

## Bermad Hydraulically Operated, Remote Controlled Monitor Valve

### Model: 400E-5X

### 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 Hydraulically Controlled valve with 5X trim is actuated by an HRV - Hydraulic Relay Valve (26B), which permits local release of top chamber pressure (instead of the usual remote top chamber release by the hydraulic release system), in order to ensure quick opening even when release device is distant.

The Control Valve requires a wet pilot line system including hydraulic releases.

The HRV (26B) is normally held closed by pressure maintained in the hydraulic release system.

The 5X trim may also use a Normally Closed hydraulic release system with thermostatic releases and/or fixed temperature releases to release water pressure directly from the Control Valve top chamber.

In fire conditions, operation of a releasing device on the hydraulic release system causes pressure in the release system piping to drop down, causing the HRV to open, releasing to the atmosphere trapped water pressure from the top chamber and opening the Control Valve, allowing water to enter the system piping.

The releasing device in the Normally Closed hydraulic release system holds the pressure in the top chamber of the Control Valve. The opening of the device in a fire condition releases trapped water pressure from the top chamber, opening the Control Valve allowing water to enter the piping system. Water will flow from any open sprinklers and/or spray nozzles on the system.

Control systems are commonly used where, when the system operates, it is desirable to simultaneously spray water from all open sprinklers and/or nozzles on the system.

## 3. Approval

BERMAD 400E-5X Remote Control Valve is Lloyd's Register type approved and ABS certified, for sizes 1½" through 12" according to NFPA code and standards for water and Foam fire protection systems.

Consult the manufacturer for any component approved when approval recently to appear in the fire protection equipment directory.

## 4. Installation

Subject to all other instructions, drawings and technical specifications, which describe Bermad Control Valve, install in their proper positions the components comprising the Control Trim Package, according to the drawing relevant to the specific type, hereby enclosed.

Install also the additional accessories, which appear in the drawing and which must be installed as shown in the drawing, although they are not packed together with the Bermad Control Valve itself.

**Model: FP 400E-5X**

**Sizes: 2 "-12"**

Any deviation in trim size or arrangement may adversely affect the proper operation of the Control Valve.

Refer also to applicable installation standards, codes and relevant authorities.

Any deviation in trim size or arrangement may adversely affect the proper operation of the Control Valve. Refer also to applicable installation standards, codes and authorities having jurisdiction.

**Note:** The Control Valve and trim must be installed only in areas where they will not be subjected to freezing temperatures.

## Installation Instructions

- 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 It is recommended to install an Isolating valves upstream of the BERMAD 400E-5X Control Valve to allow future maintenance.
- 4.4 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.
- 4.5 BERMAD 400E-5X Control Valve is intended for horizontal or vertical installation. Ensure that the valve is positioned so that the valve cover can be easily removed for future maintenance
- 4.6 Install also the additional accessories, which appear in the drawing and which must be installed as shown in the schematic drawing.
- 4.7 Connect the Hydraulic pressure supply to the pilot system according to the design Piping and Instrumentation Diagram.
- 4.8 Connect the Limit Switches and/or the Pressure Switch (if utilized) to the Electric Control System according to the System Electrical Wiring Diagram
- 4.9 After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
- 4.10 Any deviation in trim size or arrangement, that is not performed by a representative of BERMAD, may adversely affect the proper operation of the Control Valve.

## 5. Optional Equipment

If required, order a pressure switch to either activate an electric alarm, or shut down desired equipment.

### Notes:

- A. It is recommended practice to provide an "Inspector's Test Connection" on the hydraulic release system. The inspector's Test Connection should be equipped with a ball valve (normally locked closed) capable of being opened to simulate the opening of a release.
- B. The water supply priming line must be connected to the upstream of the system control valve.

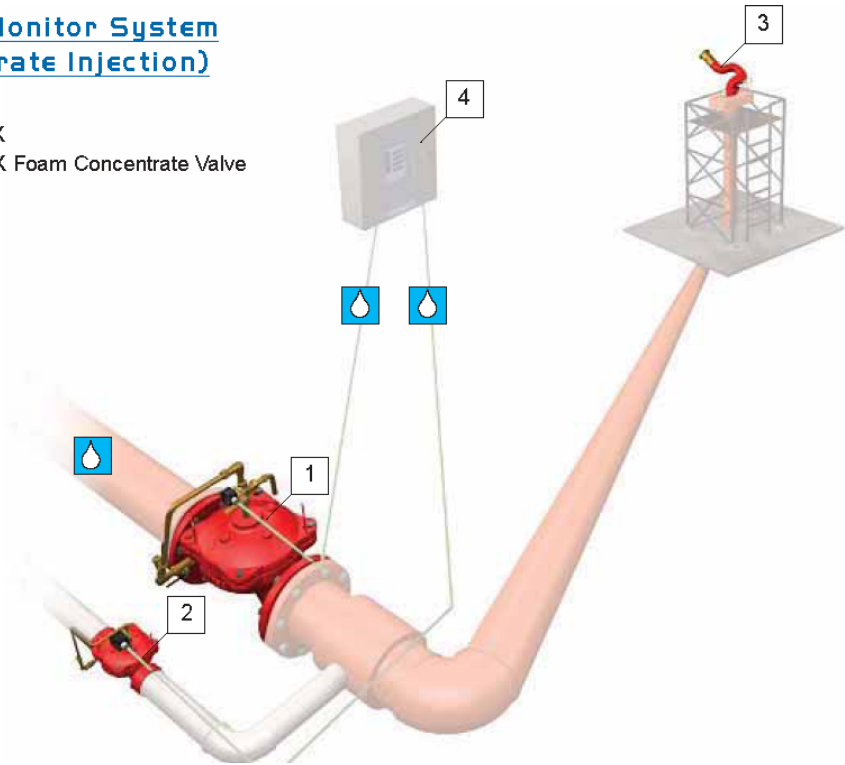
**Model: FP 400E-5X      Sizes: 2"-12"**

**Figure 1: Installation Drawing**

**Remote Controlled Monitor System  
(with Foam Concentrate Injection)**

**System Components**

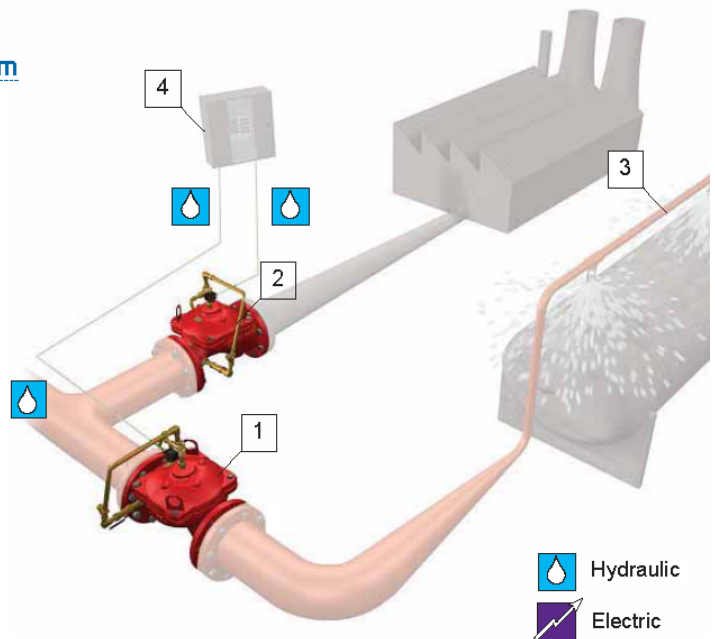
- 1 - BERMAD Model FP 400E-5X
- 2 - BERMAD Model FC 400E-5X Foam Concentrate Valve
- 3 - Remote Controlled Monitor
- 4 - Hydraulic Control Panel



**Emergency Zone Isolation System**

**System Components**

- 1 - BERMAD 400E Deluge Valve
- 2 - BERMAD Model FP 400E-5X Remote Controlled Shut-off Valve
- 3 - Deluge Spray System
- 4 - Hydraulic Control Panel



## 6. Placing in Service/Resetting the System

- 6.1 Check the hydraulic release system for leaks.
- 6.2 Check the Local and Remote emergency releases, making certain all valve handles are returned to the closed position.
- 6.3 Open priming-line valve and allow pressurized water to flow to the control chamber of the valve.
- 6.4 Check the entire release system for leaks.
- 6.5 Drain any water from the system side of the Bermad valve.
- 6.6 The system is now in service.



## 7. Removing the System from Service

When taking Control System out of service, a fire patrol should be established in the system area. If automatic fire-alarm signaling equipment is utilized, the proper authority should be notified that the system is being removed from service. The insuring body and owner representative should also be notified when the system is being taken out of service.

### Removing Instructions

Shut off the main supply valve.

Priming-line valve (1 fig. 2) to the Control Valve, should be closed.

Open all drain valves.

Release the water pressure from the top chamber by pulling the manual release valve (No. 4 fig. 2).

Place "Fire Protection System Out of Service" signs in the area protected by the system.

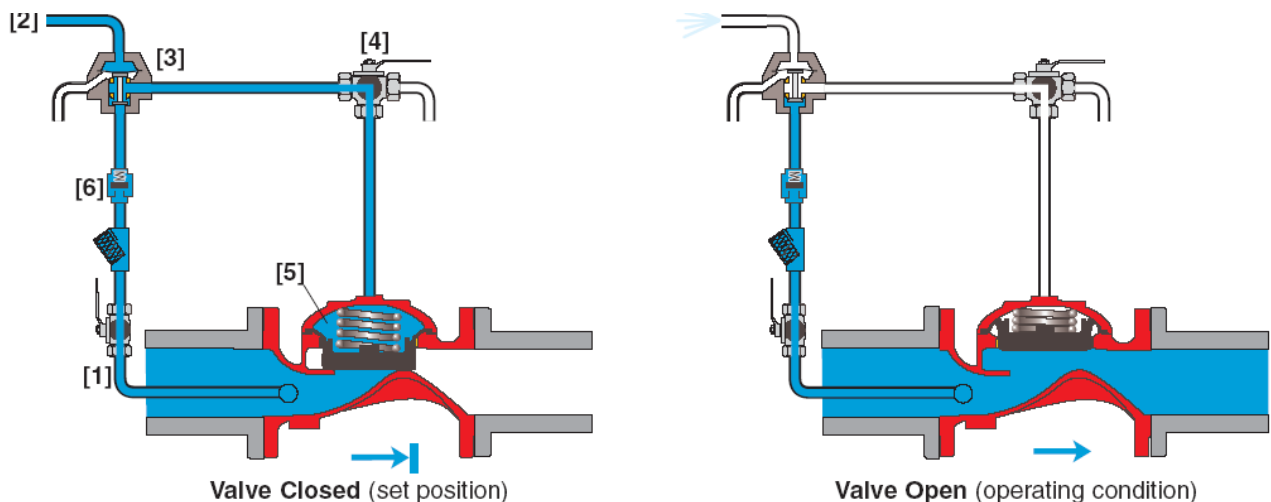
## 8. Operation

In the Set position, pressure is applied through the same priming line to the top chamber through the Accelerator and Priming Restriction (2), and to the hydraulic release system through another restriction (30B). The pressure is trapped in the top chamber of the control valve by check valve (7B) which prevents high pressure back flow, by the HRV which is normally held closed by pressure maintained in the hydraulic release system, and by the Normally Closed wet pilot release system.

The pressure trapped in the top chamber of the Control Valve presses the valve seal disc down, sealing the valve and keeping the system piping dry.

In fire conditions the hydraulic pilot line pressure drops down, causing the HRV to open, or the Normally Closed wet pilot line pressure drops down, releasing to the atmosphere trapped water pressure from the top chamber and opening the Control Valve, allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.

Figure 2: Operation Drawing





## 9. Maintenance and Inspection Test

**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.

- 11.1 Prior to turning off any valves or activating any alarms, notify local security guards and the central alarm station, if used, so that a false alarm will not be signaled.
- 11.2 In any of the following inspections or testing procedures, if an abnormal condition exists, see Abnormal Conditions for possible cause and corrective action.
- 11.3 See NFPA Pamphlet No. 25 .

## 12. Normal Condition

- 12.1 All main control valves are open and sealed with tamperproof seals.
- 12.2 The priming-line valve (4 fig. 2) is OPEN.
- 12.3 The top chamber gauge valve (if supplied) should be OPEN and gauge should indicate the pressure in the top chamber.
- 12.4 Upstream pressure gauge valve (if supplied) is OPEN. The gauge should reflect the upstream supply pressure to the Control Valve.

## 13. Weekly Inspection

- 13.1 The system should be checked for normal condition.
- 13.2 Observe the upstream pressure gauge, it should indicate that the normal supply of water pressure to the Control Valve is maintained.

## 14. Monthly Inspection and Test

- 14.1 Complete Weekly Inspection.
- 14.2 Test the electric alarm (optional Limit Switch or Pressure Switch).

## 15. Semi- Annual Inspection

- 15.1 Complete Weekly and Monthly Inspection and Test.
- 15.2 Inspect the Hydraulic release system.

## 16. Annual Inspection and Test

- 16.1 Complete Weekly, Monthly and Semi-Annual inspections.
- 16.2 Place the system out of service (See instructions above).
- 16.3 Trip the release-line system, clean all strainers.
- 16.4 The interior of the Control Valve should be inspected and cleaned.
- 16.5 The interior of the HRV, including its diaphragm and seal, should be inspected and cleaned.
- 16.6 Place the system back in service. (See instructions "Placing the System in Service").
- 16.7 The Control Valve, trim, auxiliary devices and manual release must be activated at full flow.

**Model: FP 400E-5X**

**Sizes: 2 "-12"**

**Note:** The system will be flooded! Take all necessary precautions to drain water and prevent damage in the area protected by the Control system.

- 16.8 Trip test the control system by decreasing pressure in the pneumatic release system. Reset system.
- 16.9 The manual release handle is to be pulled and tested. The Control Valve should open and discharge water.
- 16.10 Take all additional measures as required by NFPA 25 "Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems."

## 17. Abnormal Conditions

### 17.1 False Trip

Check for HRV (26B) out of order.

### 17.2 Leakage Through the Water Control Valve

- A. Plugged Priming Strainer.
- B. Leaking Release System.
- C. Damaged Control Valve seat or a foreign object is caught inside the seat.

### 17.3 Water Control Valve Will Not Reset

- A. An open main control valve.
- B. System not properly drained.
- C. Closed priming-line valve (18B).
- D. Damaged Control Valve seat or seal.
- E. Foreign object lodged between seal disc and valve seat.
- F. HRV (26B) not properly sealed.

### 17.4 HRV will Not Reset

- A. Leak in release line.
- B. Local or Remote Manual Emergency Release open.
- E. HRV not properly sealed.

### 17.5 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.