

## **Burst Control & Pressure Reducing Valve Excessive Flow**

(Sizes 1½-14"; DN40-350)

### **Description**

The Model 792-U Burst Control & Pressure Reducing Valve is a hydraulically operated, diaphragm actuated control valve with two independent functions. When flow is below the burst flow setting, it reduces higher upstream pressure to lower pre-set downstream pressure, regardless of varying demand or upstream pressure. Upon sensing flow in excess of the burst flow setting, it shuts off and locks drip tight, until it is manually reset.

### **Installation**

1. Ensure enough space around the valve assembly for future maintenance and adjustments.
2. Prior to valve installation, flush the pipeline to insure 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 rings provided on the main valve cover for installing the valve.
5. The orifice assembly should be attached to the valve inlet flange, with a resilient gasket between them. Determine tightening bolts length according to flanges, gaskets and orifice assembly thickness.
6. Install the orifice assembly with the flow-arrow in the designed flow direction and confirm connection of the sensing ports, marked [+] and [-], according to control drawing below.
7. For best performance, it is recommended to install the valve horizontally and upright. For different valve positions – consult Bermad.
8. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
9. Install pressure gauges, instead of the plastic plugs on the upstream and downstream control branches.
10. It is highly recommended to install a strainer Bermad model 70F upstream from the 792-U, to prevent debris from damaging valve operation.
11. Install a pressure relief valve Bermad model 73Q for protection against momentary pressure peaks.
12. It is recommended to install a water meter on the pipe line to enable accurate adjustment.

### **Commissioning, Resetting & Calibration**

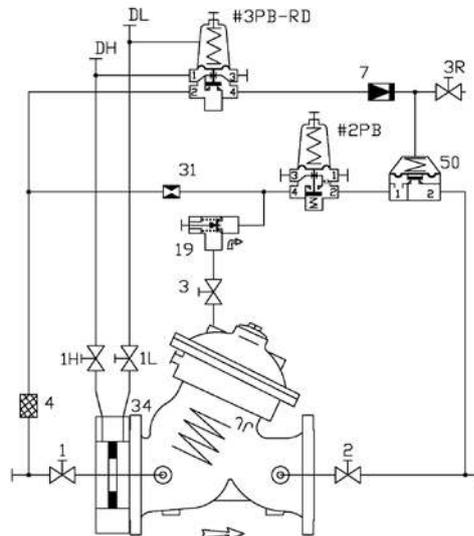
1. Confirm that cock valves [1], [2], [3], [3R], [1H] & [1L] are open (handle parallel to cock-valve body).
2. Open fully the upstream isolating valve and slowly fully open the downstream isolating valve, to fill-up, in a controlled manner, the consumers line downstream from the 792-U.
3. Vent air from the valve's control loop by loosening cover tube fitting & pilot sensing chambers at the highest point, allowing all air to bleed. Retighten the tube fitting eyebolt.
4. Confirm that the supply pressure and the flow through the system, inspected in the system Water-meter, are typical. If necessary, increase flow by opening a hydrant, or reduce the flow/pressure by adjusting the downstream/upstream isolating valves.
5. Close cock valve [3R]. Valve is now ready to close during burst excessive flow.
6. The Model 792-U is factory set according to the design burst flow and downstream pressure request:
  - 6.1. The set burst flow is marked on the Burst Flow Control Pilot [BFCP] (#3PB-RD) label.
  - 6.2. The set downstream pressure is marked on the Pressure Reducing Pilot [PRP] (#2PB) label.
7. If the set burst flow and/or pressure are either different from the design or the requirements have been changed, then refer to "Calibration" - (step 9 of Commissioning, Resetting & Calibration).
8. **Resetting after valve shut off**
  - 8.1. Check the reasons and/or fix the pipeline.
  - 8.2. Follow steps 1-5 of Commissioning, Resetting & Calibration.
9. **Calibration**
  - 9.1. Pressure Reducing:
    - 9.1.1. Unlock the PRP locking nut and slowly turn the pilot adjusting screw Clock-Wise to increase set downstream pressure or Counter -Clock-Wise to decrease it. Allow the 792-U to react and the downstream pressure to stabilize, lock the PRP locking nut and open fully the downstream isolating valve.
  - 9.2. Burst Flow:
    - 9.2.1. Close cock valve [2]. The valve will close.
    - 9.2.2. Unlock the BFCP locking nut and turn the pilot adjusting screw CW until spring tension is maximal.
    - 9.2.3. Follow steps 1-4 of Commissioning, Resetting & Calibration.
    - 9.2.4. Increase system consumption to burst excessive flow.
    - 9.2.5. Slowly turn the BFCP adjusting screw CCW until water start dripping through cock valve [3R]. Return the adjusting screw CW until the drip stop & ¼ of a turn more. Tighten the BFCP adjusting screw locking nut.
    - 9.2.6. Close cock valve [3R]. Valve is now ready to close during burst excessive flow

Note: Changing the burst flow setting more than +/-10% of marked setting may require redesign of orifice plate size.
10. The Restriction [31] enables the 2-Way control & reduces valve closing speed.
11. The one way flow control (19) is factory set fully open. To decrease opening speed or to stabilize the valve reaction, turn the needle valve CW.
12. Relief Valves should be set 1 bar above system highest set-pressure.
13. Use plugged sensing points [DH] & [DL] to allow connection of a ΔP Gauge for measurement of the actual differential pressure sensed by the BFCP.

## Control Drawing

### PARTS LIST

1	2W Cock Valve
2	2W Cock Valve
3	2W Cock Valve
4	Control Filter
7	Check Valve
19	One Way Flow Control MT Type
31	Restriction Orifice
34	Orifice Plate Assembly
50	2W Hydraulic Valve
#2PB	2W PB PR Pilot
#3PB-RD	2W PB PS Pilot Diff Sensing
DL	Plugged Low Pressure Sensing Point
DH	Plugged Low Pressure Sensing Point



## Trouble-Shooting

- Valve fails to open:** Check for sufficient inlet pressure, create demand/flow, confirm pilot settings, check cock & needle valves status.
- Valve fails to Close:** Check for sufficient inlet pressure, create demand/flow, confirm pilot settings, check needle & 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.
- Valve fails to Regulate:** Check needle valve setting, detect for clogged ports or fittings (particularly orifice sensing ports), release air trapped in the control chamber & the pilot sensing chambers.

## Preventative Maintenance

- System operating conditions that effect on the valve should be checked periodically to determent the required preventative maintenance schedule.
- Maintenance instructions:
  - Tools required:
    - Metric and imperial wrenches
    - Anti seize grease
  - Visual inspection to locate leaks and external damages
  - Functional inspection including: closing, opening and regulation.
  - Close upstream and downstream isolating valves (and external operating pressure when used).
  - Once the valve is fully isolated vent pressure by loosening a plug or a fitting.
  - Open the stud nuts and remove the actuator as one unit from the valve body. Disassemble necessary control tubs.
  - It is highly recommended to stock a reserve actuator assembly for each size. This allows minimum system field work and system down time.
  - Disassemble the actuator and examine its parts carefully for signs of wear, corrosion, or any other abnormal conditions.
  - Replace worn parts and all the Elastomers. Lubricate the bolts and studs 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.

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