Anti-Surge Pump Start Control Valve

Model FP-730-48-BL

The BERMAD 730-48-BL is a Normally Open, Anti Surge, pilot-operated and diaphragm-actuated control valve.

It has a double-chambered actuator for positive and reliable actuation with an external lift spring, giving the valve it's normally open characteristic. This affords the BERMAD 730-48-BL a zero reaction time, pre-empting and dissipating any pressure surge or excess air at pump start up.

Once the surge has passed and system piping pressure has normalized the 730-48-BL will close and will continue duty as a relief valve, relieving pressure spikes when needed, keeping the system pressure at its designed level.

The 730-48-BL is an autonomous valve operating under line pressure alone requiring no external power source.

(for Illustration Only)

Features and Benefits

- **Safety Features**
  - Provides soft pump start for system surge protection
  - Pre-opening to anticipate and pre-empt start-up surge and expel initial air build up.
  - Double chambered for reliable quick and smooth opening/closing
  - Unobstructed flow path with no lower guide/ribs
- **High Performance**
  - Y-shape straight-through-flow or angle body design
  - High flow capacity
  - 25 bar / 365 psi Rated
- **Maintenance**
  - In-line serviceable
  - Cover and actuator removal without removing the control trim

Typical Applications

- Pump start-up dump valve
- Vertical fire pump air release
- Pressure sustaining/Relief
- Pump protection from discharge overpressure

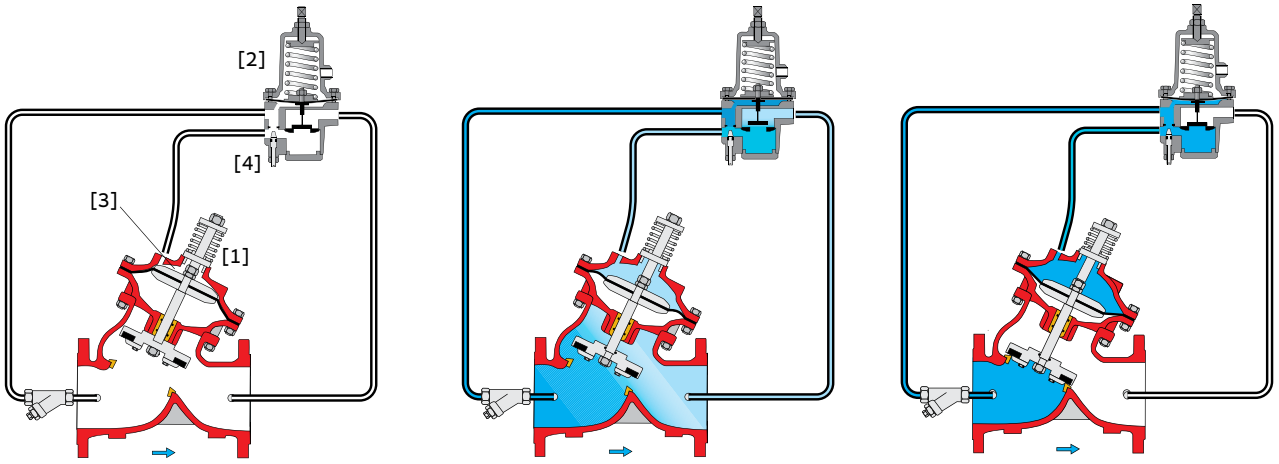
Approvals

DNV	Det Norske Veritas (Type Approval)
ABS TYPE APPROVAL PROGRAM	ABS American Bureau of Shipping Type Approval
Lloyd's Register	Lloyd's Register Type Approval

Additional Features

- Large high capacity filter
- Sea water compatibility
- Angle pattern available

Operation



Standby **Relief / Modulating** **Closed**

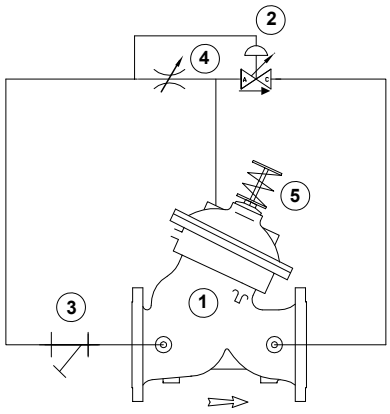
Standby: The BERMAD 730-48 is a Normally Open valve with an external lifting spring [1] keeping the valve in a fully open position as default when the system piping is depressurized, as might be before a pump start-up. When the pump starts the initial pressure surge and excess air will be expelled from the system through the valve.

Relief / Modulating: After the surge has passed, air has been exhausted and the system piping reaches normal pressure, the BERMAD 730-48 will continue duty as a pressure relief / sustaining valve, controlled by the pressure relief pilot valve [2] which should be pre-adjusted to the required pressure. When the system pressure is above the set pressure, the pilot valve will open, enabling water to exit the main valve control chamber [3] allowing the main valve to open and relieve system over-pressure.

Closed: When the system pressure falls below the set pressure the pilot valve will close allowing inlet pressure to accumulate in the main valve control chamber, closing the main valve. The closing speed can be set by changing the needle valve [4] adjustment.

The valve will remain closed and will open only when either the piping system pressure exceeds the required set pressure or when there is no pressure in the piping system.

System P&ID



Components

1	BERMAD 700 Double Chambered Valve
2	Adjustable Pilot Valve
3	Priming Line Filter
4	Closing Speed Needle Valve
5	Lift Spring

Typical Installations

A typical installation of the Model: BERMAD FP-730-48-BL is in systems where a pump start up would be followed by a pressure surge or contain accumulated residual air that has to be prevented from entering the piping system for the proper and safe function of a fire protection system.

When fitted close to the pump outlet the Normally Open characteristic of the FP-730-48-BL means a zero reaction time to initial pressure spikes and a maximum amount of the air being exhausted immediately before entering the system piping.

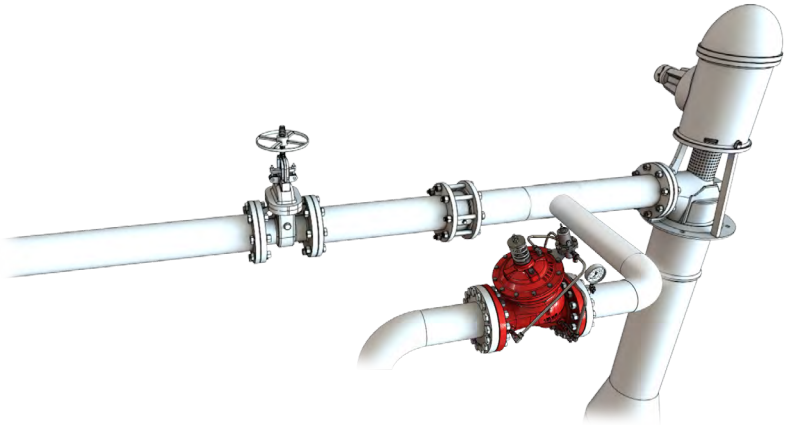
The high flow capacity of the valve enables an efficient and fast surge prevention and air extraction procedure.

When the pipeline pressure normalizes to below the relief set pressure, determined by the adjustable pilot valve, the BERMAD FP-730-48-BL will tend to close. Closing of the valve is positive and fast due to the double chamber, yet cushioned and smooth, due to the hydraulic characteristic of under-the-seat flow direction.

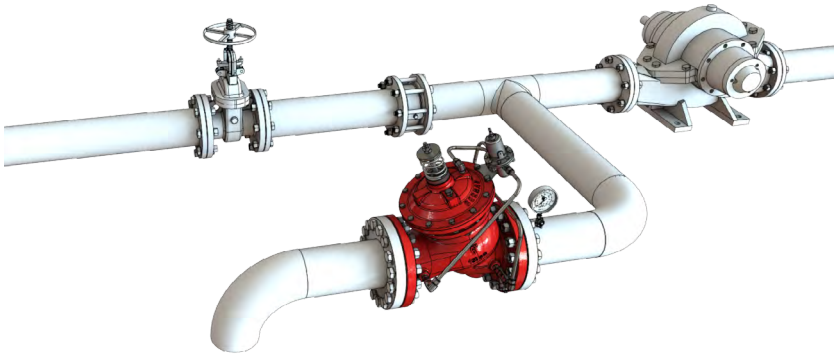
Whilst there is pressure in the pipeline the valve will continue service as a normal pressure relief or sustaining valve.

As soon as the pump is shut down and the pipeline is depressurized, the BERMAD FP-730-48-BL will return to the Normally Open position in standby and ready to dispel air contamination on the next pump start-up.

The BERMAD FP-730-48-BL installed downstream of a deep well pump



The BERMAD FP-730-48-BL installed downstream of a centrifugal pump



Suggested Specifications

The valve body shall be a center guided, diaphragm actuated globe valve, with a Y-type straight-through-flow or angle pattern design.

The flow passage shall be unobstructed and free of any supporting ribs.

The valve shall have a removable non-corrosive stainless steel seat ring with no stem guide, an anti-surge external lift spring and a field adjustable pilot with an integral main valve closing speed adjustment capability.

The valve shall be Normally Open (N.O.).

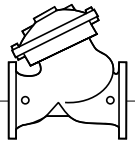
Valve actuation shall be accomplished by a vented double chambered actuator with a stainless steel stem and seat housing, creating a drip tight seal.

Servicing the valve for inspection or maintenance shall be inline and shall not require removal of the valve from the pipeline.

The valve shall be rated for 25-bar/365-psi.

The 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-730-48-BL

700 Series

Technical Data

Available Sizes (inch)

- Flanged (angle) - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Flanged (Y-pattern) - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 2, 3, 4, 6 & 8"
- Threaded - 1½, 2, 2½ & 3"

Pressure Rating

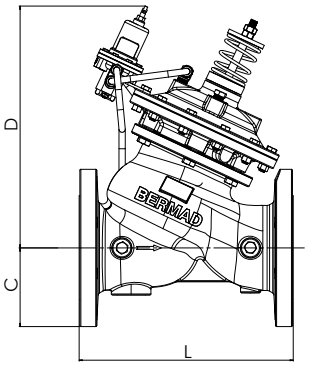
- ANSI#150 - 16 bar / 235psi
- ANSI#300 - 25 bar/365 psi
- Grooved/Threaded - Refer to code designations table below

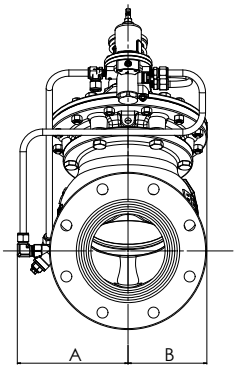
Temperature Range

- 0.5 - 80°C / 33 - 180°F

Setting Range

- Class #150: 2-16 bar / 30-235 psi
- Class #300: 7-24 bar / 100-350 psi





Size	1½" DN40		2" DN50		2½" DN80		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	mm	in
L[1]	205	8.1	205	8.1	209	8.2	250	9.8	320	12.6	415	16.3	500	19.7	605	23.8	725	28.5	733	28.9	990	39.0
L[2]	210	8.3	210	8.3	212	8.3	264	10.4	335	13.2	433	17.0	524	20.6	637	25.1	762	30.0	767	30.2	1024	40.3
A	191	7.5	191	7.5	191	7.5	207	8.1	242	9.5	290	11.4	325	12.8	370	14.6	515	20.3	525	20.7	610	24.0
B	78	3.1	78	3.1	89	3.5	100	3.9	112	4.4	160	6.3	195	7.7	240	9.4	275	10.8	275	10.8	370	14.6
C	75	3.0	83	3.3	93	3.7	100	3.9	114	4.5	140	5.5	171	6.7	203	8.0	241	9.5	267	10.5	298	11.7
D	312	12.3	312	12.3	312	12.3	364	14.3	405	15.9	505	19.9	566	22.3	639	25.2	449	17.7	449	17.7	541	21.3
Kv / Cv[4]	42/49		50/58		55/64		115/134		200/234		460/537		815/952		1250/1460		1850/2161		1990/2325		3310/3867	
Leq[3]: m / ft	4.3/14.1		10.3/33.8		33.4/109.6		21.6/70.9		23/75.5		37.5/123		53.9/177		70/230		85.6/281		159.9/525		112.7/370	
kg / lb (approx) [5]	9.1/20		10.6/23.3		13/28.6		22/48.4		37/81.4		75/165		125/275		217/477		370/814		381/838		846/1861	

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) is for a fully opened valve and refers to turbulent flow in new steel pipe schedule 40, values given for general consideration only
[4] Pressure loss coefficient given for fully opened valve
[5] Weights are given for ANSI#150 flanged valves
[6] Dimensions for the trim envelope may vary with specific component positioning

Valve Code Designations

FP | 6" | 730-48 | Y | C | A5 | PR | NN | BL | 6N

Category	Code
Standard	FP
Seawater	FS

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

Installation	Code
Y-Pattern	Y
Angle Body	A

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	BH
Threaded 235psi/PN16, NPT	NP
Threaded 365psi/PN25, NPT	NH

Coating	Code
Polyester Red	PR
High Build Epoxy	ER
Uncoated	UC

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

	Code
Double Chamber with Lift Spring	BL

Factory Fitted Options	Code
Pressure Gauge	6
Stainless Steel Glycerin Pressure Gauge Assembly	6n
Monel Pressure Gauge Assembly	6m
Special Elastomer EPDM	E1
Large Control Filter	F
Stainless Steel 316 Trim accessories	N

Notes:
[1] Other materials available see engineering data
[2] Coated internally and externally

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