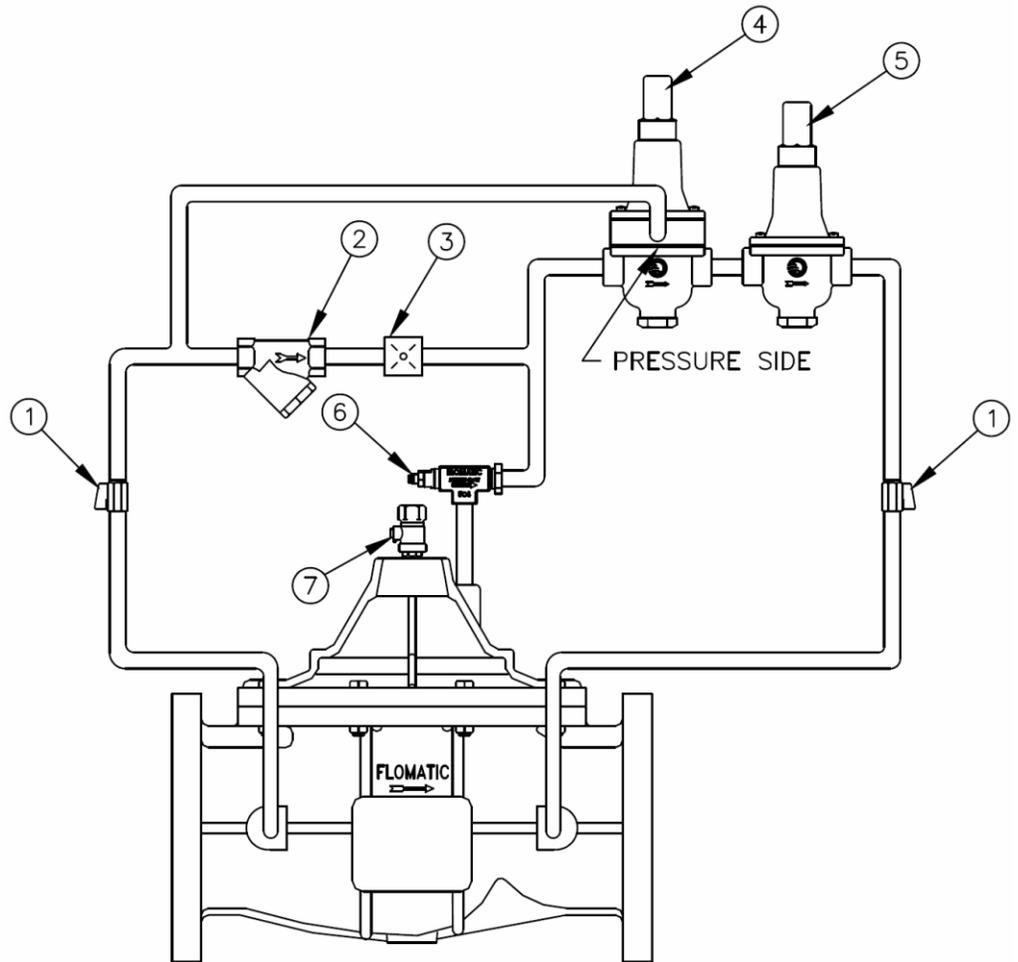


Operation & Maintenance Manual

Place this manual with valve or person responsible for maintenance of the valve

Part List

1. Isolation Valve
2. Y-Strainer
3. Orifice (restriction fitting)
4. Pilot (Model BPP)
5. Pilot (Model PRP)
6. Flow Control (FC4)
7. ¼" Air Bleeder



Model C/CA/CF/CFA104-Pressure Reducing and Back Pressure Sustaining Valve

YOUR PRODUCT INFORMATION:

Model Number: _____

Date: _____

Serial Number: _____

Valve Size: _____

Factory BPP Preset: _____ **psi**

Factory PRP Preset: _____ **psi**

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PRESSURE REDUCING AND BACK PRESSURE SUSTAINING VALVE

The Model C/CA/CF/CFA 104 Pressure Reducing and Back Pressure Sustaining Valve provides downstream pressure reduction and upstream back pressure control. If the upstream pressure drops below the back pressure setting the valve will close.

SHIPMENT:

When shipped, controls are usually mounted on the main valve. If control sub-assemblies are shipped separately, all connections are tagged to insure correct assembly.

INSTALLATION:

1. Flush the pipeline before inserting the valve.
2. **Exercise caution to prevent dirt/debris from entering valve and control piping.**
3. Install the valve with the "arrow" on body pointing in the direction of flow.
4. Attach sub-assemblies to main valve if necessary.
5. Allow enough clearance above valve for removal of diaphragm assembly.

START-UP:

1. Install pressure gauges to inlet and outlet (optional).
2. Open both isolation valves on the control assembly.
3. Open 1/4" air bleeder at the top of the valve.
4. Open main line shut-off valve (usually a gate or butterfly valve) on the outlet side of the main valve about 1/4 open.
5. Slowly open main line shut-off valve on the inlet side.
6. Close 1/4" air bleeder when **all air has been removed** from valve cover.
7. Slowly open the main line shut-off valve on the outlet side the remainder of the way.
8. If the upstream pressure (backpressure) requires adjustment, turn the adjusting screw on the BPP counter-clockwise to decrease or clockwise to increase the backpressure.
9. If the downstream pressure requires adjustment, turn the adjusting screw on the PRP counter clockwise to decrease or clockwise to increase downstream pressure. Fluid must be flowing through valve to make pilot adjustments.

CAUTION: any adjustment should be done slowly.

OPERATION:

The Model C/CA/CF/CFA 104 Pressure Reducing and Back Pressure Sustaining Valve controls and maintains a preset, reduced outlet pressure while sustaining a minimum inlet pressure (backpressure). This is obtained by throttling the main valve diaphragm to maintain a reduced pressure downstream only after the minimum backpressure is achieved. The throttled position of the main valve diaphragm is controlled with the BPP and PRP in conjunction with an orifice (or needle valve).

The BPP senses the inlet pressure and reacts immediately to reposition the diaphragm assembly to obtain the minimum required backpressure. Once the backpressure is satisfied, the PRP will sense the outlet pressure and react immediately to reposition the diaphragm assembly as the outlet pressure tends to increase or decrease with varying flow demand. If the outlet demand causes the inlet pressure to drop below the minimum set point of the BPP the valve will close fully.

The pilot valves will automatically sense changes in the flow of the system as they continually add or remove water from the top of the main valve diaphragm assembly thus causing the main valve to open, close or maintain the desired backpressure and reduced downstream pressures.

TROUBLE SHOOTING GUIDE

Problem: Valve opens and will not close resulting in excessive outlet pressure	
<p>Cause:</p> <ol style="list-style-type: none"> 1. Main valve is air bound. 2. Indicator stuffing box or sight glass is leaking (if equipped). 3. Ruptured diaphragm in pilot valve, evidenced by leak from vent hole in spring chamber. 4. Fouled orifice (or needle valve). 5. Fouled Y-strainer. 6. Damaged pilot valve seat. 7. Ruptured diaphragm in main valve. 8. Sticks or stones lodged under seat of main valve. 9. Worn seat packing and/or seat ring in main valve. 10. Incorrect adjustment of PRP (set too high). 11. Leakage from one or more fittings in the controls. 12. Damaged o-ring stem seal. 	<p>Solution:</p> <ol style="list-style-type: none"> 1. Open ¼" air bleeder located on top cover of valve to release air. Close when all air has been removed and water flows freely. 2. Tighten packing nut or replace packing seals. 3. Replace pilot diaphragm 4. Remove and clean orifice, or open needle valve wide (counter clockwise) to flush seat. Return to original setting after 4 or 5 seconds. 5. Disassemble, clean or replace screen. 6. Disassemble, clean and replace damaged parts. 7. Disassemble and replace diaphragm. 8. Disassemble & remove. Replace damaged parts. 9. Disassemble and replace damaged parts. 10. Turn adjusting screw on PRP counter clockwise slowly until valve resumes control and the desired outlet pressure is obtained. 11. Tighten or replace fitting. 12. Disassemble and replace o-ring.
Problem: Valve is closed and will not open	
<ol style="list-style-type: none"> 1. Backpressure is less than the BPP set point. 2. Incorrect adjustment of BPP (set too high). 3. Incorrect adjustment of PRP (set too low). 4. Needle valve (if installed) open too far. 5. Isolation valve at the outlet side is closed. 6. Fouled pilot valve. 7. Worn or eroded orifice (or needle valve seat). 	<ol style="list-style-type: none"> 1. Wait for system demands to be satisfied. 2. Turn BPP adjusting screw counter-clockwise slowly until the valve opens and the desired backpressure is obtained. 3. Turn PRP adjusting screw clockwise slowly until the valve opens and the desired outlet pressure is obtained. 4. Turn adjusting cap clockwise slowly until valve opens and reduced outlet pressure is observed. Lock in position. 5. Open isolation valve. 6. Disassemble and clean, replace seat ring/packing if necessary. 7. Replace orifice (or needle valve).
Problem: Valve hunts or chatters.	
<ol style="list-style-type: none"> 1. Valve is oversized. 2. Flow control valve (or needle valve at the outlet side) is out of adjustment or may be clogged with debris. 3. Pilot valve seat packing is damaged. 	<ol style="list-style-type: none"> 1. Install a smaller C 104 valve in a bypass around the oversized valve to handle low flows and provide better control. 2. Slowly turn adjusting cap counter clockwise until the outlet pressure becomes steady and/or remove to inspect for debris. 3. Replace seat packing
Test To Isolate Source Of Problem (After visual inspection of external leaks)	
<p>1. With the main line gate valves open and the control valve pressurized, close the control isolation valve at the outlet side of the pilot controls. THE MAIN VALVE SHOULD CLOSE.</p> <p>If the valve remains fully open the source of the problem could be: <i>(A) fouled orifice or needle; (B) fouled Y-strainer; (C) control isolation valve at inlet is closed; (D) ruptured main valve diaphragm.</i></p> <p>If the valve is partially closed the source of the problem could be: <i>(A) damaged main valve seat packing or seat ring; (B) debris under seat; (C) main valve is air-bound; (D) damaged stem O-ring.</i></p> <p>If the valve closes fully, the source of the problem could be: <i>(A) pilot valve(s) out of adjustment; (B) damaged pilot valve stem or seat ring; (C) partially fouled Y-strainer or needle valve.</i></p> <p>2. With the main line gate valves open and the control valve pressurized, close both isolation valves and open the ¼" air bleeder to release water out of the power chamber above the diaphragm of the control valve. Water will flow from the air bleeder as the valve moves to the full open position.</p> <p>If water continues to flow, the source of the problem could be: <i>(A) damaged main valve diaphragm or stem seal O-ring; (B) loose locknut.</i></p>	