Electric, Pressure-Control, On-Off Deluge Valve

FP 400Y - 3DC

The BERMAD model 400Y-3DC is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.
The 400Y-3DC is activated by a 3-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.
The 400Y-4DC is ideal for open-nozzle systems with a high pressure water supply.
Available with electric components to suit any hazardous location.

Benefits and Features

- **Safety and reliability**
  - Time-proven, simple, fail-safe actuation
  - Single-piece, rugged, elastomeric diaphragm sea 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
- **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
  - Quick cover removal without detaching control trim*
  - Swivel mounted drain valves*

* not including 1½" & 2" valves

Typical Applications

- Electric fire detection systems with control panels
- Automatic water spray systems
- Foam applications
- Corrosive water supplies
- High pressure water supply

Approvals

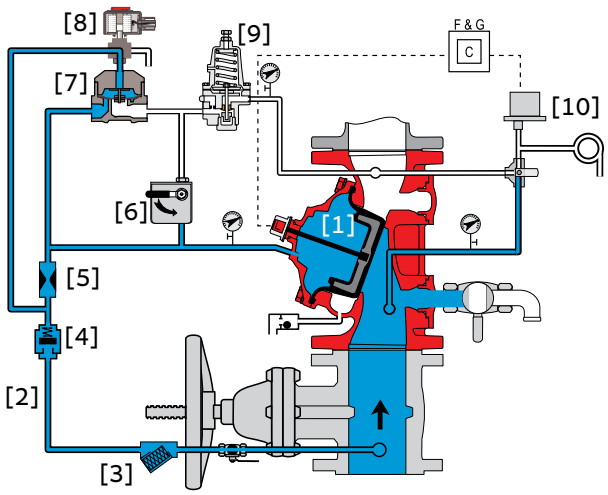
c UL us LISTED	**UL-Listed** Special System Water Control Valves Deluge Type (VLFT)
DNV	**Det Norske Veritas** Type Approval
ABS TYPE APPROVAL PROGRAM	**ABS** American Bureau of Shipping Type Approval
Lloyd's Register	**Lloyd's Register** Type Approval

Factory Fitted Options

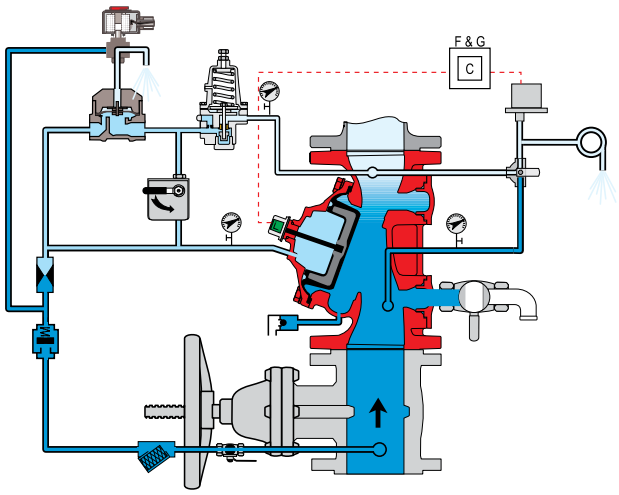
- Valve position limit switches
- Stainless steel seat ring
- Sea water compatibility
- Water motor alarm
- Alarm pressure switch
- Downstream drain valve

Operation

(for Illustration Only)



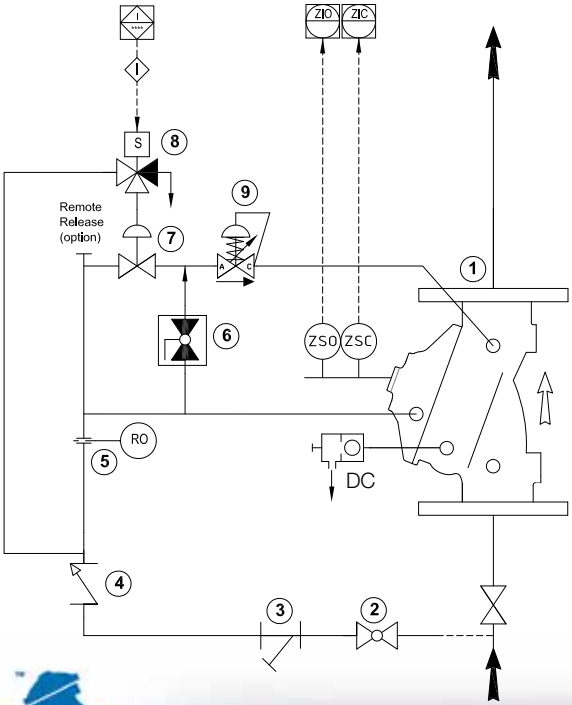
Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD model 400Y-3DC 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]**, and a relay valve (HRV) **[7]** that is held closed by hydraulic 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 HRV opening automatically in response to the solenoid valve being activated by the fire & gas control system **[C]**. This opens the 400Y-3DC 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 outlet pressure rises above the pre - set pressure value, the pilot valve throttles, enabling pressure to accumulate in the control chamber. This causes the main valve to close further and reduce outlet pressure, returning the outlet pressure to the set value. When outlet pressure falls, the pilot valve opens wider, releasing pressure from the control chamber. This causes the main valve to open wider and increase outlet 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	HRV-2 Hydraulic Relay Valve
8	3-Way NC Solenoid Valve
9	Pressure Reducing Pilot Valve

Factory fitted options

ZS	Limit Switch Assembly
DC	Automatic Drip Check Valve

System Installation

A typical installation of the BERMAD model 400Y-3DC features automatic actuation via a hydraulic relay valve and three-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 sends a feedback signal to the remote valve position monitoring system. A pressure reducing pilot valve ensures a precise, pre-set, and stable downstream water pressure.

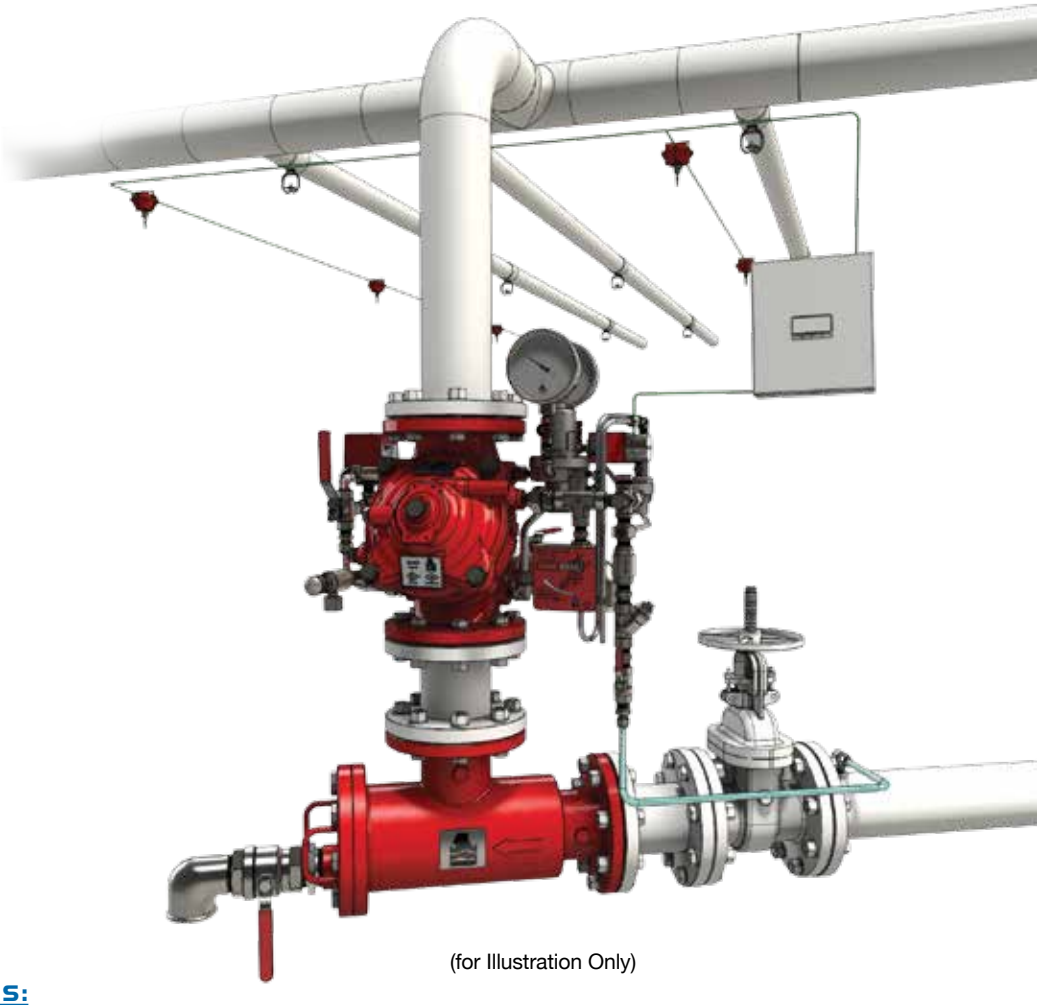
Factory Fitted Options


Water Motor Alarm


Pressure Switch


Limit Switch


Strainer

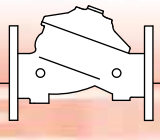


(for Illustration Only)

Suggested Specifications:

The deluge valve shall be a UL listed, 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 single-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 relay pilot valve, a 3-Way solenoid valve approved for 25 bar (365 psi) working pressure with a tolerance of 35% below the rated voltage.The trim shall include 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 a 360-degree swivel.
The valve shall be equipped with two limit switches.
Removing the valve cover for inspection and maintenance shall be in-line and not require removal of 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.

BERMAD Fire Protection



Model: FP 400Y - 3DC

400Y Series

Technical Data

Available Sizes (inch)

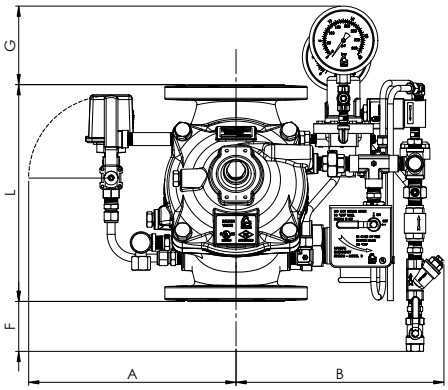
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16”
- Grooved - 2, 3, 4, 6 & 8”
- Threaded - 1½ & 2”

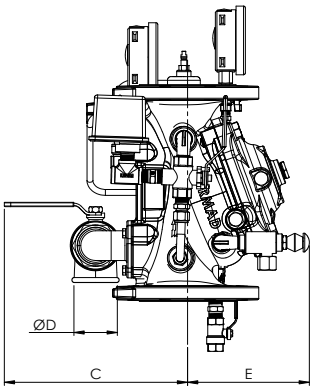
Pressure Rating

- ANSI#150 - 16 bar / 235 psi
- ANSI#300 - 25 bar / 365 psi
- Grooved - 25 bar / 365 psi
- Threaded – 25 bar / 365 psi

Temperature Rating

- 60°C / 140°F with NR elastomers (standard)
- 90°C / 194°F with EPDM elastomers





Valve Size	1½" DN40	2" DN50	3" DN80	4" DN100	6" DN150	8" DN200	10" DN250	12" DN300	14" DN350	16" DN400
(1)L¹ 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)
L² ANSI #300 mm (in.)	230(9.06)	235(9.25)	326(12.84)	368(14.50)	506(19.94)	626(24.66)	730(28.76)	850(33.49)	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.)	334(13.1)	334(13.1)	392(15.5)	402(15.8)	457(18)	485(19)	485(19)	598(23.5)	598(23.5)	598(23.5)
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)
D mm (in.)	¾"	¾"	1½"	2"	2"	2"	2"	2"	2"	2"
E mm (in.)	120(4.7)	120(4.7)	146(5.7)	158(6.2)	228(9.0)	295(11.6)	295(11.6)	441(17.4)	441(17.4)	415(16.3)
F mm (in.)	179(7)	179(7)	109(4.3)	82(3.2)	0.5(0.01)	-	-	-	-	-
G mm (in.)	141(5.55)	141(5.55)	131(5.2)	118(4.6)	69.5(2.7)	45(1.8)	-	-	-	-
Kv m³/h (Cv gpm)	68(79)	80(92)	190(219)	345(398)	790(912)	1160(1340)	1355(1652)	2600(3040)	2950(3450)	3254(3801)
(2) Leq m (ft)	2(6)	4(14)	8(25)	8(25)	13(43)	27(89)	55(179)	40(128)	66(215)	115(370)
Weight, flanged kg (lbs)	18.3(40.3)	19.7(43.3)	34.4(75.7)	44.4(97.7)	87.7(193)	151(332.2)	181(398)	324(713)	357(785)	403(887)

Notes: (1) L1 Dimensions are for grooved, threaded and raised face flanged valves
(2) Leq: Equivalent pipe length for turbulent flow in clean commercial steel pipe (SCH 40)

Valve Code Designations

FP | 6” | 400Y-3DC | V | C | A5 | PR | 4DC | NN | P6nQ

Category	code
Standard	FP
Seawater	FS
Foam Concentrate	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
14"	350 mm
16"	400 mm

Notes:
(1) Other materials available, see engineering data
(2) Coated internally and externally
(3) Supplied loose

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 A890 Grade 5A	D

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

Coating	code
Polyester Red	PR
High Build Epoxy	ER
Uncoated	UC

Voltage - Main Valve N.O or N.C	
24VDC - N.C.	4DC
24VDC - N.O.	4DO
24VDE - Latch	4DS
110VDC - N.C.	5DC
110VDC - N.O.	5DO
110-120/AC - N.C.	5AC
110-120/AC - N.O.	5AO
220-240/AC - N.C.	2AC
220-240/AC - N.O.	2AO

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

Factory Fitted Options	Code
General Purpose NEMA-4 Pressure Switch	P
Ex Proof NEC, Div.1 Pressure Switch	P7
Single Limit Switch, General Purpose	S
Ex d ATEX Pressure Switch	P9
Single Ex d Proximity Limit Switch	S9
Double Ex d Proximity Limit Switch	SS9
S.S Glycerin Pressure Gauge Assembly	6n
Monel Pressure Gauge Assembly	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
E xd ATEX solenoid	9
Downstream Drain valve	DV
Water Motor Alarm Assembly (3)	W
Special Elastomer EPDM	E2
Special Elastomer NBR	E3
Large Control Filter	F
Valve Position Indicator	I
S.S Solenoid Valve	K
S.S 316 Trim Accessories	N
Stainless Steel 316 Seat	T
Pressure Transmitter	Q
Drain and Indicating Components	A

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