

Model 420-HY Pressure Regulating Hydrant Valve



INSTALLATION OPERATION MAINTENANCE

1. Safety First

BERMAD believes that the safety of personnel working with and around our equipment is the most important consideration. Please read all safety information below and from any other relevant source before attempting to perform any maintenance function.

Comply with all approved and established precautions for working with your type of equipment and/or environment. Authorized personnel should perform all maintenance tasks.

Prior to performing a procedure, read it through to the end and understand it. If anything is not clear, ask the appropriate authority.

When performing a procedure, follow the steps in succession without omission"

2. Description

BERMAD’s Model 420-HY Pressure-Reducing Hydrant Valve is a manually operated pressure control valve that reduces higher inlet pressure to lower constant outlet pressure, regardless of fluctuating flow-rates and/or varying inlet pressure. It is a pilot-operated, diaphragm-actuated, low pressure-loss valve. Valve differential pressure powers the diaphragm actuator open or closed. The actuator design enables quick and smooth valve action. According to the downstream pressure, the pilot valve regulates main valve opening.

Models and Sizes

Models and Sizes covered by this document include the BERMAD Pressure-Reducing Valve 420-HY, sizes 1½”, 2”, 2.5”, 3”, 4” and 6” are available in Globe pattern, sizes: 2”, 2.5”, 3” and 4” are available in Angle pattern.

Operating Pressure Rating

All sizes have a maximum rated inlet pressure of 235 psi (16bar).

Outlet pressure setting for all sizes is limited to 100 psi (6.9bar).

When setting the outlet pressure, the inlet pressure should be at least 15 psi (1 bar) higher than the set outlet pressure.

Table 1

Flow Capacity Table

Valve Size [in (mm)]	2 (50)	2.5 (65)	3 (80)	4 (100)	6 (150)
Max. Inlet pressure [psi (bar)]	250 (17)	250 (17)	250 (17)	250 (17)	250 (17)
Outlet pressure adjustable range [psi (bar)]	30-100 (0-6.9)	30-100 (0-6.9)	30-100 (0-6.9)	30-100 (0-6.9)	30-100 (0-6.9)
Maximum flow-rate [GPM (LPM)]	150 (568)	300 (1140)	500 (1892)	800 (3028)	1800 (6813)
Minimum required flow-rate for Pilot Valve Setting [GPM (LPM)]*	75 (284)	150 (568)	250 (946)	400 (1514)	900 (3406)

*Required flows to be established through the valve to properly adjust the set pressure



3. Approvals

BERMAD 420-HY Valve is Lloyd's Register and ABS approved when installed with specific components & accessories. Refer to the current directory. Consult the manufacturer for any component.

4. Installation

Installation Instruction:

- 4.1 Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
- 4.2 Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Failure to do this might result in the valve being inoperable.
- 4.3 Install the valve in the pipeline with the valve flow arrow on the body casting in the proper direction. Use the lifting eye provided on the main valve cover for lifting and lowering the valve.
- 4.4 After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
- 4.5 Install a pressure gauge on both the upstream & downstream of the Pressure Reducing Control Valve.
- 4.6 Install the Model 420-HY valve in accordance with the Standard for Installation of Standpipe and Hose Systems, NFPA 14, as appropriate. The Model 420-HY valve is to be tested after installation in accordance with owner regulations and the authorities having jurisdiction.
- 4.7 The Model 420-HY valve is to be inspected, tested and maintained in accordance with the Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, NFPA 25.

5. Equivalent Length

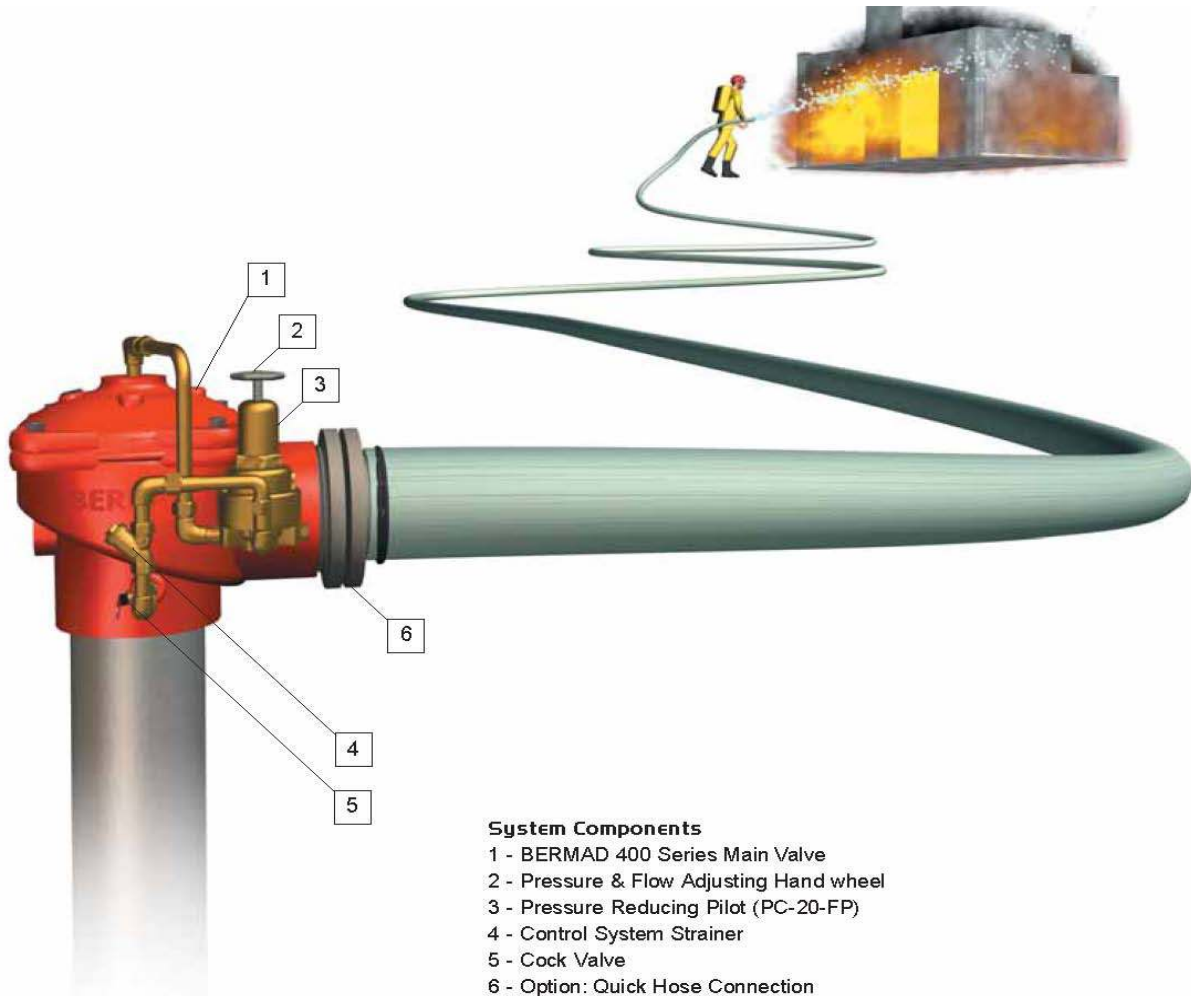
Valve Equivalent Length Value (Steel Pipe), for use in hydraulically calculated systems

Valve Size	Equivalent Length Value Meter (Ft)
2"	9.1 (30) of 2" pipe
2½"	12.1 (40) of 2½" pipe
3"	13.7 (45) of 3" pipe
4"	14 (46) of 4" pipe
6"	27.4 (90) of 6" pipe



Model: FP – 420- HY Sizes: 1.5"-6"

Figure 1: Installation Drawing



- System Components**
- 1 - BERMAD 400 Series Main Valve
 - 2 - Pressure & Flow Adjusting Hand wheel
 - 3 - Pressure Reducing Pilot (PC-20-FP)
 - 4 - Control System Strainer
 - 5 - Cock Valve
 - 6 - Option: Quick Hose Connection

6. Operation

The pressure-regulating pilot senses downstream pressure and modulates the upper control chamber causing the main valve to throttle, thus maintaining constant downstream pressure. When the downstream pressure falls below the pilot setting, the pilot opens, pressure in the upper control chamber decreases, and the main valve modulates open to increase downstream pressure and maintain pilot setting.

Should the downstream pressure rise above the pilot setting, the pilot closes while pressure in the upper chamber increases and the main valve throttles close to decrease downstream pressure to the pilot setting.

The pressure-reducing pilot is equipped with an adjusting screw as shown in figure 2. To increase pressure setting, turn handle counter clockwise, to reduce pressure setting or to close the valve, turn the handle clockwise.

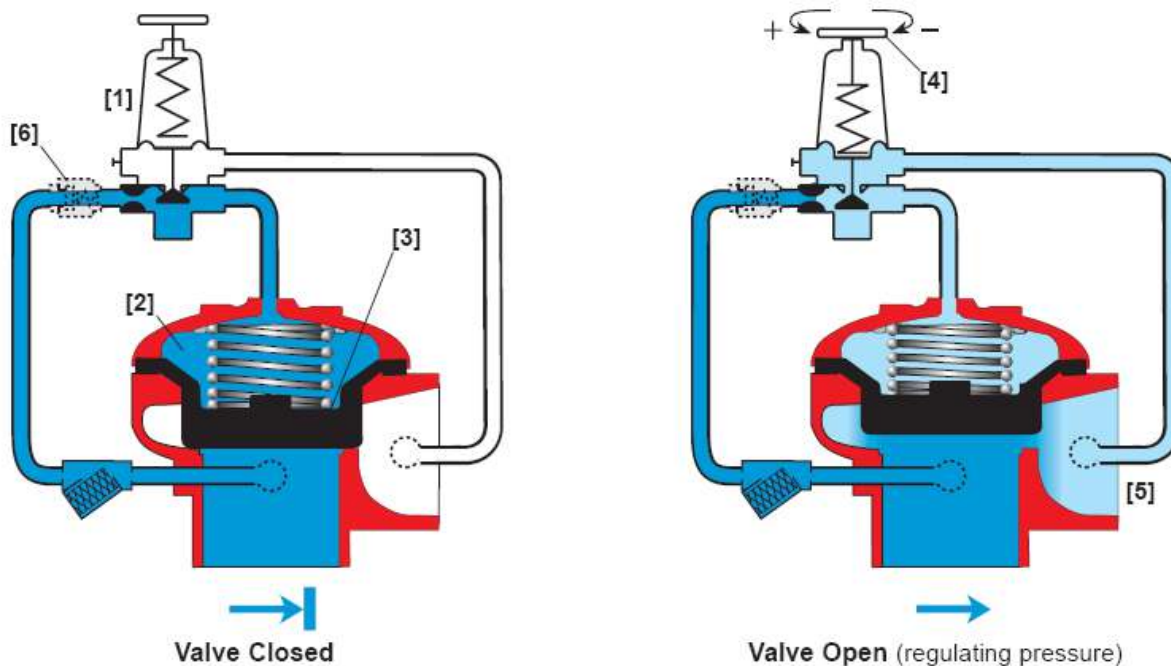
Model: FP – 420- HY Sizes: 1.5"-6"

7. Starting –up

When performing this procedure refer to figure 2.

- 7.1 Open the Model 420-HY Pressure-Reducing Hydrant Valve by turn the handle (4) clockwise until you get the required pressure.
- 7.2 Fully close the valve by turn the handle (2) counter clockwise.

Figure 2: Operation Drawing



8. Maintenance and Inspection Test

- 8.1 **WARNING:** Do not turn off the water supply to make repairs without placing a roving fire patrol in the area covered by the system. The patrol should continue until the system is back in service.
- 8.2 Prior to turning off any valves or maintenance activity, notify local security guards.
- 8.3 A periodic test schedule should be established also with accordance to the site conditions and owner regulations.
- 8.4 Take all additional measures as required by NFPA-25 “standard for the inspection, testing, and maintenance of water-based fire protection systems”.
- 8.5 The valve should be checked monthly for “normal Conditions”.
- 8.6 Clean the priming strainer prior to any Operation of the Water Control valve.
- 8.7 The valve shall be inspected every three month, check that the main valve, pilot system, tubing and fittings, are all in good condition, damage free and not leaking.
- 8.8 The valve must be activated at full flow at least annually. Take all necessary precautions to prevent damage in the surrounding area.
- 8.9 After approximately five years of operation, replacement of the diaphragm assembly is recommended. Remove the Cover, clean the valve body from sediments, clean the control tubing entry holes, and install a new Diaphragm Assembly.

9. Spare Parts

- 9.1 The Diaphragm Assembly is the only spare part needed for the main Water Control valve.
9.2 Disassembly and Parts Breakdown Illustration". It is not recommended to store spare rubber parts for long periods (rubber in improper storage conditions can harden and crack).
Contact your Bermad representative and order new rubber parts when required.

10. Trouble Shooting

SYMPTOM	PROBABLE CAUSE	REMEDY
Valve fails to regulate	Air trapped in main valve cover.	Loosen cover tube fitting at the highest point, allow the air to escape and re-tighten.
	Filter screen (4) blocked.	Remove filters cap and screen to clean.
	Insufficient inlet pressure.	Check/create inlet pressure.
	No downstream demand.	Create demand/flow.
Valve fails to open	Insufficient pilot spring compression	Turn adjusting screw CW on pilot.
	Cock valve (5) close	Turn Cock valve to open

11. Difficulty in Performance

Where difficulty in performance is experienced, the manufacturer or his authorized representative should be contacted if any field adjustment is to be made.