



## Pressure Reducing Valve

### with Check Feature

- Flow and leakage reduction
- Cavitation damage protection
- Return flow prevention
- Throttling noise reduction
- Burst protection

The Model 720-20 Pressure Reducing Valve with Check Feature 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 check feature prevents reverse flow through the valve.



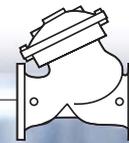
### Features and Benefits

- **Line pressure driven** – Independent operation
- **Check feature**
  - Replacing line sized check valve
  - Cost effective pumping
  - One-way zonal back-up
- **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 valve – 720-25
- Downstream over pressure guard – 720-20-48
- High sensitivity pilot – 720-20-12
- Electrically selected multi-level setting – 720-20-45
- Electronic multi-level setting, Type 4T – 720-20-4T
- Automatic regulation override – 720-20-09

See relevant BERMAD publications.



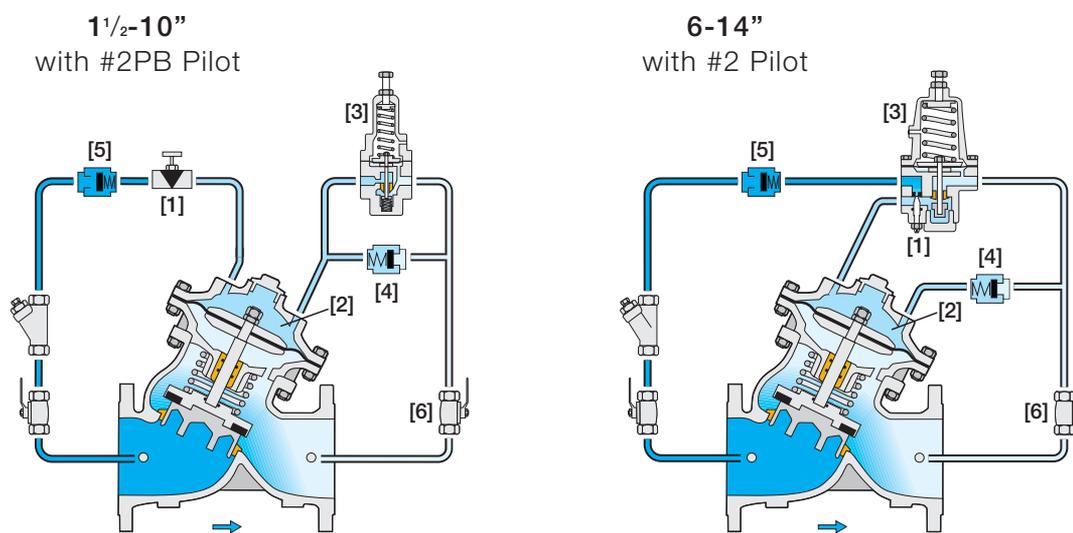
### Operation

The Model 720-20 is a pilot controlled valve equipped with an adjustable, 2-Way, pressure reducing pilot and two check valves. The needle valve [1] continuously allows flow from valve inlet into the upper control chamber [2]. The pilot [3] senses downstream pressure.

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 exceed upstream pressure, check valve [4] allows downstream pressure into the upper control chamber while check valve [5] traps this pressure, together closing the main valve.

The needle valve controls the closing speed. The downstream cock valve [6] enables manual closing.



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

### Engineer Specifications

The Pressure Reducing Valve with Check Feature shall reduce higher upstream pressure to lower preset downstream pressure regardless of fluctuating demand or varying upstream pressure and shall prevent reverse flow.

**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.



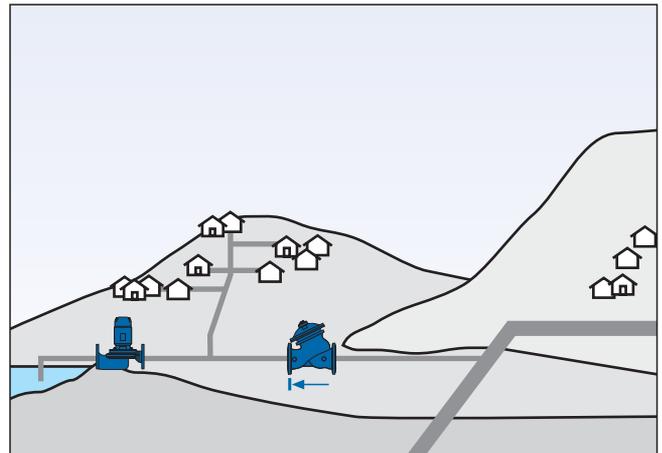
### Typical Applications

#### Cost Effective Pumping

One zone of a distribution network has two supply sources. Setting the Model 720-20 Pressure Reducing Valve with Check Feature slightly higher than pump pressure, ensures pumping only when pressure provided from the network is insufficient.

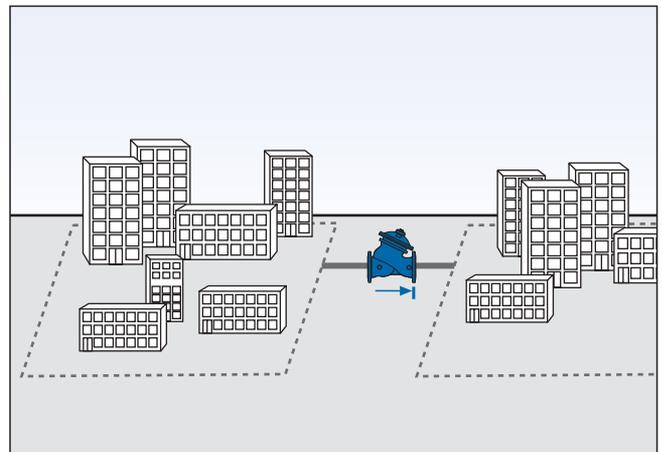
The Model 720-20:

- Protects the zone from excessive network supply pressure
- Saves energy and lowers costs by off-hours pumping



#### One-way Zonal Backup

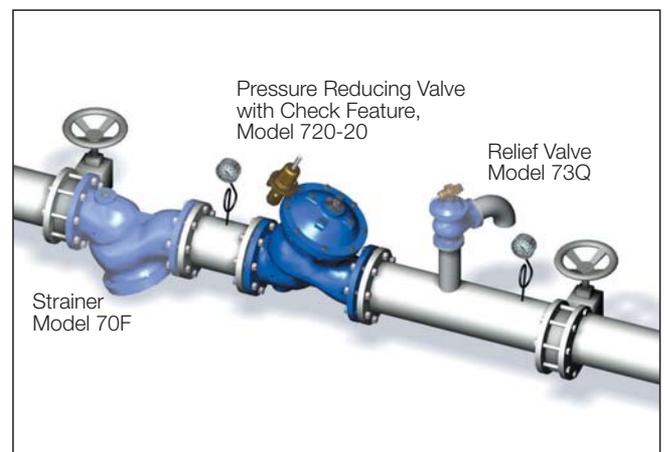
The Model 720-20 Pressure Reducing Valve with Check Feature, installed between two pressure zones, permits one zone to backup pressure supply to another zone while preventing reverse flow.



### Typical Installation

In addition to the Model 720-20 Pressure Reducing Valve with Check Feature, BERMAD recommends the system also include:

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

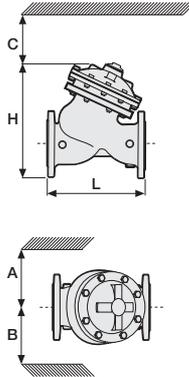




### Technical Data

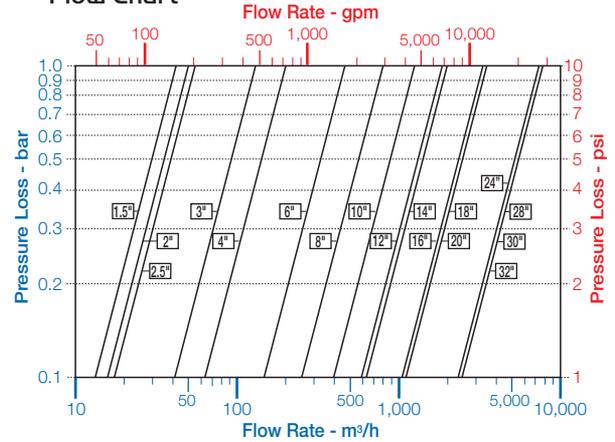
#### Dimensions and Weights

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:** Copper or Stainless Steel
- Tubing:** Forged Brass or Stainless Steel
- Fittings:** Galvanized Steel 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	#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	20	Y	C	16	EB	-	CB	VI
Waterworks	1 1/2 - 32"	Pressure Reducing	Oblique (up to 20") Angle (up to 18") Globe (24-32" only)	Y A G	Ductile Iron Standard Cast Steel St. Steel 316 Nickel Alumin. Bronze	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	Valve Position Indicator V-Port Throttling Plug Large Control Filter Electric Limit Switch 3-Way Control Loop Valve Position Transmitter St. St. 316 Control Accessories St. St. 316 Internal Trim (Closure & Seat) St. St. 316 Actuator Internal Assembly Delrin Bearing Viton Elastomers for Seals & Diaphragm Pressure Gauge
No Additional Feature			00			24VAC/50Hz - N.C. 24VAC/50Hz - N.O. 24VDC - N.C. 24VDC - N.O. 24VDC - L.P. 220VAC/50-60Hz N.C. 220VAC/50-60Hz N.O.	4AC 4AO 4DC 4DO 4DP 2AC 2AO			I V F S X Q N T D R E 6
Closing and Opening Speed Control			03							
Automatic Regulation Override			09							
High sensitivity pilot			12							
Check Valve			20							
Solenoid Controlled & Check Valve			25		ISO-16					
Multi-Setting Levels - Electrically Selected			45		ISO-25					
Downstream Over Pressure Guard			48		ANSI-150					
Hydraulic Control			50		ANSI-300					
Solenoid Controlled			55		JIS-16					
Electric Override			59		JIS-20					

Multiple choices permitted

Use when additional electric control feature is selected

Multiple choices permitted

