

Technical Service Bulletin

October 2013 TSB332.03

HYDRAcap[®] MAX Module Installation Instructions

This Technical Service Bulletin provides information required to install HYDRAcap[®] MAX modules and to provide an example support rack assembly.

General Guidelines and Rack Design

The following rules are applicable to installing the HYDRAcap[®] MAX:

1. The modules can ONLY be installed vertically with the concentrate connection at the top (see figure 1).

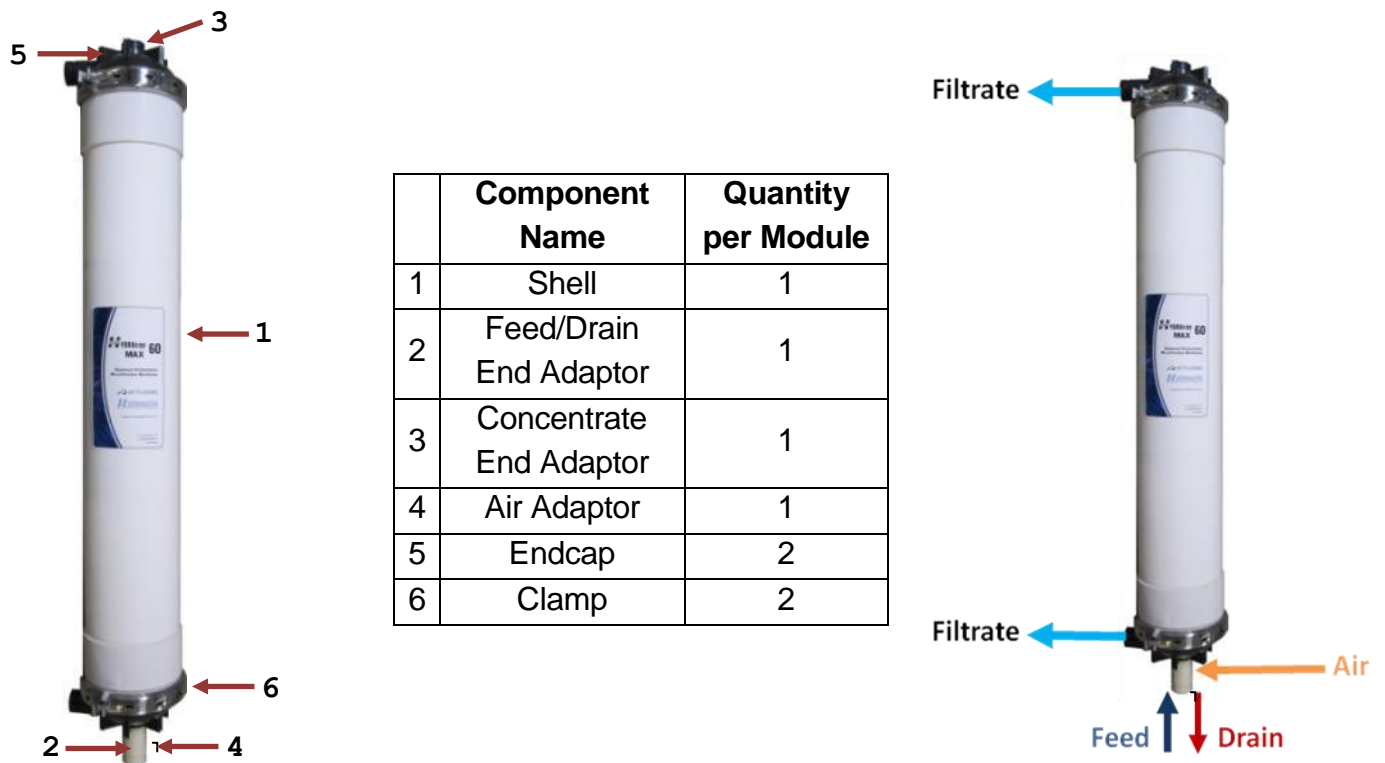


Figure 1: Module Components and Port Configuration

2. Feed water should enter the bottom of the module through the feed end adaptor.

3. The rack structure must be capable of supporting the weight of the HYDRAcap[®] MAX modules as follows:

Module	Shipping Weight	Wet Weight (Maximum)
HYDRAcap [®] MAX 40	41 kg (90 lbs)	73 kg (161 lbs)
HYDRAcap [®] MAX 60	52 kg (115 lbs)	100 kg (220 lbs)
HYDRAcap [®] MAX 80	62 kg (135 lbs)	118 kg (260 lbs)

4. A suggested rack design is shown below in Figure 2. Hydranautics suggests double Victaulic flexible joints to connect all four ports of each module to the rack piping for the following reasons:
- The thermal expansion coefficient of PVC is 50.4×10^{-6} m/m K (28×10^{-6} in/in °F), while ABS is 73.8×10^{-6} m/m K (41×10^{-6} in/in °F). The coefficients indicate that the change in volume caused by the change in temperature for these two components are similar. As a result, a HYDRAcap[®] MAX module can expand approximately 4 mm (0.16") over a temperature range of 21°C (70°F). A double Victaulic connection can accommodate this deviation.
 - The rack headers have certain tolerance on the side port angles.
 - A 3" spool piece with 2 Victaulic connections allows a port-to-port tolerance of 7 mm and can handle alignment angle issues.
5. The modules should be placed on a plate with cut out hole for where the feed end adaptor may fit into. A example of such a plate is shown in Figure 3. It is recommended to have at least one strap and one saddle to hold the modules to the support structure.

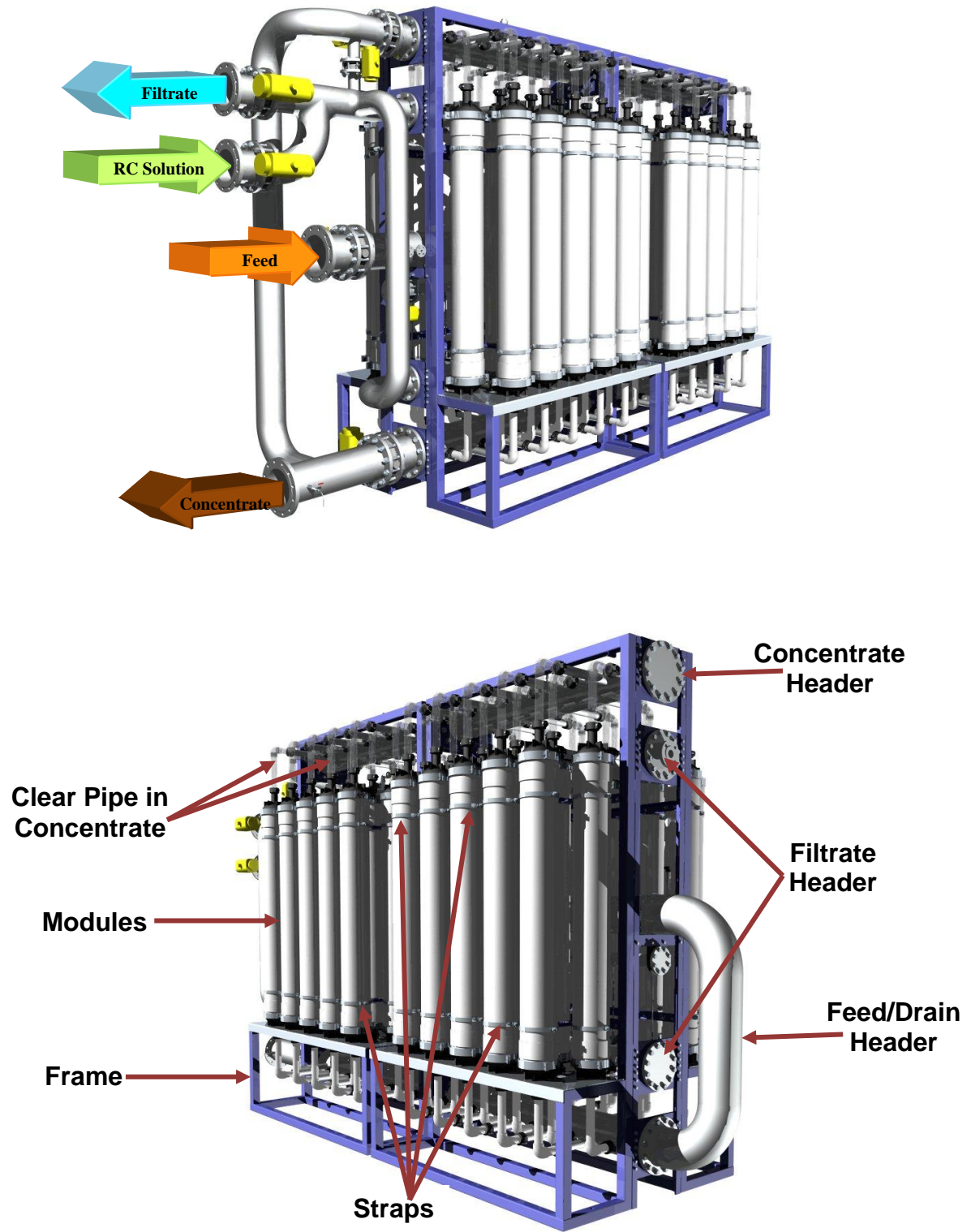


Figure 2: Example Rack Assembly Drawings

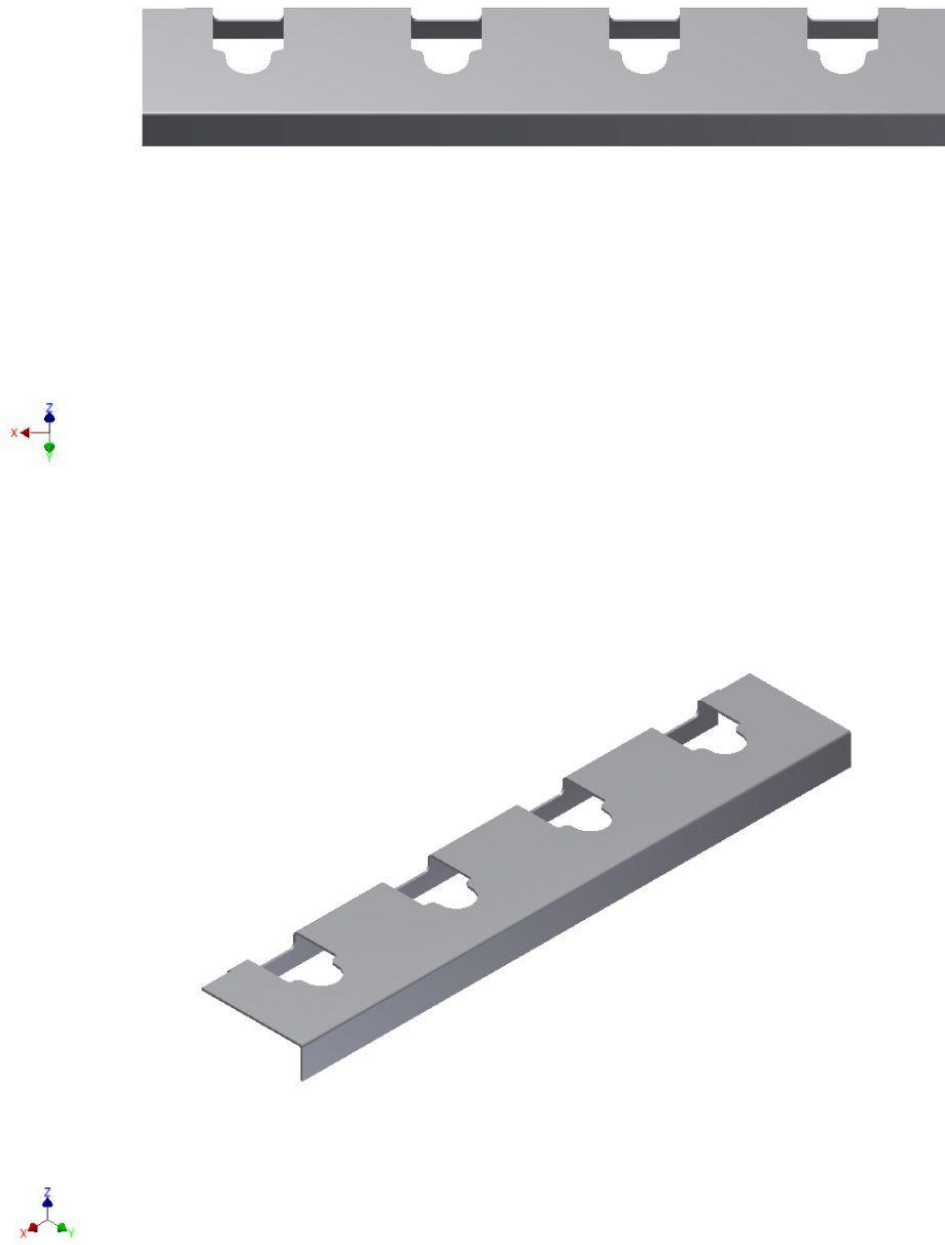


Figure 3: Example Module Base Plate

6. A section of clear PVC (~6" long) is required in the concentrate exit line to identify modules that have lost integrity.
7. The HYDRAcap[®] MAX module is preserved in a solution of 30.0% w/v calcium chloride. This solution is relatively non hazardous, with NFPA ratings of the following:

Health	1
Fire	0
Reactivity ...	0

If the caps are removed from the modules, 1.5 – 2.5 L (0.4 – 0.7 gal) of this solution will drain, depending on the module size. If the modules are to be subsequently shipped, they must be re-preserved according to Hydranautics TSB331.

8. THE MAXIMUM FEED PRESSURE ALLOWED FOR HYDRACAP[®] MAX IS 5 BAR (73 PSIG) AT 20°C.

Installation Procedure

The HYDRAcap[®] MAX modules are shipped from the factory with a preservative solution. The end cap clamps are tightened and rubber caps are placed on all ports to retain the preservative. Prior to installation, the user may wish to rinse the preservative from the modules. The following is the recommended installation procedure:

1. Prior to module installation, clean the system and its piping sufficiently to prevent foreign matter from entering the modules, according to TSB 341.
2. Remove the rubber caps on the 4 connection ports.
3. Place the module on the support rack, while taking care not to damage the bottom feed end adaptor as it is lowered through its respective opening in the base plate. Make sure to use two straps that attach to the support structure (frame) to secure the module. Utilize curved saddles to cushion the modules to the support rack.
4. If needed, loosen the top end clamp and only adjust the cap so that the upper and lower filtrate ports are mechanically lined up with the individual module side ports on the headers. Then securely tighten the top end clamp. **DO NOT ROTATE THE BOTTOM END CAP.** Rotating the bottom end cap may result in damage to the feed end adaptor or air diffuser, rendering the module unusable.
5. Connect all ports starting with the bottom feed port and working up. Tighten all Victaulic clamps.

6. All feed end adaptors will be supplied with a 3/8" NPT by 3/8" hose ID air hose adaptor from Hydranautics. Care must be taken to avoid damaging the threads when screwing or unscrewing the fitting. **DO NOT OVERTIGHTEN THE AIR HOSE ADAPTOR FITTING.**
7. Slowly pressurize the system and check for connection leaks. The system should be pressurized to 30 psi (2 bar) or 1.5 times the regular feed pressure of operation up to a maximum of 73 psi (5 bar).
8. The HYDRAcap[®] MAX modules are shipped from the factory with a preservative solution. Per site requirements, this solution may need to be flushed and sent to drain prior to filtrate production. If necessary, flush with permeate or city water from the feed side at a rate of 2 gpm/module to the filtrate side and 18 gpm/module to the concentrate side for 1 hour. The maximum feed pressure allowed is 73 psig (5 bar) at 20°C.

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