

HYDRAULIC PRESSURE CONTROL ON-OFF DELUGE VALVE

Model FP-400E-1DC

The BERMAD model 400E-1DC is an elastomeric, manually operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400E-1DC is activated manually. An integral pressure reducing pilot valve ensures a precise, stable, pre-set downstream water pressure.

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

The 400-1DC is ideal for systems that combine a manual operation with a high pressure water supply.



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
 - 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



FM Approved
for Deluge Sprinkler Systems
Sizes 1½" - 8"



Det Norske Veritas
Type Approval
Sizes 1½" to 12"



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



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

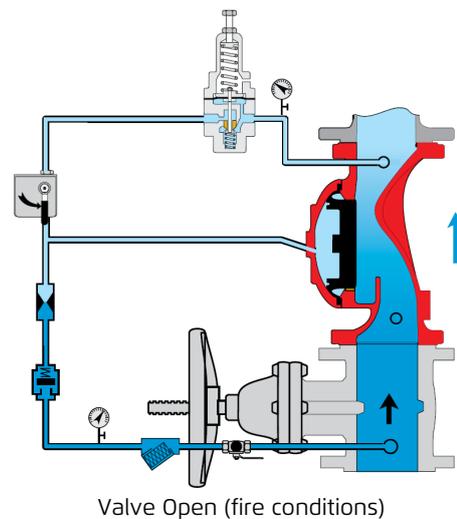
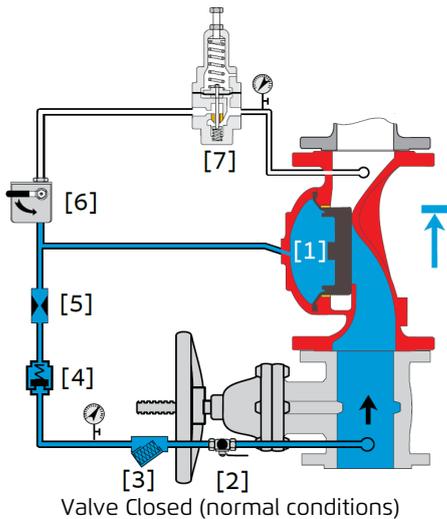
Typical Applications

- Remote Control Water Spray Systems
- Foam applications
- High Pressure Water Supply

Additional Features

- Alarm pressure switch
- Seawater compatibility
- Valve position limit switches
- Valve Position Indicator
- Corrosion resistant zinc based high build epoxy coating

Operation

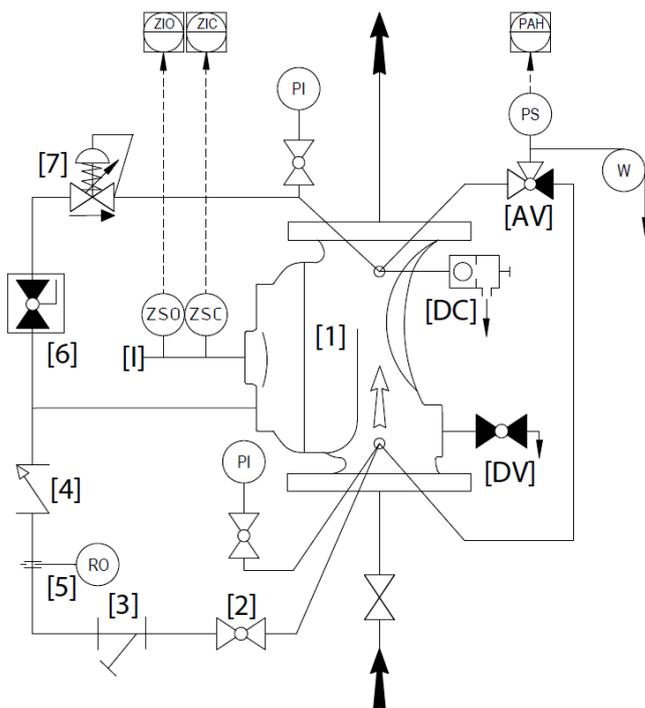


The BERMAD model 400E-1DC is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] strainer [3] and a restricted orifice [5] it is then trapped in the control chamber by a check valve [4] and a Manual Release Valve [6]. The water pressure trapped in the control chamber holds the main valve 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, with the Manual Release Valve. This opens the 400E-1DC deluge valve, allowing water to flow into the system piping and to the alarm device/s. The pressure-reducing pilot valve [7] modulates the main valve to maintain the water pressure at or below the set pressure. When outlet pressure changes, the pressure-reducing pilot opens or closes in response. This regulates the pressure in the main valve's control chamber, thus modulating the position of the diaphragm seal disk to maintain the set downstream 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	Pressure Reducing Pilot Valve

Optional System Items	
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
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-1DC features actuation via a manual release valve. A pressure reducing pilot valve within the control trim ensures a precise and stable pre-set downstream water pressure. When fitted with a limit switch the valve can send a feedback signal to a remote valve position monitoring system.

Optional System Items



Single Ex d
Proximity S.S.316
Limit Switch



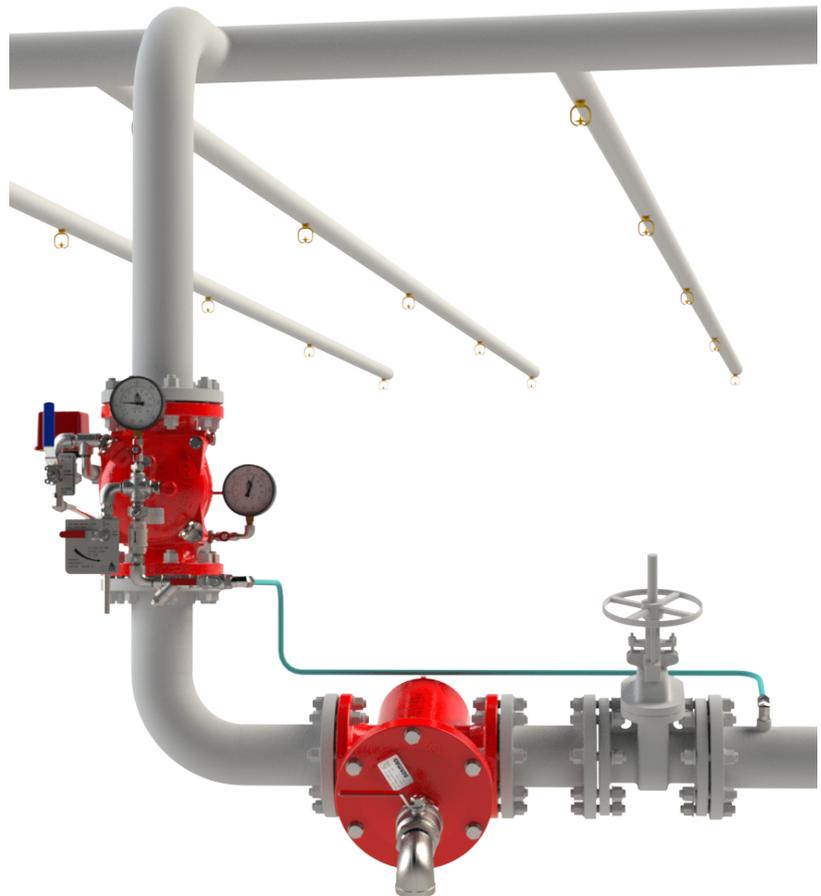
Pressure Gauge



Water Motor Alarm



Exd Pressure
Switch - Stainless
Steel Enclosure for
Harsh
Environments



Suggested Specifications

The deluge valve shall be 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 control trim shall include a pressure control pilot 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.

Technical Data

Available Sizes:

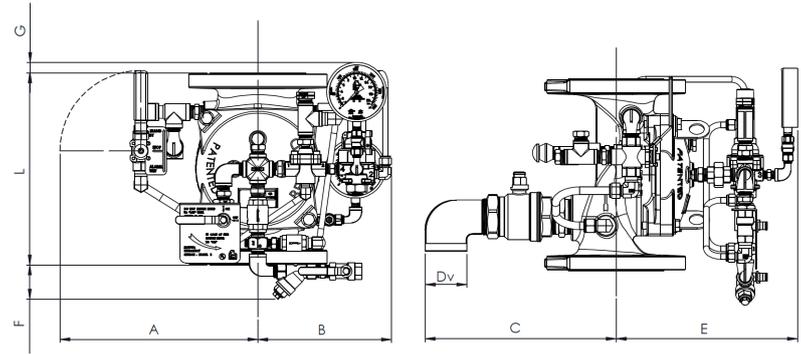
Flanged- 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
Grooved- 2, 3, 4, 6, & 8"

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	225 8.7	199 7.8	¾"	245 9.6	115 4.5	50 2	17 37
DN50 2"	205 8.1	205 8.1	313 12.3	221 8.7	199 7.8	1½"	245 9.6	115 4.5	50 2	18 40
DN65 2½"	205 8.1	-	325 12.8	221 8.7	253 10	1½"	249 9.7	115 4.5	50 2	21 46
DN80 3"	257 10.1	250 9.8	345 13.6	221 8.7	266 10.5	1½"	280 11	89 3.5	49 2	29 64
DN100 4"	320 12.6	320 12.6	328 12.9	221 8.7	316 12.4	2"	300 11.8	57 2.2	18 0.7	43 95
DN150 6"	415 16.3	415 16.3	349 13.7	190 7.4	347 13.7	2"	377 14.8	10 0.4	-	87 191
DN200 8"	500 19.7	-	383 15.1	220 8.7	364 14.3	2"	427 16.8	-	-	149 328
DN250 10"	605 23.8	-	396 15.6	230 9	384 15.1	2"	425 16.7	-	-	166 365
DN300 12"	725 28.5	-	438 17.2	283 11.1	422 16.6	2"	522 16.6	-	-	254 559

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-1DC** **03** **V** **C** **A5** **ER** **NN** **N6nW**

Category	Code
Standard	FP
Seawater	FS
Foam	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
Closing Speed	01
Opening Speed Control	02
Opening & Closing Speed Control	03
None	-

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

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

Factory Supplied Additional Items	Code
General Purpose NEMA-4 Pressure Switch ⁽³⁾	P
Ex Proof NEC, Div. 1 Pressure Switch ⁽³⁾	P7
Ex d Pressure Switch ⁽³⁾	P9
Ex d Pressure Switch, SS316 Enclosure ⁽³⁾	P9Jn
Ex d Pressure Switch, MONEL Sensor, SS316 JB ⁽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 Kit ⁽³⁾	6
S.S Glycerin Pressure Gauge Assembly ⁽³⁾	6n
Monel Pressure Gauge Assembly ⁽³⁾	6m
Drain Valve	DV
Water Motor Alarm Assembly ⁽³⁾	W
Special Elastomer ⁽⁴⁾	E
Large Control Filter	F
Valve Position Indicator	I
S.S 316 Trim Accessories	N
Pressure Transmitter ⁽³⁾	Q
Drain and Indicating Components	A

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"

*More options available – consult BERMAD