



INSTALLATION PROCEDURE
WETTING PROCEDURE
INTEGRITY TEST GUIDE
BUBBLE POINT
DIFFUSIVE FLOW



PROFLOW™ II CARTRIDGES

PLEATED PTFE MEMBRANE WITH
POLYPROPYLENE SUPPORTS & STRUCTURE

PRODUCT LINES

Pharmaceutical LBR (Liquid Bacterial Retentive)

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1. INSTALLATION PROCEDURE

O-RING CARTRIDGES

1. Wipe the plastic bag clean and cut it open at the end nearest the O-Rings.
2. Lubricate the O-rings and housing bore with service fluid or other appropriate liquid (e.g., Alcohol)
3. Insert the O-Ring fitting into the housing bore with a slight twisting motion (Leave the bag on the cartridge for protection and grasp the filter as near as possible to the O-ring fitting.)

Caution: *Excessive twisting of or pushing on the pleated section of the filter cartridge may cause damage.*

4. Once the filter is seated in the housing bore, gently rotate the cartridge a few degrees in either direction to relax the O-rings.
5. Remove the plastic bag from the cartridge and reassemble the housing.

2. WETTING PROCEDURE

CAUTION: *Wetting is a required procedure for certain filtration applications. See Below.*

GENERAL INFORMATION

Proflow II filter elements contain a PTFE membrane. This material is hydrophobic; it resists penetration by water, aqueous (water based) liquids, and other liquids with high surface tensions (greater than 24dyne/cm). For filtration service in these fluids, the membrane must first be saturated, or wetted, with a low surface-tension liquid. Because a liquid displacing another liquid involves little or no resistance due to surface tension, the pressure required to initiate flow in a wetted filter element is much less than that for an unwetted element.

The membrane should be protected from exposure to gas while in liquid service, since this would de-wet the exposed area, thus reducing the effective filtration area, increasing the filter pressure drop, and shortening the filter life expectancy. To help prevent this the filter housing should be properly vented during filling and before operating the system.

WETTING PROCEDURE*

There are two methods for preparing a wetted element for service. The method to use is determined by the permitted amount of wetting liquid in the service system. The wetting liquid should have a surface tension less than 24 dyne/cm. It should also be chemically compatible with the filter element material(s), the filtrate fluid, and the service system. Isopropyl alcohol (IPA) is a common wetting agent: electronics-grade IPA is a purer grade. IPA is used as an example in the following procedures.

** Non-aqueous service may indicate modification of the procedure for fluids with other surface tensions. Contact Parker at bwf.oxn.support@support.parker.com for more information.*

METHOD 1:

OPEN-CONTAINER WETTING

(Greater System Exposure to IPA)

Place the element, with the open end up, in a clean container (such as a filter housing bowl). Add IPA until the filtration area (containing membrane) is submerged. Do not fill the center tube with IPA. Allow the membrane to wet from the outside to the inside. Agitate the element briefly. After ten (10) minutes, remove it, let excess fluid drain off, and install it in the filter housing. Flush with 25 gallons (95 liters) of service fluid (per 10" equivalent) at 2 gpm (7.6lpm) [*1gpm (3.8lpm) per five-inch (13-cm) filter*].

METHOD 2:

REMOTE-SITE WETTING

(Lesser System Exposure to IPA)

NOTE: *Requires a separate system that can alternately flow IPA and water through the element.*



Install the element in the filter housing of the flushing system. Seal the housing, and flush it with 2 gallons (7.6liters) of IPA (per 10" equivalent) at 1gpm (3.8lpm) [0.5gpm (1.9lpm) per five-inch (13-cm) filter]. Next, flush the element with 25 gallons (95liters) of water (per 10" equivalent) at 2gpm (7.6lpm) [1gpm (3.8lpm) per five-inch (13-cm) filter]. Remove the cartridge and transport it to the site of the filter use.

If the element will be transported through uncontrolled (contaminated) areas, or will not be quickly installed in the service system, it is recommended to transport it in a clean, sealed container.

Install the element in the housing and seal. Fill the housing, while venting if permissible, and flow 25 gallons (95 liters) of service liquid (per 10" equivalent) through the element at 2gpm (7.6lpm) [1gpm (3.8lpm) per five-inch (13-cm) filter].

3. INTEGRITY TEST GUIDE

NOTE: *Bubble Point values reported here apply to filter cartridges wetted with a mixture of 60% SEMI-grade isopropyl alcohol (IPA) and 40% DI Water. It is also acceptable to use another compatible liquid (with surface tension less than 24dyne/cm) but the Bubble Point values must be corrected for surface tension differences.*

A. BUBBLE POINT TEST

1. Install the Proflow II cartridge into the housing.
2. Open the vent valve and fill the housing with wetting fluid until liquid exits from the vent.
3. Wet the filter as described in the Wetting Procedure (See Section 2).
4. Drain the housing (upstream and down-stream of the filter cartridge).
5. Connect the housing inlet to a regulated (0-100psig) source of clean, compressed gas and connect the housing outlet to a tube extending into a collection vessel (e.g. beaker) partially filled with liquid.
6. Pressurize the filter assembly to 3psig and hold at this pressure for 30 seconds to displace any residual wetting solution.
7. Increase gas pressure slowly (3psi/min) while observing for bubbles in collection vessel.
8. Report the Bubble Point as the pressure at which a surge of bubbles appears from the tube in the collection vessel.
9. Acceptable minimum Bubble Point values (in 60% IPA/40% DI Water) are:

FILTER RATING	MINIMUM BUBBLE POINT	
	psig	bar
(µm)		
0.2	21	1.4

***NOTE:** When using a wetting fluid having a surface tension different from that of 60% IPA /40% DI Water, *please contact Parker at bwf.oxn.support@support.parker.com.*

B. DIFFUSIVE FLOW TEST

1. Install the filter cartridge into the housing using the procedure described in this guide.
2. Open the vent valve and fill the housing with wetting fluid (e.g., 60% SEMI-grade isopropyl alcohol, 40% DI Water) until liquid exits from the vent.
3. Wet the filter as described in the Wetting Procedure (See Section 2).
4. Drain the housing (upstream and down-stream of the filter cartridge).
5. Connect the housing inlet to a regulated (0-100psig) source of clean, compressed air.
6. Pressurize the filter assembly to 3psig and hold at this pressure for 30 seconds to displace any residual wetting solution. Leave the downstream valve open when running this test.
7. Connect the housing outlet to a mass flow meter or other apparatus suitable for measuring gas flow rates (e.g., liquid-filled inverted graduated cylinder or sidearm buret).



8. Pressurize the filter assembly to the test pressure value listed in Table 2 below.
9. Measure the flow rate (cc/min) of diffusing gas after flow has equilibrated for a few minutes.
10. The maximum acceptable Diffusive Flow rates for Proflow II cartridges wetted with 60/40 IPA/DI water solution and tested using air are:

Table 2. Maximum Diffusive Flow Limits:

FILTER RATING	TEST PRESSURE		MAXIMUM DIFFUSIVE FLOW
	psig	bar	
(μm)			cc/min
10-inch (25-cm) Cartridges			
0.2	17	1.2	25
5-inch (13-cm) Cartridges			
0.2	17	1.2	15

**NOTE: Most integrity test failures are due to incomplete wetting of the filter cartridge rather than a defect in the filter membrane itself. Therefore, if a failure occurs, re-wet the cartridge and repeat the test.*

C. PRESSURE HOLD TEST

1. Install the filter cartridge into the housing using the procedure described within this guide.
2. Open the vent valve and fill the housing with wetting fluid until liquid exits from the vent.
3. Wet the filter as described in the Wetting Procedure (See Section 2).
4. Drain the housing (upstream and down-stream of the filter cartridge).
5. Connect the housing inlet to a regulated (0-100psig) source of clean, com-pressed air.
6. Pressurize the filter assembly to 3psig and hold at this pressure for 30 seconds to displace any residual wetting solution. Leave the downstream valve open when running this test.
7. Pressurize the filter assembly to the test pressure value listed in Table 2 above, and after the system has equilibrated, isolate it by shutting off the pressure supply line.
8. Record the decay in pressure on the upstream side of the filter cartridge over an interval of 5 minutes.
9. The maximum acceptable pressure decay rate depends on the upstream volume of the test housing, the length of the cartridge tested, and the type of test gas and wetting liquid used. Please contact Parker Hannifin or one of its authorized distributors for the theoretical maximum acceptable pressure decay rate for a specific Proflow II cartridge.

**NOTE: Most integrity test failures are due to incomplete wetting of the filter cartridge rather than a defect in the filter membrane itself. Therefore, if a failure occurs, re-wet the cartridge and repeat the test.*

