

Pressure Reducing and Sustaining Valve

WW-723

- Protecting lower pressure zones
- Prioritizing higher pressure zones
- Preventing pipeline emptying
- Ensuring controlled pipeline fill-up
- Pump overload & cavitation protection
- Compensating during groundwater drawdown

The Model 723 Pressure Reducing and Sustaining Valve is a hydraulically operated, diaphragm actuated control valve with two independent functions. It sustains minimum pre-set upstream pressure regardless of fluctuating flow or varying downstream pressure, and it prevents downstream pressure from rising above maximum pre-set regardless of fluctuating flow or excessive upstream pressure.

Features and Benefits

- **Line pressure driven** – Independent operation
- **In-line serviceable** – Easy maintenance
- **Double chamber design**
 - Moderated valve reaction
 - Protected diaphragm
- **Flexible design** – Easy addition of features
- **Variety of accessories** – Perfect mission matching
- **"Y" or angle, wide body** – Minimized pressure loss
- **Semi-straight flow** – Non-turbulent flow
- **Stainless Steel raised seat** – Cavitation damage resistant
- **Obstacle free, full bore** – Uncompromising reliability
- **V-Port Throttling Plug** – Low flow stability



Major Additional Features

- Solenoid control – **723-55**
- Check feature – **723-20**
- High sensitivity pilots – **723-12**
- Solenoid control & check feature – **723-25**
- Downstream over pressure guard – **723-48**
- Proportional – **723-PD**

See relevant BERMAD publications.



Operation

The Model 723 is a pilot controlled valve equipped with two adjustable, 2-Way pilots, pressure sustaining (PS) and pressure reducing (PR), operating independently in series.

The needle valve [1] continuously allows flow from the valve inlet into the upper control-chamber [2].

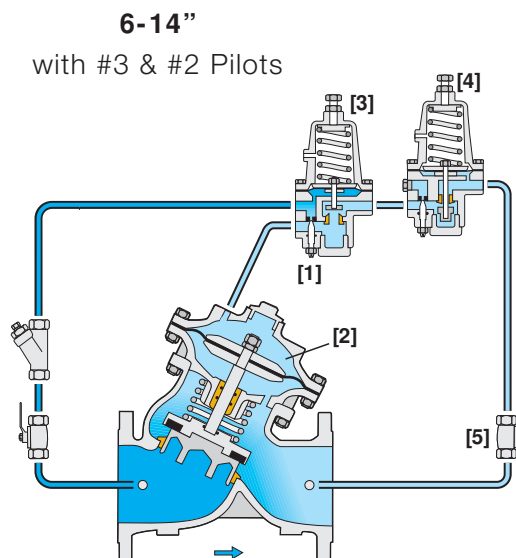
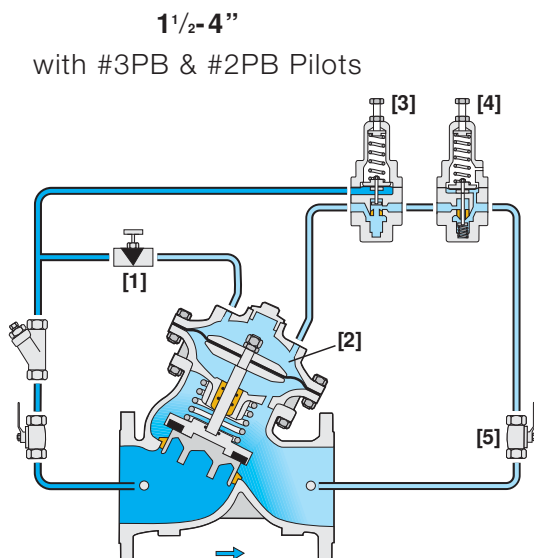
The PS pilot [3] and the PR pilot [4] together control outflow from the upper control chamber.

Should upstream pressure fall below PS pilot setting, the pilot closes causing pressure to accumulate in the upper control chamber. The main valve throttles closed sustaining upstream pressure at the pilot setting.

Should upstream pressure rise above PS pilot setting, the pilot releases accumulated pressure from the upper control chamber to the main valve outlet through the held open PR pilot, opening the main valve.

Should opening the main valve cause downstream pressure to rise above PR pilot setting, the pilot closes, causing the main valve to throttle closed reducing downstream pressure to PR pilot setting.

The needle valve controls the closing speed. The downstream cock valve [5] enables manual closing.



Note: For 16" and larger valves, see "Pilot Valve Selection" table at the last page.

Engineer Specifications

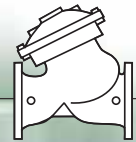
The Pressure Sustaining and Reducing Valve shall sustain minimum pre-set upstream pressure regardless of fluctuating flow or varying downstream pressure, and shall also prevent downstream pressure from rising above maximum pre-set regardless of fluctuating flow or excessive upstream pressure.

Main Valve: The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design. The body shall have a replaceable, raised, stainless steel seat ring. The valve shall have an unobstructed flow path, with no stem guides, bearings, or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

Actuator: The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be center guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

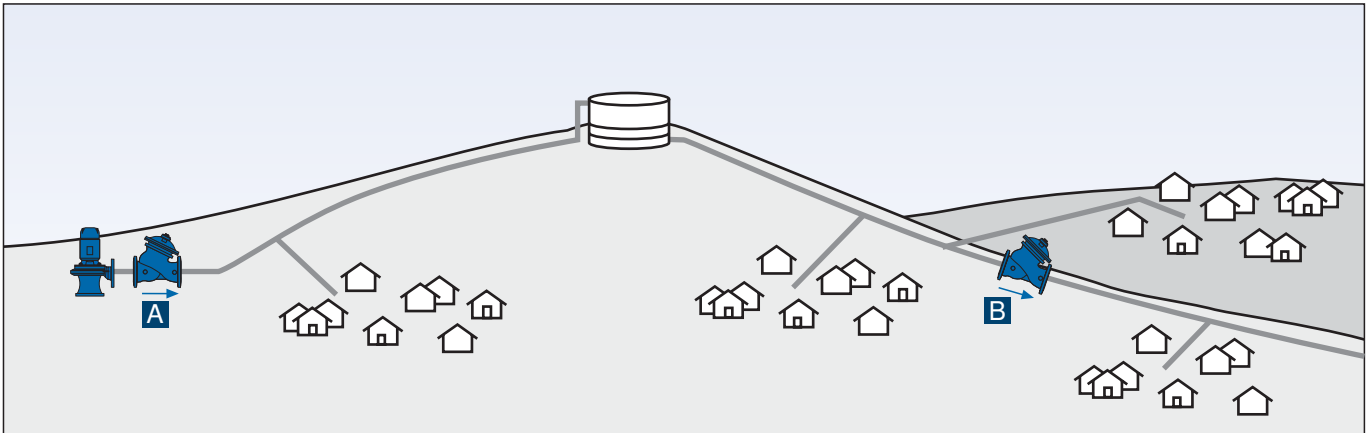
Control System: The control system shall consist of two 2-way adjustable, direct acting pilots (pressure sustaining and pressure reducing), a needle valve, isolating cock valves, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

Quality Assurance: The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.



Typical Applications

Water is pumped from a deep well to the reservoir through a line also supplying nearby consumers along the way. Water is then supplied from the reservoir to both higher and lower elevation consumers. Both parts of the system require pressure sustaining and reducing solutions.

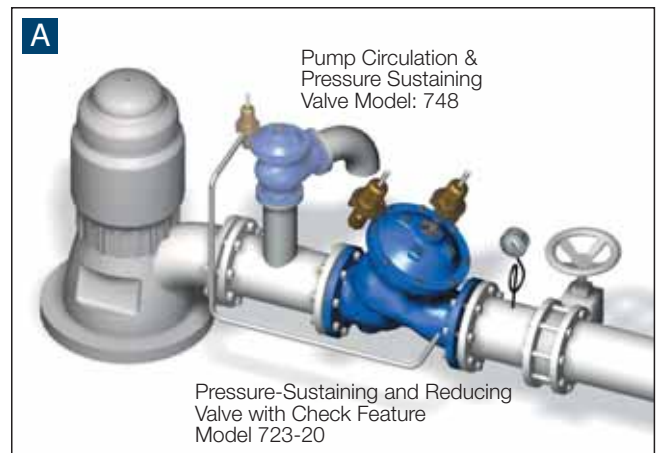


Groundwater Draw Down System

In deep well pumping systems, the groundwater level varies according to: seasonal changes, seepage rate, and demand. These systems require a solution to a unique combination of issues:

- Consumer demand or filling an empty line results in pump overload and cavitation, requiring pressure sustaining.
- Deep well pumps boost a constant ΔP , resulting in high ground level raising the discharge pressure, requiring pressure reducing.

The Model 723 provides a complete solution for both of these issues. Adding check feature "20", saves the cost of a line-sized check valve.

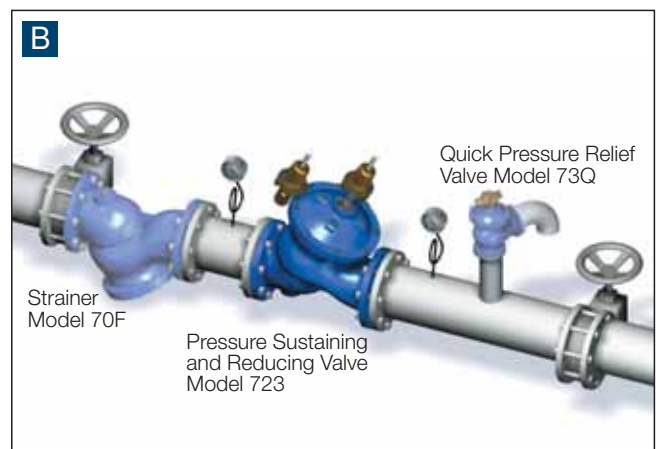


Gravity Fed Supply Line

Where consumers at both higher and lower elevations use the same distribution network:

- Consumers located at higher elevation need protection against over demand by the lower zone.
- Lower zone consumers need protection against high gravity fed pressure.

The Model 723, being both a pressure sustaining and reducing valve, simultaneously fulfills both requirements.





Technical Data

Dimensions and Weights

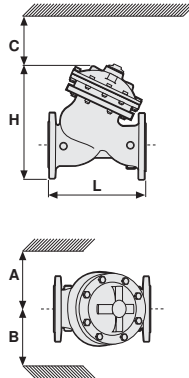
Size	A, B	C	L	H	Weight
mm inch	mm inch	mm inch	mm inch	mm inch	kg lbs
40 1 1/2"	350 14	180 7	205 8.1	239 9.4	9.1 20
50 2"	350 14	180 7	210 8.3	244 9.6	10.6 23
65 2 1/2"	350 14	180 7	222 8.7	257 10.1	13 29
80 3"	370 15	230 9	250 9.8	305 12.0	22 49
100 4"	395 16	275 11	320 12.6	366 14.4	37 82
150 6"	430 17	385 15	415 16.3	492 19.4	75 165
200 8"	475 19	460 18	500 19.7	584 23.0	125 276
250 10"	520 21	580 23	605 23.8	724 28.5	217 478
300 12"	545 22	685 27	725 28.5	840 33.1	370 816
350 14"	545 22	685 27	733 28.9	866 34.1	381 840
400 16"	645 26	965 38	990 39.0	1108 43.6	846 1865
450 18"	645 26	965 38	1000 39.4	1127 44.4	945 2083
500 20"	645 26	965 38	1100 43.3	1167 45.9	962 2121

Data is for Y-pattern, flanged, PN16 valves
Weight is for PN16 basic valves

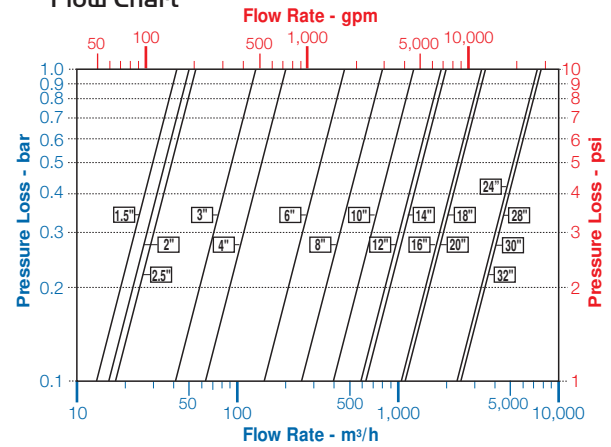
"C" enables removing the actuator in one unit

"L", ISO standard lengths available

For more dimensions and weights tables, refer to Engineering Section



Flow Chart



Data is for Y-pattern, flat disk valves
For more flow charts, refer to Engineering Section

Main Valve

Valve Patterns: "Y" (globe) & angle

Size Range: 1 1/2"-32" (40-800 mm)

End Connections (Pressure Ratings):

Flanged: ISO PN16, PN25

(ANSI Class 150, 300)

Threaded: BSP or NPT

Others: Available on request

Working Temperature:

Water up to 80°C (180°F)

Standard Materials:

Body & Actuator: Ductile Iron

Internals:

Stainless Steel, Bronze & coated Steel

Diaphragm:

NBR Nylon fabric-reinforced

Seals: NBR

Coating:

Fusion Bonded Epoxy, RAL 5005 (Blue)

NSF & WRAS approved or Electrostatic

Polyester Powder, RAL 6017 (Green)

Control System

Standard Materials:

Accessories:

Bronze, Brass, Stainless Steel & NBR

Tubing: Copper or Stainless Steel

Fittings: Forged Brass or Stainless Steel

Pilot Standard Materials:

Body: Brass, Bronze or Stainless Steel

Elastomers: NBR

Springs: Galvanized Steel or Stainless Steel

Internals: Stainless Steel

Pilot Valve Selection

Valve Size	Pilot Setting (bar)	Pilot Type		
		#2PB #3PB	#2 #3	#2HC #3HC
1 1/2"-4"	<15	■		
40-100 mm	>15		●	
6-14"	<15		■	
150-350 mm	>15		●	
16-32"	<15			■
400-800 mm	>15			●

■ Standard model ● with high pressure setting kit

How to Order

Please specify the requested valve in the following sequence: (for more options, refer to Ordering Guide)

Sector	Size	Primary Feature	Additional Feature	Pattern	Body Material	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additional Attributes
WW	6"	723	00	Y	C	16	EB	—	CB	VI
Waterworks	1½ - 32"	Pressure Reducing and Sustaining		Oblique (up to 20") Angle (up to 18") Globe (24-32" only)	Y A G	Epoxy FB Blue Polyester Green Polyester Blue Uncoated	EB PG PB UC	Copper Tubing & Brass Fittings Plastic Tubing & Brass Fittings St. St. 316 Tubing & Fittings	CB PB NN	
No Additional Feature			00	Ductile Iron Standard	C			Valve Position Indicator		I
Closing and Opening Speed Control			03	Cast Steel	S			Large Control Filter		F
Automatic Regulation Override			09	St. Steel 316	N			V-Port Throttling Plug		V
High sensitivity pilot			12	Nickel Alumin. Bronze	U			Electric Limit Switch		S
Check Valve			20					3-Way Control Loop		X
Solenoid Controlled & Check Valve			25	ISO-16	16	24VAC/50Hz - N.C.	4AC	Valve Position Transmitter		Q
Multi-Setting Levels - Electrically Selected			45	ISO-25	25	24VAC/50Hz - N.O.	4AO	St. St. 316 Control Accessories		N
Downstream Over Pressure Guard			48	ANSI-150	A5	24VDC - N.C.	4DC	St. St. 316 Internal Trim (Closure & Seat)		T
Hydraulic Control			50	ANSI-300	A3	24VDC - N.O.	4DO	St. St. 316 Actuator Internal Assembly		D
Solenoid Controlled			55	JIS-16	J6	24VDC - L.P.	4DP	Delrin Bearing		R
Electric Override			59	JIS-20	J2	220VAC/50-60Hz N.C.	2AC	Viton Elastomers for Seals & Diaphragm		E
Multiple choices permitted						220VAC/50-60Hz N.O.	2AO	Pressure Gauge		6
						Use when additional electric control		Multiple choices permitted		

Use when additional electric control feature is selected

Multiple choices permitted

