Electrically Controlled Deluge Valve with Local Reset

Model FP 400E - 3UM

The BERMAD model 400E-3UM is an elastomeric, hydraulic, line pressure operated deluge valve, designed for advanced fire protection systems, and the latest industry standards.

The 400E-3UM is activated by a 3-way solenoid valve, which actuates a latching relay valve, to open the main valve. Once open the main valve will not close until locally reset.

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

The 400E-3UM is ideal for systems with open nozzles for water or foam discharge, available with electric components to suit any hazardous location.

(for Illustration Only)

Benefits and Features

- **Safety and reliability**
  - Time proven, simple design with a fail safe actuation
  - Single piece, rugged elastomeric diaphragm seal - 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 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
ABS TYPE APPROVAL PROGRAM	ABS American Bureau of Shipping Type Approval
Lloyd's Register	Lloyd's Register Type Approval

Typical Applications

- Electric fire detection systems with control panels
- Remote Control Monitors
- Automatic water spray
- Foam applications

Additional Features

- Valve position limit switches
- Alarm pressure switch
- Seawater compatibility

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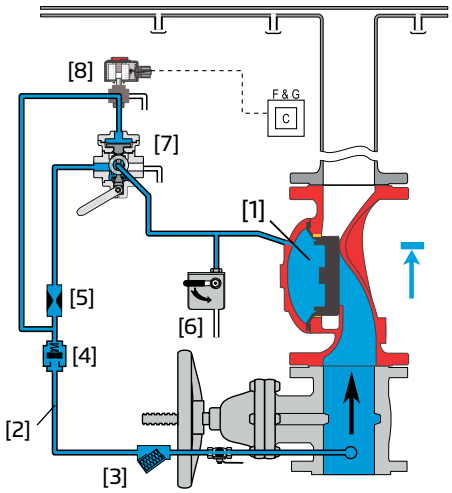
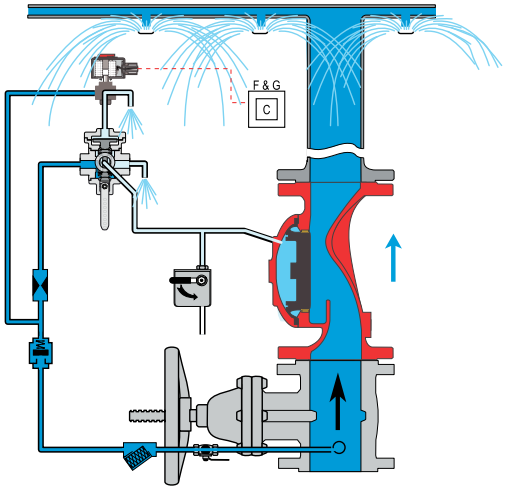
Operation

(for Illustration Only)



Valve Closed (normal conditions)



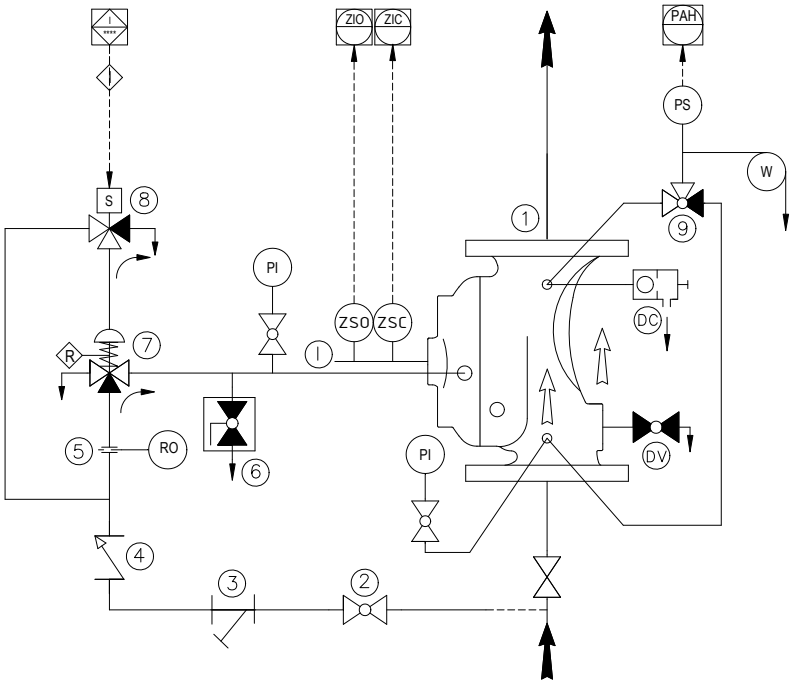
Valve Open (fire conditions)

The BERMAD model 400E-3UM 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] strainer [3] and restriction orifice [5] and is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV-M) [7] that is held in the supply position by hydraulic pressure supplied through a three-way solenoid valve [8]. The water pressure trapped in the control chamber keeps the valve closed by holding 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 URV-M switching to the release position in response to the solenoid valve being activated by the fire & gas control system [C].This latches the 400E-3UM deluge valve open, allowing water to flow into the system piping and the alarm device.

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-3-M Relay Valve
8 3-Way NO Solenoid Valve

Optional System Items

ZS Limit Switch Assembly
I Visual Indicator
DC Automatic Drip Check Valve*
DV Drain Valve*
PI Pressure Indicator*
PS Pressure Switch
W Water Motor Alarm
9 3-Way Alarm 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-3UM features automatic actuation via a relay valve and three-way solenoid valve, triggered by a signal from a fire & gas control system or an on-site emergency pushbutton. When fitted with a limit switch, the valve can send a feedback signal, indicating the valve's status to a remote valve position monitoring system.

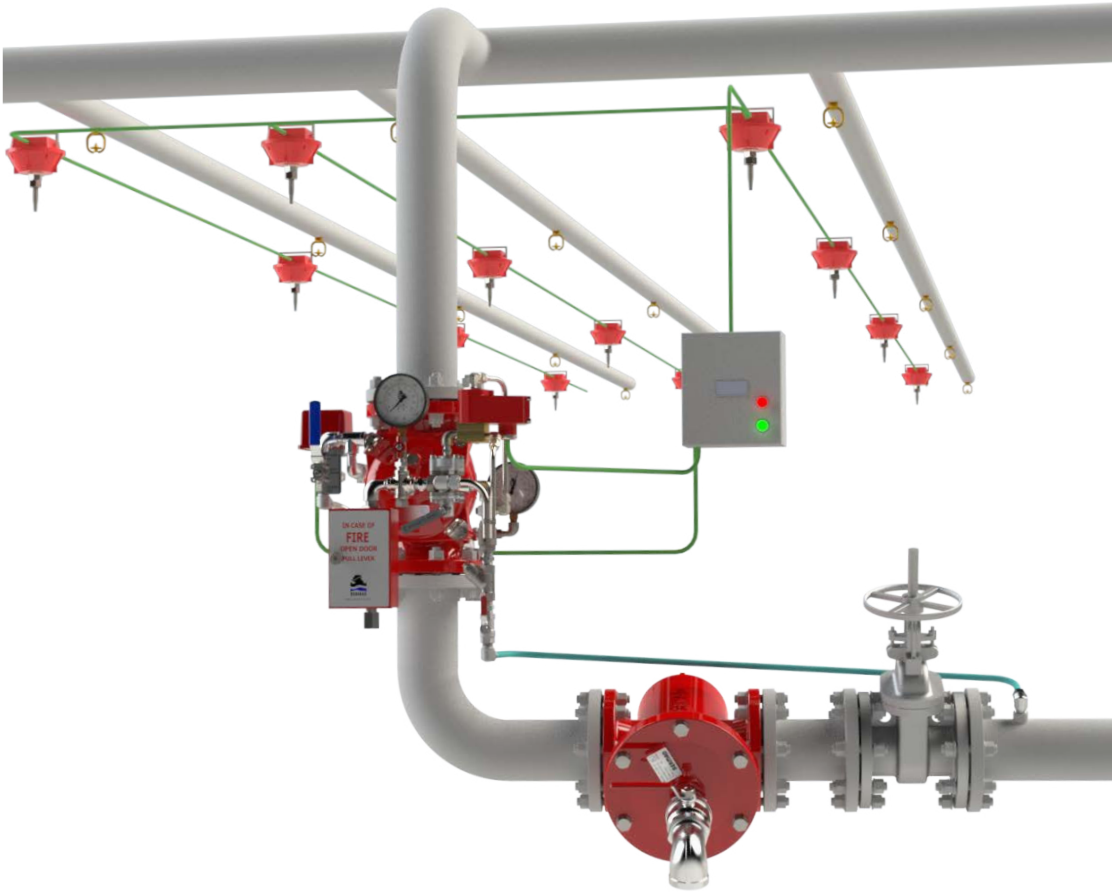
Optional System Items

Water Motor Alarm

Pressure Switch

Limit Switch

Strainer



(for Illustration Only)

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.

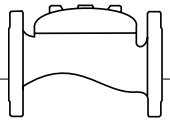
The diaphragm assembly shall be the only moving part.

The deluge valve shall include a 3-Way latching relay pilot valve, a 3-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, a ball 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 - 3UM

400E Series

Technical Data

Available Sizes (inch)

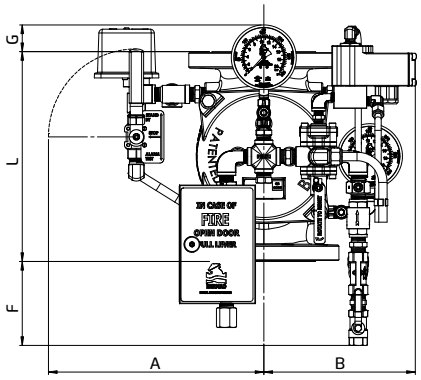
- Flanged - 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- Grooved - 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

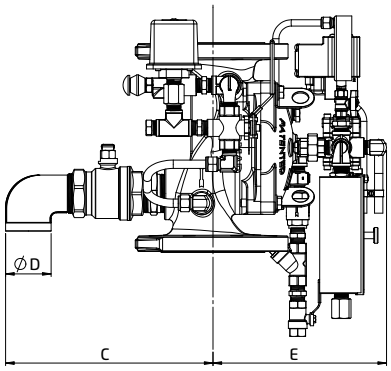
Pressure Rating

- 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	
	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
A	284	11.2	284	11.2	295	11.6	317	12.5	329	13.0	358	14.1	374	14.7	394	15.5	439	17.3
B	219	8.6	219	8.6	219	8.6	219	8.6	219	8.6	219	8.6	219	8.6	219	8.6	219	8.6
C	282	11.1	282	11.1	287	11.3	302	11.9	316	12.4	337	13.3	364	14.3	372	14.6	420	16.5
ØD	¾"		¾"		1½"		1½"		2"		2"		2"		2"		2"	
E	214	8.4	214	8.4	226	8.9	250	9.8	270	10.6	345	13.6	396	15.6	396	15.6	513	20.2
F	185	7.3	185	7.3	185	7.3	160	6.3	128	5.0	80	3.1	38	1.5	-	-	-	-
G	102	4.0	102	4.0	102	4.0	77	3.0	45	1.8	-	-	-	-	-	-	-	-
Kg / lb	14 / 31		15 / 33		17 / 37		25 / 55		34 / 75		74 / 163		131 / 289		146 / 322		227 / 500	

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" | 400E-3UM | V | C | A5 | PR | 4DC | NN | NP9DV

Category	code
Standard	FP
Seawater	FS
Foam Concentrate	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

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 C606	VI

Coating [2]	Code
Polyester Red	PR
High Build Epoxy	ER
Uncoated	UC

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

* 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 Fitted Options	Code
General Purpose NEMA-4 Pressure Switch [3]	P
Ex Proof NEC, Div.1 Pressure Switch [3]	P7
Ex d ATEX Pressure Switch [3]	P9
Ex d Pressure Switch, SS316 Enclosure [3]	P9Jn
Ex d Pressure Switch, SS316 Enclosure, Monel Sensor [3]	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 SS316 Junction Box	SS9Jn
Pressure Gauge Assembly [3]	6
S.S Glycerin Pressure Gauge Assembly [3]	6n
Monel Pressure Gauge Assembly	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 [4]
Large Control Filter	F
Valve Position Indicator	I
S.S Solenoid Valve	K
S.S 316 Trim Accessories	N
Pressure Transmitter [3]	Q
Drain and Indicating Components	A

* More options available - contact BERMAD

Notes:

[1] Other materials available see engineering data
[2] Coated internally and externally
[3] Supplied loose
[4] Consult BERMAD for availability

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