Pressure Relief/Sustaining Valve

(Sizes 1½"-16"; DN40-400)

Description

The model 430 Pressure Relief/Sustaining Valve is a hydraulically operated, diaphragm actuated control valve that can fulfill either of two separate functions:

- When installed in-line, it sustains minimum pre-set, upstream (back) pressure regardless of fluctuating demand or varying downstream pressure .
- When installed as a circulation valve, it relives excessive line-pressure that is above maximum pre-set.

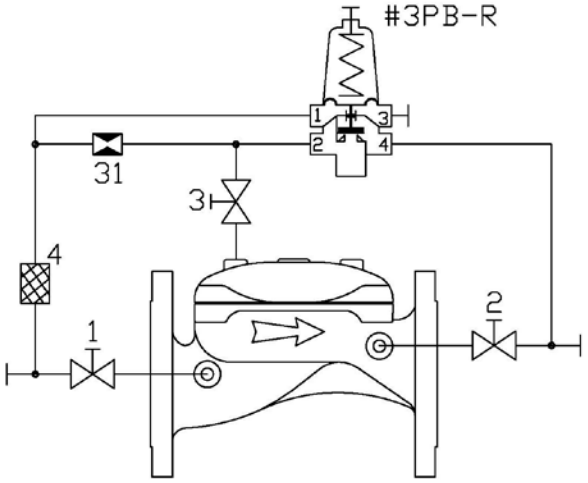
Installation

1. Ensure enough space around the valve assembly for future maintenance and adjustments.
2. Prior to valve installation, flush the pipeline to ensure flow of clean fluid through the valve.
3. For future maintenance, install Isolation gate valves upstream and downstream from Bermad control valve.
4. Install the valve in the pipeline with the valve flow direction arrow in the actual flow direction. Use the lifting ring provided on the main valve cover for installing the valve.
5. For best performance, it is recommended to install the valve horizontally and upright. For different valve positions – consult Bermad.
6. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
7. Install a pressure gauge (instead of the plastic plug on the pilot)
8. It is highly recommended to install a strainer Bermad model 70F upstream from the model 430, to prevent debris from damaging valve operation.

Commissioning & Calibration

1. Confirm that cock valves [1], [2] & [3] are open (handle parallel to cock-valve body).
2. Open fully the upstream isolating valve and partially the downstream isolating valve, to fill-up, in a slow and controlled manner, the consumers line downstream from the model 430.
   Note: When upstream pressure is below the model 430 setting, the valve is closed.
3. Confirm that the supply pressure and the flow through the system are typical.
4. Vent air from the valve's control loop by loosening cover tube fitting at the highest point, allowing all air to bleed. Retighten the tube fitting eyebolt.
5. The model 430 is factory set according to design definitions. The set pressure is marked on the pilot's label.
6. If the set pressure is either different from the design or the requirements have been changed follow the steps described below:
   - 6.1. Model 430 @ In-Line Installation:
     - 6.1.1. Close the upstream isolating valve to reduce model 430 inlet pressure. Ensure that the model 430 sustains the upstream pressure, preventing it from decreasing below setting, even when the upstream isolating valve is almost closed.
     - 6.1.2. Unlock the pilot locking nut and slowly turn the pilot adjusting screw Clock-Wise to increase set pressure and Counter-Clock-Wise to decrease it.
     - 6.1.3. After the pressure is stabilized, lock the pilot locking nut and open fully the upstream isolating valve.
   - 6.2. Model 430 @ Off-Line (Circulation) Installation:
     - 6.2.1. Confirm that the line pressure is the designed dynamic operating pressure.
       Note: When setting is below the designed dynamic operating pressure, the valve is partially/fully open.
     - 6.2.2. Unlock pilot locking nut & slowly turn the adjusting screw Clock-Wise until the valve close & seal.
     - 6.2.3. Slowly turn the pilot adjusting screw Counter-Clock-Wise until the valve starts leaking, re-tighten the setting screw until the model 430 seals again plus 1/4 – 1/2 turn and lock the locking nut
7. The Restriction [31] enables the 2-Way control & reduces valve closing speed.

Control Drawing



PARTS LIST

1	2W Cock Valve
2	2W Cock Valve
3	2W Cock Valve
4	Control Filter
31	Restriction Orifice
#3PB-R	2W PB PS Pilot R Sensing

Trouble-Shooting

1. **Valve fails to Open:** Check for sufficient inlet pressure, create demand/flow, confirm pilot setting & check cock valves status.
2. **Valve fails to Close:** Create demand/flow, confirm pilot setting, check cock valves status, clean control filter & detect for clogged ports or fittings, check if any debris trapped in the main valve, confirm diaphragm is not leaking.
3. **Valve fails to Regulate:** Confirm pilot setting, release air trapped in the control chamber & check cock valves status.

Preventative Maintenance

1. System operating conditions that effect on the valve should be checked periodically to determent the required preventative maintenance schedule.
2. Maintenance instructions:
   - 2.1. Tools required:
     - 2.1.1. Metric and imperial wrenches
     - 2.1.2. Anti seize grease
   - 2.2. Visual inspection to locate leaks and external damages
   - 2.3. Functional inspection including: closing, opening and regulation.
   - 2.4. Close upstream and downstream isolating valves (and external operating pressure when used).
   - 2.5. Once the valve is fully isolated vent pressure by loosening a plug or a fitting.
   - 2.6. Unscrew cover fastening bolts and remove cover. Disassemble necessary control tubs.
   - 2.7. Inspect the diaphragm and the sealing area on the valve body.
   - 2.8. Replace worn or damaged diaphragm. Lubricate the bolts' threads with Anti seize grease.

Spare parts

Bermad has a convenient and easy to use ordering guide for valve spare-parts and control system components.
For solenoid valves refer to model and S/N on solenoid tags.