

## Model: 400E-2M

### BERMAD Electrically Controlled Deluge Valve with Easy Lock Manual Reset

#### Installation Operation Maintenance



Model: FP-400E-2M Size: 1½"-12"

## 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

The BERMAD Electrically Controlled Deluge Valve is suitable for automatic water spray or foam deluge systems that include electric detection and piping systems with open nozzles.

This BERMAD Deluge Valve is equipped with an EasyLock Manual Reset (EMR: M in fig.1) device, which locks it into an open position during fire detection and system activation. The Deluge Valve is operated by an electric Solenoid Valve and requires a listed System Control Panel with a compatible electrical fire detection system.

In Fire condition, activation of the detection system causes the System Control Panel to be activated.

This in turn opens the Solenoid Valve (14B fig.1), causing the BERMAD Deluge Valve (1 fig.1) to open, and thereby allowing water to enter the system piping. Whenever either the Solenoid or the Manual Emergency Release (15B fig.1) is activated, the EMR locks the Deluge Valve in its open position. The BERMAD Deluge Valve will close again only when the reset button on the EMR is pressed.

## 2. UL Listed

BERMAD 400E-2M Deluge Valve is UL Listed for sizes 1½" through 8" when installed with specific components & accessories. Refer to the current UL Directory.

The 400E-2M is Lloyd's Register type approved and ABS certified, for sizes 1½" through 12" for Water and Water/Foam fire protection systems.

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

## 3. Installation

### NOTES:

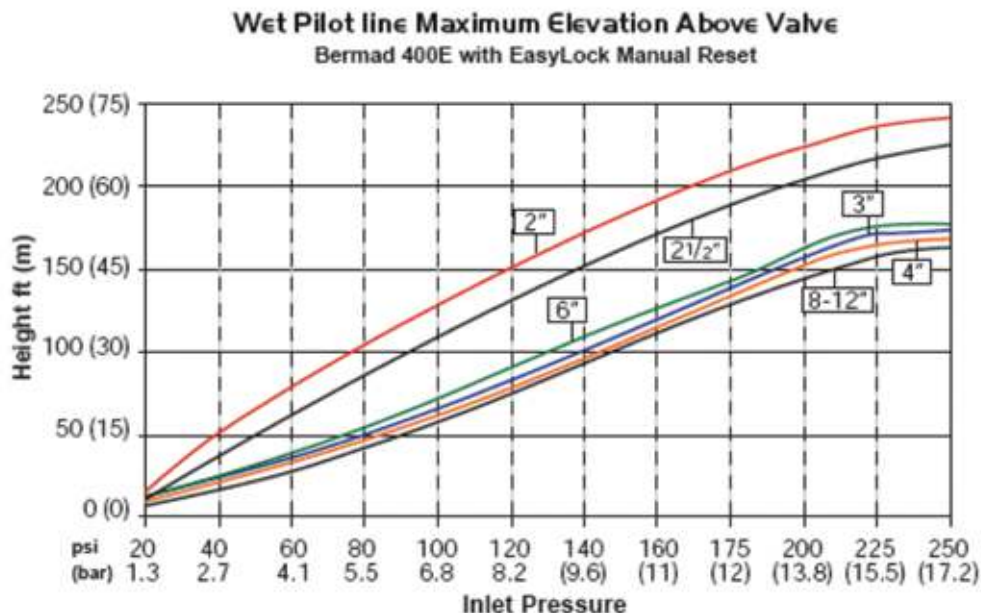
- Wet Pilot height (if mounted) should not exceed the maximum elevation as appears on chart 1, "Maximum Elevation above Valve"
- Any deviation in trim size or arrangement may adversely affect the proper operation of the Deluge Valve.
- All initiating devices (detectors), indicating appliances, releasing devices, wet pilot line actuation devices (such as thermostatic releases, and/or fixed temperature releases), as well as the system control panel, must be compatible and UL listed for use with the particular Deluge System. Refer to current «UL Listed Fire Protection Equipment Directory». Refer also to NFPA 13 or the applicable installation standards, codes and authorities having jurisdiction.

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



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Chart 1:



## 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.  
Not flushing the line may render the valve inoperable.
- 3.3. Install the valve in the pipeline with the valve flow arrow on the body casting in the proper direction.  
Ensure that the valve is positioned so that the cover/actuator can be easily removed for future maintenance.
- 3.4. Ensure that the EMR is Mounted Vertically (with the reset button up), and all other components are positioned correctly as per the appropriate drawing.
- 3.5. The water supply priming line must be connected to the upstream of the system control valve.
- 3.6. Subjected to all other instructions, drawings and technical specifications, which describe BERMAD Deluge Valve, install in their proper positions the components comprising the Deluge Trim Package, according to the drawing relevant to the specific type, hereby enclosed.
- 3.7. 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 Deluge Valve itself.



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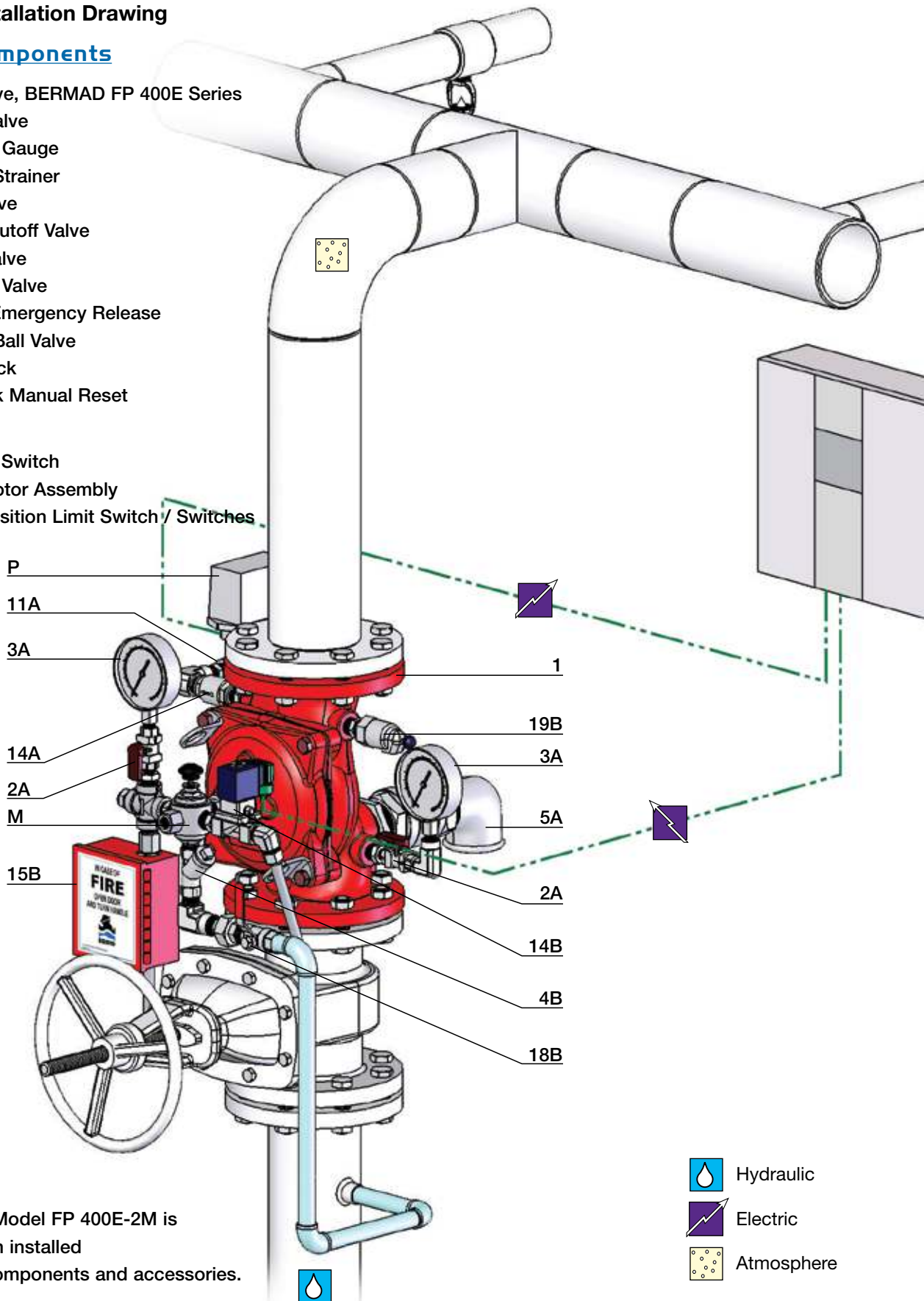
Figure 1: Installation Drawing

**System Components**

- 1 - Main Valve, BERMAD FP 400E Series
- 2A - Gauge Valve
- 3A - Pressure Gauge
- 4B - Priming Strainer
- 5A - Drain Valve
- 11A - Alarm Shutoff Valve
- 14A - Check Valve
- 14B - Solenoid Valve
- 15B - Manual Emergency Release
- 18B - Priming Ball Valve
- 19B - Drip Check
- M - EasyLock Manual Reset

**Optional**

- P - Pressure Switch
- W - Water Motor Assembly
- S - Valve Position Limit Switch / Switches



**UL Listed**  
 The BERMAD Model FP 400E-2M is UL-Listed when installed with specific components and accessories.



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PI4PE14-400E-2M

## 4. Equivalent Length

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

Valve Size	Equivalent Length Value Meter (Ft)
1.5 - 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
8"	45.7 (150) of 8" pipe
10"	108 (187) of 10" pipe

## 5. Optional Equipment

- 5.1. If required, provide an Alarm Pressure Switch (P fig.1), to either activate an electric alarm, or shut down desired equipment. Connect it according to manufacturer instructions.
- 5.2. If required, provide a Water Motor Alarm, it shall be assembled and installed according to instructions within its package.
- 5.3. 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.

## 6. Placing in Service/Resetting the System

- 6.1. Close the main isolating valve upstream of the Deluge valve.
- 6.2. Place the detector circuit in service.
- 6.3. Reset the Solenoid Valve (14B fig.1) by resetting the releasing control panel.
- 6.4. Close all emergency release valves.
- 6.5. Test supervisory circuits in releasing control panel.
- 6.6. Open priming-line valve (18B fig.1). Check that there is no water flow from the Solenoid valve.
- 6.7. Push and hold the EMR's reset button, this allows upstream water pressure to fill the Deluge Valve's control chamber.
- 6.8. When the control chamber pressure gauge (3A fig.1) indicates full upstream pressure and is no longer rising, the release system is reset.
- 6.9. Slowly Open the supply Isolating Valve and check that no water flows into the system.
- 6.10. Depress the Drip Check (19B fig.1) and drain any water from the system side of the Deluge Valve.

The system is now operational and in a standby mode.

Ensure that the following Set Conditions are met.





## Set Conditions (Normal Conditions)

Item	Status
All Main Isolating Valves	<b>OPEN</b> and sealed with tamperproof seals
All Manual Releases	<b>CLOSE</b> position and sealed
Alarm Shut-Off Valve (11A)	<b>OPEN</b> position
Priming Ball Valve (18B)	<b>OPEN</b>
Control-Chamber Gauge	<b>OPEN</b> gauge valve, the Pressure Gauge indicates rate of pressure in Control-Chamber
Upstream Pressure Gauge	<b>OPEN</b> gauge valve, the Pressure Gauge indicates the upstream supply pressure to the Deluge Valve
Drip-Check Device (19B)	<b>VENTED:</b> Push the knob to confirm that there is no leakage.
Control Panel & Detections	Are in service and in a stand-by position.
Releasing Devices	<b>CLOSED</b> with no leaking

## 7. Removing the System from Service

**WARNING:** Do not shutoff the pressure supply and Do not apply lower pressure than normal for maintenance without closing the Main Isolating Supply Valve first.

When taking the Deluge 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.

## 8. Removing Instructions

- 8.1. Shut off the Main Isolating Supply Valve.
- 8.2. Priming Line Cock Valve (18B fig.1) to the Deluge Valve should be closed.
- 8.3. Open the Drain Valve (5A fig.1) to drain all the water from the system.
- 8.4. Release the water pressure from the top chamber of the Deluge Valve by pulling the Emergency Release (15B fig.1), or by tripping the electrical circuit (de-energize the Solenoid Valve (14B fig.1).
- 8.5. If auxiliary power is used, disconnect all power supply and batteries.
- 8.6. Place "Fire Protection System Out of Service" signs in the area protected by the system.

## 9. Operation

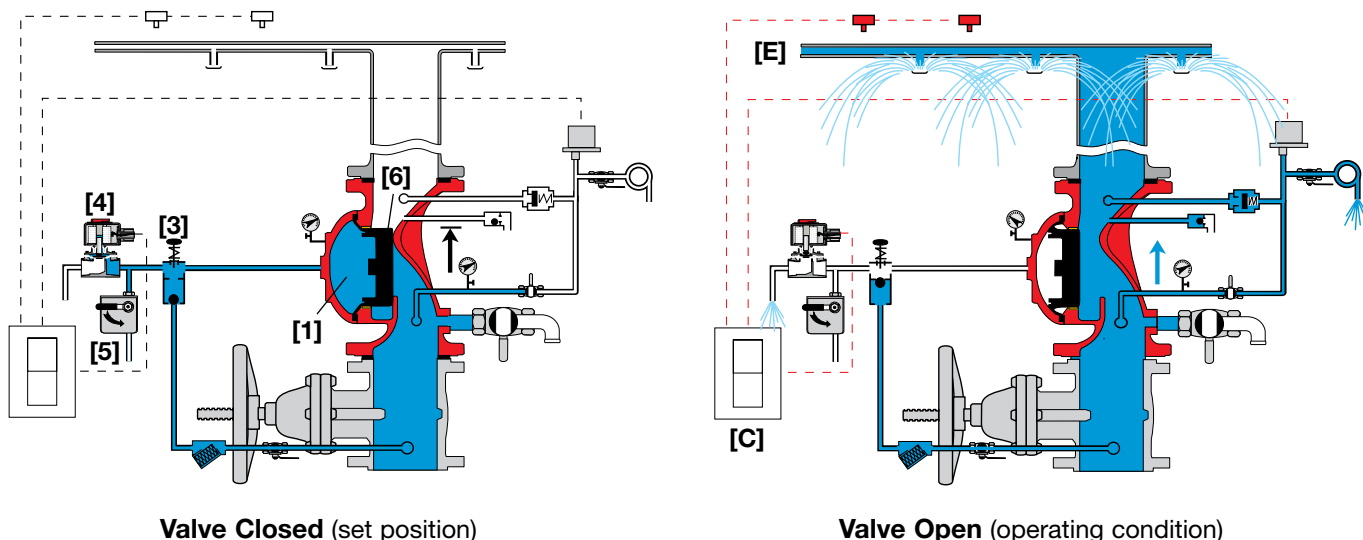
In the SET position, the line-pressure supplied to the main valve's control chamber via the priming line (2 fig. 2) and through the EMR (3 fig. 2), is trapped by the EMR's internal check valve, by a closed 2-Way Solenoid Valve (4 fig. 2), and by a closed Manual Emergency Release (5 fig. 2). The trapped pressure holds the main valve's diaphragm and plug against the valve seat (6 fig. 2), sealing it drip-tight and keeping the system piping dry.

In FIRE or test conditions, an electric detection system, through a control panel, triggers the Solenoid Valve to an open position. Pressure is released from the control chamber by the opened Solenoid Valve or Manual Emergency Release. The EMR prevents line-pressure from entering the control chamber, latching the main valve open and allowing water to flow into the system piping and to the alarm devices.

**WARNING:** Whenever the handle of the Emergency Manual Release (5 fig.2) is pulled, the Deluge Valve opens, and water flows into the system's piping and to the alarm devices, the Deluge Valve will close again only when the handle of the Emergency Manual Release is returned to its original position and the reset button on the EMR is manually pressed.



**Figure 2: Operation Drawing**



## 10. Maintenance and Inspection Test

### WARNINGS:

- Do not shutoff the pressure supply and Do not apply lower pressure than normal for maintenance without closing the Main Isolating Supply Valve first.
- 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.

10.1 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.

10.1. In any of the following inspections or testing procedures, if an abnormal condition exists, see Abnormal Conditions for possible cause and corrective action.

10.2. See NFPA Pamphlet No. 25 and also relevant publications by authorities having jurisdiction.

## 11. Weekly Inspection

11.1. The system should be checked for Set Condition. See above “Set Condition (Normal condition)”.

11.2. Observe the upstream pressure gauge (3A fig.1): it should indicate that the normal supply of water pressure to the Deluge Valve is maintained.

## 12. Monthly Inspection and Test

12.1. Complete Weekly Inspection.

12.2. Test the water-motor alarm and/or electric alarm, by turning the alarm test valve (1A) to the open position. The alarm should sound. Turn to close position.

12.3. Depress the Drip Check (19B fig.1) to release accumulated water and to check main valve leakage (Significant water accumulation on the system side may indicate a sealing problem).

## 13. Semi-Annual Inspection

13.1. Complete Weekly and Monthly Inspection and Test.

13.2. Inspect the electric detection system and electric release control panel, as suggested by the release control panel manufacturer.



## 14. Annual Inspection and Test

- 14.1. Complete Weekly, Monthly and Semi-Annual inspections.
- 14.2. Place the system out of service (See "Removing the System from Service" above).
- 14.3. Trip the release-line system.
- 14.4. The interior of the Deluge Valve should be cleaned and inspected.
- 14.5. Place the system back in service. (See instructions "Placing the System in Service").
- 14.6. The Deluge Valve must be activated at full flow.
- 14.7. Note: The system will be flooded! Take all necessary precautions to drain water and prevent damage in the area protected by the system.
- 14.8. Trip-test the deluge system with an electric release control panel.  
The release may be tripped by the method suggested by the release control panel manufacturer.
- 14.9. The manual emergency release handle (15B fig.1) is to be pulled.  
The Deluge Valve should open and discharge water. Observe upstream Pressure Gauge (3A fig.1) while full flow is on. Inspect all system nozzles.
- 14.10. Take all additional measures as required by NFPA-25 "Standard for the Inspection Testing and Maintenance of Water-Based Fire Protection Systems."
- 14.11. Clean the priming strainer (4B fig1) prior to resetting the Deluge Valve.

## 15. Abnormal Conditions

- 15.1. Alarm Pressure Switch Fails to Sound
  - A. Check for obstructions in the alarm test line.
  - B. Clean the alarm-line strainer (if a water motor alarm is installed).
  - C. Make certain the alarm is free to operate.
  - D. Test the electrical circuit to the electric alarm (if utilized).
- 15.2. False Trip  
Check for any of the following possible causes:
  - A. Check and test the electrical circuit to the Solenoid Valve (14B fig.1)
  - B. Check for Malfunctioning EMR device.
- 15.3. Leakage through Deluge Valve  
Check for any of the following possible causes:
  - A. Check for clogged priming strainer (4B fig.1).
  - B. Leaking control trim system.
  - C. Damaged deluge valve internal elastomers or seat.
- 15.4. Deluge Valve Will Not Reset  
Check for any of the following possible causes:
  - A. The EMR Device is clogged or not reset properly
  - B. Check for clogged priming strainer (4B fig.1), the screen should be properly cleaned.
  - C. Closed priming valve (18B fig.1).
  - D. Check for Foreign object lodged between seal and valve seat.
  - E. Control Panel is not reset. Check for Faulty circuits, using manufacturer instructions.
- 15.5. 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.

