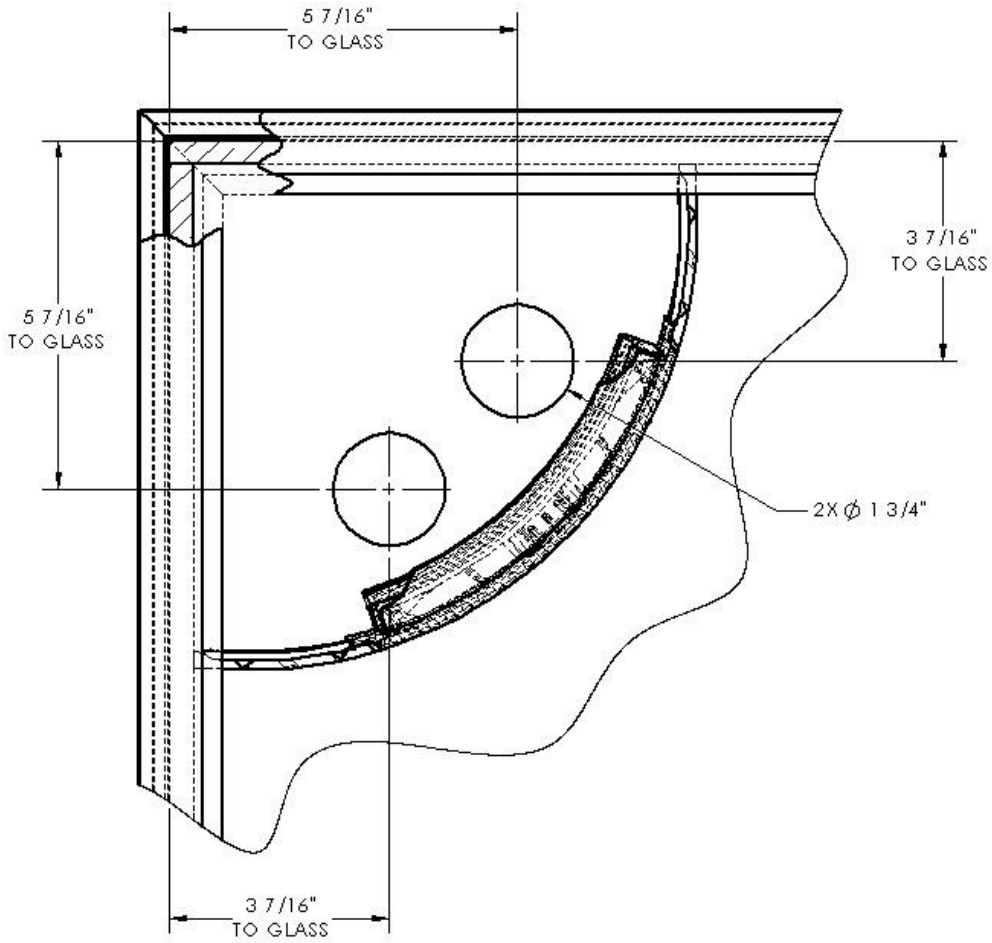
Corner-Flo™ Plumbing Tips

General information about Corner-Flo™ tanks can be found on the Marineland.com product page. However, there are common questions that we will try to address here.

Interior Tank Plumbing

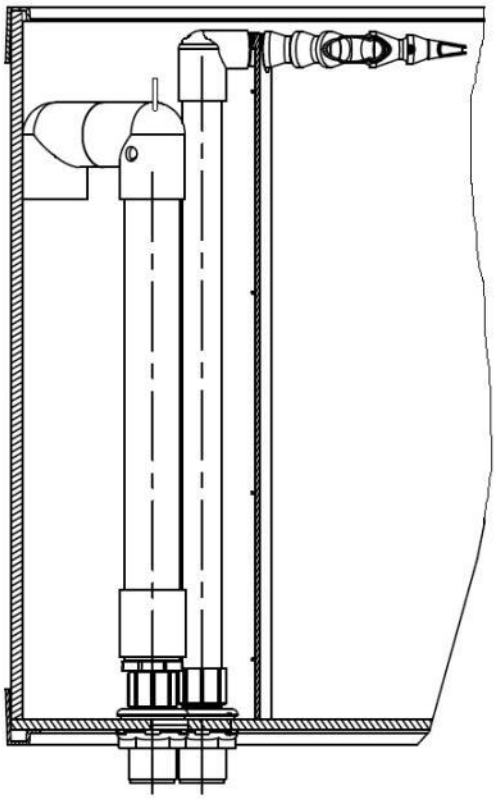
First, let's stay inside the tank and cover some items with the interior plumbing provided with the tanks. Included with each tank is drain plumbing and return plumbing. Gluing is generally not recommended for any of the interior plumbing. This is an open system and pressures are not attained that would require the plumbing to be glued. The force fit of most fittings to each other and to the pipes is generally adequate. If you find that for some reason a connection is loose and does not force fit well, then standard PVC pipe cement can be used.

The holes where the bulkhead fittings will go are now located symmetrically behind the Corner-Flo™ panel. This allows the user to select which hole will be the drain and which will be the return, allowing a more custom setup of how the water will be returned to the tank. Bulkhead gaskets always go on the inside of the tank between the flange of the bulkhead and the glass.



Interior Drain Plumbing

The drain plumbing consists of two elbows, a 1-1/2" drain pipe, a reducer fitting, a piece of 1" pipe, and the 1" bulkhead. One of the elbows is drilled with large holes in the sides that allow relief flow into the drain.



There is also a small hole on top that has a short length of small tube in the top. The small tube is there to help allow water to enter into the top of the elbow so that there is no restriction. It's important that this tube remain free of any obstructions. It's also important that the tube extend very little into the inside wall of the bulkhead. It's best for it to simply be flush with the inside wall and should not be pushed so far in that it remains in the water stream.

The Corner-Flo™ overflow and plumbing are rated for 700gph and this is not affected by the fact that the drain necks down to 1" as it enters into the bulkhead. Higher flow rates can be achieved, but 700gph has been established as the optimal flow rate.

Interior Return Plumbing

The return plumbing consists of a 1" bulkhead, 1" pipe, an elbow, and loc-line fittings that end with a Tee and two flared nozzles. The elbow has a small hole drilled into its inner corner.

The hole in the elbow is the Anti-siphon hole. Its purpose is to help ensure in the event of a power failure, that your drain plumbing will not begin to siphon and backflow a large amount of water from the nozzles into the sump. This hole is located in an optimal position to be less likely to become clogged by any passing debris. However, one common complaint is that it sprays water onto the Corner-Flo™ panel and makes additional noise. We are currently looking at other options for accomplishing this safety feature, but, as it stands, this hole is required to help keep sumps from overflowing during a power failure. Modifying this hole will void the warranty of the Corner-Flo™ tank.

Exterior Tank Plumbing

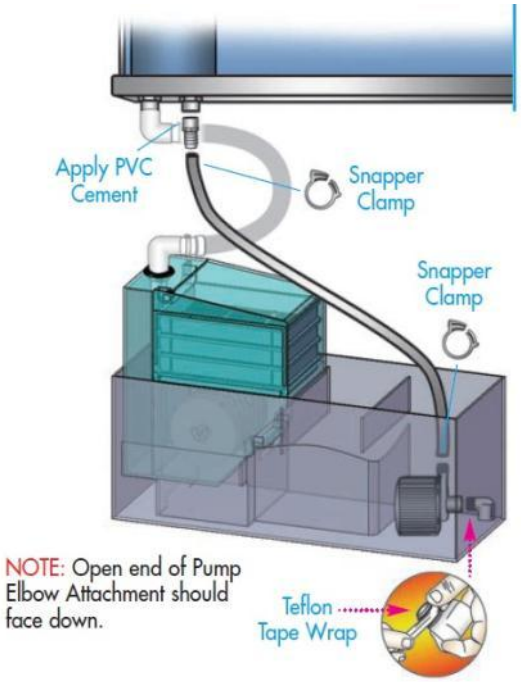
If you've purchased a Marineland Corner-Flo™ tank, you have a lot of options for how to plumb under your tank and what sump to use. We don't cover sump selection, but will help with general plumbing advice. Gluing or sealing exterior plumbing will be required. This may be in the form of gluing PVC pipe

that you may run from the bulkheads to the sump or possibly hose clamps around flexible tubing and barb fittings.

Exterior Drain Plumbing

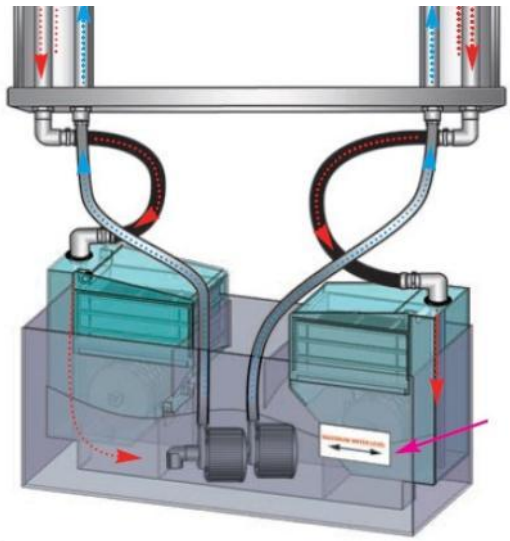
The drain plumbing is typically the most critical part of the system. Often a 90deg fitting is placed at the base of the bulkhead fitting. This can be a street elbow for simplicity, since the interior of the bulkhead is a 1" slip connection. The threads on the outside of the bulkhead are typically not compatible with any threaded PVC fittings and therefore they may not seal well. You might be able to get something on there, but it may not match up well and may cause leakage problems.

Flow restrictions can be created that are in a variety of forms. If flexible tubing is being used, it should be 1" or larger tubing that can fit onto 1" barb fittings or that can fit aroud 1" pipe. Either way, a hose clamp should be used to secure the seal and connection. Flexible tubing should gradually descend down to the sump level. It should not curve down, then up, then down again. Anything like a goose-neck like you might see in a drain under a sink will not work well. This can cause a flushing effect with the water behind the Corner-Flo™ panel. A restriction like this will cause water to back up until it has enough pressure to essentially siphon through the restriction. Once it reaches a lower level and more air enters the drain it will start filling slowly and siphon again. This can happen fairly dramatically or subtly depending on the situation.



If hard plumbing is used, the number of 90deg. fittings contributes to losses in any plumbing system. If two 45deg fittings can be used to create a more gradual descent into the sump, that would be ideal. If two Corner-Flo™ panels are in a tank, it's not advisable to Tee them together, especially with the same size fitting as the pipe. This would create a situation where two drains are fighting to exit through one smaller hole. A reducing Tee with a 1" straight section and the tee section large enough to handle both sides might work. Ideally, draining both sides into the sump separately is most advisable.

The way in which water enters a sump is important to the noise, bubbles, and spray that might be present. Water should generally be drained from flexible or rigid pipe under the running water level of the sump to keep noise to a minimum. There are many ways in which bubbles can be diffused and



sump suppliers may have their own plumbing to help with that.

Exterior Return Plumbing

Return plumbing can also be plumbed with flexible or rigid pipe. Due to an increased pressure in this plumbing, well glued connections or hose clamps are more important than the drain plumbing. Single Corner-Flo™ systems are pretty straight forward and similar restriction reductions should be considered. The more 90deg fittings the more loss, in addition to the head loss due to the height the pump must push the water. When two Corner-Flo™ panels are in a tank, it's ideal to have two pumps plumbed separately. This typically results in fewer restrictions and provides a backup pump in the even one should fail. If one pump is plumbed to two Corner-Flo™ panels, the flow to each will be half of what it's rating suggests. Also, a larger pump that would typically have the right amount of flow to two panels, may not reach that full potential due to splitting its flow.