

Anti-Surge Pump Start Control Valve

Air Release and Pressure Sustaining Control Valve

Model: FP/FS 730-48



(for Illustration Only)

Installation
Operation
Maintenance
Manual (IOM)

1. Safety First

BERMAD believes that the safety of personnel working with and around our equipment is the most important consideration. Please read all safety information below and from any other relevant source before attempting to perform any maintenance function.

Comply with all approved and established precautions for working with your type of equipment and/or environment.

Authorized personnel should perform all maintenance tasks.

Prior to performing a procedure, read it through to the end and understand it. If anything is not clear, ask the appropriate authority.

When performing a procedure, follow the steps in succession without omission.

2. Description

BERMAD 730-48 Pump Air Release and Pressure Sustaining Control Valve is a pilot-operated normally open, diaphragm-actuated type valve. It has an external Lifting Spring to maintain the Normally Open position.

The Model 730-48 Control Valve is set to release air and excess system water pressure to sump or atmosphere.

The double-chambered actuator design enables quick and smooth valve action. According to the inlet pressure, the pilot valve regulates the main valve throttling.

This valve requires only existing line pressure to operate.

2.1 Models and Sizes:

Models and Sizes covered by this document include the model 730-48, sizes 1-1/2" to 16".

2.2 Large Control Filter

This option provides extra capacity means for filtering of the water supplied to the control trim to achieve the essential level of debris free water. This feature is recommended for those cases where there is any doubt as to the level of particulate matter in the water.

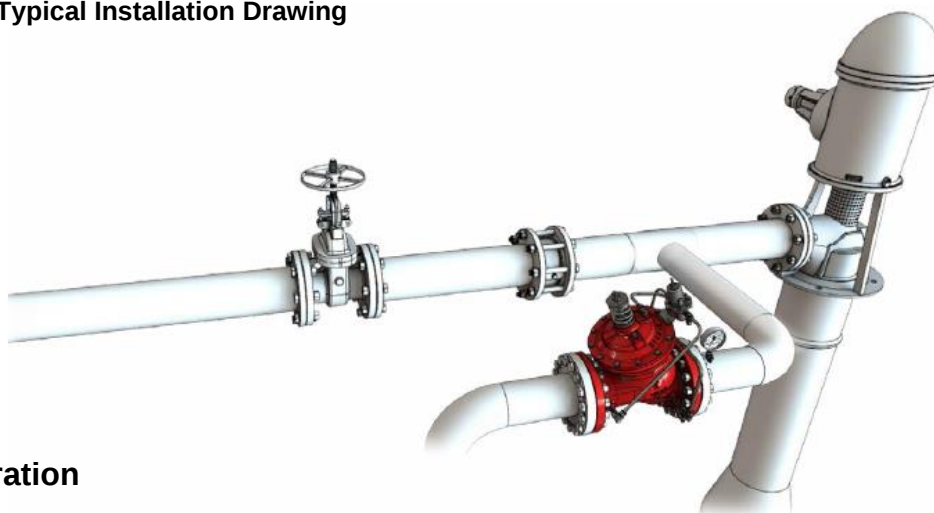
3. Approvals

BERMAD 730-48 Valve is ABS and Lloyd's Register approved for fire protection service. Refer to the current ABS and Lloyd's Register Directories. Consult the manufacturer for any component approval recently to appear in the equipment directory.

4. Installation

- 4.1 Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
- 4.2 Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Not flushing the line may render the valve inoperable.
- 4.3 Install the valve in the pipeline with the valve flow arrow on the body casing in the proper direction. Ensure that the valve is positioned so that the cover/actuator can be easily removed for future maintenance.
- 4.4 For best performance, install the valve horizontally with the cover up. However other positions are acceptable.
- 4.5 After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings. Ensure that there are no leaks.

Fig. 1: Typical Installation Drawing



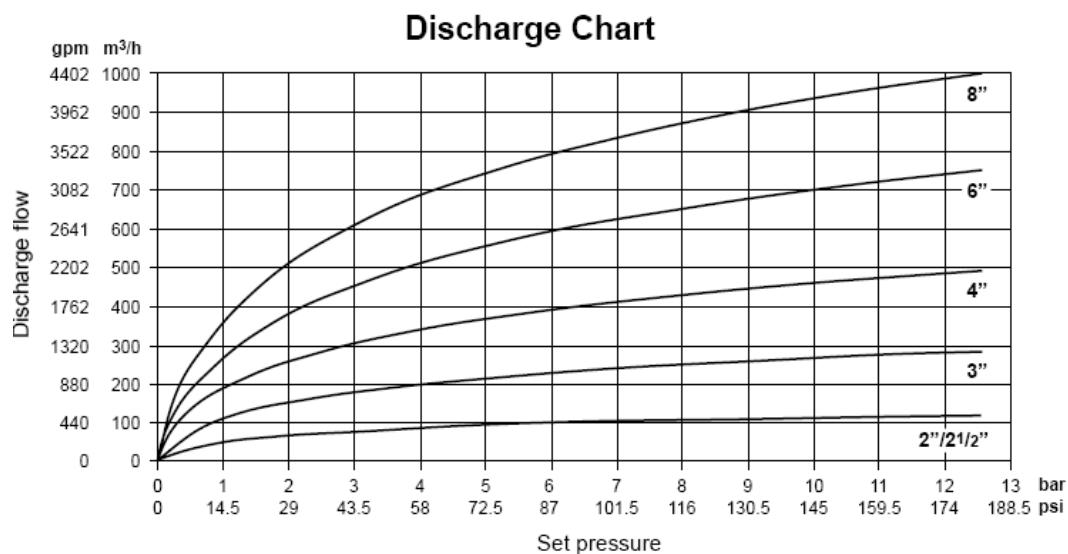
5. Operation

Principles of Operation

The Air Release and Pressure Sustaining Control Valve begins open to relieve the main line of air and sediment that is produced on Deep Well Pump activation, when the pressure begins to rise, the pilot valve senses inlet pressure and modulates the upper control chamber causing the main valve to throttle, thus sustaining constant inlet pressure. When the inlet pressure rises above the pilot setting, the pilot opens, pressure in the upper control chamber decreases, and the main valve modulates open to relieve inlet pressure and sustain pilot setting.

The pressure-relief pilot is equipped with an Adjusting

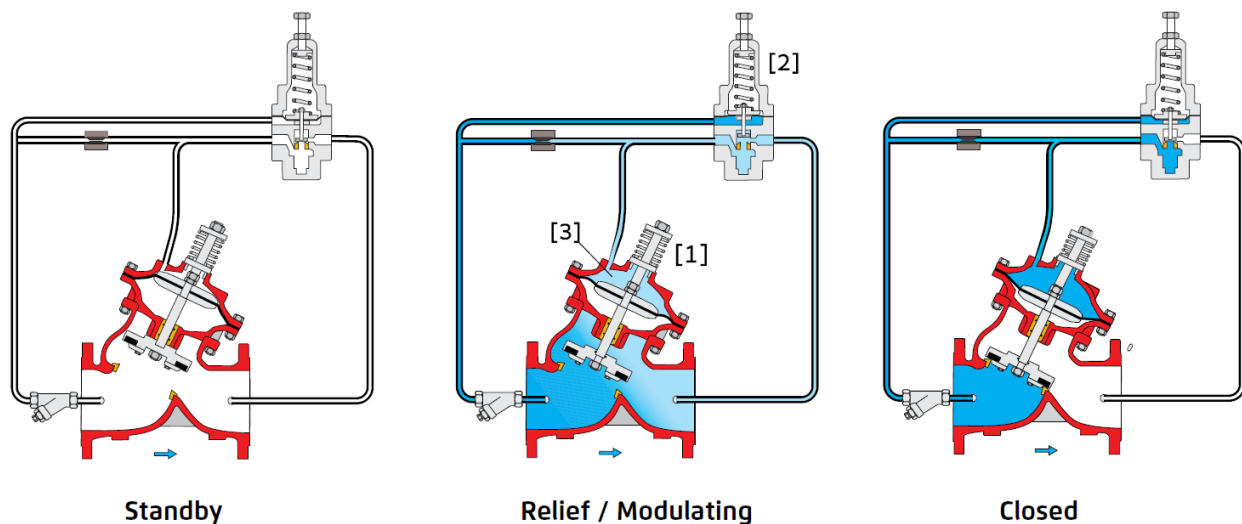
Screw to preset the desired inlet pressure.



Starting-up

- 5.1 Provide pump shut-off pressure to the Model FP 730-38 Valve inlet, allow no system demand.
- 5.2 Create sufficient pressure (higher than the valve set pressure) to allow flow through the relief valve.
- 5.3 While relief valve is operating, wait for the valve inlet pressure to stabilize. The pressure on the inlet side of the relief valve should be according to the factory pre-set adjusted pressure.
- 5.4 Slowly allow system flow so that system pressure falls below the relief-valve adjusted pressure. The relief-valve should slowly shut to drip-tight.

Fig. 2: Operation Drawing



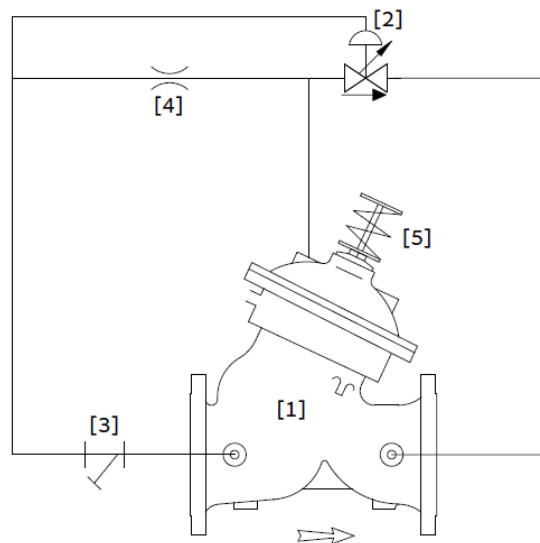
6. Readjusting

- 6.1 The pilot valve is factory pre-set according to the stated demands of the customer. The pre-set pressure settings are clearly indicated on the pilot valve tag.
- 6.2 If readjustment to either the pressure or valve response is required, follow the following steps.
- 6.3 Ensure that there is minimum flow through the main valve.
- 6.4 Free the tension between the adjusting screw on the pilot valve and the fastening nut by turning the fastening nut counterclockwise.
- 6.5 By alternately turning the adjusting screw on the pilot valve a half turn and then reading the upstream pressure, gradually adjust the pressure:
 - Counterclockwise to decrease (-) the upstream pressure
 - Clockwise to increase (+) the upstream pressure.

Fig. 3: Valve P&ID

Components:

- 1) BERMAD 700 Double Chambered Control Valve
- 2) 2 Adjustable Pilot Valve
- 3) 3 Priming Line Filter
- 4) 4 Orifice
- 5) 5 Lift Spring



7. Maintenance and Inspection Test

Warning: Do not turn off the water supply, to make repairs, without notifying local security guards.

- 7.1 In any of the following inspections or testing procedures, if an abnormal condition exists, see Troubleshooting for possible cause and corrective action.
- 7.2 The Model FP 730-48 valve is to be inspected, tested and maintained in accordance with the Maintenance Instructions of the plant, this Maintenance Manual, as well as the Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, NFPA 25.

8. Weekly Inspection

- 8.1 The system should be inspected under flow conditions.
- 8.2 Check that the main valve, pilot system, accessories, tubing & fittings, are all in good condition, damage free and not leaking.
- 8.3 The fastening nut, of the pilot valve (2, fig. 2) adjusting screw, should be fastened tightly.
- 8.4 For circulation type installations, verify that sufficient water flows through the valve when fire pump is operating at shut-off pressure (churn) to prevent the pump from overheating.
- 8.5 Verify that the pressure upstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

9. Monthly Inspection and Test

- 8.6 Complete Weekly Inspection.
- 8.7 During the monthly fire pump flow test, it shall be verified that the pressure relief valve is correctly adjusted and set to relieve at the appropriate pressure and closes below the pressure setting

10. Abnormal Conditions

SYMPTOM	PROBABLE CAUSE	REMEDY
Valve fails to regulate	Restrictor (item 4, fig. 3) is blocked	Clean and flush the restriction
	Air trapped in main valve cover	Loosen cover tube fitting at the highest point, allow the air to escape and re-tighten.
	Filter (item 3, fig 3) screen blocked	Remove filters cap and screen to clean.
Valve fails to open	Insufficient inlet pressure	Check/create inlet pressure.
	No downstream demand	Create demand/flow.
	Insufficient pilot spring compression	Turn adjusting screw (item 2, fig 2) on pilot valve
	Indicating / isolation valve/s	Open indicating / isolation valve/s
Valve fails to hold set static outlet pressure	Filter screen blocked.	Remove filter cap and screen to clean*
	Debris trapped in main valve.	Remove and inspect actuator assembly. Check seat and disc seal
	Diaphragm in main valve is leaking.	CAUTION: Close the indicating / isolating valves upstream and downstream. Disassemble the valve actuator to allow access to the diaphragm. Inspect the condition of the Elastomer and if necessary replace.

*Code "F" – Large Filter

11. Difficulty in Performance

Where difficulty in performance is experienced, the manufacturer or his authorized representative should be contacted if any field adjustment is to be made.

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