# DRY PIPE SPRINKLER VALVE

## Model FP-400Y-DP

The BERMAD model 400Y-DP utilizes an elastomeric deluge valve, designed specifically for advanced fire protection systems and the latest industry standards. Dry-pipe systems include automatic sprinklers attached to pressurized dry sprinkler piping with supplementary electric monitoring and a Supervised Pneumatic system installed in the same area.
The 400Y-DP admits water into the sprinkler system piping when there is a drop in pressure in the piping due to the opening of one or more fusible head sprinklers.
As an option the 400Y-DP features a rotating valve position indicator available with limit switches for remote valve position monitoring.

### Features & Benefits

- Safety and reliability
  - No mechanical moving parts
  - Valve position limit switches (optional)
  - Obstacle-free, uninterrupted flow path
  - Local valve position indicator beacon (optional)
  - Single piece, rugged elastomeric diaphragm seal - VRSD technology
- High performance
  - High discharge capacity
  - Straight through Y type body
  - Approved for PN25 / 365 psi
- 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>Dry Pipe and Deluge Valves for Fire Protection Service.<br>Sizes 1½" - 10" |
| FM APPROVED | FM Approved<br>Dry Pipe Valves<br>Sizes 1½" - 8" |
| DNV | Det Norske Veritas<br>Type Approval |
| ABS TYPE APPROVED PRODUCT | ABS<br>American Bureau of Shipping<br>Type Approval |
| Lloyd's Register TA TYPE APPROVED | Lloyd's Register<br>Type Approval |

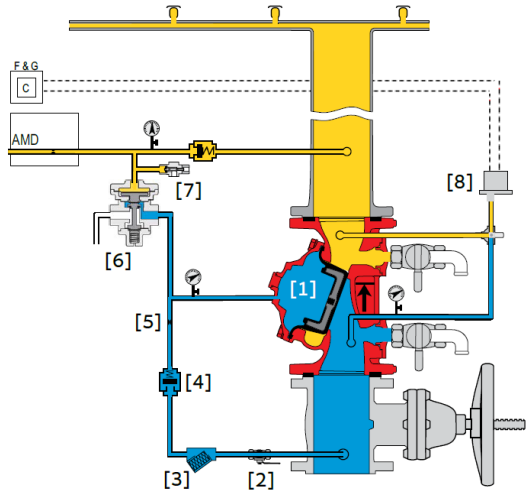
### Typical Applications

- Water sensitive material storage
- Freezing Environments

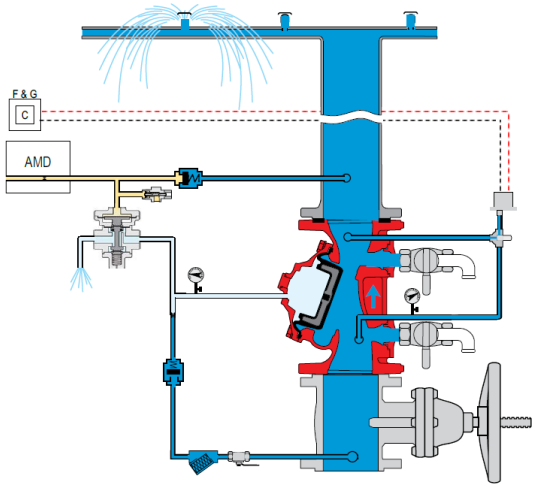
### Additional Features

- Seawater compatibility
- Air Maintentenance Device
- Valve position limit switches
- Local valve position indicator beacon
- Corrosion resistant zinc based high build epoxy coating

## Operation



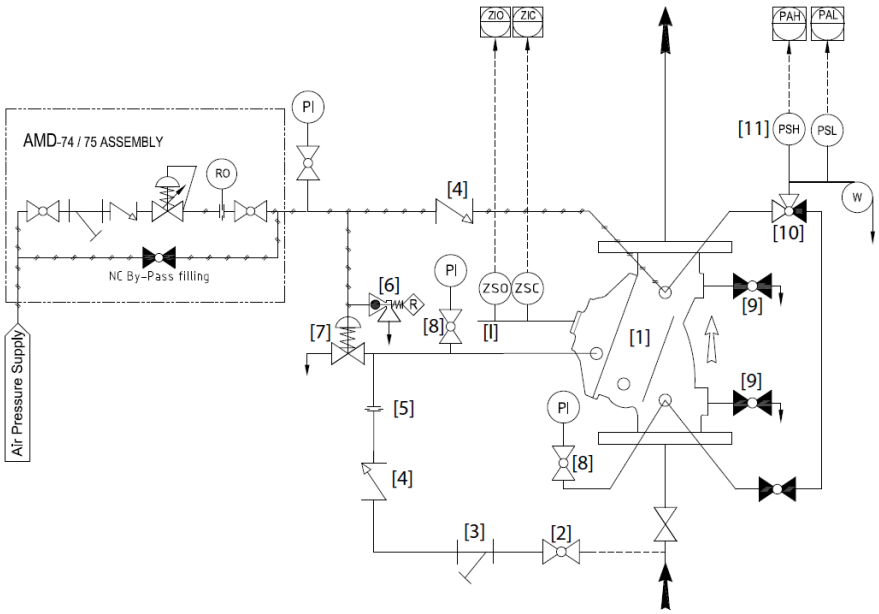
Valve Closed (normal condition)



Valve Open (fire condition)

The BERMAD model 400Y-DP 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], restriction orifice [5] and is then trapped in the control chamber by a check valve [4] and a URV relay valve [6] which is held closed by the pneumatic pressure of the dry sprinkler pipeline. When required an optional auto drain device can be installed to prevent water accumilation in the dry pipe.
In the event of fire the activation of the automatic sprinkler/s will cause a drop in pneumatic pressure, upon which the URV relay valve will open and the air pressure switch [8] will be activated. Water pressure will be released from the main valve control chamber, opening the main valve and admitting water into the piping and to pressure switch [8] connected to the alarm device [8].
Once open the main valve will latch in this position, closing the main valve can be done only manually and locally by resetting or reclosing the low pressure accelerator valve with the restored pipeline air pressure.

## System P&ID




| | Components |
|---|---|
| 1 | BERMAD 400Y Deluge Valve |
| 2 | Priming ball valve |
| 3 | Priming strainer |
| 4 | Check valve |
| 5 | Restriction orifice |
| 6 | Low pressure accelerator |
| 7 | URV relay pilot valve |
| 8 | Pressure gauge |
| 9 | Drain valve |
| 10 | 3-Way alarm test valve |
| 11 | PS40-2 Pressure switch, 2xSPDT (with separate PSH/PSL) |

| | Optional System Items |
|---|---|
| ZS | Limit Switch Assembly |
| AMD | Air Maintenance Device |
| I | Visual Valve Position indicator |
| W | Water Motor Alarm |
| PI | Pressure Gauge |

## System Installation

A typical installation of the BERMAD model 400Y-DP features a pressurized dry sprinkler pipeline in the protected area with a Supervised Pneumatic System installed in the same area. Valve opening is in response to the activation of one or more of the fusible sprinkler heads causing a drop in the dry sprinkler pipeline pressure, triggering the URV relay valve to open the 400Y-DP valve. When fitted with a limit switch the main valve can send a feedback signal to a remote valve status monitoring system.
The pneumatic system shall maintain a pressure between 1.5-1.6 barg (22-23 psi) supplying a dry, clean, dependable and continuous compressed-air source via an Air Maintenance Device.

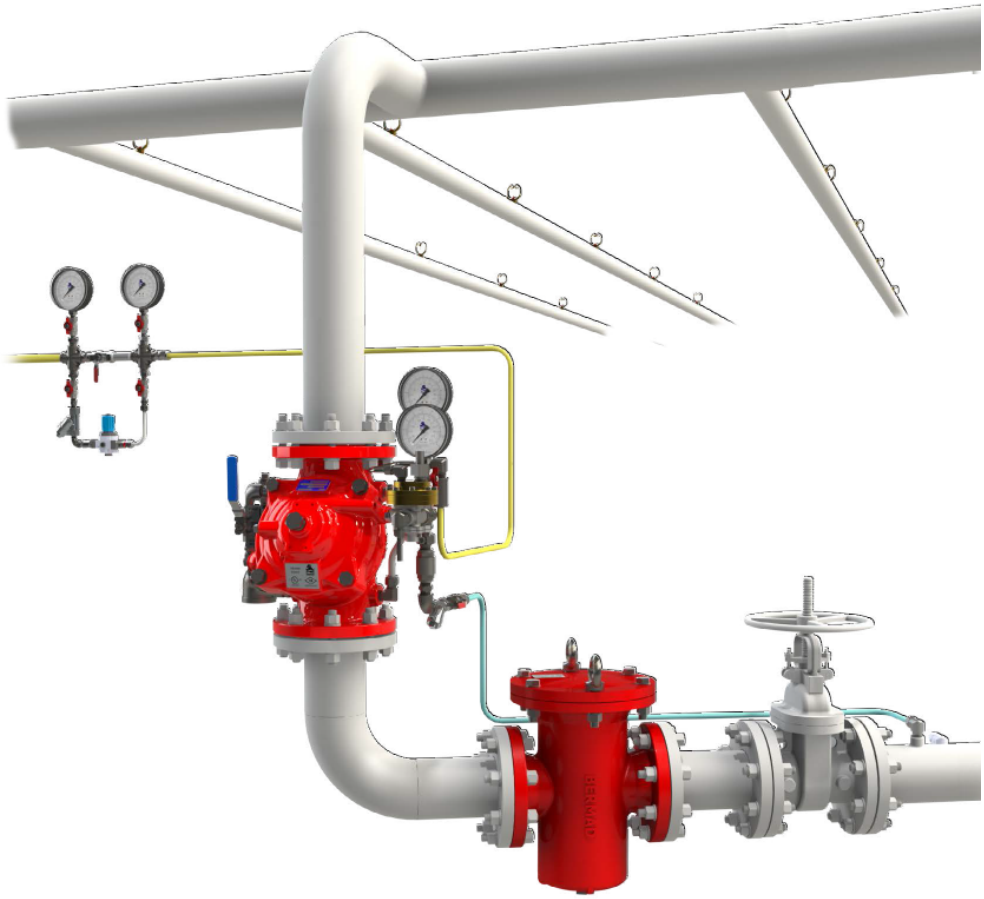
## Optional System Items

Visual Position Indicator


Rotating Limit Switch Box

Water Motor Alarm

Basket Strainer - 60F



## Suggested Specifications

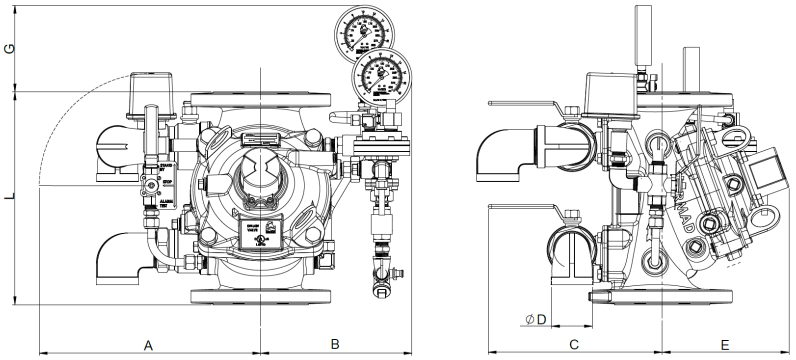
The valve shall be UL-listed and FM-approved, 365-psi/25-bar rated, with a straight-through Ytypebody.
The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.
The valve shall have no mechanical moving parts, and the actuation shall utilize a single-piece diaphragm assembly 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 relay valve with a latching low pressure release valve, a manual emergency release unit, a Y-type strainer, two 4-inch pressure gauges, and ball drain valves 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.

## Technical Data

**Available Sizes:**
Flanged- 1½, 2, 2½, 3, 4, 6, 8 & 10"
Grooved- 1½, 2, 2½, 3, 4, 6, 8 & 10"

**Pressure Rating:**
ANSI#150 - 17.2 bar | 250 psi
ANSI#300 - 1½" to 10" - 25 bar | 365 psi
Grooved - 17.2 / 25 bar | 250 / 365 psi

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




| Valve Size | L #150 mm \| in | L Grooved mm \| in | L #300 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" | 230 \| 9.1 | 230 \| 9.1 | 230 \| 9.1 | 279 \| 11 | 191 \| 7.5 | 241 \| 9.5 | ¾" | 120 \| 4.7 | - | 101 \| 4 | 20 \| 45 |
| DN50 \| 2" | 230 \| 9.1 | 230 \| 9.1 | 235 \| 9.3 | 279 \| 11 | 191 \| 7.5 | 241 \| 9.5 | ¾" | 146 \| 5.7 | - | 101 \| 4 | 22 \| 48 |
| DN65 \| 2½" | 235 \| 9.3 | 235 \| 9.3 | 241 \| 9.5 | 279 \| 11 | 191 \| 7.5 | 241 \| 9.5 | ¾" | 146 \| 5.7 | - | 101 \| 4 | 22 \| 48 |
| DN80 \| 3" | 310 \| 12.2 | 310 \| 12.2 | 326 \| 12.8 | 339 \| 13.3 | 249 \| 9.8 | 274 \| 10.8 | 1½" | 228 \| 9 | - | 91 \| 3.6 | 37 \| 81 |
| DN100 \| 4" | 350 \| 13.8 | 350 \| 13.8 | 368 \| 14.5 | 347 \| 13.7 | 247 \| 9.7 | 290 \| 11.4 | 2" | 295 \| 11.6 | - | 78 \| 2.9 | 47 \| 103 |
| DN150 \| 6" | 480 \| 18.9 | 480 \| 18.9 | 506 \| 19.9 | 400 \| 15.7 | 314 \| 12.4 | 305 \| 12 | 2" | 441 \| 17.4 | - | 30 \| 1.2 | 90 \| 198 |
| DN200 \| 8" | 600 \| 23.6 | 600 \| 23.6 | 626 \| 24.6 | 430 \| 16.9 | 342 \| 13.5 | 320 \| 12.6 | 2" | - | - | - | 153 \| 337 |
| DN250 \| 10" | 730 \| 23.4 | 730 \| 23.4 | 730 \| 24.1 | 430 \| 13.7 | 342 \| 9.7 | 320 \| 12.8 | 2" | - | - | - | 183 \| 403 |

**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-DP | V | C | A5 | ER | NN | NP9

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

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

| Valve Size | |
|---|---|
| 1½ | 40 mm |
| 2" | 50 mm |
| 2½" | 65 mm(6) |
| 3" | 80 mm |
| 4" | 100 mm |
| 6" | 150 mm |
| 8" | 200 mm |

| 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 |

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

| 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 | RS |
| Single Ex d Proximity limit Switch | RS9 |
| Double Ex d Proximity Limit Switch | RSS9 |
| Pressure Gauge Assembly (3) | 6 |
| S.S Glycerin Pressure Gauge Assembly (3) | 6n |
| Monel Pressure Gauge Assembly (3) | 6m |
| 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 |

* More options available - contact 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

| End Connections | Code |
|---|---|
| ANSI#150RF | A5 |
| ANSI#150FF | a5 |
| ISO PN16 | 16 |
| Grooved Class 250psi/17.2bar | VI |
| Grooved Class 365psi/25bar | V2 |

| Tubing & Fittings | Code |
|---|---|
| Stainless Steel 316 | NN |
| Monel 400 | MM |
| Super Duplex | DD |