

Bermad Pneumatically Operated, Remote Controlled Monitor Valve

Model: 400E-4X

**INSTALLATION
OPERATION
MAINTENANCE**



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"

1. Description

Bermad Pneumatically controlled Control valve (5 fig. 2) requires a pneumatic release system, equipped with thermostatic releases, and/or fixed temperature releases and pneumatic pressure supply system. The 400E-4X trim may also use a hydraulic release system with thermostatic releases and/or fixed temperature releases.

The specific trim for the pneumatically controlled Control Valve 400E-4X includes a HRV Pneumatic Actuator (3 fig. 2), normally held closed by pressure maintained in the pneumatic release system, and a Manual Release valve (4 fig. 2).

In **fire** condition the pneumatic pressure drops, causing the HRV to open, releasing trapped water pressure from the top chamber and opening the Control Valve, allowing water to enter the system piping.

In emergency the system can be activated by pulling down the manual release handle.

Note

A regulated supply of pressurized gas (air or nitrogen) is required. See section "Reset the system" below concerning air supplies for release system.

2. Approvals

BERMAD 400E-4X 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.

3. 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. 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.

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

Model: FP 400E-5X

Sizes: 2"-12"

Installation Instructions

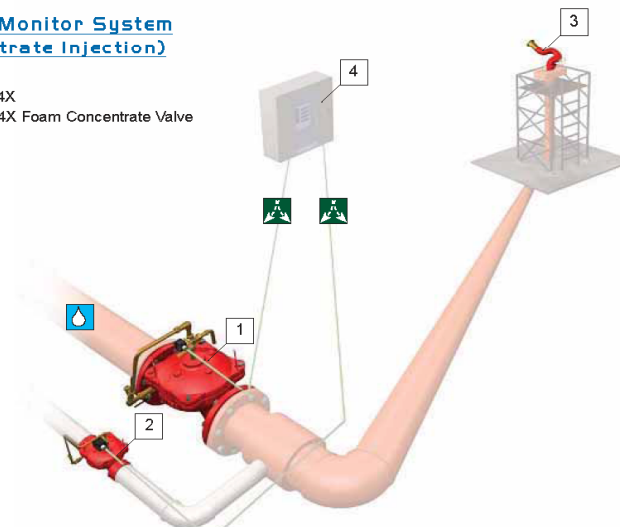
- 3.1 Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
- 3.2 Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Failure to do this might result in the valve being inoperable.
- 3.3 It is recommended to install an Isolating valves upstream of the BERMAD 400E-4X Control Valve to allow future maintenance.
- 3.4 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.
- 3.5 BERMAD 400E-4X 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
- 3.6 Install also the additional accessories, which appear in the drawing and which must be installed as shown in the schematic drawing.
- 3.7 Connect the Pneumatic pressure supply to the pilot system according to the design Piping and Instrumentation Diagram.
- 3.8 Connect the Limit Switches and/or the Pressure Switch (if utilized) to the Electric Control System according to the System Electrical Wiring Diagram
- 3.9 After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
- 3.10 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.

Figure 1: Installation Drawing

Remote Controlled Monitor System (with Foam Concentrate Injection)

System Components

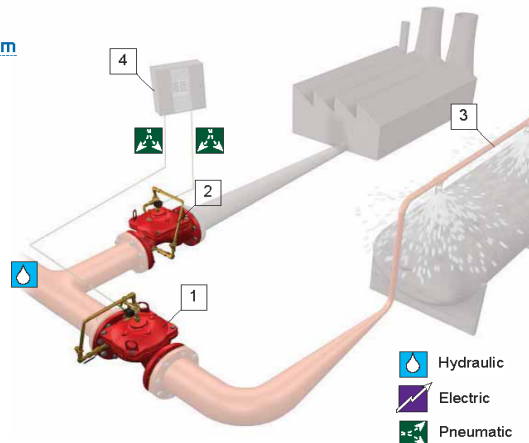
- 1 - BERMAD Model FP 400E-4X
- 2 - BERMAD Model FC 400E-4X Foam Concentrate Valve
- 3 - Remote Controlled Monitor
- 4 - Pneumatic Control Panel



Emergency Zone Isolation System

System Components

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



4. Optional Equipment

Valve Position Limit switch(s) and/or water flow alarm pressure switch are available to enable either activate an electric alarm, or shut down desired equipment.

5. Placing in Service/Resetting the System

5.1 Check the entire release system for leaks.

5.2 Check the emergency release.

5.3 Make certain release handle is returned to the CLOSED position.

5.4 Operate pneumatic pressure supply system, allowing release system pressure to build up to a range of minimum 74 psi (5 barg.). Check the entire system for leaks.

Note: In case that fusible plugs pilot line is installed the pneumatic pressure supply must feed the system through a Restriction Orifice. If a low air pressure alarm is utilized, test it by dropping the release line pressure. Restore pressure after the test.

5.5 Open the priming-line valve (1 fig. 2) and allow pressurized water to fill the top chamber of the Control Valve.

5.6 When the top chamber pressure gauge indicates full service-line pressure and pressure is no longer rising, open the main control valve slowly. No water should flow into the system.

5.7 The system is now in service.

8. 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

8.1 Shut off the main supply valve.

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

8.3 Open all drain valves.

8.4 Release the water pressure from the top chamber by pulling the manual release valve (4 fig. 2).

8.5 Shut off air or nitrogen-supply to the release system.

8.6 Release air or nitrogen pressure from release system. This may be accomplished by tripping a release or opening a test valve in the release system (if utilized).

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

9. Operation

In the Set position: System water supply pressure enters the top chamber of the Control Valve through the priming line and is trapped in the top chamber of the Control Valve by check valve (6 fig. 2), releasing device in the hydraulic release system and/or a normally held closed HRV Pneumatic Actuator (3 fig. 2).

The pressure trapping is done by the check valve which prevents high pressure back flow, on the one hand, the closed HRV and the closed hydraulic releasing device, on the other hand.

The HRV (3 fig. 2) is held closed by pressure maintained in the pneumatic release system. The pressure in the top chamber holds the Control Valve seal disc closed, keeping the outlet of the control valve and system piping dry.

In **fire** conditions, when a releasing device (such as fixed temperature release heads and/or thermostatic release) operates, pressure in the pneumatic release system drops, causing the HRV to open. When the HRV opens, pressure is released from the top chamber and the priming line is closed to the top chamber of the valve. The Control Valve seal opens to allow water to flow through the piping into the system and alarm devices. Water will flow from any open sprinklers and/or spray nozzles on the system.

When the HRV operates, it prevents water from entering the top chamber to prevent the control valve from resetting.

The Bermad Control Valve can be reset only after the system is taken out of service, and the outlet of the control valve and associated trim piping are depressurized and drained.

Air Supply Troubles

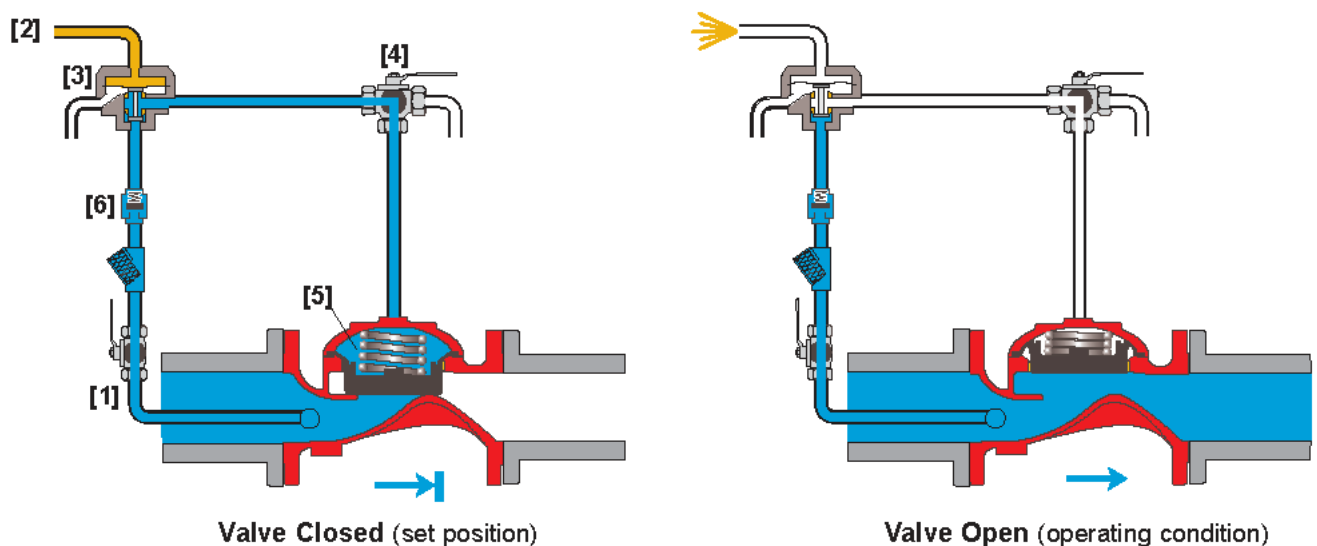
Any event of an air supply failure, slow leakage of air from the pneumatic release system, and/or failure to restore air supply to the pneumatic release system, will result in activation of the Pneumatic HRV, causing the Control Valve to open. Similarly, if the release system is activated due to mechanical damage or malfunction, the Control Valve will open. Water will flow from any open sprinklers and/or spray nozzles on the system. Water Motor Alarm will be set off if supplied and installed.

Note: Minimum required air pressure is 74 psi (5 barg.)

10. Manual Operation

Whenever the handle of the manual Release valve (4 fig. 2) is pulled, pressure is released from the top chamber, the Control Valve will open, and water will flow into system piping and alarm devices..

Figure 2: Operation Drawing



11. Maintenance and Inspection Test

- 11.1 **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.
- 11.2 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.
- 11.3 In any of the following inspections or testing procedures, if an abnormal condition exists, see Abnormal Conditions for possible cause and corrective action.
- 11.4 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.

Pneumatic Release System.

- 12.6 The Pneumatic Release System Pressure Gauge should indicate minimum of 74 psi (5 barg.).
- 12.7 Pneumatic pressure supply system (including its dehydrator) is functioning properly.
- 12.8 Automatic air or nitrogen-supply is ON, compressor is ON.

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 Pneumatic release system: Drain condensation from release-lines and service the Dehydrator if necessary.

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

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.

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.

