Basic Deluge Valve

400E

Direct-Diaphragm, Internationally Patented

Typical Applications

- Petrochemical facilities
- Tunnels
- Power plants & Transformers
- Flammable materials storage
- Marine environments
- Self-contained spray systems
- Gas storage tanks
- Hydraulic remote-controlled systems
- Foam applications

Features and Benefits

Simple design – **cost effective**
Quick cover removal – **easy in-line service**
Automatic reset – **"hands free" return to stand-by**
One piece diaphragm – **reliability**

Optional Features

- **Seawater service**
- A wide variety of control trim components, including:
  - **Latched open** – manual reset to close
  - **Alarm pressure-switch**
  - **Explosion proof** for hazardous zones
  - **Fail-safe open** (upon electrical failure) energized to close main valve
  - **Electric release trim**
  - **Hydraulic and pneumatic** release trim

UL LISTED EX5092

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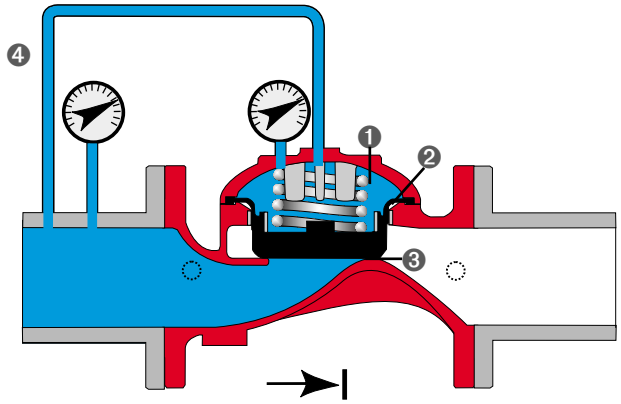
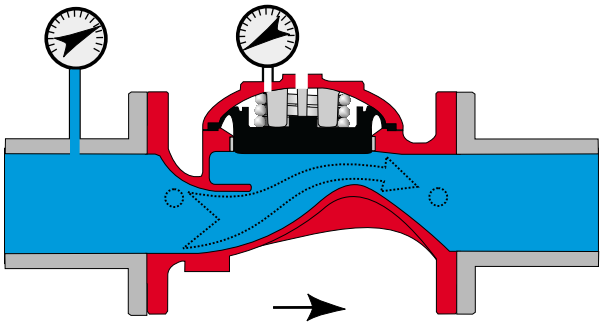
Operation

Deluge valves are required to operate independently, regardless of failures in other systems or other sources of energy. In emergency situations, these valves should be driven by the line water pressure.
In the closed, SET condition, the Bermad 400E Deluge Valves are held closed by line pressure applied and trapped in the control-chamber ❶. This water pressure, multiplied by the surface area of the diaphragm ❷, creates a differential closing force resulting in the valve remaining sealed bubble-tight ❸ until a control device activates. The closed valve prevents the water (or foam) from entering the system.
During a FIRE or TEST condition, the water pressure is released from the control-chamber. Line water pressure ❹, without assistance from any outside source, forces the diaphragm-plug open, enabling full, unobstructed, full-bore clear flow.
For RESET, line pressure is drained and pressure is re-introduced into the control-chamber closing the valve.



Valve Closed
(set condition)



Valve Open
(operating condition)

Tender Specifications

The deluge valve shall be a UL-listed, direct-diaphragm actuated, globe pattern. 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.
The manufacturer shall be certified according to ISO 9001 standards.

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Models

400E Type 1:
Hydraulically-Controlled Deluge Valve
For wet pilot line sprinkler systems, simplest and least costly of deluge actuation systems

400E Type 2:
Electrically-Controlled Deluge Valve
Quick-opening, large-bore servo-solenoid activated, optimized for industrial applications, offers the greatest number of features and design flexibility

400E Type 3:
Electrically-Controlled, PORV-Activated, Deluge Valve
Ideal for corrosive water. Pneumatic actuator isolates corrosive media from the solenoid valve, keeps solenoid dry

400E Type 3D:
Solenoid-Controlled Valve
Smooth acting, on/off cycling, combines hydraulic relay and solenoid pilot valve for added system design alternatives

400E Type 4:
Pneumatically-Controlled Deluge Valve
Dry pilot line, suited for freezing environments and corrosive media

400E Type 5:
Hydraulically-Controlled, PORV-Activated, Deluge Valve
Local release compensates for long release lines with adjustable pilot sensing trip point

400E Type 5D:
Hydraulically-Controlled Deluge Valve with HRV
Hydraulic-relay local release for long release lines and quick opening

400E Type 6:
Dry Pilot & Electrically-Controlled Deluge Valve
Combination of solenoid activation and dry pilot line for dual-redundant systems

UL-Listed

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

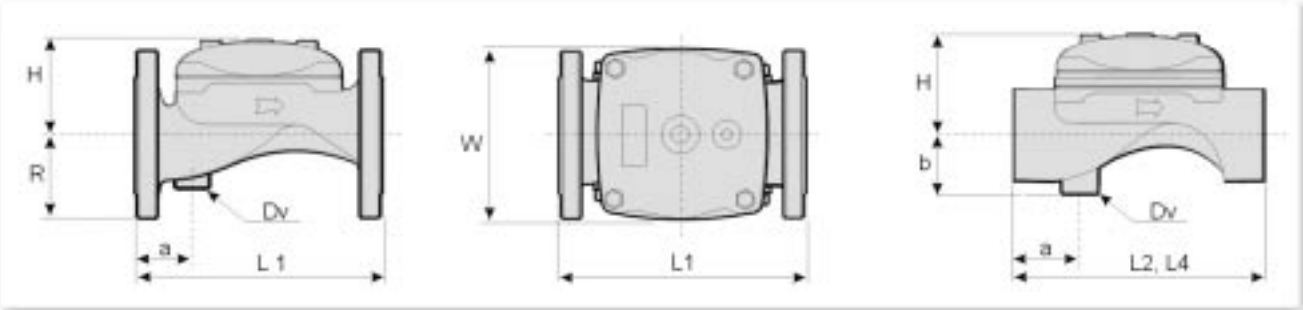
Notes

1. Photos show typical orientation.
2. All models can be installed vertically or horizontally.

CONTROL VALVES BERMAD

400E Basic Deluge Valve

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
	W	155	6 1/8	178	7	200	7 7/8	223	8 3/4	306	12 1/16	365	14 3/8	405	15 15/16
	H	77	3	89	3 1/2	110	4 3/8	130	5	205	8 1/16	260	10 1/4	258	10 3/16
	R	78	3 1/16	89	3 1/2	100	3 15/16	112	4 7/16	140	5 1/2	170	6 11/16	203	8
	a	57.5	2 1/4	57.5	2 1/4	71	2 13/16	85	3 3/8	95	3 3/4	100	3 15/16	122.5	4 13/16
	b	40	1 9/16	40	1 9/16	60	2 3/8	74	2 15/16	95	3 3/4	122	4 13/16	130	5 1/8
	Dv	3/4"		1 1/2"		1 1/2"		2"		2"		2"		2"	
	(1)kg1	9		10.5		19		28		68		125		140	
	(2)kg2	4		5.7		N/A		N/A		N/A		N/A		N/A	
	(4)kg4	5		N/A		10.6		16.2		58		N/A		N/A	

Notes:
1. L1 & kg1 are for flanged ANSI #150 and ISO PN16.
2. L2 & kg2 are for threaded female, NPT or BSP.
3. L4 & kg4 are for grooved.
4. Dv is for threaded female NPT or BSP
5. kg is maximum shipping weight
6. Dimensions are maximum
7. Provide adequate clearance around valve for maintenance

Connection Standard
- Flanged: ANSI B16.42 (Ductile iron), B16.5 (Steel & Stainless), B16.24 (Bronze), B16.1 (Cast iron), & ISO PN16
- Threaded: NPT or BSP 2, 2½ & 3"
- Grooved: ANSI/AWWA C606 for 2, 3, 4 & 6"

Available Sizes
- Globe: 2, 2½, 3, 4, 6, 8, 10 & 12"
- Angle: 2, 3 & 4"
- UL-listed: 2, 2½, 3, 4, 6 & 8"

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

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

Materials

Manufacturers Standard Materials

Valve body and cover
- Ductile iron ASTM 536(1)
- Cast iron ASTM A126 class B(1)

Valve wetted parts (internals)
- Stainless steel 304

Control Trim system
- Forged brass fittings & copper tubing

Elastomers
- Nylon fabric reinforced polyisoprene

Notes:
1. Epoxy coated, fusion bonded - standard. Other coatings available on request.
2. For seawater service see BERMAD publication "Seawater and Corrosive Media".

Optional Materials

Valve body and accessories
- Carbon steel ASTM A216-WCB(1)
- Stainless steel 316
- Marine bronze
- Ni-Al bronze
- Seawater spec(2)

Valve wetted parts
- Stainless steel 316

Optional coatings (main valve body)
- Halar®
- Marine epoxy

Optional elastomers
- NBR
- EPDM

Control Trim System
- Brass ASTM B21

Tubing & Fittings
- Stainless steel 316
- Copper-nickel

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