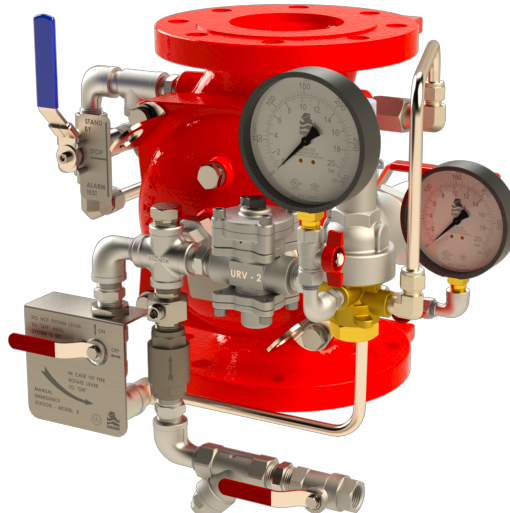


PNEUMATIC PRESSURE CONTROL ON-OFF DELUGE VALVE

Model FP-400E-4DC

The BERMAD model 400E-4DC is an elastomeric hydraulic, line pressure operated, deluge valve, designed specifically for advanced fire protection systems and the latest industry standards. The 400E-4DC is activated by a relay valve, held closed by pneumatic pressure. Opening and closing of the deluge valve can be controlled remotely. An integrated pressure control pilot valve ensures a stable and precise pre-set downstream water pressure. The BERMAD 400E-4DC is suitable for open-nozzle systems with a high pressure water supply. The pneumatic control makes it ideal for use in freezing environments and corrosive media. The optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.



Features & Benefits

- Safety and reliability
 - Time proven, simple design with a fail safe actuation
 - Single piece, rugged elastomeric diaphragm seal - VRSD technology
 - Obstacle-free, uninterrupted flow path
 - No mechanical moving parts
 - Valve position limit switches (optional)
 - Meets the requirements of the industry standards
- Quick and easy maintenance
 - Designed for high reliability and easy maintenance
 - In-line serviceable
 - Fast and easy cover removal

Typical Applications

- Remote Control Water Spray Systems
- Foam applications
- Corrosive water systems
- Freezing Environments

Approvals



UL-Listed
Special System Water Control
Valves, Deluge Type (VLFT)
Sizes 1½" - 10"



Det Norske Veritas
Type Approval
Sizes 1½" to 12"



ABS
American Bureau of Shipping
Type Approval
Sizes 1½" - 12"

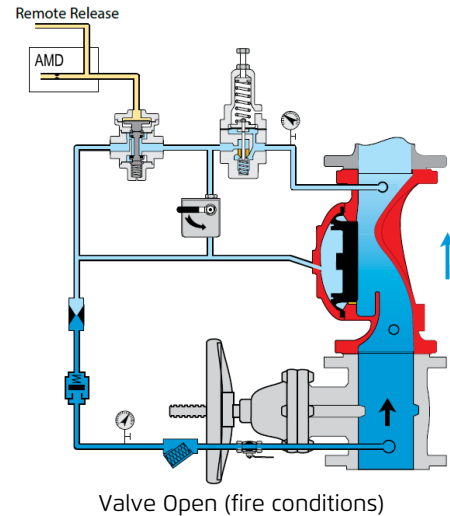
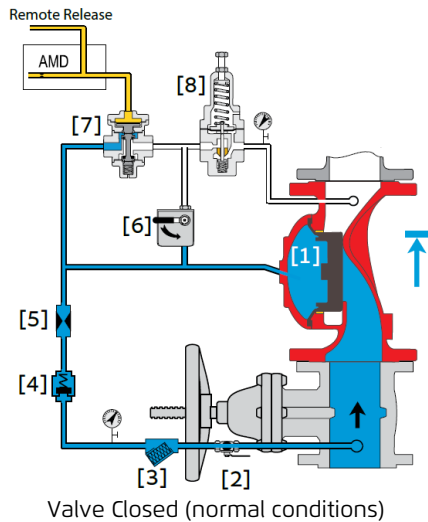


Lloyd's Register
Type Approval
Sizes 1½" - 10"

Additional Features

- Valve position limit switches
- Alarm pressure switch
- Air Maintenance Device
- Seawater compatibility
- Corrosion resistant zinc based high build epoxy coating

Operation

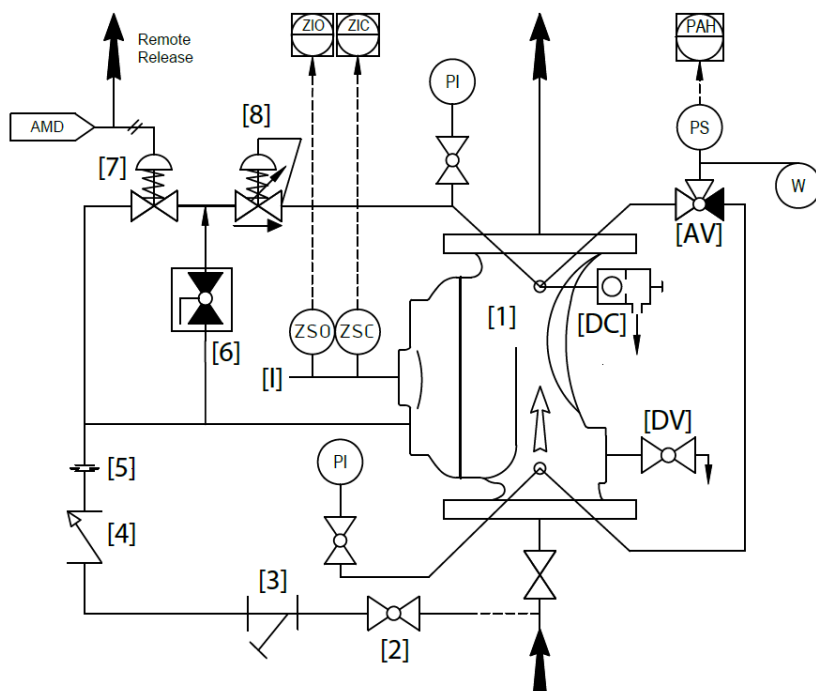


The BERMAD model 400E-4DC is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] strainer [3] and restriction orifice [5], it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV) [7] that is held closed by pneumatic pressure in the dry pilot line [E]. The water pressure trapped in the main valve control chamber 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 emergency release, or by the URV opening in response to a decrease in pneumatic pilot-line pressure. This opens the 400E-4DC deluge valve, allowing water to flow into the system piping and to the alarm device [9]. The pressure-reducing pilot valve [8] senses changes in outlet pressure and, modulates the main valve to maintain the set downstream pressure.

System P&ID



Components	
1	BERMAD 400E Deluge Valve
2	Priming Ball Valve
3	Priming Strainer
4	Check valve
5	Restriction Orifice
6	Manual Emergency Release
7	URV-2 Hydraulic Relay Valve
8	Pressure Control Pilot Valve

Optional System Items	
ZS	Limit Switch Assembly
AMD	Air Maintenance Device
W	Water Motor Alarm
I	Visual Valve Position indicator
PS	Pressure Switch
PI	Pressure Gauge*
DV	Drain Valve*
AV	3-way Alarm Test Valve*
DC	Automatic Drip Check Valve*

* Included with suffix A in valve code (drain and indicating components)
See code designations and "factory supplied additional items" on page 4

System Installation

A typical installation of the BERMAD model 400E-4DC features actuation by way of a fall in pneumatic pressure to the control chamber of the 2-Way Universal Relay Valve. When open, and fitted with a limit switch the valve can send a feedback signal to a remote valve position monitoring system.

A pressure reducing pilot valve integrated in the control trim ensures a precise and stable pre-set downstream water pressure.

Optional System Items



Single Ex d
Proximity S.S.316
Limit Switch



Exd Pressure
Switch - Stainless
Steel Enclosure for
Harsh
Environments



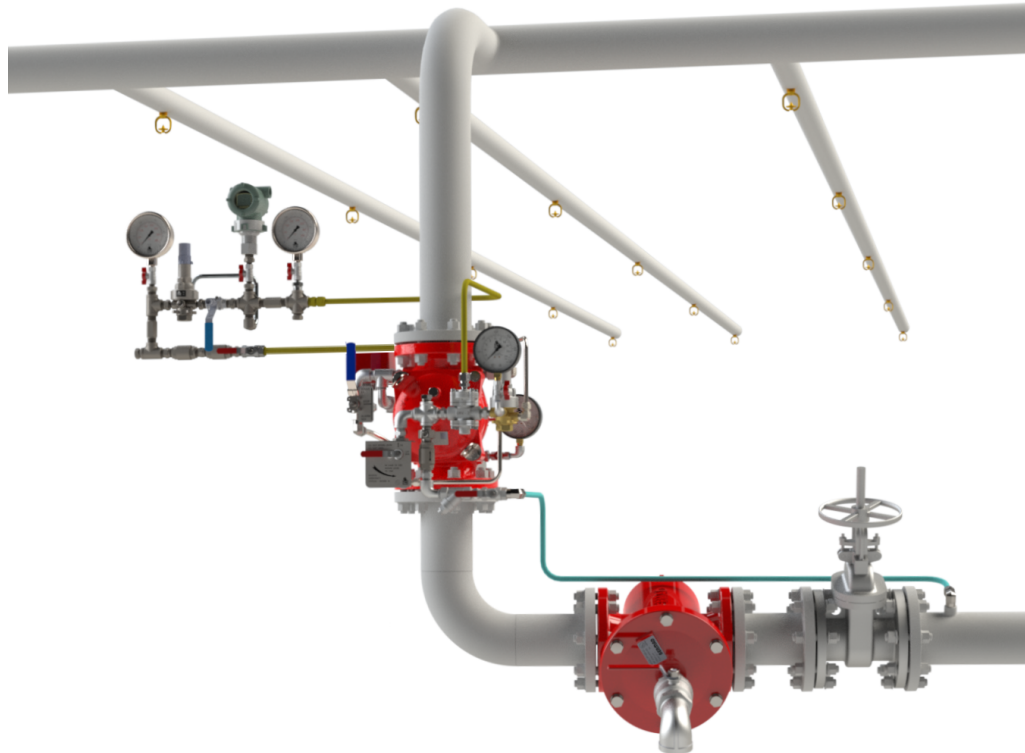
Water Motor Alarm



Pressure Gauge



Basket Strainer -
60F



Suggested Specifications

The deluge valve shall be UL-listed, 250 psi/17.2 bar rated.

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

The deluge valve shall have no mechanical moving parts, and the actuation shall utilize a single-piece diaphragm assembly of VRSD technology.

The valve shall be coated internally and externally with UV protection. Optional: C5-VH grade of ISO-12944 standard against corrosive conditions.

The control trim shall include a pressure control pilot valve, an auxiliary relay valve, a manual emergency release unit, a Y-type strainer, two 4-inch pressure gauges, and an automatic drip-check with manual override.

A valve position indicator shall be provided, and equipped with two proximity limit switches.

Removing the valve cover for full inspection and maintenance shall be in-line, and not require removal of the valve from the pipeline.

The deluge valve and control trim shall be pre-assembled and hydraulically tested by a UL/FM and ISO 9000, 9001 certified factory.

Technical Data

Available Sizes:

Flanged- 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"

Grooved- 2, 3, 4, 6, & 8"

Pressure Rating:

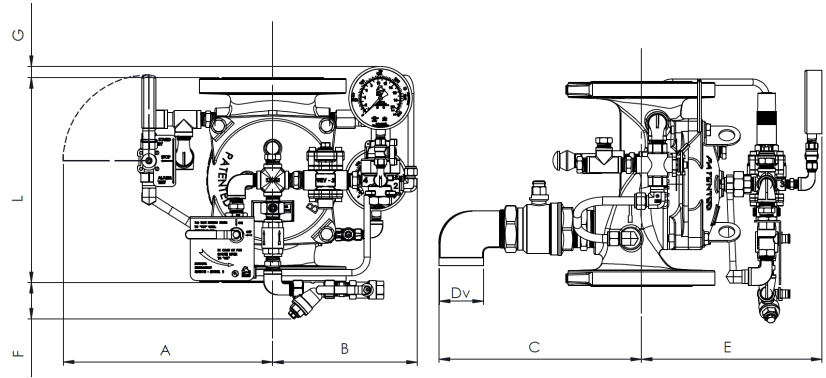
ANSI#150 - 17.2 bar | 250 psi

Grooved - 17.2 bar | 250 psi

Elastomer:

HTNR - Fabric Reinforced High Temperature

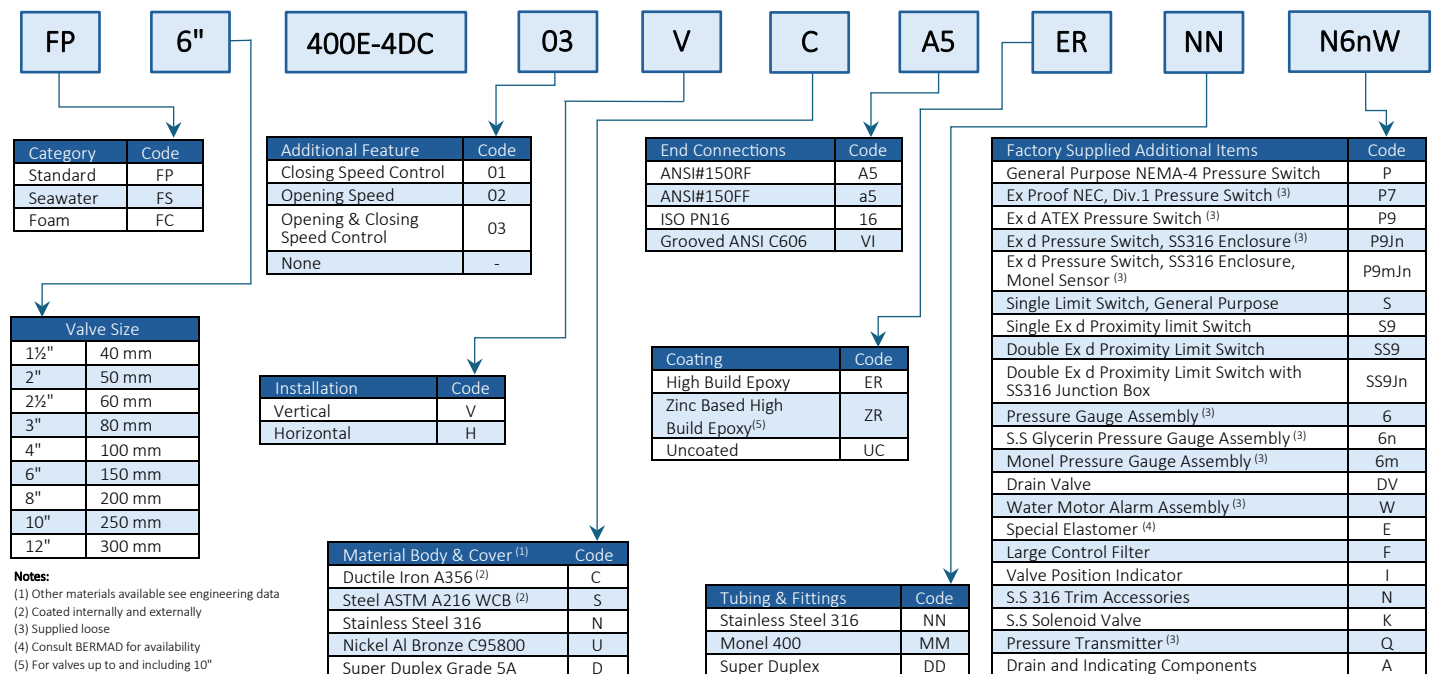
Compound - See engineering data



Valve Size	L #150 mm in	L Grooved mm in	A mm in	B mm in	C mm in	ØD in	E mm in	F mm in	G mm in	Weight #150 kg lb
DN40 1½"	205 8.1	-	313 12.3	225 8.8	199 7.8	¾"	227 8.9	115 4.5	50 2	17 38
DN50 2"	205 8.1	205 8.1	313 12.3	225 8.8	199 7.8	1½"	227 8.9	115 4.5	50 2	18 40
DN65 2½"	205 8.1	-	325 12.8	225 8.8	253 10	1½"	229 9	115 4.5	50 2	21 46
DN80 3"	257 10.1	250 9.8	345 13.6	225 8.8	266 10.5	1½"	263 10.4	89 3.5	49 1.9	29 64
DN100 4"	320 12.6	320 12.6	328 12.9	225 8.8	316 12.4	1½"	282 11.1	57 2.2	18 0.7	43 95
DN150 6"	415 16.3	415 16.3	349 13.7	215 8.5	347 13.7	2"	359 14.1	10 0.4	-	87 192
DN200 8"	500 19.7	-	383 15.1	245 9.6	364 14.3	2"	409 16.1	-	-	149 329
DN250 10"	605 23.8	-	396 15.6	255 10	384 15.1	2"	407 16	-	-	166 366
DN300 12"	725 28.5	-	438 17.2	308 12	422 16.6	2"	504 19.8	-	-	254 560

IMPORTANT: Dimensions for the trim envelope or extents refer to a vertical orientation and may vary with specific component positioning - Apart from the "L" dimension, allow a tolerance of at least ±15%

Valve Code Designations



*More options available – consult BERMAD