Seasonal Shutdown 1.1

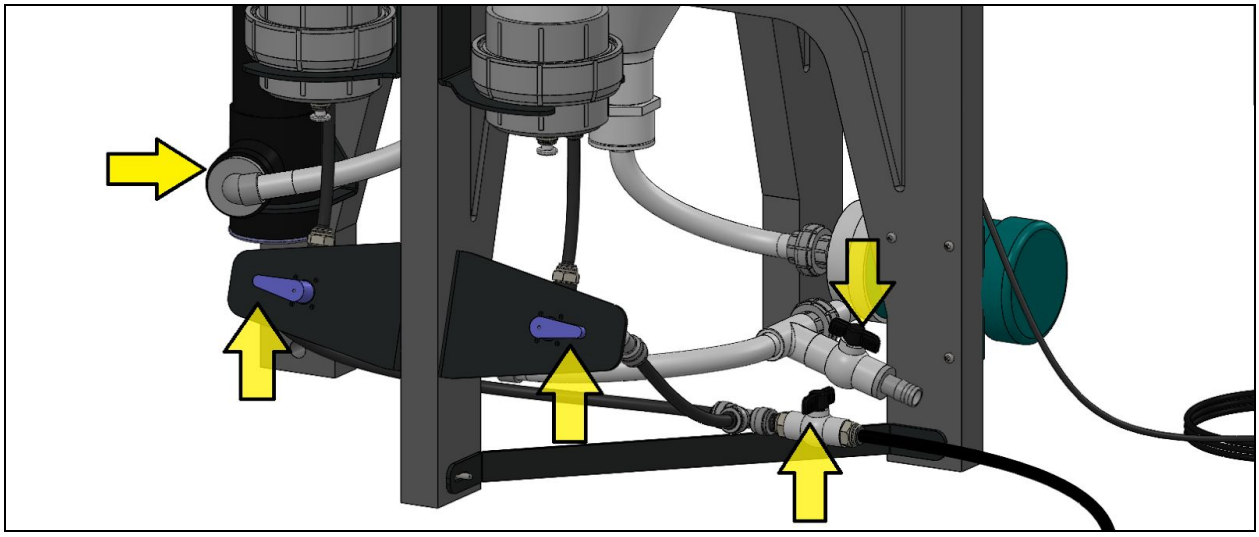
The Bioreactors are built to be low maintenance, but a few components require special attention before storage.

Header and Ultrafilter

Most importantly, the Ultrafilter membranes must **never** be allowed to completely dry out.

Find the most up-to date storage instructions in Client Resources and refer to “Ultrafilter Installation, Cleaning and Storage”

The header should be rinsed with freshwater and drained to prevent bacterial growth. Open the bottom drain and loosen the lower fitting on the UV to allow water to leave the system. Ensure the Ultrafilters maintain their storage solution in them.



Filters

With the exception of the Ultrafilter, all PBR filters should be rinsed with freshwater, drained and allowed to dry to prevent bacteria from proliferating on the membrane surfaces. After rinsing, re-install the Filters on the PBR to keep the tank generally clean while not in use.

Acrylic Tank

Complete a standard biofilm removal routine followed by a freshwater rinse to ensure biofilm has been effectively removed prior to shut-down. Any biofilm present will continue to dry and become much harder to remove later.

Drain the PBR completely and take off the bottom harvest tubing to allow for full draining. Reassemble filters and tubing, with the Spray Pump connected to the Manifold and the bottom drain open.

Control System

In humid, hot or variable temperature environments it is important to prevent condensation and corrosion inside the control system. Open the control box and use masking tape to seal off the fan inlet and outlet and place a 5000 in^2 silica gel packet inside the control box and seal it by closing and tightening the screws. Ensure to remove tape and silica prior to powering up for the next culture.

pH probes

The pH probes expire over time, though they should last six months to one year. keep it in a storage solution to keep it functional. If pH storage solution isn't available, water or a pH 4 or 7 buffer may be used. **Do not** allow the pH probe to dry out and do not store in deionized water.

Chiller System

If there is any chance of temperature going below freezing the chiller system should be drained completely. The chiller will need to be carefully tipped over to drain the inside. If the water inside the Chiller, Cistern, or Chiller Pump freezes it will irreparably damage these components.

Peristaltic Pumps

Over time peristaltic pump tubing will collapse if left in the peristaltic pumps. Remove nutrient and harvest peristaltic pump tubing when the PBR will not be used.