



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.

The optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.



(for Illustration Only)

Benefits and Features

■ Safety and reliability

- Time-proven, simple, fail-safe actuation
- Single-piece, rugged, elastomeric diaphragm seal - 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-flow Y-type body
- Approved for PN25 (365 psi)

■ Designed for fire protection

- Face-to-face length standardized to ISO 5752, EN 558-1
- Suitable for corrosive fluids and freezing temperatures: pneumatic relay valve
- Designed to meet the requirements of the industry standards

■ Quick and easy maintenance

- In-line serviceable
- Fast and easy cover removal
- Swivel mounted drain valves*

* For 3" valves and larger

Typical Applications

- Remote control water spray systems
- Foam applications
- Corrosive water supplies
- High pressure water supply
- Freezing conditions

Approvals



UL-Listed
Special System Water Control Valves, Deluge Type (VLFT)
Sizes 1½" - 16"



Det Norske Veritas
Type Approval



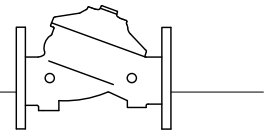
ABS
American Bureau of Shipping
Type Approval



Lloyd's Register
Type Approval

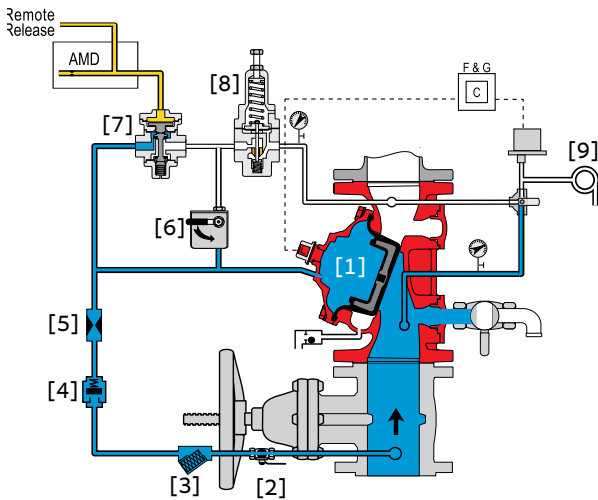
Additional Options

- Valve position limit switches
- Alarm pressure switch
- Air maintenance device
- Sea water compatibility
- Drain valve/s inlet/outlet
- For "automatic activation" select BERMAD local or remote reset model

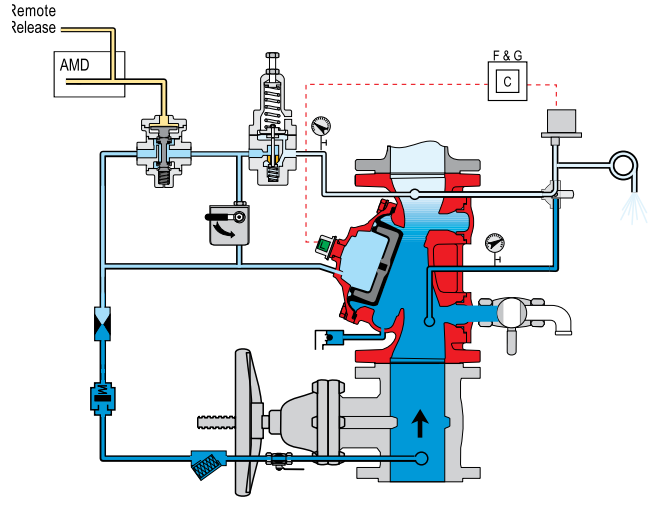


Operation

(for Illustration Only)



Valve Closed (normal conditions)



Valve Open (fire conditions)

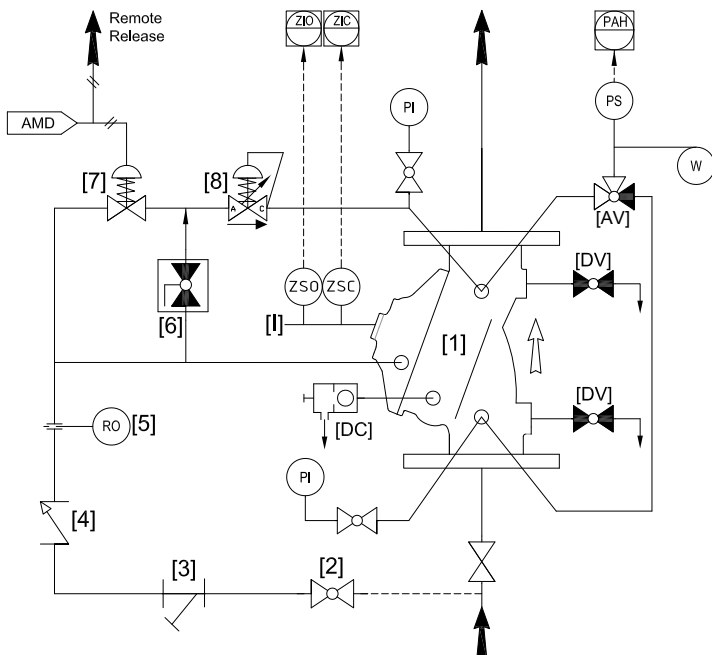
The BERMAD model 400Y-4DC is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

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.

When outlet pressure changes, the pressure-reducing pilot opens or closes in response. This regulates the pressure in the main valve's control chamber, thus modulating the position of the diaphragm seal disk 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*

- PI Pressure Gauge
- I Valve Position Indicator
- DC Drip Check
- AV 3-Way Alarm Test Valve
- DV Drain Valve
- PS Pressure Switch
- ZS Limit Switch Assembly
- W Water Motor Alarm
- AMD Air Maintenance Device

* See also Factory Fitted Options under the Valve Code Designations on the last page

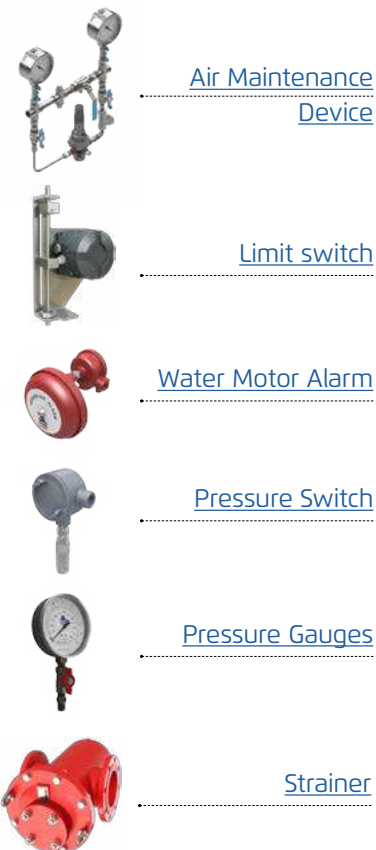


System Installation

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



(for Illustration Only)

Suggested Specifications:

The deluge valve shall be UL listed, 25 bar/365 psi rated, elastomeric-type, with a straight-through, Y-type body. The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.

Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.

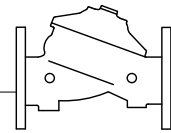
The deluge valve shall include a relay pilot valve, a pressure reducing pilot valve, a Y-type strainer, a ball drain valve, an automatic drip-check with manual override, 4-inch pressure gauges, and a manual emergency release housed in a stainless steel box. The valve drain socket shall be flanged and have 360-degree swivel.

The valve shall be equipped with two limit switches.

Removing the valve cover for inspection and maintenance shall not require removing the control trim.

The deluge valve and its entire control trim shall be supplied pre-assembled and hydraulically tested by a factory certified to ISO 9000 and 9001 standards.

BERMAD Fire Protection



Model FP 400Y - 4DC

400Y Series

Technical Data

Available Sizes (inch)

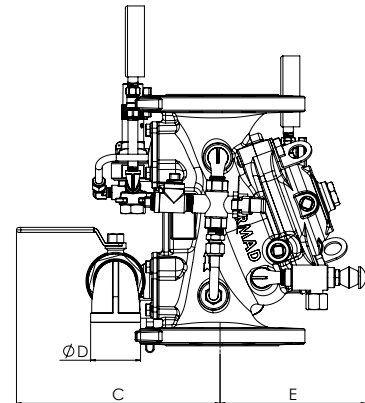
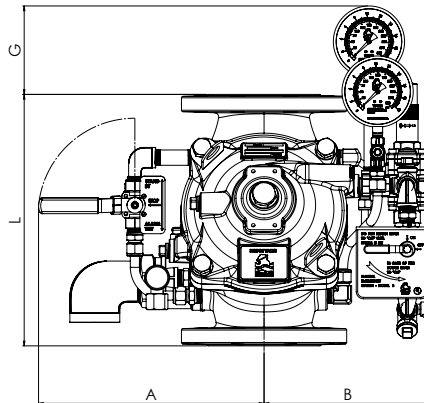
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 1½, 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

Pressure Rating

- ANSI#150 - 16 bar / 235 psi
 - ANSI#300 - 1½" to 10" 25 bar / 365 psi
12" to 16" 20 bar / 300 psi
 - Grooved - 25 bar / 365 psi
 - Threaded - 25 bar / 365 psi
 - Setting range: 4 - 12 bar (60 - 175 psi)
- for other setting ranges consult BERMAD

Elastomer

- HTNR - Fabric Reinforced High Temperature Compound - See 400Y Engineering



| Valve Size | 1½" DN40 | | 2" DN50 | | 3" DN80 | | 4" DN100 | | 6" DN150 | | 8" DN200 | | 10" DN250 | | 12" DN300 | | 14" DN350 | | 16" DN400 | |
|-------------------------------|----------|------|---------|------|-----------|------|-----------|------|-----------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|
| | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| ⁽¹⁾ L ANSI #150 | 230 | 9.1 | 230 | 9.1 | 310 | 12.2 | 350 | 13.8 | 480 | 18.9 | 600 | 23.6 | 730 | 28.7 | 850 | 33.5 | 980 | 38.6 | 1100 | 43.3 |
| ⁽²⁾ L ANSI #300 | 230 | 9.1 | 235 | 9.3 | 326 | 12.8 | 368 | 14.5 | 506 | 19.9 | 626 | 24.7 | 730 | 28.8 | 850 | 33.5 | 980 | 38.6 | 1100 | 43.3 |
| A | 320 | 12.6 | 320 | 12.6 | 380 | 15.0 | 388 | 15.3 | 441 | 17.4 | 471 | 18.5 | 471 | 18.5 | 584 | 23.0 | 584 | 23.0 | 584 | 23.0 |
| B | 164 | 6.5 | 164 | 6.5 | 222 | 8.7 | 232 | 9.1 | 287 | 11.3 | 365 | 14.4 | 365 | 14.4 | 428 | 16.9 | 428 | 16.9 | 428 | 16.9 |
| C | 241 | 9.5 | 241 | 9.5 | 274 | 10.8 | 290 | 11.4 | 305 | 12.0 | 320 | 12.6 | 320 | 12.6 | 383 | 15.1 | 383 | 15.1 | 408 | 16.1 |
| ØD | ¾" | | ¾" | | 1½" | | 2" | | 2" | | 2" | | 2" | | 2" | | 2" | | 2" | |
| E | 180 | 7.1 | 180 | 7.1 | 185 | 7.3 | 195 | 7.7 | 228 | 9.0 | 295 | 11.6 | 295 | 11.6 | 441 | 17.4 | 441 | 17.4 | 415 | 16.3 |
| F | 142 | 5.6 | 142 | 5.6 | 132 | 5.2 | 119 | 4.7 | 71 | 2.8 | 46 | 1.8 | - | - | - | - | - | - | - | - |
| ⁽³⁾ Kv / Cv | 68 / 79 | | 80 / 92 | | 190 / 219 | | 345 / 398 | | 790 / 912 | | 1160 / 1340 | | 1355 / 1652 | | 2600 / 3040 | | 2950 / 3450 | | 3254 / 3801 | |
| ⁽⁴⁾ Leq(4): m / ft | 2 / 7 | | 6 / 18 | | 8 / 25 | | 9 / 31 | | 15 / 49 | | 28 / 92 | | 64 / 209 | | 46 / 149 | | 56 / 184 | | 90 / 295 | |
| Kg / lb (ANSI # 150) | 18 / 40 | | 20 / 43 | | 34 / 76 | | 44 / 98 | | 88 / 193 | | 151 / 332 | | 181 / 398 | | 324 / 713 | | 357 / 785 | | 403 / 887 | |
| Kg / lb (ANSI # 300) | 20 / 45 | | 22 / 48 | | 35 / 77 | | 51 / 113 | | 108 / 238 | | 171 / 376 | | 217 / 477 | | 364 / 801 | | 429 / 944 | | 523 / 1151 | |

⁽¹⁾ Refers to the length dimensions for Raised Face ANSI #150, ISO 16 Flanged, Threaded and Grooved valves

⁽²⁾ Refers to the length dimensions for Raised Face ANSI #300 and ISO 25 Flanged valves

⁽³⁾ Flow coefficients apply to a fully opened valve

⁽⁴⁾ Leq (Equivalent Pipe Length) refers to turbulent flow in new steel pipe schedule 40 for a fully opened valve, values given for general consideration only

⁽⁵⁾ **IMPORTANT:** Dimensions for the trim envelope or extents may vary with specific component positioning and where needed can be tailored to suit specific requirements - allow a tolerance of at least ±10%.

Valve Code Designations

FP 6" 400Y 4DC 06-03 V C A5 PR NN N6nW

| Category | code |
|------------------|------|
| Standard | FP |
| Seawater | FS |
| Foam Concentrate | FC |

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

| Speed and Pressure Control | Code |
|----------------------------|------|
| Differential Sensing Pilot | 06 |
| Opening speed | 02 |
| Closing speed | 01 |
| Opening & Closing speed | 03 |
| None | - |

| 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 |

| End Connections | code |
|--------------------------------|------|
| ANSI#150RF | A5 |
| ANSI#150FF | a5 |
| ANSI#300RF | A3 |
| ISO PN16 | 16 |
| ISO PN25 | 25 |
| Grooved 235psi/PN16, ANSI C606 | VI |
| Grooved 365psi/PN25, ANSI C606 | V2 |
| Threaded 235psi/PN16, ISO-7-Rp | BP |
| Threaded 365psi/PN25, ISO-7-Rp | PH |
| Threaded 235psi/PN16, NPT | NP |
| Threaded 365psi/PN25, NPT | NH |

| Coating | code |
|------------------|------|
| Polyester Red | PR |
| High Build Epoxy | ER |
| Uncoated | UC |

| Factory Fitted Options* | Code |
|--------------------------------------|------|
| General Purpose Pressure Switch | P |
| Ex Proof NEC, Div.1 Pressure Switch | P7 |
| Ex d ATEX Pressure Switch | P9 |
| Single Limit Switch, General Purpose | S |
| Single Ex d Proximity Limit Switch | S9 |
| Double Ex d Proximity Limit Switch | SS9 |
| Pressure Gauge Assembly | 6 |
| S.S Glycerin Pressure Gauge Assembly | 6n |
| Monel Pressure Gauge Assembly | 6m |
| Water Motor Alarm Assembly | W |
| Downstream Drain Valve | DV |
| Special Elastomer EPDM | E1 |
| Special Elastomer NBR | E3 |
| Large Control Filter | F |
| Valve Position Indicator | I |
| Stainless Steel 316 Trim Accessories | N |
| Stainless Steel 316 Seat | T |
| Pressure Transmitter | Q |
| Drain and Indicating Components | A |

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

* For more Factory Fitted Options - see 400Y Ordering Guide or Consult BERMAD

Notes:

⁽¹⁾ Other materials available see

[400Y Engineering](#)

⁽²⁾ Coated internally and externally



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