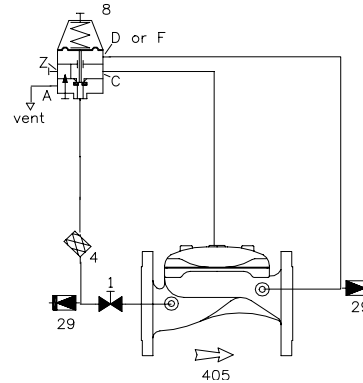


Model 420-X Pressure Reducing Valve—3 WAY



PART LIST

1	Cock Valve
4	Y-Filter
8	3-Way 'X' Press. Reducing Pilot Valve
29	Pressure gauge connection.
405	Main Valve



DESCRIPTION

The 420-X 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 modulate the main valve to maintain the upstream pressure setpoint.

When downstream pressure is lower than the setting of the pressure reducing pilot, the pilot opens allowing the main valve to open and flow. When downstream pressure gradually rises above the setting of the pressure reducing pilot, the pilot closes causing the main valve to throttle to maintain the desired 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. Check for leaks at the flange connection, fittings, etc.

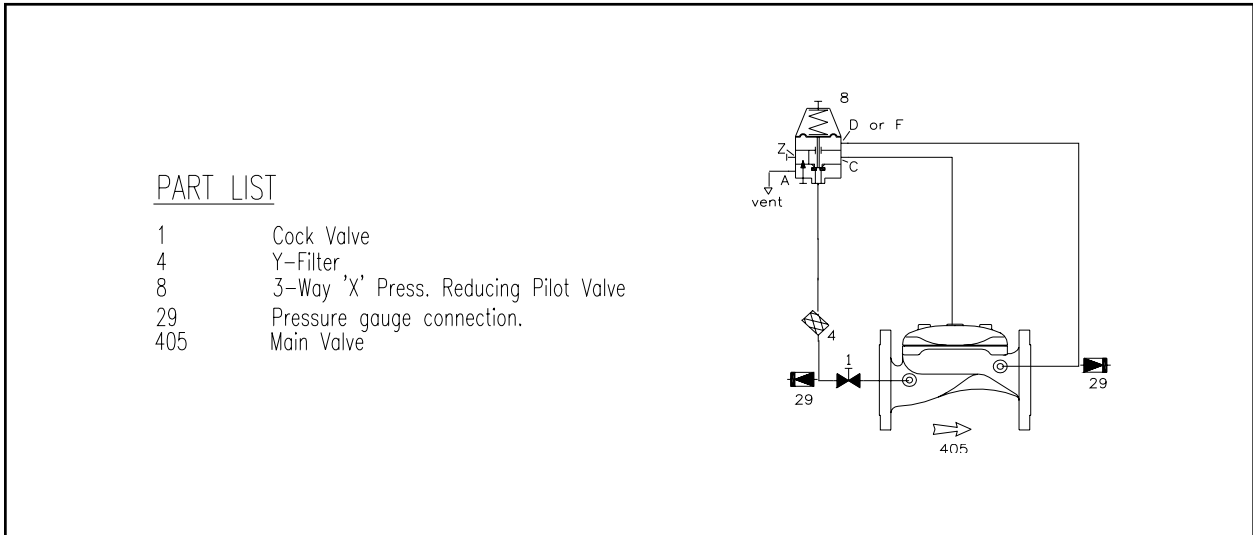
Closed Valve Static Test

1. Bleed air from cover by loosening top cover fitting. Check the valve cover and diaphragm area for leaks. Tighten fittings and 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 8 fully counter-clockwise (CCW) until all spring tension is relieved. 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 8 (CW) until the valve just begins to open. Continue to slowly turn adjusting screw (CW) until desired setting is reached. Tighten locknut.



TROUBLESHOOTING

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>REMEDY</u>
Valve Fails to Open	Insufficient inlet pressure.	Check/create inlet pressure.
	No downstream demand.	Create demand/flow.
	Insufficient spring compression on pressure reducing pilot 8.	Turn adjusting screw on pressure reducing pilot 8 clockwise.
Valve Fails to Close or Regulate	Filter 4 plugged.	Remove filter 4 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.
	Debris trapped in main valve.	Remove valve cover and diaphragm to inspect/ remove debris.
	Diaphragm in main valve leaking.	Replace diaphragm.
	Excess spring compression on pressure reducing pilot 8.	Turn adjusting screw on pressure reducing pilot 8 counter-clockwise CCW.

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