

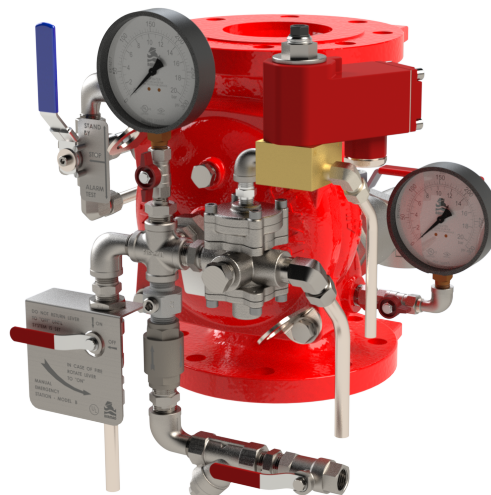
ELECTRO-PNEUMATICALLY CONTROLLED ON-OFF DELUGE VALVE

Model FP-400E-6D

The BERMAD Model 400E-6D is an elastomeric, hydraulic line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards. The 400E-6D is suitable for systems that include electric or redundant (electric or pneumatic) fire detection systems. It opens in response to an electric signal and / or a drop in pressure of a pneumatic pilot line.

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

The 400E-6D is ideal for open-nozzle systems and is available with electrical components to suit any hazardous location.



Features & Benefits

- 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 the 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
- Corrosive water systems
- Dual redundant detection systems

Approvals



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



Det Norske Veritas
Type Approval
Sizes 1½" to 12"



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

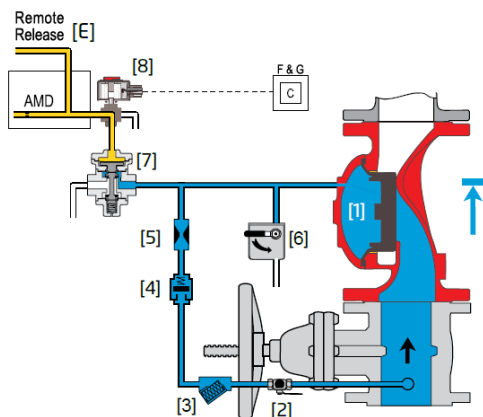


Lloyd's Register
Type Approval

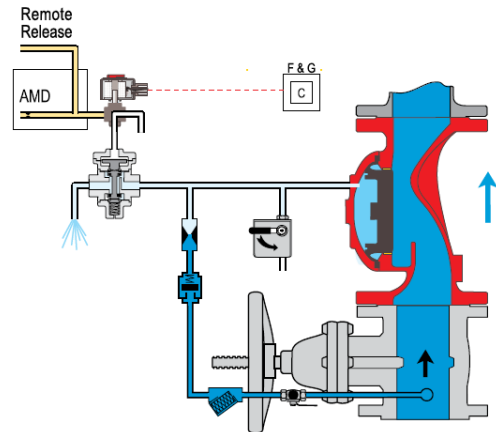
Additional Features

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

Operation



Valve Closed (normal conditions)



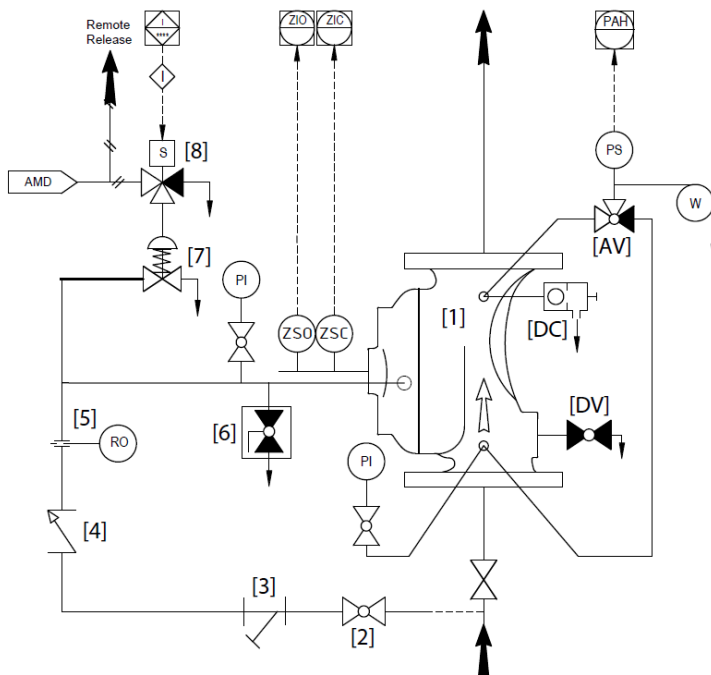
Valve Open (fire conditions)

The BERMAD model 400E-6D 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 restricted orifice [5] it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV) [7] that is held closed by pneumatic 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 URV opening. The URV opens in response either to a decrease in pneumatic pilot-line [E] pressure or to the solenoid valve being activated by the fire & gas control system [C]. This opens the 400E-6D deluge valve, allowing water to flow into the system piping.

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 - Universal Relay Valve
8	3-Way Solenoid Valve

Optional System Items	
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
AMD	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

System Installation

A typical installation of the BERMAD model 400E-6D features actuation via a pneumatic universal relay valve. The valve can also be triggered electrically by a signal from a fire & gas control system or an on-site emergency push-button. 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



Single Ex d
Proximity S.S.316
Limit Switch



Water Motor Alarm



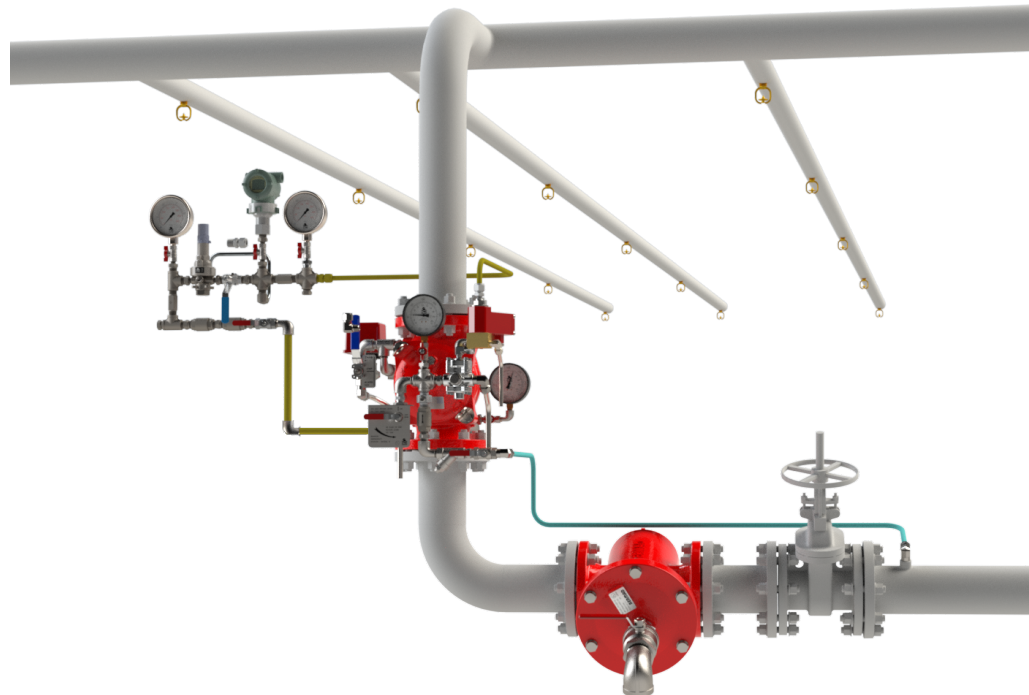
Pressure Gauge



Exd Pressure
Switch - Stainless
Steel Enclosure for
Harsh



Environments
Basket Strainer -
60F



Suggested Specifications

The deluge valve shall be UL-listed, 250 psi/17.2 bar 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 relay valve, a manual emergency release unit, a Y-type strainer, two 4-inch pressure gauges, and an automatic drip-check with manual override.

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.

Technical Data

Available Sizes:

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

Grooved- 2, 3, 4, 6, & 8"

Pressure Rating:

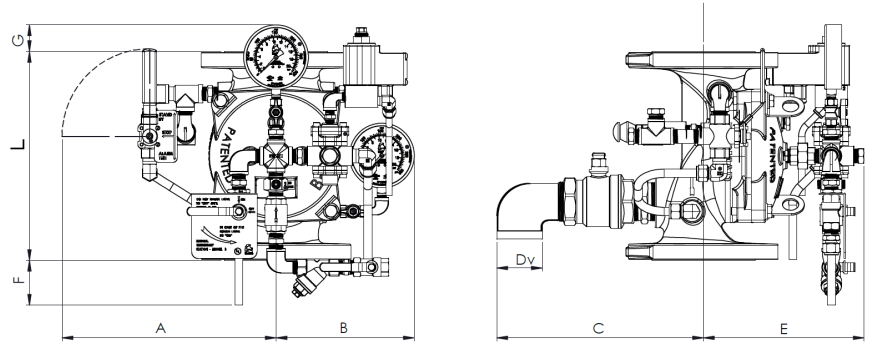
ANSI#150 - 17.2 bar | 250 psi

Grooved - 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	196 7.7	199 7.8	¾"	190 7.5	126 5	100 3.9	14 31
DN50 2"	205 8.1	205 8.1	313 12.3	196 7.7	199 7.8	1½"	190 7.5	126 5	100 3.9	15 33
DN65 2½"	205 8.1	-	325 12.8	196 7.7	253 10	1½"	193 7.6	126 5	100 3.9	20 44
DN80 3"	257 10.1	250 9.8	345 13.6	205 8.1	266 10.5	1½"	225 8.9	100 3.9	74 2.9	31 68
DN100 4"	320 12.6	320 12.6	328 12.9	212 8.3	316 12.4	1½"	245 9.6	69 3.9	-	41 90
DN150 6"	415 16.3	415 16.3	349 13.7	204 8	347 13.7	2"	322 12.7	21 0.8	-	85 187
DN200 8"	500 19.7	-	383 15.1	270 10.6	364 14.3	2"	372 14.6	-	-	148 326
DN250 10"	605 23.8	-	396 15.6	280 11	384 15.1	2"	373 14.7	-	-	165 363
DN300 12"	725 28.5	-	438 17.2	333 13.1	422 18.4	2"	467 20.2	-	-	253 557

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-6D	03	V	C	A5	ER	4DC	NN	N6nW
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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 and including 10"

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

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
24VDC - Latch	4DS
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

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

Factory Supplied Additional Items	Code
General Purpose NEMA-4 Pressure Switch	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 ⁽³⁾	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex d ATEX Solenoid	9
Stainless steel 316 Solenoid Valve	K
Magna Latch Solenoid	H2
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