CONTROL VALVES BERMAD

Fire Protection

Electro-Pneumatically Controlled Deluge Valve

400E Type 3

Direct-Diaphragm, Internationally Patented

Typical Applications

- Off-shore platforms
- Seawater
- Corrosive water supplies
- Foam fire systems
- Increased reliable response by dry solenoid
- Dual redundant detection systems

Features and Benefits

- **Dry solenoid –** suitable for corrosive water or foam
- **Simple design –** cost effective
- **Obstacle-free Full-bore –** uncompromising reliability
- **Factory Pre-assembled trim –** Out-of-Box Quality
- **Automatic reset –** "hands free" return to stand-by
- **Venturi action accelerator –** quicker opening response
- **In-line, quick cover removal –** minimal down-time

Pressure Control

- **Pressure-Reducing Function** additional feature option: constant, regulated, lower outlet pressure, UL-Listed

Optional Features

- **Explosion proof** for hazardous locations (code: 7)
- **Fail Safe Open** – energized to close main valve
- **Alarm Pressure-Switch** (code: P)
- **Water Motor Alarm** (code: W)
- **Seawater service** (add FS as prefix to model)

UL LISTED

400E Type 3 — Electro-Pneumatically Controlled Deluge Valve

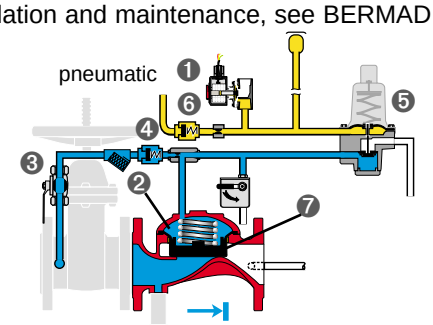
Operation

The BERMAD Model 400E Type 3 is suited for those cases, such as seawater installations, where it is advantageous to keep the solenoid ❶ dry. These systems include a wide variety of open nozzles and an electric fire detection system.

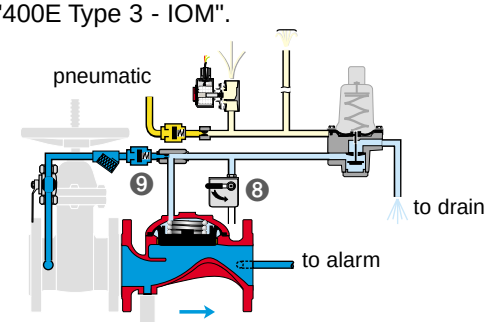
The 400E Type 3 is held closed by pressure applied to the control chamber ❷ of the main valve. The closed valve prevents the water (or water-foam) from entering the system until the pressure is released from the control chamber. In the SET condition, the water pressure, supplied through the priming line ❸, is trapped in the main valve's control chamber, by a check valve ❹ and a normally held closed, PORV ❺ (Pressure-Operated Relief Valve) pilot valve . The PORV is held closed by the maintained pneumatic pressure ❻ and normally closed solenoid valve. The trapped pressure in the control chamber holds the diaphragm-plug of the main valve to the valve seat ❼. Sealing is drip-tight and the system piping is dry.

In a FIRE or TEST condition, an electric detection system, through a control panel, trips the 400E Type 3 deluge valve. The deluge valve releases water from the control chamber, either by opened PORV or by the manual release assembly ❽. The PORV is opened by the electrically controlled solenoid pilot valve releasing trapped pneumatic pressure from the PORV. Water exits the accelerator ❾ faster than it can be supplied to the control chamber, allowing the main valve to open and water to flow into the system piping and to the alarm device.

For installation and maintenance, see BERMAD publication "400E Type 3 - IOM".



Valve Closed
(set condition)



Valve Open
(operating condition)

Tender Specifications

The deluge valve shall be a UL-listed, direct-diaphragm actuated, globe pattern valve, with automatic reset. The main valve body shall be manufactured from a single non-fabricated material.

Valve actuation shall be accomplished by a vulcanized, one piece, balanced direct-diaphragm, with metal insert. The diaphragm assembly shall be peripherally guided. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure.

The valve cover shall be removable for in-line service, enabling all necessary inspection and servicing.

The valve shall have an unobstructed flow path, with no stem-guide or supporting ribs.

The control trim shall be factory pre-assembled and integrated to the main valve, hydraulically-tested, UL-listed and supplied as an assembly consisting of:

- "Y" strainer
- PORV (Pressure-Operated Relief Valve), UL-listed
- 2-way solenoid pilot valve
- Venturi action accelerator
- Manual emergency release assembly with stainless steel bracket
- Spring-loaded check valve
- Non-corrosive trim of uniform metal, neither steel nor galvanized piping is permitted

The manufacturer shall be certified according to ISO 9001 standards.

Electro-Pneumatically Controlled Deluge Valve

400E Type 3

System Components*

1 - Main Valve, BERMAD 400E Series

Basic Trim, includes "B" Items as listed(1)

2B - Accelerator & Priming Restriction

3B - Orifice Assembly

4B - Priming Strainer

6B - Pressure Operated Relief Valve (PORV)

7B - Check Valve

14B - Solenoid Valve

15B - Manual Emergency Release

18B - Priming Valve

19B - Drip Check

Additional Accessories – "A" Items(2)

1A - Alarm Test Valve

2A - Gauge Valve

3A - Pressure Gauge

5A - Drain Valve

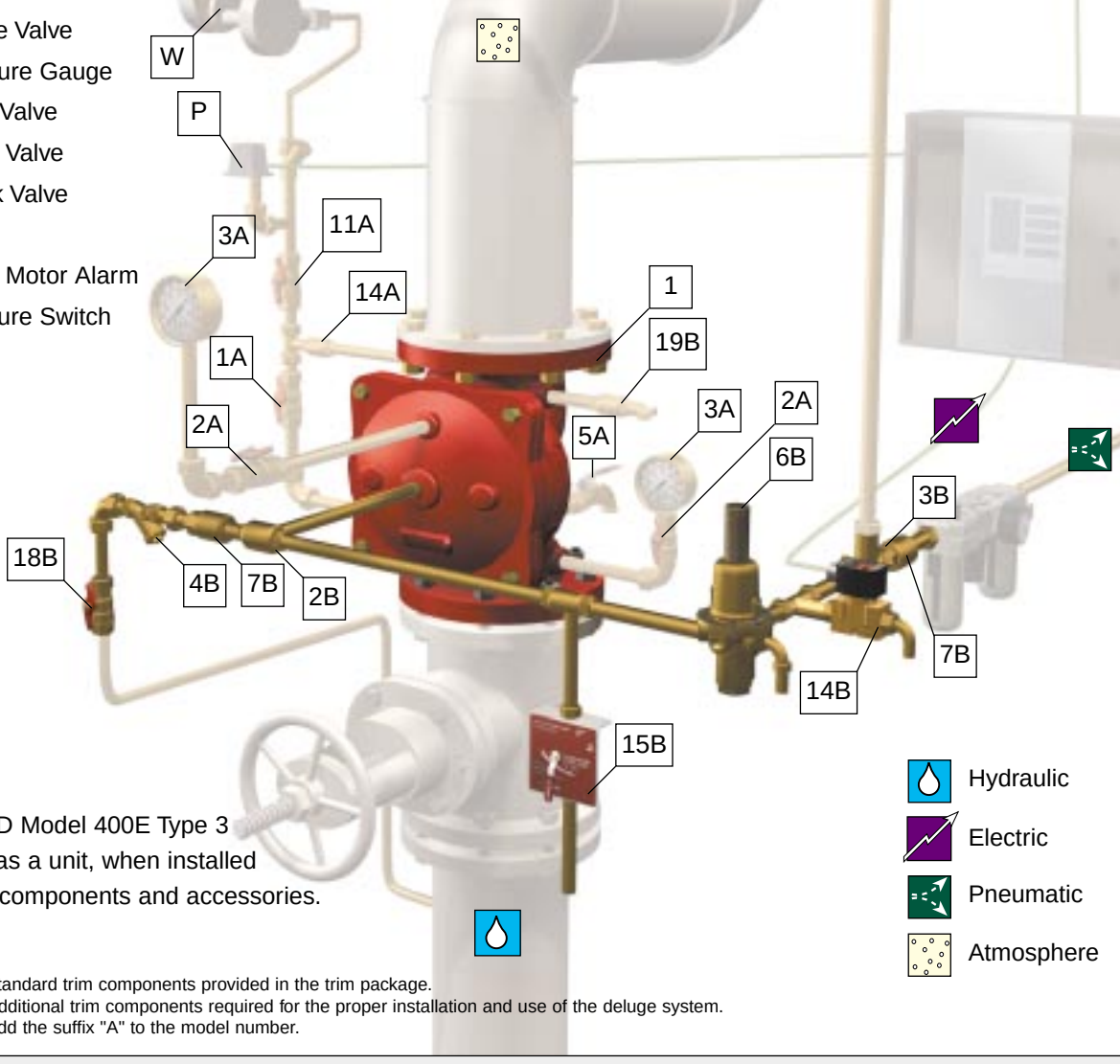
11A - Alarm Valve

14A - Check Valve

Optional

W - Water Motor Alarm

P - Pressure Switch



Hydraulic

Electric

Pneumatic

Atmosphere

UL-Listed

The BERMAD Model 400E Type 3 is UL-listed, as a unit, when installed with specific components and accessories.

*** Notes:**

1. "B" items are standard trim components provided in the trim package.
2. "A" items are additional trim components required for the proper installation and use of the deluge system. For ordering, add the suffix "A" to the model number.

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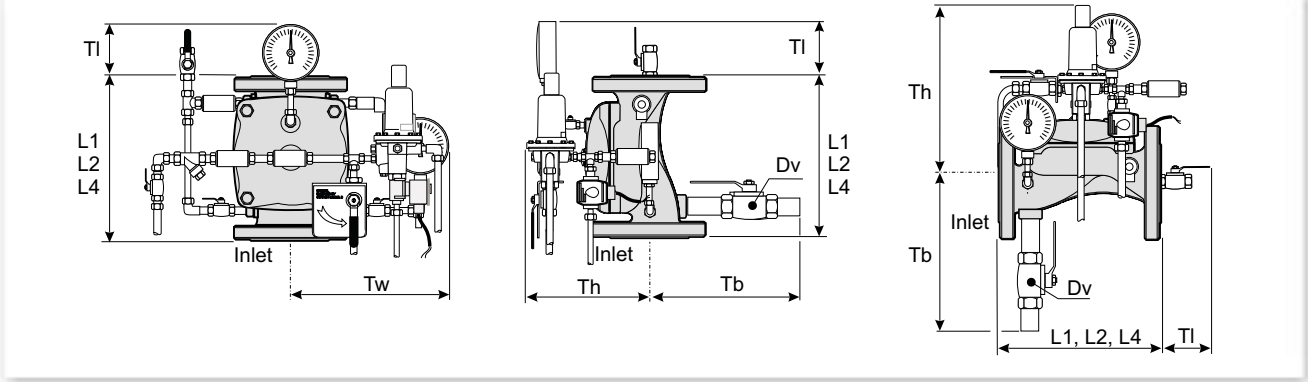
Specifications



Valve Size		2”		2½”		3”		4”		6”		8”		10”	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Dimensions	(1)L1	205	8 1/16	205	8 1/16	250	9 13/16	320	12 5/8	415	16 5/16	500	19 11/16	605	23 13/16
	(2)L2	180	7 1/16	210	8 1/4	255	10 1/16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(3)L4	205	8 1/16	N/A	N/A	250	9 13/16	320	12 5/8	N/A	N/A	N/A	N/A	N/A	N/A
	Tl	200	7 7/8	200	7 7/8	170	6 3/4	165	6 1/2	160	6 5/16	140	5 1/2	130	5 1/8
	Tw	317 1/2	12 1/2	329	12 15/16	340	13 3/8	351 1/2	13 13/16	393	15 1/2	422 1/2	16 5/8	442 1/2	17 7/16
	Th	232	9 1/8	244	9 5/8	265	10 3/8	285	11 1/4	360	14 3/16	415	16 5/16	413	16 1/4
	Tb	258	10 3/16	269	10 9/16	280	11	292	11 1/2	320	12 5/8	350	13 3/4	382	15 1/16
	Dv	3/4”		1 1/2”		1 1/2”		2”		2”		2”		2”	

Notes:
1. L1 is for flanged ANSI #150 and ISO PN16.
2. L2 is for threaded female, NPT or BSP.
3. L4 is for grooved.
4. Provide adequate space around valve for maintenance.
5. Tw is the max trim width.
6. Data is for envelope dimensions, specific component positioning may vary.

Connection Standard
- Flanged: ANSI B16.42 (Ductile Iron), B16.5 (Steel & Stainless), B16.24 (Bronze) or ISO PN16
- Threaded: NPT or BSP for 2, 2 1/2 & 3"
- Grooved: ANSI/AWWA C606 for 2, 3, 4 & 6"

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

Available Sizes
- 2, 2 1/2, 3, 4, 6, 8, 10 & 12"
- UL-listed for sizes 2, 2 1/2, 3, 4, 6, & 8"

Working Pressure
- Max working pressure: 235 psi (16 bar)
- UL-rated working pressure: 175 psi (12 bar)

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 fittings & copper tubing

Elastomers
- Nylon fabric reinforced polyisoprene

Coating
- Electrostatic Power Coating Poleyester
- Red (RAL 3000)

"PORV set - opens on pressure drop
- Factory set: 20 psi (1.5 bar)
- Adjustable range: 10-75 psi (0.7-5 bar)

Optional Materials

Main valve body
- Carbon steel ASTM A-216 WCB
- Stainless steel 316
- Ni-Al bronze
- Marine bronze

Control Trim
- Stainless steel 316
- Monel®
- Hastalloy C-276

Coating
- High Built Epoxy Fusion-Bonded with UV Protection (for Corrosive Materials)

Optional elastomers
- NBR
- EPDM

Solenoid Pilot Valve

Standard
- 2-way brass body
- N.C (main valve closed when de-energized)
- Enclosure: General purpose watertight, NEMA 4 and 4X / IP65
- Optional: Explosion-proof NEMA 6, 6P, 7 & 9

Voltage
- 24, 120, DC
- 24, 110, 220, AC 50 Hz (or 24, 120, 240, AC 60 Hz)
- Continuous duty-molded Class F
- Wattage rating:10.6 DC, 9.5 AC

Approvals
- UL-Listed, CSA Certified
- Alternative: CENELEC / IEC certified
- Other solenoids available on request

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