Operation & Maintenance Manual

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

Model C1001C/CF1001C-Hydraulic Check Valve

YOUR PRODUCT INFORMATION:
Model Number: ______________________
Date: ______________________
Serial Number: ______________________
Valve Size: ______________________
Check Valve Model: ______________________

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FILE: C1001C
Rev 2
HYDRAULIC CHECK VALVE

The Model C1001C Hydraulic Check Valve opens and closes at controlled, adjustable speeds to provide for smooth piston operation and reduce pressure surges associated with conventional check valves.

When the upstream (inlet) pressure is greater than the downstream (outlet) pressure, the piston moves to the open position at a controlled speed by exhausting control water from above the diaphragm (piston) to the downstream side through an adjustable needle valve.

When the upstream pressure becomes less than the downstream pressure, the piston closes to prevent reverse flow at a controlled speed by introducing control water above the diaphragm from the downstream side through a second needle valve.

Adjustment of the needle valve will provide "slow opening and slow closing," "rapid opening and slow closing" or "slow opening and rapid closing." (If immediate closure is required, a built-in check feature may be included to replace the controlled hydraulic closure.)

Part List

1. Shut-Off Valve
2. Strainer
3. Needle Valve (Closing Speed Control)
4. Needle Valve (Opening Speed Control)
5. Check Valve
6. Finger Strainer

SHIPMENT: When shipped, controls are usually mounted on the main valve. If control subassemblies are shipped separately, all connections are tagged to insure correct assembly.

INSTALLATION:

1. Flush the pipeline before inserting the valve.
2. Install the valve with the "arrow" on body pointing in the direction of flow (usually towards the tank or reservoir).
3. Attach subassemblies to main valve if necessary.
4. Install 1/4" pet cocks at the backside of valve.
5. Allow enough clearance above valve for removal of piston assembly.

START-UP:

1. Install pressure gauges to inlet and outlet.
2. Open both shut-off valves on the control assembly.
3. Open 1/8" air bleeder at the top of the valve. (Re-close after step 4 or step 5.)
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 and observe pressure gauges. When the outlet pressure gauge shows that the downstream pressure is being controlled, this shut-off valve may be opened more rapidly.
6. If the outlet pressure requires adjustment, turn the adjusting screw of the pilot valve counter clockwise to decrease, clockwise to increase. CAUTION: any adjustment should be done slowly.
Information needed to order replacement parts:
Valve Size __________________________
Serial # __________________________
Model # C1001C

Main Valve

Exterior Valve Components

Open Position

1 Shut-Off Valve

2 Strainer

3 & 4 Needle Valve

5 Check Valve

6 Finger Strainer

ITEM | QTY. | DESCRIPTION | MATERIAL
--- | --- | --- | ---
1 | 1 | BODY | DUCTILE IRON
2 | 1 | COVER | DUCTILE IRON
3 | 1 | DIAPHRAGM | NITRILE/NYLON
4 | 1 | DIAPHRAGM PLATE | CAST IRON
5 | 1 | BUSHING | BRONZE
6 | 1 | STEM | STAINLESS STEEL
7 | 1 | SPRING | STAINLESS STEEL
8 | 2 | STEM NUT | STAINLESS STEEL
9 | 1 | SPOOL | CAST IRON
10 | 1 | SEAT SEAL | BUNA-N
11 | 1 | SEAT PLATE | FEDERALLOY
12 | 1 | SEAT RING | FEDERALLOY
13 | 1 | STEM O-RING | BUNA-N
14 | 1 | SEAT RING O-RING | BUNA-N
15 | A/R | BOLT & NUT | STAINLESS STEEL
16 | A/R | WASHER | STAINLESS STEEL
17 | 1 | DRAIN PLUG | STAINLESS STEEL
TROUBLE SHOOTING GUIDE

A. PROBLEM : Valve is open and will not regulate flow.

CAUSE
1. Main valve is air bound.
2. Shut-off (isolation) valve at the outlet side of valve is closed.
3. Damaged or fouled solenoid pilot seat or core tube assembly of solenoid pilot valve.
4. Fouled needle valve.
5. Fouled strainer.
6. Ruptured diaphragm in main valve.
7. Debris lodged under the seat of main valve.
8. Worn seat packing and/or seat ring in main valve.
9. Leaking in plumbing fittings.
10. Damaged O-ring stem seal.
11. Outlet check valve is stuck open.

CORRECTION
1. Open 1/8” air bleeder at the top of valve to release air.
2. Open shut-off valve.
3. Clean or replace solenoid pilot.
4. Open needle valve (counter clockwise) to flush seat, & after 4 or 5 seconds return to original setting, or remove and clean orifice.
5. Disassemble, clean or replace screen.
6. Replace diaphragm.
7. Disassemble, clean and replace damaged parts.
8. Disassemble, clean and replace damaged parts.
9. Tighten or replace fitting.
10. Disassemble and replace O-ring.
11. Replace check valves.

B. PROBLEM: Valve is closed and will not open.

1. Coil of N.C. solenoid pilot is burned out.
2. Fouled solenoid pilot.
3. Pilot is adjusted to low.
4. Needle valve #3 is open wider the needle valve #4

1. Replace coil.
2. Clean or replace solenoid pilot.
3. Adjust pilot.
4. Adjust needle valves.

Test To Isolate Source Of Problem
(After visual inspection of external leaks)

1. With the main line gate valves open and the reducing valve pressurized, close the control shut-off (isolation) valve at the outlet side of the pressure reducing pilot control. THE MAIN VALVE SHOULD CLOSE.

If the valve remains fully open the source of the problem could be:
(A) fouled orifice or needle; (B) fouled strainer; (C) control shut off valve at inlet is closed; (D) ruptured main valve diaphragm.

If the valve is partially closed the source of the problem could be:
(A) damaged: main valve seat packing or seat ring; (B) debris under seat; (C) main valve is air-bound; (D) damaged stem O-ring.

If the valve closes fully, the source of the problem could be:
(A) pilot valve out of adjustment; (B) damaged pilot valve stem or set ring; (C) partially fouled strainer or needle valve.

2. With the main line gate valves open and the reducing valve pressurized, close both shut-off (isolation) valves and open the air bleeder pet cock to release water out of the power chamber above the diaphragm of the reducing valve. Water will flow from the pet cock as the valve moves to the full open position.

If water continues to flow, the source of the problem could be:
(A) damaged: main valve diaphragm or stem seal O-ring; (B) loose locknut.