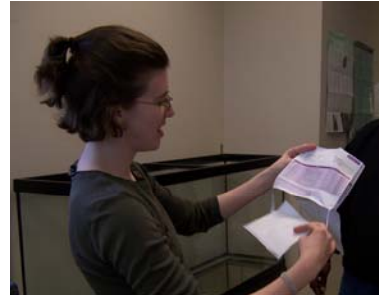


## Tank Setup: Page 1



1. Unpack all materials and compare to shipping list. Ensure that nothing is missing or broken. Check plastic pieces for cracks, particularly the filter components.



2. Place tank in a location away from heat, excessive light, and activity. If next to a window, make sure that the window shade is down until the fry are swimming around, or that there is some protection around the tank. Do not put the tank next to an active radiator. Because a filled tank will be top heavy, place it away from areas where students might accidentally bump into it. Clean out any dirt inside the tank with a wet paper towel. Do not use soap or any cleaning chemicals.

3. Locate the electrical outlet and plug in the power strip. This should be close enough to the tank that all electric devices can reach. Ideally, this should be right behind or underneath the tank. Turn the power strip off.



4. Place the chiller to the side of or below the tank with the front facing out. Please ensure that there are at least 4 inches on every side for airflow. Open the plastic bag with chiller parts and remove two water nozzles. Screw these in place on the chiller, tighten them by hand. You may carefully tighten these further with pliers, but be mindful of the limitations of the plastic.

5. Measure a length of chiller tubing that will reach from the chiller to the bottom of the tank without stress or kinks, be generous with length because a tube can always be made shorter but not longer. Cut this length of tubing and slide one end over the chiller input nozzle. Measure a similar length of tubing for the output nozzle of the chiller and cut this piece. Attach this piece of tubing by sliding it over the chiller output nozzle. Tight tubing can be made more flexible by dipping it in very hot water. You may need to remove the nozzle, also. Depending on chiller design, there may not be any specific input or output side.

6. Next slide the metal clamp over the tube to the nozzle on the chiller. Screw the clamp in place over the end of the tube so that the outer edge of the clamp and the tube are matched. The clamp should be tight but not forced.

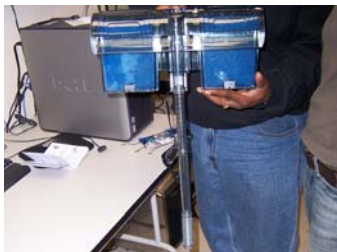
## Tank Setup: Page 2



7. Remove the pump from its box and locate the plastic adapter nozzle for the pump. Screw this nozzle in place, and slide the other end of the input chiller tube over the nozzle on the pump. This connection does not need a clamp. Install the pump filter if one is included but not attached. Gently place the pump inside the tank, place the pump power cord near the power strip.



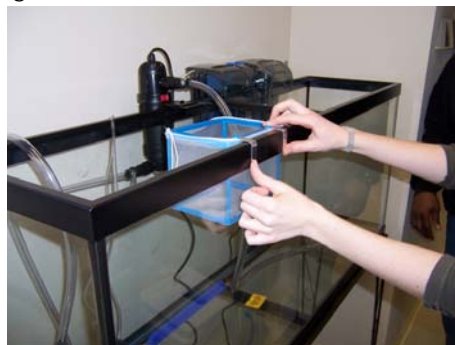
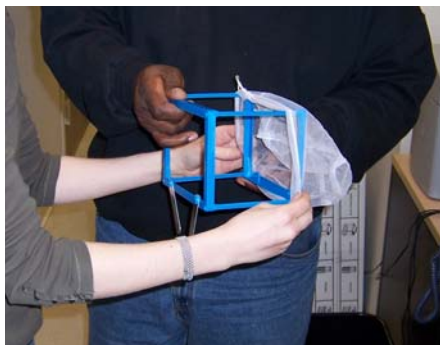
8. Unpack the UV sterilizer and follow the instructions for assembly. The UV sterilizer light bulb must be installed first. Place the UV sterilizer on the edge of the tank, near the chiller tubing. Test fit the chiller output tube to the UV sterilizer, and cut the extra tubing length. Next, attach the output tube from the chiller to the input of the UV sterilizer, and use the third clamp to hold this in place. Finally, attach the small piece of remaining tubing to the UV output (top) and clamp this length in place with the last clamp. This tube should then be placed in the tank and secured with a twist tie to the chiller input tube, or part of the tank.



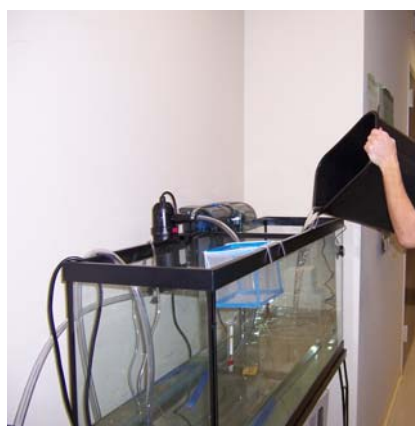
9. Unpack and assemble the filter according to the included directions. Place the filter on the back side of the tank. Make sure that the filter intake tube is as close to the tank bottom as possible. Place the filter power cord near the power strip.

10. Unpack the airstone, air pump, and airstone tube. Attach one end of the airstone tube to the airstone, and the other to the air pump. Place the air pump on the ground near the power strip. The rubber feet of the air pump should be on the ground to prevent excessive noise. Place the airstone in the tank, away from the filter intake tube. You may choose to use a valve to prevent backflow of water in the airstone tube. To do this, make a cut in the air tubing and use the check valve to connect the two pieces back together. Air should push the flap and compress the spring inside the valve.

## Tank Setup Page 3



11. Assemble the hatching basket by stretching the net over the outside of the plastic frame, or carefully securing the net to the inside of the frame. Hang the basket on the tank wall by bending the metal clips.



12. Fill the tank with tap water using any clean container or tubing. The water level should be no more than 2 inches from the top of the tank, but should not be so close that it might spill. Use a cup to fill the filter chamber with water until it overflows back into the tank.

13. Plug in all electric cords using the power strip, but keep the power off. Once everything is plugged in, stand back from the tank to double check all connections and ensure that everything is ready for operation. The output tube should be secure; a student can hold this tube in place. Have some paper towels on hand in the event of a leak.

14. Turn on the power strip and check for any leaks on the chiller. The bubbler should be creating a large volume of small bubbles. The chiller may beep, and is now warming up. The filter system will be quite loud as it pumps water into the motor for the first time. Remove the output hose from the water carefully to ensure that there is good water flow. The filter should start to pump water into the tank and will become much quieter. If the filter fails to pump water after 1 minute, check to make sure that the chamber is still filled with water.

15. Adjust the chiller temperature to the appropriate setting. You may have to wait a few minutes before the chiller begins to operate fully. You will probably hear the chiller fan or compressor operating in a few minutes.



16. If you have Biozyme, add a small pinch at this time to the tank. Unplug the UV sterilizer for one week to allow the colony to start the nitrogen cycle in the tank. You should not need to add biozyme again.

17. Fill a container with tap water to be aged for the first water change.

### Chiller setup: Unpacking and chiller placement

These directions are based on an Aqua-Chill 1/4 HP chiller. With different chillers, installation may vary, but the general procedure is similar for most chillers that have water pumped into them (inline). It is, however, important to consult the chiller manual before use.



Please unpack the chiller carefully to ensure that nothing is damaged or lost. Chillers will arrive as boxes inside larger shipping boxes. Keep all materials including shipping receipts, chiller directions, and small parts. Check that nothing is missing.



Small chiller parts will probably be in a bag attached to the chiller. These might include plastic nozzles, a spare fuse, and twist ties for securing tubes. Pull the chiller out of the box and place it on the floor with the front facing out. The front is the side with a display on it, and the top is the side that has two openings for water.

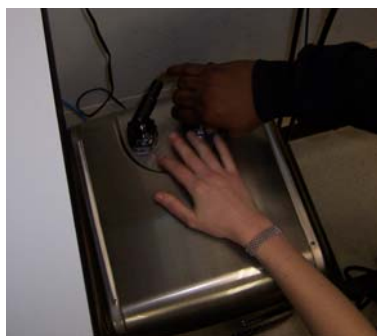


The Chiller can be placed in many locations around the tank, but it is best to be as close as possible. The most common locations are to the side, behind, or below the tank. Placement below the tank can save room, but also might require longer lengths of tubing. Regardless of location, the chiller needs 4 inches of clearance on all sides for proper airflow. The chiller should be close to a power source, and away from any sources of heat. For young students, it might be a good idea to keep the chiller out of reach.

## Chiller setup: Attaching nozzles and preparing tubing



If the chiller comes with closure caps, please remove them first. Some chillers will arrive without this protection. Remove nozzles from the plastic bag and follow any assembly directions. This chiller requires the addition of two rubber gaskets to the nozzle by hand. This is a very important step because a mistake here will likely cause a leak. Please take all the time you need for this part of tank setup, it is far better to spend an extra 10 minutes now than clean up a leak later. Once the nozzles are ready, please check all plastic parts for cracks or dirt which might cause problems.



Carefully place the nozzles into the chiller with the threaded collar facing down (it will only work one way). It is most important to have the nozzle straight. As tight as you make the connection, there is no replacement for good alignment. Next screw the nozzles in place while pressing down on the top. Make this connection as tight as possible by hand. If you want to gently use pliers or a wrench to tighten this more, it can be helpful, but remember that plastic can be easily damaged. The nozzles should be facing in a direction that points towards the nearest side of the tank. This reduces the amount of bending tubes will be exposed to.



Once the chiller is ready to be attached to the tubing, it is time to cut the tubing to size. The tubing used for chiller operation is the largest tubing included. There is usually extra left over at the end of tank setup, but please do not discard it as some might be used for the UV sterilizer later. Measure the length of tubing needed to loosely fit between the chiller input nozzle (or if one is not specified, either one) and the bottom, inside of the tank nearest to the chiller. This length of tubing will run from the pump to the chiller. Always cut extra because tubing can be shortened but not made longer. Cut this length with scissors or a sharp knife; the best cut makes an even tube end. Now take the other piece of tubing and test to see if it can reach from the other chiller nozzle to the bottom of the tank. Cut off any extra, after making sure that there will be enough.

## Chiller Setup: Attaching tubing



Once you are ready to slide the tubes over the nozzles, place a metal clamp over each tube. Then slide each tube over the nozzle as far as it can go by hand. This should be about 1 inch (more is better) or about three ridges. If the tube is too loose, and slides on and off the nozzle with ease, either the tube or the nozzle might be the wrong size. If this is the case, check the chiller box for different sized nozzles. If the tube is too tight, you can use hot water to make it soft, or use a tool to gently stretch the tube end.

Once the nozzle is in place, slide the metal clamp over the connection point so that the end of the clamp is flush with the end of the tube. With the screw facing up, tighten the clamp with a screwdriver until it is tight. Do not force this, however, because it may damage the plastic.

The image to the right, above, shows a completed nozzle setup. You can assemble it off the chiller if that helps facilitate the process.

At this point, the chiller is ready. Please do not turn the chiller on until the rest of the tank system is ready. You may plug the chiller in to a power strip that is turned off.

### Common Chiller Problems

**Leaks:** Leaks most often occur where the nozzle screws into the chiller, or where the tubes attach to the nozzles. In the event of a leak, turn off the power strip for the tank system and unplug the chiller unit. Paper towels or a rag should be able to clean up most leaks. To stop a leak, the water must be removed from the tubing. To do this, place the output end of the tubing in a bucket, and hold the other end in the air. If this fails to drain the water, you can blow the water out by taking the pump off of the input end blowing into it. You can now repair the leaking connection. Check for alignment, and also make sure that connections are tight but never force parts.

**Chiller will not turn on:** If the chiller does not turn on after being plugged in, and after the chiller power switch is pressed, you can check the fuse. The chiller fuse is generally located near the power switch. You can unscrew the fuse to check it. If there is a continuous metal ribbon inside the fuse, it has not blown. It is likely that the chiller needs to be repaired or replaced by the vendor. Please do not open the chiller container or attempt to repair internal parts yourself.

**The chiller turns on but isn't cooling the water:** The chiller system requires a few minutes to warm up. If after 30 minutes the chiller still has not started to cool (a louder cycle which produces noticeable airflow) but the tank water is warmer than your target temperature, there may be a problem with the chiller. If this is the case, please notify the vendor.

## UV Sterilizer Setup: Page 1

These directions are based on the setup of the Turbo-Twist 3x UV filter. The UV filter is one of the more complex parts of the tank system, and can be confusing the first time. These directions are only a supplement to the materials included with the filter. Please read all included directions first.



Please first open the UV filter container carefully. There are many small parts so make sure that nothing is lost by accident. Look for any cracks in any plastic parts. Included in the box is the filter, UV bulb, mounting brackets, adapter nozzles, gaskets, and directions. Start by reading the directions. When ready, remove the filter unit from the box. Note that the red plastic tab unlocks the two filter halves allowing it to rotate and open.



Separation of the two halves shows the glass bulb enclosure, and the twisted channels which slowly move water through the system. Reattach the top and bottom. You can next unscrew the bottom cap (with the power cord in it). This exposes the UV bulb socket, an area of the sterilizer that needs to stay dry.



Next, carefully remove the UV bulb from its box. Try to keep the bulb clean by holding the base and not the glass parts. Click the bulb into the socket base, insert the bulb and base back into place, and screw until tight. This bulb should be changed after every trout year.

## UV Sterilizer Setup: Page 2



Now that the bulb is in place, you can remove the two brackets which hold the sterilizer to the outside of the tank wall. The upper bracket is adjustable, and the lower bracket has a suction cup. These two clip on to the side of the sterilizer along any of the grooves (4 possible positions each).

It is important to note that the sterilizer will work with the cord facing down, or up. However, the system will be most stable if the top (with the adjustable bracket) is the part of the filter with the power cord. This side has a ridge that will help hold the system steady.



Differences in tube size might require the use of a nozzle adapter. With the Turbo-Twist, the adapter comes with a rubber gasket which must be used to prevent leaks.



With the gasket in place, you can screw the nozzles in. The system is now ready to be connected to the water pump and chiller system.



## UV Sterilizer Setup: Page 3



On most systems, the UV sterilizer can be attached to the output from the chiller. However, for lower powered sterilizers, a separate, smaller pump will be required. This is because the powerful chiller system pump might move water too quickly for some sterilizers to work. You can simply attach the chiller output tubing to the intake (bottom) of the UV sterilizer. A smaller length of tubing will help direct the flow of water from the output at the top of the sterilizer.



The Turbo Twist system comes with a built mechanism for attaching tubing. By screwing the outer part of the nozzle, there should be a seal created with the tube. It is also possible to use metal clamps to attach tubes to the UV sterilizer if needed.

## Filter Setup: Page 1

This demonstration was done with a Millennium 3000 filter. Because filters vary a great deal from one to the next, it is best to follow the included instructions first. Filters are often made of particularly brittle plastic; indeed the filter shown here was found to have a crack in it. Because of this, please check your filter for cracks when you unpack it, and leaks when you fill it with water.



Carefully unpack the filter and lay out all of the parts. Because filters often have so many small parts, it is easy to misplace something. Check for the instructions, and read them before attempting setup for the first time. Make sure that nothing is broken or missing from the filter. Often small parts might be inside the filter chamber, so look here for items as well.



Most filters will include a carbon, or activated charcoal filter component. These help with mechanical and chemical filtration of tank water. Often, because of carbon dust, these filters need to be cleaned with tap water before installation. But please refer to the filter directions for this. Do not use soap to clean any part of the tank system. In the millennium 3000, the carbon filters slide into slots in the filter chamber.

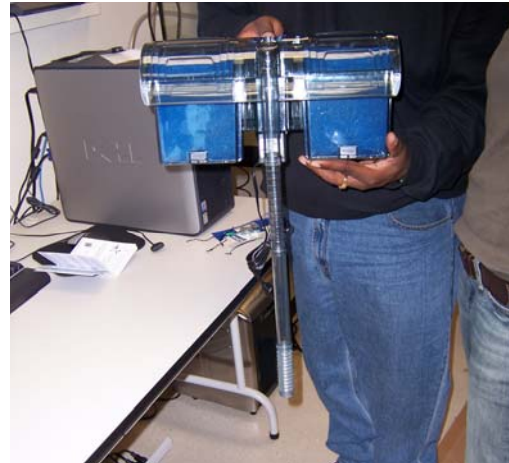


Here a complete millennium 3000 filter chamber can be seen. There are two plastic biological filters (surface area on which bacteria grow) and two carbon filter packs each in a slot. Also, the top of the filter siphon is installed. A clear plastic lid covers the chambers. Water enters the system in the center—rear of the chambers, passes through the filters, and cascades over the plastic lip creating a small waterfall.

## Filter Setup: Page 2



The millennium 3000 filter comes with three siphon parts. There is an upper tube, with ridges in it, a middle tube, and a lower tube that allows for water intake. Each of these snaps into the other. The upper tube can telescope to adjust for different tank depths. It is best to have the bottom of the filter siphon as close to the bottom of the tank as possible.



Here you see a completed millennium filter. The filter should be placed on a rear or side wall of the tank with the siphon in the water. The filter should not be directly above an airstone or any other source of bubbles because bubbles can cause problems with the filter pump. Cheesecloth or plastic netting should be placed over the filter intake to keep small fish from getting hurt. This can be held in place with rubber bands, and cleaned regularly to maintain flow.

### Common Filter Problems:

The filter is not pumping any water, and is very loud: When dry, filter pumps are very loud because they are working in air which does not reduce the noise and vibration they make. Also, filter pumps are generally not strong enough to draw water up from the tank without first being primed. By filling the filter chambers with water, this helps the pump draw more pressure with water. If a filter does not start after 30 seconds, check to make sure that there is still water in the chambers.

There is a crack in my filter, the filter is leaking: Due to the hazards of shipping, one should check for cracks before assembly of any plastic parts. If there is damage to your filter, you should either replace it, or repair it if you have the materials to do so. It is quite possible to fix minor filter cracks with materials obtained from a pet store. Please do not use chemicals or materials which might harm the fish, such as glues that can dissolve in water. Serious cracks, or damage to the filter pump, require that you replace the filter. A replacement should be provided free of charge by the vendor in the event of damage from shipping.

Tube Problems: how to make a tight tube fit.

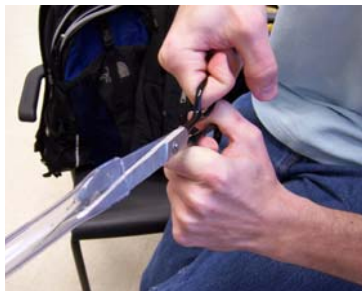
Sometimes tubing is too tight to fit over tank parts. Often it is hardest to simply get the tube on the part in the first place. There are several ways to help fix this.



First, you can heat tubing with very hot water; this makes the tube softer and more likely to stretch. The water has to be steaming hot to work best. Soak the tube for a minute in water, then quickly remove it and try to reapply it. The tube will quickly cool and harden again so it may require several tries. As always, please exercise caution when dealing with water hot enough to burn. It appears best to heat only the first inch or two of tube so that you can still use the cooler, more rigid part above to push against.



Two set of hands are better than one: With two people taking turns, you can be sure that each person will have a chance to rest. Once the tube is on the nozzle or other part, it is simply a matter of slowly moving it higher up.



If the tube doesn't fit after heating, you can try to stretch the first inch of tube with a tool such as scissors or pliers. This will flare out the end and help with that most difficult first step.

If tubing still fails to fit at all after all these methods, it is possible that the tube is the wrong size, or the wrong nozzle is being used. If this problem occurs with a chiller nozzle, check the chiller parts for nozzles of a smaller size that might work better.