

## Excessive Pressure Shut-Off Valve

### Description

The 794 Excessive Pressure Shut-Off Valve constantly senses upstream pressure, generally the pressure downstream of a PRV system. If upstream pressure rises above the setting of pilot 9, the pilot opens causing the main valve to throttle toward a closed position to prevent excess pressure from reaching downstream. If upstream pressure falls below the pilot 9 setting, the pilot closes allowing the main valve to open wide to allow maximum flow. To ensure that consumer water supply is not cut-off should pressure upstream of the 794 begin to rise, this method of protection is only recommended to be used in systems with parallel PRV branches.

### Installation

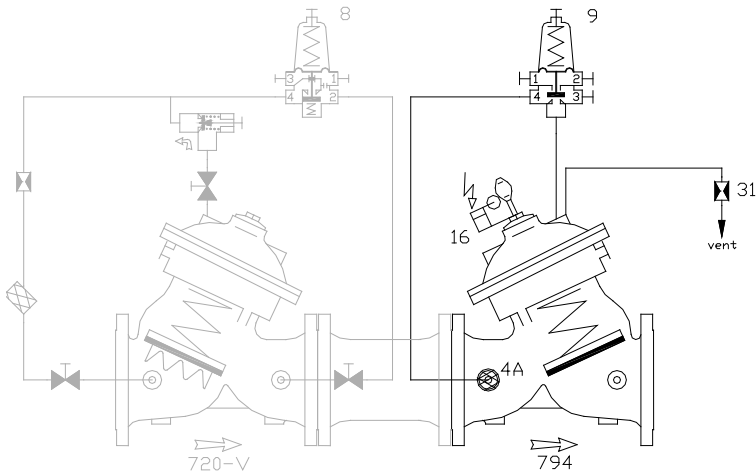
1. Allow enough room around the valve assembly for making adjustments and for future maintenance and disassembly work.
2. Thoroughly flush the pipeline to remove dirt, scale, and debris. Failure to perform this operation may render the valve inoperable.
3. It is recommended that isolation valves be installed upstream and downstream of the Bermad pressure reducing system to allow for future maintenance operations.
4. Install the valve in the pipeline with the valve flow arrow sticker in the proper direction; this will be opposite the normal flow direction of other Bermad valves, such as the model 720-V pressure reducing valve. For best performance, do not install the valve horizontally with the cover facing down, so that air can be easily purged from the upper control chamber. Make certain the valve is positioned so the actuator assembly can be easily removed for future maintenance requirements.
5. If applicable, run the appropriate conduit and cables to wire a limit switch or position transmitter. See relevant accessories IOM for more information.
6. This valve/system vents water to atmosphere, ensure that there is a floor drain near the valve(s) or install a line to re-direct the vented water to an acceptable area.
7. It is recommended to install a pressure gauge between the pressure reducing valve and excessive pressure shut-off valve.
8. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.

### Commissioning & Calibration

**NOTE:** The Model 794 is normally used in conjunction with a pressure reducing valve. This manual refers to the pressure reducing valve as the "720-V" and to the emergency shut-off valve as the "794". There must be sufficient flow through the valve and system to check and adjust the valve. Insure that a downstream demand is created.

1. The model 794 should be factory set according to the design pressure request. The emergency shut-off set pressure is marked on pilot 9's label (15-20 psi higher than the 720-V setting). If there are no marking on the pilot label or a set-point adjustment is needed proceed to step 3.
2. Fully open the upstream isolation valve and partially open the downstream isolation valve, to fill the consumer line downstream of the pressure reducing system, in a slow and controlled manner. Allow the downstream pressure to stabilize; it should be at the set pressure of the 720-V.
3. If no set-point is marked on the pilot, or system requirements are different than the current set-point:
  - 3.1. Loosen the pilot 9 locknut (on the 794), and turn the adjusting screw in, CW, for maximum spring compression.
  - 3.2. Loosen the pilot 8 locknut (on the 720-V), and turn the adjusting screw out, CCW, to release all spring tension. The 720-V will close.
  - 3.3. Slowly turn the pilot 8 adjusting screw in, CW; the 720 will open and downstream pressure will slowly increase. Set the pressure roughly 15-20 psi higher than the required PRV set-point. Allow the 720 to react and the pressure to stabilize. **CAUTION: This will allow the excess pressure to reach downstream. Make sure this condition will not cause system damage!**
  - 3.4. Slowly turn the pilot 9 adjusting screw out, CCW, until the 794 begins to close, and water is venting from orifice 31. Allow the system to react, and the pressure to stabilize. Tighten the pilot 9 locknut. This will set the 794 to close if the pressure rises 15-20 psi above the 720-V set-point.
  - 3.5. Slowly turn the pilot 8 adjusting screw out, CCW, until downstream pressure begins to fall. Continue slowly turning the adjusting screw until the downstream pressure reaches the required set-point. Allow the 720 to react and the pressure to stabilize. Tighten the pilot 8 locknut. Fully open the downstream isolation valve.
4. The operation of the 794 can be checked by turning the pilot 8 adjusting screw in, CW, 1-2 turns from the set-point. If operational, the 794 will close.
5. Set the limit switch cam to activate limit switch 16 when the 794 is in the fully closed position. The signal should trigger an alarm in the Building Management System.
6. Calibrating Pressure Reducing Systems that include parallel By-Pass PRVs, require calibrating each of the PRVs separately, while the parallel PRV system branches are closed. Calibration should refer to a shared pressure gauge, installed downstream from the system. For best & long term performance, larger PRV set points should be 5-10 psi to lower than smaller, low flow bypass, PRV set points.

## Control Loop Diagram



### PART LIST

- 4A
- 8
- 9
- 16
- 31
- 794
- 720-V

- In-Line Filter
- Pressure Reducing Pilot
- Emergency Closing Pilot
- Limit Switch
- Restriction Orifice (Red Marking)
- Excessive Pressure Valve
- Pressure Reducing Valve

## Troubleshooting

### Symptom

#### Valve Fails to Open

### Possible Cause

- The pressure reducing valve (720-V) has failed to function properly
- The pilot 9 (on the 794) set-point is less than the pilot 8 (on the 720-V).
- Pipeline isolation valve(s) closed.
- Orifice 31 clogged.
- Cover tap/plumbing clogged

### Solution

- Inspect the 720-V and repair if necessary.
- Insure the pressure reducing valve is set correctly. If necessary, readjust pilot 9. See step 3 of the commissioning instructions.
- Open isolation valve(s).
- Remove and inspect/clean orifice 31.
- Clean cover tap/plumbing.

#### Valve Fails to Close

- Filter 4A plugged.
- Excessive pilot 9 spring compression, resulting in the pilot 9 set-point being much greater than the pilot 8 set-point.
- Debris trapped in main valve.
- Diaphragm in main valve ruptured or the diaphragm assembly loose.

- Remove in-line filter 4A and clean screen/body taps re-installing w/dot mark facing upstream.
- Readjust pilot 9. See step 3 of the commissioning instructions.
- Remove actuator assy. to inspect seat area/verify valve stroke/remove debris.
- Check by observing vent tube from orifice 31 when the valve is open. Continuous flow from the vent indicates diaphragm leakage. Inspect, tighten, and/or replace Diaphragm.