DOUBLE INTERLOCK PRE-ACTION SYSTEM ELECTRIC-PNEUMATIC RELEASE WITH PRESSURE CONTROL

Model FP-400Y-7DC

The BERMAD model 400Y-7DC utilizes an elastomeric deluge valve with unique Vulcanized Radial Seal Disk (VRSD) technology, designed specifically for advanced fire protection systems and the latest industry standards.
Electric-Pneumatic Double interlock systems include automatic sprinklers attached to a supervised dry sprinkler piping system and a supplementary electric detection system.
The 400Y-7DC admits water into the sprinkler system piping only when both the electric detection device and the pneumatic supervised systems are simultaneously activated.
This valve includes an integrated pressure control pilot ensuring a precise and stable pre-set maximum downstream water pressure.
An anti-flooding feature is provided by using an in-line check valve, which creates an intermediate vented chamber using a Normally Open drip check.

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
  - Controls nozzle water pressure-flow - preventing overflow and flooding
  - No mechanical moving parts
  - Valve position limit switches (optional)
- High performance
  - Very high flow efficiency
  - Straight through Y type body
  - Approved for PN20 - 300 psi
- Quick and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal
  - Swivel mounted drain valves (for valves 3" and larger)

Approvals

FM APPROVED	FM Approved for Preaction and Refrigerated Area Sprinkler Systems Sizes 1½" - 8"
DNV	Det Norske Veritas Type Approval
ABS TYPE APPROVED PRODUCT	ABS American Bureau of Shipping Type Approval
Lloyd's Register TA	Lloyd's Register Type Approval

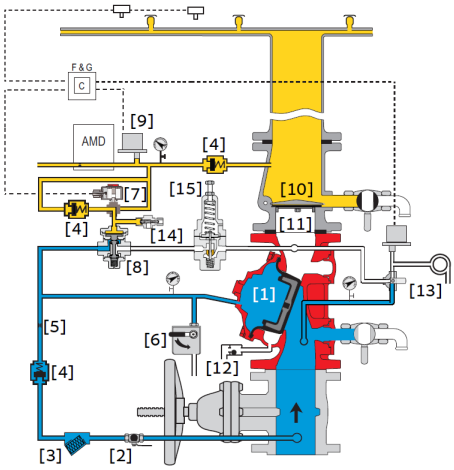
Typical Applications

- Flow control against flooding, where drainage is restricted
- Water sensitive material storage
- Freezing Environments
- Computer and electronics rooms
- Libraries museums and archives

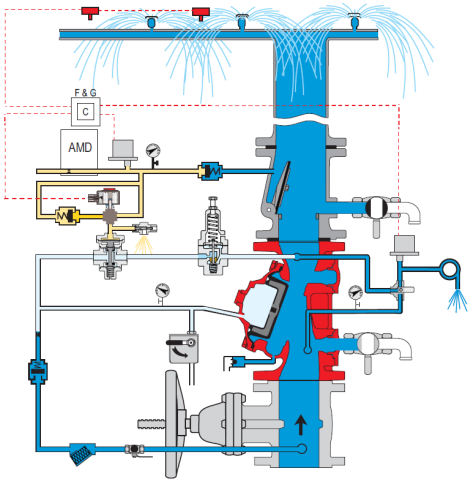
Additional Features

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

Operation



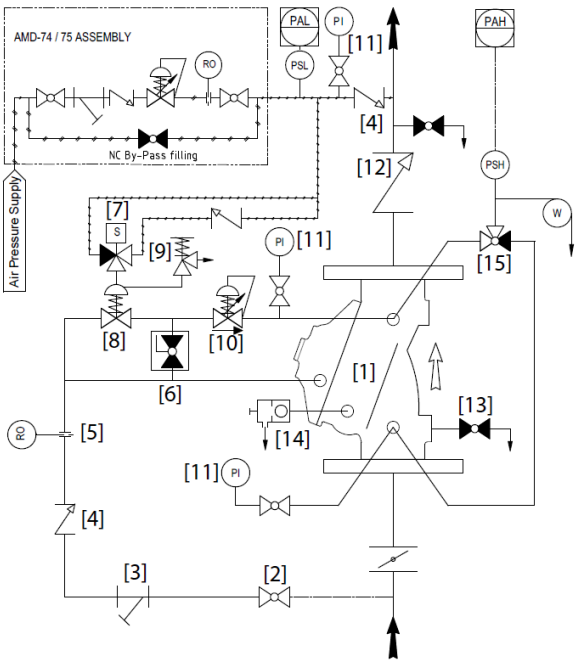
Valve Closed (normal conditions)



Valve Open (fire conditions)

Under NORMAL conditions, the valve is kept closed by water pressure supplied to the control chamber [1] via the priming line [2] strainer [3], and is then trapped in the control chamber by the closed manual emergency release [6] a check valve [4] a closed solenoid valve [7] and a URV relay valve [8] held closed by pneumatic pressure in the dry sprinkler pipeline. An intermediate vented chamber [11] is created by an in-line swing check valve [10] and a Normally Open drip check valve [12]. In FIRE conditions the valve can be opened either manually using the manual emergency release valve [6] or by the URV relay valve opening simultaneously with the solenoid valve. The opening of the automatic sprinkler/s will cause a drop in pneumatic pressure and the release device [14] will latch open, opening the URV relay valve and the air pressure switch [9] will be activated signalling to the electric detection system via a control panel [C] and will the main valve open. When both these conditions exist the water pressure will be released from the main valve control chamber, opening the 400Y-7DC, releasing water into the piping system and alarm devices, during which the integral control pilot[15] ensures that a predetermined maximum downstream pressure will not be exceeded.

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	3-Way solenoid
8	URV-2-Way relay valve
9	Automatic release device
10	Pressure control pilot
11	Pressure gauge
12	Line check valve
13	Drain valve
14	Automatic drip check valve
15	3-Way alarm check valve
16	3-Way alarm check valve

	Optional System Items
PS	Pressure Switch
W	Water Motor Alarm
AMD	Air Maintenance Device

System Installation

A typical installation of the BERMAD model 400Y-7DC, features automatic actuation via a URV pilot control valve opening in response to a fall in pneumatic pressure of the dry sprinkler pipeline and the simultaneous opening of a 3-Way solenoid triggered electrically by a signal from a fire & gas control system.
A pressure control pilot, integrated in the control trim keeps the downstream pressure below a predetermined maximum.
An inline check valve and drip check valve create an intermediate vented chamber to ensure against flooding when the valve is closed.

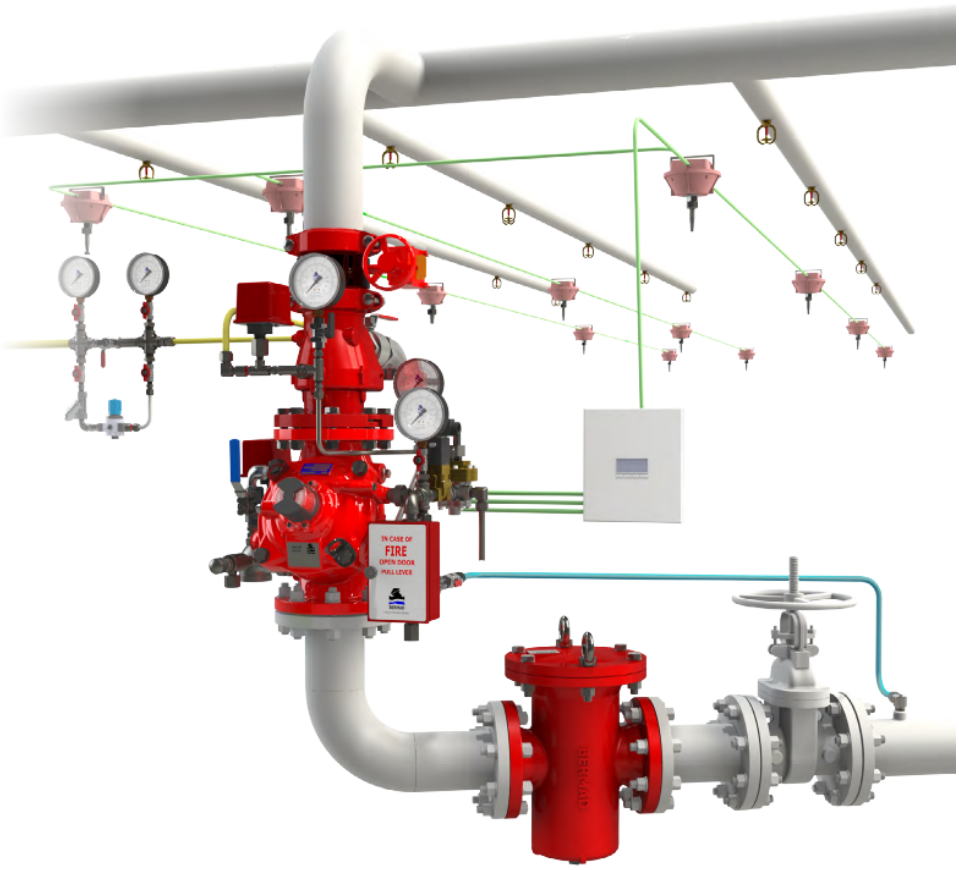
Optional System Items

Double Mechanical Linear Limit Switch

Visual Position Indicator, Linear

S.S Pressure Switch E xd

Basket Strainer - 60F



Suggested Specifications

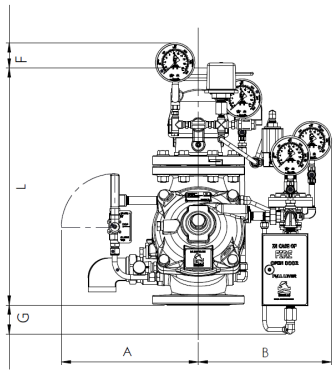
The pre-action valve shall be FM-approved for 325-psi/25-bar. with a straight-through Y type body.
The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.
The valve shall have no mechanical moving parts, and the actuation shall utilize a single-piece diaphragm assembly 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, an automatic drip-check with manual override, and a ball drain valve with a 360 degree swivel.
The solenoid valve shall be a 3-way FM and UL429A-listed for 365 psi/25 bar with 65% of the rated voltage.
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 pre-action valve and control trim shall be pre-assembled and hydraulically tested by a UL/FM and ISO 9000, 9001 certified factory.

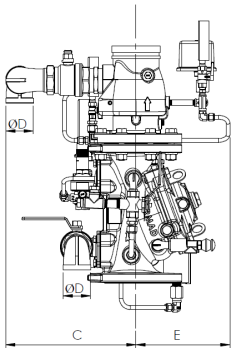
Technical Data

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

Pressure Rating:
ANSI#150 - 17.2 bar | 250 psi
ANSI#300 - 1½" to 10" - 25 bar | 365 psi
Grooved - 25 bar | 365 psi
Setting range: 2 - 16 bar | 30 - 235 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
DN50 | 2"	450 | 17.7	450 | 17.7	455 | 17.9	293 | 11.5	296 | 11.7	178 | 7	3/4"	249 | 9.8	78 | 3	200 | 7.9	31 | 68
DN80 | 3"	555 | 21.9	555 | 21.9	570 | 22.4	313 | 12.3	326 | 12.8	221 | 8.7	1½"	220 | 8.7	62 | 2.4	98 | 3.9	55 | 121
DN100 | 4"	594 | 23.4	594 | 23.4	613.5| 24.2	343 | 13.5	334 | 13.1	287 | 11.3	2"	233 | 9.2	63 | 2.4	71 | 2.8	73 | 131
DN150 | 6"	775 | 30.5	775 | 30.5	800.$31.6	358 | 14.1	388 | 15.3	302 | 11.9	2"	268 | 10.6	26 | 1	-	132 | 290
DN200 | 8"	956 | 37.6	956 | 37.6	990.$39	391 | 15.4	433 | 17	317 | 12.5	2"	335 | 13.2	-	-	226 | 497

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-7DC | V | C | A5 | ER | 4DC | NN | NP9

Category	Code
Standard	FP
Seawater	FS

Valve Size	
2"	50 mm
3"	80 mm
4"	100 mm
6"	150 mm
8"	200 mm

Notes:
(1) Other materials available see engineering data
(2) Coated internally and externally
(3) Supplied loose
(4) Consult BERMAD for availability
(5) Main valve only

Installation	Code
Vertical	V
Horizontal	H

Material Body & Cover [1]	Code
Ductile Iron A356 [2]	C
Steel ASTM A216 WCB [2][5]	S
Nickel Al Bronze C95800[5]	NAB

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

Coating	Code
High Build Epoxy	ER
Zinc Based High Build Epoxy [5]	ZR

Voltage - Main Valve N.O or N.C *	Code
24VDC - N.C.	4DC
110VDC - N.C.	5DC
110 - 120/AC - N.C.	5AC

* NO or NC refers to the main valve status when the Solenoid is de-energized

Tubing & Fittings	Code
Stainless Steel 316	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
Double Limit Switch, General Purpose	SS
Single Ex d Proximity limit Switch	S9
Double Ex d Proximity Limit Switch	SS9
Pressure Gauge Assembly [3]	6
S.S Glycerin Pressure Gauge Assembly [3]	6n
Monel Pressure Gauge Assembly [3]	6m
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex. d Atex Solenoid	9
Stainless steel 316 Solenoid Valve	K
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

* More options available - contact BERMAD