

## **Flow Control Valve**

(Sizes 1½-14"; DN40-350)

### **Description**

The Model 770-U Flow Control Valve is a hydraulically operated, diaphragm actuated, control valve that maintains pre-set maximum flow, regardless of fluctuating demand or varying system pressure. For applications where downstream pressure is constant & low (relief to reservoir), apply model 727-U.

### **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. Confirm the existence of a Flow-meter dedicated to measure the flow through the valve.
5. 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.
6. 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.
7. 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.
8. For best performance, it is recommended to install the valve horizontally and upright. For different valve positions – consult Bermad.
9. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
10. It is highly recommended to install a strainer Bermad model 70F upstream from the pressure reducing valve to prevent debris from damaging valve operation.

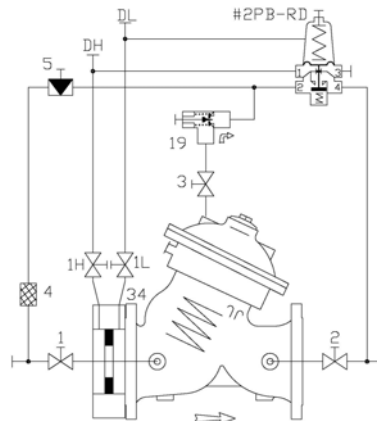
### **Commissioning & Calibration**

1. Confirm that cock valves [1], [2], [3], [1H] & [1L] 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 770-U.
3. Confirm that the supply pressure and the flow through the system, inspected in the system Water-meter, are typical. If necessary, create flow by opening a hydrant, or reduce the flow/pressure by adjusting the downstream/upstream isolating valves.
4. 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.
5. The Model 770-U is factory set according to the design maximum flow request. The set flow is marked on the pilot's label. Allow the flow inspected in the system Water-meter to stabilize, meeting the marked set flow.
6. If the set flow is either different from the design or the requirements have been changed, unlock the pilots locking nut and slowly turn the pilot adjusting screw Clock-Wise to increase set flow and Counter-Clock-Wise to decrease it. Allow the 770-U to react & the flow to stabilize.
7. After the flow is stabilized, lock the pilots locking nut and open fully the downstream isolating valve.
8. Needle valve (5) is factory set to 1-1.5 turn open.
  - 8.1. To decrease closing speed turn the needle valve CCW
  - 8.2. To increase closing speed turn the needle valve CW
9. 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.
10. Use plugged sensing points [DH] & [DL] allow connection of a  $\Delta P$  Gauge for measurement of the actual differential pressure sensed by the pilot.

## Control Drawing

### PARTS LIST

1	2W Cock Valve
1L	2W Cock Valve
1H	2W Cock Valve
DL	Plugged Low Pressure Sensing Point
DH	Plugged High Pressure Sensing Point
2	2W Cock Valve
3	2W Cock Valve
4	Control Filter
5	Needle Valve
19	One Way Flow Control MT Type
#2PB-RD	2W Flow Control PB Pilot
34	Orifice Plate Assembly



## Trouble-Shooting

- Valve fails to open:** Check for sufficient inlet pressure, create demand/flow, confirm pilot setting, check cock & needle valves status.
- Valve fails to Close:** Check for sufficient inlet pressure, create demand/flow, confirm pilot setting, 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 valves 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 effects on the valve should be checked periodically to determine 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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