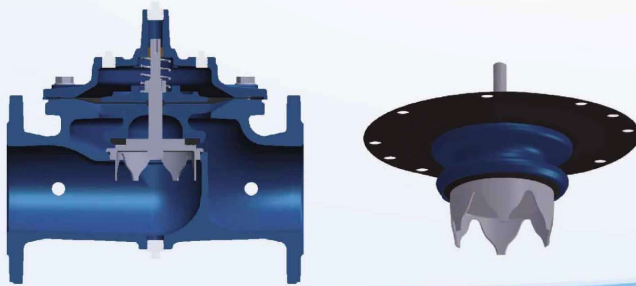


## Flow Chart of Fully Opened Main Valve



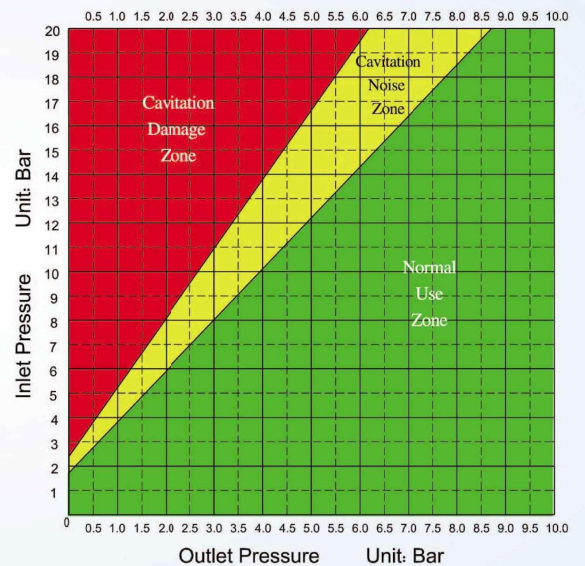
## Anti-cavitation Solution

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.



## Cavitation Guide Chart

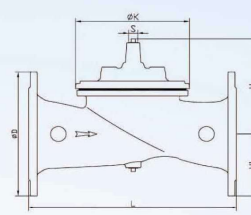
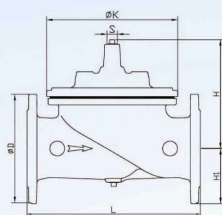
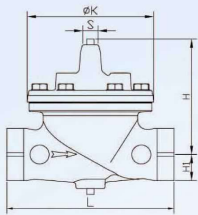
This chart used as a guide to the proper selection of the pressure drop. When pressure drop is too big, velocity of flow across the seat will be very fast, then cavitation occurs, also with shaking and noise. The valve should be used in the green zone to guarantee continue working.



NOTE: This chart is for modulating service valve only.

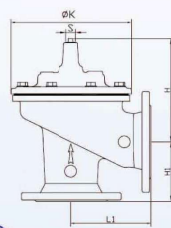


## Dimension of main valve



Main Valve-Fully Bore Type						
DN	L	H	H1*	ΦK	S	Weight (Kg)
40S-1½"	230	139	55	173	3/8"	13
50S-2"	230	139	55	173	3/8"	13
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	3/8"	32
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
400	1100	624	292	741	1½"	560
500	1250	720	360	1002	2"	880
600	1450	835	425	1308	2"	1300
800	1850	1110	515	1755	2"	1950
1000	2250	1350	630	2231	2"	2456

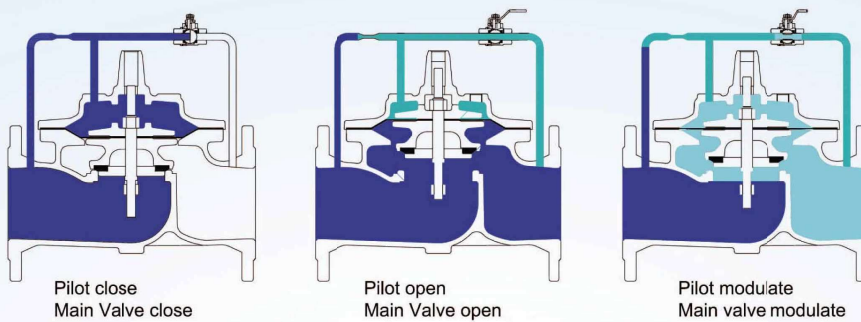
Main Valve-Reduced Bore Type						
DN	L	H	H1*	ΦK	S	Weight (Kg)
65	230	139	95	173	3/8"	21
80	290	159	102	198	3/8"	28
100	350	179	112	226	3/8"	39
125	350	214	127	265	3/8"	56
150	480	214	145	265	3/8"	96
200	600	333	172	351	1/2"	162
250	730	407	205	436	3/4"	230
300	850	476	232	524	1"	285
350	850	526	262	606	1"	435
400	1100	526	292	606	1"	590
450	1100	624	325	741	1½"	750
500	1100	624	360	741	1½"	1090
600	1250	720	425	1002	2"	1200
700	1450	835	460	1308	2"	1420
800	1450	835	515	1308	2"	1510
900	1850	1110	570	1755	2"	2185
1000	1850	1110	630	1755	2"	2268
1200	2250	1350	750	2231	2"	2855



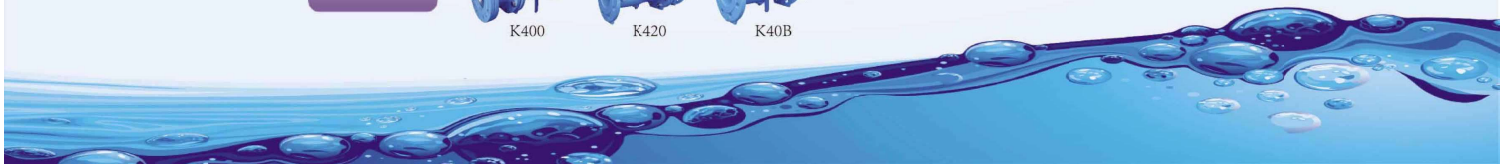
Main Valve-Angle Type						
DN	L1	H	H1*	ΦK	S	Weight (Kg)
50	115	139	90	173	3/8"	13
65	145	159	102	198	3/8"	18
80	155	179	110	226	3/8"	22
100	175	214	122	265	3/8"	31
150	240	333	160	351	1/2"	66
200	300	407	192	436	3/4"	123
250	365	476	230	524	1"	196
300	425	526	262	606	1"	256
400	550	624	332	741	1½"	556



## Pilot is the Brain of Main Valve



## Products Family-Function





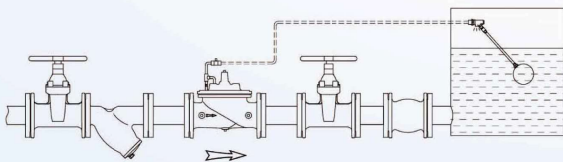
## On-off/Level Control

### K100-Float control valve-Modulating



The Model K100 Float Valve is a modulating valve that accurately controls the liquid level in tanks. This valve is designed to open fully when the liquid level reaches a preset low point, and close drip-tight when the level reaches a preset high point. The float pilot is remotely installed inside of reservoir.

The float pilot is remotely installed inside of reservoir, or integrally installed with main valve for size  $\leq$  DN100.



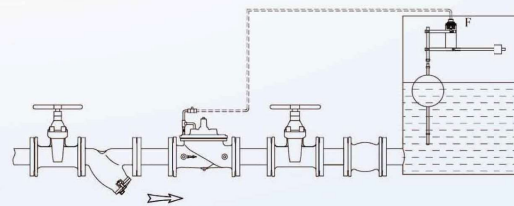
### K10B-Float control valve-Non Modulating



The Model K10B Float control Valve is a non-modulating valve that accurately controls the liquid level in tanks. This valve is designed to open fully when the liquid level reaches a preset low point, and close drip-tight when the level reaches a preset high point.

The float pilot is remotely installed inside of reservoir, or integrally installed with main valve for size  $\leq$  DN100.

The high and low point can be adjusted on the spot, the Max. adjustable distance is 0.5m, if need more, consult factory.



## On-off/Level Control

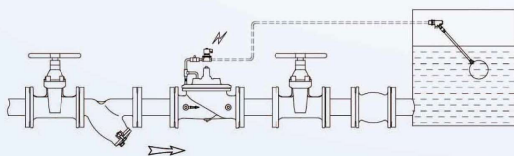
### K106-Solenoid + Float control -Double Safety



The Model K106 Float Valve is a Level control valve that accurately controls the liquid level in tanks. This valve is designed to open fully when the liquid level reaches a preset low point, and close drip-tight when the level reaches a preset high point. The float pilot is remotely installed inside of reservoir.

This is a hydraulically operated, diaphragm valve with the pilot control and float mechanism mounted on the cover of the main valve.

When danger happens, the solenoid can be controlled to close right away by remote control system, and pipeline shut off.



### K10A-Altitude Control Valve

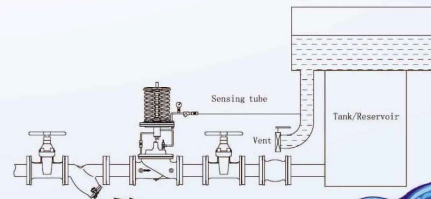


The Model K10A Altitude Valve controls the high water level in reservoirs without the need for floats or other devices. It remains fully open until the shut-off level is reached.

This valve is hydraulically operated and pilot controlled. The pilot control operates on the differential in forces between a spring load and the water level in the reservoir. The desired high water level is set by adjusting the spring force.

The pilot control measures the reservoir head through a customer supplied sensing line connected directly to the reservoir.

The spring of pilot is according to the height of shut-off level.



## On-off Series

### K300 Check Valve



The Model K300 Check Valve is a hydraulically operated No-Slam Check Valve. This valve opens when the pressure at the inlet exceeds the discharge pressure. A gradual rate of opening prevents sudden opening surges. When a pressure reversal occurs the higher downstream pressure is applied to the cover chamber through the control tube lines, and the valve closes drip tight. This valve is ideally suited for use where a positive shutoff is required. The rubber disc assures tight sealing.

The velocity of Open/Shutoff can be controlled by the ball valve on the outlet control tube line.

### K600-Solenoid Control Valve



The Model K600 Solenoid Control Valve is an on-off control valve that either opens or closes upon receiving an electrical signal to the solenoid pilot control. This valve consists of a main valve and a two-way solenoid valve that alternately applies pressure to or relieves pressure from the diaphragm chamber of the main valve. It is furnished either normally open (energized solenoid to close) or normally closed (energized solenoid to open). Industrial uses for the solenoid control valve are many and include accurate control of process water for batching, mixing, washing, blending or other on-off type uses.

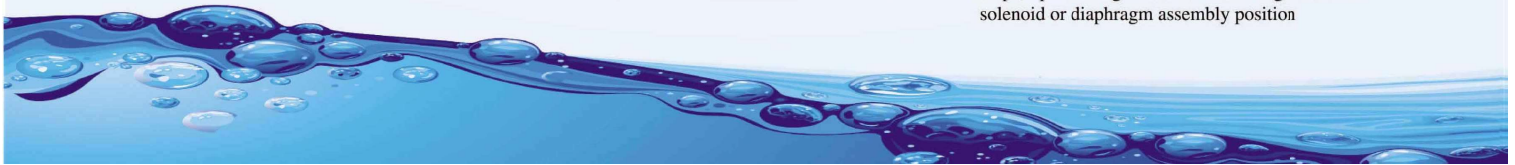
Liquid level control can be provided by using a float switch or electrode probe which sends an electrical signal to open or close the valve as needed.

### K700 Pump Control Valve



The Model K700 Pump Control Valve is a pilot operated valve designed for installation on the discharge of booster pumps to eliminate pipeline surges caused by the starting and stopping of the pump.

The pump starts against a closed valve. When the pump is started, the solenoid control is energized and the valve begins to open slowly, gradually increasing line pressure to full pumping head. When the pump is signaled to shut-off, the solenoid control is de-energized and the valve begins to close slowly, gradually reducing flow while the pump continues to run. When the valve is closed, a limit switch assembly, which serves as an electrical interlock between the valve and the pump, releases the pump started and the pump stops. Should a power failure occur, a built-in, lift-type check valve closes the moment flow stops, preventing reverse flow regardless of solenoid or diaphragm assembly position.







## Pressure Control Series

### K200/K20R Pressure Reducing Valve-Fully Bore/Reduced Bore



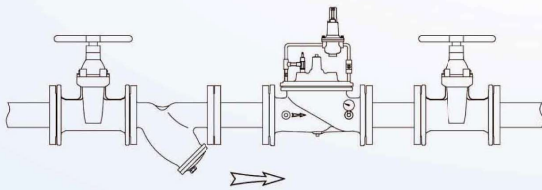
The Model K200/K20R Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure, regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a re-determined limit. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close drip-tight.

K200 and K20R Pressure reducing valve are the most commonly used control valve.

K200 and K20R are also the most difficult and important .

K200: Inlet pressure / Outlet pressure  $\leq 3$  Times

K20R: Inlet pressure / Outlet pressure  $\leq 5$  Times



One year static leakage test: keep outlet pressure constant (differ less than 10 percent) for one year

K200 Pressure Reducing Valve-Fully Bore  
 K20R Pressure Reduce Valve-Reduced bore



## Pressure Control Series

### K20D Dual Stage Pressure Reducing Valve



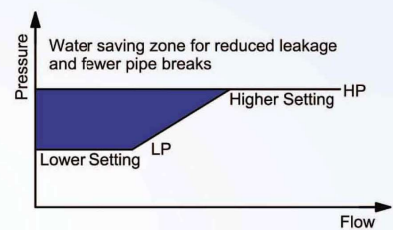
The Model K20D Dual Stages Pressure Reducing Valve automatically reduces a higher inlet pressure to two different steady lower downstream pressure, regardless of changing flow rate and/or varying inlet pressure. The two different outlet pressure can be transferred by solenoid control pilot, and adjusted separately.

### KPMV Pressure Management Valve



The Model KPMV Pressure Management Control Valve is a pressure reducing valve that allows for two downstream set points. A high pressure set point is selected for high flow demand and a low pressure set point is selected for low flow demand. This dual set point arrangement allows for reduction in water loss by not over pressurizing the system during times of low demand, while providing adequate pressure during high or fire demand.

The design is 100% hydraulic and in addition to the dual pressure set points the transition point at which the pressure changes based on the flow is adjustable as well.

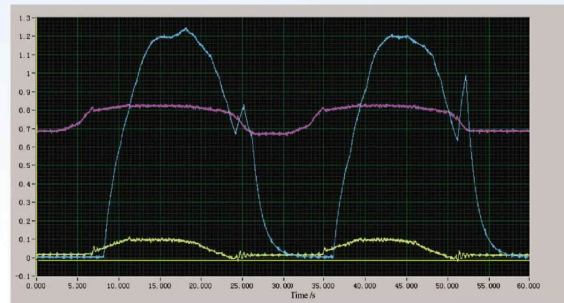
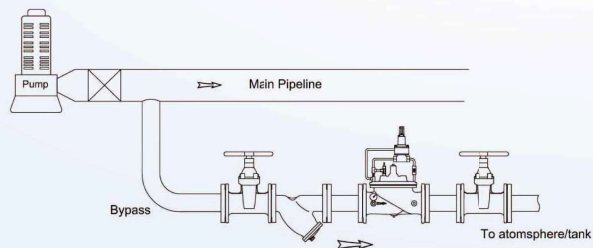


## Pressure Control Series

### K500 Pressure Sustaining/Relief Valve



The Model K500 Pressure Sustaining/Relief Valve is a hydraulically operated, pilot-controlled, modulating valve designed to maintain constant upstream pressure within close limits. This valve can be used for pressure relief, pressure sustaining, back pressure functions in a by-pass system. In operation, the valve is actuated by line pressure through a pilot control system, opening fast to maintain steady line pressure but closing gradually to prevent surges. Operation is completely automatic and pressure settings may be easily changed by adjusting screw on top of the pilot.



Quickly open to release the over-pressure  
Slowly close to prevent a second surge damage





## Pressure Control Series

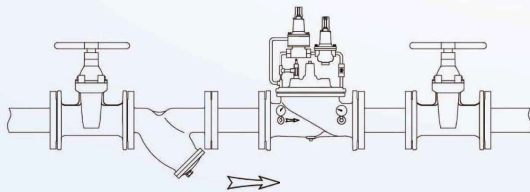
### K520 Pressure sustaining and reducing Valve



The Model K520 Combination Pressure Reducing and Pressure Sustaining Valve automatically perform two independent functions. It maintains a constant downstream pressure, regardless of fluctuating demand and sustains the upstream pressure to a pre-determined minimum.

The pressure reducing pilot responds to slight variations in downstream pressure and immediately repositions the main valve to maintain the desired downstream pressure. The pressure sustaining pilot is normally held open by the upstream pressure, and close when the pressure drop to the set point.

This valve usually used in lower elevation pipeline to guarantee prior use of higher elevation area.

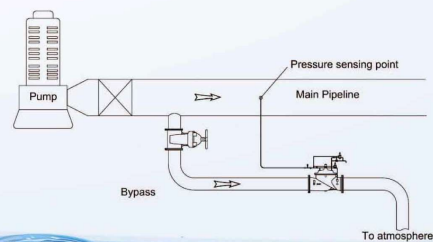


### K550 Surge anticipating Valve



The Model K550 Surge Anticipating 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 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.





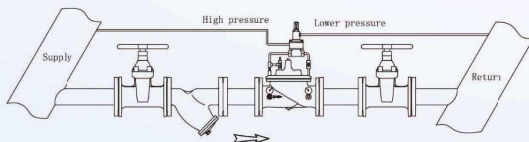
## Pressure Control Series

### K80A Differential pressure control valve



The Model K80A Differential Pressure Valve is a hydraulically operated, pilot-controlled, modulating valve. It is designed to maintain a constant pressure differential between any two pressure points in a system where the closing of the valve directly causes the differential pressure to increase. The valve tends to open on an increase in differential pressure and close on a decrease in differential pressure. Especially used in air condition system.

In operation, the valve is actuated by line pressure through a pilot control system sensing from two points across which a differential is to be maintained. Operation is completely automatic and pressure settings may be easily changed.

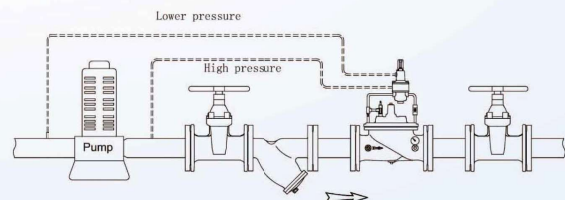


### K80B Differential pressure control valve



The Model K80B Differential Pressure Valve is a hydraulically operated, pilot-controlled, modulating valve. It is designed to maintain a constant pressure differential between two pressure points in a system where the closing of the valve directly causes the differential pressure to increase. Especially used in pump system.

When suction pressure regimes vary, it is needed to limit pump flow by sustaining pump differential pressure, preventing pump overload and cavitation damage caused by excessive demand.





## Flow Control Series

### K400 Flow Control Valve



The Model K400 Rate of Flow Control Valve prevents excessive flow by limiting flow to a preselected maximum rate, regardless of changing line pressure. It is a hydraulically operated, pilot controlled, diaphragm valve. The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve. Accurate control is assured as very small changes in the controlling differential pressure produce immediate corrective action of the main valve. Flow rate adjustments are made by turning an adjusting screw on the pilot control.

The Model includes an orifice plate with a holder that should be installed one to five pipe diameters downstream of the Valve.

To guarantee accurate control of flow rate, there are several orifice plate with different hole optional for each size, see the additional table for selection of orifice.

### K420 Flow Control and Pressure Reducing Valve



The Model K420 Combination Flow control and Pressure reducing Valve automatically perform two independent functions.

It maintains a constant downstream pressure, regardless of fluctuating demand and prevents excessive flow by limiting flow to a preselected maximum rate, regardless of changing line pressure.

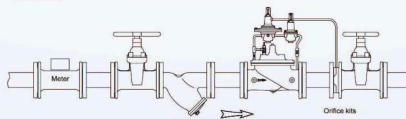
The Model includes an orifice plate with a holder that should be installed one to five pipe diameters downstream of the Valve.

To guarantee accurate control of flow rate, there are several orifice plate with different hole optional for each size, see the additional table for selection of orifice.

### K40B Burst Control Valve



The Model K40B Burst Control Valve is a hydraulically operated, diaphragm actuated control valve. It shuts off and locks drip tight upon sensing flow in excess of setting, until it is manually reset. As long as flow is lower than the setting, the valve remains fully open, minimizing head loss.







### Pilot Series

P100 Float control pilot	P10B Float control pilot	P10A Altitude control pilot	P200 Pressure reducing pilot	P20M Pressure reducing pilot-remote sensing	P500 Pressure relief pilot
P600 Differential pressure pilot	P400 Flow control pilot	P20H Pressure reducing pilot-High pressure	P2HM Pressure reducing pilot-High pressure	P50H Pressure relief pilot-High pressure	Accelerator
<p>Pilot springs with different pressure range</p>					

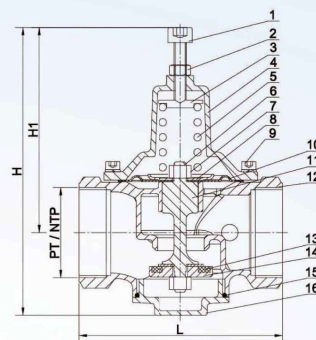
### Accessories

Needle valve-Brass	Needle valve-SS	Internal strainer
Micro check valve	Indicator kits	Pressure gauge





## Direct Acting Pressure Reducing Valve



The Model K200S Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure, regardless of changing flow rate and/or varying inlet pressure.

This valve is an accurate regulator capable of holding downstream pressure to a Pre-determined limit. When downstream pressure exceeds the pressure setting, the valve close drip-tight.

Dimension				
Inch	DN	L	H	H1
3/8"	10	60	100	67
1/2"	15	60	100	67
3/4"	20	70	120	80
1"	25	70	120	80
1 1/4"	32	104	160	107
1 1/2"	40	104	160	107
2"	50	136	200	134

NO.	Part Name	Material
1	Adjusting Screw	Stainless Steel
2	Jam Nut	Stainless Steel
3	Spring guide	Stainless Steel
4	Bonnet	Stainless Steel
5	Spring	Stainless Steel
6	Nut	Stainless Steel
7	Washer	Stainless Steel
8	Fixing Holder	Stainless Steel
9	Screw	Stainless Steel
10	Diaphragm	Rubber+Nylon
11	Stem	Stainless Steel
12	Body	Stainless Steel
13	Seal	Rubber
14	Disc	Stainless Steel
15	O-Ring	Rubber
16	Plug	Stainless Steel

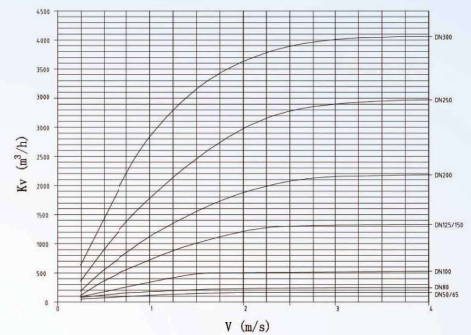


## Nozzle Check Valve

BS EN 1074-3  
 BS EN 12334



DN: DN50 - DN300  
 PN: 10/16/20/25/CL125/150/Table D/E/fis 10K  
 Medium: Fresh water  
 Temperature: -10—70°C  
 Standards: EN 1074 BS5163  
 Advantage:  
 - Reasonable and streamlined design  
 - Minimum noise while direct flow or backflow  
 - Head loss is only 0.2Bar with velocity of 2m/s  
 - Shut off speed is only 0.2s  
 - Integral body and flow guide  
 - Fully rubber coated disc  
 - DI / Stainless steel / bronze seat



NO.	Components	Material
1	Body	EN-JS1050
2	Disc	EN-JS1050+EPDM
3	Seat	DI+Ni plate/SUS304
4	Spring	SUS304
5	Stem	SUS420/304
6	Washer	PTFE
7	Bushes	C37710/C61900

DN	50	65	80	100	125	150	200	250	300	
Face to Face GB12221/ EN 558-1 / ISO 5752 Series 14	150	150	180	190	210	210	230	250	270	
Outside diameter of flange GB17241.6/ EN 1092-2 / ISO 7005-2	PN 10	165	185	200	220	250	285	340	400	455
	PN 16	165	185	200	220	250	285	340	400	455
	PN 25	165	185	200	235	270	300	360	425	485
Weight of PN 16 (Kg.) approx.	7	8	12	15	20	25	41	59	80	
Shell test	PNx1.5+1 Bar									
Seat test	0.5 Bar & PNx1.1+1 Bar									



ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ  
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Телефоны: +7 (495) 7774788, 7489626, (925) 5007155, 54, 65  
Эл. почта: [info@tisys.ru](mailto:info@tisys.ru) [info@tisys.kz](mailto:info@tisys.kz) [info@tisys.by](mailto:info@tisys.by)



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