

## Hydraulically Controlled Anti-Columning Deluge Valve Model 400Y - 5M

The BERMAD model 400Y-5M is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400Y-5M is activated by a pressure operated relay valve, which latches the main valve open until locally reset. The 400Y-5M is ideal for systems with remote or elevated wet pilot lines, due to its boosted local pressure release. 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, fail-safe actuation
  - Single piece, rugged, elastomeric diaphragm seal
  - VRSD technology
  - Obstacle-free, uninterrupted flow path
  - No mechanical moving parts
  - Latches open: remains open until reset locally
  - Valve position limit switches (optional)
  - Local valve position indicator beacon (optional)
- **High performance**
  - Very high flow efficiency
  - Minimal head loss: straight-through-flow Y-type body
  - Approved for PN25/365 psi
- **Designed for fire protection**
  - Face-to-face length standardized to ISO 5752, EN 558-1
  - Designed to meet the requirements of the industry standards
  - Opens quickly in systems with long wet pilot lines
- **Quick and easy maintenance**
  - In-line serviceable
  - Quick cover removal without detaching control trim\*
  - Swivel mounted drain valves\*

\* not including 1½" & 2" valves

### Typical Applications

- Remote or elevated wet pilot lines
- Automatic water spray systems
- Hydraulic remote controlled systems
- Automatic foam systems

### Approvals



UL-Listed  
Special System Water Control  
Valves, Deluge Type (VLFT)



FM Approved  
for Deluge Sprinkler Systems



Det Norske Veritas  
Type Approval



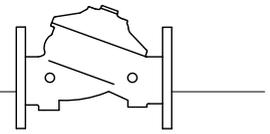
ABS  
American Bureau of Shipping  
Type Approval



Lloyd's Register  
Type Approval

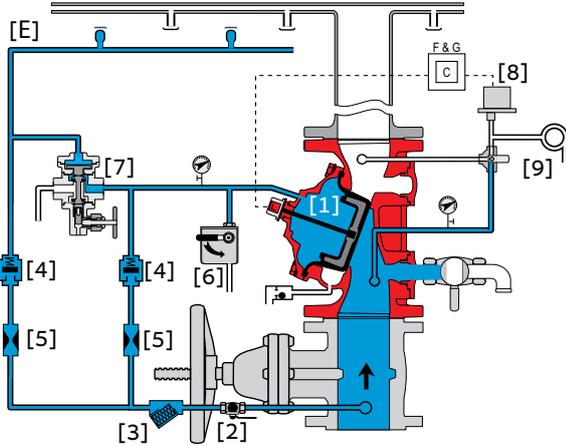
### Additional Features

- Valve position limit switches
- Local valve position indicator beacon
- Stainless steel seat ring
- Alarm pressure switch
- Water motor alarm
- Sea water compatibility
- Drain valve/s inlet/outlet

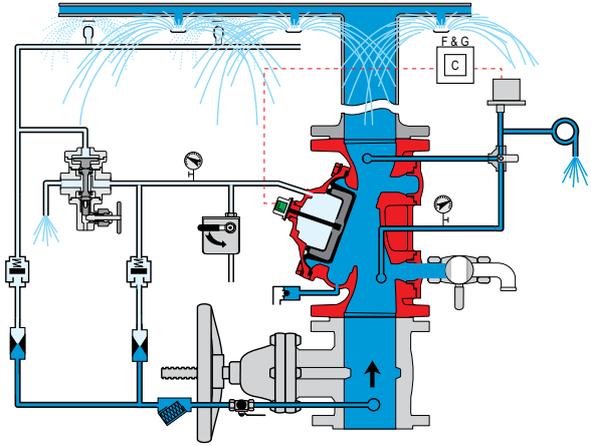


## Operation

(For illustration only)



**Valve Closed** (normal conditions)



**Valve Open** (fire conditions)

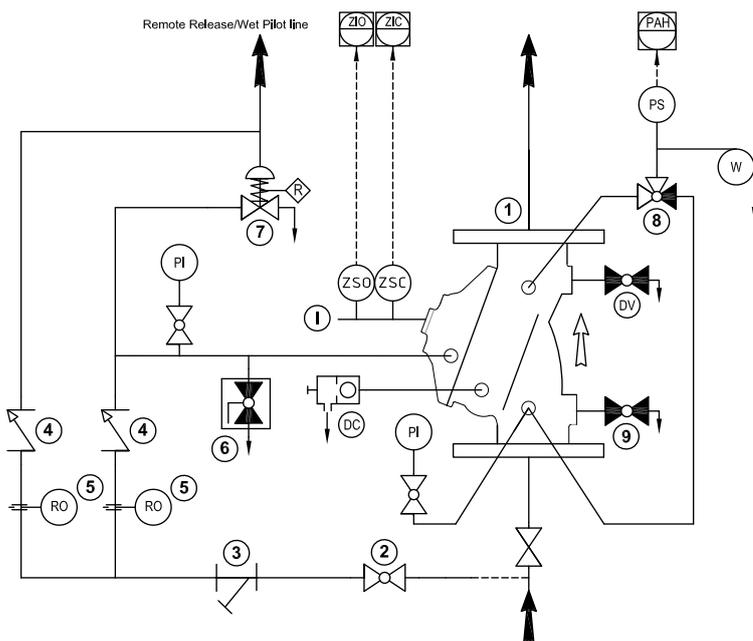
The BERMAD model 400Y-5M is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] and strainer [3], and a restriction orifice [5] and then trapped in the control chamber by a check valve [4], a manual emergency release [6], and a relay valve (URV-M) [7] that is held closed by hydraulic pilot line pressure [E]. The water pressure trapped in the 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-M opening automatically in response to a decrease in hydraulic pilot-line pressure. This latches the 400Y-5M deluge valve open, allowing water to flow into the system piping and to the alarm device [9].

The URV-M is factory set to operate with a minimum pilot line elevation of 10 meters above the valve. Additional spring tension can be set to suit greater elevations, up to a maximum of 70 meters above the valve (refer to the Valve Code Designation on the last page).

## System P&ID



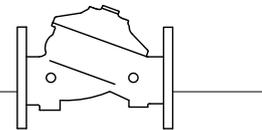
### Components

- 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

### Optional System Items

- ZS Limit Switch Assembly
- I Visual Indicator
- DV Additional Drain Valve
- PS Pressure Switch
- W Water Motor Alarm
- PI Pressure Gauge\*
- DC Automatic Drip Check Valve\*
- 8 3-Way Alarm Test Valve\*
- 9 Main Drain Valve\*

\*Mandatory for FM approval  
(suffix A in code designations on page 4)



### System Installation

A typical installation of the BERMAD model 400Y-5M features automatic actuation via a pressure operated relay valve, triggered by a wet pilot line with closed fusible plugs elevated above the deluge valve. When open and fitted with a limit switch, the valve sends a feedback signal to the remote valve position monitoring system.

### Optional System Items



Water Motor Alarm



Pressure Switch



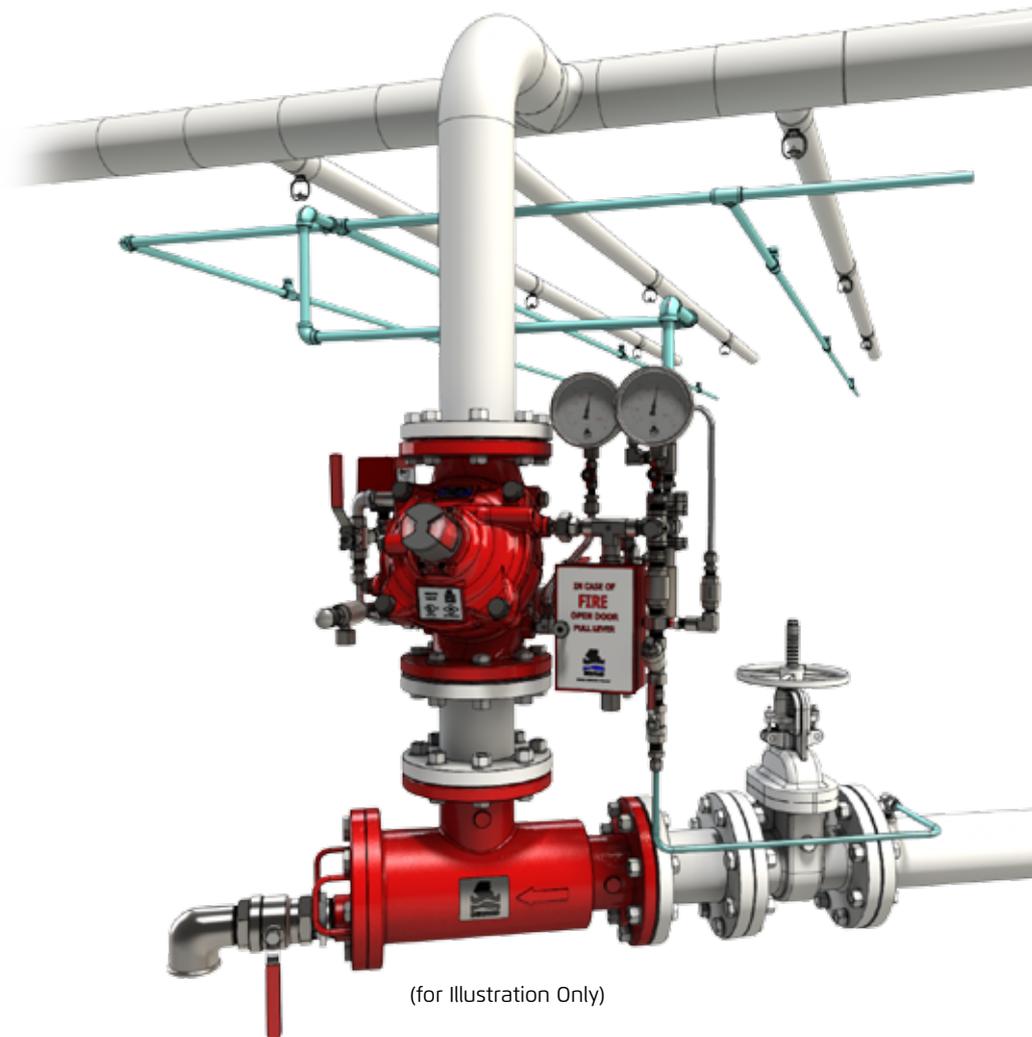
Valve Position Indicator



Limit Switch



Strainer



### Suggested Specifications

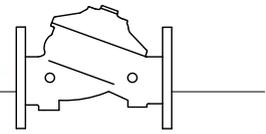
The deluge valve shall be a UL listed and FM approved, 25 bar/365 psi rated, elastomeric-type, straight-through, Y-type-body valve. The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.

Valve actuation shall be accomplished by a one-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 latching relay pilot valve, 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 stainless steel box.

The valve drain socket shall be flanged and have 360-degree swivel.

The valve shall be equipped with a dual-color, rotational position indicator, readable from 50 meters, with two limit switches enclosed in a protective switch box. Removing the valve cover for inspection or maintenance shall not require removing the control trim. The deluge valve and its entire control trim shall be supplied pre-assembled and hydraulically tested by a factory certified to ISO 9000 and 9001 standards.



## Technical Data

### Available Sizes (inch)

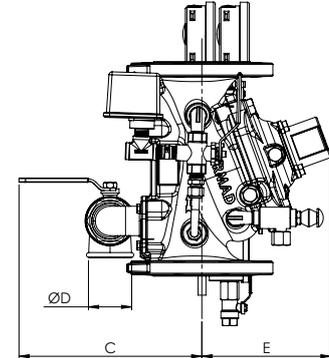
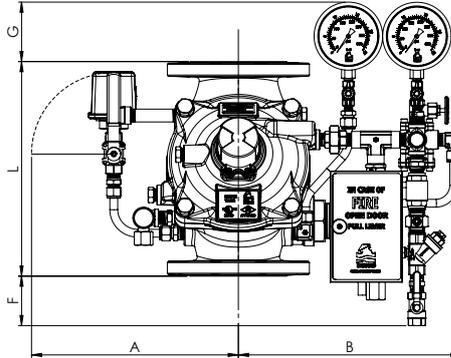
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 1½, 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

### Pressure Rating

- ANSI#150 - 16 bar / 235psi
- ANSI#300 - 1½" to 10" 25 bar / 365 psi  
12" to 16" 20 bar / 300 psi
- Grooved/Threaded - 25 bar / 365 psi
- Minimum supply pressure is related to the the selected Pilot Trip Point setting, see notes 5 and 6 in code designations below

### Elastomer

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



Valve Size	1½" DN40	2" DN50	3" DN80	4" DN100	6" DN150	8" DN200	10" DN250	12" DN300	14" DN350	16" DN400
<sup>(1)</sup> L <sup>1</sup> ANSI #150 mm (in.)	230(9.06)	230(9.06)	310(12.21)	350(13.79)	480(18.91)	600(23.64)	730(28.76)	850(33.49)	980(38.61)	1100(43.34)
L <sup>2</sup> ANSI #300 mm (in.)	230(9.06)	238(9.37)	326(12.84)	368(14.50)	506(19.94)	626(24.66)	730(28.76)	888(34.96)	980(38.61)	1100(43.34)
A mm (in.)	330(13.0)	330(13.0)	390(15.4)	398(15.7)	451(17.8)	481(18.9)	481(18.9)	594(23.4)	594(23.4)	594(23.4)
B mm (in.)	294(11.6)	294(11.6)	352(13.8)	362(14.3)	417(16.4)	445(17.5)	455(17.9)	568(22.4)	568(22.4)	568(22.4)
C mm (in.)	241(9.5)	241(9.5)	274(10.8)	290(11.4)	304(12.0)	320(12.6)	320(12.6)	383(15.1)	383(15.1)	408(16.1)
ØD	¾"	¾"	1½"	2"	2"	2"	2"	2"	2"	2"
E mm (in.)	167(6.6)	167(6.6)	191(7.5)	205(8.1)	273(10.7)	338(13.3)	338(13.3)	490(19.3)	490(19.3)	465(18.3)
F mm (in.)	179(7)	179(7)	109(4.3)	82(3.2)	0.5(0.02)	-	-	-	-	-
G mm (in.)	121(4.8)	121(4.8)	111(4.4)	98(3.9)	49.5(2)	25(1)	-	-	-	-
KV m <sup>3</sup> /h (Cv gpm)	68(79)	80(92)	190(219)	345(398)	790(912)	1160(1340)	1355(1565)	2370(2737)	2850(3292)	3254(3758)
<sup>(2)</sup> Leq m (ft)	2(7)	5(16)	7(23)	9(30)	15(49)	27(89)	62(203)	52(171)	59(194)	88(289)
Weight, flanged kg (lbs)	17.7(39)	19.1(42)	33.8(74.4)	43.8(96.4)	87.1(191.6)	150.3(330.7)	180.3(396.7)	323.3(711.3)	356.3(783.9)	402.3(885)

Notes: <sup>(1)</sup> L1 Dimensions are for grooved, threaded and raised face flanged valves  
<sup>(2)</sup> Leq (Equivalent Pipe Length) refers to turbulent flow in new steel pipe schedule 40, values given for general consideration only  
<sup>(3)</sup> Dimensions for the trim envelope may vary with specific component positioning

## Valve Code Designations

FP	6"	400Y-5M	00	V	C	A5	PR	NN	PNQ
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Category	code
Standard	FP
Seawater	FS
Foam Concentrate	FC

Valve Size	code
1½"	40 mm
2"	50 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

Pilot Line Trip Point Setting	code
Elevation below 10m/33ft	00
Max elevation 35m/115ft <sup>(5)</sup>	M6
Max elevation 70m/230ft <sup>(6)</sup>	M7

Installation	code
Vertical	V
Horizontal	H

End Connections	code
ANSI#150RF	A5
ANSI#150FF	a5
ANSI#300RF	A3
ISO PN16	16
ISO PN25	25
Grooved ANSI C606	VI

Material Body & Cover <sup>(1)</sup>	code
Ductile Iron A356 <sup>(2)</sup>	C
Steel ASTM A216 WCB <sup>(2)</sup>	S
Stainless Steel 316	N
Nickel Al Bronze C95800	U
Super Duplex Grade 5A	D

Coating	code
Polyester Red	PR
High Build Epoxy	ER
Uncoated	UC

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

Factory Fitted Options	Code
Ex d ATEX Pressure Switch <sup>(3)</sup>	P9
Ex Proof NEC, Div.1 Pressure Switch <sup>(3)</sup>	P7
General Purpose NEMA-4 Pressure Switch	P
Limit Switch, General Purpose <sup>(3)</sup>	RS
Single Ex d Proximity Limit Switch	RS9
Double Ex d Proximity Limit Switch	RSS9
S.S Glycerin Pressure Gauge Assembly <sup>(3)</sup>	6n
Monel Pressure Gauge Assembly <sup>(3)</sup>	6m
Water Motor Alarm Assembly <sup>(3)</sup>	W
Drain Valve	DV
Special Elastomer EPDM	E1
Special Elastomer NBR	E3
Large Control Filter	F
Valve Position Indicator	RI
Stainless Steel Solenoid Valve	K
Stainless Steel 316 Trim Accessories	N
Stainless Steel 316 Seat	T
Pressure Transmitter <sup>(3)</sup>	Q
Drain and Indicating Components <sup>(4)</sup>	A

Notes:  
<sup>(1)</sup> Other materials available see engineering data  
<sup>(2)</sup> Coated internally and externally  
<sup>(3)</sup> Supplied loose  
<sup>(4)</sup> Mandatory for FM approved valves  
<sup>(5)</sup> Minimum supply pressure to the Deluge Valve shall be at least 5.0 barg  
<sup>(6)</sup> Minimum supply pressure to the Deluge Valve shall be at least 8.5 barg





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