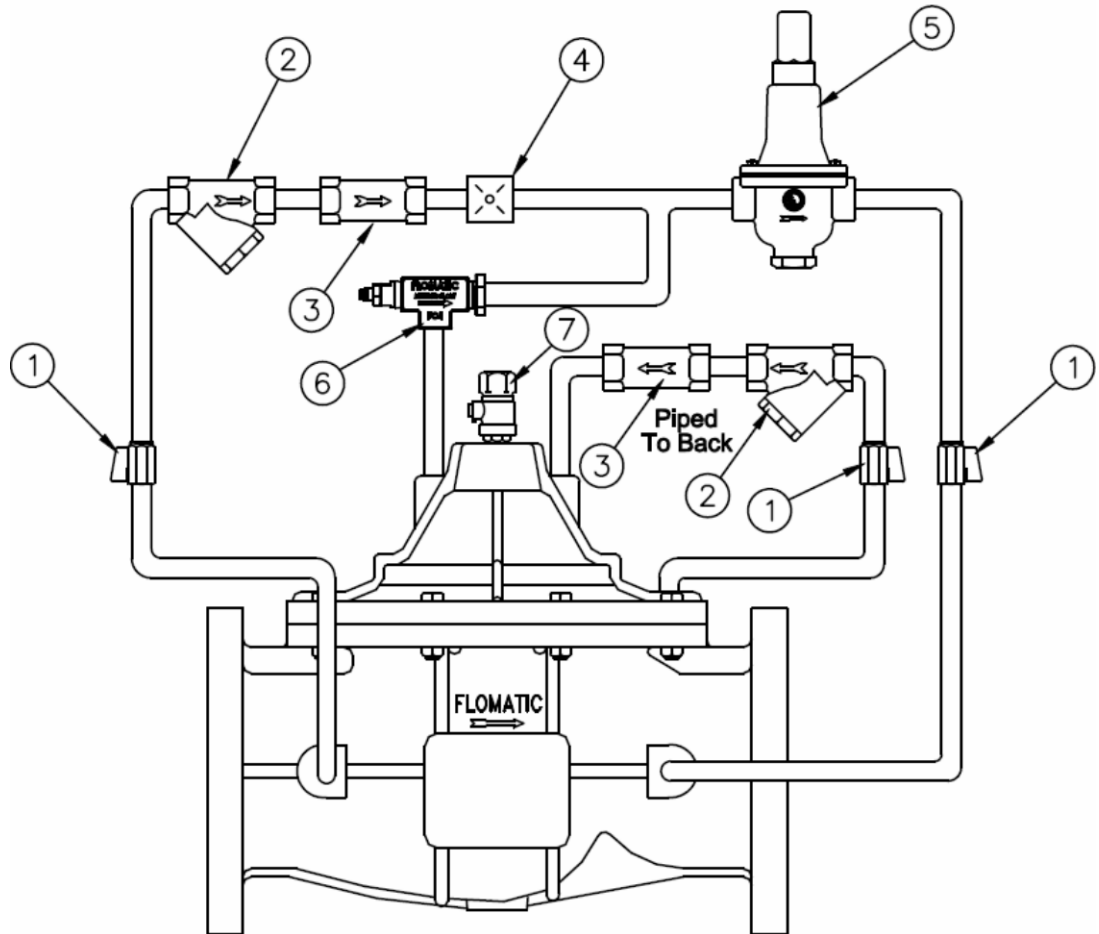


Operation & Maintenance Manual

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

Part List

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



Model C/CA/CF/CFA103-Pressure Reducing with External Check Valve

YOUR PRODUCT INFORMATION:

Model Number: _____

Date: _____

Serial Number: _____

Valve Size: _____

Factory PRP Preset: _____ **psi**

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PRESSURE REDUCING WITH EXTERNAL CHECK VALVE

The Model C/CA/CF/CFA 103 Pressure Reducing with External Check Valve feature maintains a preset constant downstream outlet pressure regardless of variations in the flow rate and/or inlet upstream pressure. The additional external check valve allows the valve to close when the downstream (outlet) pressure is greater than the upstream (inlet) pressure.

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 outlet pressure requires adjustment, turn the adjusting screw of the PRP counter clockwise to decrease downstream pressure 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 103 Pressure Reducing Valve with external check valve feature controls and maintains a preset, reduced downstream (outlet) pressure by causing the main valve diaphragm assembly to throttle and sustain the desired reduced downstream pressure regardless of variations in demand and upstream (inlet) pressure. The throttled position of the main valve diaphragm assembly is controlled by an adjustable PRP operating in conjunction with an orifice (or needle valve).

The PRP senses the downstream (outlet) pressure and reacts immediately to add or remove water from the top of the main valve diaphragm assembly causing a repositioning of the main valve as the outlet pressure tends to increase or decrease with varying flow demand. The PRP diaphragm will automatically sense the changes in the flow of the system as it continuously controls the main valve to throttle or to open and maintain the desired, preset reduced outlet pressure. The throttling action of the main valve provides the required reduced downstream pressure.

The additional external check valve allows the valve to close when the downstream pressure is greater than the upstream pressure. The higher downstream pressure will cause reverse flow into the control valve and pilot piping resulting in flow being directed to the top cover of the main valve diaphragm thus causing the main valve to close.

TROUBLE SHOOTING GUIDE

A. PROBLEM: Valve opens and will not close.	
<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 PRP, 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. Debris 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 PRP 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 and remove debris. Replace any damaged parts. 9. Disassemble and replace damaged parts. 10. Turn PRP adjusting screw 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.
B. PROBLEM: Valve is closed and will not open.	
<ol style="list-style-type: none"> 1. Incorrect adjustment of PRP (set too high). 2. Needle valve (if installed) open too far. 3. Isolation valve at the outlet side of the PRP is closed. 4. Fouled PRP valve. 5. Worn or eroded orifice (or needle valve seat). 6. Downstream pressure exceeds upstream pressure. 	<ol style="list-style-type: none"> 1. Turn PRP adjusting screw counter clockwise slowly until the valve opens and the desired outlet pressure is obtained. 2. Turn adjusting screw clockwise slowly until valve opens and desired outlet pressure is observed. Lock in position. 3. Open isolation valve. 4. Disassemble and clean, replace seat ring and seat seal if necessary. 5. Replace orifice (or needle valve). 6. Wait for system demands to be satisfied.
C. 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. PRP seat packing is damaged. 	<ol style="list-style-type: none"> 1. Install a smaller pressure reducing 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 reducing valve pressurized, close the control isolation valve at the outlet side of the PRP control. 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) PRP out of adjustment; (B) damaged PRP 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 reducing 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 reducing 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>	