

Electro-Pneumatically Controlled Deluge Valve

Model: FP 400Y-6U

The BERMAD model 400Y-6U is an elastomeric, hydraulic, line pressure operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400Y-6U is activated by a 3-way solenoid valve which in turn activates a 3 way pneumatic relay valve to open the deluge valve.

It is available with a latching option that maintains the deluge valve open until de-latched remotely.

The 400Y-6U is ideal for systems with open nozzles for water or foam discharge and is offered with electric components to suit any hazardous location.

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



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
 - ▢ Valve position limit switches (optional)
 - ▢ Local valve position indicator beacon (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 / EN558-1
 - ▢ Latching option
 - ▢ Meets the requirements of the industry standards
- **Quick and easy maintenance**
 - ▢ In-line serviceable
 - ▢ Quick cover removal without detaching control trim*
 - ▢ Swivel mounted drain valves *

* not including 1½" & 2" valves

Typical Applications

- Electric fire detection systems with control panels
- Automatic water spray systems
- Foam applications
- Corrosive water systems

Approvals



UL-Listed
Special System Water Control
Valves, Deluge Type (VLFT)



FM Approved
for Deluge Sprinkler Systems



Det Norske Veritas
Type Approval



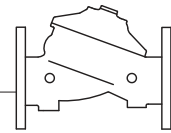
ABS
American Bureau of Shipping
Type Approval



Lloyd's Register
Type Approval

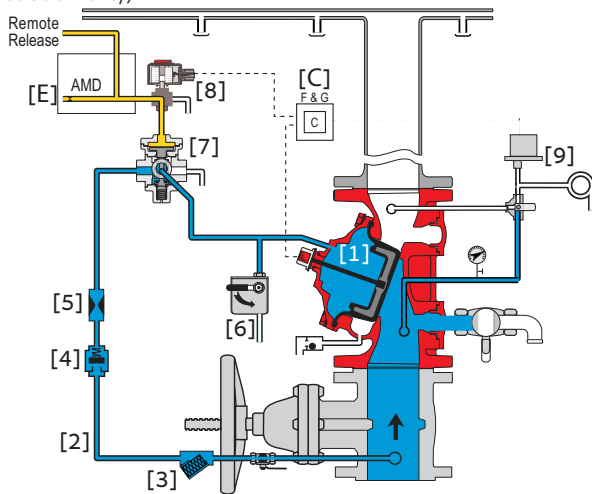
Additional Features

- Valve position limit switches
- Local valve position indicator beacon
- Seawater compatibility
- Stainless steel seat ring
- Remote de-latch
- Drain valve/s inlet/outlet
- Air maintenance device

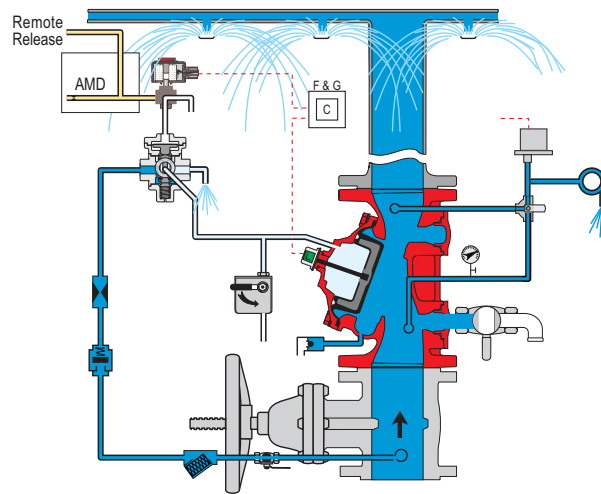


Operation

(for Illustration Only)



Valve Closed (normal conditions)



Valve Open (fire conditions)

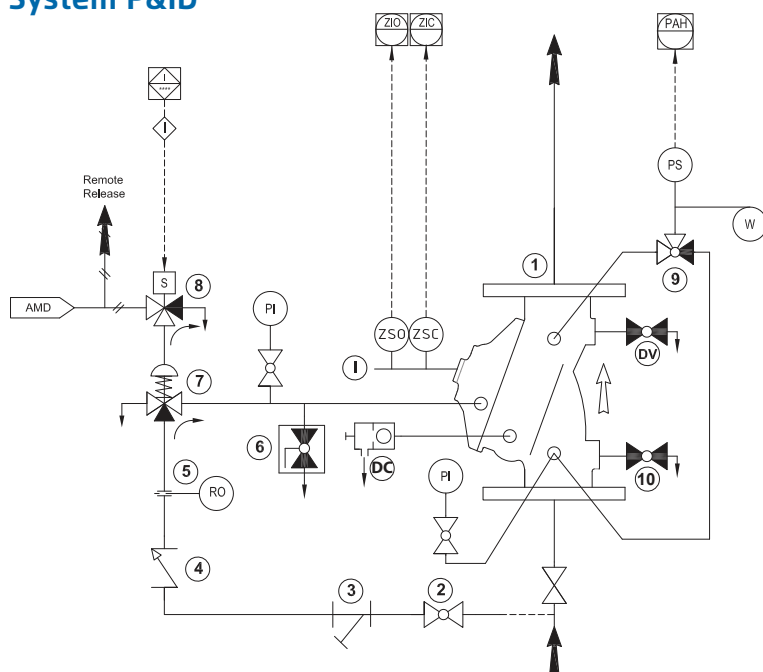
The BERMAD model 400Y-6U is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] and strainer [3], and is then trapped in the control chamber by a check valve [4], restriction orifice [5], manual emergency release [6], and a relay valve (URV) [7] that is held in the supply position by pneumatic pressure supplied through a three-way solenoid valve [8]. The water pressure trapped in the control chamber of the deluge valve 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 switching to the release position. The URV switches position in response either to a decrease in pneumatic line pressure [E] or to the solenoid valve being activated by the fire & gas control system [C]. This opens the deluge valve allowing water to flow into the system piping and to the alarm device.

When the Magna latch solenoid is specified for FM approval: model 400Y- 6U with H2 suffix (see code designation on page 4), the deluge valve will latch open until reset remotely.

System P&ID



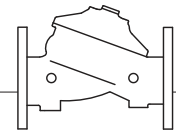
Components

- 1 BERMAD 400Y Deluge Valve
- 2 Priming Ball Valve
- 3 Priming Strainer
- 4 Check Valve
- 5 Restriction Orifice
- 6 Manual Emergency Release
- 7 URV-3 Relay Valve
- 8 3-Way Solenoid Valve

Optional System Items

- ZS Limit Switch Assembly
- I Visual Indicator
- DV Additional Drain Valve
- W Water motor Alarm
- PS Pressure Switch
- AMD Air Maintenance Device
- 9 3-Way Alarm Test Valve*
- 10 Main Drain Valve*
- PI Pressure Gauge*
- DC Automatic Drip Check Valve*

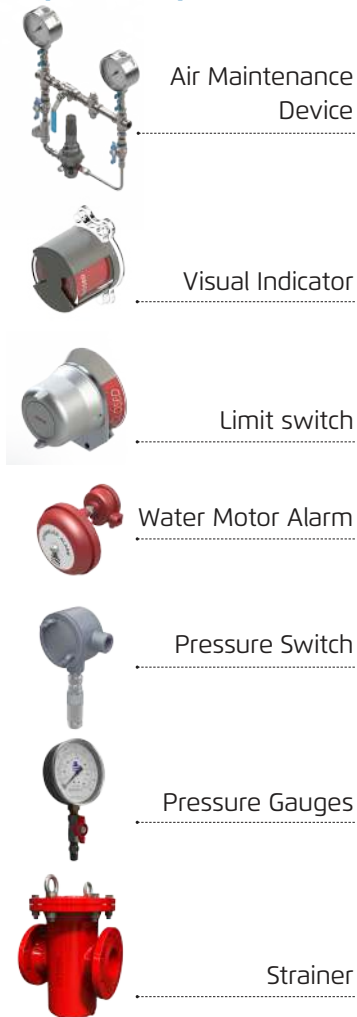
*Mandatory for FM approval
(suffix A in code designations on page 4)



System Installation

A typical installation of the BERMAD model 400Y-6U features automatic actuation via a universal relay valve, triggered by a pneumatic fusible plug loop. It can also be triggered electrically by a signal from a fire & gas control system or an on-site emergency pushbutton. When open and fitted with a limit switch the valve can send a feedback signal to a remote valve status monitoring system.

Optional System Items



(for Illustration Only)

Engineering Specifications

The deluge valve shall be UL-listed and FM-approved, 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 latching FM approved 3-way solenoid valve with a tolerance of 35% below the rated voltage, 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 shall be equipped with a dual-color, rotational position indicator, readable from 50 meters and with two limit switches enclosed in a protective switch box.

Removing the valve cover for inspection or maintenance shall not require removal of the 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.

Technical Data

Available Sizes (inch)

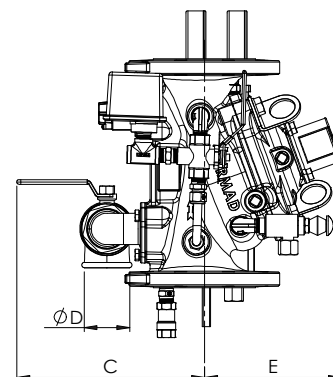
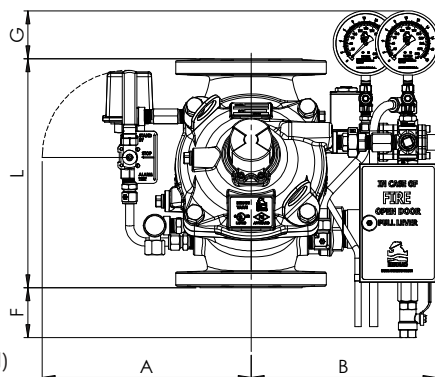
- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

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/Threaded - 25 bar / 365 psi

Temperature Rating

- 60°C / 140°F with NR elastomers (standard)
- 90°C / 194°F with EPDM elastomers



Size	1½" DN40		2" DN50		3" DN80		4" DN100		6" DN150		8" DN200		10" DN250		12" DN300		14" DN350		16" DN400	
Unit	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L ⁽¹⁾	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
L ⁽²⁾	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	279	11.0	279	11.0	339	13.3	347	13.7	400	15.7	430	16.9	430	16.9	543	21.4	543	21.4	543	21.4
B	221	8.7	221	8.7	279	11.0	316	12.4	344	13.5	372	14.6	372	14.6	485	19.1	485	19.1	485	19.1
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	120	4.7	120	4.7	146	5.7	158	6.2	228	9.0	295	11.6	295	11.6	441	17.4	441	17.4	415	16.3
F	119	4.7	119	4.7	49	1.9	22	0.9	-	-	-	-	-	-	-	-	-	-	-	-
G	98	3.9	98	3.9	88	3.5	75	3.0	26.5	1.0	-	-	-	-	-	-	-	-	-	-
Kv / Cv	68 / 79		80 / 92		190 / 219		345 / 398		790 / 912		1160 / 1340		1355 / 1565		2370 / 2737		2850 / 3292		3254 / 3758	
Leq ⁽³⁾ : m / ft	2 / 7		5 / 16		7 / 23		9 / 30		15 / 49		27 / 89		62 / 203		52 / 171		59 / 194		88 / 289	
kg / lb	22.1 / 48.6		3.5 / 51.7		38.2 / 84		48.2 / 106		91.5 / 201		155 / 340		185 / 407		328 / 721		361 / 794		407 / 895	

Notes: ⁽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⁾ Leq (Equivalent Pipe Length) refers to turbulent flow in new steel pipe schedule 40, values given for general consideration only

⁽⁴⁾ Dimensions for the trim envelope may vary with specific component positioning

Valve Code Designations

FP	6"	400Y-6U	V	C	A5	PR	4DC	NN	P77RI																																																																																																																																																										
<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 Concentrate</td><td>FC</td></tr></table>		Category	code	Standard	FP	Seawater	FS	Foam Concentrate	FC	<table><tr><th>Installation</th><th>code</th></tr><tr><td>Vertical</td><td>V</td></tr><tr><td>Horizontal</td><td>H</td></tr></table>		Installation	code	Vertical	V	Horizontal	H	<table><tr><th>Coating</th><th>code</th></tr><tr><td>Polyester Red</td><td>PR</td></tr><tr><td>High Build Epoxy</td><td>ER</td></tr><tr><td>Uncoated</td><td>UC</td></tr></table>		Coating	code	Polyester Red	PR	High Build Epoxy	ER	Uncoated	UC	<table><tr><th>Factory Fitted Options</th><th>Code</th></tr><tr><td>Remote Reset Magna-Latch Solenoid ⁽⁵⁾</td><td>H2</td></tr><tr><td>Pressure Switch General Purpose</td><td>P</td></tr><tr><td>Ex Proof NEC, Div.1 Pressure Switch</td><td>P7</td></tr><tr><td>Ex d ATEX Pressure Switch</td><td>P9</td></tr><tr><td>Single Limit Switch General Purpose</td><td>RS</td></tr><tr><td>Single Ex d Proximity Limit Switch</td><td>RS9</td></tr><tr><td>Double Ex d Proximity Limit Switch</td><td>RS59</td></tr><tr><td>Pressure Gauge Assembly</td><td>6</td></tr><tr><td>S.S Glycerin Pressure Gauge Assembly</td><td>6n</td></tr><tr><td>Monel Pressure Gauge Assembly</td><td>6m</td></tr><tr><td>Ex Proof NEC Class 1 Div 1 Solenoid</td><td>7</td></tr><tr><td>E xd ATEX solenoid</td><td>9</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 EPDM</td><td>E1</td></tr><tr><td>Special Elastomer NBR</td><td>E3</td></tr><tr><td>Large Control Filter</td><td>F</td></tr><tr><td>Valve Position Indicator</td><td>RI</td></tr><tr><td>S.S Solenoid Valve</td><td>K</td></tr><tr><td>S.S 316 Trim Accessories</td><td>N</td></tr><tr><td>Stainless Steel 316 Seat</td><td>T</td></tr><tr><td>Pressure Transmitter</td><td>Q</td></tr><tr><td>Drain and Indicating Components ⁽⁵⁾</td><td>A</td></tr></table>		Factory Fitted Options	Code	Remote Reset Magna-Latch Solenoid ⁽⁵⁾	H2	Pressure Switch General Purpose	P	Ex Proof NEC, Div.1 Pressure Switch	P7	Ex d ATEX Pressure Switch	P9	Single Limit Switch General Purpose	RS	Single Ex d Proximity Limit Switch	RS9	Double Ex d Proximity Limit Switch	RS59	Pressure Gauge Assembly	6	S.S Glycerin Pressure Gauge Assembly	6n	Monel Pressure Gauge Assembly	6m	Ex Proof NEC Class 1 Div 1 Solenoid	7	E xd ATEX solenoid	9	Drain valve	DV	Water Motor Alarm Assembly ⁽³⁾	W	Special Elastomer EPDM	E1	Special Elastomer NBR	E3	Large Control Filter	F	Valve Position Indicator	RI	S.S Solenoid Valve	K	S.S 316 Trim Accessories	N	Stainless Steel 316 Seat	T	Pressure Transmitter	Q	Drain and Indicating Components ⁽⁵⁾	A	<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>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	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>Material Body & Cover ⁽¹⁾</th><th>code</th></tr><tr><td>Ductile Iron ASTM A356 ⁽²⁾</td><td>C</td></tr><tr><td>Steel ASTM A216 WCB ⁽²⁾</td><td>S</td></tr><tr><td>Stainless Steel 316 ASTM</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 ASTM A356 ⁽²⁾	C	Steel ASTM A216 WCB ⁽²⁾	S	Stainless Steel 316 ASTM	N	Nickel Al Bronze C95800	U	Super Duplex Grade 5A	D	<table><tr><th>End Connections</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>ISO PN16</td><td>16</td></tr><tr><td>ISO PN25</td><td>25</td></tr><tr><td>Grooved ANSI C606</td><td>VI</td></tr></table>		End Connections	code	ANSI#150RF	A5	ANSI#150FF	a5	ANSI#300RF	A3	ISO PN16	16	ISO PN25	25	Grooved ANSI C606	VI	<table><tr><th>Voltage ⁽⁴⁾ - Main Valve N.O or N.C</th><td></td></tr><tr><td>24VDC - N.C.</td><td>4DC</td></tr><tr><td>24VDC - N.O.</td><td>4DO</td></tr><tr><td>24VDC - Latch ⁽⁵⁾</td><td>4DS</td></tr><tr><td>110VDC - N.C.</td><td>5DC</td></tr><tr><td>110VDC - N.O.</td><td>5DO</td></tr><tr><td>110-120/AC - N.C.</td><td>5AC</td></tr><tr><td>110-120/AC - N.O.</td><td>5AO</td></tr><tr><td>220-240/AC - N.C.</td><td>2AC</td></tr><tr><td>220-240/AC - N.O.</td><td>2AO</td></tr></table>		Voltage ⁽⁴⁾ - Main Valve N.O or N.C		24VDC - N.C.	4DC	24VDC - N.O.	4DO	24VDC - Latch ⁽⁵⁾	4DS	110VDC - N.C.	5DC	110VDC - N.O.	5DO	110-120/AC - N.C.	5AC	110-120/AC - N.O.	5AO	220-240/AC - N.C.	2AC	220-240/AC - N.O.	2AO	<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
Category	code																																																																																																																																																																		
Standard	FP																																																																																																																																																																		
Seawater	FS																																																																																																																																																																		
Foam Concentrate	FC																																																																																																																																																																		
Installation	code																																																																																																																																																																		
Vertical	V																																																																																																																																																																		
Horizontal	H																																																																																																																																																																		
Coating	code																																																																																																																																																																		
Polyester Red	PR																																																																																																																																																																		
High Build Epoxy	ER																																																																																																																																																																		
Uncoated	UC																																																																																																																																																																		
Factory Fitted Options	Code																																																																																																																																																																		
Remote Reset Magna-Latch Solenoid ⁽⁵⁾	H2																																																																																																																																																																		
Pressure Switch General Purpose	P																																																																																																																																																																		
Ex Proof NEC, Div.1 Pressure Switch	P7																																																																																																																																																																		
Ex d ATEX Pressure Switch	P9																																																																																																																																																																		
Single Limit Switch General Purpose	RS																																																																																																																																																																		
Single Ex d Proximity Limit Switch	RS9																																																																																																																																																																		
Double Ex d Proximity Limit Switch	RS59																																																																																																																																																																		
Pressure Gauge Assembly	6																																																																																																																																																																		
S.S Glycerin Pressure Gauge Assembly	6n																																																																																																																																																																		
Monel Pressure Gauge Assembly	6m																																																																																																																																																																		
Ex Proof NEC Class 1 Div 1 Solenoid	7																																																																																																																																																																		
E xd ATEX solenoid	9																																																																																																																																																																		
Drain valve	DV																																																																																																																																																																		
Water Motor Alarm Assembly ⁽³⁾	W																																																																																																																																																																		
Special Elastomer EPDM	E1																																																																																																																																																																		
Special Elastomer NBR	E3																																																																																																																																																																		
Large Control Filter	F																																																																																																																																																																		
Valve Position Indicator	RI																																																																																																																																																																		
S.S Solenoid Valve	K																																																																																																																																																																		
S.S 316 Trim Accessories	N																																																																																																																																																																		
Stainless Steel 316 Seat	T																																																																																																																																																																		
Pressure Transmitter	Q																																																																																																																																																																		
Drain and Indicating Components ⁽⁵⁾	A																																																																																																																																																																		
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																																																																																																																																																																		
Material Body & Cover ⁽¹⁾	code																																																																																																																																																																		
Ductile Iron ASTM A356 ⁽²⁾	C																																																																																																																																																																		
Steel ASTM A216 WCB ⁽²⁾	S																																																																																																																																																																		
Stainless Steel 316 ASTM	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 ANSI C606	VI																																																																																																																																																																		
Voltage ⁽⁴⁾ - Main Valve N.O or N.C																																																																																																																																																																			
24VDC - N.C.	4DC																																																																																																																																																																		
24VDC - N.O.	4DO																																																																																																																																																																		
24VDC - Latch ⁽⁵⁾	4DS																																																																																																																																																																		
110VDC - N.C.	5DC																																																																																																																																																																		
110VDC - N.O.	5DO																																																																																																																																																																		
110-120/AC - N.C.	5AC																																																																																																																																																																		
110-120/AC - N.O.	5AO																																																																																																																																																																		
220-240/AC - N.C.	2AC																																																																																																																																																																		
220-240/AC - N.O.	2AO																																																																																																																																																																		
Tubing & Fittings	Code																																																																																																																																																																		
Stainless Steel 316	NN																																																																																																																																																																		
Monel 400	MM																																																																																																																																																																		
Super Duplex	DD																																																																																																																																																																		

Notes:

⁽¹⁾ Other materials available, see engineering data

⁽²⁾ Coated internally and externally

⁽³⁾ Supplied loose

⁽⁴⁾ FM approved with 24 VDC only

⁽⁵⁾ Mandatory for FM approved valves