

Technical Service Bulletin

JANUARY 2019 TSB131.12

HYDRAcap® Storage Procedure

This Technical Service Bulletin provides information required to store HYDRAcap® Ultrafiltration modules or elements under the following circumstances:

1. Storage of HYDRAcap® modules/elements as spares.
2. Storage of HYDRAcap® modules/elements in-situ after they have been placed in service.

Introduction

For the purpose of this TSB, the term “module” refers to products comprised of an outer shell, in which multibore membranes are fixed at the ends, as well as, end caps, clamps, and product end adapters. The term “element”, denoted by an ‘E’ at the end of the product name, refers to products comprised only of an outer shell, in which multibore membranes are fixed at the ends. Elements are normally operated inside of a pressure vessel.

All modules are subjected to wet tests to check integrity before they leave the factory. In order to avoid membrane from drying out and avoid bacteria growth during transportation and storage, HYDRAcap® modules/elements are saturated with a non-hazardous solution consisting of: (Water/glycerin/propylene glycol [72:10:18:wt%]).

Storage as Spares

New HYDRAcap® modules/elements can be safely stored for up to 12 months in the original solution.

1. The modules/elements should be stored horizontally and with filtrate ports facing up.
2. The modules/elements should be protected from direct sunlight and stored in a cool, dry place with moderately ventilated conditions.
3. Modules should be stored in a temperature controlled environment between -20C and 40C during storage and transportation in order to ensure it does not impact the modules functionality and performance.
4. If the solution needs to be changed, follow the procedure below:
 - 4.1. For HYDRAcap® modules that will be stored horizontally:
 - A. Remove the plastic caps on all three side ports.



Figure 1: Photo of original plugs and end caps.

- B. Drain approximately 1 Liter of old preservative from the module.
- C. Through the concentrate port of the module, introduce either water/glycerin/propylene glycol [72:10:18:wt%] or water/glycerin/sodium bisulfite [74.25:25:0.75 wt%]. Use RO or demineralized water when possible to make up the solutions.
 - i. HYDRAcap®60 - 1500 ± 50 ml of solution.
 - ii. HYDRAcap®40 - 1000 ± 50 ml of solution.

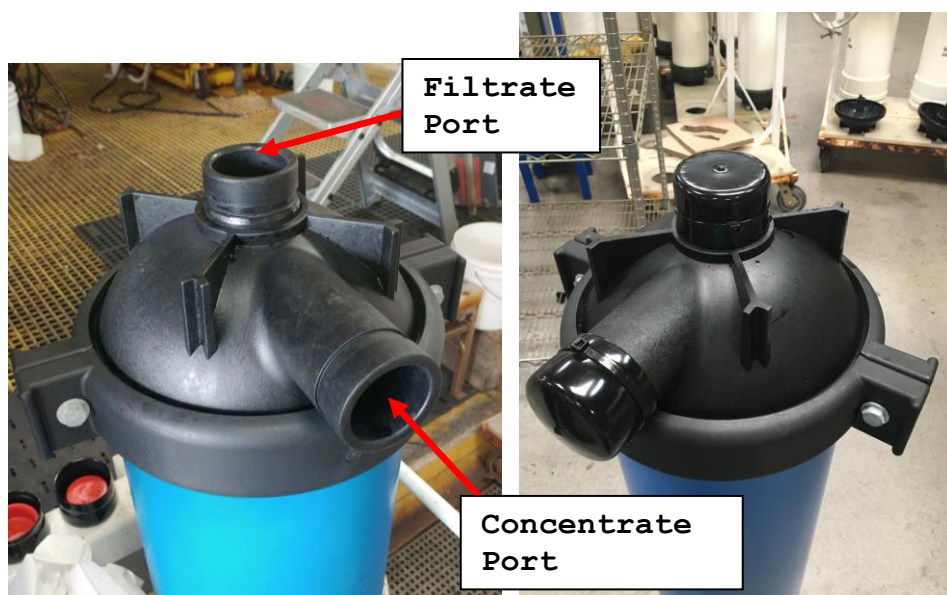


Figure 2: Module standing on end showing port locations.

- D. Replace caps onto all three ports to maintain cleanliness, prevent evaporation of solution. Secure the caps in place with zipties.
- E. For storage, place the modules horizontally with the feed ports facing up.

4.2. For HYDRAcap® elements:

- A. Open the vacuum sealed bag.
- B. Drain 1 Liter of old preservative from the element and bag.
- C. With the element standing on one end introduce either (water/glycerin/propylene glycol [72:10:18:wt%] or water/glycerin/sodium bisulfite [74.25:25:0.75 wt%]. Use R.O or demineralized water when possible to make up the solutions.
 - i. HYDRAcap®60 - 1500 ± 50 ml of solution.
 - ii. HYDRAcap®40 - 1000 ± 50 ml of solution.



Figure 3: Module standing on end showing where to pour solution.

- D. Plug the elements with the cap shown in figure 3 and reseal vacuum sealed bag to maintain cleanliness, prevent evaporation of any solution.
- E. For storage, place the modules horizontally.

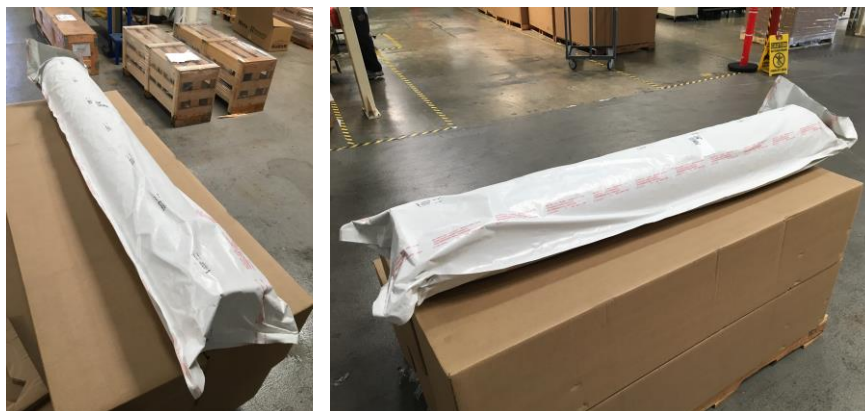


Figure 3: Element Sealed in a chemical resistant vacuum bag.

Storage in-situ

Observe the following guidelines for different downtime conditions and durations:

- 1) If modules will be subject to a 24 hours or less downtime:
 - a. Run a system backwash of at least 60 seconds.
 - b. No further action is required.
 - 2) If modules will be subject to a 24 hour to 7 day day downtime:
 - a. Daily filtration must be performed at a flux rate of 50LMH (29GFD) for at least 10 min.
 - b. Complete CEB must be performed once per day for disinfecting purposes. This will require injecting NaOCl and soaking for 30 min.
 - c. Verify concentration of free chlorine in the discharged rinse water at the end of each soak should not exceed 10mg/L and does not fall below 1mg/L.
 - 3) If modules will be subject to a 7 day or more downtime:
 - a. Perform a chemical cleaning to remove any organic or inorganic contaminants from the membranes.
 - b. Hydranautics recommends to use the backwash or CIP system to introduce the preservative chemical solution. Inject either 0.75% sodium bisulphite or 10% calcium chloride solution into the modules/elements in both top and bottom backwash modes. The water used for the chemical makeup solution should be UF filtrate quality or better.
 - c. The preservative solution should be left in the module/rack and replaced every 4 weeks. If 10% CaCl₂ is used, solution can be replaced every 90 days with a periodic check to ensure conditions have not changed.
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1. To store used HYDRAcap[®] modules that will be stored horizontally:
 - A. Remove modules from the rack and follow guidelines of storage as spares
 2. For HYDRAcap[®] elements:
 - A. Remove the module(s) from the pressure vessel and follow guidelines of storage and spares

Notes:

- Whichever of the above situations applies, the modules should be kept hydraulically filled with liquid. The membranes must be kept free of any oxidizing agents during system shutdowns.
- If you wish to use any other disinfectants, please contact Hydranautics beforehand. It is essential to obtain prior written agreement and approval from Hydranautics regarding the chemicals and concentrations that are permitted for use.

Hydranautics
401 Jones Rd.
Oceanside, CA 92058
Tel: (760) 901-2500
Fax: (760) 901-2578
email: info@hy-nitto.com