

which eliminates the need for all but a single vent. Thus, wetting simply involves connecting a water supply to F-1 and fill the housing, venting out the top, closing the vent, and unclamping F-3 and flowing to drain.

The configuration shown in FIG. 10 also eliminates the need, during draining, to connect an air supply to the vent filter between F-1 and F-2 to drain F-2 since the air upstream of F-1 can freely pass through the barrier filter to F-2. Thus, draining simply requires connecting an air supply to F-1 upstream of F-2 to drain F-1.

The configuration shown in FIG. 10 also eliminates the need, during integrity testing, to isolate F-1 from F-2 and the vent filter, to attach an integrity tester to the vent filter and test F-2, and to isolate F-2 from F-1 and the vent filter since the barrier filter in F-1 is transparent to a typical bubble point or diffusion integrity tester. Thus, integrity testing simply requires attaching the integrity tester to F-1 and testing F-2.

The configuration shown in FIG. 10 also eliminates the need, during drying, to isolate F-1 from F-2 and the vent filter, and to attach an air supply to the vent filter and exhaust F-2 through F-3. Thus, drying simply requires attaching an air supply to F-1 and exhausting through the vent filter (F-3).

FIG. 11 shows a configuration wherein two devices are combined into one, and an integrated hydrophobic vent is added to the top of the filter chamber of F-1 to eliminate the vent bag. The fluid enters the inlet and flows through a hydrophilic process membrane F-1 in the first stage, then passes to the upstream side of the second stage where it is filtered through the hydrophilic portion of the process membrane F-2 (the barrier filter). The first chamber or