

## Electrically Controlled, On-Off Deluge Valve with Optional Remote Reset

### Model FP 400E - 3U

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

The 400E-3U is activated by a 3-way solenoid valve which in turn activates a 3 way relay valve to open the deluge valve. It is available with a Remote Reset option that maintains the deluge valve open until de-latched or reset remotely, by Magna-Latch technology.

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

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



(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
  - 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

### Typical Applications

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

### Approvals



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



Det Norske Veritas  
Type Approval  
Sizes 1½" - 12"



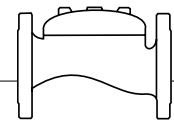
American Bureau of Shipping  
Type Approval  
Sizes 1½" - 12"



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

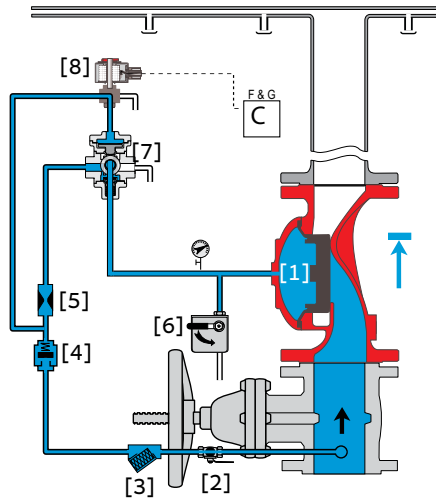
### Additional Features

- Valve position limit switches
- Seawater compatibility
- Remote Reset (remote de-latch)

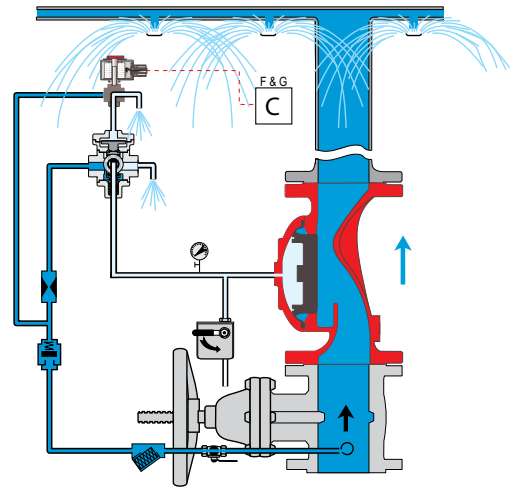


### Operation

(for Illustration Only)



**Valve Closed** (normal conditions)



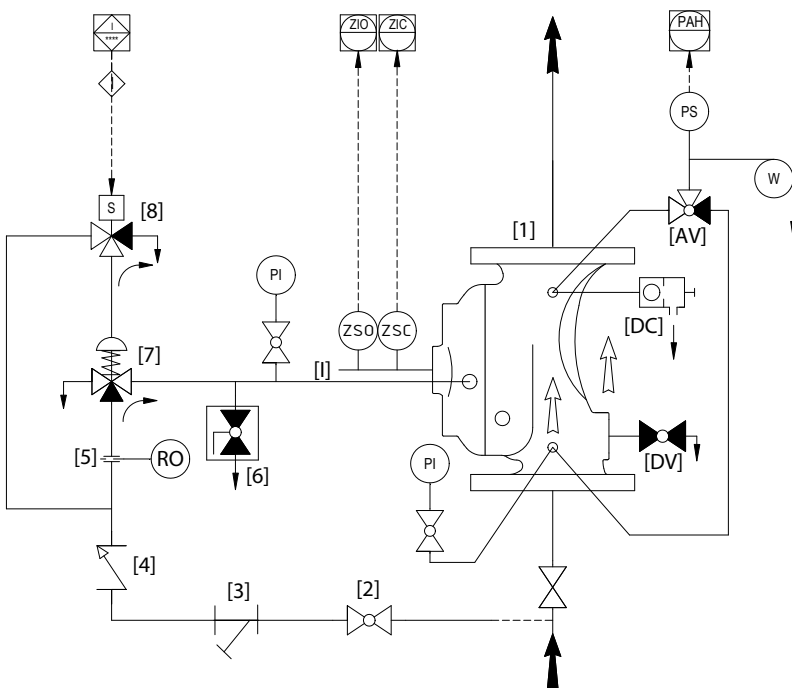
**Valve Open** (fire conditions)

The BERMAD model 400E-3U 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 a check valve [4], restriction orifice [5], manual emergency release [6], and a relay valve (URV) [7] that is held in the supply position by line pressure supplied through a three-way solenoid valve [8]. 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 URV switching to the release position. The URV switches position in response to the solenoid valve being activated by the fire & gas control system [C]. This opens the deluge valve allowing water to flow into the system piping and to the alarm device.

### System P&ID



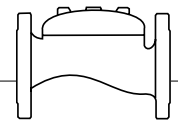
#### Components

- 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 Relay Valve
- 8 3 way Solenoid Valve

#### Optional System Items

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

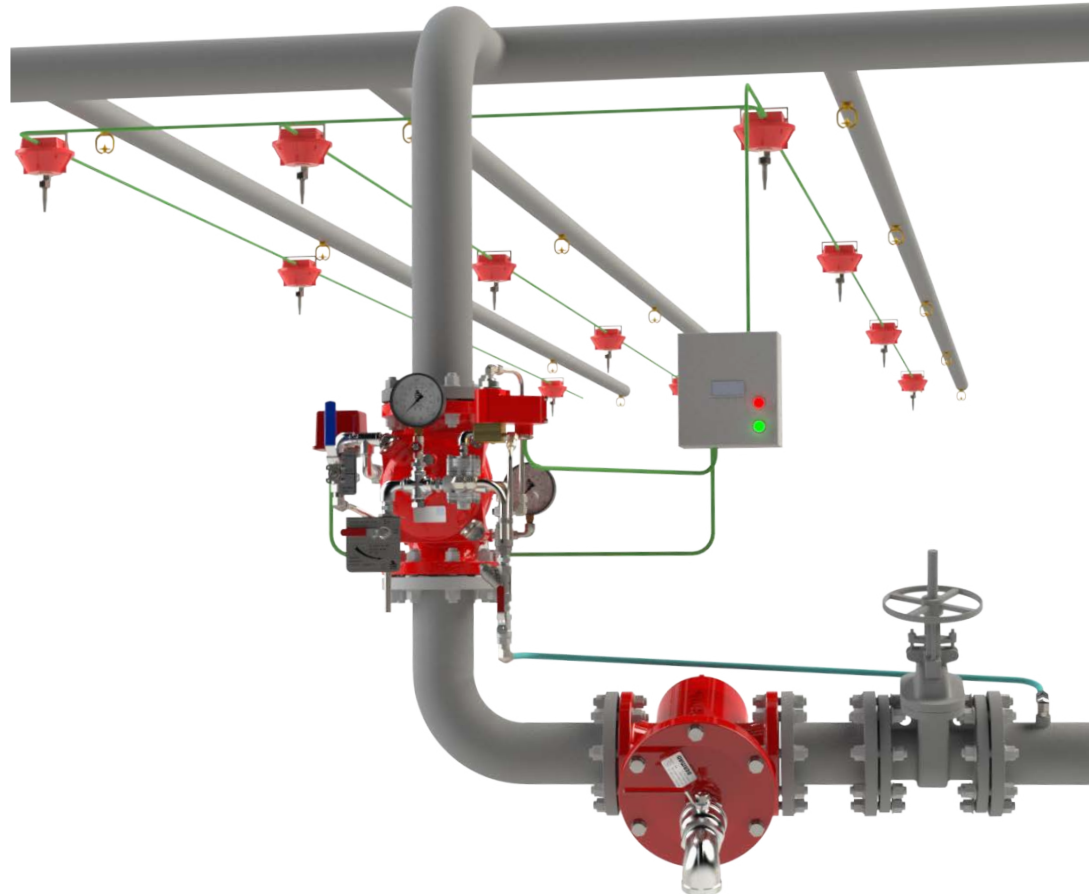
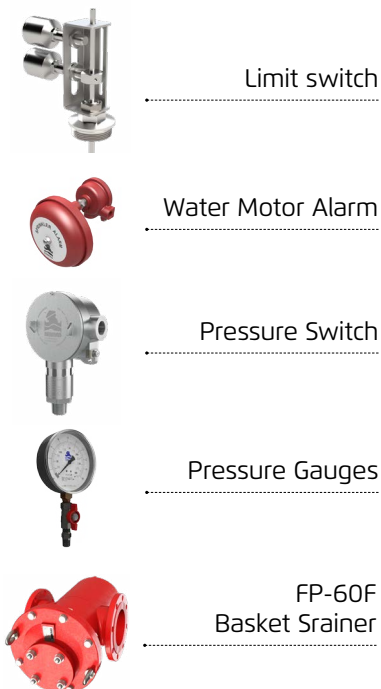
\* Included with suffix A in valve code (drain and indicating components) See code designations and additional Factory Fitted Options on page 4



## System Installation

A typical installation of the BERMAD model 400E-3U features automatic actuation via a universal relay valve, 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. For latching and remote de-latching feature, choose a Magna-Latch solenoid, add suffix code H2 or H3 - see in code designations on page 4.

## Optional System Items



(for Illustration Only)

## Engineering 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.

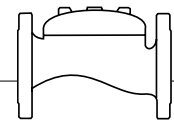
The deluge valve shall include a relay valve, a 3-Way UL429A Listed solenoid valve rated to 25 bar/365 psi working pressure with a tolerance of 35% below the rated voltage.

The valve will also include 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 - 3U

400E Series

## Technical Data

### Available Sizes (inch)

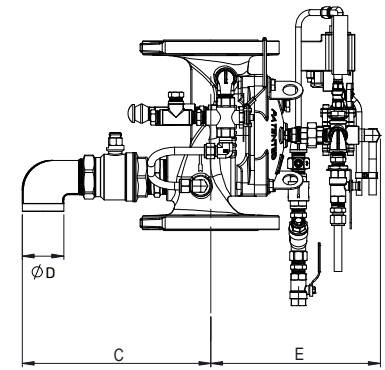
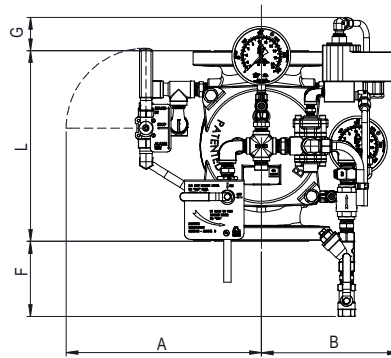
- Flanged - 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- Grooved - 2, 3, 4, 6 & 8"

### Pressure Rating

- 17.2 bar / 250 psi

### Elastomer

- HTNR with VRSD - Fabric Reinforced High Temperature, 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
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	235	9.3	235	9.3	235	9.3	235	9.3	234	9.2	240	9.4	270	10.6	266	10.5	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	229	9.0	229	9.0	230	9.1	264	10.4	283	11.1	360	14.2	411	16.2	411	16.2	539	21.2
F	185	7.3	185	7.3	186	7.3	160	6.3	128	5.0	81	3.2	38	1.5	-	-	-	-
G	98	3.9	98	3.9	98	3.9	72	2.8	41	1.6	-	-	-	-	-	-	-	-
Kg / lb	17 / 37		18 / 40		21 / 45		29 / 64		42 / 93		87 / 192		166 / 366		166 / 366		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"    400E-3U    03    V    C    A5    ER    4DC    NN    N9W

Category	Code
Standard	FP
Seawater	FS
Foam Concentrate	FC

Valve Size	Code
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

Additional Feature Code	Code
Opening speed	02
Closing speed	01
Opening & Closing speed	03
None	-

Installation	Code
Vertical	V
Horizontal	H
Universal (basic trim only)	G

Material Body & Cover <sup>(1)</sup>	Code
Ductile Iron A536 <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

End Connections	Code
ANSI#150RF	A5
ANSI#150FF	a5
ISO PN16	16
Grooved ANSI C606	VI

Coating <sup>(2)</sup>	Code
High Build Epoxy	ER
Uncoated	UC

Voltage - Main Valve N.O. or N.C.*	Code
24VDC - N.C.	4DC
24VDC - N.O.	4DO
24VDC - Remote De-Latch	4DS
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 <sup>(3)</sup>	P
Ex Proof NEC, Div.1 Pressure Switch <sup>(3)</sup>	P7
Ex d ATEX Pressure Switch <sup>(3)</sup>	P9
Ex d Pressure Switch, SS316 Enclosure <sup>(3)</sup>	P9Jn
Ex d Pressure Switch, SS316 Enclosure, Monel Sensor <sup>(3)</sup>	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 <sup>(3)</sup>	6
S.S Glycerin Pressure Gauge Assembly <sup>(3)</sup>	6n
Monel Pressure Gauge Assembly	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex d Atex Solenoid	9
Magna-Latch Solenoid (2 wire)	H2
Magna-Latch Solenoid (3 wire)	H3
Stainless steel 316 Solenoid Valve	K
Drain Valve	DV
Water Motor Alarm Assembly <sup>(3)</sup>	W
Special Elastomer	E <sup>(4)</sup>
Large Control Filter	F
Valve Position Indicator	I
S.S Solenoid Valve	K
S.S 316 Trim Accessories	N
Pressure Transmitter <sup>(3)</sup>	Q
Drain and Indicating Components	A

\* More options available - contact BERMAD

### Notes:

- Other materials available, see engineering data
- Coated internally and externally
- Supplied loose
- Consult BERMAD for availability.



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