Electro-Pneumatic, Pressure Control On-Off Deluge Valve

Model FP 400Y - 6DC

The BERMAD Model 400Y-6DC is an elastomeric, hydraulic line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400Y 6DC is activated by a fall in pneumatic pressure to the relay valve on the control trim.

A fall in pneumatic pressure can be from a dry pilot line, a remote pneumatic release, or from an electric signal to the 3-Way solenoid.

When open an integrated pressure control pilot valve regulates the main valve to maintain a precise, stable, pre-set downstream pressure.

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

The 400Y-6DC is ideal for open-nozzle systems with a high pressure water supply. It is available with electrical components to suit any hazardous location.

(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
  - Shuts off on remote command
  - Ensures precise, stable downstream water pressure
  - Valve position limit switches (optional)
- **High performance**
  - Very high flow efficiency
  - Straight-through-flow Y-type body
  - Approved for PN25/365psi
- **Designed for fire protection**
  - Face-to-face length standardized to ISO 5752, EN 558-1
  - Meets the requirements of industry standards
- **Quick and easy maintenance**
  - In-line serviceable
  - Fast and easy cover removal
  - Swivel mounted drain valves*

* From 3" valves and larger

Typical Applications

- Remote control water spray systems
- Foam applications
- Corrosive water supplies
- High pressure water supply
- Dual redundant detection system

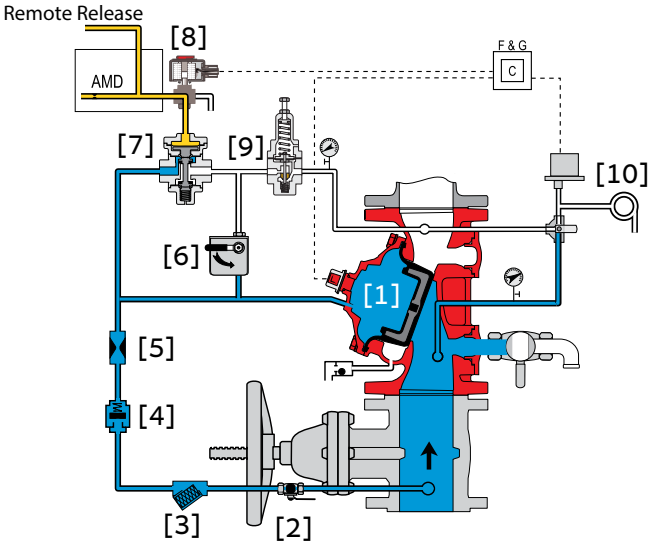
Approvals

c UL us LISTED	UL-Listed Special System Water Control Valves, Deluge Type (VLFT) Sizes 1½" - 16"
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

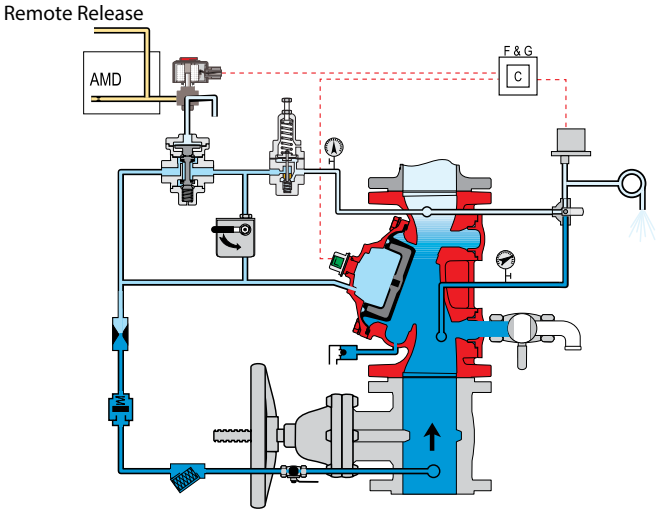
Additional Features

- Valve position limit switches
- Alarm pressure switch
- Air maintenance device
- Drain valve/s inlet/outlet
- For "automatic activation" select BERMAD local or remote reset model

Operation



Valve Closed (normal conditions)



Valve Open (fire conditions)

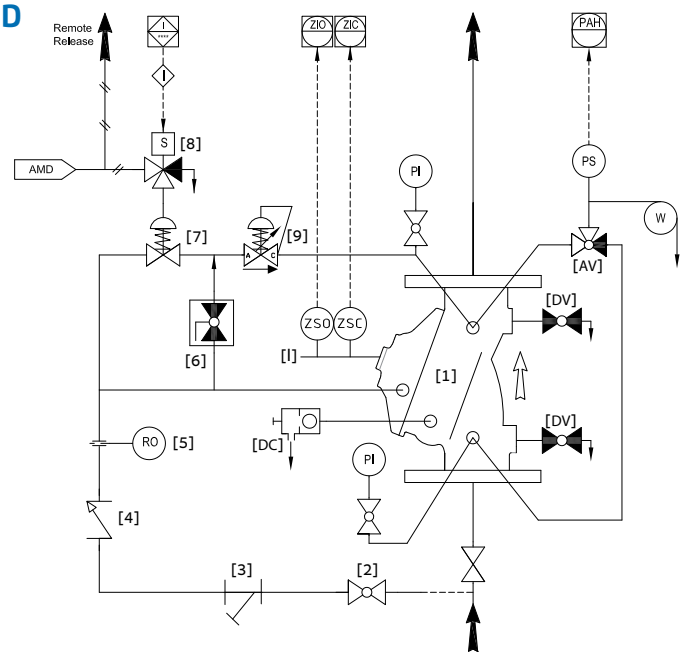
The BERMAD model 400Y-6DC is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] and strainer [3], restriction orifice [5] and is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV) [7] that is held closed by pneumatic 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 URV opening. The URV opens in response either to a decrease in pneumatic pilot-line pressure [E] or to the solenoid valve being activated by the fire & gas control system [C]. This opens the 400Y-6DC deluge valve, allowing water to flow into the system piping and to the alarm device/s [10]. The pressure-control pilot valve [9] modulates the main valve to maintain the set outlet pressure.

When outlet pressure changes, the pressure-control 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 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	URV, Pilot Valve
8	3-Way NC Solenoid Valve
9	Pressure Control Pilot Valve

Optional System Items*

AMD	Air Maintenance Device
PI	Pressure Gauge
I	Valve Position Indicator
DC	Drip Check
AV	3-Way Alarm Test Valve
DV	Drain Valve
PS	Pressure Switch
ZS	Limit Switch Assembly
W	Water Motor Alarm

* See also Factory Fitted Options under the Valve Code Designations on the last page

System Installation

A typical installation of the BERMAD model 400Y-6DC features actuation by way of a fall in pneumatic pressure to the control chamber of the 2-Way Universal Relay Valve.
It can also be actuated electrically by a signal from a fire & gas control system or an on-site emergency pushbutton.
A pressure control pilot valve integrated in the control trim ensures a precise and stable pre-set downstream water pressure.
When open, and fitted with a limit switch the valve can send a feedback signal to a remote valve position monitoring system.

Optional system Items

Air Maintenance Device

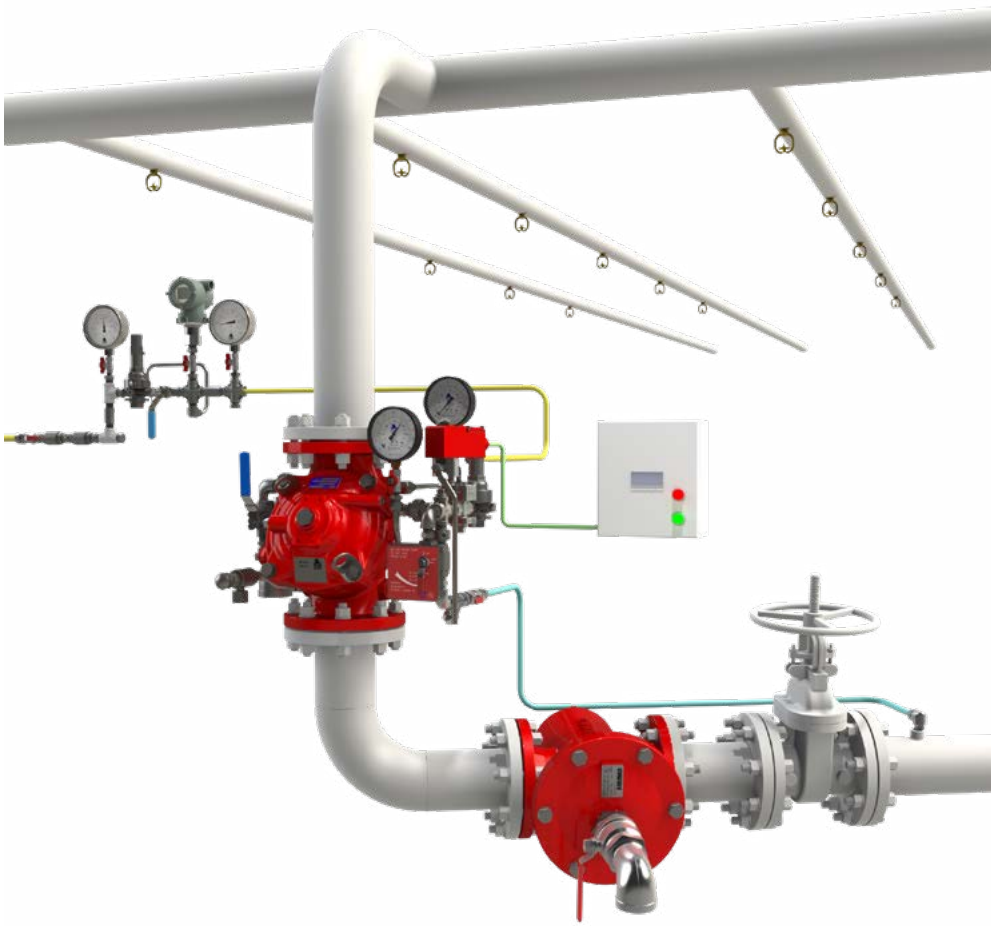
Limit switch

Water Motor Alarm

Pressure Switch

Pressure Gauges

Strainer



(for Illustration Only)

Suggested Specifications

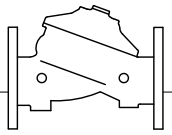
The deluge valve shall be UL listed, 25 bar/365 psi rated, elastomeric-type, with a straight-through, Y-type body.
The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.
Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial 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 with a tolerance of 35% below the rated voltage, a pressure control 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 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 - 6DC

400Y Series

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"

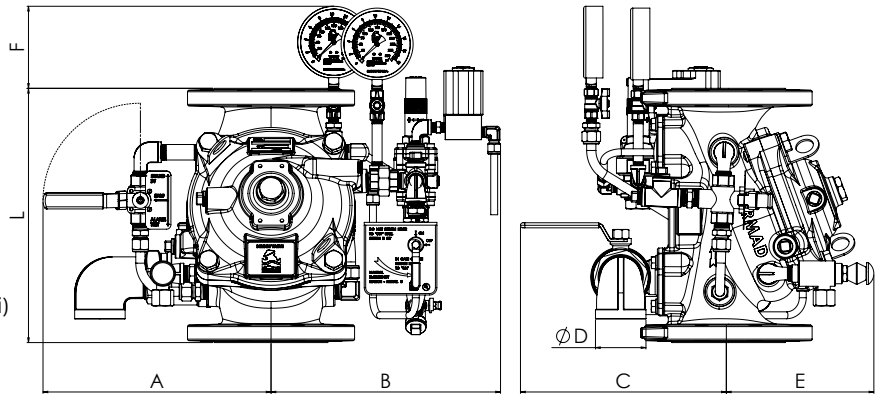
Pressure Rating

- ANSI#150 - 16 bar / 235 psi
- ANSI#300 - 1½" to 10" 25 bar / 365 psi
  12" to 16" 20 bar / 300 psi
- Grooved - 25 bar / 365 psi
- Threaded - 25 bar / 365 psi
- Standard setting range*: 4 - 12 bar (60 - 175 psi)

* For other setting ranges consult BERMAD

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	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L ANSI #150 (1)	230	9.1	230	9.1	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	980	38.6	1100	43.3
L ANSI #300 (2)	230	9.1	235	9.3	326	12.8	368	14.5	506	19.9	626	24.7	730	28.8	850	33.5	980	38.6	1100	43.3
A	259	10.2	259	10.2	319	12.6	327	12.9	380	15.0	410	16.1	410	16.1	523	20.6	523	20.6	523	20.6
B	271	10.7	271	10.7	329	13.0	339	13.3	394	15.5	422	16.6	422	16.6	535	21.1	535	21.1	535	21.1
C	241	9.5	241	9.5	274	10.8	290	11.4	305	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	180	7.1	180	7.1	185	7.3	195	7.7	228	9.0	295	11.6	295	11.6	441	17.4	441	17.4	415	16.3
F	148	5.8	148	5.8	138	5.4	125	4.9	77	3.0	52	2.0	-	-	-	-	-	-	-	-
Kv / Cv (3)	68 / 79		80 / 92		190 / 219		345 / 398		790 / 912		1160 / 1340		1355 / 1652		2600 / 3040		2950 / 3450		3254 / 3801	
Leq: m / ft (4)	2 / 7		6 / 18		8 / 25		9 / 31		15 / 49		28 / 92		64 / 209		46 / 149		56 / 184		90 / 295	
Kg / lb (ANSI # 150)	18 / 40		20 / 43		34 / 76		44 / 98		88 /193		151 / 332		181 / 398		324 / 713		357 / 785		403 / 887	
Kg / lb (ANSI # 300)	20 /45		22 / 48		35 / 77		51 / 113		108 / 238		171 / 376		217 / 477		364 / 801		429 / 944		523 / 1151	

(1) Refers to the length dimensions for Raised Face ANSI #150, ISO 16 Flanged, Threaded and Grooved valves
(2) Refers to the length dimensions for Raised Face ANSI #300 and ISO 25 Flanged valves
(3) Flow coefficients apply to a fully opened valve
(4) Leq (Equivalent Pipe Length) refers to turbulent flow in new steel pipe schedule 40 for a fully opened valve, values given for general consideration only
(5) **IMPORTANT:** Dimensions for the trim envelope or extents refer to a vertical orientation and may vary with specific component positioning; - allow a tolerance of at least ±10%.

Valve Code Designations

FP | 6" | 400Y-6DC | 03-06 | V | C | A5 | PR | 4DC | NN | N6nW

Category	Code
Standard	FP
Seawater	FS
Foam Concentrate	FC

Valve Size	
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

Speed Control	Code
Closing speed	01
Opening speed	02
Opening & Closing speed	03
Differential Pressure Sensing	06
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
ANSI#300RF	A3
ANSI#300FF	a3
ISO PN25	25
Grooved 235psi/PN16, ANSI C606	VI
Grooved 365psi/PN25, ANSI C606	V2
Threaded 235psi/PN16, ISO-7-Rp	BP
Threaded 365psi/PN25, ISO-7-Rp	PH
Threaded 235psi/PN16, NPT	NP
Threaded 365psi/PN25, NPT	NH

Coating	Code
Polyester Red	PR
High Build Epoxy	ER
Uncoated	UC

Voltage*	Code
24VDC - N.C.	4DC
24VDC - N.O.	4DO
24VDC - Latch	4DS
110VDC - N.C.	5DC
110-120/AC - N.C.	5AC
110-120/AC - N.O.	5AO
220-240/AC - N.C.	2AC
220-240/AC - N.O.	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 Fitted Options *	Code
General Purpose Pressure Switch	P
Ex Proof NEC, Div.1 Pressure Switch	P7
Ex d ATEX Pressure Switch	P9
Single Limit Switch, General Purpose	S
Single Ex d Proximity Limit Switch	S9
Double Ex d Proximity Limit Switch	SS9
Pressure Gauge Assembly	6
S.S Glycerin Pressure Gauge Assembly	6n
Monel Pressure Gauge Assembly	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex. d Atex Solenoid	9
Water Motor Alarm Assembly	W
Drain Valve	DV
Special Elastomer EPDM	E1
Large Control Filter	F
Valve Position Indicator	I
Stainless Steel 316 Trim Accessories	N
Stainless Steel Solenoid Valve	K
Pressure Transmitter	Q
Drain and Indicating Components	A

* For more Factory Fitted Options – see 400Y Ordering Guide or Consult BERMAD

Notes: (1) Other materials available see 400Y Engineering
(2) Coated internally and externally

www.bermad.com

May 2019