

S.S.316 ZERO PRESSURE, ELECTRICALLY REMOTE CONTROLLED VALVE FOR FOAM CONCENTRATE

Model FC-700E-3X-B0-N

The BERMAD FC 700E-3X-B0 is a Double Chambered hydraulically powered foam-concentrate valve, controlled electrically by a solenoid valve. The FC 700E-3X-B0 is hydraulically actuated by existing fire water pressure, independent from the foam pressure enabling functionality at very low pressure or even non-pressurized foam concentrate. This makes it highly suited for installation at the discharge of atmospheric tanks. The valve is "Fail Safe Close", designed with an "Over the Seat" flow direction to ensure drip-tight sealing and safe operation. The BERMAD FC 700E-3X-B0 replaces mechanically actuated valves or pilot-operated solenoid valves, providing safer operation for modern foam systems, assuring maximum reliability of the entire firefighting system.



Features & Benefits

- Features
 - Double chambered Actuation – Zero Line Pressure
 - Fail Safe Close – Safe operation and drip tight sealing
 - Obstacle-free, uninterrupted flow path
 - In-line serviceable

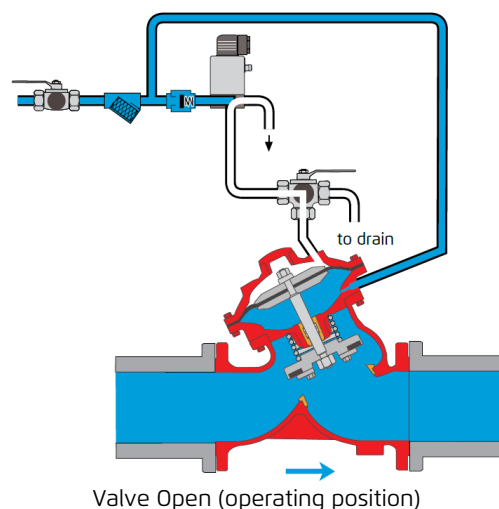
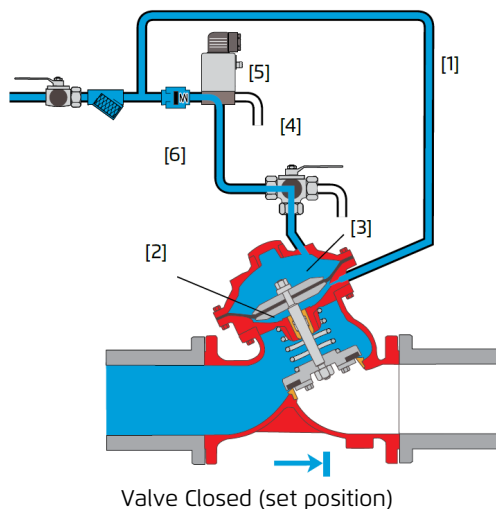
Typical Applications

- Foam applications
- Fire monitor installations
- Oil & Gas storage tanks
- Remote Control Monitors
- Power plants and transformers

Additional Features

- Valve Position Indicator
- Hazardous locations solenoid

Operation



The BERMAD FC-700E-3X-B0 is a "Y" pattern, Fail Safe Close, diaphragm actuated, double chambered, water pressure driven hydraulic valve, that requires existing firewater as a priming pressure source for valve activation.

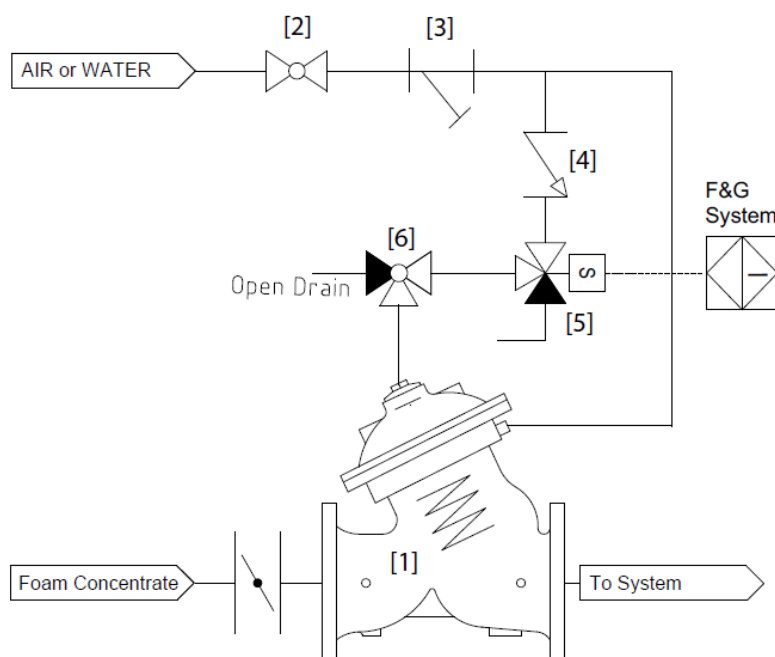
In the set position: The 3-Way solenoid valve [5] is de energized. The priming line [1] constantly supplies pressure to the valve's lower chamber [2] by way of the Y filter [8] and the 2-Way priming line ball valve [7]. Pressure to the upper chamber is provided via a manual override valve [4] and by the de energized 3-Way solenoid valve valve.

The check valve [6] retains pressure in the upper control chamber ensuring that the main valve remains with a drip tight seal until activated.

In the operating position: The solenoid is energized and the valve upper chamber is vented while the lower chamber remains pressurized, this imbalance of hydraulic forces, lifts the valve seal disc assembly to open the valve and allow fluid to flow into the system.

Alternatively the valve may be opened by use of the 3-Way manual override valve [4]

System P&ID



Components	
1	Main Valve
2	2 Way priming valve
3	Y Filter
4	Check valve
5	3 Way Solenoid
6	3 Way Override valve

System Installation

The BERMAD FC-700E-3X-BO replaces mechanically actuated valves or pilot-operated solenoid valves, providing safer operation for modern foam systems, assuring maximum reliability of the entire firefighting system.

The below illustration shows an FC-700E-3X-BO model installed to open in unison when the main deluge valve opens, ensuring simple and reliable synchronization within the system.

Optional System Items



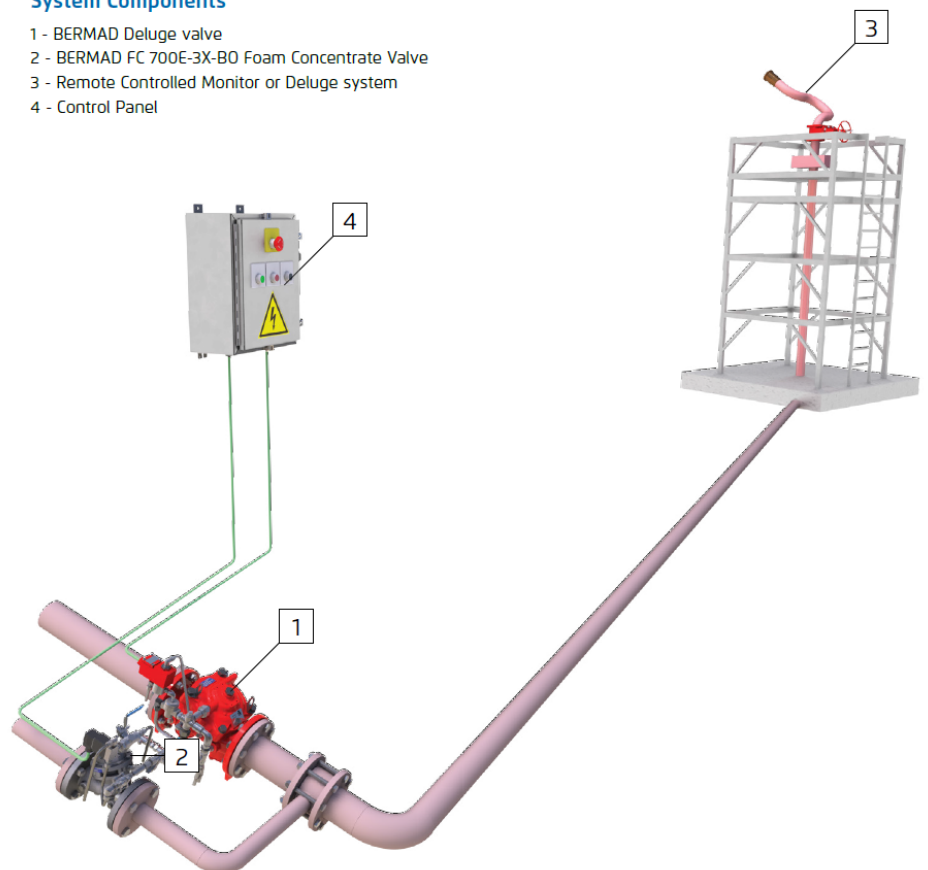
Pressure Gauge



Exd Pressure
Switch - Stainless
Steel Enclosure for
Harsh
Environments

System Components

- 1 - BERMAD Deluge valve
- 2 - BERMAD FC 700E-3X-BO Foam Concentrate Valve
- 3 - Remote Controlled Monitor or Deluge system
- 4 - Control Panel



Suggested Specifications

The valve shall be a solenoid controlled "Y" pattern body with integral unitized double chamber actuator.

Valve actuation shall be accomplished by one moving assembly, which shall include the diaphragm assembly, a flat seal disk and a stainless steel stem.

All valve body and internal parts shall be of stainless steel and have an unobstructed flow path, with no stem guide or supporting ribs.

The valve actuator shall be removable for quick in-line service enabling all necessary inspection and servicing.

The control trim shall consist of stainless steel 316 tubing, fittings and accessories, including a stainless steel 3-Way solenoid valve, Y strainer, 3-Way manual override valve and check valve.

The control Trim shall be supplied as an assembly, pre-assembled and hydraulically tested at an ISO 9000 and 9001 certified factory.

The Solenoid Controlled Valve shall open and close in response to an electric signal.

Technical Data

Available Sizes:

Flanged- 1½, 2, 2½, 3 & 4"

Threaded- 1½, 2, 2½ & 3"

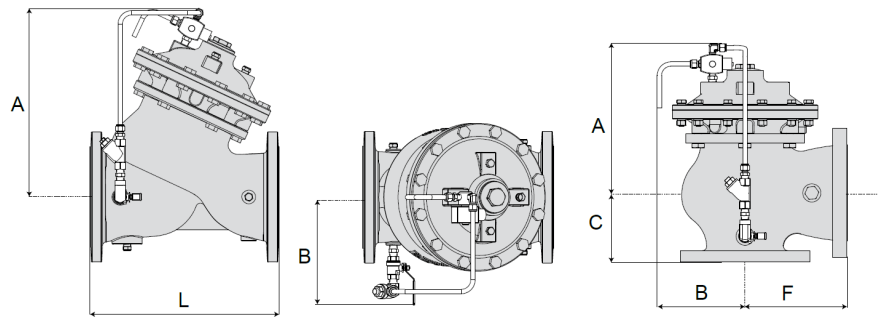
Pressure Rating:

ANSI#150 - 17.2 bar | 250 psi

ANSI#300 - 1½" to 10" - 28 bar | 400 psi

Elastomer:

Nitrile Butadiene Rubber (NBR)



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"	205 8.1	-	-	312 12.3	191 7.5	82 3.2	-	-	121 4.8	-	-	-
DN50 2"	205 8.1	-	-	312 12.3	191 7.5	82 3.3	-	-	121 4.8	-	-	-
DN65 2½"	209 8.3	-	-	312 12.3	191 7.5	102 4	-	-	140 5.5	-	-	-
DN80 3"	250 9.8	-	-	364 14.3	207 8.1	102 4	-	-	152 6	-	-	-
DN100 4"	320 12.6	-	-	405 16	242 9.5	127 5	-	-	200 7.9	-	-	-

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	4"	700E-3X-BO	V	C	A5	ER	4DC	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><th></th></tr><tr><td>1½"</td><td>40 mm</td></tr><tr><td>2"</td><td>50 mm</td></tr><tr><td>2½"</td><td>60 mm</td></tr><tr><td>3"</td><td>80 mm</td></tr><tr><td>4"</td><td>100 mm</td></tr></table>	Valve Size		1½"	40 mm	2"	50 mm	2½"	60 mm	3"	80 mm	4"	100 mm	<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>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>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>Voltage - Main Valve N.O or N.C *</th><th>Code</th></tr><tr><td>24VDC - N.C.</td><td>4DC</td></tr><tr><td>24VDC - N.O.</td><td>4DO</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.C.</td><td>5AO</td></tr><tr><td>220 - 240/AC - N.C.</td><td>2AC</td></tr><tr><td>221 - 240/AC - N.C.</td><td>2AO</td></tr></table>	Voltage - Main Valve N.O or N.C *	Code	24VDC - N.C.	4DC	24VDC - N.O.	4DO	110VDC - N.C.	5DC	110VDC - N.O.	5DO	110 - 120/AC - N.C.	5AC	110 - 120/AC - N.C.	5AO	220 - 240/AC - N.C.	2AC	221 - 240/AC - N.C.	2AO	<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>Ex Proof NEC Class 1 Div 1 Solenoid</td><td>7</td></tr><tr><td>Ex. d Atex Solenoid</td><td>9</td></tr><tr><td>Stainless steel 316 Solenoid Valve</td><td>K</td></tr><tr><td>Special Elastomer</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>Pressure Transmitter ⁽³⁾</td><td>Q</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	Ex Proof NEC Class 1 Div 1 Solenoid	7	Ex. d Atex Solenoid	9	Stainless steel 316 Solenoid Valve	K	Special Elastomer	E	Large Control Filter	F	Valve Position Indicator	I	Pressure Transmitter ⁽³⁾	Q	<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>ISO PN16</td><td>16</td></tr><tr><td>Grooved ANSI</td><td>VI</td></tr></table>	End Connections	Code	ANSI#150RF	A5	ANSI#150FF	a5	ISO PN16	16	Grooved ANSI	VI	<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	FC																																																																																																																																	
Valve Size																																																																																																																																		
1½"	40 mm																																																																																																																																	
2"	50 mm																																																																																																																																	
2½"	60 mm																																																																																																																																	
3"	80 mm																																																																																																																																	
4"	100 mm																																																																																																																																	
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																																																																																																																																	
Coating	Code																																																																																																																																	
High Build Epoxy	ER																																																																																																																																	
Zinc Based High Build Epoxy ⁽⁵⁾	ZR																																																																																																																																	
Uncoated	UC																																																																																																																																	
Voltage - Main Valve N.O or N.C *	Code																																																																																																																																	
24VDC - N.C.	4DC																																																																																																																																	
24VDC - N.O.	4DO																																																																																																																																	
110VDC - N.C.	5DC																																																																																																																																	
110VDC - N.O.	5DO																																																																																																																																	
110 - 120/AC - N.C.	5AC																																																																																																																																	
110 - 120/AC - N.C.	5AO																																																																																																																																	
220 - 240/AC - N.C.	2AC																																																																																																																																	
221 - 240/AC - N.C.	2AO																																																																																																																																	
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																																																																																																																																	
Ex Proof NEC Class 1 Div 1 Solenoid	7																																																																																																																																	
Ex. d Atex Solenoid	9																																																																																																																																	
Stainless steel 316 Solenoid Valve	K																																																																																																																																	
Special Elastomer	E																																																																																																																																	
Large Control Filter	F																																																																																																																																	
Valve Position Indicator	I																																																																																																																																	
Pressure Transmitter ⁽³⁾	Q																																																																																																																																	
End Connections	Code																																																																																																																																	
ANSI#150RF	A5																																																																																																																																	
ANSI#150FF	a5																																																																																																																																	
ISO PN16	16																																																																																																																																	
Grooved ANSI	VI																																																																																																																																	
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) Consult BERMAD for availability

(5) For valves up to and including 10"

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"

*More options available – consult BERMAD