

## Pressure Reducing Valve

Model: FP 420-00



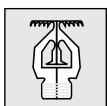
### Description

The Model FP 420-00 Pressure Reducing Valve is a hydraulically self operated, diaphragm actuated control valve that reduces high, unstable upstream pressure to maintain precise stable downstream pressure, regardless of fluctuating demand or varying upstream pressure.

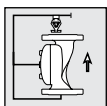
### Typical Applications



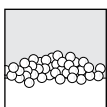
Hose station feeds



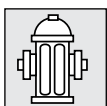
Sprinkler systems with over pressure



Deluge systems with over pressure



Foam systems



Fire hydrant water supply

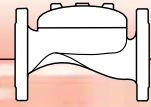
### Features and Benefits

- **Advanced Elastomeric Globe type** – Low pressure loss
- **One-piece molded elastomeric moving part** – No maintenance required
- **Simple design** – Cost effective
- **Factory pre-assembled trim** – Out-of-Box Quality
- **In-line serviceable** – Minimal down time

### Optional Features

- **Large control filter** (code: F)
- **Seawater service**
- **Valve Position Single/Double Limit Switches**

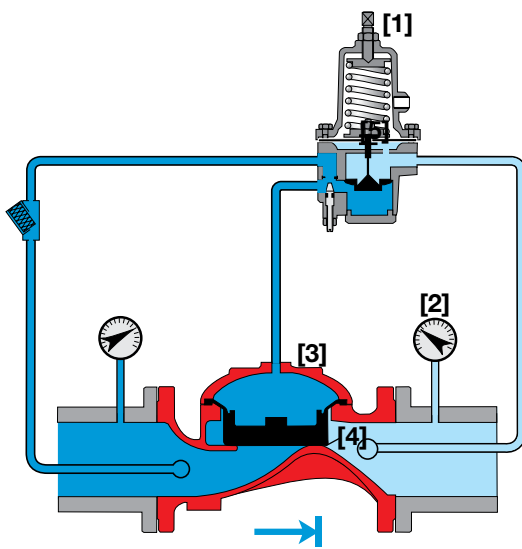
**Note:** Optional features can be mixed and matched.  
Consult your Bermad representative for full details



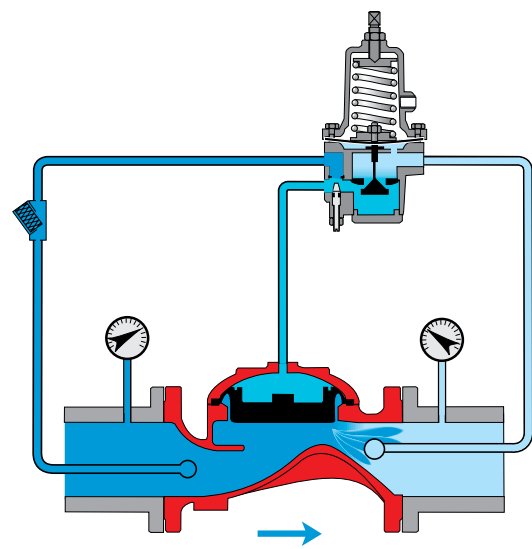
## Operation

The BERMAD Model FP 420-00, pilot operated pressure reducing valve automatically and accurately reduces upstream water pressure to a specific, adjustable value. The FP 420-00 operates under both flowing and non-flowing (static) conditions. The Pressure Reducing Pilot [1] senses downstream pressure [2] and in real time modulates the main valve [3] to maintain the constant downstream pressure.

In no-flow static conditions, should the downstream pressure start rising above pilot setting, the pilot closes, shutting the main valve drip-tight [4] to maintain the allowable downstream pressure.



Valve Closed (static condition)



Valve Open (flowing condition)

## Engineer Specifications

The pressure reducing valve shall eliminate downstream over-pressure, maintaining a constant downstream delivery pressure, regardless of varying pressures and/or flows.

The main valve shall be an elastomeric type globe valve with a rolling-diaphragm.

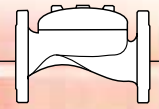
Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.

The valve shall have an **unobstructed flow path**, with no stem guide or **supporting ribs**.

The valve shall have a removable cover for quick in-line service enabling all necessary inspection and servicing.

The control trim shall be supplied as an assembly, pre-assembled and hydraulically tested at an

ISO 9000 and 9001 certified factory.

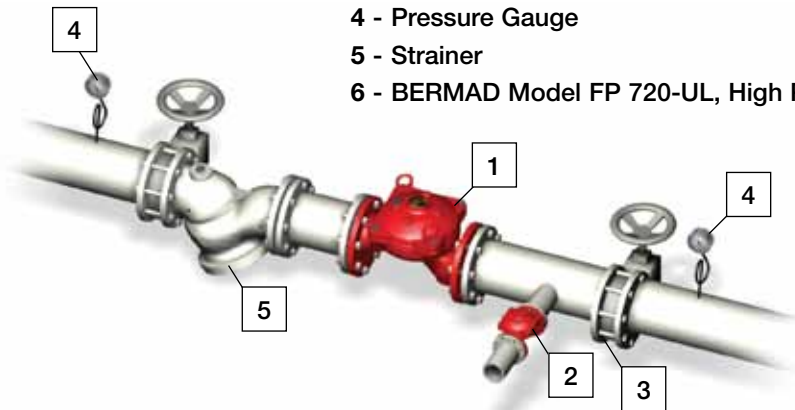


## Typical Installations

## System Components

- 1 - BERMAD Model FP 420-00
- 2 - BERMAD Model FP-430-UF Pressure Relief Valve
- 3 - Isolating Valve
- 4 - Pressure Gauge
- 5 - Strainer
- 6 - BERMAD Model FP 720-UL, High Pressure Reducing Valve

### Standard Pressure Reducing System



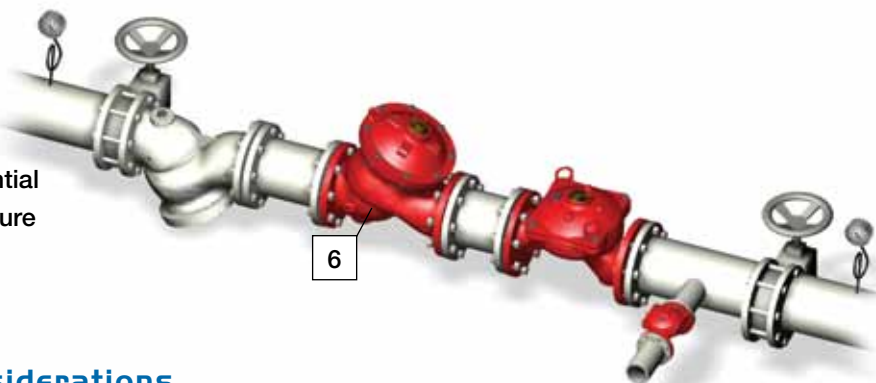
### Parallel Pressure Reducing System

- Wide flow range
- Redundant safety
- Serviceable with zero down time



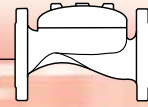
### Two-Stage Pressure Reducing System

- High pressure differential
- Added reduced pressure zone protection

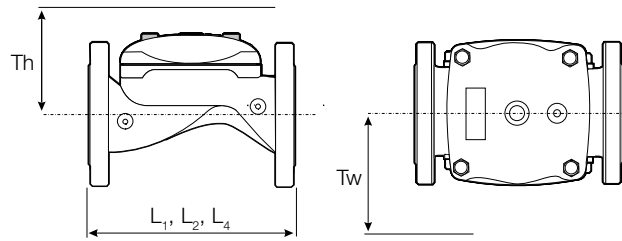


## Installation Considerations

- Allow enough room around the valve assembly for any future maintenance.
- Install isolating valves upstream and downstream of the system.
- Install the valve horizontally with the cover facing up (consult Bermad for other configurations).
- Install a relief valve (recommended: BERMAD Model FP 430-UF) of the appropriate size on the downstream side of the FP 420-00, as required by NFPA-20 standard.
- Install a pressure gauge on each side of the system.



## Technical Data



Size	2"		2½"		3"		4"		6"		8"		10"		12"		
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
Dimensions	L <sub>1</sub> <sup>(1)</sup>	205	8½	205	8½	257	10⅛	320	12 <sup>9</sup> / <sub>16</sub>	415	16 <sup>5</sup> / <sub>16</sub>	500	19 <sup>11</sup> / <sub>16</sub>	605	23 <sup>13</sup> / <sub>16</sub>	725	28½
	L <sub>2</sub> <sup>(2)</sup>	180	7 <sup>1</sup> / <sub>16</sub>	210	8¼	255	10 <sup>1</sup> / <sub>16</sub>	N/A	N/A	N/A	N/A	500	19 <sup>11</sup> / <sub>16</sub>	N/A	N/A	N/A	N/A
	L <sub>4</sub> <sup>(2)</sup>	180	7 <sup>1</sup> / <sub>16</sub>	210	8¼	255	10 <sup>1</sup> / <sub>16</sub>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Tw	284	11 <sup>3</sup> / <sub>16</sub>	284	11 <sup>3</sup> / <sub>16</sub>	300	11 <sup>3</sup> / <sub>16</sub>	313	12 <sup>5</sup> / <sub>16</sub>	341	13 <sup>7</sup> / <sub>16</sub>	415	16 <sup>5</sup> / <sub>16</sub>	443	17 <sup>7</sup> / <sub>16</sub>	481	18 <sup>15</sup> / <sub>16</sub>
	Th	210	8¼	210	8¼	215	8 <sup>7</sup> / <sub>16</sub>	243	9 <sup>9</sup> / <sub>16</sub>	315	12 <sup>3</sup> / <sub>8</sub>	350	13¾	382	15	430	6 <sup>15</sup> / <sub>16</sub>

**Notes:**

- L<sub>1</sub> is for flanged valves.
- L<sub>2</sub> is for threaded NPT or ISO-7-Rp.
- L<sub>4</sub> is for grooved end connections (Ductile Iron Only).
- Tw & Th are max. for pilot system.
- Data is for envelope dimensions, component positioning may vary.
- Provide space around valve for maintenance.

### Connection Standard

- Flanged: ANSI B16.42 (Ductile Iron), B16.5 (Steel & Stainless Steel), B16.24 (Bronze)
- ISO PN16
- Threaded: NPT or ISO-7-Rp for 2, 2½ & 3"
- Grooved: ANSI/AWWA C606 for 2, 3, 4, 6 & 8"

### Water Temperature

- 0.5 – 50°C (33 – 122°F)

### Available Sizes

- Globe: 2, 2½, 3, 4, 6, 8, 10 & 12"

### Pressure Rating

- Max. inlet: 250 psi (17 bar)
- Set: 30 - 165 psi (2 - 11.5 bar)
- Test : 365 psi (25 bar)

### Approvals

- ABS
- Lloyd's Registered

### Manufacturers Standard Materials

#### Main valve body and cover

- Ductile Iron ASTM A-536

#### Main valve internals

- Stainless Steel & Elastomer

#### Control Trim System

- Brass control components/accessories
- Stainless Steel 316 tubing & fittings

#### Elastomers

- Polyamide fabric reinforced Polyisoprene, NR

#### Coating

- Electrostatic Powder Coating Polyester, Red (RAL 3002)

### Optional Materials

#### Main valve body

- Carbon Steel ASTM A-216 WCB
- Stainless Steel 316
- Ni-Al-Bronze ASTM B-148

#### Control Trim

- Stainless Steel 316
- Monel® and Al-Bronze
- Hastelloy C-276

#### Elastomers

- NBR
- EPDM

#### Coating

- High Build Epoxy Fusion-Bonded with UV Protection, Anti-Corrosion

