

# Capsule Filters

## Operating & Installation Guide

**Note: Consult the product data sheet for your filter model to find operating limits and other information to assure the safe use of the capsule filters.**

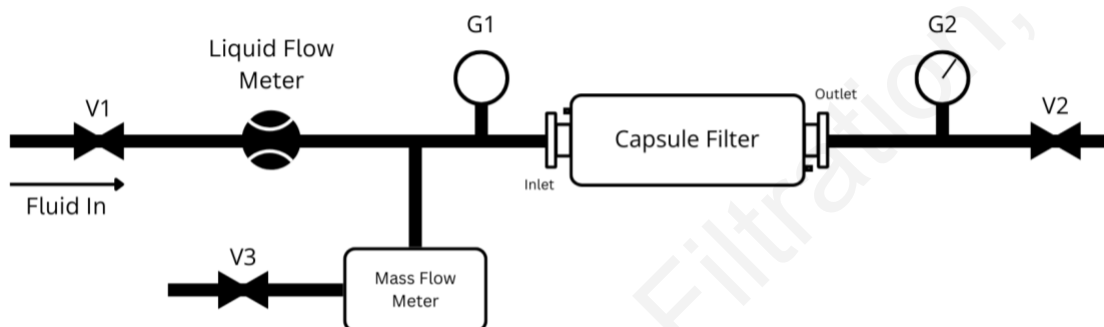


Figure 1: Single Capsule Filter Installation

## Preface

Capsule filters are self-contained, disposable units that do not require any additional housings. The units may be installed and operated using the steps below.

Critical Process Filtration Capsule Filters should be installed in a system similar to that shown in the figure above with the valves and pressure gauges in place. If the capsule is to be integrity tested using the diffusive flow method, then the mass flow meter portion of the system in the figure above should also be installed.

Alternate procedures for integrity testing capsule filters as well as procedures for autoclave and chemical sanitization are available as separate documents from Critical Process Filtration.

## Initial Installation of a Capsule Filter

1. Each capsule is labelled with a “flow direction” arrow. This arrow indicates the direction of fluid flow through the capsule, from inlet to outlet.
2. Open the bag containing the new capsule filter and carefully remove the capsule filter. DO NOT TOUCH THE FLUID CONTACT PORTIONS OF THE INLET OR OUTLET FITTINGS WITH BARE HANDS OR FINGERS (to avoid potential contamination).
3. Connect the inlet of the filter to the fluid supply line.
4. Connect the outlet of the filter to the outlet line. (The outlet may be open to atmosphere or drain. If so, assure that process fluid is contained as it exits the capsule.)
5. Position the capsule so that the vent port is the “high point” of the capsule, and remove the Luer cap. (The vent can be connected to a piece of tubing, valve, or left open to the atmosphere.)

## Replacing a Capsule Filter

1. Shut off flow by first closing valve V1 and making sure that valves V2 and V3 are also closed. Then close all other valves open during operation. (CAUTION: Do not open the capsule vent ports or disconnect the capsule inlet or outlet until pressure gauges G1 and G2 both show "0" pressure.)
2. Open Vent and Drain ports on the capsule to relieve pressure and empty the filter of liquid. WARNING: The fluid pressure must be relieved before the capsule is disconnected. Disconnecting the capsule before pressure is relieved may result in serious injury
3. Remove the old capsule filter.
4. Open the bag containing the new capsule filter and carefully remove the capsule filter. DO NOT TOUCH THE FLUID CONTACT PORTIONS OF THE INLET OR OUTLET FITTINGS WITH BARE HANDS OR FINGERS (to avoid potential contamination).
5. Each capsule is labelled with a "flow direction" sticker. This sticker indicates the direction of fluid flow through the capsule, from inlet to outlet.
6. Connect the inlet of the filter to the fluid supply line.
7. Connect the outlet of the filter to the outlet line. (The outlet may be open to atmosphere or drain. If so, assure that process fluid is contained as it exits the capsule.)
8. Position the capsule so that the vent port on the inlet side of the capsule is the "high point" of the capsule. (The vent can be connected to a piece of tubing, valve, or left open to the atmosphere.)
2. Open valve V2 then slowly open valve V1 to begin flow of process fluid at a slow, controlled rate. When fluid appears at the vent, shut off the fluid flow, and replace vent the Luer cap tightly.
3. Visually inspect the capsule to ensure it is full of process fluid. If any air bubbles can be seen inside the capsule, repeat steps 1 and 2.
4. Slowly ramp up process flow to the desired flow rate, and observe the capsule inlet, outlet, and vent caps for any sign of leaks. If any leaks are observed, stop the fluid flow, and tighten connections before restarting flow.
5. When filtration is complete, the fluid pressure must be relieved before the capsule is disconnected. Disconnecting the capsule before pressure is relieved may result in serious injury.

### Safety Warnings

Serious injury may occur if process conditions exceed the maximum operating conditions. DO NOT EXCEED the maximum operating conditions (pressure and temperature) stated on the capsule filter label.

Users must review the chemical compatibility of the process fluid with capsule materials of construction.

DO NOT in-line steam sterilize CPF Capsule filters.

## Operating a Capsule Filter

1. Remove the Luer cap on the capsule vent port on the inlet side of the filter. (NOTE: Venting the capsule might not be necessary in gas filtration applications. In applications that do not require venting, proceed to step 4.)



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