

## Electrically Controlled Deluge Valve with Local Reset

### Model FP 400E - 2M

The BERMAD model 400E-2M is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400E-2M is activated by a 2-Way solenoid valve. Once open the 400E-2M latches open until locally reset.

The optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.

The 400E-2M is ideal for systems with open nozzles for water or foam discharge and is available with electrical components to suit any hazardous location.



(for Illustration Only)

### Benefits and Features

#### ■ Safety and reliability

- Time proven, simple design, fail-safe actuation
- Single piece, rugged elastomeric diaphragm seal - VRSD technology
- Obstacle-free, uninterrupted flow path
- No mechanical moving parts
- 2-Way Solenoid Valve, UL429A Listed
- Latches open: Remains open until reset locally

#### ■ Quick and easy maintenance

- Designed for high reliability and easy maintenance
- In-line serviceable
- Fast and easy cover removal

### Approvals



UL-Listed  
Special System Water Control  
Valves, Deluge Type (VLFT)  
Sizes 1½" - 10"



Det Norske Veritas  
Type Approval  
Sizes 1½" - 12"



American Bureau of Shipping  
Type Approval  
Sizes 1½" - 12"



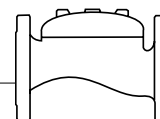
Lloyd's Register  
Type Approval  
Sizes 1½" - 10"

### Typical Applications

- Electric fire detection systems with control panels
- Automatic water spray
- Foam applications
- Corrosive water systems

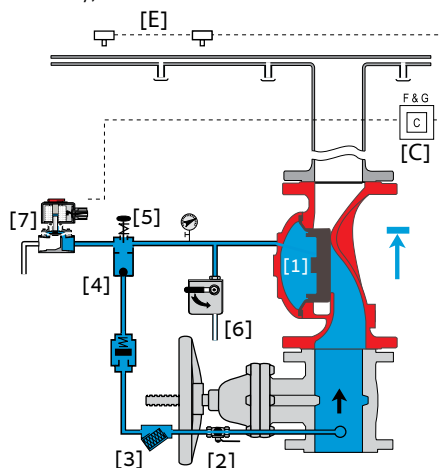
### Additional Features

- Valve position limit switches
- Sea water compatibility
- Alarm / Pressure Switch

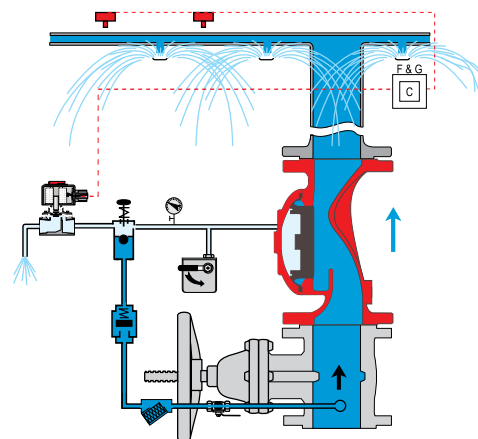


## Operation

(for Illustration Only)



**Valve Closed** (normal conditions)



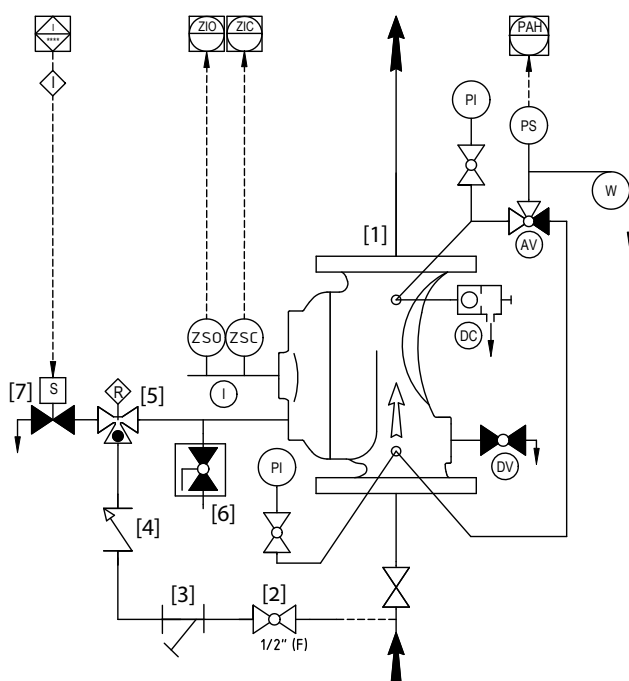
**Valve Open** (fire conditions)

The BERMAD model 400E-2M is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] and strainer [3], and is then trapped in the control chamber by the check valve feature [4] of the easy-lock manual reset [5], the closed manual emergency release [6], and the closed solenoid valve [7]. The water pressure trapped in the control chamber of the deluge valve holds the diaphragm against the valve seat, sealing it drip-tight and keeping the system pipes dry.

Under FIRE conditions, water pressure is released from the control chamber, either with the manual emergency release, or by the solenoid switching to the release position in response to a signal from the heat detection system [E] by way of the fire & gas control system [C]. This opens the deluge valve allowing water to flow into the system piping and to the alarm devices. The 400E 2M latches open until reset locally by depressing the Easy-Lock button.

## System P&ID



## Components

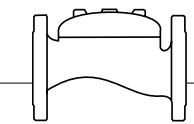
- 1 BERMAD 400E Deluge Valve
- 2 Priming Ball Valve
- 3 Priming Strainer
- 4 Check Valve
- 5 Easy-Lock – Manual Reset
- 6 Manual Emergency Release
- 7 2-Way Solenoid

## Optional System Items

- ZS Limit Switch Assembly
- I Visual Indicator
- PS Pressure Switch
- W Water Motor Alarm
- PI Pressure Gauge\*
- DC Automatic Drip Check Valve\*
- DV Drain Valve\*
- AV 3-Way Alarm Ball Valve\*

\* Included with suffix A in valve code (drain and indicating components)

See code designations and additional Factory Fitted Options on page 4



## System Installation

A typical installation of the BERMAD model 400E-2M, features automatic actuation by way of a 2-Way solenoid. It can also be triggered electrically by a signal from a fire & gas control system or an on-site emergency pushbutton. When open and fitted with a limit switch the valve can send a feedback signal to a remote valve status monitoring system.

## Optional System Items



Water Motor Alarm



Limit Switch



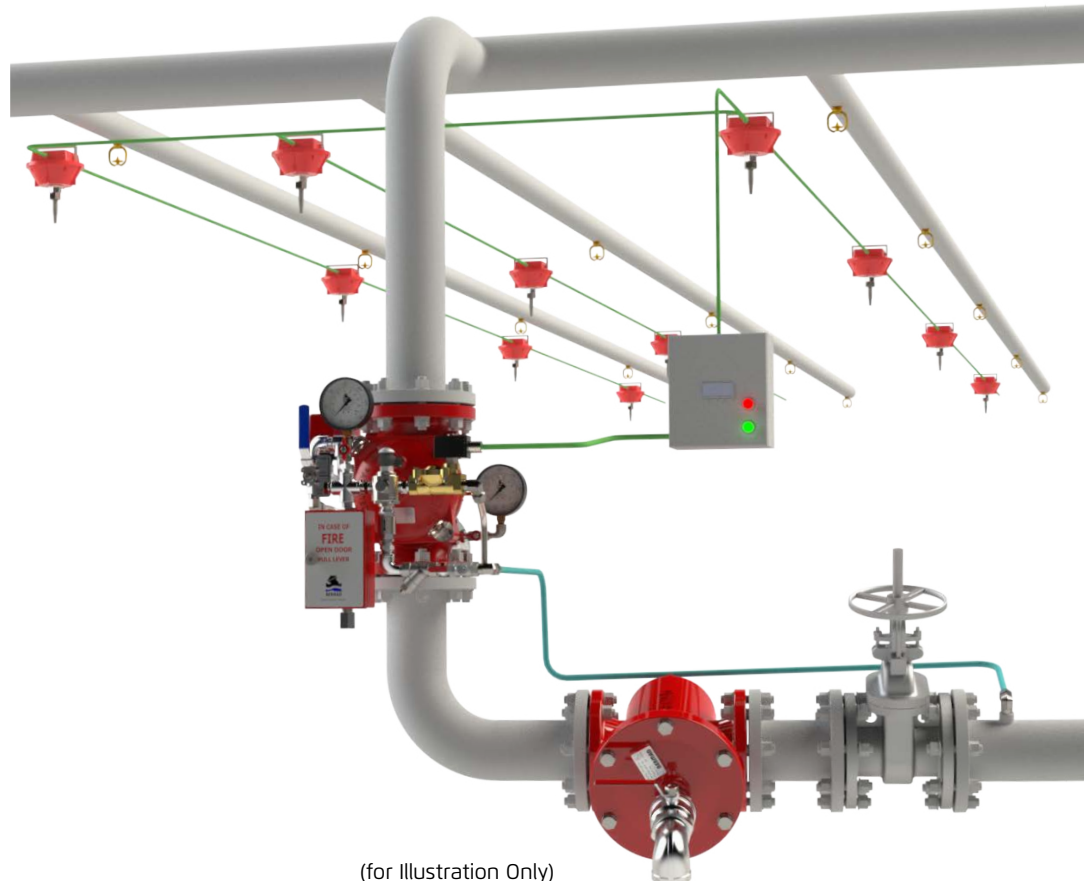
Pressure Gauges



Pressure Switch



Strainer



## Suggested Specifications

The deluge valve shall be UL-listed.

The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.

Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial seal disk.

The diaphragm assembly shall be the only moving part.

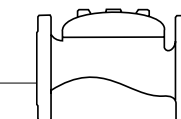
The deluge valve shall include EasyLock Manual Reset from SS316, a 2-Way UL429A Listed solenoid valve rated to 25 bar/365 psi working pressure with a tolerance of 35% below of the rated voltage, a Y-type strainer, SS316 tubing and fittings, drain valve, an automatic drip-check with manual override, 4-inch pressure gauges, and a manual emergency release housed in a 316 stainless steel box.

Removing the valve cover for inspection and full maintenance shall be in line and not require removal of the valve from the piping line.

The deluge valve and its entire control trim shall be supplied pre-assembled and hydraulically tested in compliance to the UL 260 standard, by a factory certified to ISO 9000 and 9001 quality assurance standards.

# BERMAD Fire Protection

Model FP 400E - 2M



400E Series

## Technical Data

### Available Sizes (inch)

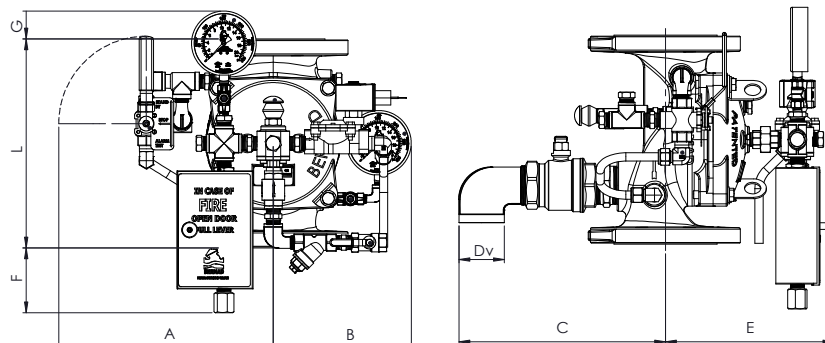
- Flanged - 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- Grooved - 2, 3, 4, 6 & 8"

### Pressure Rating

- 17.2 bar / 250 psi

### Elastomer

- HTNR - Fabric Reinforced High Temperature Compound - See engineering data



Valve Size	1½" DN40		2" DN50		2½" DN65		3" DN80		4" DN100		6" DN150		8" DN200		10" DN250		12" DN300	
Unit	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L #150	205	8.1	205	8.1	205	8.1	257	10.1	320	12.6	415	16.3	500	19.7	605	23.8	725	28.5
L Grooved	-	-	205	8.1	-	-	250	9.8	320	12.6	415	16.3	500	19.7	-	-	-	-
A	313	12.3	313	12.3	325	12.8	345	13.6	328	12.9	349	13.7	383	15.1	396	15.6	438	17.2
B	191	7.5	191	7.5	196	7.7	205	8.1	212	8.3	204	8.0	270	10.6	280	11.0	333	13.1
C	199	7.8	199	7.8	253	10.0	266	10.5	316	12.4	347	13.7	364	14.3	384	15.1	422	16.6
ØDv	¾"		¾"		1½"		1½"		2"		2"		2"		2"		2"	
E	203	8.0	203	8.0	205	8.1	238	9.4	258	10.2	334	13.1	385	15.2	382	15.0	513	20.2
F	157	6.2	157	6.2	157	6.2	131	5.2	99	3.9	52	2.0	9	-	-	-	-	-
G	100	3.9	100	3.9	100	3.9	74	2.9	43	1.7	-	-	-	-	-	-	-	-
Kg / lb	14 / 31		15 / 33		17 / 37		28 / 62		40 / 88		84 / 185		147 / 323		162 / 356		242 / 532	

**IMPORTANT:** Dimensions for the trim envelope or extents refer to a vertical orientation and may vary with specific component positioning - allow a tolerance of at least ±10%.

## Valve Code Designations

FP	6"	400Y-2M	03	V	C	A5	PR	4DC	NN	N6nW																																																																																																																																										
<table><tr><th>Category</th><th>code</th></tr><tr><td>Standard</td><td>FP</td></tr><tr><td>Seawater</td><td>FS</td></tr><tr><td>Foam Concentrate</td><td>FC</td></tr></table>	Category	code	Standard	FP	Seawater	FS	Foam Concentrate	FC	<table><tr><th>Valve Size</th><th></th></tr><tr><td>1½"</td><td>40 mm</td></tr><tr><td>2"</td><td>50 mm</td></tr><tr><td>3"</td><td>80 mm</td></tr><tr><td>4"</td><td>100 mm</td></tr><tr><td>6"</td><td>150 mm</td></tr><tr><td>8"</td><td>200 mm</td></tr><tr><td>10"</td><td>250 mm</td></tr><tr><td>12"</td><td>300 mm</td></tr></table>	Valve Size		1½"	40 mm	2"	50 mm	3"	80 mm	4"	100 mm	6"	150 mm	8"	200 mm	10"	250 mm	12"	300 mm	<table><tr><th>Installation</th><th>code</th></tr><tr><td>Vertical</td><td>V</td></tr><tr><td>Horizontal</td><td>H</td></tr></table>	Installation	code	Vertical	V	Horizontal	H	<table><tr><th>Material Body &amp; Cover<sup>(1)</sup></th><th>code</th></tr><tr><td>Ductile Iron A356<sup>(2)</sup></td><td>C</td></tr><tr><td>Steel ASTM A216 WCB<sup>(2)</sup></td><td>S</td></tr><tr><td>Stainless Steel 316</td><td>N</td></tr><tr><td>Nickel Al Bronze C95800</td><td>U</td></tr><tr><td>Super Duplex Grade 5A</td><td>D</td></tr></table>	Material Body & Cover <sup>(1)</sup>	code	Ductile Iron A356 <sup>(2)</sup>	C	Steel ASTM A216 WCB <sup>(2)</sup>	S	Stainless Steel 316	N	Nickel Al Bronze C95800	U	Super Duplex Grade 5A	D	<table><tr><th>Coating</th><th>code</th></tr><tr><td>Polyester Red</td><td>PR</td></tr><tr><td>High Build Epoxy</td><td>ER</td></tr><tr><td>Uncoated</td><td>UC</td></tr></table>	Coating	code	Polyester Red	PR	High Build Epoxy	ER	Uncoated	UC	<table><tr><th>Voltage - Main Valve N.O or N.C*</th><th></th></tr><tr><td>24VDC - N.C.</td><td>4DC</td></tr><tr><td>24VDC - N.O.</td><td>4DO</td></tr><tr><td>110VDC - N.C.</td><td>5DC</td></tr><tr><td>110VDC - N.O.</td><td>5DO</td></tr><tr><td>110-120/AC - N.C.</td><td>5AC</td></tr><tr><td>110-120/AC - N.O.</td><td>5AO</td></tr><tr><td>220-240/AC - N.C.</td><td>2AC</td></tr><tr><td>220-240/AC - N.O.</td><td>2AO</td></tr></table>	Voltage - Main Valve N.O or N.C*		24VDC - N.C.	4DC	24VDC - N.O.	4DO	110VDC - N.C.	5DC	110VDC - N.O.	5DO	110-120/AC - N.C.	5AC	110-120/AC - N.O.	5AO	220-240/AC - N.C.	2AC	220-240/AC - N.O.	2AO	<table><tr><th>Speed Control</th><th>code</th></tr><tr><td>Opening speed</td><td>02</td></tr><tr><td>Closing speed</td><td>01</td></tr><tr><td>Opening &amp; 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**Notes:**

<sup>(1)</sup> Other materials available, see engineering data

<sup>(2)</sup> Coated internally and externally

<sup>(3)</sup> Supplied loose

<sup>(4)</sup> Consult BERMAD for availability.

### Notes:

- <sup>(1)</sup> Other materials available, see engineering data  
<sup>(2)</sup> Coated internally and externally  
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<sup>(4)</sup> Consult BERMAD for availability.

\* NO or NC refers to the main valve status when the Solenoid is de-energized

\* More options available - contact BERMAD



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