

Pressure Reducing Valve with Low Flow By-Pass

Description

The Model BC-720-2B-P Pressure Reducing Valve maintains a constant downstream pressure regardless of fluctuating demand or varying upstream pressure. Pressure reducing pilot #2PB/L senses downstream pressure and modulates the main valve to maintain the set point. When downstream pressure falls below the setting of pressure reducing pilot, the pilot opens allowing the main valve to open to increase pressure to the set point. When downstream pressure rises above the setting of the pressure reducing pilot, the pilot closes causing the main valve to throttle toward a closed position to maintain the set point. The direct acting pressure reducing valve CAP2 will act as a by-pass, allowing for more stable pressure reduction in low flow situations.

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 on the body casting in the proper direction. 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 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. It is recommended to install a pressure gauge downstream of the pressure reducing valve.
7. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.

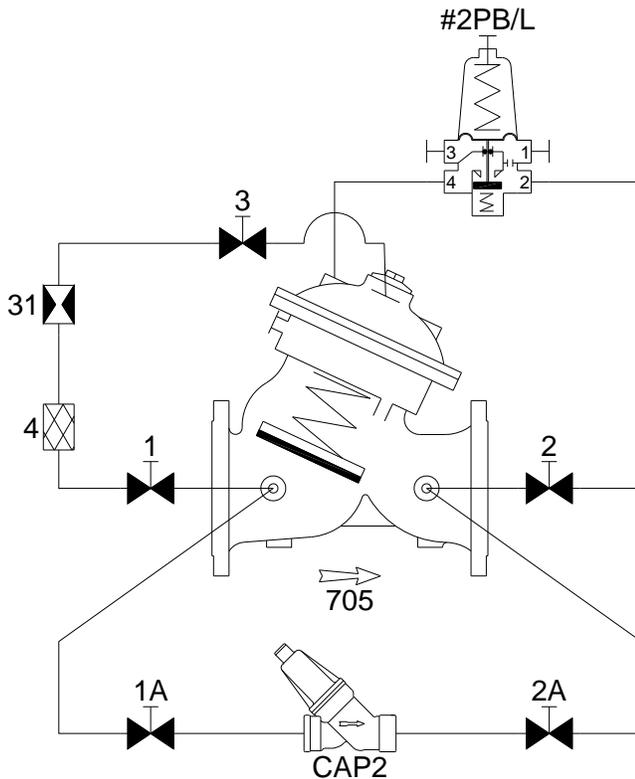
Commissioning & Calibration

NOTE: There must be sufficient flow through the valve and system to check and adjust the valve. Insure that a downstream demand is created. **Ball valves 1, 2, 3, 1A & 2A must be open at all times for automatic regulation mode.**

1. 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 as marked on pilot #2PB/L.
2. Confirm that the supply pressure and the system flow are typical. If necessary, create flow by opening 10-15 demand points, such as faucets. Partially closing the outlet isolation valve will reduce the flow.
3. Vent air from the control loop by loosening a tube fitting at a highpoint near the cover of the main valve, allowing all air to bleed. Retighten the tube fitting. 2-3 bolts on the high side of the cover may be loosened to bleed air, if the valve is not installed upright.
4. If no set point is marked on the pilot, or system requirements are different than the current set-point:
 - 4.1. Close ball valves 1A & 2A.
 - 4.2. Loosen the pilot #2PB/L locknut, and turn the adjusting screw out, CCW, to release all spring tension. The 720 should close.
 - 4.3. Slowly turn the pilot #2PB/L adjusting screw in, CW; the 720 will open and downstream pressure will slowly increase. 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.
 - 4.4. If the downstream pressure rises above the desired set point, slowly turn the pilot #2PB/L adjusting screw out until the required set point is achieved.
 - 4.5. Tighten the pilot #2PB/L locknut.
 - 4.6. Re-open ball valves 1A & 2A, and close the downstream isolating valve.
 - 4.7. Adjust the setpoint of the CAP2 using the operating knob on the upper part of the valve. The pressure reducing valves are factory set to a pressure of 45 psi.

NOTE: Because the pre-adjustment dial displays in 15 psi increments, the optional downstream outlet pressure gauge can be used to show the exact outlet pressure, which is especially useful for applications requiring this precision.
 - 4.8. 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 lower than smaller, low flow by-pass, CAP2 set points.
 - 4.9. Fully open the downstream isolating valve.
5. For more information about the CAP2 low flow by-pass, please refer to IOM BC-CAP2-P.
6. A pressure relief valve, such as the BERMAD Model BC-73Q-P, is recommended downstream of all pressure reducing valves. Relief valve set points should be 10-15 psi higher than PRV set points.

Control Loop Diagram



PARTS LIST

1, 1A	Inlet Ball Valve, Normally Open
2, 2A	Outlet Ball Valve, Normally Open
3	Cover Ball Valve, Normally Open
4	Control Filter
31	Restriction Orifice (Red Marking)
#2PB/L	Pressure Reducing Pilot
CAP2	Low Flow By-Pass
705	Main Valve

Troubleshooting

Symptom

Valve Fails to Open

Possible Cause

- Insufficient inlet pressure.
- No downstream demand.
- Insufficient pilot #2PB/L spring compression.
- Ball valve 2 or 2A is closed.

Solution

- Check/create inlet pressure.
- Create demand/flow.
- Readjust pilot #2PB/L. See step 4 of the commissioning instructions.
- Open ball valves 2 & 2A.

Valve Fails to Close or Regulate

- Filter 4 plugged/clogged.
- Excessive pilot #2PB/L spring compression.
- Ball valve 1, 1A or 3 is closed.
- Regulated pressure pulsates or hunts.
- Debris trapped in main valve.

- Open filter 4 and clean screen.
- Readjust pilot #2PB/L. See step 4 of the commissioning instructions.
- Open ball valves 1, 1A & 3.
- Bleed air from valve cover. Ensure flow rate is above recommended minimum.
- Remove actuator assy. to inspect seat area/verify valve stroke/remove debris.
- *After closing ball valves 1 & 2, remove small cover plug at valve cover. Continuous flow indicates diaphragm leakage. Inspect, tighten, and/or replace Diaphragm.

***CAUTION:** Valve will be fully open. Close the downstream isolation valve or omit this test if this condition may cause system damage.

- *Diaphragm in main valve leaking or diaphragm assembly loose.