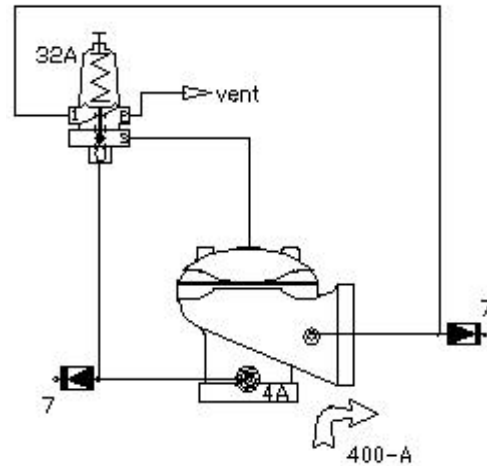


MODEL 420-3W Pressure Reducing Valve—3 way Control Loop

**PARTS LIST**

- 4A. IN-LINE FILTER
- 7 PRESSURE GAUGE CONNECTION
- 32A 3-WAY PILOT-REDUCING CONFIGURATION
- 400-A MAIN VALVE

**DESCRIPTION**

The 420-3W valve maintains a minimum preset downstream pressure regardless of changing demand. Differential pressure operates the valve which utilizes a 3-way pressure reducing pilot to position the main valve to maintain the downstream pressure setpoint.

When downstream pressure is lower than the setting of the pressure reducing pilot, the pilot opens allowing the main valve to open wide and flow. When downstream pressure gradually rises above the setting of the pressure reducing pilot, the pilot positions open to flood upper diaphragm chamber then locks causing the main valve to fix in an area to maintain the desired set point. Should downstream pressure rise above pilot 32A setting, the valve positions open to flood upper diaphragm chamber to get valve to its fixed set point.

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 gate valves be installed upstream and downstream of the Bermad control valve 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. Install the valve horizontally with the cover up for best performance. Make certain the valve is positioned so the cover assembly can be easily removed for future maintenance requirements.
5. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.

IN LINE STATIC TEST**Open Valve Static Test**

1. Create flow demand and take away the control tube from the cover of the main valve.

CAUTION: This will allow the valve to fully open.

Make sure this condition will not cause system damage!

2. Check for leaks at the flange connection, fittings, etc...

Closed Valve Static Test

1. Create flow and unwind top adjusting screw on pilot 32A fully CCW.
2. Bleed air from cover by loosening top cover plug/fitting or loosening control tube at cover fitting.
3. Check the valve cover and diaphragm area for leaks. Tighten fittings and nuts/bolts if necessary.

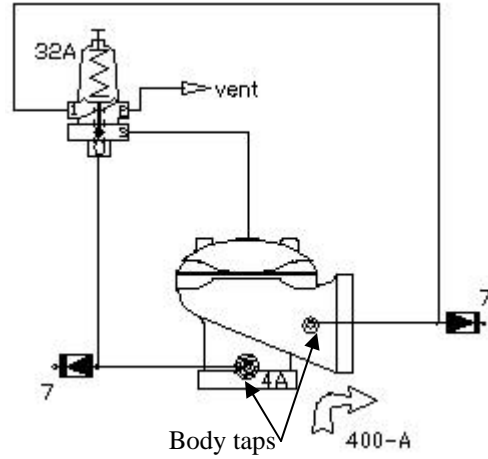
START-UP OPERATION

NOTE: There **must be flow** through the valve and system to check and adjust the valve. Ensure that a downstream demand is created.

1. Turn adjusting screw on reducing pilot 32A out fully counter-clockwise (CCW) until all spring tension is relieved. The main valve will close.
2. Open fully pipeline gate or butterfly valves if applicable. Main valve should still remain closed.
3. Vent trapped air in the main valve cover by loosening a tube fitting or pipe plug on the cover.
4. Slowly turn adjusting screw on reducing pilot 32A (CW) until the valve just begins to open. Continue to slowly turn adjusting screw (CW) until desired setting is reached. Turning the adjustment screw (CW) increases downstream pressure and turning it (CCW) decreases downstream pressure.
5. Verify valve modulation by throttling a downstream gate valve or changing flow demand; the valve should respond accordingly. Tighten locknut after desired pressure setting has been obtained. Check for leaks.

PARTS LIST

- 4A IN-LINE FILTER
- 7 PRESSURE GAUGE CONNECTION
- 32A 3-WAY PILOT-REDUCING CONFIGURATION
- 400-A MAIN VALVE



TROUBLESHOOTING

SYMPTOM

CAUSE

REMEDY

Valve Fails to Open

Insufficient inlet pressure/No downstream demand.

Check/create inlet pressure-10 psi min./Create demand/flow.

Insufficient spring compression on pressure reducing pilot 32A.

Turn adjusting screw on pressure reducing pilot 32A in clockwise.

Debris trapped in main valve/plumbing/pilot body tap conn's.

Remove valve cover and diaphragm to inspect/remove debris/clean plumbing-pilot/body taps.

Valve Fails to Close or Regulate

Debris trapped in main valve/plumbing/pilot body tap conn's./Diaphragm ruptured-torn

Remove valve cover and diaphragm to inspect seat area/remove debris/clean plumbing-pilot/body taps/inspect diaphragm.

Filter 4A plugged.

Remove filter 4A and clean screen.

Regulated pressure pulsates or hunts.

Bleed air from valve cover (See closed Valve Static Test). Ensure flow rate is above recommended minimum.

Excess spring compression on pressure reducing pilot 32A.

Turn adjusting screw on pressure reducing pilot 32A out counter-clockwise CCW.

