Pneumatic Pressure Control, On-Off Deluge Valve

Model: FP 400E-4DC

UL LISTED

Typical Applications

- Fluctuating or over pressure
- Offshore platforms
- Marine environments
- Freezing environments
- Seawater/corrosive water supplies
- Foam applications
- Remote monitor

Features and Benefits

- **Pressure control function –** Constant preset downstream pressure
- **Remote reset –** Shut-off on remote command
- **One-piece molded elastomeric moving part –** No maintenance required
- **Simple design –** Cost effective
- **Obstacle-free full bore –** Uncompromising reliability
- **Factory pre-assembled trim –** Out-of-box quality
- **In-line serviceable –** Minimal down time

Optional Features

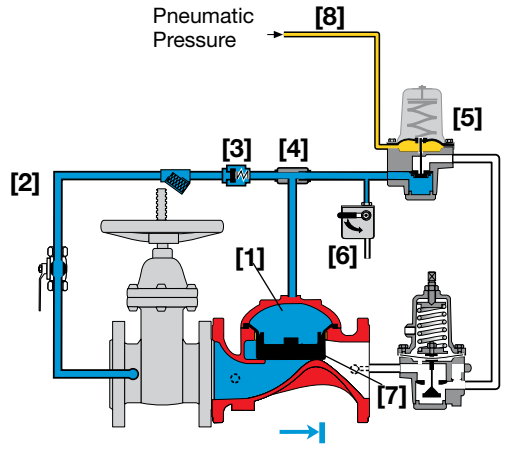
- **Water motor alarm**
- **Alarm pressure-switch** (code: P or P7)
- **Seawater** (add FS as prefix to model)
- **Valve Position Single/Double Limit Switches**

Operation

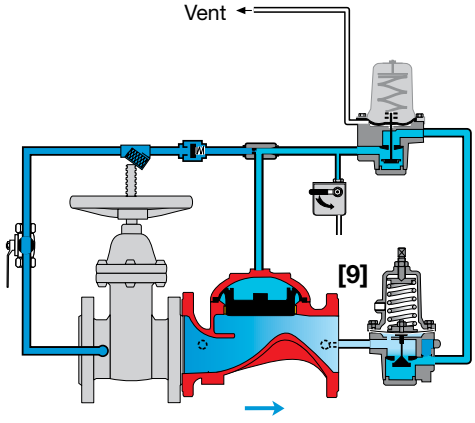
BERMAD Model Model FP 400E-4DC is suitable for systems that include dry pilot lines with closed pneumatic fusible plugs (thermal releases), and piping systems with a wide variety of open nozzles. Since it is pneumatically controlled, the Model FP 400E-4DC is recommended for environments with freezing temperatures and/or corrosive water supply. Combining a pressure control feature, it's also suitable for systems with high pressure supply source and/or relatively low flow.

In the SET position, line-pressure supplied to the main valve's control chamber **[1]** via the priming line **[2]**, and through a Check Valve **[3]**, and an Accelerator **[4]** with priming restriction, is trapped by the Check Valve, by a closed Pneumatic Pressure Operated Relief Valve (PORV) **[5]**, and by a closed Manual Emergency Release **[6]**. The trapped pressure holds the main valve's diaphragm and plug against the valve seat **[7]**, sealing it drip-tight and keeping the system piping dry. The PORV is held closed by the pneumatic pressure maintained in the dry pilot line **[8]**.

Under FIRE condition, a dry line pneumatic pressure drop opens the PORV. Pressure is then released from the main valve control chamber to the downstream, throughthe open PORV and the Pressure Reducing (PR) Pilot valve **[9]**, allowing the main valve to open, and water to flow into the system piping and to the alarm device. Should system pressure rise above PR pilot setting, the PR pilot throttles, thereby enabling pressure to accumulate in the valve control chamber. This causes the FP 400E-4DC to throttle closed, decreasing system pressure to PR pilot setting. The Manual Emergency Release **[6]**, overrides the PR pilot, causing the FP 400E-4DC to open fully.



Valve Closed (set position)



Valve Open (operating condition)

Engineer Specifications

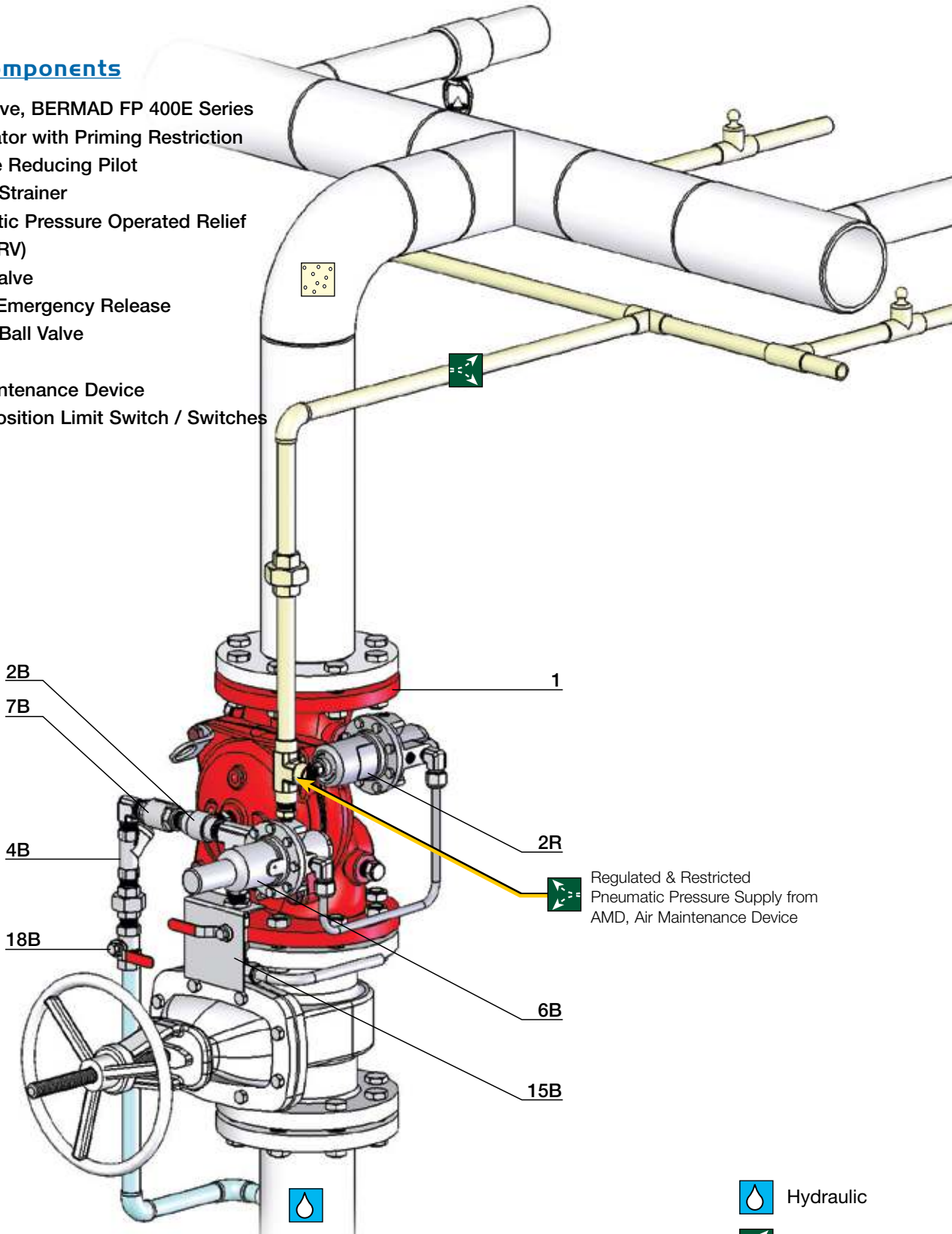
- The On-Off deluge valve shall be a UL-Listed, pneumatically remote controlled elastomeric type globe valv with a **rolling-diaphragm**.
- The valve shall have an **unobstructed flow path**, with no stem guide or **supporting ribs**.
- Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.
- The valve shall have a removable cover for quick in-line service enabling all necessary inspection and servicing.
- The control trim materials shall consist of St.St. 316 tubing and fittings, and plated brass accessories, including Accelerator, PORV pneumatic pilot valve, 2-Way Pressure Reducing Pilot, Y strainer and Manual Emergency Release.
- The control trim shall be supplied as an assembly, pre-assembled and hydraulically tested at an ISO 9000 and 9001 certified factory.
- The Pressure Control and Pneumatically Remote Controlled, On-Off Deluge Valve shall open and close in response to dry line pneumatic pressure drop, reducing higher upstream pressure to preset lower downstream pressure.

System Components

1 - Main Valve, BERMAD FP 400E Series
2B - Accelerator with Priming Restriction
2R - Pressure Reducing Pilot
4B - Priming Strainer
6B - Pneumatic Pressure Operated Relief Valve (PORV)
7B - Check Valve
15B - Manual Emergency Release
18B - Priming Ball Valve

Optional

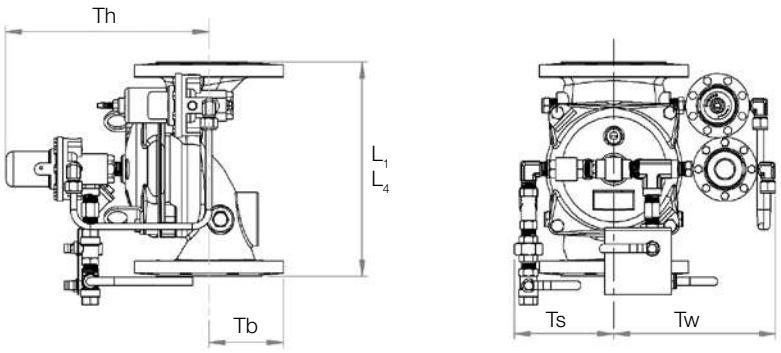
AMD - Air Maintenance Device
S - Valve Position Limit Switch / Switches



UL Listed

The BERMAD Model FP 400E-4DC is UL-Listed.
The installation shall include Indicating and Drain Components.

Technical Data



Size		1½", 2"		2½"		3"		4"		6"		8"		10"		12"	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Dimensions	L_1 (1)	205	8 1/16	205	8 1/16	257	10 1/8	320	12 5/8	415	16 5/16	500	19 11/16	605	23 13/16	725	28 9/16
	L_4 (2)	205	8 1/16	N/A	N/A	250	9 13/16	320	12 5/8	415	16 5/16	500	19 11/16	N/A	N/A	N/A	N/A
	Tw	228	9	220	8 11/16	243	9 9/16	253	10	312	12 5/16	326	12 13/16	346	13 5/8	391	15 3/8
	Ts	228	9	220	8 11/16	243	9 9/16	253	10	318	12 1/2	326	12 13/16	326	12 13/16	391	15 3/8
	Th	226	8 7/8	242	9 1/2	262	10 5/16	261	10 5/16	356	14	407	16	407	16	546	21 1/2
	Tb	278	10 1/16	289	11 3/8	300	11 13/16	337	13 1/4	378	14 7/8	405	15 15/16	413	16 1/4	473	18 5/8

Notes:
1. L_1 is for flanged ANSI #150 and ISO PN16.
2. L_4 is for grooved end connections (Ductile Iron Only).
3. Provide adequate space around valve for maintenance.
4. Data is for envelope dimensions, specific component positioning may vary.

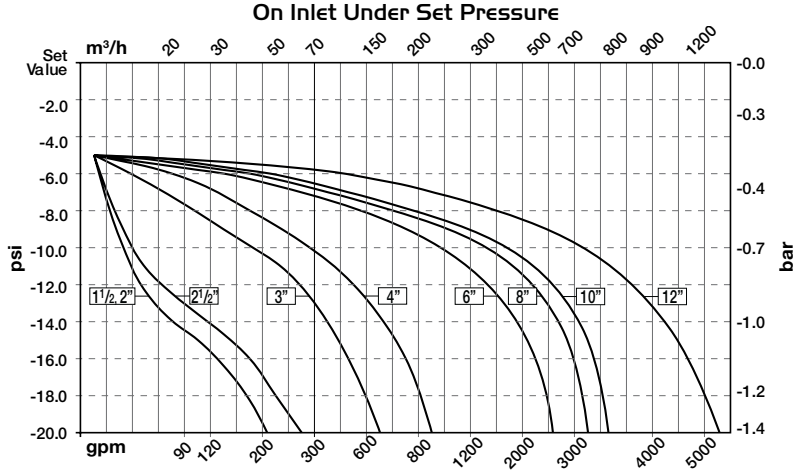
Connection Standard
- Flanged: ANSI B16.42 (Ductile Iron), B16.5 (Steel & Stainless Steel), B16.24 (Bronze) or ISO PN16
- Grooved: ANSI/AWWA C606 for 2, 3, 4, 6 & 8"

Water Temperature
- 0.5 – 50°C (33 – 122°F)

Available Sizes
- 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- UL-Listed for sizes 1½, 2, 2½, 3, 4, 6, 8 & 10"

Pressure Rating
- Max. inlet: 250 psi (17 bar)
- Set: 30-165 psi (4.5-11.5 bar)

Valve Outlet Pressure Fall-off Characteristics On Inlet Under Set Pressure



Manufacturers Standard Materials

Main valve body and cover
- Ductile Iron ASTM A-536

Main valve internals
- Stainless Steel 304 & Cast Iron

Control Trim System
- Brass control components/accessories
- Forged Brass pressure reducing pilot with St. St. 304 internals & NBR elastomers
- Stainless Steel 316 tubing & fittings

Elastomers
- Nylon fabric reinforced polyisoprene NR

Coating
- Electrostatic Powder Coating Polyester, Red (RAL 3002)

Optional Materials

Main valve body
- Carbon Steel ASTM A-216 WCB
- Stainless Steel 316
- Ni-Al-Bronze ASTM B-148

Control Trim
- Stainless Steel 316
- Monel® and Ni-Al-Bronze
- Hastalloy C-276

Elastomers
- NBR
- EPDM

Coating
- High Build Epoxy Fusion-Bonded with UV Protection, Anti-Corrosion

PORV setting

Valve opens on pilot line pressure drop
- Factory set: 20 psi (1.5 bar)

