



# Connecting the Electric Heating System to your Hot Tub

## Getting Started - General Installation Considerations:

This document and the attached diagrams provide a general picture of how the system is set up. Your site considerations may dictate some changes. The placement of the components is flexible, however there are a few important rules to follow. Read the following points carefully before starting your installation.

1. Your system is quite simple. The water in the tub is circulated by means of a pump through a heater and a filter and returned to the tub. A two-speed pump circulates for heating and filtration at low speed and has a higher speed for adding pressure to the jets. The Hydroquip unit manages the temperature, filter cycles, and pump. The user interface is through the topside control touchpad that can be installed next to the tub.
2. **Important:** National Electric Code requires that electronic spa equipment be at least 5 feet away from the tub and/or behind a physical barrier that prevents a bather from reaching it. **This is an important safety requirement! Be certain that your pump and electric heater (the Hydroquip unit) are 5 feet away from the tub or behind a physical barrier!** For example: If your tub and heater are over 5 feet apart then your installation meets code. If your tub and heater are less than 5 feet apart, you must separate them with a barrier that prevents anyone in the tub from touching the heater.
3. **VERY IMPORTANT!** Electrical devices used with hot tubs need to be wired into a GFI protected circuit. The Hydroquip unit **must be wired to a GFCI circuit breaker** – have your electrician provide and install this type of breaker. This is a required safety item.
4. Qualified professionals familiar with local code must do electrical connections. They should review the manufacturers installation instructions included with the heater equipment.
5. We provide flexible spa hose for connecting the heater to your tub. If you place the equipment more than ten feet away you may need additional spa hose to complete the installation. You can also use rigid PVC pipe, which should be available locally.
6. The Hydroquip pump comes with a leaf basket, which allows the pump to self-prime in most cases. However, we recommend that the unit be installed at a maximum height of 18” below the normal high water level of the tub and not more than 4 feet below the floor of the tub.

Any installations outside of these parameters may require the use of a check valve (not included) and possible adjustments to the pressure sensor. Improper installation may cause the heating system to malfunction.

7. The Hydroquip is UL listed as weatherproof. Place equipment where it is not exposed to flooding, pooling of water, or snow accumulation.
8. If your tub is partially or completely sunken into a deck, you may be able to keep most or all of the equipment out of sight below the deck.
9. If the tub is more exposed, you can hide most or all of the equipment by clustering the jets and suction fittings so that you don't have to run pipe connections around the front of the tub. See diagram for ideas.
10. Place all the equipment where it can be easily accessed for adjustments and service. The filter, ball valves and heater should be conveniently located. By placing unions or drain fittings at low points in the system, you can drain it completely if necessary (winter vacation, extended shutdown, service, etc.)
11. Please carefully read all the included manufacturer's instructions for the Hydroquip heater, ozone, and filter.
12. Remember that there is a lot of flexibility in the placement of the equipment and the routing of the hoses. The included diagram is useful for getting the big picture. We have made every effort to include the parts you will need. Your site may require some modifications or additional fittings. With the exception of the jet and suction fittings, the rest are standard sized PVC plumbing fittings available at hardware and plumbing supply stores if you find you need additional parts for your installation. You can contact us for additional parts if necessary.
13. Test fit all plumbing connections dry before gluing any of them. The flex hose can be cut with a utility knife or hacksaw. Clean off any rough edges or fuzz with sandpaper. Complete the installation as a "dry fit" without glue before gluing any of the connections. Once you are satisfied with the whole system, begin gluing. Use the primer first on both surfaces, then glue on both surfaces. The glue is permanent. Provide good ventilation while gluing – the fumes are harmful. Avoid getting glue on your skin by wearing gloves.
14. Reference the included diagrams for the following installation steps.

## **Installation steps:**

- **Assemble Tub First.** Place any staves with pre-cut holes for jets and suction fittings in the locations that work best for your installation. See separate instructions for tub assembly. You have some flexibility in choosing locations for the jets and suction fittings. See the diagrams for ideas and suggestions.

- **Installing Suction and Jet fittings.** Holes for these have been pre-cut. Follow this procedure: Gasket goes inside the tub. Put a small amount of silicone on the inside rim of each fitting. Also put a little bit of silicone on the threads before installing the nut.
- **Suctions.** Once the tub is assembled, install the suction fittings. The 3 suction fittings have a 4” circular perforated cover. Suction fittings are installed in the lower holes. The perforated side goes on the inside of the tub. Be sure these suction covers are in place on each – they insure that the suction cannot be blocked – **This is an important safety feature of your tub.** Tighten the nut on the outside of the suction fitting 1/2 turn past hand tight. See diagram for example placement.
- **Jets.** Next install the 4 jets that return water to the tub. Use a little silicone between the gasket and the wood surface, and on the threads. Tighten the elbow nut on the outside of the fitting 1/2 turn past hand tight.
- **Position Heater.** Now position the Hydroquip heater equipment in its approximate location. Remember that National Electric Code requires that electronic spa equipment be at least 5 feet away from the tub and/or behind a physical barrier that prevents a bather in the tub from reaching and touching it. **This is an important safety requirement! Be certain that the Hydroquip system is 5 feet away from the tub or behind a physical barrier!** Once again – do not overlook this. Consult local code and a qualified electrician for any specific requirements in your area.
- **Filter.** Next position the filter. We recommend placing the filter on the Pressure (Jets) side of the pump and heater as shown in the attached diagram. Take care to align the IN and OUT properly for the water flow direction. Be sure that the filter is in a convenient location because you will need to clean or change it regularly. Note the filter should be installed as near to vertical as possible.
- **Ozone** – The last major item before the water goes back to the tub should be the Ozone injection fitting. The included ozone system has an injection fitting that is installed after the heater and filter in the Jet line to the tub. See the diagram for clarity. Ozone is automatically generated when the water pump is running and is added to the water through the injection fitting. The details of how to set up and operate the ozone system are included with the Hydroquip manual – refer to that for proper setup and adjustment.
- **Suction Connections.** Refer to the plumbing diagram. The suction fittings are joined then connected to the suction side of the pump (the middle port on the pump.) Using the included 90° elbows and 4-way T fitting, and the spa flex hose, make dry connections that join the three suction fittings into one suction line that heads to the pump. Utilize the fittings in the way that works best for your situation. Install one of the provided ball valves in the suction line in a convenient location after the suction fittings and before any other components such as the heater or pump. This is so that the water can be shut off for filter cleaning and other service. The ball valve includes a union fitting that allows for a hassle-free disconnect if needed. Use additional unions as needed.

- **Jet Connections.** The sequence from the output (or pressure) side of the heater is as follows: heater to filter to ozone to ball-valve to jets. The four jets are joined together into one line using supplied T fittings and elbows as needed. See diagram for typical layout.
- **Final Connection.** Now complete the Return line connection by using the spa flex hose to make the final connection to the jets. Before the jets, install the second ball valve in the 1.5” line at a convenient location. Place ball valves to that by closing the two ball valves you should be able to stop the flow of water to the filter, pump and heater so they can be worked on without draining the tub!
- **Plumbing drainage.** To make draining the plumbing easy for winterizing, place a union, union/ball-valve or spigot valve at the lowest spot(s) in the plumbing. By doing this the system can be easily drained if necessary for winter storage
- **Tub Drainage.** The tub drain pipe is easily adapted to accept a garden hose. By doing this you can temporarily attach a hose when it is time to drain the tub.
- **Touchpad.** The topside touchpad control panel plugs into the Hydroquip controller unit (refer to Hydroquip user manual). This panel should be placed close to the tub so you can adjust the temperature or turn on jets while using the tub. Use the included touchpad shelf mount to attach it to the tub.
- **Electrical connections to the heater unit.** Contact a qualified professional electrician for these connections. The Hydroquip heater **must be wired to a GFCI circuit breaker** – have your electrician provide and install this type of breaker. This is a required safety item. Do not try to make these connections on your own. Refer to the Hydroquip installation instructions for proper wiring.

## Operation

- Make sure the tub is holding water before starting the system. Check your glue joints and threaded connections and correct any leaks at this time.
- Refer to the Hydroquip user manual to learn how to set the temperature, time of day, filtration schedule and other heater functions.
- Be sure that all ball valves are in the open position. (Handle is parallel to the hose).
- Begin by setting the temperature to about 100 degrees.
- To remove the filter, turn off the system, and then close the two ball valves. Remove the top of the filter housing. Clean the filter at least monthly. You can simply wash it in a dishwasher if it fits or use a high-pressure garden hose. We can supply you with replacement filters. The filter should be replaced annually, or when it shows signs of wear or reduced flow.

## Regular Tub Maintenance

- Important! Set filtration cycles for 2 hours twice per day for a total of at least 4 hours per day. Adjust as necessary for water quality. Clean the filter twice per month.
- Maintain the pH to proper level (7.2 – 7.6 range).

- Maintain clean water. Warm water can grow bacteria quickly.
- Change the water and clean the tub every 4 to 6 weeks or as necessary.
- Replace your filters once per year.
- Oil the exterior of the tub once per year.

## **Maintaining Clean Hot Tub Water**

It is important to carefully monitor the quality of the water in your tub. Bacteria can grow in warm water so you must take steps to sanitize the water. We have a simple and safe approach that will keep your tub water clean and safe.

We recommend the use of granular dichlor in our wooden tubs. This will ensure that you have safe clean water.

Test water and get pH in the 7.2 to 7.6 range (7.4 or 7.5 is ideal.)

1. Water should be warm. Add two tablespoons of Granular Chlorine to the tub. Turn on the pump for about one hour.
2. Do this every 3-4 days or more if tub use is more frequent than usual.
3. Set the filter to for a total time of about 4 hours per day.
4. Adjust the ozone valve so that you see very fine bubbles in the jet water.
5. Clean filter every 2 weeks. (See instructions below on filter cleaning)
6. We recommend changing your tub water every 4 to 8 weeks – or as needed.
7. We carry replacement supplies for your tub – so give us a call or order online when you need to resupply.

We recommend draining and cleaning and refilling the tub with fresh water every 4-8 weeks or as needed. Frequent water changes allow you to clean the surfaces of the tub as well.

Your new cedar tub will leach a reddish color into the water for the first several fillings, and with some water conditions, a small amount of foam may form on the surface. The natural tannin oils in the wood cause this. It is what gives the wood and water that wonderful smell – it is harmless and will diminish with time. You can speed up the process by more frequent water changes.

## **Filter Cleaning**

You should clean your filter every 2 weeks. Here's how:

1. Close the valves to isolate the filter. Remove the cartridge from the canister according to the manufacturer's instructions.
2. Spray the filter with a garden hose equipped with a straight flow nozzle. Work from top down and wash the pleats – especially between the pleats where the most dirt builds up. Smaller filters may fit in your dishwasher.
3. Rinse until all the dirt and debris is washed off.
4. 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.
5. Rinse again to remove oil and detergent. 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. Rinse thoroughly and reassemble.

6. Replace the filter once per year.
7. Tip: Order a second filter and swap the filters each time you clean them. Allowing the filter to dry out completely between improves performance.

**Hydroquip Troubleshooting Guide. (Please refer to Hydroquip user and installation guides)**

**Weak water flow.** Clean filter. Check that all valves are fully open. Check that there is nothing blocking suction fittings, leaf basket or water lines.