

Connecting the SmarTouch 1000 Gas Heating System to your tub

September 2008

Getting Started - General Installation Considerations:

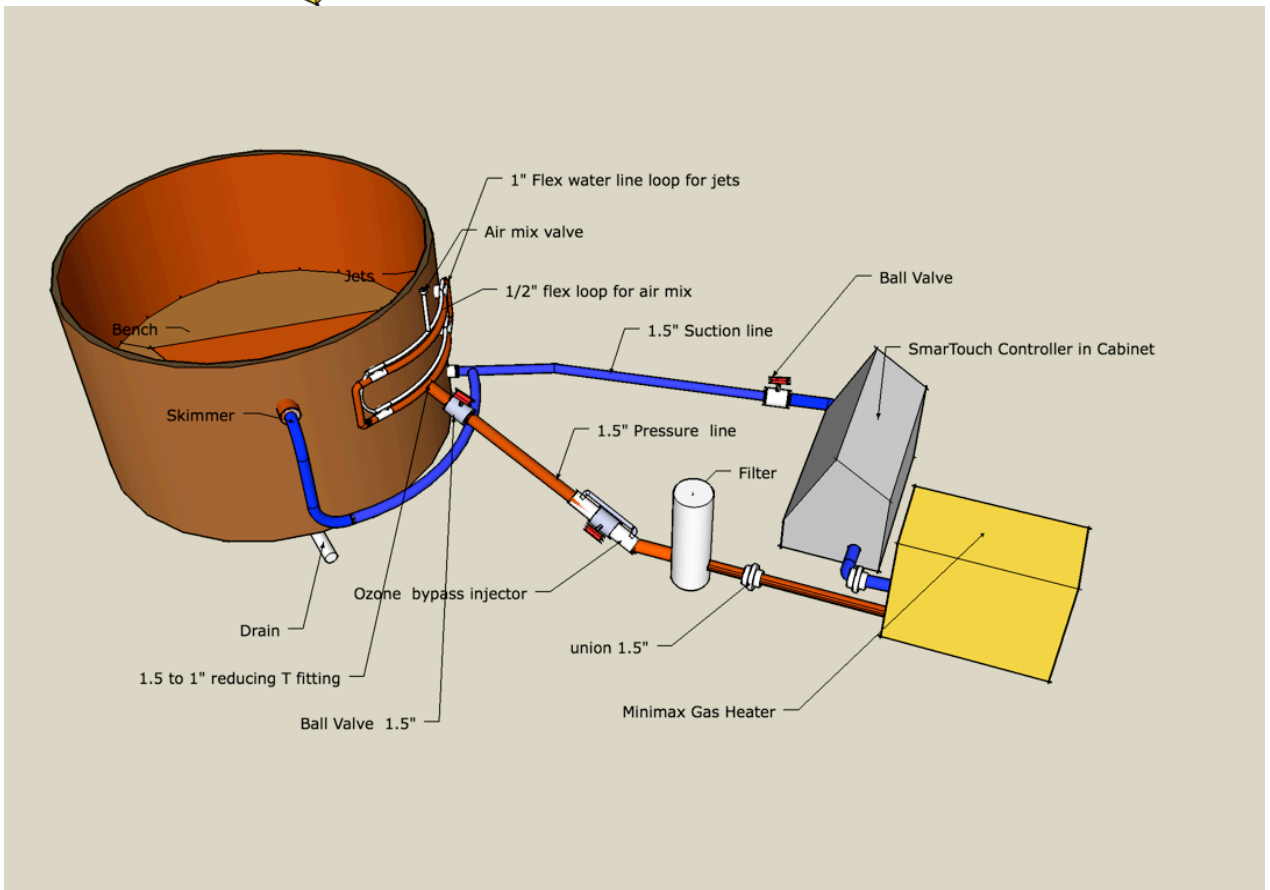
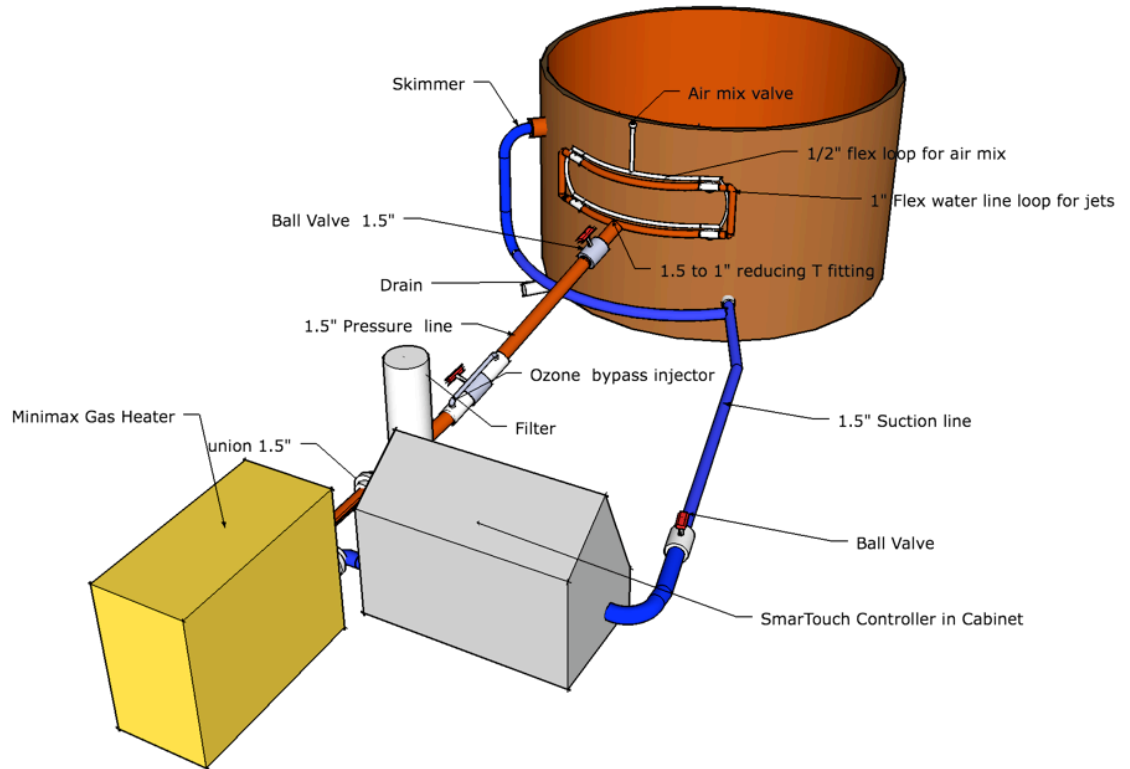
This document and the attached diagrams provide a general picture of how the system is set up. Your site considerations may dictate some changes. The placement of the components is flexible, however there are a few important rules to follow. Read the following points carefully before starting your installation.

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. Your pump has one speed for filtration, heating and jets. The pump we use is very quiet and efficient – in fact it helps to heat the tub by capturing the heat from the pump motor. The controller manages the temperature, filter cycles, and pump. The user interface is through the remote 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 SmarTouch 1000) 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. This can be accomplished by using the stainless steel cabinet we offer, by locating the equipment under a surrounding deck or by other means built on site.
3. Electrical devices used with hot tubs need to be wired into a GFI protected circuit. The SmarTouch comes complete with a Ground Fault Interrupt circuit breaker built in to the unit. No additional GFI is required.
4. Electrical connections must be done by qualified professionals familiar with local code. 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 SmarTouch pump does not self-prime. It should 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 will 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 SmarTouch controller **MUST** be protected from direct rain and snow. This can be accomplished by using the optional cabinet we offer or by building weather protection on site. 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 hose 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 SmarTouch, 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 hack saw. 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.
- **Holes.** If the holes for jets and suction fittings were not pre-cut (in most cases we have cut them for you), cut them once the tub assembly is complete. Use a hole saw and start the cut from the inside of the tub – once the pilot bit emerges on the outside, stop, and finish the cut from the outside to prevent tearout. Take care not to place the holes where they interfere with the exterior hoops or bench supports. The round suction fitting should be placed low (under benches if possible) about 6 – 18 inches from the floor. The large rectangular skimmer fitting should be placed high – about 10" from the rim of the tub. See diagram for ideas for jet locations.
- **Installing Suction and Jet fittings.** 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.



- **Suction and Skimmer.** Once the tub is assembled, install the suction fittings. The skimmer is installed in the hole that has been cut. The suction fitting has a 4” circular perforated cover. This one is installed in the lower hole. The slotted or perforated side goes on the inside of the tub of course. Be sure the covers are in place on each – they insure that the suction cannot be blocked – **This is an important safety feature of your tub.** The rectangular skimmer face is installed with the suction at the bottom of the rectangle. The covers are held in place with 3/4” stainless screws included. Use the screw to lock the skimmer in place. 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 jet fittings. They have a set of parallel tubes on the back and an adjustable eyeball in the center, which can be used to direct the water in a range of angles. If you need to cut holes for the jets or suctions (in some cases the tub is sent without holes cut) – use a hole saw. In most cases the holes have been cut for you on selected staves. Tighten the nut on the outside of the suction fitting 1/2 turn past hand tight. Make sure the tubes are parallel to the ground with the small tube on top. The small (1/2”) tube is for the air portion of the jets. The larger (1”) tube is the water connection.
- **Position Gas Heater.** Place the Minimax gas heater unit in its approximate location. Considerations are: ease of connection to gas source, ease of connection the SmarTouch control unit, proper clearance on sides (6”), front (24”) and above (36”) from any walls, shrubs, or fences.
- **Position SmarTouch controller.** Now position the SmarTouch controller and the Minimax heater equipment in their approximate locations. 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 from reaching it. **This is an important safety requirement! Be certain that SmarTouch 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 requirements in your area.
- **Suction Connections.** The suction and skimmer from the tub are joined then connected to the suction side of the pump (the middle port on the pump.) Using the included 90° elbows and/or “T” fittings, and the spa flex hose, make dry connections that join the two 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 between the tub and the 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 jets. Begin with the water supply for the jets (the larger 1” tubes) in a continuous loop with the supplied 1” flex tubing and the special “T” fitting that converts to 1.5”. This “T” connects to the line coming from the heater and filter. See the attach diagram. Next connect the smaller air supply for each jet (smaller ½” tubes) in a similar continuous loop with the supplied ½” flex tubing, small “T” and the air control valve. The air control valve must be just at the height of the rim of your tub – or slightly higher. This device is used to increase or decrease the amount of air mixed with water in the jets.
- **Connect Controller to Gas Heater.** Using elbows and flex hose, connect the output from the SmarTouch (large Stainless tube), to the input on the Minimax Gas heater. The instructions and

connection parts for the Minimax Heater may be shipped inside the heater. Open the connection plate to locate them if necessary. Read these carefully to properly identify the inlet to the heater.

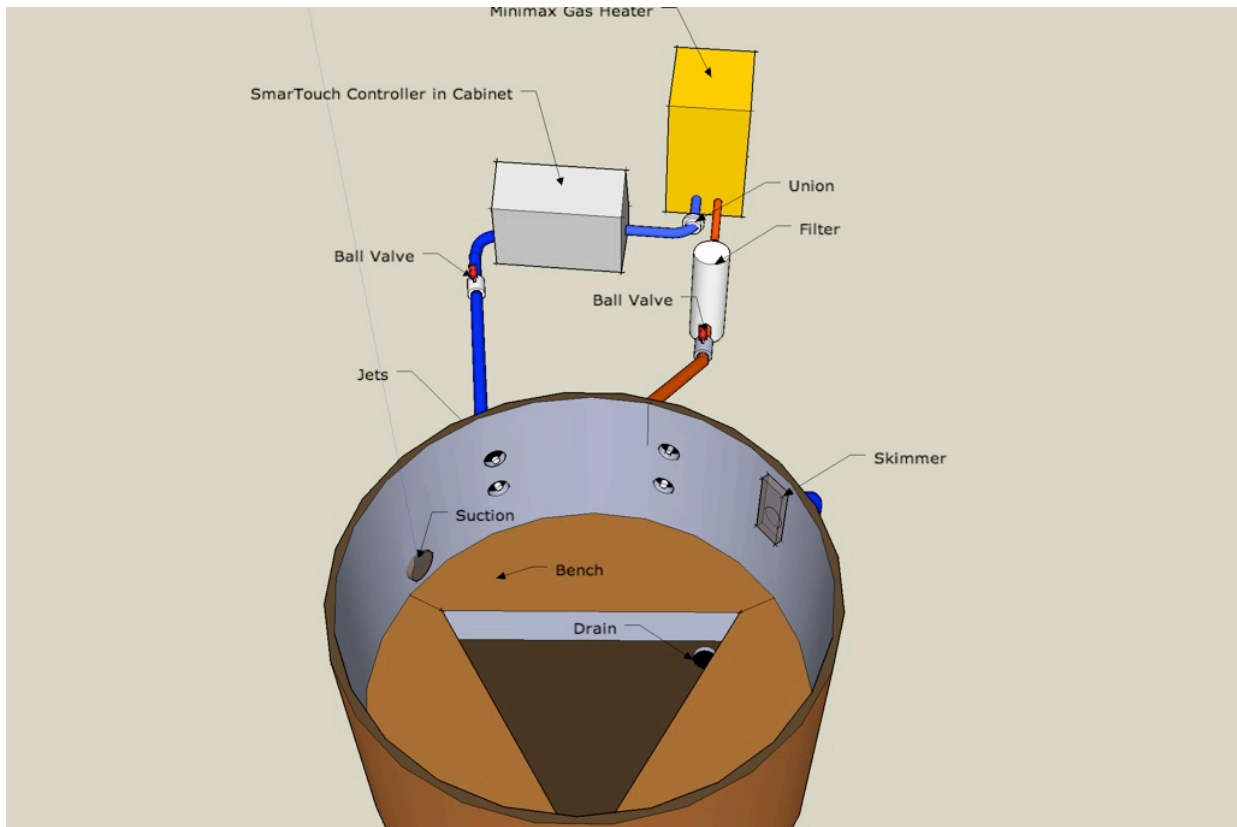
- **Filter.** Next install the filter taking care to align the IN and OUT properly. IN should be connected to the heater. OUT should be connected to the tub. Double check that the flow is going the right way. Be sure that the filter is in a convenient location because you will need to clean or change it regularly. You can mount the base to something like a piece of plywood for stability. The filter unit can then sit neatly in the base. Note the filter should be installed as near to vertical as possible. Between the filter and the jets, install the second ball valve in a convenient location. By placing a union or ball valve/union at the lowest point, the system can be easily drained.
- **Ozone.** The ozone system has two parts. One is the “bypass injector” made of 1.5” PVC pipe, and the other is the ozone generator in a waterproof box. See photo below. As shown in the diagrams above, the ozone injector should be installed as the last component on the return to the tub (pressure side). It is important to maximize the length of pipe from the ozone injector to the tub to allow maximum mixing of the water and ozone as the water returns to the tub. In other words, as the water cycles through the system, the ozone is the last component, but push it back from the tub as far as is practical to increase the contact between water and ozone. Read the installation instructions for the ozone unit carefully. The power for the box is supplied by plugging into the outlet labeled “Ozone” on the SmarTouch controller. The ozone generator will now operate automatically whenever the pump is running.



Ozone generator (black box), injector (white pipe)

- **Final Connection.** Now complete the Return line by using the spa flex hose to make the final connection to the jet line.
- **SmarTouch Touchpad.** The tub-side touchpad control panel plugs into the SmarTouch controller unit opposite the “OZONE” side. This panel should be placed close to the tub so you can adjust the temperature or turn on jets from within the tub. Use the included touchpad mount to attach it to a convenient location such as the side of the tub, deck, etc.
- **Electrical connections to the heater unit.** Contact a qualified professional electrician for these connections. Do not try to make these connections on your own. Refer to the SmarTouch installation instructions.

- **Gas Connection to the Minimax gas unit.** Contact a qualified gas appliance installer to make the actual gas connection to the heater.



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 SmarTouch user manual to learn how to set the temperature, time of day, filtration schedule and other heater functions.
- Turn the temperature on the Minimax gas heater all the way up to the highest setting. The actual temperature control will be done by the SmarTouch. If necessary, plug the Minimax into an electrical source.
- 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.
- Adjust the eyeballs in the jets as needed to get the jet action you prefer. Open or close the air control valve to adjust the jet air mixture. More air makes the jets more aggressive.
- To remove the filter, turn off the system, 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

- Set filtration cycles for 2 hours twice per day. Adjust as necessary. 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 at least every 4 to 6 weeks.
- Replace the filter 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 the ozone generator and sodium bromide in our wooden tubs. The basis behind 2-part bromine sanitizing systems is to add a salt of bromine (sodium bromide) to the water to establish a background bromide level, and then oxidize the bromide ions with an oxidizer such as potassium monopersulfate.

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

1. When you fill the tub with fresh water, add .5 oz of sodium bromide* per 100 gallons. This establishes a “bank” of bromide ions in solution. Turn on filter for 20 minutes to mix the water.
2. Add about 2 ounces of potassium monopersulfate (Renew*) and run filter for 15 minutes. This will release bromine into the water where it goes to work for a couple of hours – after which it is gone.
3. After each tub use add one ounce Renew (more if heavily used) and run filter for 15 minutes. Do this at least 3 times per week even if the tub is not being used.
4. Set the filter to come on 2 - 4 times per day for a total time of about 4 hours.
5. Clean filter every 2 weeks. (see instructions below on filter cleaning)
6. Use bromine test strips to check bromine level. Balance pH between 7.2 – 7.6. Lower with sodium bisulfate - or use Spa Down*. Raise with baking soda or soda ash – or use Spa Up*.
* these items available on our website – woodentubs.com

We recommend draining and cleaning and refilling the tub with fresh water every 4-6 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. This is caused by the natural tannin oils in the wood. 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 manufacturers 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. You can order a replacement through our website: woodentubs.com.
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. Order tub supplies from woodentubs.com.

SmarTouch Trouble Shooting Guide.

PSoC, PSoL, PSoH Pressure Switch Errors. This common problem is caused by air trapped in the pump or filter. To bleed excess air turn power off. Open the bleed valve on the top of the filter until water only flows. Then open the upper union fitting on the water pump about a half turn – until water flows out freely. Turn power back on.

Weak water flow. Clean filter. Check that all valves are fully open. Check that there is nothing blocking suction fittings.