Bermad Pressure Relief Valve

Model: FP-3PB

Installation
Operation
Maintenance
Manual (IOM)

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 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.

1. Description

Bermad 3PB Pressure-Relief Valve is an adjustable direct acting, diaphragm type pressure relief valve, automatically relieving/opening, at the chosen pre-set inlet pressure. It is suitable to be used as a pressure safety relief valve (PSV) downstream of a pressure control valve, a thermal pressure relief valve for piping systems or as a relief valve for fusible plugs line.

2. Specifications

2.1 **Rated Pressure**: 25 bar / 365 psi
2.2 **Temperature rating**: 0 - 80°C / 33 -176°F
2.3 **Connections**: 1/4" NPT or 1/2" NPT

Table 1. Adjustment Range:

Spring	Adjustment Pressure Range	
	bar	psi
M (16)	1 - 16	5 - 235
Z (25)	7 - 25	100 - 365

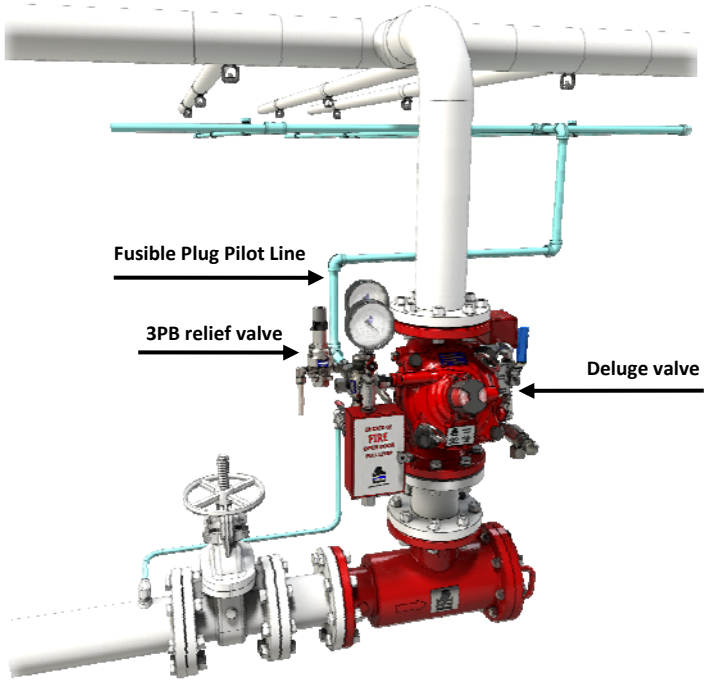
3. Installation

Be sure to use qualified personnel when installing, operating and maintaining this valve.
Prior to installation inspect the valve for any damage that may have been caused during shipment and ensure all ports are clean and free from any obstructions.

3.1 Before the valve is installed, flush the pipeline to remove any scale, debris, etc.
Warning: not flushing the line may result in the valve being rendered inoperable.
3.2 The BERMAD 3PB relief valve maybe installed in any position, vertical horizontal or otherwise.
Select the valve position and orientation that will facilitate the future maintenance, adjustment and inspection.Install the valve in the pipeline using port 2 as the inlet, port 4 will be the outlet or discharge port.
3.3 On the discharge port install a drain pipe with an appropriate fitting facing downward at the 3PB valve discharge port to prevent blockage.
3.4 Install the valve above or at the middle of the pipeline to avoid the accumulation of debris upstream of the 3PB valve.

Figure 1: Typical Installation on a Wet Pilot Line with Fusible Plugs

As well as a static pressure relief valve for pressure relief in closed piping systems, the 3PB relief valve may be typically installed as part of the deluge system on a wet pilot line with fusible plugs. The PB3 will relieve any overpressure from surges or thermal expansion keeping the pilot line below the allowable maximum pressure.



4. Operation

The 3PB Pressure Relief valve is held closed by the force of the spring above the diaphragm attached to the closure disc.
The inlet pressure is sensed by the diaphragm, when the inlet pressure force applied under the diaphragm exceeds the adjusted spring force, the valve will open to relieve any overpressure.
When the inlet pressure force drops to below the force of the spring the valve will return to close.

4.1 Re-adjustment

Tools required: adjustable wrench
The valve is pre-set before leaving the factory, the set point is clearly indicated on the setting sticker on the valve cover.
If the set point is to be adjusted follow the instructions below:

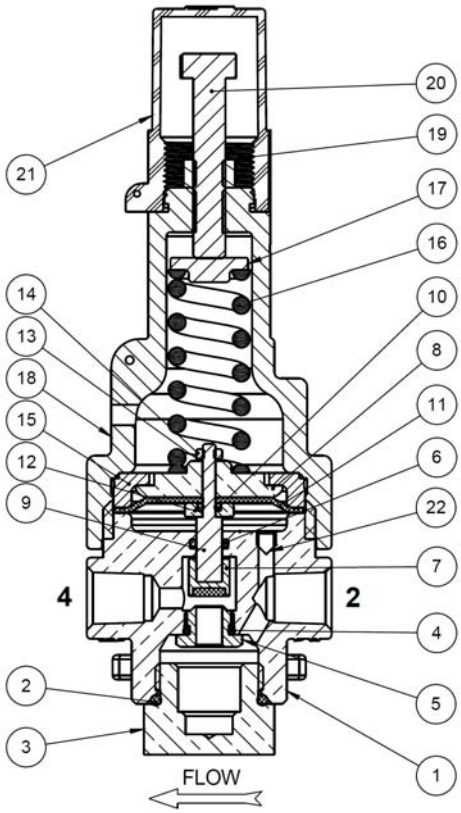
4.1.1 Unscrew the tamper proof cap (item 21, fig.2) exposing the adjusting screw and loosen the locking nut (item 19, fig. 2) By alternately turning the adjusting screw (item 18, fig.2) a half turn and then reading the outlet pressure, gradually adjust the pressure: Counter-clockwise to decrease (-) the inlet pressure or Clockwise to Increase (+) the inlet pressure.

4.1.2 If needed replace the setting indication sticker to display the new setting value.

4.1.3 The pressure has been set re-tighten the locknut and replace the tamper proof cap.

5. Figure 2: 3PB Relief Valve General Arrangement Drawing

No.	ITEM
1	Body
2	Lower plug O ring
3	Lower plug
4	Seat O ring
5	Seat
6	Shaft O ring
7	Seal/Plunger
8	Diaphragm Washer
9	Shaft
10	Diaphragm O ring
11	Diaphragm
12	Diaphragm retainer
13	Washer
14	Diaphragm nut
15	Diaphragm support ring
16	Spring
17	Spring retainer
18	Cover
19	Locking nut
20	Screw
21	Tamper proof cap



6. Maintenance

The 3PB 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.

The following inspection procedure shall be performed in addition to any specific requirements of the NFPA 25 and also to any requirements of the authorities having jurisdiction.
Any malfunction must be immediately corrected. The installing contractor or product supplier should be contacted regarding any questions. It is recommended that the 3PB relief valve be inspected, tested, and maintained by a qualified inspection service

6.1 Quarterly Inspection

6.1.1 Visually check for any evidence of damage or leaks
6.1.2 The protected pipe pressure gauge should show a pressure below that of the set pressure (see setting sticker on the valve cover)
6.1.3 Visually check for any obstructions in the discharge drain port
6.1.4 If a strainer is installed before the valve, clean or flush any accumulated debris within it.

6.2 Abnormal Conditions

Symptom	Probable Cause	Remedy
Leakage from discharge/drain port	High supply pressure	Check supply pressure gauge
	Debris obstruction on seal	Flush the valve by releasing the adjusting screw
	Worn or damaged seal	Replace seal (item 7, fig.2)
Valve fails open	Blocked internal trim	Disassemble valve and clear any obstructions
	Blocked sensing port	Remove valve cover and diaphragm and clear any obstructions
Leakage shows on valve cover	Damaged or worn diaphragm	Replace diaphragm
	Loose diaphragm assembly	Tighten diaphragm holding nut (item 14, fig.2)
	Leaking diaphragm O ring	Replace diaphragm O ring (item 10, fig.2)