

# SeaOtter WoodWorks

## MicroStar Filter/Ionizer Instructions

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Water of Life

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### Introduction:

The MicroStar filter and ionizer is a water sanitation system designed to work with hot tubs. The installation will be easier if you follow the correct sequence of steps and use the proper tools. *Please take the time to read the instructions completely and carefully before starting the process of assembly.*

The big picture: The filter and ionizer system is connected to your tub independently from any heating system. It normally requires two holes in the tub for water out and water in. There are three basic components to your system: a pump, a filter, and an ionizer. The pump and filter are connected and mounted to a plastic base. The ionizer consists of two parts: a "T" fitting containing copper/silver anodes that is placed in-line between the filter and the tub and an electronic controller that sends the proper low voltage to the "T" fitting.

The pump and ionizer both run on 120 volt 60 cycle power and will be plugged into a GFI protected outlet with a timer to control when they go on and off.

Note: This system is not recommended for use at temperatures below freezing. Freezing can damage the system, voiding the warranty. If you live in a cold weather climate, this system should be removed and stored during the winter months.

### Section 1: Parts list

The following is a list of parts that are included with the MicroStar filter and ionizer:

- MicroStar pump
- MicroStar filter
- Two lengths of flex hose
- Teflon pipe tape
- Four pipe clamps
- Pioneer P-15 Ionizer controller

P-15 Ionizer "T"

Two through wall tub fittings

See Figures 1.1 and 1.2 to help identify the parts.



Figure 1.1 MicroStar Filter and Pump, two hoses, two through wall fittings, union



Figure 1.2 Pioneer P-15 Ionizer controller, Ionizer "T", test strips, instruction booklet

## Section 2: Tools and supplies needed

There are a few basic tools and supplies that will be needed to complete the installation. Gather what you will need before you start. See Figure 2.1

- ◆ Small tape measure
- ◆ Power drill with 2 3/8" hole saw
- ◆ Flat head and phillips screwdrivers
- ◆ Caulking gun or squeeze tube of clear silicone
- ◆ Two medium sized pipe wrenches
- ◆ 120 volt 24 hour timer (such as used for switching lights on and off) Intermatic makes a good one. Make sure it is rated for outdoor use if placed outside.
- ◆ GFI protected 120 volt, 15 amp circuit



Figure 2.1 tools required

## Section 3: Tub Preparation

Drain the tub.

If the holes in the side of the tub were not predrilled, you will need to do that now. If the holes were cut, then proceed to Section 4.

There are several options for placement of the holes. Here are some guidelines:

If your tub is indoors or you live in a climate where freezing temperatures are not a concern, you can use

the floor drain as the intake for the filter and avoid cutting one hole.

In general, the suction (intake) should be placed lower than the return.

If the suction is to be on the side of the tub, place it no less than three inches from the floor of the tub.

The return should be a minimum of 12 inches below the rim of the tub. The suction and return should be as far apart as practical - at least 24 inches.

You may want to place them out of view, where they don't interfere with benches and where they are accessible if you want to plug the holes in cold weather.

Cutting the holes: Mark the location of your holes and double check that they are in the location you want. Use a 2 3/8" hole saw bit attached to a power drill for this. Cut the hole from the outside first - going just far enough so that the center pilot bit pokes through. Stop and finish the cut from the inside of the tub to avoid tearing the wood grain.

## Section 4: Install Tub Fittings

Locate the two brown through-wall fittings that have a large threaded nut assembly attached. (See Figure 4.1) Install one in each hole with the nut outside, the mushroom head and gasket inside the tub. Put a small amount of clear silicone on the surface between the gasket and the tub.



Figure 4.1 Through wall fittings with hose barb

Tighten the nut assembly by hand and then with a pipe wrench just 1/2 turn past hand tight. Don't over tighten or the fitting may break.

Now attach the threaded hose barbs to each of these through-wall fittings. Make sure they are properly installed with the supplied teflon pipe tape or pipe thread "dope." Tighten carefully with two pipe wrenches.

If you are using the drain hose as the suction fitting, (warm weather climates only) then you will remove the threaded hose barb from the through-wall assembly. You will be putting a "T" fitting in the drain hose, attaching the hose barb to the "T", and closing the other end of the "T" with a ball valve or removable plug for draining. Visit the local hardware or plumbing supply store and get a couple of parts. Depending on your situation you may need a 1.5" PVC "T", a 1.5" ball valve and some PVC glue.

### Section 5: Filter and Pump Assembly

Locate the pump and filter which require simple assembly. Follow the manufacturers instructions for this step. Make sure to use teflon tape or pipe dope on the pipe connections to prevent leaks.



Figure 5.1 Ionizer "T" attaches to filter. Note that the ionizer "T" is oriented slightly above horizontal - about 5 degrees.

Attach the ionizer "T" to the output side of the filter. That would be the only unused hole on the upper end

of the filter. (See figure 5.1) Make sure to use teflon tape or pipe dope on the pipe connections to prevent leaks.

### Section 6: Place the Pump and Run the Hose

**IMPORTANT: The pump MUST be at least 5 feet away from the tub or behind a physical barrier that prevents someone in the tub from touching the pump. This is a requirement.**

Both the pump and the ionizer are weather resistant. However they should be placed so that they will not get flooded. Choose a location that is reasonably protected.

The filter comes with two sections of hose. One connects the suction fitting on the tub (lower one) to a hose barb on suction side of the pump. The suction side of the pump is in the center of the end of the pump.

The other section of hose goes from the hose barb on the ionizer "T" back to the return fitting on the tub. Remember the return fitting on the tub is the higher one.

Extra hose can be trimmed off. If you need additional hose, take a sample to the hardware store and purchase the same size.

Secure the hose to the hose barbs with the included hose clamps and tighten with a screwdriver.

### Section 7: Electrical

**IMPORTANT REQUIREMENT: The circuit for the pump and ionizer must be GFI (Ground Fault Interrupt) protected.** Have an electrician check this if you are not absolutely sure that you have a GFI in place.

Ionizer connection. There is a low voltage wire with two connectors that runs from the ionizer control box to the ionizer "T". Connect the wire the terminals with an adjustable wrench. It doesn't matter which wire goes to which terminal. Mount the controller in a convenient location.

Use a 24 hour timer plugged into the GFI circuit to have the ionizer and pump come on together. Plug both the pump and the ionizer into the timer. You may need to use a plug adapter to accomplish this. Set the timer initially so the system comes on twice per day for 1 hour. You can adjust this as needed for proper water quality.



Figure 7.1 24 hour timer for controlling pump

## Section 8: Operating and Maintenance

1. Read the instructions that came with the Pioneer Ionizer carefully. It contains good information on water chemistry.
2. We recommend setting the controller at an initial setting of 6 for about 2 weeks to bring the level up. Check weekly for .3 ppm and adjust the setting up or down as needed.
3. The filter cycle on the spa pack should be set to come on twice per day for 30 – 60 minutes each time.
4. Twice per week, oxidize your tub with simple household bleach 4 ounces in a 500 gallon tub. Alternatively you can use Potassium Monopersulfate : available under several brand names at pool/spa supply stores.
5. Filter: clean once or twice per month according to attached instructions.
6. We recommend draining and cleaning and refilling the tub with fresh water every 4-6 weeks or as needed.
7. We have simplified test kits (paper strips) for weekly testing – 25 strips for \$14. Two of these are enough for a full year.
8. The filter will need to be replaced every 12-24

months. The ionizer element will need to be replaced every 2-3 years. To order parts, contact us.

New tubs: Red Cedar has tannin in it when it is fresh. Warm water will draw the tannin out and cause the water to become tea-colored. This is harmless and is the source of the wonderful cedar smell. The filter/ionizer combination will reduce the effect somewhat. To clear the water up – plan on draining and refilling the tub frequently for the first month or two of use as the tannins are drawn out. Drain approximately once per week or as desired. The tannin effect will subside as the tub is used.

## Filter Cleaning Instructions

You should clean your filter monthly. Here's how.

1. Unplug the pump and install the threaded plugs to isolate the filter. Remove the cartridge from the canister according to the manufacturers instructions.
2. Spray the filter with a high pressure stream of water from a garden hose. Work from top down and wash the pleats – especially between the pleats where the most dirt builds up. Alternatively you can wash the filter in the dishwasher if it fits.
3. Rinse until all the dirt and debris is washed off.
4. Replace the filter once per year or as needed. It is a good idea to keep an extra filter on hand.
5. Filters that are exposed to heavy bather loads may clog with oils that can be soaked out with a cup of dishwasher detergent in 5 gallons of warm water.
6. Rinse again to remove oil and detergent.
7. If the filter is coated with algae or minerals, soak it in a solution of 1 part muriatic acid to 20 parts water until the solution stops bubbling.
8. Rinse thoroughly and reassemble.
9. To order replacement test kits, filters, ionizer electrodes, or other parts, give us a call at 907 766 3553 or go to our website: [woodentubs.com](http://woodentubs.com).

## Section 9: Hot Tub Water Chemistry

How does ionization purify water?

A safe ultra-low DC voltage is applied to electrodes

that contain a copper/silver blend. As the water passes by, copper and silver ions are released into the water. Copper and silver ions are very effective at killing algae, bacteria and viruses. The process is completely safe for humans. Studies have shown that ionization in conjunction with trace amounts of chlorine is much more effective than chlorine alone. For this reason use of ionization for water treatment is widespread.

A small amount of a strong oxidizing agent is necessary for maximum effectiveness of ionization. We recommend about 1/2 cup of generic household bleach two times per week.

This system is completely safe. It eliminates the need for high levels of chlorine or other chemicals that are toxic, smelly, and damaging to skin, hair, and tub equipment.

For clean healthy tub water maintain the following:

1. Start with a clean tub and clean fresh water.
2. Balance pH between 7.2 and 7.6 (7.4 ideal)
3. Alkalinity - 80 to 120 (100 ideal)

4. Copper at .3 ppm
5. Run filter/ionizer 1-2 hours per day
6. Oxidize with household bleach 1/2 cup two times per week.

pH is adjusted up with baking soda, down with muriatic acid or sodium bisulfate  
Alkalinity is adjusted up with baking soda and down with sodium bisulfate or muriatic acid.  
Copper is adjusted with the ionizer - raise or lower the dial. Takes several days to change.

Use the test strips included for checking these values. For more complete information review the owners manual that came with the ionizer.

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