

# Pressure Reducing Valve

## with Solenoid Control

- Flow and leakage reduction
- Cavitation damage protection
- Pressure zone isolation
- Switching between “on-duty” valves
- Auto-refreshing of reservoirs

The Model 720-55 Pressure Reducing Valve with Solenoid Control is a hydraulically operated, diaphragm actuated control valve that reduces higher upstream pressure to lower constant downstream pressure regardless of fluctuating demand or varying upstream pressure. The valve opens and shuts off in response to an electric signal.



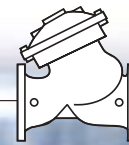
### Features and Benefits

- **Line pressure driven** – Independent operation
- **Solenoid controlled**
  - Low power consumption
  - Wide ranges of pressures and voltages
  - Normally Open, Normally Closed or Last Position
- **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 & check feature – **720-25**
- Downstream over pressure guard – **720-55-48**
- High sensitivity pilot – **720-55-12**
- Electrically selected multi-level setting – **720-55-45**
- Electronic multi-level setting, Type 4T – **720-55-4T**
- Electric override – **720-55-59**

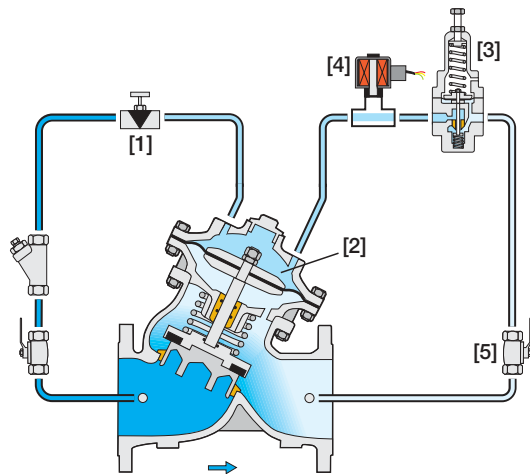
See relevant BERMAD publications.



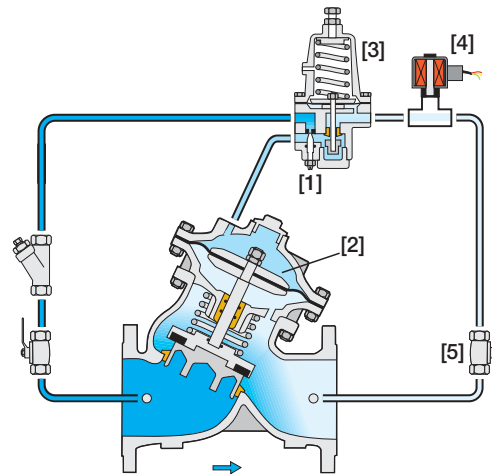
### Operation

The Model 720-55 is a pilot controlled valve equipped with an adjustable, 2-Way, pressure reducing pilot and a solenoid pilot. The needle valve [1] continuously allows flow from the valve inlet into the upper control-chamber [2]. The pilot [3] senses downstream pressure, and the solenoid [4] together control outflow from the upper control chamber. Should this pressure rise above pilot setting, the pilot throttles, enabling pressure to accumulate in the upper control chamber, causing the main valve to throttle closed, decreasing downstream pressure to pilot setting. Should downstream pressure fall below pilot setting, the pilot releases the accumulated pressure and the main valve modulates open. Should the solenoid close, pressure in the upper control chamber accumulates causing the main valve to shut off. The needle valve controls the closing speed. The downstream cock valve [5] enables manual closing. Normally closed, normally open and last position models are available.

1½-10"  
with #2PB Pilot



6-14"  
with #2 Pilot



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

### Engineer Specifications

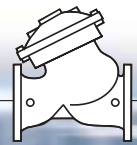
The Pressure Reducing Valve with Solenoid Control shall reduce higher upstream pressure to lower preset downstream pressure regardless of fluctuating demand or varying upstream pressure and shall open or shut off in response to an electric signal.

**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.

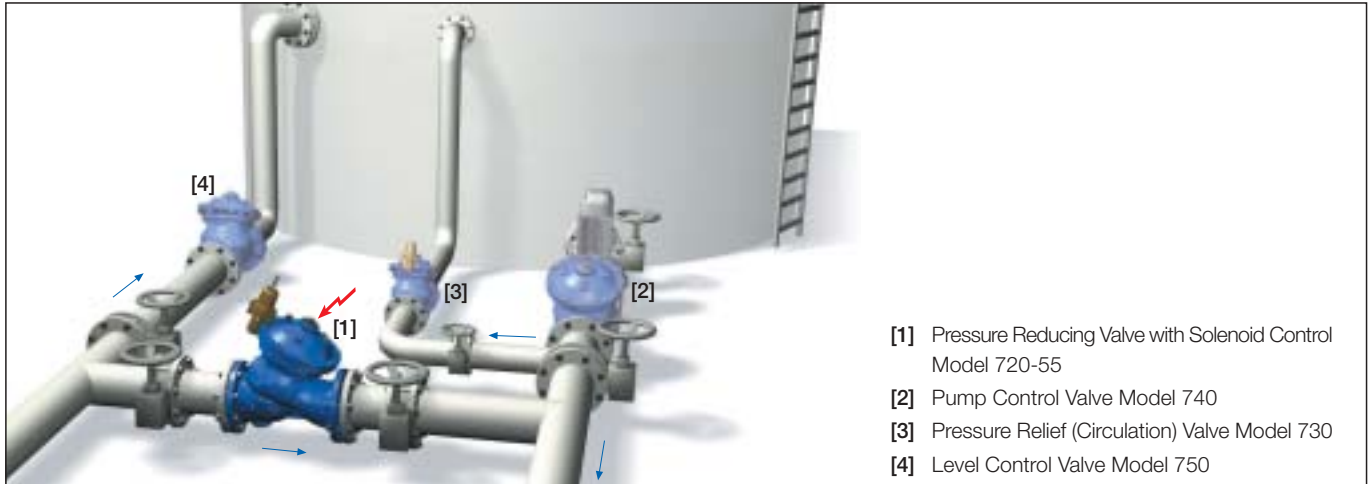
**Control System:** The control system shall consist of a 2-Way adjustable, direct acting, pressure reducing pilot valve, a needle valve, isolating cock valves, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested and factory adjusted 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

### Reservoir By-Pass



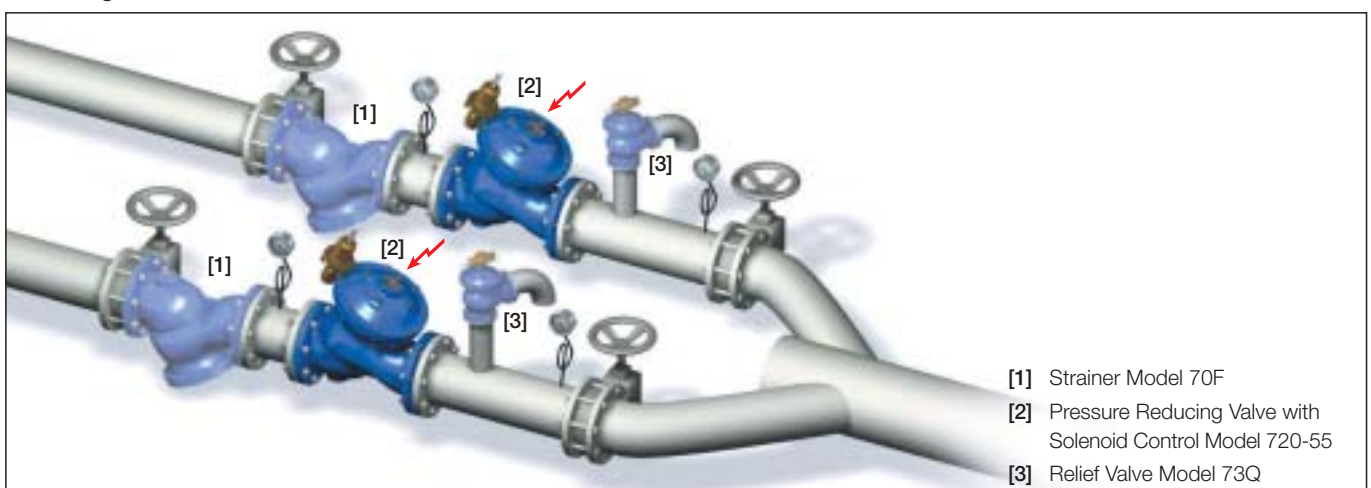
The Model 720-55 is installed as a by-pass between the reservoir supply line and the pump discharge line to the distribution network providing four major advantages:

- Saves energy and lowers costs by shortening pumping hours, when supply pressure is sufficient
- Protects the distribution network from excessive supply pressure
- Automatically refreshes the water in the reservoir by periodically forcing supply through reservoir
- Ensures uninterrupted supply during reservoir maintenance

### Parallel or Multiple Sources

Where a distribution network is supplied by parallel and/or multiple sources, the solenoid controlled feature enables switching the “on-duty” valve and provides:

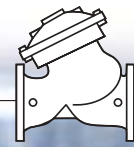
- Equalizing operating hours between valves
- Selecting source according to management considerations
- Isolating zones



To complete the system, BERMAD recommends that the system also include:

- **Strainer** Model 70F [1] preventing debris from damaging valve operation
- **Relief Valve** Model 73Q [3] providing:
  - Protection against momentary pressure peaks
  - Visual indication of need for maintenance

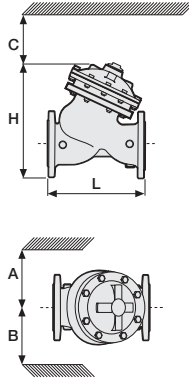
For more information on BERMAD Pressure Reducing Systems, see BERMAD publication 720, Pressure Reducing Valve.



### Technical Data

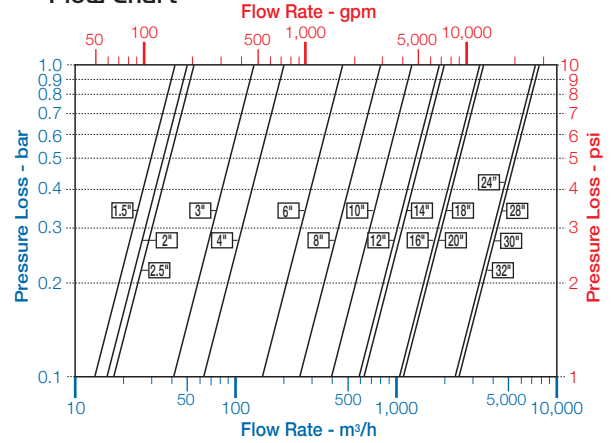
#### Dimensions and Weights

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:** Bronze, Brass, Stainless Steel & NBR
- 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

#### Solenoid Standard Materials:

- Body:** Brass or Stainless Steel
- Elastomers:** NBR or FPM
- Enclosure:** Molded epoxy
- Solenoid Electrical Data:**
- Voltages:** (ac): 24, 110-120, 220-240, (50-60Hz); (dc): 12, 24, 110, 220
- Power Consumption:** (ac): 30 VA, inrush; 15 VA (8W), holding or 70 VA, inrush; 40 VA (17.1W), holding; (dc): 8-11.6W

Values might vary according to specific solenoid model

#### Pilot Valve Selection

Valve Size	Pilot Setting (bar)	Pilot Type		
		#2PB	#2	#2HC
1 1/2"-10"	<15	■		
40-250 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"	720	55	Y	C	16	EB	4AC	CB	VI
Waterworks	1 1/2" - 32"	Pressure Reducing		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	24VAC/50Hz - N.C.	4AC	Valve Position Indicator		I
Closing and Opening Speed Control			03	Cast Steel	S	24VAC/50Hz - N.O.	4AO	V-Port Throttling Plug		V
Automatic Regulation Override			09	St. Steel 316	N	24VDC - N.C.	4DC	Large Control Filter		F
High sensitivity pilot			12	Nickel Alumin. Bronze	U	24VDC - N.O.	4DO	Electric Limit Switch		S
Check Valve			20			24VDC - L.P.	4DP	3-Way Control Loop		X
Solenoid Controlled & Check Valve			25	ISO-16	16	220VAC/50-60Hz N.C.	2AC	Valve Position Transmitter		Q
Multi-Setting Levels - Electrically Selected			45	ISO-25	25	220VAC/50-60Hz N.O.	2AO	St. St. 316 Control Accessories		N
Downstream Over Pressure Guard			48	ANSI-150	A5			St. St. 316 Internal Trim (Closure & Seat)		T
Hydraulic Control			50	ANSI-300	A3			St. St. 316 Actuator Internal Assembly		D
Solenoid Controlled			55	JIS-16	J6			Delrin Bearing		R
Electric Override			59	JIS-20	J2			Viton Elastomers for Seals & Diaphragm		E
								Pressure Gauge		6

Multiple choices permitted

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