ELECTRO-PNEUMATICALLY CONTROLLED DELUGE VALVE WITH LOCAL RESET

Model FP-400E-6M

The BERMAD model 400E-6M is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.
The 400E-6M is activated by a 3-way solenoid valve which in turn activates a pneumatic relay valve that latches the main valve open until locally reset.
The optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.
The 400E-6M is ideal in systems with open nozzles for water or foam discharge, and is available with electric components to suit any hazardous location.

Features & Benefits

- Safety and reliability
  - Time proven, simple design with a fail safe actuation
  - Single piece rugged elastomer, VRSD technology
  - Obstacle-free, uninterrupted flow path
  - No mechanical moving parts
  - UL429A Listed 3-Way Solenoid Valve
  - Latches open: remains open until reset locally
  - Valve position limit switches (optional)
  - Meets the requirements of the industry standards
- Quick and easy maintenance
  - Designed for high reliability and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal

Approvals

c UL us LISTED	UL-Listed Special System Water Control Valves, Deluge Type (VLFT) Sizes 1½" - 10"
DNV	Det Norske Veritas Type Approval Sizes 1½" to 12"
ABS TYPE APPROVED PRODUCT	ABS American Bureau of Shipping Type Approval Sizes 1½" - 12"
Lloyd's Register TA TYPE APPROVED	Lloyd's Register Type Approval Sizes 1½" - 10" Fire Test

Typical Applications

- Fusible plug loops
- Automatic water spray systems
- Foam applications
- Corrosive water systems
- Freezing Environments

Optional Features

- Valve position limit switches
- Alarm pressure switch
- Seawater compatibility
- Air Maintentenance Device
- Water motor alarm
- Corrosion resistant zinc based high build epoxy coating

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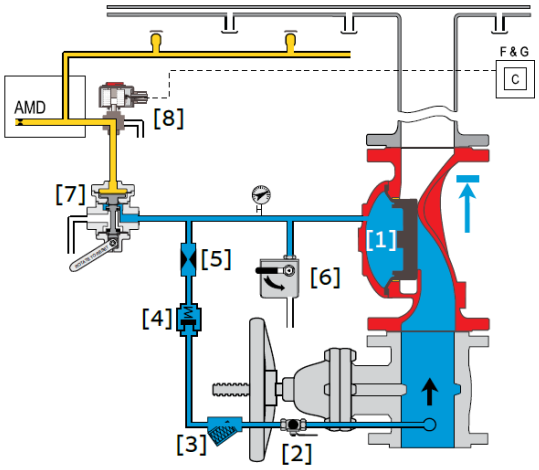
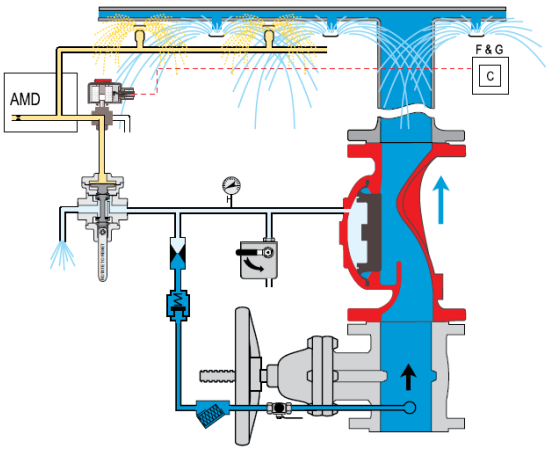
Operation



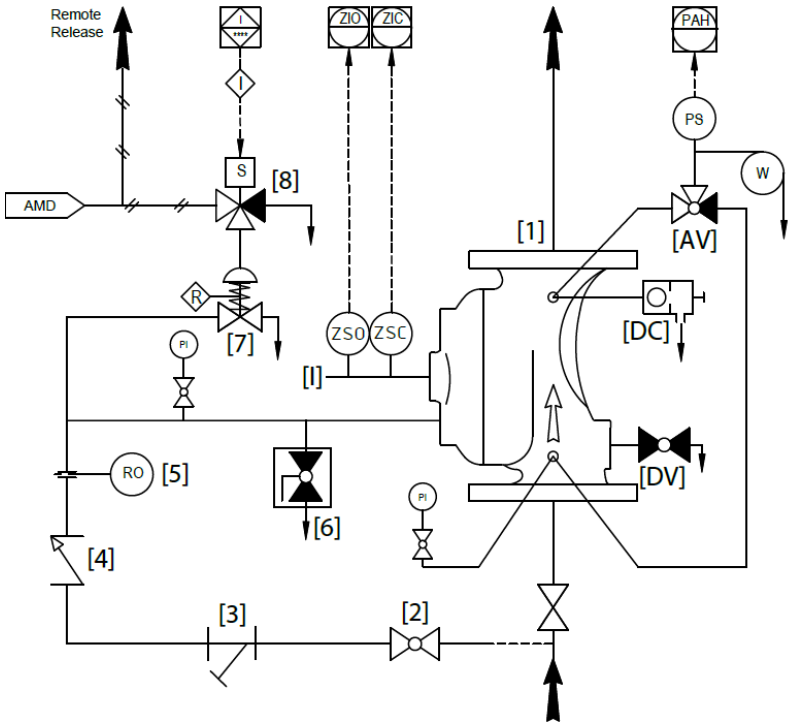
Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD model 400E-6M 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 by the priming line [2] via the strainer [3], and restriction orifice [5], it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV-M) [7] The relay valve is held closed by pneumatic pressure supplied through a threeway solenoid valve [8]. The water pressure trapped in the main valve control chamber 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. The URV-M opens in response either to a decrease in pneumatic pilot-line pressure [E] or to the solenoid valve being activated by the fire & gas control system [C]. This latches the 400E-6M deluge valve open, allowing water to flow into the system piping and to the alarm device [9].

System P&ID



	Components
1	BERMAD 400E Deluge Valve
2	Priming Ball Valve
3	Priming Strainer
4	Check Valve
5	Restriction Orifice
6	Manual Emergency Release
7	URV-2-M Relay Valve
8	3-Way Solenoid Valve

	Optional System Items
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
AMD-74/75	Air Maintenance Device
I	Visual Valve Position indicator
DV	Drain Valve*
PI	Pressure Gauge*
AV	3-way Alarm Test Valve*
DC	Automatic Drip Check Valve*

** Included with suffix A in valve code (drain and indicating components)*
See code designations and "factory supplied additional items" on page 4

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System Installation

A typical installation of the BERMAD model 400E-6M features automatic actuation via a relay valve, triggered by a fusible plug loop. 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.

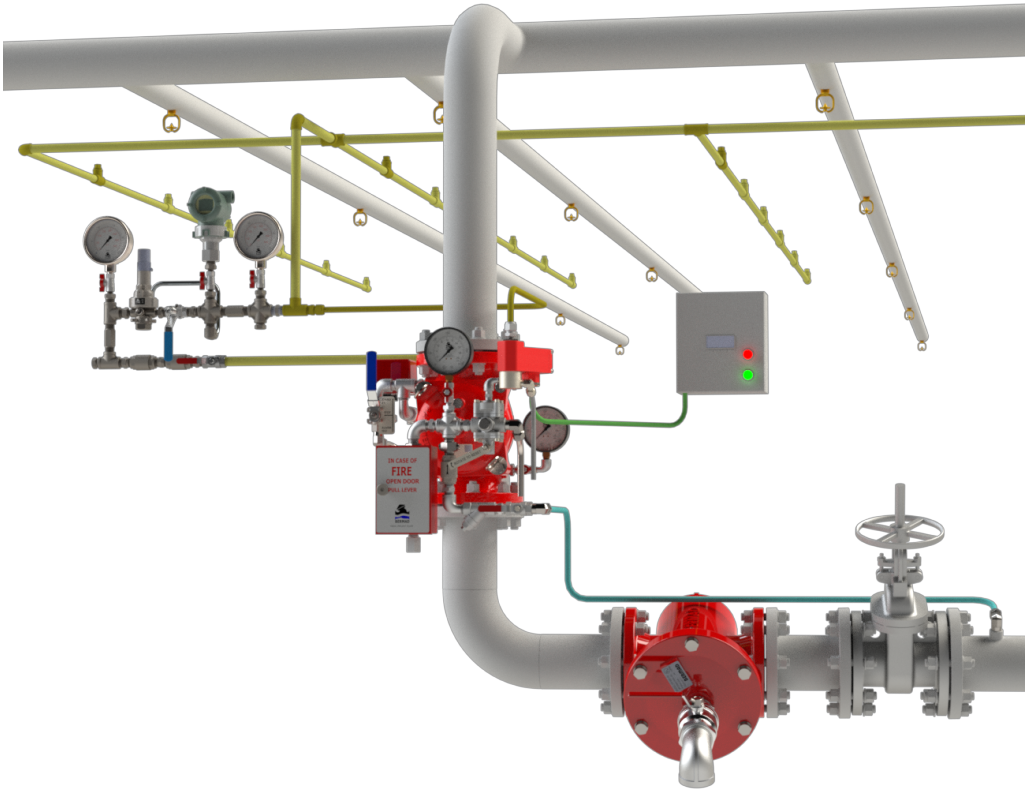
Optional System Items

S.S. Glycerin Filled Pressure Gauge

Water Motor Alarm

S.S Pressure Switch E xd

Basket Strainer - 60F



Suggested Specifications

The deluge valve shall be UL-listed, 250 psi/17.2bar rated.
The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.
The deluge valve shall have no mechanical moving parts, and the actuation shall utilize a single-piece diaphragm assembly of VRSD technology.
The valve shall be coated internally and externally with UV protection. Optional: C5-VH grade of ISO-12944 standard against corrosive conditions.
The solenoid valve shall be a 3-way FM and UL429A-listed for 365 psi/25 bar with 65% of the rated voltage.
The control trim shall include an auxiliary latching relay valve, a manual emergency release unit, a Y-type strainer, two 4-inch pressure gauges, and an automatic drip-check with manual override.
A valve position indicator shall be provided, and equipped with two proximity limit switches.
Removing the valve cover for full inspection and maintenance shall be in-line, and not require removal of the valve from the pipeline.
The deluge valve and control trim shall be pre-assembled and hydraulically tested by a UL/FM and ISO 9000, 9001 certified factory.

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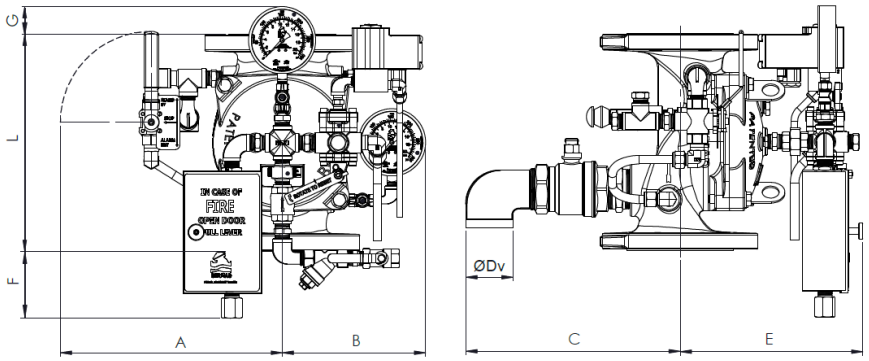
Technical Data

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

Pressure Rating:
ANSI#150 - 17.2 bar | 250 psi

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



Valve Size	L #150 mm | in	L Grooved mm | in	A mm | in	B mm | in	C mm | in	øD in	E mm | in	F mm | in	G mm | in	Weight #150 kg | lb
DN40 | 1½"	205 | 8.1	-	313 | 12.3	191 | 7.5	199 | 7.8	¾"	203 | 8.0	157 | 6.2	100 | 3.9	14 | 31
DN50 | 2"	205 | 8.1	205 | 8.1	313 | 12.3	191 | 7.5	199 | 7.8	1½"	203 | 8.0	157 | 6.2	100 | 3.9	15 | 33
DN65 | 2½"	205 | 8.1	-	325 | 12.8	196 | 7.7	253 | 10.0	1½"	205 | 8.1	157 | 6.2	100 | 3.9	17 | 37
DN80 | 3"	257 | 10.1	250 | 9.8	345 | 13.6	205 | 8.1	266 | 10.5	1½"	238 | 9.4	131 | 5.2	74 | 2.9	28 | 62
DN100 | 4"	320 | 12.6	320 | 12.6	328 | 12.9	212 | 8.3	316 | 12.4	1½"	258 | 10.2	99 | 3.9	43 | 1.7	40 | 88
DN150 | 6"	415 | 16.3	415 | 16.3	349 | 13.7	204 | 8.0	347 | 13.7	2"	334 | 13.1	52 | 2.0	-	84 | 185
DN200 | 8"	500 | 19.7	-	383 | 15.1	270 | 10.6	364 | 14.3	2"	385 | 15.2	9 | 0.4	-	147 | 323
DN250 | 10"	605 | 23.8	-	396 | 15.6	280 | 11.0	384 | 15.1	2"	382 | 15.0	-	-	162 | 356
DN300 | 12"	725 | 28.5	-	438 | 17.2	333 | 13.1	422 | 16.6	2"	513 | 20.2	-	-	242 | 532

IMPORTANT: Dimensions for the trim envelope or extents refer to a vertical orientation and may vary with specific component positioning -Apart from the "L" dimension, allow a tolerance of at least ±15%

Valve Code Designations

FP | 6" | 400E-6M | 03 | V | C | A5 | ER | 4DC | NN | N6nW

Category	Code
Standard	FP
Seawater	FS
Foam	FC

Valve Size	
1½"	40 mm
2"	50 mm
2½"	60 mm
3"	80 mm
4"	100 mm
6"	150 mm
8"	200 mm
10"	250 mm
12"	300 mm

Notes:
(1) Other materials available see engineering data
(2) Coated internally and externally
(3) Supplied loose
(4) Consult BERMAD for availability
(5) For valves up to 10" inclusive

Installation	Code
Vertical	V
Horizontal	H

Material Body & Cover (1)	Code
Ductile Iron A356 (2)	C
Steel ASTM A216 WCB (2)	S
Stainless Steel 316	N
Nickel Al Bronze C95800	U
Super Duplex Grade 5A	D

End Connections	Code
ANSI#150RF	A5
ANSI#150FF	a5
ISO PN16	16
Grooved ANSI	VI

Additional Feature	Code
Closing Speed Control	01
Opening Speed Control	02
Opening & Closing Speed Control	03
None	-

Coating	Code
High Build Epoxy	ER
Zinc Based High Build Epoxy (5)	ZR
Uncoated	UC

Voltage - Main Valve N.O or N.C *	Code
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.C.	5AO
220 - 240/AC - N.C.	2AC
221 - 240/AC - N.C.	2AO

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

Tubing & Fittings	Code
Stainless Steel 316	NN
Monel 400	MM
Super Duplex	DD

Factory Supplied Additional Items	Code
General Purpose NEMA-4 Pressure	P
Ex Proof NEC, Div.1 Pressure Switch (3)	P7
Ex d ATEX Pressure Switch (3)	P9
Ex d Pressure Switch, SS316 Enclosure	P9Jn
Ex d Pressure Switch, SS316 Enclosure,	P9mJn
Single Limit Switch, General Purpose	S
Single Ex d Proximity limit Switch	S9
Double Ex d Proximity Limit Switch	SS9
Double Ex d Proximity Limit Switch with	SS9Jn
Pressure Gauge Assembly (3)	6
S.S Glycerin Pressure Gauge Assembly	6n
Monel Pressure Gauge Assembly (3)	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex. d Atex Solenoid	9
Stainless steel 316 Solenoid Valve	K
Drain Valve	DV
Water Motor Alarm Assembly (3)	W
Special Elastomer	E
Large Control Filter	F
Valve Position Indicator	I
S.S 316 Trim Accessories	N
S.S Solenoid Valve	K
Pressure Transmitter (3)	Q
Drain and Indicating Components	A

*More options available – consult BERMAD

* **UL-Listed** with Solenoid BE370D 3-way 24 VDC, 110AC/DC, 220 AC/DC 8 Watts

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