

Hydraulic Pressure Control On-Off Deluge Valve

Model FP 400Y - 5DC

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

The 400Y-5DC is activated by a hydraulically operated relay valve, through which opening and closing of the valve can be controlled either with a remote hydraulic command or with a wet pilot line with closed fusible plugs.

An integral pressure reducing pilot valve ensures a precise, stable, pre-set downstream water pressure.

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

The 400Y-5DC is ideal for systems that combine a remote wet pilot line with a high pressure water supply.



(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
 - ▢ Ensures precise, stable downstream water pressure
 - ▢ Valve position limit switches (optional)
- **High performance**
 - ▢ Very high flow efficiency
 - ▢ Straight-through Y-type body
 - ▢ Approved for PN25/365psi
- **Specifically-designed for fire protection**
 - ▢ Face-to-face length standardized to ISO 5752, EN 558-1
 - ▢ Meets industry standards requirements
- **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
- Remote hydraulic control
- Foam applications
- High / Fluctuating water pressure supply

Approvals



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



Det Norske Veritas
Type Approval



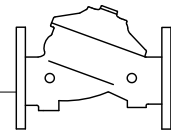
ABS
American Bureau of Shipping
Type Approval



Lloyd's Register
Type Approval

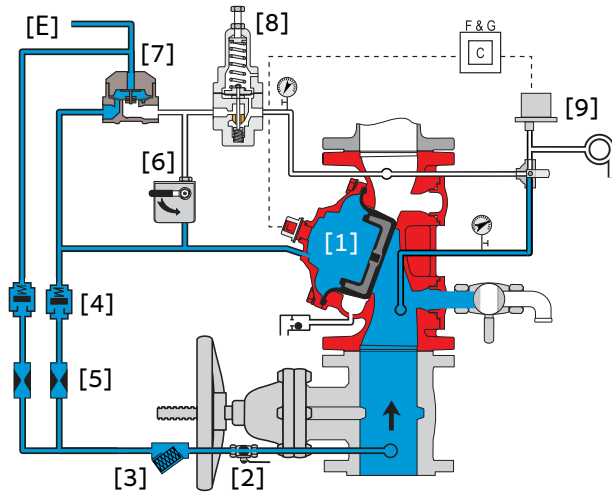
Additional Features

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

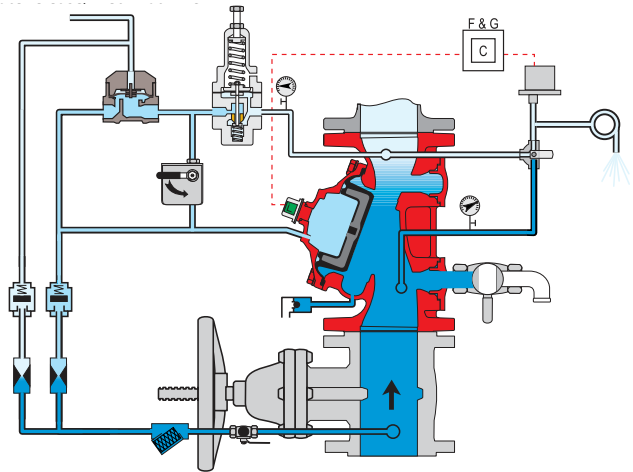


Operation

(For illustration only)



Valve Closed (normal conditions)



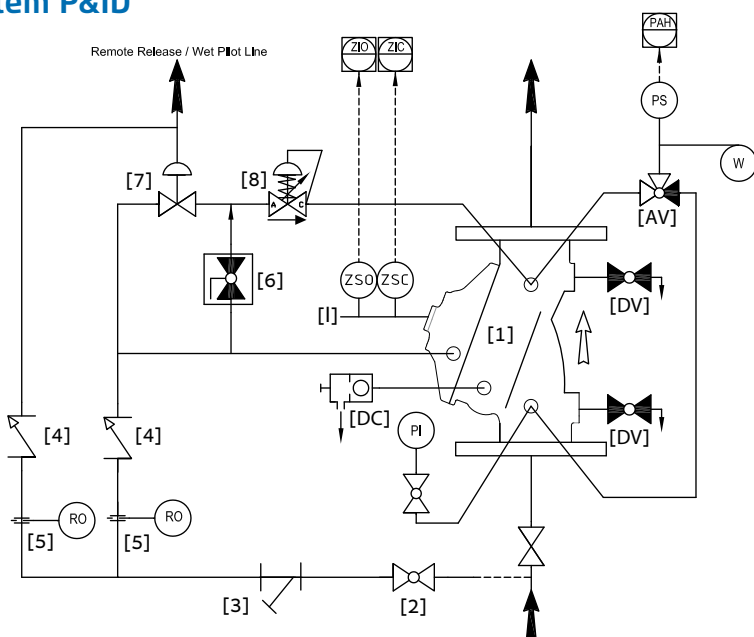
Valve Open (fire conditions)

The BERMAD model 400Y-5DC 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 a restricted orifice [5] it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a hydraulic relay valve (HRV) [7] that is held closed by hydraulic pilot line pressure [E]. The water pressure trapped in the control chamber holds the main valve 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 in response to a decrease in hydraulic pressure from a pilot line or a remote release [E]. This opens the 400Y-5DC deluge valve, allowing water to flow into the system piping and to the alarm device/s [9]. The pressure-reducing pilot valve [8] modulates the main valve to maintain the set downstream pressure. When outlet pressure changes, the pressure-reducing 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 downstream pressure.

System P&ID



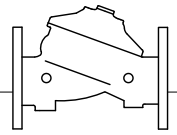
Components

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

Optional System Items*

- PI Pressure Gauge
- I Valve Position Indicator
- DC Drip Check
- AV 3-Way Alarm 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-5DC features actuation via a pressure operated relay valve. This relay valve can be operated to actuate the main valve by using either a remote hydraulic pressure supply or a wet pilot line with fusible plugs. A pressure reducing pilot valve within the control trim ensures a precise and stable pre-set 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



[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.

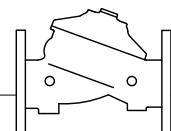
Valve actuation shall be accomplished by a single-piece rolling diaphragm, bonded with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.

The deluge valve shall include a pressure reducing pilot 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.



Technical Data

Available Sizes (inch)

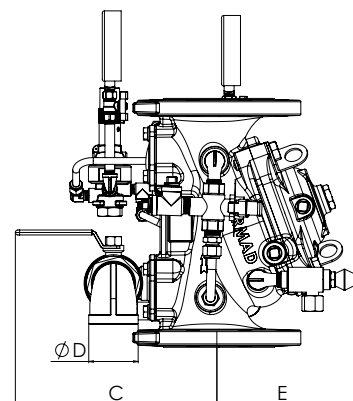
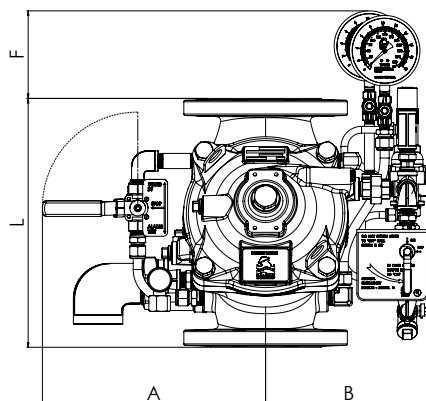
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 1½, 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

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
- Setting range: 4 - 12 bar (60 - 175 psi)
for other setting ranges consult BERMAD

Elastomer

- HTNR - Fabric Reinforced High Temperature Compound - See [400Y Engineering](#)



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	244	9.6	244	9.6	304	12.0	312	12.3	365	14.4	395	15.6	395	15.6	508	20.0	508	20.0	508	20.0
B	164	6.5	164	6.5	222	8.7	232	9.1	287	11.3	365	14.4	365	14.4	478	18.8	478	18.8	478	18.8
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	136	5.4	136	5.4	126	5.0	113	4.4	65	2.5	40	1.6	-	-	-	-	-	-	-	-
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 may vary with specific component positioning and where needed can be arranged to suit specific requirements - allow a tolerance of at least ±10%.

Valve Code Designations

FP	6"	400Y 5DC	06-03	V	C	A5	PR	NN	N6nW																																																																																																																																											
<table><tr><th>Category</th><th>code</th></tr><tr><td>Standard</td><td>FP</td></tr><tr><td>Seawater</td><td>FS</td></tr><tr><td>Foam Concentrate</td><td>FC</td></tr></table>	Category	code	Standard	FP	Seawater	FS	Foam Concentrate	FC	<table><tr><th>Valve Size</th><td></td></tr><tr><td>1½"</td><td>40 mm</td></tr><tr><td>2"</td><td>50 mm</td></tr><tr><td>3"</td><td>80 mm</td></tr><tr><td>4"</td><td>100 mm</td></tr><tr><td>6"</td><td>150 mm</td></tr><tr><td>8"</td><td>200 mm</td></tr><tr><td>10"</td><td>250 mm</td></tr><tr><td>12"</td><td>300 mm</td></tr><tr><td>14"</td><td>350 mm</td></tr><tr><td>16"</td><td>400 mm</td></tr></table>	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	<table><tr><th>Speed & Differential Control</th><th>code</th></tr><tr><td>Closing Speed</td><td>01</td></tr><tr><td>Opening Speed</td><td>02</td></tr><tr><td>Opening & Closing speed</td><td>03</td></tr><tr><td>Differential Sensing Pilot</td><td>06</td></tr><tr><td>None</td><td>-</td></tr></table>	Speed & Differential Control	code	Closing Speed	01	Opening Speed	02	Opening & Closing speed	03	Differential Sensing Pilot	06	None	-	<table><tr><th>Installation</th><th>code</th></tr><tr><td>Vertical</td><td>V</td></tr><tr><td>Horizontal</td><td>H</td></tr></table>	Installation	code	Vertical	V	Horizontal	H	<table><tr><th>Material Body & Cover⁽¹⁾</th><th>code</th></tr><tr><td>Ductile Iron A356 ⁽²⁾</td><td>C</td></tr><tr><td>Steel ASTM A216 WCB ⁽²⁾</td><td>S</td></tr><tr><td>Stainless Steel 316</td><td>N</td></tr><tr><td>Nickel Al Bronze C95800</td><td>U</td></tr><tr><td>Super Duplex Grade 5A</td><td>D</td></tr></table>	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	<table><tr><th>End Connections</th><th>code</th></tr><tr><td>ANSI#150RF</td><td>A5</td></tr><tr><td>ANSI#150FF</td><td>a5</td></tr><tr><td>ANSI#300RF</td><td>A3</td></tr><tr><td>ISO PN16</td><td>16</td></tr><tr><td>ISO PN25</td><td>25</td></tr><tr><td>Grooved 235psi/PN16, ANSI C606</td><td>VI</td></tr><tr><td>Grooved 365psi/PN25, ANSI C606</td><td>V2</td></tr><tr><td>Threaded 235psi/PN16, ISO-7-Rp</td><td>BP</td></tr><tr><td>Threaded 365psi/PN25, ISO-7-Rp</td><td>PH</td></tr><tr><td>Threaded 235psi/PN16, NPT</td><td>NP</td></tr><tr><td>Threaded 365psi/PN25, NPT</td><td>NH</td></tr></table>	End Connections	code	ANSI#150RF	A5	ANSI#150FF	a5	ANSI#300RF	A3	ISO PN16	16	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	<table><tr><th>Coating</th><th>code</th></tr><tr><td>Polyester Red</td><td>PR</td></tr><tr><td>High Build Epoxy</td><td>ER</td></tr><tr><td>Uncoated</td><td>UC</td></tr></table>	Coating	code	Polyester Red	PR	High Build Epoxy	ER	Uncoated	UC	<table><tr><th>Tubing & Fittings</th><th>Code</th></tr><tr><td>Stainless Steel 316</td><td>NN</td></tr><tr><td>Monel 400</td><td>MM</td></tr><tr><td>Super Duplex</td><td>DD</td></tr></table>	Tubing & Fittings	Code	Stainless Steel 316	NN	Monel 400	MM	Super Duplex	DD	<table><tr><th>Factory Fitted Options</th><th>Code</th></tr><tr><td>General Purpose Pressure Switch</td><td>P</td></tr><tr><td>Ex Proof NEC, Div.1 Pressure Switch</td><td>P7</td></tr><tr><td>Ex d ATEX Pressure Switch</td><td>P9</td></tr><tr><td>Single Limit Switch, General Purpose</td><td>S</td></tr><tr><td>Single Ex d Proximity Limit Switch</td><td>S9</td></tr><tr><td>Double Ex d Proximity Limit Switch</td><td>SS9</td></tr><tr><td>Pressure Gauge Assembly</td><td>6</td></tr><tr><td>S.S Glycerin Pressure Gauge Assembly</td><td>6n</td></tr><tr><td>Monel Pressure Gauge Assembly</td><td>6m</td></tr><tr><td>Water Motor Alarm Assembly</td><td>W</td></tr><tr><td>Drain Valve</td><td>DV</td></tr><tr><td>Special Elastomer EPDM</td><td>E1</td></tr><tr><td>Special Elastomer NBR</td><td>E3</td></tr><tr><td>Valve Position Indicator</td><td>I</td></tr><tr><td>Large Control Filter</td><td>F</td></tr><tr><td>Stainless Steel 316 Trim Accessories</td><td>N</td></tr><tr><td>Stainless Steel 316 Seat</td><td>T</td></tr><tr><td>Pressure Transmitter</td><td>Q</td></tr><tr><td>Drain and Indicating Components</td><td>A</td></tr></table>	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	Water Motor Alarm Assembly	W	Drain Valve	DV	Special Elastomer EPDM	E1	Special Elastomer NBR	E3	Valve Position Indicator	I	Large Control Filter	F	Stainless Steel 316 Trim Accessories	N	Stainless Steel 316 Seat	T	Pressure Transmitter	Q	Drain and Indicating Components	A
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⁽¹⁾ Other materials available see [400Y Engineering](#)

⁽²⁾ Coated internally and externally

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