PNEUMATIC PRESSURE CONTROL DELUGE VALVE WITH LOCAL RESET

Model FP-400Y-4DC-H

The BERMAD model 400Y-4DC-H is an elastomeric hydraulic, line pressure operated, deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.
The 400Y-4DC-H is activated by a latching pneumatic relay valve that latches the main valve open until locally reset. An integrated pressure reducing pilot valve ensures a stable and precise pre-set downstream water pressure.
An optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.
The 400Y-4DC-H is ideal for open-nozzle systems with a high pressure water supply and/or relatively low flow. The pneumatic control makes the 400Y-4DC-H suitable for freezing environments and corrosive water supplies.



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
  - Accurate and stabilizing pressure control
  - Valve position limit switches (optional)
- High performance
  - Very high flow efficiency
  - Straight through Y type body
  - Approved for PN25 / 365 psi
- Specifically-designed for fire protection
  - Face-to-face length standardized to ISO 5752 EN 558-1
  - Suitable for corrosive fluids and freezing temperatures
  - 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	ABS American Bureau of Shipping Type Approval Sizes 1½" - 12"
Lloyd's Register TA	Lloyd's Register Type Approval Sizes 1½" - 10"

Typical Applications

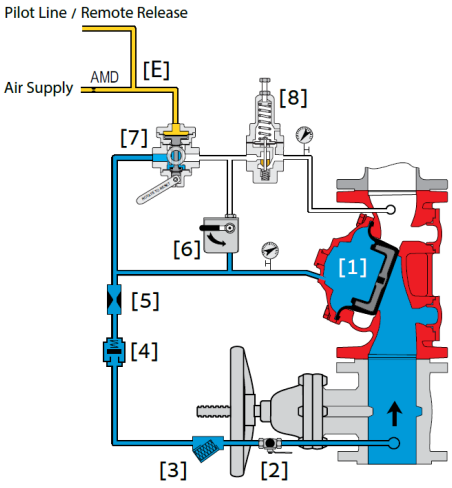
- Fusible plug loops
- Automatic water spray systems
- Foam applications
- Corrosive water systems
- High Pressure Water Supply
- Freezing Environments

Additional Features

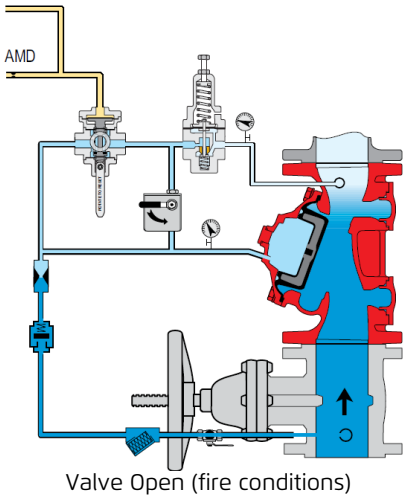
- Valve position limit switches
- Seawater compatibility
- Drain valve/s inlet/outlet
- Air Maintentenance Device
- Corrosion resistant zinc based high build epoxy coating

All images in this catalog are for illustration only

Operation



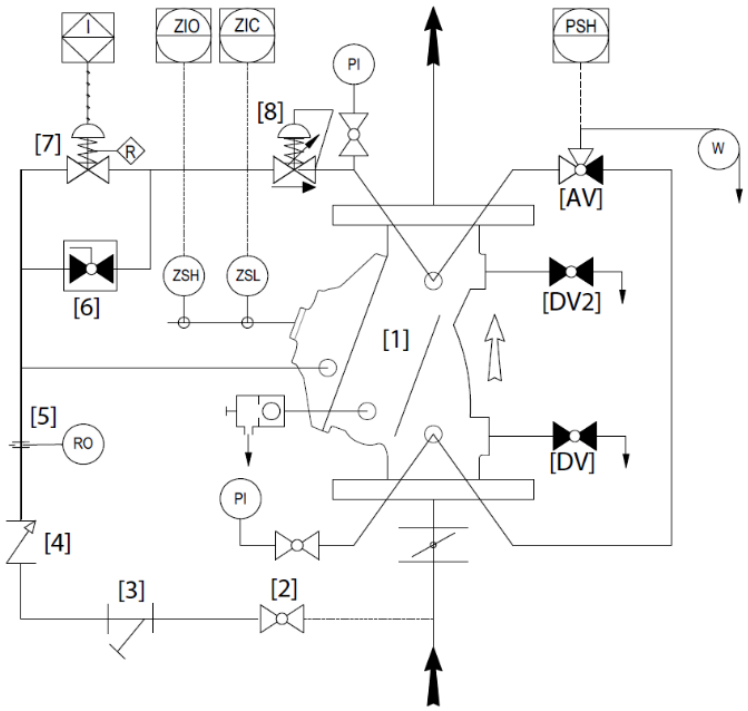
Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD model 400Y-4DC-H 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 restriction orifice [5], it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a latching relay valve (URV-M) [7] that is held closed by pneumatic pressure in the dry pilot line [E]. The water pressure trapped in the main valve control chamber holds the diaphragm against the valve seat, sealing driptight.
Under FIRE conditions, water pressure is released from the control chamber, either with the manual emergency release, or by the URV-M opening automatically in response to a decrease in pneumatic pilot-line pressure. This opens the 400Y-4DC-H deluge valve, allowing water to flow into the system piping and to the alarm device. Once open the valve latches until reset locally.
The pressure-reducing pilot valve [8] senses changes in outlet pressure and modulates the main valve to maintain the set downstream pressure.

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	URV-2-M Relay Valve
8	Pressure Reducing Pilot Valve

	Optional System Items
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
AMD	Air Maintenance Device
I	Visual Valve Position indicator
DV2	Downstream Drain valve
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

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System Installation

A typical installation of the BERMAD model 400Y-4DC-H features automatic actuation via a pneumatic universal relay valve, triggered by a fusible plug loop. Once open the relay pilot URV-M will latch mechanically keeping the 400Y 4DC-H open, until locally reset. A pressure reducing pilot valve within the trim controls the main valve to ensure a precise, pre-set, stable 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



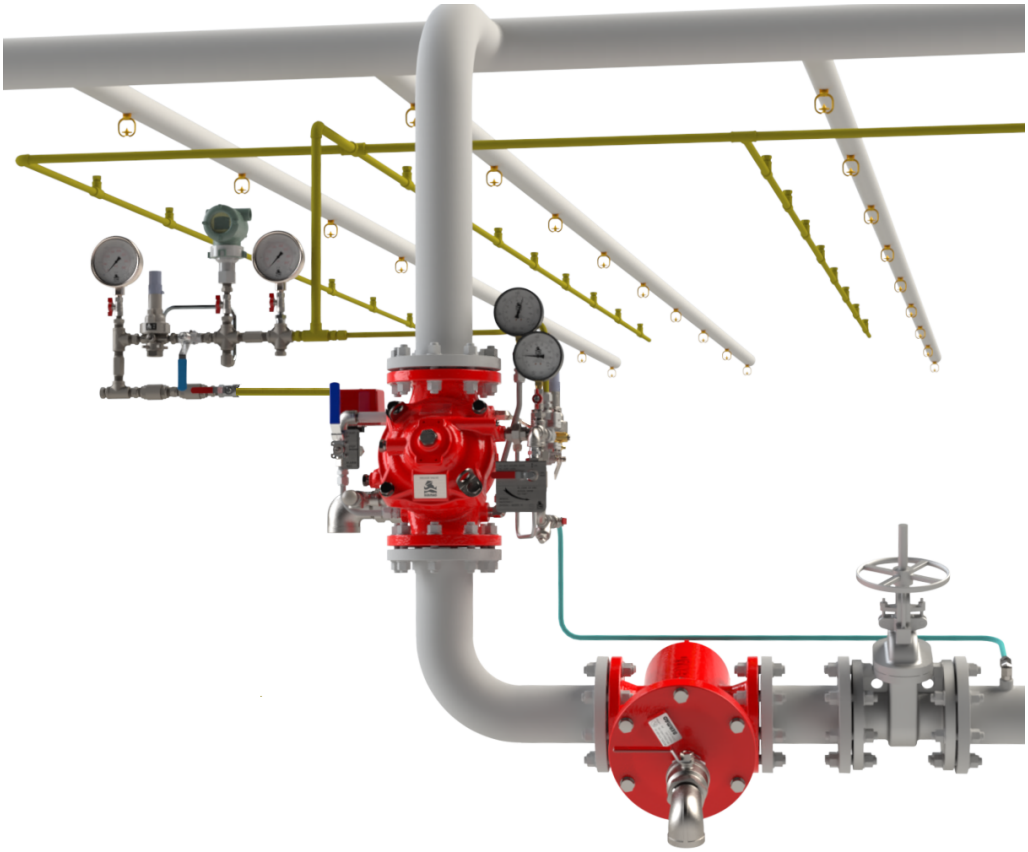
Single Ex d
Proximity S.S.316
Limit Switch



Pressure Switch



Pressure Gauge



Suggested Specifications

The deluge valve shall be UL-listed, 365-psi/25-bar rated, with a straight-through Ytypebody.
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, an auxiliary latching relay 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.

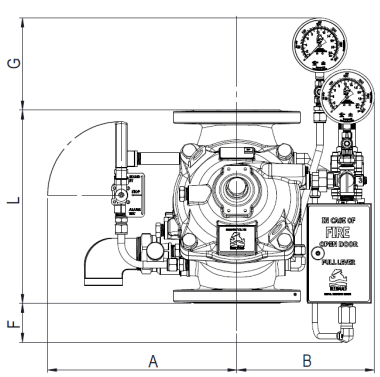
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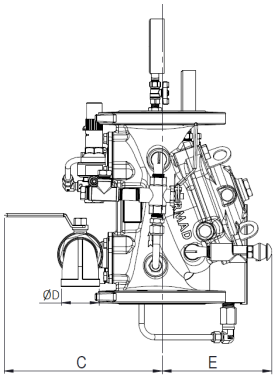
Technical Data

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
ANSI#300 - 1½" to 10" - 25 bar
ANSI#300 - 12" to 16" - 20 bar
Grooved - 17.2 / 25 bar
Setting range: 4 -12 bar

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





Valve Size	L #150 (mm)	L Grooved (mm)	L #300 (mm)	A (mm)	B (mm)	C (mm)	øD(in)	E (mm)	F (mm)	G (mm)	Weight #150 (Kg)	Weight #300 (Kg)
DN40 | 1½"	230	230	230	293	232	177	¾"	215	166	130	19	20
DN50 | 2"	230	230	238	293	232	177	¾"	215	166	130	19	20
DN65 | 2½"	235	235	241	296	233	183	1½"	215	164	123	24	26
DN80 | 3"	310	310	326	313	292	221	1½"	186	97	100	38	39
DN100 | 4"	350	350	368	343	300	287	2"	199	71	167	52	59
DN150 | 6"	480	480	506	358	354	302	2"	234	-	35	100	120
DN200 | 8"	600	600	626	392	431	317	2"	301	-	-	169	189
DN250 | 10"	730	730	730	406	431	317	2"	301	-	-	202	238
DN300 | 12"	850	-	888	478	496	380	2"	441	-	-	358	398
DN350 | 14"	980	-	980	478	496	379	2"	441	-	-	394	454
DN400 | 16"	1100	-	1100	478	496	405	2"	417	-	-	445	564

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" | 400Y-4DC | 03 | V | C | A5 | ER | NN | N6nWH

Category	Code
Standard	FP
Seawater	FS
Foam	FC

Valve Size	
1½"	40 mm
2"	50 mm
2½" (6)	60 mm
3"	80 mm
4"	100 mm
6"	150 mm
8"	200 mm
10"	250 mm
12"	300 mm
14"	350 mm
16"	400 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
Closing Speed Control	01
Opening Speed Control	02
Opening & Closing Speed Control	03
None	-

End Connection	Code
ANSI#150RF	A5
ANSI#150FF	a5
ANSI#300RF	A3
ANSI#300FF	a3
ISO PN16	16
ISO PN25	25
Grooved Class 25psi / 17.2bar	VI
Grooved Class 365psi / 25bar	V2

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	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
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
Mechanical latch – Manual Reset	H

*More options available – consult BERMAD

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"
(6) Available in Ductile Iron only

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