# PNEUMATIC PRESSURE CONTROL ON-OFF DELUGE VALVE

## Model FP-400Y-4DC

The BERMAD model 400Y-4DC is an elastomeric hydraulic, line pressure operated, deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.
The 400Y-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 400Y-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.




### Features & Benefits

- Safety and reliability
  - Time proven, simple design with a fail safe actuation
  - Single piece rugged elastomer, VRSD technology
  - Obstacle-free, uninterrupted flow path
  - No mechanical moving parts
  - Shuts off on remote command
  - Ensures precise, stable downstream water pressure
  - Valve position limit switches (optional)
- High performance
  - Very high flow efficiency
  - Straight through Y type body
  - Approved for PN25 / 365 psi
- Specifically-designed for fire protection
  - Face-to-face length standardized to ISO 5752 EN 558-1
  - Suitable for corrosive fluids and freezing temperatures
  - Meets the requirements of the industry standards
- Quick and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal
  - Swivel mounted drain valves (for valves 3" and larger)

### Approvals

| | |
|---|---|
| c UL us LISTED | UL-Listed<br>Special System Water Control Valves, Deluge Type (VLFT)<br>Sizes 1½" - 16" |
| FM APPROVED | FM Approved<br>for Deluge Sprinkler Systems<br>Sizes 1½" - 8" |
| DNV | Det Norske Veritas<br>Type Approval<br>Sizes 1½" to 16" |
| ABS TYPE APPROVED PRODUCT | ABS<br>American Bureau of Shipping<br>Type Approval<br>Sizes 1½" - 12" |
| Lloyd's Register TA TYPE APPROVED | Lloyd's Register<br>Type Approval<br>Sizes 1½" - 10" |

### Typical Applications

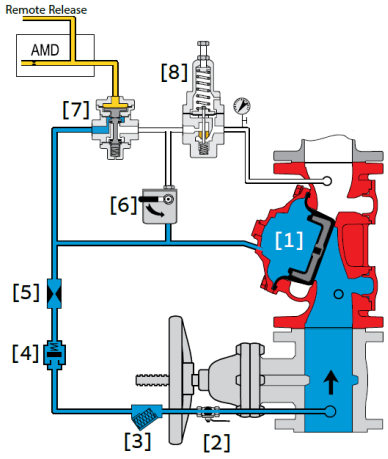
- High Pressure Water Supply
- Remote Control Water Spray Systems
- Corrosive water systems
- Freezing Environments

### Additional Features

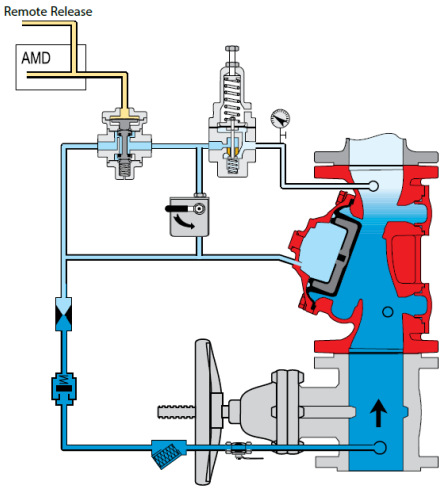
- Valve position limit switches
- Alarm pressure switch
- Air Maintentenance Device
- Seawater compatibility
- Drain valve/s inlet/outlet

All images in this catalog are for illustration only

## Operation



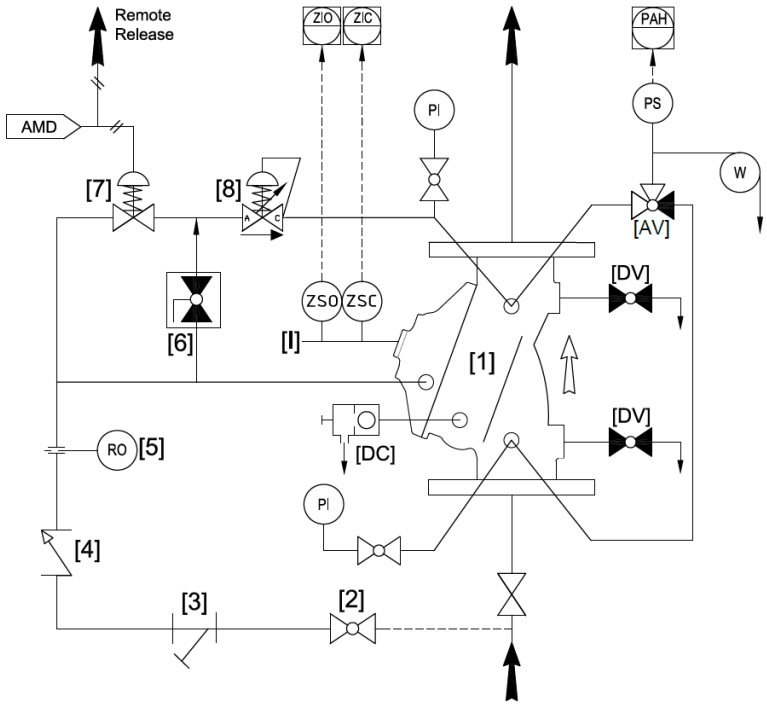
Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD model 400Y-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 400Y-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 400Y 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 |
|---|---|
| PS | Pressure Switch |
| W | Water Motor Alarm |
| ZS | Limit Switch Assembly |
| I | Visual Valve Position indicator |
| DV2 | Downstream Drain valve |
| DV | Drain Valve* |
| PI | Pressure Gauge* |
| AV | 3-way Alarm Test Valve* |
| AMD | Air Maintenance Device |

** 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 400Y-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



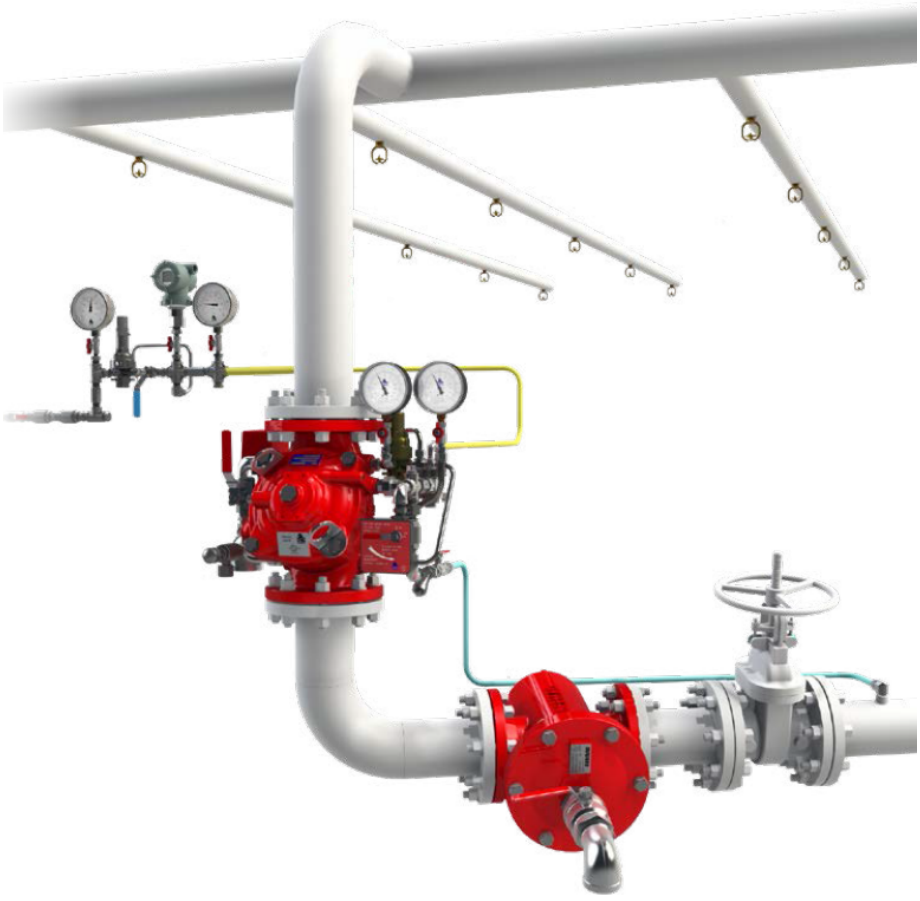
Pressure Gauge



Single Ex d
Proximity S.S.316
Limit Switch



Pressure Switch



## Suggested Specifications

The deluge valve shall be UL-listed, 365-psi/25-bar rated, with a straight-through Ytypebody.
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, an automatic drip-check with manual override, and a ball drain valve with a 360-degree swivel.
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 control trim.
The deluge valve and control trim shall be pre-assembled and hydraulically tested by a UL/FM and ISO 9000, 9001 certified factory.

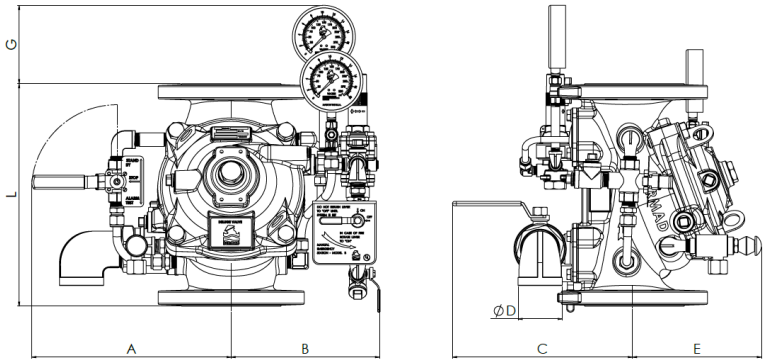
All images in this catalog are for illustration only

## Technical Data

**Available Sizes:**
Flanged- 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
Grooved- 1½, 2, 3, 4, 6, 8 & 10"

**Pressure Rating:**
ANSI#150 - 17.2 bar
ANSI#300 - 1½" to 10" - 25 bar
ANSI#300 - 12" to 16" - 20 bar
Grooved - 17.2 / 25 bar
Setting range: 4 - 12 bar

**Elastomer:**
HTNR - Fabric Reinforced High Temperature Compound - See engineering data




| Valve Size | L #150 (mm) | L Grooved (mm) | L #300 (mm) | A (mm) | B (mm) | C (mm) | ØD(in) | E (mm) | F (mm) | G (mm) | Weight #150 (Kg) | Weight #300 (Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN40 \| 1½" | 230 | 230 | 230 | 293 | 232 | 177 | ¾" | 215 | 166 | 130 | 19 | 20 |
| DN50 \| 2" | 230 | 230 | 238 | 293 | 232 | 177 | ¾" | 215 | 166 | 130 | 19 | 20 |
| DN65 \| 2½" | 235 | 235 | 241 | 296 | 233 | 183 | 1½" | 215 | 164 | 123 | 24 | 26 |
| DN80 \| 3" | 310 | 310 | 326 | 313 | 292 | 221 | 1½" | 186 | 97 | 100 | 38 | 39 |
| DN100 \| 4" | 350 | 350 | 368 | 343 | 300 | 287 | 2" | 199 | 71 | 167 | 52 | 59 |
| DN150 \| 6" | 480 | 480 | 506 | 358 | 354 | 302 | 2" | 234 | - | 35 | 100 | 120 |
| DN250 \| 10" | 730 | 730 | 730 | 406 | 431 | 317 | 2" | 301 | - | - | 202 | 238 |
| DN300 \| 12" | 850 | - | 888 | 478 | 496 | 380 | 2" | 441 | - | - | 358 | 398 |
| DN350 \| 14" | 980 | - | 980 | 478 | 496 | 379 | 2" | 441 | - | - | 394 | 454 |
| DN200 \| 8" | 600 | 600 | 626 | 392 | 431 | 317 | 2" | 301 | - | - | 169 | 189 |
| DN400 \| 16" | 1100 | - | 1100 | 478 | 496 | 405 | 2" | 417 | - | - | 445 | 564 |

**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

FP | 6" | 400Y-4DC | 03 | V | C | A5 | ER | NN | N6nW

| Category | Code |
|---|---|
| Standard | FP |
| Seawater | FS |
| Foam | FC |

| Valve Size | |
|---|---|
| 1½" | 40 mm |
| 2" | 50 mm |
| 2½" | 60 mm(6) |
| 3" | 80 mm |
| 4" | 100 mm |
| 6" | 150 mm |
| 8" | 200 mm |
| 10" | 250 mm |
| 12" | 300 mm |
| 14" | 350 mm |
| 16" | 400 mm |

| Installation | Code |
|---|---|
| Vertical | V |
| Horizontal | H |

| Material Body & Cover (1) | Code |
|---|---|
| Ductile Iron A356 (2) | C |
| Steel ASTM A216 WCB (2) | S |
| Stainless Steel 316 | N |
| Nickel Al Bronze C95800 | U |
| Super Duplex Grade 5A | D |

| Additional Feature | Code |
|---|---|
| Closing Speed Control | 01 |
| Opening Speed Control | 02 |
| Opening & Closing Speed Control | 03 |
| None | - |

| End Connection | Code |
|---|---|
| ANSI#150RF | A5 |
| ANSI#150FF | a5 |
| ANSI#300RF | A3 |
| ANSI#300FF | a3 |
| ISO PN16 | 16 |
| ISO PN25 | 25 |
| Grooved 17.2bar/250psi(5) | VI |
| Grooved 25bar/365psi(5) | V2 |

| Coating | Code |
|---|---|
| High Build Epoxy | ER |
| Zinc Based High Build Epoxy (5) | ZR |
| Uncoated | UC |

| Tubing & Fittings | Code |
|---|---|
| Stainless Steel | NN |
| Monel 400 | MM |
| Super Duplex | DD |

| Factory Supplied Additional Items* | Code |
|---|---|
| General Purpose NEMA-4 Pressure Switch | P |
| Ex Proof NEC, Div.1 Pressure Switch (3) | P7 |
| Ex d ATEX Pressure Switch (3) | P9 |
| Ex d Pressure Switch, SS316 Enclosure (3) | P9Jn |
| Ex d Pressure Switch, SS316 Enclosure, Monel Sensor (3) | P9mJn |
| Single Limit Switch, General Purpose | S |
| Single Ex d Proximity limit Switch | S9 |
| Double Ex d Proximity Limit Switch | SS9 |
| Double Ex d Proximity Limit Switch with SS316 Junction Box | SS9Jn |
| Pressure Gauge Assembly (3) | 6 |
| S.S Glycerin Pressure Gauge Assembly (3) | 6n |
| Monel Pressure Gauge Assembly (3) | 6m |
| Drain Valve | DV |
| Water Motor Alarm Assembly (3) | W |
| Special Elastomer (4) | E |
| Large Control Filter | F |
| Valve Position Indicator | I |
| S.S 316 Trim Accessories | N |
| Pressure Transmitter (3) | Q |
| Drain and Indicating Components | A |

*More options available – consult BERMAD

**Notes:**
(1) Other materials available see engineering data
(2) Coated internally and externally
(3) Supplied loose
(4) Consult BERMAD for availability
(5) For valves up to and including 10"
(6) Available in Ductile Iron only


The information contained herein may be changed by BERMAD without notice. BERMAD shall not be held liable for any errors.
© Copyright 2015-2025 BERMAD CS Ltd