ELECTRIC PRESSURE CONTROL ON-OFF/ LATCHING DELUGE VALVE

Model FP-400Y-2DC

The BERMAD model 400Y-2DC is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.
The 400Y-2DC is activated by a 2-way solenoid valve by which opening and closing of the deluge valve may be controlled remotely.
An integrated pressure reducing pilot ensures a precise and stable pre-set downstream water pressure.
This valve is available with a latching option that maintains the deluge valve open until de-latched remotely.
The 400Y-2DC 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.

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
  - Shuts off on remote command
  - Ensures precise, stable downstream water pressure
  - Valve position limit switches (optional)
- Specifically-designed for fire protection
  - Face-to-face length standardized to ISO 5752 EN 558-1
  - Meets the requirements of the industry standards
- Quick and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal
  - Swivel mounted drain valves (for valves 3" and larger)

Approvals

c UL us LISTED	UL-Listed Special System Water Control Valves, Deluge Type (VLFT) Sizes 1½" - 16"
FM APPROVED	FM Approved for Deluge Sprinkler Systems Sizes 1½" - 8"
DNV	Det Norske Veritas Type Approval Sizes 1½" to 16"
ABS TYPE APPROVED PRODUCT	American Bureau of Shipping Type Approval Sizes 1½" - 12" Fire Test
Lloyd's Register TA TYPE APPROVED	Lloyd's Register Type Approval Sizes 1½" - 10"

Typical Applications

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

Optional Features

- Valve position limit switches
- Seawater compatibility
- Alarm pressure switch
- Drain valve/s inlet/outlet
- For "automatic activation" select BERMAD local or remote reset model
- Corrosion resistant zinc based high build epoxy coating

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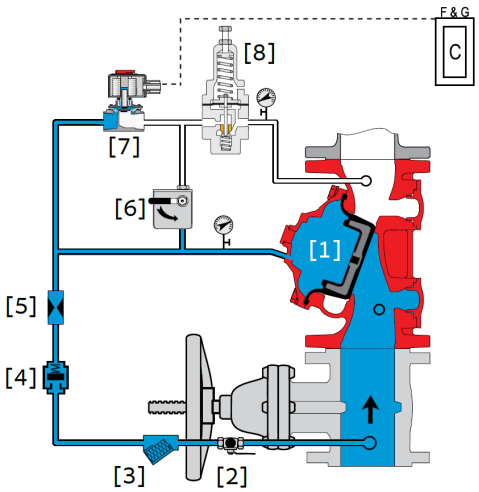
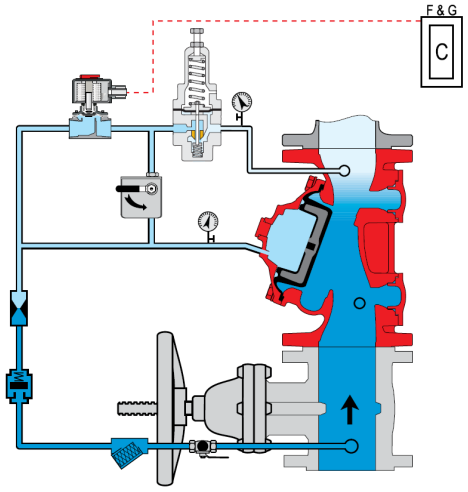
Operation



Valve Closed (normal conditions)



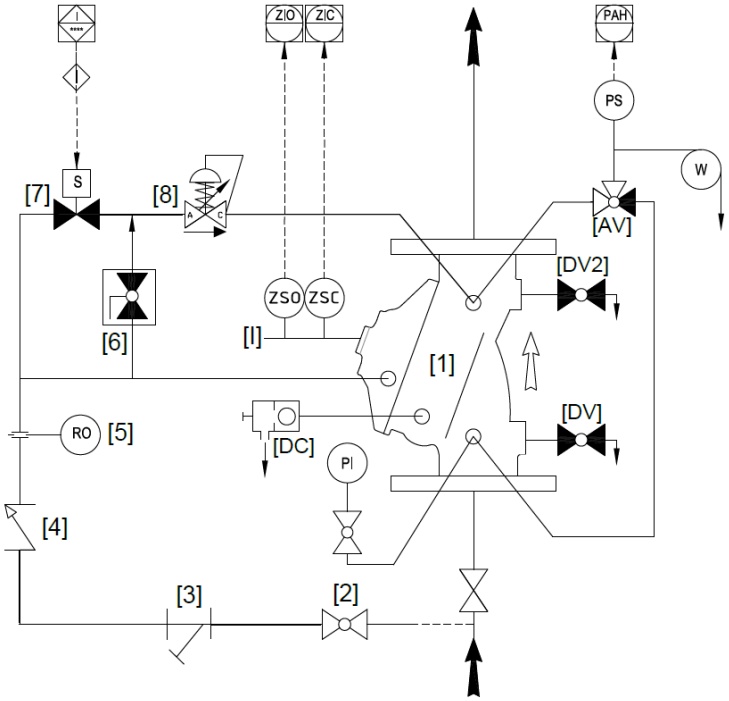
Valve Open (fire conditions)

The BERMAD model 400Y-2DC 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], a 2-Way Normally De-Energized solenoid valve [7]. The water pressure trapped in the main valve control chamber holds the diaphragm against the valve seat, sealing it driptight 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 the solenoid valve being energized by the fire & gas control system [C]. This opens the 400Y-2DC deluge valve, allowing water to flow into the system piping and to the alarm device [10]. The pressure-reducing pilot valve [9] senses changes in outlet pressure and, modulates the main valve to maintain the set downstream pressure. When the Magna latch solenoid is specified for model 400Y–2DC with H2 or H3 suffix (see code designation on page 4) the deluge valve will latch open until reset remotely.

System P&ID



	Components
1	BERMAD 400Y Deluge Valve
2	Priming Ball Valve
3	Priming Strainer
4	Check valve
5	Restriction Orifice
6	Manual Emergency Release
7	2-way Solenoid valve
8	Pressure Reducing Pilot Valve

	Optional System Items
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
DV2	Downstream Drain valve
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 the valve code, and mandatory for FM approval (drain and indicating components) See code designations on page 4 "Factory Supplied Additional Items"*

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System Installation

A typical installation of the BERMAD model 400Y-2DC features actuation via a hydraulic relay valve and 2-way solenoid valve, triggered 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 position monitoring system.
A pressure reducing pilot valve integrated in the control trim ensures a precise and stable pre-set downstream water pressure.

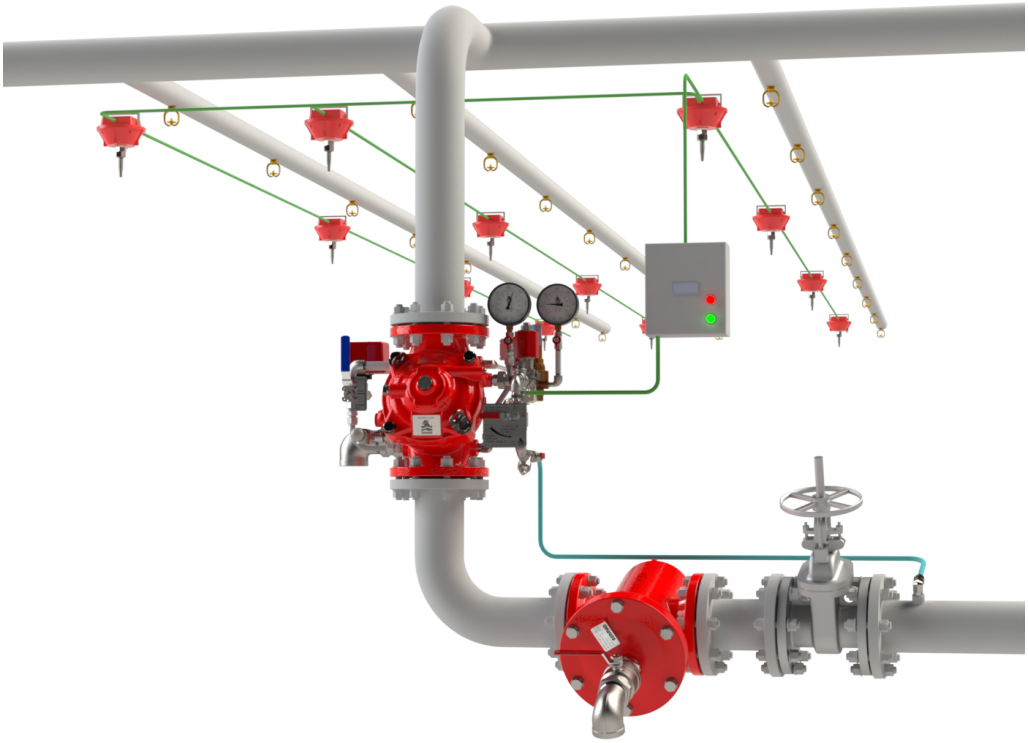
Optional System Items

S.S. Glycerin Filled Pressure Gauge

Linear Visual Position Indicator

S.S Pressure Switch E xd

Basket Strainer - 60F



Suggested Specifications

The deluge valve shall be UL-listed and FM Approved for 365-psi/25bar.
The valve shall have an unobstructed flow path a straight-through, Y-type-body, 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 2-way FM and UL429A-listed for 365 psi/25 bar with 65% of the rated voltage.
The control trim shall include a pressure control pilot valve, a manual emergency release unit, a Y-type strainer, two 4-inch pressure gauges, an automatic drip-check with manual override, and a ball drain valve with a 360-degree swivel.
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 control trim.
The deluge valve and control trim shall be pre-assembled and hydraulically tested by a UL/FM and ISO 9000, 9001 certified factory.

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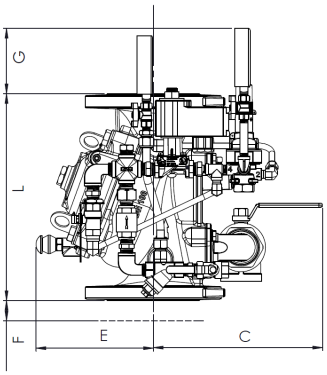
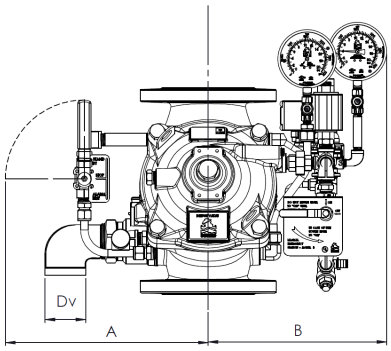
Technical Data

Available Sizes:
Flanged- 1½, 2, 2½, 3, 4, 6, 8, 10, 12, 14 & 16"
Grooved- 1½, 2, 2½, 3, 4, 6, 8 & 10"

Pressure Rating:
ANSI#150 - 17.2 bar | 250 psi
ANSI#300 - 1½" to 10" - 25 bar | 365 psi
ANSI#300 - 12" to 16" - 20 bar | 300 psi
Grooved - 17.2 / 25 bar | 250 / 365 psi
Setting range: FM: 30 to 235 psi / 2 to 16 bar | UL: 4 to 12 bar / 60 to 175 psi

Elastomer:
HTNR - Fabric Reinforced High Temperature Compound - See engineering data





Valve Size	L #150 mm | in	L Grooved mm | in	L #300 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	Weight #300 kg | lb
DN40 | 1½"	230 | 9.1	230 | 9.1	230 | 9.1	293 | 11.5	282 | 11.1	177 | 7	¾"	215 | 8.5	91 | 3.6	166 | 6.5	19 | 42	22 | 49
DN50 | 2"	230 | 9.1	230 | 9.1	238 | 9.4	293 | 11.5	282 | 11.1	177 | 7	¾"	215 | 8.5	91 | 3.6	166 | 6.5	20 | 44	22 | 49
DN65 | 2½"	235 | 9.3	235 | 9.3	241 | 9.5	293 | 11.6	282 | 11.1	177 | 7.2	1½"	184 | 7.3	88 | 3.5	152 | 6	24 | 53	30 | 66
DN80 | 3"	310 | 12.2	310 | 12.2	326 | 12.8	313 | 12.3	294 | 11.6	177 | 7	1½"	186 | 7.3	21 | 0.8	124 | 4.9	37 | 82	43 | 95
DN100 | 4"	350 | 13.8	350 | 13.8	368 | 14.5	343 | 13.5	302 | 11.9	287 | 11.3	2"	199 | 7.8	-	113 | 4.4	51 | 112	58 | 128
DN150 | 6"	480 | 18.9	480 | 18.9	506 | 19.9	358 | 14	356 | 14	302 | 11.9	2"	234 | 9.2	-	72 | 2.8	99 | 218	120 | 264
DN200 | 8"	600 | 23.6	600 | 23.6	626 | 24.7	392 | 15.4	433 | 17	317 | 12.5	2"	301 | 11.9	-	37 | 1.5	168 | 370	190 | 418
DN250 | 10"	730 | 28.7	730 | 28.7	730 | 28.7	406 | 16	433 | 17	317 | 12.5	2"	301 | 11.9	-	-	201 | 442	235 | 517
DN300 | 12"	850 | 33.5	-	888 | 35	478 | 18.8	463 | 18.2	380 | 15	2"	441 | 17.4	-	14 | 0.5	365 | 803	405 | 891
DN350 | 14"	980 | 38.6	-	980 | 38.6	478 | 18.8	463 | 18.2	379 | 14.9	2"	441 | 17.4	-	-	401 | 882	470 | 1034
DN400 | 16"	1100 | 43.3	-	1100 | 43.3	478 | 18.8	463 | 18.3	405 | 16.1	2"	417 | 16.4	-	-	452 | 995	572 | 1259

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-2DC | 03 | V | C | A5 | ER | 4DC | NN | N6nW

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 A536 (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

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

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
24VDC - Latch	4DS
110VDC - N.C.	5DC
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

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
Magna-Latch Solenoid - 2 wires	H2
Stainless steel 316 Solenoid Valve	K
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

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