

HYDRAULICALLY CONTROLLED ANTI-COLUMNING DELUGE VALVE WITH LOCAL RESET

Model FP-400Y-5M

The BERMAD model 400Y-5M is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards. The 400Y-5M is activated by a pressure operated relay valve, which latches the main valve open until locally reset. The 400Y-5M is ideal for systems with remote or elevated wet pilot lines, due to its boosted local pressure release. 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 elastomer, VRSD technology
 - No mechanical moving parts
 - Latches open: remains open until reset locally
 - Valve position limit switches (optional)
 - Local valve position indicator beacon (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
 - Meets the requirements of the industry standards
 - Designed for high reliability and easy maintenance
 - Quick opening for long pilot lines
- Quick and easy maintenance
 - In-line serviceable
 - Fast and easy cover removal
 - Swivel mounted drain valves (for valves 3" and larger)

Typical Applications

- Remote or elevated wet pilot lines
- Automatic water spray systems
- Hydraulic remote controlled systems
- Foam applications

Approvals



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



FM Approved
for Deluge Sprinkler Systems
Sizes 1½" - 8"



Det Norske Veritas
Type Approval
Sizes 1½" to 16"



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

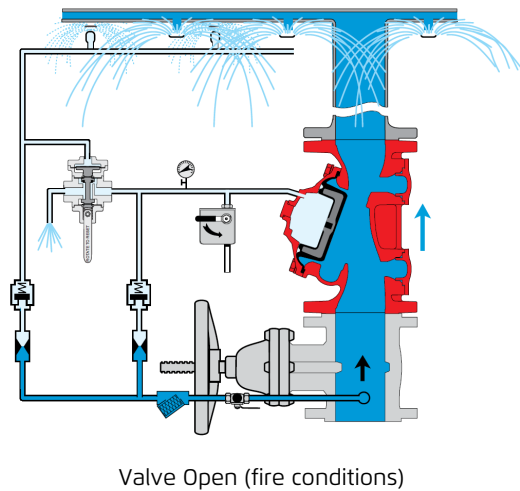
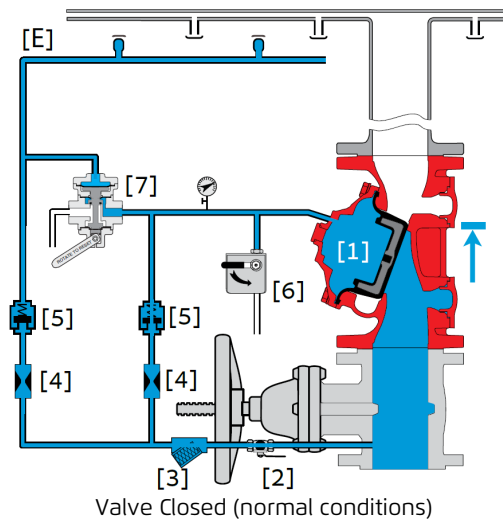


Lloyd's Register
Type Approval
Sizes 1½" - 10"

Additional Features

- Valve position limit switches
- Local valve position indicator beacon
- Alarm pressure switch
- Water motor alarm
- Seawater compatibility
- Drain valve/s inlet/outlet

Operation

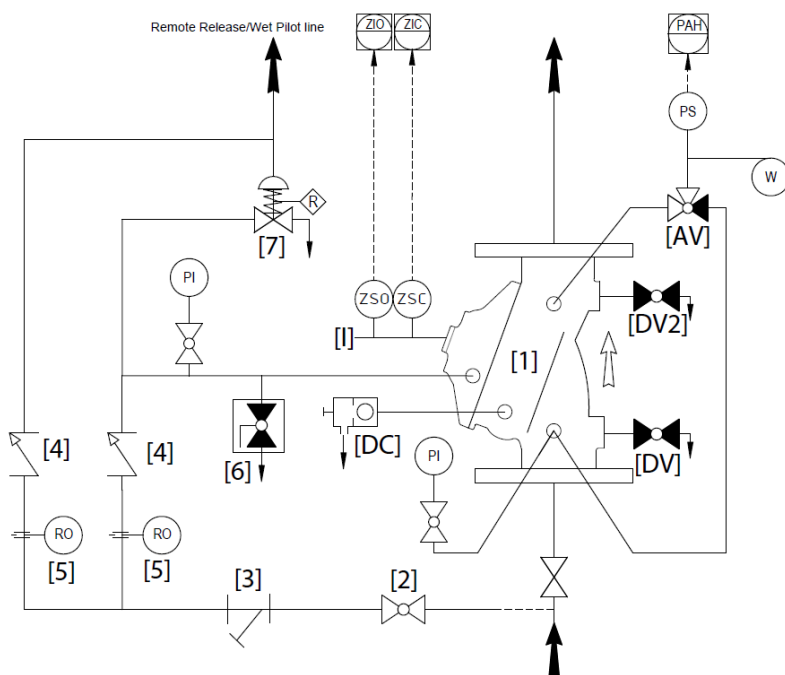


The BERMAD model 400Y-5M is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] and strainer [3], and a restriction orifice [5] and then trapped in the control chamber by a check valve [4], a manual emergency release [6], and a relay valve (URV-M) [7] that is held closed by hydraulic pilot line pressure [E]. The water pressure trapped in the 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-M opening automatically in response to a decrease in hydraulic pilot-line pressure. This latches the 400Y-5M deluge valve open, allowing water to flow into the system piping and to the alarm device [9]. The URV-M is factory set to operate with a minimum pilot line elevation of 10 meters above the valve. Additional spring tension can be set to suit greater elevations, up to a maximum of 70 meters above the valve (refer to the Valve Code Designation on the last page).

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-M Relay Valve

	Optional System Items
I	Visual Valve Position indicator
PS	Pressure Switch
W	Water Motor Alarm
ZS	Limit Switch Assembly
DV2	Downstream Drain valve
DV	Drain Valve*
PI	Pressure Gauge*
AV	3-way Alarm Test Valve*
DC	Automatic Drip Check Valve*

* Included with suffix A in valve code and mandatory for FM approval (drain and indicating components) See code designations on page 4 "Factory Supplied Additional Items"

System Installation

A typical installation of the BERMAD model 400Y-5M features automatic actuation via a pressure operated relay valve, triggered by a wet pilot line with closed fusible plugs elevated above the deluge valve. When open and fitted with a limit switch, the valve sends a feedback signal to the remote valve position monitoring system.

Optional System Items



Pressure Gauge



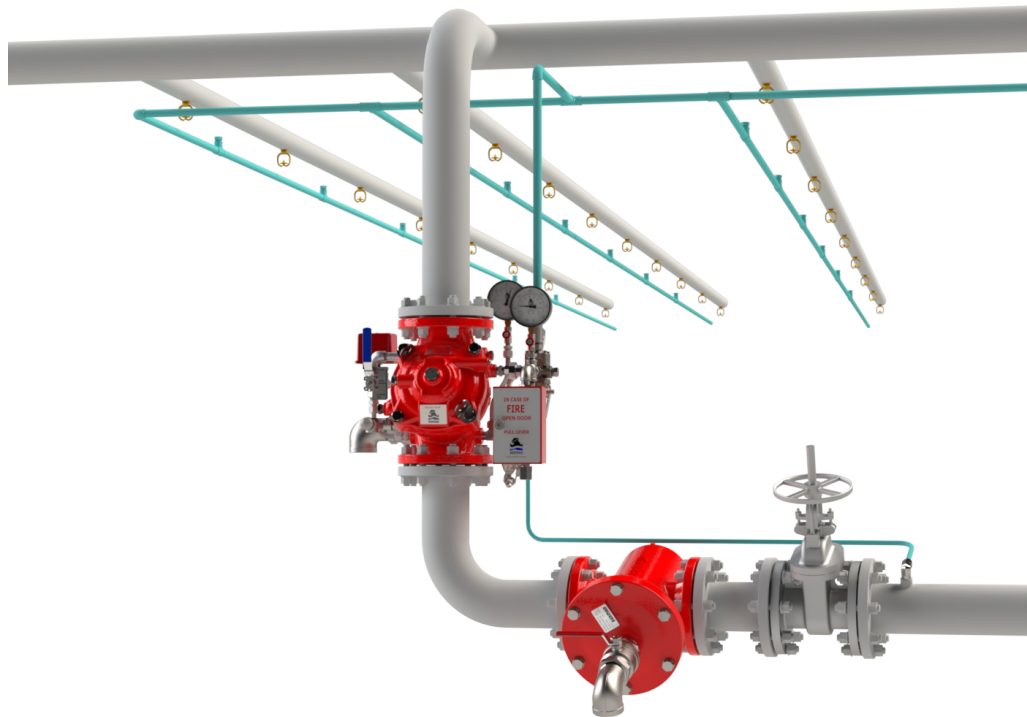
Exd Pressure
Switch - Stainless
Steel Enclosure for
Harsh
Environments
Visual Position
Indicator



Rotating Limit
Switch Box



Basket Strainer -
60F



Suggested Specifications

The deluge 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 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 an auxiliary latching 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.

Technical Data

Available Sizes:

Flanged- 1½, 2, 2½, 3, 4, 6, 8, 10, 12, 14 & 16"

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

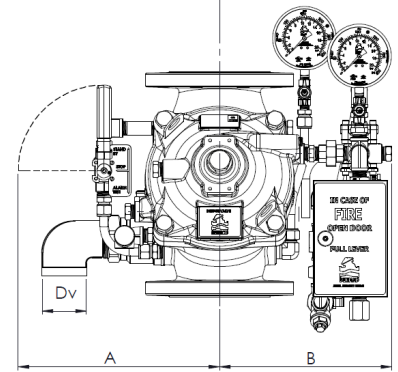
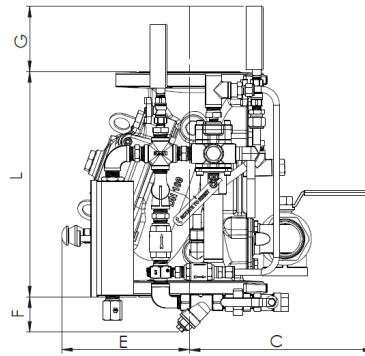
ANSI#300 - 12" to 16" - 20 bar | 300 psi

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	Weight #300 kg lb
DN40 1½"	230 9.1	230 9.1	230 9.1	293 11.5	200 7.9	177 7	¾"	215 8.5	151 5.9	178 7	18 40	20 44
DN50 2"	230 9.1	230 9.1	238 9.3	293 11.5	200 7.9	177 7	¾"	215 8.5	151 5.9	178 7	19 42	21 46
DN65 2½"	235 9.3	235 9.3	241 9.5	296 11.6	200 7.9	183 7.2	1½"	215 8.5	148 5.8	157 6.2	22 48	24 53
DN80 3"	310 12.2	310 12.2	326 12.8	313 12.3	259 10.2	221 8.7	1½"	186 7.3	82 3.2	88 3.5	36 79	41 90
DN100 4"	350 13.8	320 12.6	368 14.5	343 13.5	268 10.6	287 11.3	2"	199 7.8	55 2.2	135 5.3	50 110	57 125
DN150 6"	480 18.9	480 18.9	506 19.9	358 14.1	321 12.6	302 11.9	2"	234 9.2	-	27 1	97 213	117 257
DN200 8"	600 23.6	600 23.6	626 24.6	392 15.4	380 15	317 12.5	2"	301 11.9	-	2 0.1	167 367	187 411
DN250 10"	730 28.7	730 28.7	730 28.7	406 25.4	380 15	317 12.5	2"	301 11.9	-	-	200 440	235 517
DN300 12"	850 33.5	-	888 35	478 18.8	463 18.2	380 15	2"	441 17.4	-	-	357 785	406 895
DN350 14"	980 38.6	-	980 38.6	478 18.8	463 18.2	379 14.9	2"	441 17.4	-	-	393 864	463 1018
DN400 16"	1100 43.3	-	1100 43.3	478 18.8	463 18.2	405 15.9	2"	417 16.4	-	-	444 977	564 1240

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-5M	M6	03	V	C	A5	ER	NN	N6nW																																																																																																																																						
<table><tr><th>Category</th><th>Code</th></tr><tr><td>Standard</td><td>FP</td></tr><tr><td>Seawater</td><td>FS</td></tr><tr><td>Foam</td><td>FC</td></tr></table>	Category	Code	Standard	FP	Seawater	FS	Foam	FC	<table><tr><th>Valve Size</th><td></td></tr><tr><td>1½"</td><td>40 mm</td></tr><tr><td>2"</td><td>50 mm</td></tr><tr><td>2½"</td><td>65 mm ⁽⁶⁾</td></tr><tr><td>3"</td><td>80 mm</td></tr><tr><td>4"</td><td>100 mm</td></tr><tr><td>6"</td><td>150 mm</td></tr><tr><td>8"</td><td>200 mm</td></tr><tr><td>10"</td><td>250 mm</td></tr><tr><td>12"</td><td>300 mm</td></tr><tr><td>14"</td><td>350 mm</td></tr><tr><td>16"</td><td>400 mm</td></tr></table>	Valve Size		1½"	40 mm	2"	50 mm	2½"	65 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	<table><tr><th>Pilot Line Trip Point</th><th>Code</th></tr><tr><td>Elevation below 10m/33ft</td><td>00</td></tr><tr><td>Max elevation 35m/115ft ⁽⁷⁾</td><td>M6</td></tr><tr><td>Max elevation 70m/230ft ⁽⁸⁾</td><td>M7</td></tr></table>	Pilot Line Trip Point	Code	Elevation below 10m/33ft	00	Max elevation 35m/115ft ⁽⁷⁾	M6	Max elevation 70m/230ft ⁽⁸⁾	M7	<table><tr><th>Additional Feature</th><th>Code</th></tr><tr><td>Closing Speed Control</td><td>01</td></tr><tr><td>Opening Speed Control</td><td>02</td></tr><tr><td>Opening & Closing</td><td>03</td></tr><tr><td>None</td><td>-</td></tr></table>	Additional Feature	Code	Closing Speed Control	01	Opening Speed Control	02	Opening & Closing	03	None	-	<table><tr><th>End Connection</th><th>Code</th></tr><tr><td>ANSI#150RF</td><td>A5</td></tr><tr><td>ANSI#150FF</td><td>a5</td></tr><tr><td>ANSI#300RF</td><td>A3</td></tr><tr><td>ANSI#300FF</td><td>a3</td></tr><tr><td>ISO PN16</td><td>16</td></tr><tr><td>ISO PN25</td><td>25</td></tr><tr><td>Grooved 17.2 bar / 250 psi ⁽⁵⁾</td><td>VI</td></tr><tr><td>Grooved 25 bar / 365 psi ⁽⁵⁾</td><td>V2</td></tr></table>	End Connection	Code	ANSI#150RF	A5	ANSI#150FF	a5	ANSI#300RF	A3	ANSI#300FF	a3	ISO PN16	16	ISO PN25	25	Grooved 17.2 bar / 250 psi ⁽⁵⁾	VI	Grooved 25 bar / 365 psi ⁽⁵⁾	V2	<table><tr><th>Coating</th><th>Code</th></tr><tr><td>High Build Epoxy</td><td>ER</td></tr><tr><td>Zinc Based High Build Epoxy ⁽⁵⁾</td><td>ZR</td></tr><tr><td>Uncoated</td><td>UC</td></tr></table>	Coating	Code	High Build Epoxy	ER	Zinc Based High Build Epoxy ⁽⁵⁾	ZR	Uncoated	UC	<table><tr><th>Material Body & Cover ⁽¹⁾</th><th>Code</th></tr><tr><td>Ductile Iron A356 ⁽²⁾</td><td>C</td></tr><tr><td>Steel ASTM A216 WCB ⁽²⁾</td><td>S</td></tr><tr><td>Stainless Steel 316</td><td>N</td></tr><tr><td>Nickel Al Bronze C95800</td><td>U</td></tr><tr><td>Super Duplex Grade 5A</td><td>D</td></tr></table>	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	<table><tr><th>Tubing & Fittings</th><th>Code</th></tr><tr><td>Stainless Steel 316</td><td>NN</td></tr><tr><td>Monel 400</td><td>MM</td></tr><tr><td>Super Duplex</td><td>DD</td></tr></table>	Tubing & Fittings	Code	Stainless Steel 316	NN	Monel 400	MM	Super Duplex	DD	<table><tr><th>Factory Supplied Additional Items*</th><th>Code</th></tr><tr><td>General Purpose NEMA-4 Pressure Switch</td><td>P</td></tr><tr><td>Ex Proof NEC, Div.1 Pressure Switch ⁽³⁾</td><td>P7</td></tr><tr><td>Ex d ATEX Pressure Switch ⁽³⁾</td><td>P9</td></tr><tr><td>Ex d Pressure Switch, SS316 Enclosure ⁽³⁾</td><td>P9Jn</td></tr><tr><td>Ex d Pressure Switch, SS316 Enclosure, Monel Sensor ⁽³⁾</td><td>P9mJn</td></tr><tr><td>Single Limit Switch, General Purpose</td><td>S</td></tr><tr><td>Single Ex d Proximity limit Switch</td><td>S9</td></tr><tr><td>Double Ex d Proximity Limit Switch</td><td>SS9</td></tr><tr><td>Double Ex d Proximity Limit Switch with SS316 Junction Box</td><td>SS9Jn</td></tr><tr><td>Pressure Gauge Assembly ⁽³⁾</td><td>6</td></tr><tr><td>S.S Glycerin Pressure Gauge Assembly ⁽³⁾</td><td>6n</td></tr><tr><td>Monel Pressure Gauge Assembly ⁽³⁾</td><td>6m</td></tr><tr><td>Stainless steel 316 Solenoid Valve</td><td>K</td></tr><tr><td>Drain Valve</td><td>DV</td></tr><tr><td>Water Motor Alarm Assembly ⁽³⁾</td><td>W</td></tr><tr><td>Special Elastomer⁽⁴⁾</td><td>E</td></tr><tr><td>Large Control Filter</td><td>F</td></tr><tr><td>Valve Position Indicator</td><td>I</td></tr><tr><td>S S 316 Trim Accessories</td><td>N</td></tr></table>	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	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
Category	Code																																																																																																																																															
Standard	FP																																																																																																																																															
Seawater	FS																																																																																																																																															
Foam	FC																																																																																																																																															
Valve Size																																																																																																																																																
1½"	40 mm																																																																																																																																															
2"	50 mm																																																																																																																																															
2½"	65 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																																																																																																																																															
Pilot Line Trip Point	Code																																																																																																																																															
Elevation below 10m/33ft	00																																																																																																																																															
Max elevation 35m/115ft ⁽⁷⁾	M6																																																																																																																																															
Max elevation 70m/230ft ⁽⁸⁾	M7																																																																																																																																															
Additional Feature	Code																																																																																																																																															
Closing Speed Control	01																																																																																																																																															
Opening Speed Control	02																																																																																																																																															
Opening & Closing	03																																																																																																																																															
None	-																																																																																																																																															
End Connection	Code																																																																																																																																															
ANSI#150RF	A5																																																																																																																																															
ANSI#150FF	a5																																																																																																																																															
ANSI#300RF	A3																																																																																																																																															
ANSI#300FF	a3																																																																																																																																															
ISO PN16	16																																																																																																																																															
ISO PN25	25																																																																																																																																															
Grooved 17.2 bar / 250 psi ⁽⁵⁾	VI																																																																																																																																															
Grooved 25 bar / 365 psi ⁽⁵⁾	V2																																																																																																																																															
Coating	Code																																																																																																																																															
High Build Epoxy	ER																																																																																																																																															
Zinc Based High Build Epoxy ⁽⁵⁾	ZR																																																																																																																																															
Uncoated	UC																																																																																																																																															
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																																																																																																																																															
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																																																																																																																																															
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																																																																																																																																															
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																																																																																																																																															

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
- (7) Minimum supply pressure to the Deluge Valve shall be at least 5.0 barg
- (8) Minimum supply pressure to the Deluge Valve shall be at least 8.5 barg

*More options available – consult BERMAD