Bermad Hydraulically Controlled
Deluge Valve with EasyLock Manual Reset

Model: 400E-1M/700E-1M

INSTALLATION
OPERATION
MAINTENANCE

Application Engineering

BERMAD

Safety First

BERMAD believes that the safety of personnel working with and around our equipment is the most important consideration, read all safety information below before attempting to perform any maintenance function. Only authorized personnel should perform all maintenance tasks. Comply with all approved and established precautions for working with the equipment and/or environment. When performing a procedure, follow the steps in succession without omission.

Description

Bermad Hydraulically Controlled Deluge valve is suitable for automatic water spray or foam deluge systems that include wet pilot-line with closed fusible plugs (thermal releases), and piping systems with open nozzles. The typical wet pilot-line is installed in a covered area and connected to the valve trim. In fire conditions, operation of a releasing device on the wet pilot system opens the Deluge Valve, allowing water to enter the system piping. Water will flow from any open nozzles on the system. Deluge systems are commonly used where, when the system operates, it is desirable to simultaneously spray water or foam from all open nozzles on the system.

Approvals/Listings

The Bermad Deluge Valve is UL Listed only when installed with specific components & accessories. Refer to current UL Directory. Consult the manufacturer for any component approval recently to appear in the UL fire protection equipment directory.

Installations

NOTES:

- Wet Pilot height should not exceed that appearing on "Maximum Elevation Above Valve" appendix.
- Any deviation in trim size or arrangement may adversely affect the proper operation of the Deluge Valve.
- All the wet pilot system devices, such as Thermostatic releases and/or fixed temperature releases, must be compatible and UL listed for use with the particular Deluge System. Refer to current "UL Listed Fire Protection Equipment Directory".

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

Installation Instructions

1. Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
2. Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Not flushing the line may result in the valve being inoperable.
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.
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.
5. The water supply priming line must be connected to the upstream of the system control valve.
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.
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.

Table 2: Deluge Valve Equivalent Length Value (Steel Pipe), for use in hydraulically calculated systems

400E

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
8”	45.7 (150) of 8” pipe

700E

Valve Size	Equivalent Length Value Meter (Ft)
2”	11 (36) of 2” pipe
2½”	26.2 (86) of 2½” pipe
3”	17.4 (57) of 3” pipe
4”	28.7 (94) of 4” pipe
6”	32.6 (107) of 6” pipe
8”	49.1 (161) of 8” pipe
10”	64.3 (211) of 10” pipe

Ancillary/Optional Equipment

- If required, provide a Water Motor Alarm, it shall be assembled and installed according to instructions within it’s package
- If required, provide an Alarm Pressure Switch (P), to either activate an electric alarm, or shut down desired equipment. Connect it with according to manufacturer instructions.
- It is a 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.

Operation

Principle of Operation

In the SET position, the line-pressure supplied to the main valve’s control chamber (1) via the priming line (2) and through an EasyLock Manual Reset device (M),(EMR), is trapped by the EMR's internal check valve, the closed wet pilot-line (4), and a closed Manual Emergency Release (15B). The trapped pressure holds the main valves diaphragm and plug against the valve seat (6), sealing it drip-tight and keeping the system piping dry.
In FIRE or TEST conditions, water is released from the control chamber through the opened thermal release of the wet pilot-line or Manual Emergency Release. The EMR prevents line-pressure from entering the control chamber, allowing the main valve to latch open and water to flow into the system piping and to the alarm device.
WARNING: Whenever the handle of the Emergency Manual Release (15B) 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 reset button on the EMR is manually pressed.

Placing in Service/Resetting the System

1. Check the entire release system for leaks. Replace any fused temperature-release plugs.
2. **Close** all emergency release valves.
3. **Open** the priming-line valve (18B).
4. **Push** and hold the **EMR**’s reset button, this allows upstream water pressure to fill the Deluge Valve’s control chamber and the wet pilot system.
5. When the control chamber pressure gauge (3A) indicates full service-line pressure and is no longer rising, the release system is reset.
6. Check the entire release system for leaks.
7. Slowly **Open** the supply Isolating Valve and check that no water flows into the system.
8. **Depress** the Drip Check (19B) and drain any water from the system side of the Deluge Valve.

The system is now operational and in a stand-by mode.

Ensure that the following Set Conditions are met.

Set Conditions (Normal Conditions)

Item	Status
All Main Isolating Valves	**OPEN** and sealed with tamperproof seals
All Manual Releases	**CLOSE** position and sealed
Alarm Shut-Off Valve (11A)	**OPEN** position
Priming Ball Valve (18B)	**OPEN**
Control-Chamber Gauge	**OPEN** gauge valve, the Pressure Gauge indicates rate of pressure in Control-Chamber and Wet Pilot Line
Upstream Pressure Gauge	**OPEN** gauge valve, the Pressure Gauge indicates the upstream supply pressure to the Deluge Valve
Drip-Check Device (19B)	**VENTED**: Push the knob to confirm that there is no leakage
Wet Pilot Line System	In service – no leaks in the system
Releasing Devices	**CLOSED** with no leaking

Maintenance

Removing The System From Service

WARNING: When taking 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.

Removing Instructions

1. **Shut off** the main supply-isolating valve.
2. **Close** the Priming line valve (18B) to Deluge Valve Control chamber.
3. **Open** all drain valves.
4. **Release** the water pressure from the control chamber of the Deluge Valve by pulling the Manual emergency release (15B).
5. Place "Fire Protection System Out of Service" signs in the area protected by the system.

Inspection and Testing

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.
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.
3. In any of the following inspections or testing procedures, if an abnormal condition exists, see Abnormal Conditions for possible cause and corrective action.
4. See NFPA Pamphlet No. 25 and also relevant publications by authorities, having jurisdiction.

Weekly Inspection

1. The system should be checked for Set Condition. See above "*Set Condition (Normal condition)*".
2. Observe the upstream pressure gauge (3A) it should indicate that the normal supply of water pressure to the Deluge Valve is maintained.

Monthly Inspection and Test

1. Complete Weekly Inspection.
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.
3. Depress the Drip Check (19B) to release accumulation of water and to check main valve leakage (Significant water accumulation on the system side may indicate a sealing problem).

Annual Inspection and Test

1. Complete Weekly and Monthly inspections.
2. Place the system out of service (See “Removing The System From Service” above).
3. Trip the release-line system.
4. The interior of the Deluge Valve should be cleaned and inspected.
5. Place the system back in service. (See instructions "Placing the System in Service").
6. The Deluge 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 system.

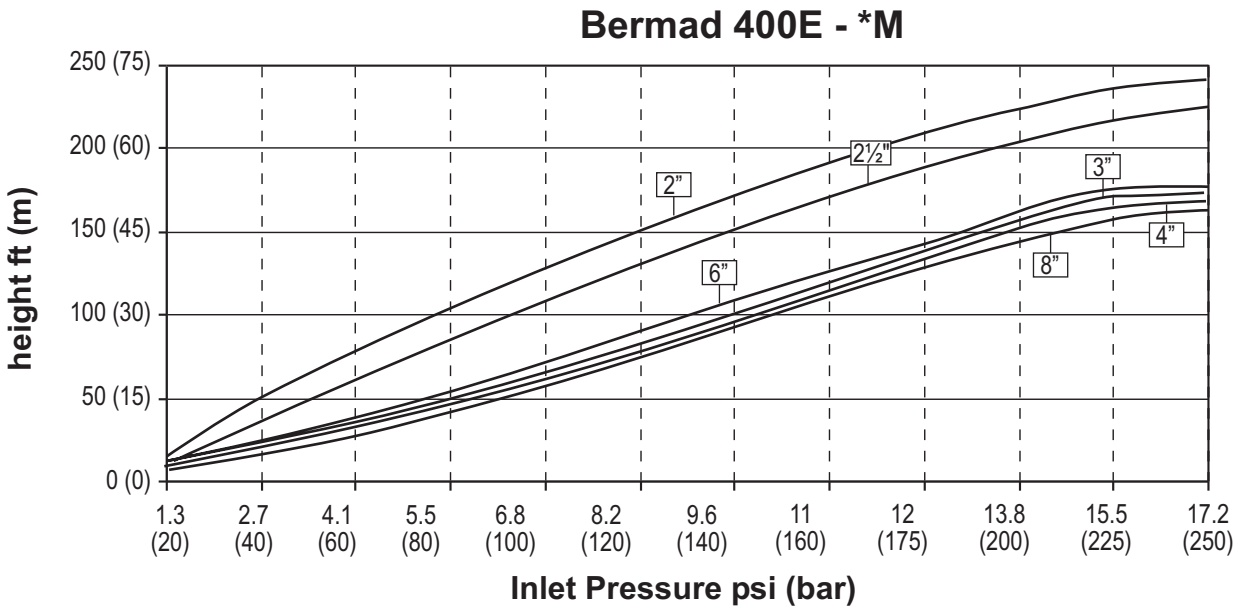
7. The manual emergency release handle (15B) is to be pulled. The Deluge Valve should open and discharge water. Observe upstream Pressure Gauge while full flow is on. Inspect all system nozzles.
9. Take all additional measures as required by NFPA-25 "Standard for the Inspection Testing and Maintenance of Water-Based Fire Protection Systems."
9. Clean the priming strainer (4B) prior to resetting the Deluge Valve.

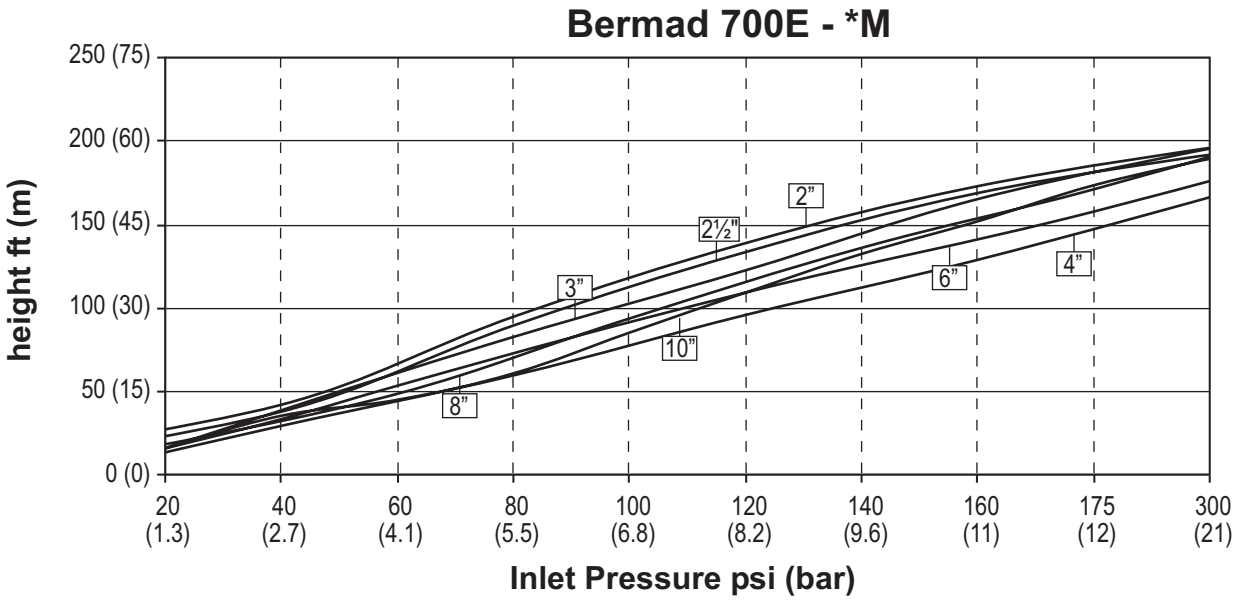
Abnormal Condition – Troubleshooting

1. Alarm 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).
2. False Trip
   - A. Check and test the electrical circuit to the Solenoid Valve (14B)
   - B. Check for Malfunctioning EMR device.
3. Leakage Through Deluge Valve
   - A. Check for clogged priming strainer (4B).
   - B. Leaking control trim system or leaking wet pilot line.
   - C. Damaged deluge valve internal elastomer or seat.
4. Deluge Valve Will Not Reset
   - A. The EMR Device is clogged or not reset properly
   - B. Check for clogged priming strainer (4B), the screen should be properly cleaned.
   - C. Closed priming valve (18B).
   - C. Check for a foreign object lodged between seal and valve seat.
   - D. Check for leaking wet pilot line.
5. Difficulty in Performance

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

Appendix: Maximum Elevation Above Valve for Bermad Deluge Valve with EasyLock Manual Reset



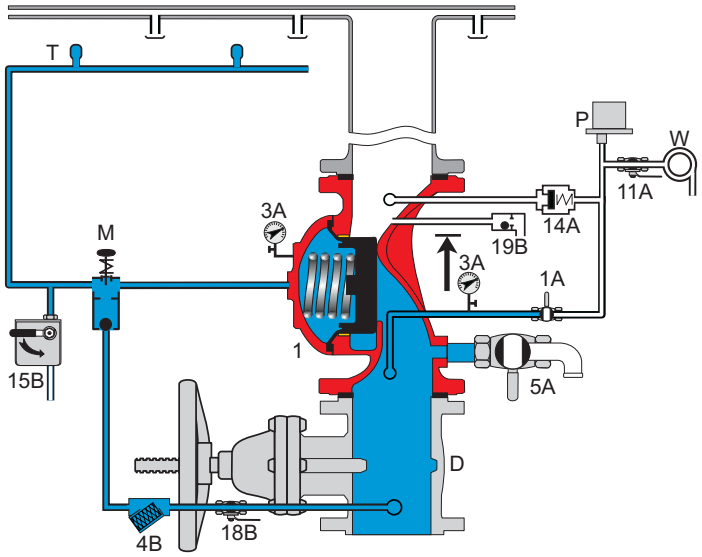


Note: *Applied to models 1M, 2M and 2MC only.

Model 400E 1M
Hydraulically Controlled Deluge Valve with EasyLock Manual Reset

Sequence of Operation

Closed Position



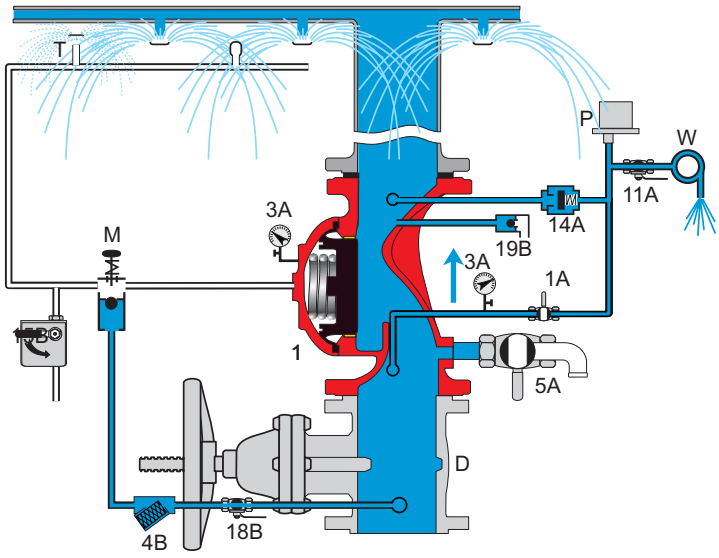
Legend:

(1)	Bermad 400E Main Deluge Valve
(1A)	Alarm Test Valve
(3A)	Pressure Gauge
(4B)	Priming Stainer
(5A)	Drain Valve
(11A)	Alarm Shutoff Valve
(14A)	Check Valve
(15B)	Manual Emergency Release Assy.
(18B)	Priming Ball Valve
(19B)	Drip Check
(M)	Manual Reset Device Assy.

Other System Items:

(T)	Thermal Fusable Plug
(P)	Pressure Switch (Option)
(W)	Water Motor Alarm (Option)

Open / Operation



Water under pressure

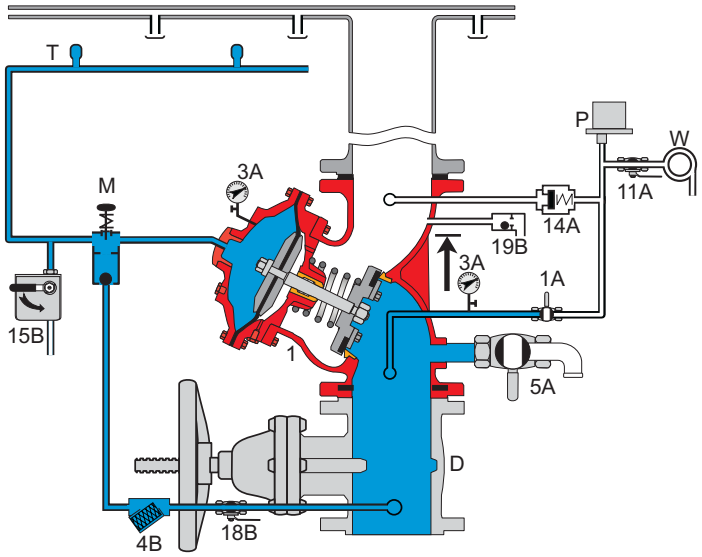
Vented to atmosphere

Figure 1

Model 700E 1M
Hydraulically Controlled Deluge Valve with EasyLock Manual Reset

Sequence of Operation

Closed Position



Legend:

(1)	Bermad 700E Main Deluge Valve
(1A)	Alarm Test Valve
(3A)	Pressure Gauge
(4B)	Priming Stainer
(5A)	Drain Valve
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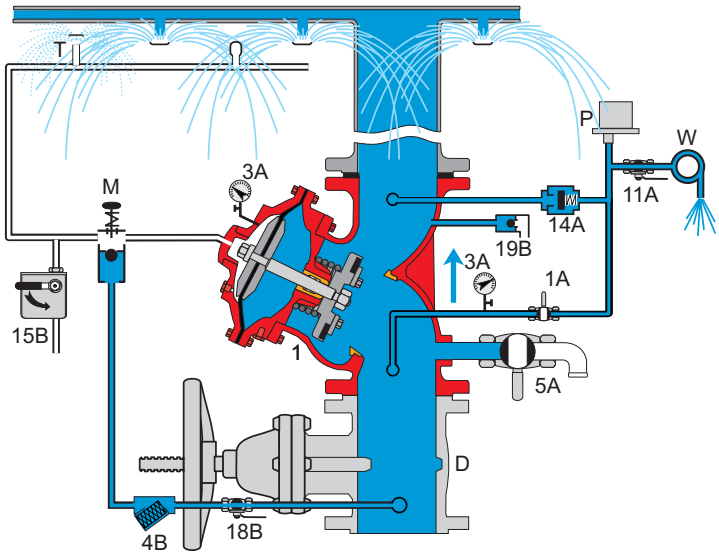
(15B)	Manual Emergency Release Assy.
(18B)	Priming Ball Valve
(19B)	Drip Check
(M)	Manual Reset Device Assy.

Other System Items:

(T)	Thermal Fusable Plug
(P)	Pressure Switch (Option)
(W)	Water Motor Alarm (Option)

Open / Operation



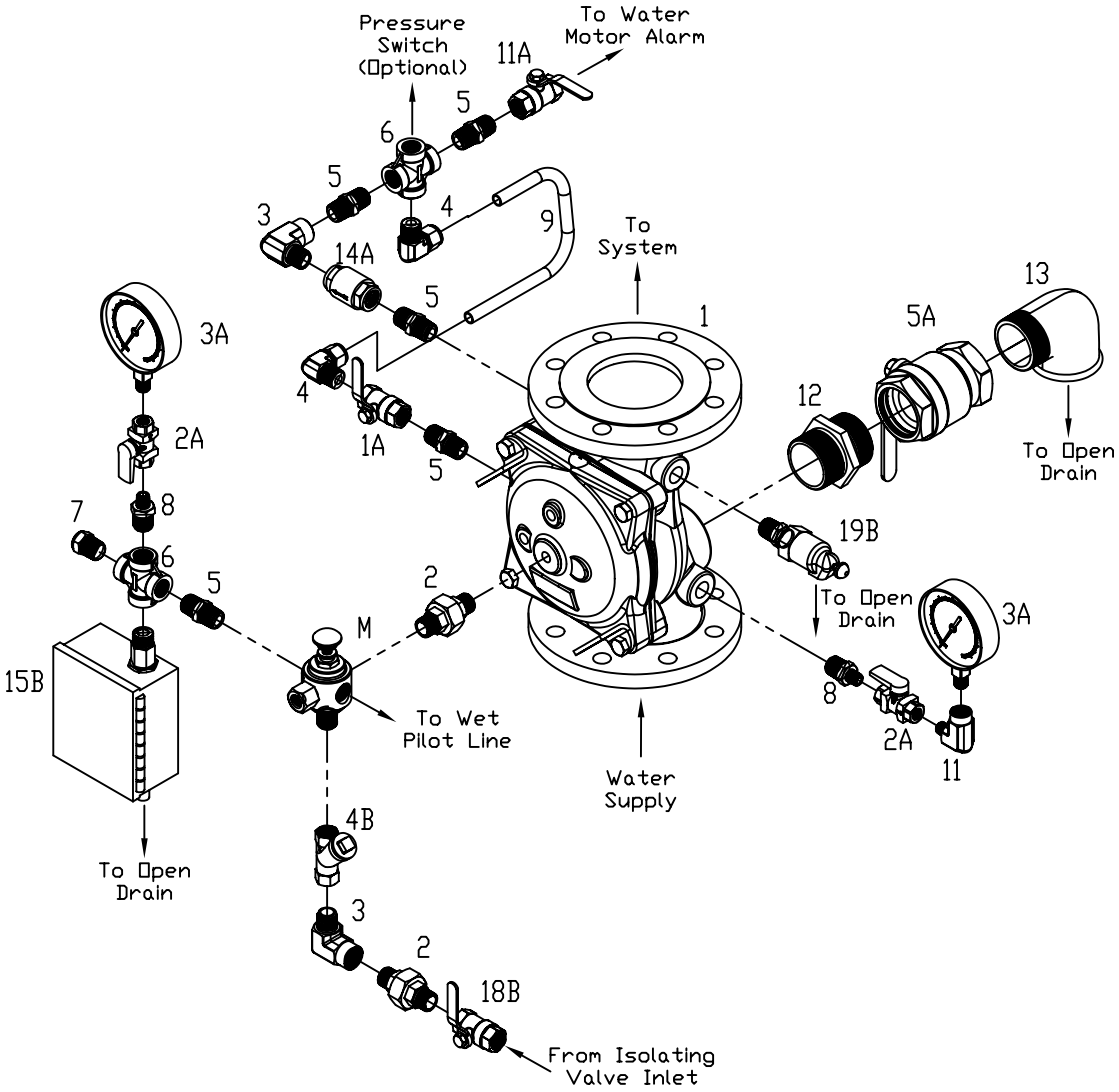
Water under pressure

Vented to atmosphere

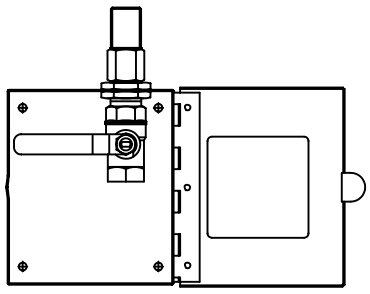
Figure 1

BERMAD Model: 400E 1M
Hydraulically Controlled Deluge Valve
with EasyLock Manual Reset

Trim Illustration Vertical Installation



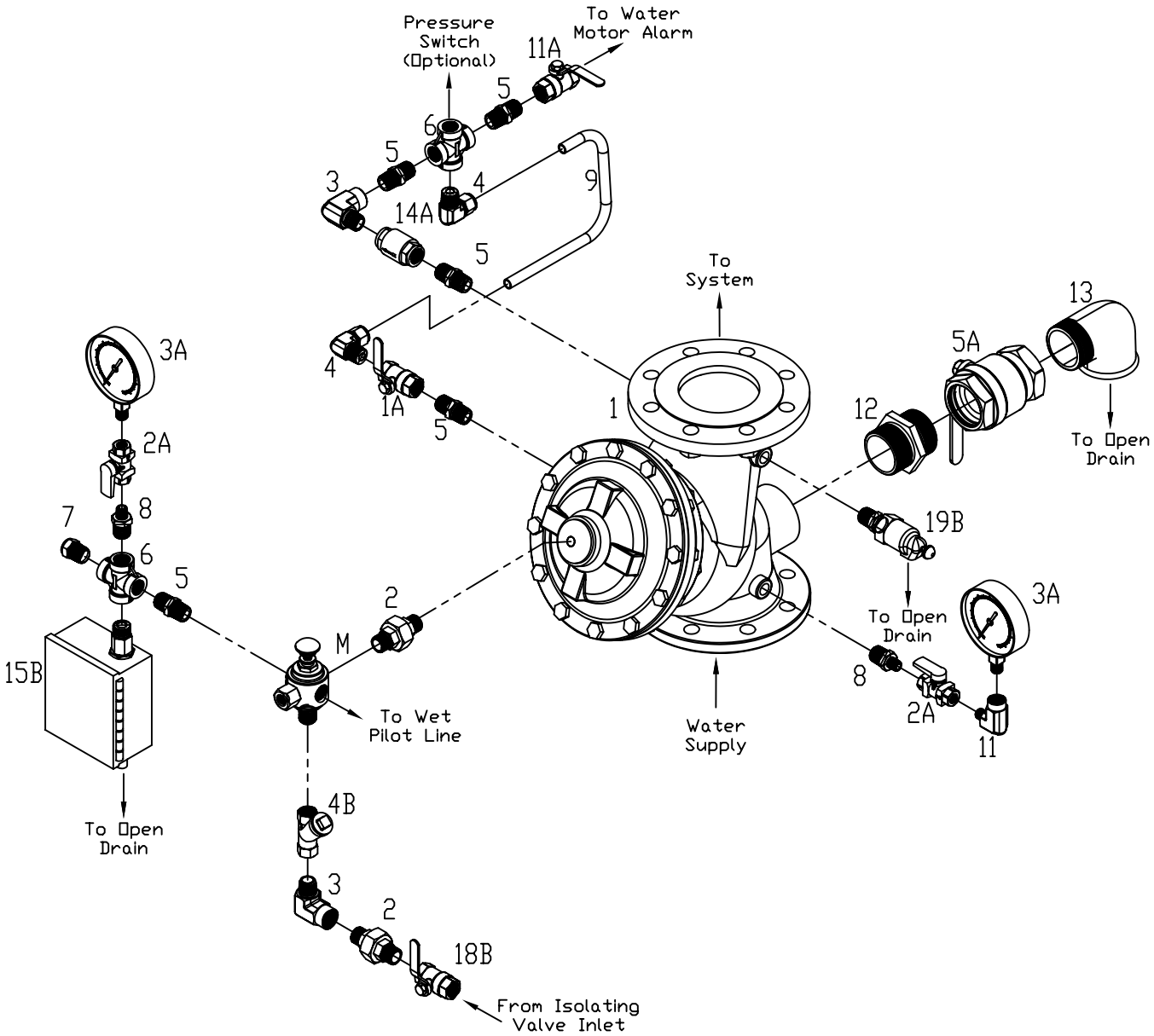
15B - Emergency Manual Release



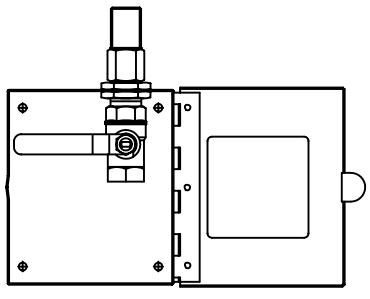
NOTE:
Valve must be trimmed as shown.
Any deviation in trim size or arrangement may affect the proper operation of the valve.

Model: 700E 1M
Hydraulically Controlled Deluge Valve with EasyLock Manual Reset

Trim Illustration Vertical Installation



15B - Emergency Manual Release



NOTE:
Valve must be trimmed as shown.
Any deviation in trim size or arrangement may affect the proper operation of the valve.

Bermad Hydraulically Controlled Deluge Valve
with EasyLock Manual Reset
Model: FP-400E-1M / 700E-1M
Trim Component List

Item	Description	Qty	Note
1	MAIN DELUGE VALVE	1	
2	UNION 1/2"	2	
3	STREET ELBOW 1/2"	2	
4	MALE ELBOW 1/2"X1/2"	2	
5	NIPPLE 1/2"	5	
6	CROSS 1/2"	2	
7	PLUG 1/2"	1	
8	REDUCING NIPPLE 1/2"X1/4"	2	
9	TUBE 1/2"	1	
11	STREET ELBOW 1/4"	1	
12	DRAIN NIPPLE	1	4
13	DRAIN ELBOW	1	4
1A	ALARM TEST VALVE - 1/2" BALL VALVE	1	
2A	GAUGE VALVE 1/4"	2	
3A	PRESSURE GAUGE 4"	2	2
4B	PRIMING STRAINER 1/2"	1	
5A	DRAIN VALVE	1	1,4
11A	ALARM SHUTOFF VALVE - 1/2" BALL VALVE	1	
14A	CHECK VALVE 1/2"	1	
15B	MANUAL EMERGENCY RELEASE MODEL-D	1	1
18B	PRIMING VALVE - 1/2" BALL VALVE	1	
19B	DRIP CHECK	1	5
M	MANUAL RESET DEVICE ASSY.	1	5

Optional System Items:

P	PRESSURE SWITCH	1	5
W	WATER MOTOR ALARM	1	5

Notes:

(1) Shall be UL Listed in accordance with UL 258
(2) Shall be UL Listed in accordance with UL 393
(3) Shall be UL Listed in accordance with UL 753
(4) For 2" : ¾" Drain Valve
For 2½" &3" : 1½" Drain Valve
For 4" and larger : 2" Drain Valve
(5) Shall be UL Listed for fire protection service
(6) Construction material Brass/S.S 316 or corrosion resistant equivalent