CRITICAL PROCESS FILTRATION, INC.

Product Instructions

Wetting Instructions

Hydrophilic & Hydrophobic Membrane

Introduction

Integrity testing hydrophilic cartridges or capsules is usually performed using one of the following techniques:

- Forward Flow Air Diffusion
- Bubble Point
- Pressure Decay

All these integrity test processes require the device to be properly wet out with water or another specified test fluid. Improper or incomplete wetting may cause air passage through the membrane, resulting in a false failure.

The most efficient method for wetting with water requires a pressurized water source. This can be from a pressure can, a dedicated pump or a line coming off a recirculation system. Wetting with process fluid is typically carried out in-line but can be taken off-line as well.

Cartridge Installation & Wetting

Cartridge Wetting

1. Install the cartridge in the appropriate housing.
    a. Make sure o-rings are properly seated.
    b. Make sure housing closure is properly sealed.
    c. Make sure all housing connections and valves are properly connected and in good working order.
2. Set up the filter as shown in Figure 1. Make sure all valves are closed.
3. Connect the pressurized fluid source to V1.
4. Set the inlet pressure to 40 psi (2.8 bar).
    a. Note: Lower pressure is acceptable, but the closer to 40 psi the better.
5. Open V2 to allow air to vent from the system as the housing is filled.
6. Gradually open V1 to fill the housing.
    a. Ideally it will take 30 - 60 seconds to fill the housing. Filling the housing too fast may cause air-locking which can result in a failed test.
7. Allow liquid to flow from vent valve V2 until no air is observed.
8. Partially close V2 so that a small stream is coming out the vent valve.
9. Open V1 to fully pressurize the upstream side of the filter for approximately one minute. This will dissolve and vent any residual air from the filter to allow complete wetting.
10. Close V2
11. Gradually open V3.
12. Adjust V3 to achieve the flow rate or pressure drop indicated in Table 1.
    a. If there is a flow meter this should be ~5-6 LPM for a typical 10” cartridge
    b. If no flow meter is available, adjust V3 to maintain a differential pressure of ~ 1 psi (P1 - P2).
13. Continue flowing liquid through the cartridge for a minimum of 5 minutes.
14. Close V1 and allow the upstream pressure (P1) to drop to zero.
    a. Disconnect the pressure source.
15. Open V2, V3 and V4 to vent and drain the housing.
16. The filter is now ready for integrity testing.
    a. Integrity test can be carried out in the housing used for wetting by connecting the integrity test system at either V1 or V2.
    b. Alternatively, the cartridge can be removed from the housing used for wetting and installed in the required integrity test system.

© Critical Process Filtration, Inc.

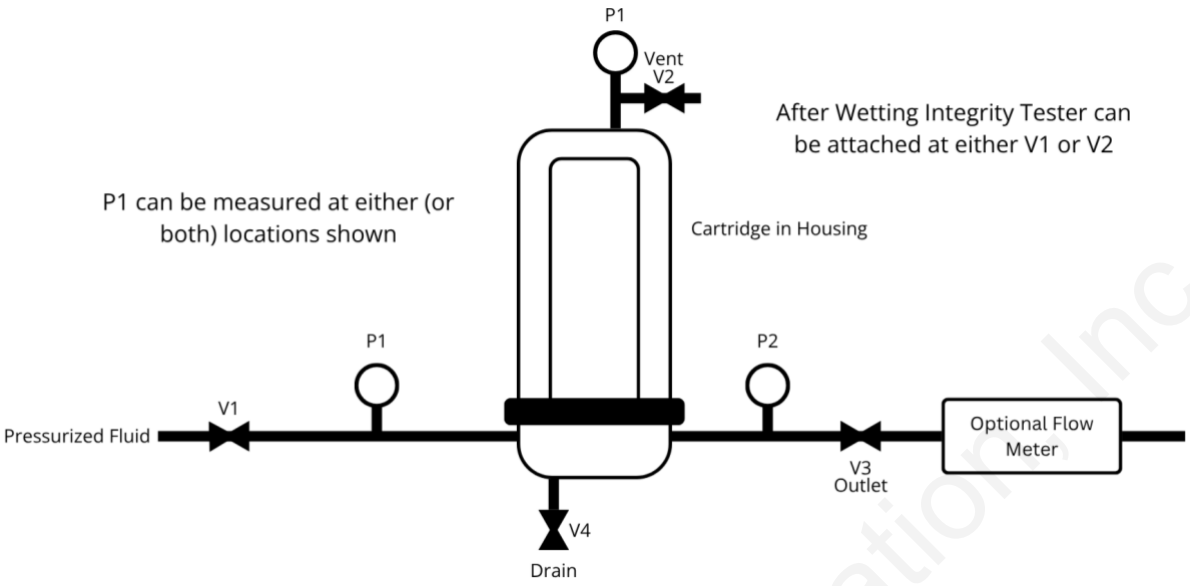

Figure 1: Cartridge Wetting

Capsule Wetting

The steps required to wet out a capsule filter are very similar to cartridge wetting but requires a different set up.

1. Each capsule is labeled with a "Flow Direction" arrow, indicating the direction the fluid must flow through the capsule.
2. Set up the capsule as shown in Figure 2.
    a. Make sure to position the capsule so the Vent port (V) is the highest point of the capsule, and the Drain port (D) is the lowest.
    b. Open the vent (V). If required, the vent can be connected to a piece of tubing to direct the venting fluid to an appropriate receptacle.
    c. NOTE: Depending on capsule configuration the vents will be either a luer cap or a twist valve.
3. Connect the pressurized fluid source (V1) to the Inlet side of the capsule
4. Connect the drain line (V2) to the Outlet side of the capsule.
5. Set the inlet pressure to 40 psi (2.8 bar).
    a. Note: Lower pressure is acceptable, but the closer to 40 psi the better.
6. Gradually open V1 to fill the capsule.
    a. Ideally it will take 30 - 60 seconds to fill the capsule. Filling the capsule too fast may cause air-locking which can result in a failed test.
7. Allow liquid to flow from vent V until no air is observed.
8. After purging the upstream side for 30 - 60 seconds, close the Vent.
9. Open V1 to fully pressurize the upstream side of the filter for approximately one minute. This will dissolve and vent any residual air from the filter to allow complete wetting.
10. Gradually open V2.
11. Adjust V2 to achieve the flow rate or pressure drop indicated in Table 1.
    a. If there is a flow meter this should be ~5-6 LPM for a typical 10" cartridge
    b. If no flow meter is available, adjust V3 to maintain a differential pressure of ~ 1 psi (P1 - P2).
12. Continue flowing liquid through the capsule for a minimum of 5 minutes.
13. Gradually open V2 to achieve a pressure drop of ~5 psi (P1 - P2).
14. Continue flow of wetting fluid for an additional 2 minutes.

© Critical Process Filtration, Inc.

15. Close V1 and allow the upstream pressure (P1) to drop to zero.
16. Open V2 and Drain D port to drain the capsule.
17. The capsule is now ready for integrity testing.

a. Integrity test can be carried out by attaching the appropriate integrity test apparatus to the inlet side of the capsule at V1.

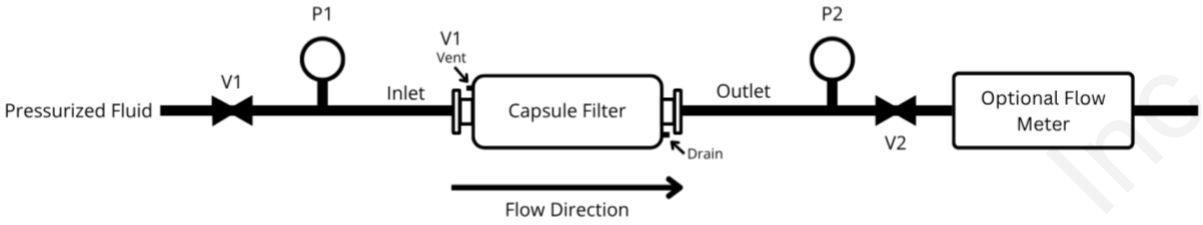

Figure 2: Capsule Wetting

Table 1: Recommended Flow Rates and Flush Volumes for Water Wetting

Filter Length *Inches (cm)*	Minimum Flow Rate *LPM (GPM)*	Max Pressure Drop without Flow Meter PSI	Minimum Flush Volume *Liters (gallons)*
Microcapsule	0.5 (0.13)	1	2.5 (0.7)
2 (5.1)	1 (0.25)	1	5 (1.3)
5 (12.7)	2.5 (0.7)	1	12.5 (3.3)
10 (25.4)	5 (1.3)	1	25 (6.6)
20 (50.8)	10 (2.6)	1	50 (13.2)
30 (76.2)	15 (3.9)	1	75 (19.8)
40 (101.6)	20 (5.2)	1	100 (26.4)

© Critical Process Filtration, Inc.

CRITICAL PROCESS FILTRATION, INC.
One Chestnut Street
Nashua, NH 03060
603.880.4420
FAX: 603.880.4536
CriticalProcess.com

The information contained herein is subject to change without notice. The Critical Process Filtration logo is a trademark of Critical Process Filtration, Inc. Viton is a trademark of DuPont Performance Elastomers L.L.C.
© 2025 Critical Process Filtration, Inc. • All Rights Reserved