

Bermad Pressure Relief Valve With Electric Override

Model: 430-59

INSTALLATION OPERATION MAINTENANCE

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's Model 430-59 Pressure-Relief Valve with electrical solenoid for regulating override control. Is a pilot-operated, diaphragm type, high performance valve. It accurately maintains a constant preset system pressure regardless of changing demands.

The Model 430-59 the valve is normally in closed position when pump is off, on pump startup solenoid is momentary energized to open the 430-59 valve fully, then the Pressure-Relief pilot valve reliably relieves excess system pressure, meeting all requirements for fire protection service.

The Elastomeric diaphragm 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.

Models and Sizes

Models and Sizes covered by this document include the BERMAD Pressure-Relief Valve 430-59, sizes 1.5"2", 2.5", 3", 4", 6", 8", 10 and 12". It is available in a Globe pattern.

Sizing shall be not less than according to NFPA 20 Table 2-20.

Pressure Rating

All sizes are rated to maximum set pressure of 175 psi (12 bar).

3. Optional Features

3.1 Valve Position Indicator

This option provides the means for detecting motion of water through the valve according to requirements of NFPA 20. This item is field retro- fit able.

3.2 Large Control Filter, mark "F"

This option provides extra capacity means for filtering of the water supplied to the control loop 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.

4. Installation

4.1 Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Not flushing the line might result in the valve being inoperable.

4.2 In cases where the valve is used for individual pump pressure-relief, locate the relief valve between the pump and the pump discharge check valve. It shall be attached in a way that it can be readily removed for repairs without disturbing the piping.

Model: FP 430-59

Sizes: 2"-12"

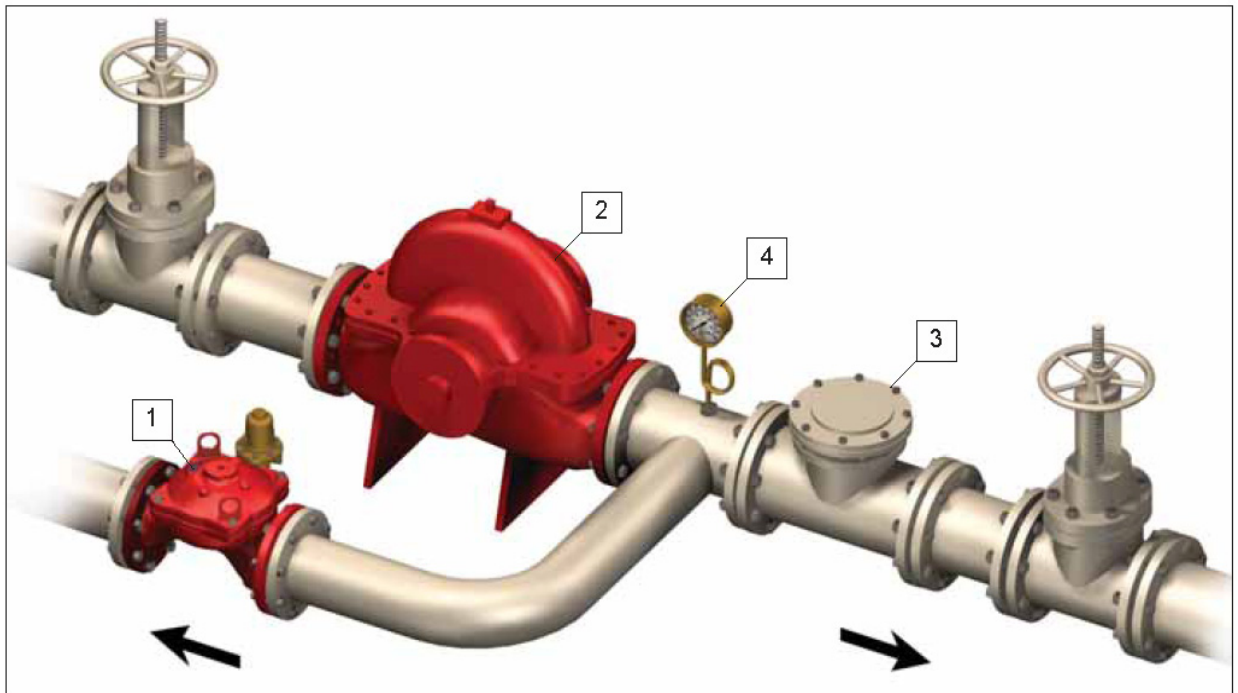
- 4.3 Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
- 4.4 Install the valve in the pipeline with the valve flow arrow on the body casting in the proper direction. Use the lifting eye provided on the main valve cover for lifting and lowering the valve.
- 4.5 For best performance, install the valve horizontally with the cover up. However, other positions are acceptable. Ensure that the valve is positioned so that the actuator can be easily removed for future maintenance.
- 4.6 After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings. Ensure that there are no leaks.

Figure 1: Installation Drawing

Typical Installations

System Components

1. BERMAD Model FP 430-59
2. Fire Pump
3. Check Valve
4. Pressure Gauge



5. Operation

The Pressure-Relief 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 valve is equipped with an adjusting screw to preset the desired inlet pressure.

Starting -up

- 5.1 Provide pump maximum shutoff pressure to the Bermad model 430-59 Pressure Relief Valve (1) upstream, allow no system flow 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.

Readjusting

Tools required:

- Adjustable wrench (6-10 inch)
- Flat head screwdriver (from 4" valve size)

The pilot valve is factory pre-set. The pre-set is clearly indicated on the pilot valve data-plate. If readjustment to either the pressure or valve response is required, follow the following steps.

- Ensure that there is nominal flow through the relief-valve.
- Release the tension between the adjusting screw on the pressure-relief pilot valve and the fastening nut by turning the fastening nut counterclockwise.
- By alternately turning the adjusting screw on the pilot valve a half turn and then reading the outlet pressure, gradually adjust the pressure:
 - Counterclockwise to decrease (—) the inlet pressureor
 - Clockwise to increase (+) the inlet pressure.

Note: Valve response adjustment affects pre-set pressure. Any adjustment to valve response requires rechecking pre-set pressure. See section 0, steps 1-4.

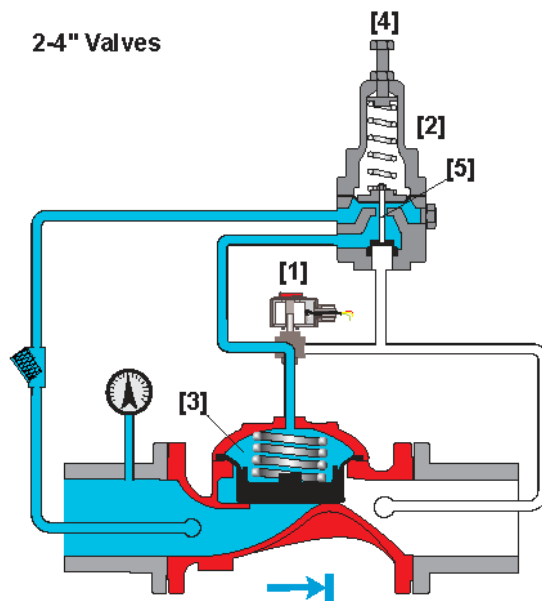
- Repeat the Starting-up procedure, section 0 steps 1-4.
- By turning the needle valve screw (from 4" size) on the pilot valve bottom, adjust the valve response. Turn:
 - Clockwise (while facing the screw) to decrease (-) the closing speed of the main valveor
 - Counterclockwise to increase (+) the closing speed of the main valve.
- Repeat the Starting-up procedure.

Model: FP 430-59

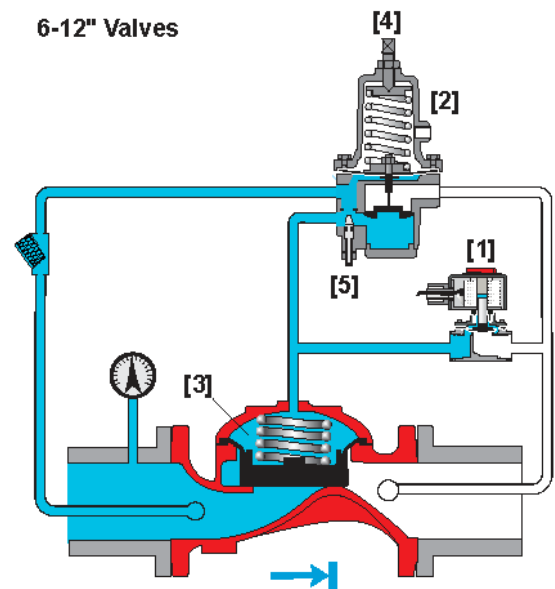
Sizes: 2"-12"

6. Figure 2: Operation Drawing

2-4" Valves



6-12" Valves



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 430-59 valve is to be inspected, tested and maintained in accordance with 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 figure 1) 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 downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

9. Annual Inspection and Test

- 9.1 Complete Weekly Inspection.
- 9.2 During the annual 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	Filter screen (4) blocked.	Remove filter cap and screen to clean. Filter might be insufficient. See Note below.
	Pulsates or hunts.	Slowly adjust needle valve (21) until pulsation stops.
	Needle valve (21) not properly adjusted.	Factory set at ½ or 1½ open. Adjust.
	Air trapped in main valve cover.	Loosen cover tube fitting at the highest point, allow the air to escape and re-tighten.
Valve fails to open	Insufficient inlet pressure.	Check/create inlet pressure.
	Pilot is adjusted to high.	Turn adjusting screw CCW on pilot (5).
Valve fails to seal inlet pressure	Filter screen (4) blocked.	Remove filter cap and screen to clean. Filter might be insufficient. See Note below.
	Debris trapped in main valve.	Remove and inspect actuator assembly. Check seat and disc seal. Check for foreign bodies. Rinse at high flow-rate.
	Diaphragm in main valve is leaking.	Open the valve cover, inspect diaphragm. If damaged, replace.
	Diaphragm in pilot valve is leaking.	

Note: Mark "F" – Large Control Filter

In cases where the filter screen frequently becomes blocked, it is recommend to replacing the standard control strainer with BERMAD's Large Filter Mark "F".

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.