



# Pressure Reducing Valve

## Model: WW-420

- Flow and leakage reduction
- Cavitation damage protection
- Throttling noise reduction
- Burst protection
- System maintenance savings

The Model WW-420 Pressure Reducing Valve 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.



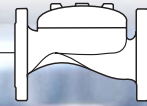
### Features and Benefits

- **Line pressure driven** – Independent operation
- **Flexible design** – Easy addition of features
- **Advanced globe or angle hydro-efficient design**
  - Unobstructed flow path
  - Single moving part
  - Non-turbulent flow
  - High flow capacity
- **Fully supported & balanced diaphragm**
  - Low actuation pressure
  - Excellent low flow regulation performance
  - Progressively restrains valve closing
  - Prevents diaphragm distortion
- **In-line serviceable**
  - Easy maintenance
  - Minimal down time

### Major Additional Features

- Solenoid control – **WW-420-55**
- Automatic regulation override – **WW-420-09**
- High sensitivity pilot – **WW-420-12**
- Downstream over pressure guard – **WW-420-48**
- Electrically selected multi-level setting – **WW-420-45**
- Electronic multi-level setting, Type 4T – **WW-420-4T**
- Electronic pressure reducing valve – **WW-428-03**

See relevant BERMAD publications.



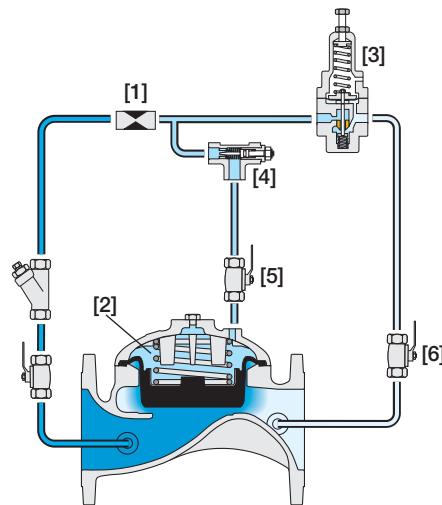
## Operation

The Model WW-420 is a pilot controlled valve equipped with an adjustable, 2-Way pressure reducing pilot. The flow restriction [1] continuously allows flow from the valve inlet into the control chamber [2]. The pilot [3] senses downstream pressure.

Should this pressure rise above pilot setting, the pilot throttles, enabling pressure in the control chamber to accumulate, causing the main valve to throttle closed, decreasing downstream pressure to pilot setting.

Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve modulates open.

The one-way flow control needle valve [4] stabilizes valve reaction by restricting the flow out of the control chamber. Closing cock valve [5] freezes valve opening rate. Downstream cock valve [6] enables manual closing.



## Engineer Specifications

The Pressure Reducing Valve shall reduce higher upstream pressure to lower preset downstream pressure regardless of fluctuating demand or varying upstream pressure.

**Main Valve:** The valve shall be hydraulically controlled, elastomeric type globe valve with a rolling-diaphragm. The valve shall have an unobstructed flow path with no stem guide or supporting ribs. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part. The valve shall have a removable cover for quick in-line service enabling all necessary inspection and servicing. Valve pressure rating shall be PN16. Valve construction materials shall be: Epoxy FB coated Ductile Iron body and cover, NR diaphragm & Stainless Steel spring.

The valve shall be supplied as an assembly, hydraulically tested and factory adjusted to customer requirements at an ISO 9000 and 9001 certified hydraulic laboratory.

**Control System:** The valve shall be controlled in a 2-way system without a water bleed to the atmosphere. The control system shall consist of a 2-way adjustable (1.5-16.0 bar), direct acting pressure reducing pilot, isolating cock valves on upstream, downstream, and control chamber ports, a one-way flow control device and a filter. Washing the filter shall not require isolating the main valve. All tubing and fittings shall be Stainless Steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

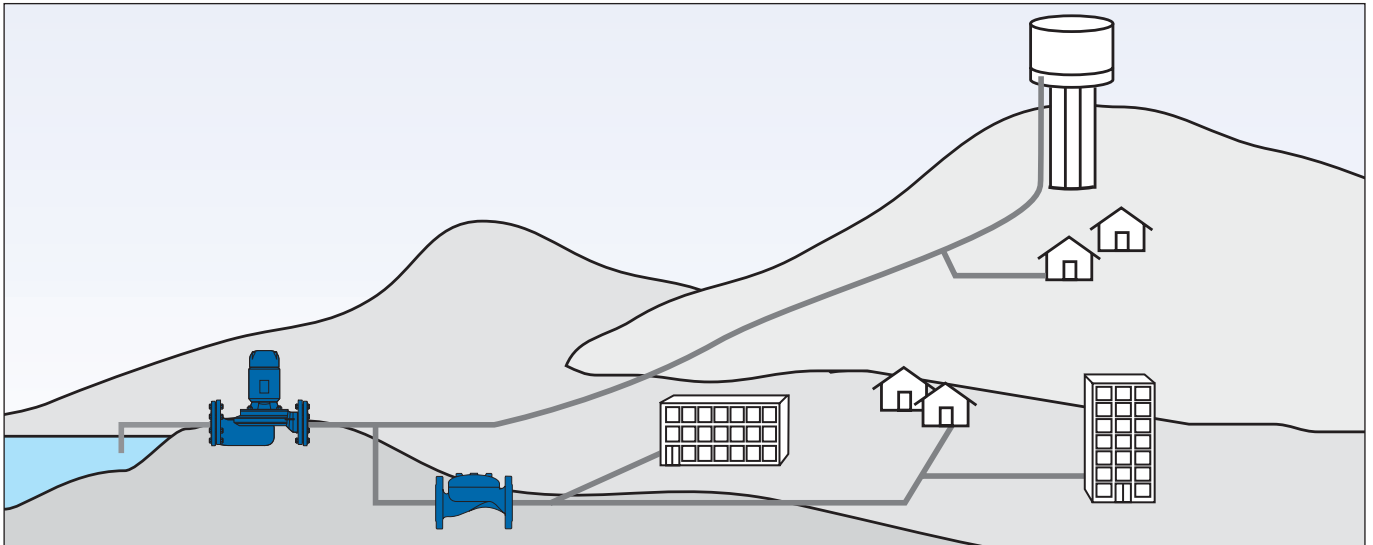
**Quality Assurance:** The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to WRAS, and other recognized standards.



## Typical Applications

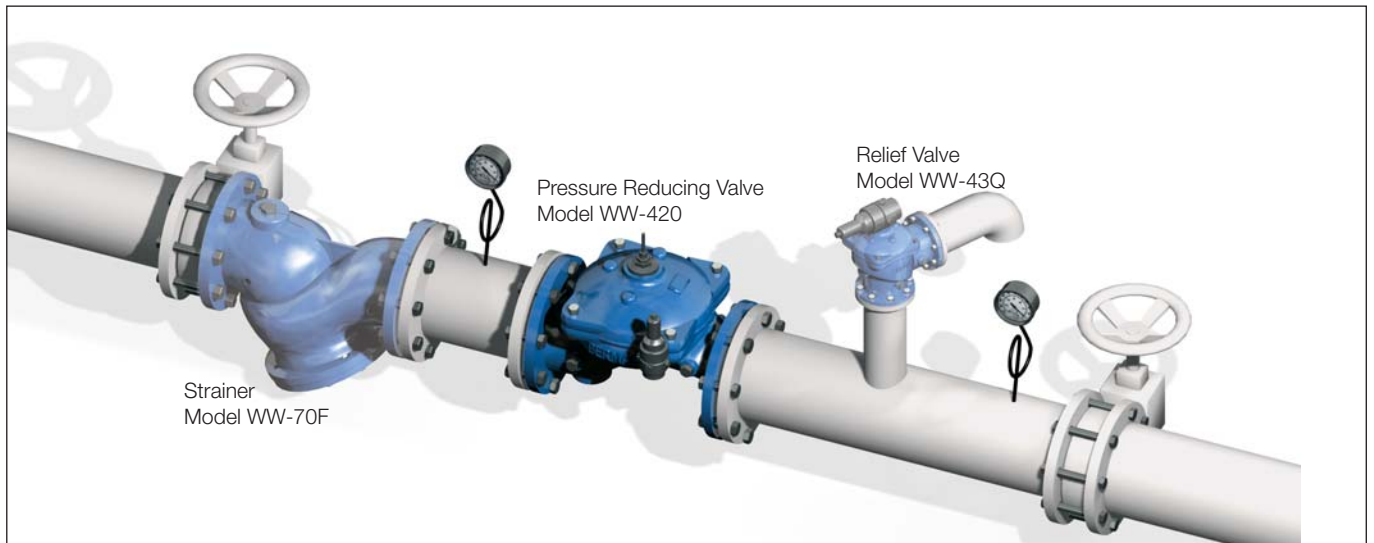
### Pressure Reducing System for Municipal Networks

Network design requires establishing various pressure zones due to topography, distances, demands, energy costs, reservoir availability, etc.



The pump supplies water to the network and to the reservoir. System pressure is too high for the residential neighborhood, requiring a pressure reducing system.

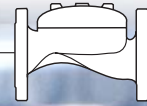
### Pressure Reducing System – Typical Installation



In addition to the Model **WW-420 Pressure Reducing Valve**, BERMAD recommends that the system also include:

- **Strainer** Model WW-70F prevents debris from damaging valve operation
- **Relief Valve** Model WW-43Q provides:
  - Protection against momentary pressure peaks
  - Visual indication of need for maintenance

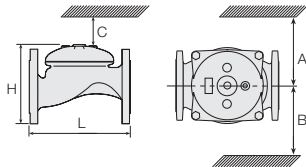
For high pressure / differential pressure systems, see BERMAD publications WW 720 & WW 820.



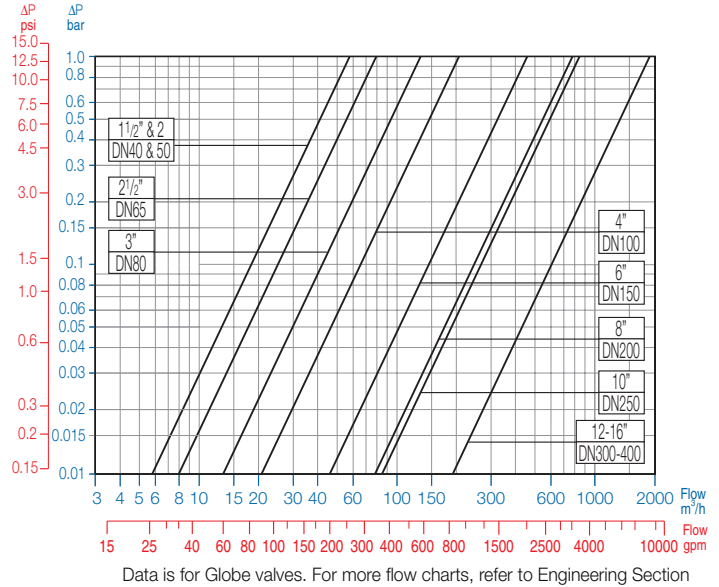
## Technical Specifications

### Dimensions and Weights

	Size		A, B		C		L		H		Weight	
	DN	inch	DN	inch	DN	inch	DN	inch	DN	inch	kg	lbs
Flange	40	1½	330	13	68	2.7	205	8.1	152	6	8	17.6
	50	2	330	13	68	2.7	205	8.1	155	6.1	9	19.8
	65	2½	340	13	110	4.3	205	8.1	178	7	11	23.1
	80	3	350	14	125	4.9	250	9.8	210	8.3	19	41.9
	100	4	360	14	145	5.7	320	12.6	242	9.5	28	61.7
	150	6	400	16	205	8.1	415	16.3	345	13.6	68	149.9
	200	8	430	17	260	10	500	19.7	430	16.9	125	275.6
	250	10	450	18	275	11	605	23.8	460	18.1	140	308.6
	300	12	515	20	380	15	725	28.5	635	25.0	290	639.3
	350	14	545	22	395	16	742	29.2	655	25.8	358	789.2
400	16	550	22	580	23	742	29.2	695	27.4	377	831.1	
Groove	50	2	310	12	65	2.6	205	8.1	108	4.3	5	11
	80	3	335	13	125	4.9	250	9.8	155	6.1	11	23.4
	100	4	350	14	145	5.7	320	12.6	191	7.5	16	35.7
	150	6	400	16	205	8.1	415	16.3	302	11.9	49	108



### Flow Chart



### Main valve

- Pressure Ratings:** 16 bar; 232 psi
- Connections Standard:**
- Flanged:** ISO 7005-2 (PN10 & 16); ANSI B16.42 (#150)
- Grooved:** ANSI C606
- Threaded:** Rp ISO 7/1 (BSP.P) or NPT
- Others:** Available on request
- Operating Pressure Range:** 0.5-16 bar; 7-232 psi
- For lower pressure requirements, consult factory
- Working Temperature:** Water up to 50°C (122°F)
- Standard Materials:**
- Body and Cover:** Electrostatic Polyester Powder, RAL 5010 (Blue) Coated Ductile Iron
- Spring:** Stainless Steel 302
- Diaphragm:** Nylon fabric Reinforced NR with rugged insert
- Bolts, Studs and Nuts:** Zinc-Cobalt plated Steel

### Control System

- Pilot Setting Range:** 1.5-16 bar; 22-232 psi
- Setting ranges vary according to specific pilot spring. Please consult factory.
- Pilot Standard Materials:**
- Body:** Bronze or Stainless Steel
- Elastomers:** NBR
- Springs:** Galvanized Steel or Stainless Steel
- Internals:** Stainless Steel
- Control Accessories:** Bronze, Brass, Stainless Steel & NBR
- Tubing and Fittings:** Stainless Steel

### 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 Materials	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additional Attributes
WW	6"	420	00	G	C	16	EB	-	NN	I
Waterworks	1½ - 16" DN40-400	Pressure Reducing	Globe Angle (up to 4") Ductile Iron (Standard) Cast Steel St. Steel 316 Nickel Alumin. Bronze	G A	C S N U	Epoxy FB Blue Polyester Green Polyester Blue Uncoated	EB PG PB UC	St. St. 316 Tubing & Fittings Copper Tubing & Brass Fittings Plastic Tubing & Brass Fittings	NN CB PB	I F S X Q N 6
No Additional Feature			00			24VAC/50Hz - N.C. 24VAC/50Hz - N.O. 24VDC - N.C. 24VDC - N.O. 24VDC - L.P.	4AC 4AO 4DC 4DO 4DP	Valve Position Indicator Large Control Filter Electric Limit Switch 3-Way Control Loop Valve Position Transmitter		
Automatic Regulation Override			09		16	220VAC/50Hz - N.C. 220VAC/50Hz - N.O.	2AC 2AO	St. St. 316 Control Accessories Pressure Gauge		
High sensitivity pilot			12		A5			Multiple choices permitted		
Multi-Setting Levels - Electrically Selected			45		J1					
Downstream Over Pressure Guard			48		VI					
Solenoid Controlled			55		BP					
Electric Override			59		NP					
Multiple choices permitted						Use when additional electric control feature is selected				

