

Flow Control, Pressure Differential Control Valve (PDCV)

Model: FP 400Y-*-06

*1MC / 2DC / 3DC / 4DC / 5DC / 6DC

The BERMAD model 400Y-*-06 is a self operated Pressure Differential Control Valve (PDCV) for flow control, designed specifically for advanced fire protection systems and the latest industry standards. The 400Y-*-06 uses a unique differential sensing pilot to control the differential pressure between two chosen points, typically a foam proportioning pump. The valve can be activated by means of an electric, hydraulic or pneumatic signal. Refer to the "Valve Code Designations" on page 4, under the Activation Code section to specify the required valve configuration.



(for Illustration Only)

Benefits and Features

- **Safety and reliability**
 - ▢ Fast response to flow changes during pipe filling
 - ▢ Exceeds UL-260 friction loss/head loss requirements
 - ▢ Time proven, simple, fail-safe actuation
 - ▢ Single piece, rugged elastomeric diaphragm seal - VRSD technology
 - ▢ Obstacle-free, uninterrupted flow path
 - ▢ No mechanical moving parts
- **High performance**
 - ▢ Very high flow efficiency
 - ▢ Straight through flow Y- type body
 - ▢ Approved for PN25 / 365 psi
- **Designed for fire protection**
 - ▢ Face-to-face length standardized to ISO 5752 / EN558-1
 - ▢ Meets the requirements of the industry standards
- **Quick and easy maintenance**
 - ▢ In-line serviceable
 - ▢ Quick cover removal without detaching the control trim

Typical Applications

- Flow regulation for foam proportioning pumps
- Foam applications
- Dosing pump flow control
- Remote operation

Approvals



UL-Listed
Special System Water Control Valves
Sizes 1½" - 16"



Det Norske Veritas
Type Approval



ABS
American Bureau of Shipping
Type Approval



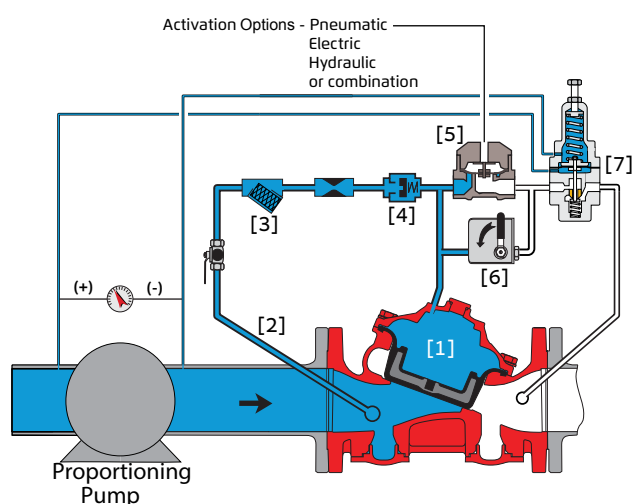
Lloyd's Register
Type Approval

Factory Fitted Options

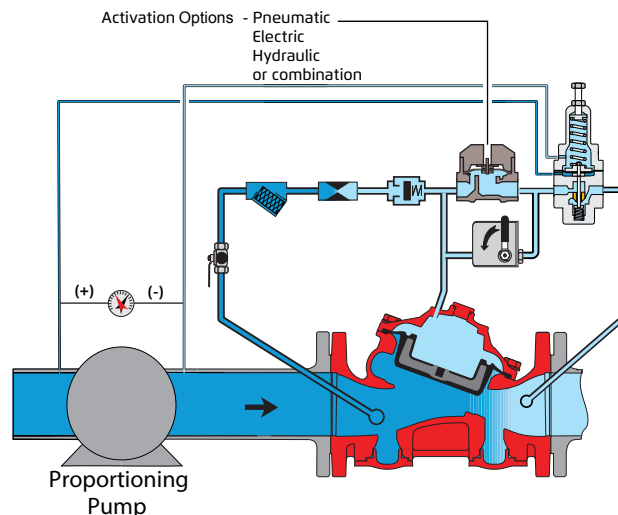
- Valve position limit switches
- Valve position indicator
- Sea water compatibility
- Stainless steel seat ring
- Opening and closing speed controls

Operation

(for Illustration Only)



Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD 400Y is held closed by water pressure in the main valve control chamber [1]. Upon release of pressure from the control chamber, the valve will open.

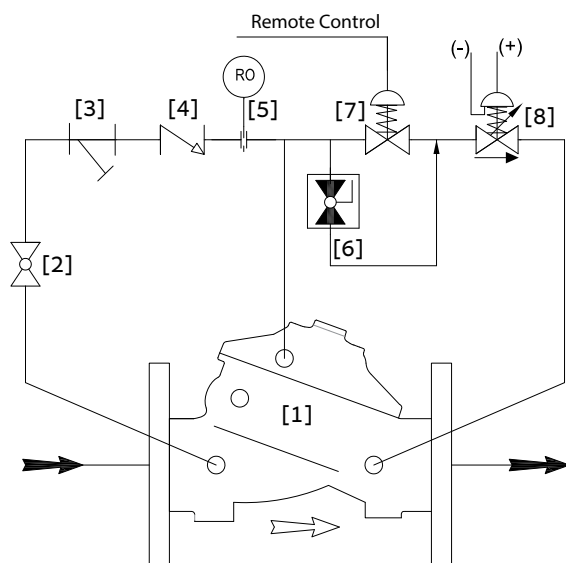
Under NORMAL conditions, water pressure is supplied to the control chamber [1] via the priming line [2] and strainer [3], and is then trapped in the control chamber by a check valve [4], the closed relay pilot valve [5] and the manual release override valve [6].

The water pressure trapped in the control chamber of the main valve 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 release [6], or by the relay pilot valve opening. Once open the differential pressure pilot [7] will modulate the main valve to maintain a preset differential pressure between the pilot sensing points. In this way keeping the flow below the allowable maximum.

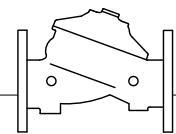
When fitted with a local reset the valve will remain open until manually and locally reset.

System P&ID



Components

- 1 Bermad 400Y Valve
- 2 Priming Ball Valve
- 3 Priming Strainer
- 4 Check valve
- 5 Restriction Orifice
- 6 Manual Release
- 7 Relay Valve
- 8 Pressure Differential Pilot Valve



System Installation

A typical installation of the BERMAD model 400Y-*-06 features remote actuation by way of the Relay Valve or locally by the manual release override valve.

Pressure differential sensing points are led from the differential pilot to either side of the item to be monitored.

The BERMAD model 400Y-*-06 is ideally suited for foam concentrate proportioning (Fig. 1), regulating the differential pressure between the foam and the water to ensure accurate foam to water ratio, regardless of changes in the water flow or pressure.

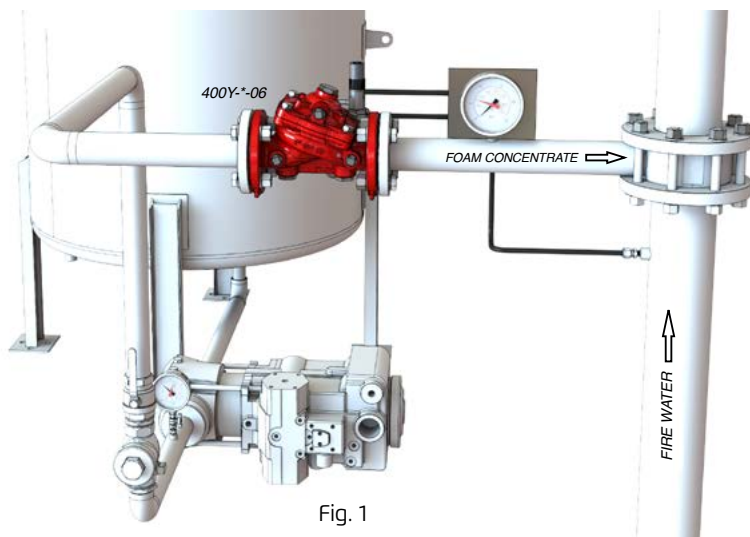


Fig. 1

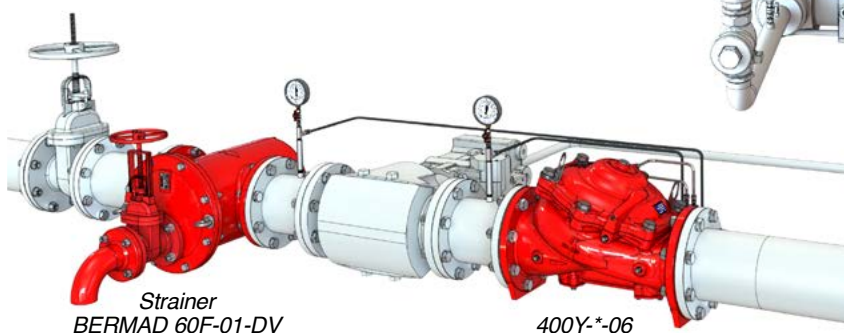


Fig. 2

(for Illustration Only)

In Fig. 2 the 400Y-*-06 is installed to prevent excessive flow, protecting the dosing pump from overflow damage often experienced during pump start up and during initial system pipe filling.

By sensing the differential pressure across the pump the 400Y-*-06 will modulate, preventing the flow from exceeding the recommended maximum.

When the differential pressure is lower than the pre-set maximum the 400Y-*-06 fully opens. The exceptional flow efficiency of the 400Y-*-06 ensures a reliable and fully functioning system performance.

Engineering Specifications

The pressure control valve shall be a UL-listed, 25-bar/365-psi rated, 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 valve shall include a Y-type strainer, and a local manual release, and shall be equipped with a linear valve position indicator.

Removing the valve cover for inspection or maintenance shall not require removing the control trim.

The 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)

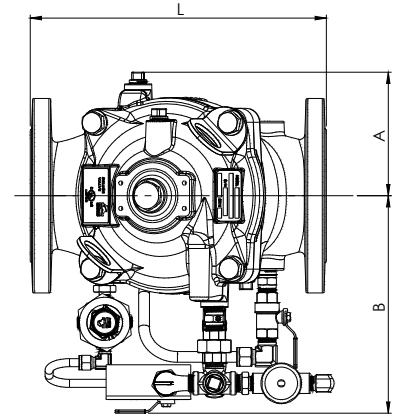
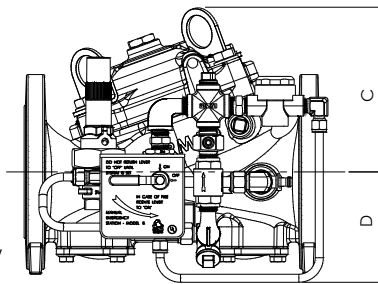
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 1½, 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

Pressure Rating

- ANSI#150 - 16 bar / 235 psi
- ANSI#300 - 1½" to 10" - 25 bar/365 psi
12" to 16" - 21 bar/300 psi
- Grooved/Threaded - 16 bar/235 psi or 25 bar/365 psi,
Refer to Code Designations table below
- Differential Pressure setting range: 0.5 - 3 bar / 7 - 43 psi
Factory setting: 2 bar / 30 psi

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 ⁽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 ⁽²⁾	230	9.1	238	9.4	326	12.8	368	14.5	506	19.9	626	24.6	730	28.7	888	35	980	38.6	1100	43.3
A	77.5	3	77.5	3	100	3.94	115	4.53	140	5.51	172	6.77	204	8	242	9.53	242	9.53	242	9.53
B	155	6.1	155	6.1	251	9.88	266	10.47	372	14.65	490	19.29	490	19.29	656	25.83	656	25.83	656	25.83
C	64	2.52	77	3.03	106	4.17	121	4.76	140	5.51	172	6.77	204	8.03	247	9.72	272	10.71	316	12.44
D	120	4.69	120	4.69	146	5.75	158	6.22	228	9	295	11.65	296	11.65	441	17.36	441	17.36	415	16.3
Kv / Cv ⁽⁴⁾	68 / 79		80 / 92		190 / 219		345 / 398		790 / 912		1160 / 1340		1355 / 1665		2370 / 2737		2850 / 3292		3254 / 3758	
Leq ⁽³⁾ : m/ft	2 / 7		5 / 16		7 / 23		9 / 30		15 / 49		27 / 89		62 / 203		52 / 171		59 / 194		88 / 289	
Kg / lb flanged#150/ISO16	17.9 / 39.4		19.3 / 42.5		34 / 74.8		44 / 95.8		87.3 / 192		150 / 331		180 / 397		323 / 712		356 / 784		403 / 886	
Kg / lb flanged#300/ISO25	20.3 / 44.4		21.2 / 46.5		38.7 / 75.8		51.4 / 102		107 / 135		170 / 400		216 / 477		363 / 822		428 / 943		523 / 1150	

Notes: ⁽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⁾ Leq (Equivalent Pipe Length) refers to a fully opened valve with turbulent flow in new steel pipe schedule 40, values given for general consideration only

⁽⁴⁾ Kv/Cv values given for a fully opened valve

⁽⁵⁾ Exact dimensions for the trim envelope may vary with specific component positioning

Valve Code Designations

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N.O.</td><td>5AO</td></tr><tr><td>220-240/AC - N.C.</td><td>2AC</td></tr><tr><td>220-240/AC - N.O.</td><td>2AO</td></tr></table>		Voltage (N.O. or N.C.)*	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	<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>NM</td></tr><tr><td>Super Duplex</td><td>DD</td></tr></table>		Tubing & Fittings	code	Stainless Steel 316	NN	Monel 400	NM	Super Duplex	DD
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<p>Notes:</p> <p>⁽¹⁾ Other materials available see: 400Y engineering</p> <p>⁽²⁾ Coated internally and externally</p>																																																																																																																																																																																																							
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