

Electric Pressure Control On-Off Deluge Valve

Model FP 400E - 3DC

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

The 400E-3DC is activated by a 3-way solenoid valve by which opening and closing of the deluge valve may be controlled remotely.

An integrated pressure control pilot ensures a precise and stable pre-set downstream water pressure.

The 400E-3DC is ideal for open-nozzle systems with a high pressure water supply and is available 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

- Remote control water spray systems
- Foam applications
- Electric fire detection systems with control panels
- High pressure water supply

Approvals



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



Det Norske Veritas
Type Approval
Sizes 1½" - 12"



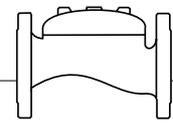
American Bureau of Shipping
Type Approval
Sizes 1½" - 12"



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

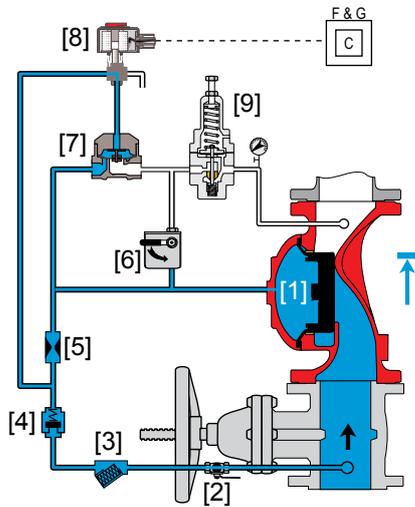
Additional Features

- Valve position indicator
- Single or double limit switch
- Alarm pressure switch
- Seawater compatibility

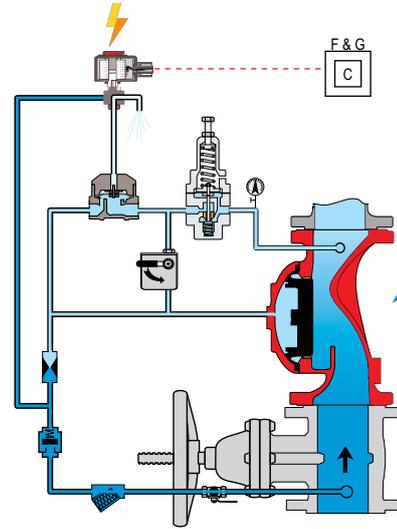


Operation

(for Illustration Only)



Valve Closed (normal conditions)



Valve Open (fire conditions)

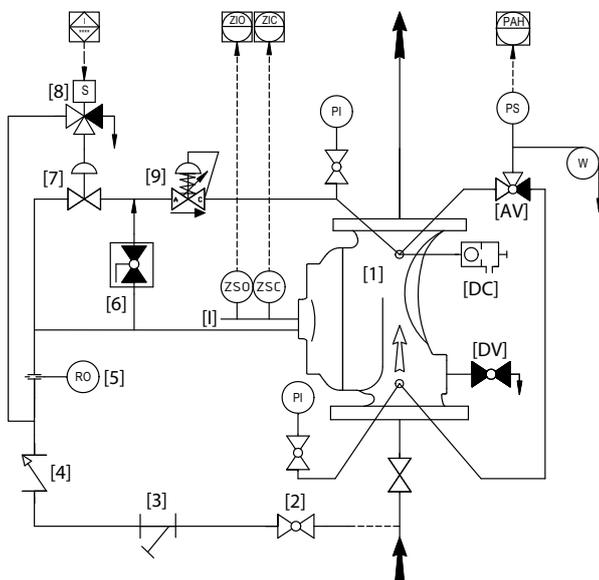
The BERMAD model 400E-3DC is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] restriction orifice [5], and strainer [3], and is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (HRV) [7] that is held closed by hydraulic pressure supplied through a three-way 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, either with the manual emergency release, or by the HRV opening in response to either the solenoid valve being activated by the fire & gas control system [C] or the by remote release. This opens the 400E-3DC deluge valve, allowing water to flow into the system piping and to the alarm devices.

The pressure-control pilot valve [9] senses changes in outlet pressure and, modulates the main valve to maintain the set downstream pressure. When outlet pressure rises above the pre - set pressure value, the pilot valve throttles, enabling pressure to accumulate in the control chamber. This causes the main valve to close further and reduce outlet pressure, keeping the outlet pressure at the set value. When outlet pressure falls, the pilot valve opens wider, releasing pressure from the control chamber. This causes the main valve to open wider and increase outlet pressure.

System P&ID



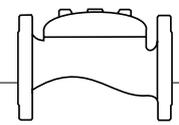
Components

- 1 BERMAD 400E Deluge Valve
- 2 Priming Ball Valve
- 3 Priming Strainer
- 4 Check valve
- 5 Restriction Orifice
- 6 Manual Emergency Release
- 7 HRV-2 Hydraulic Relay Valve
- 8 3-Way Solenoid Valve
- 9 Pressure Control Pilot Valve

Optional System Items

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

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



System Installation

The BERMAD model 400E-3DC typical installation features actuation via a hydraulic relay valve and a three-way solenoid valve, triggered by a fire & gas control system or an on-site emergency pushbutton. The pressure control pilot valve in the control trim ensures accurate and stable pre-set downstream water pressure. Additionally, when equipped with a limit switch, the valve can provide status feedback to a remote valve position monitoring system.

Optional System Items



Limit switch



Water Motor Alarm



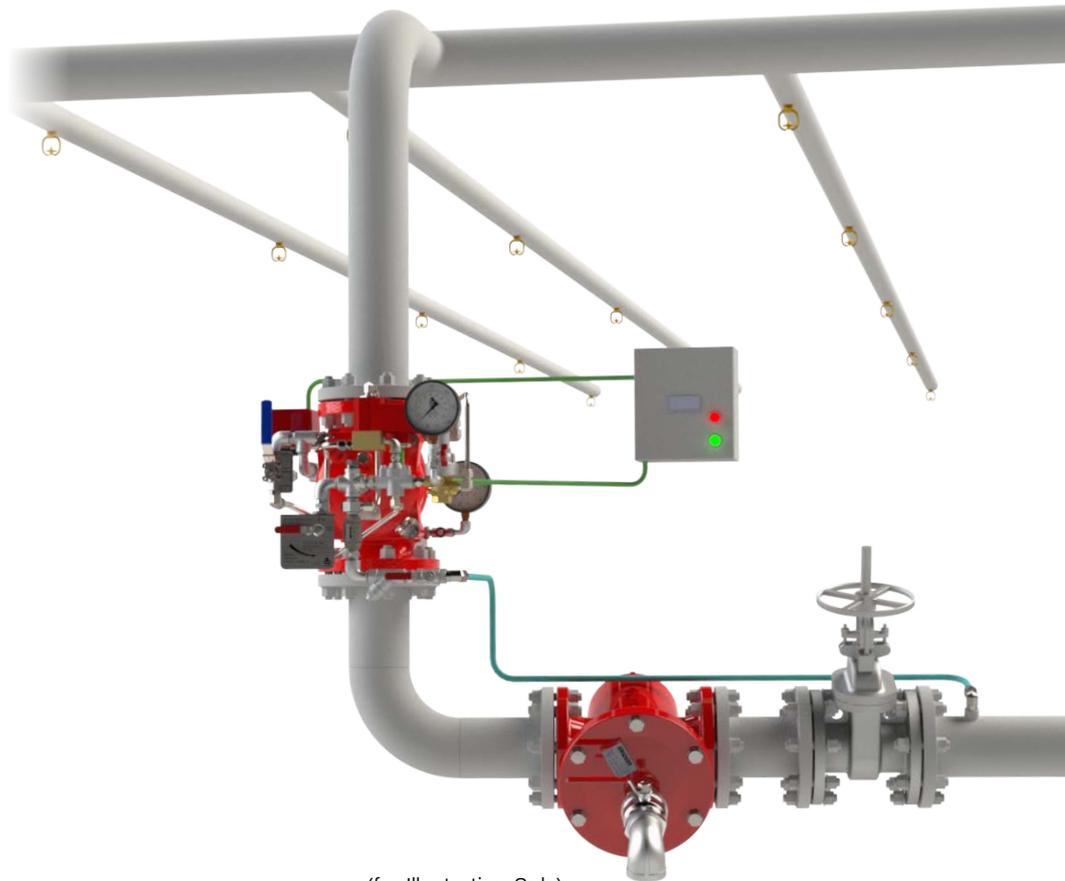
Pressure Switch



Pressure Gauges



FP-60F
Basket 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.

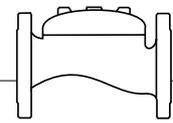
Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.

The deluge valve shall include a 2-Way relay 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.

The control trim shall include a pressure control pilot, 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 - 3DC

400E Series

Technical Data

Available Sizes (inch)

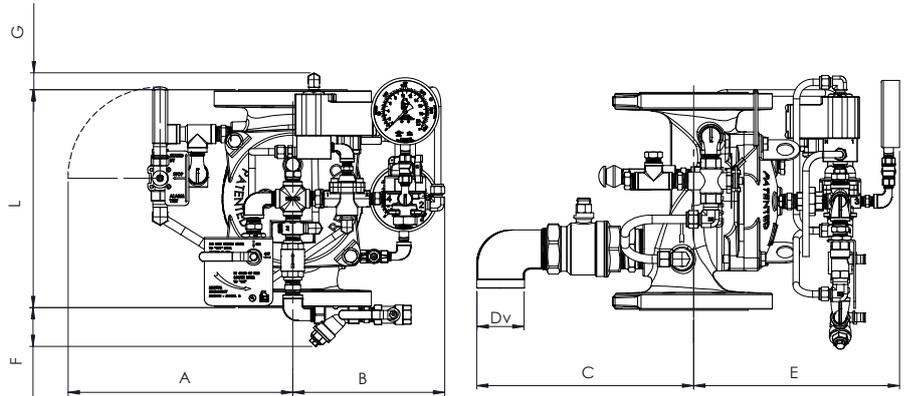
- Flanged - 1½, 2, 3, 4, 6, 8, 10 & 12"
- Grooved - 2, 3, 4, 6 & 8"

Pressure Rating

- 17.2 bar / 250 psi

Elastomer

- HTNR with VRSD - Fabric Reinforced High Temperature 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
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	221	8.7	221	8.7	221	8.7	221	8.7	221	8.7	190	7.4	220	8.7	230	9	283	11.1
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
ØD	¾"		¾"		1½"		1½"		2"		2"		2"		2"		2"	
E	245	9.6	245	9.6	247	9.7	280	11	300	11.8	377	14.8	427	16.8	425	16.7	522	20.6
F	115	4.5	115	4.5	115	4.5	89	3.5	57	2.2	10	0.4	-	-	-	-	-	-
G	50	2	50	2	50	2	49	2	18	0.7	-	-	-	-	-	-	-	-
Kg / lb	18/40		19/42		22/49		30/66		44/97		88/194		150/331		167/368		255/562	

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-3DC 03 V C A5 PR 4DC NN N6nW

Category	Code
Standard	FP
Seawater	FS
Foam Concentrate	FC

Valve Size	Code
1½"	40 mm
2"	50 mm
2½"	65 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

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

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*	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.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:

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



www.bermad.com