# EXTENDA SWIM™

## Wood Fired Pool Heaters

# Owner's Manual

Complete Installation and Operating instructions

Rev 1.05

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# Congratulations on your purchase!

Please take a few minutes to read through this owner's manual before installing and using your heater.

## Each Heater Is Shipped With:

1 - Vent Cap
1 - 24" Stove Pipe
1 - Magnetic Chimney Thermometer
2 - 1-1/2" PVC Tees with Drain Plugs
2 - 90 Degree 1-1/2" PVC Elbows

## Contents Page



## For Orders, Questions, or Support:


Email: sales@extendaswim.com
Phone: 1-866-636-8181
Web: www.extendaswim.com

# A Letter from the Owner of ExtendaSwim

My wife and I had a pool for over forty years without a heater. It seemed to never fail, if we planned a pool party, the water would cool off and ruin our plans. In the summer of 1997 this happened, and I decided to spend the money to get a heater.

I live within the city limits, so natural gas was available and I thought this would be the best way to heat the pool. When I checked with the local pool company on heaters, the range of prices was $1,500 to $2,500 uninstalled which seemed reasonable. But then, I was told a licensed plumber was required to run a gas line to the unit which could cost up to $1,000. I would also have to get a licensed electrician to hook it up which was another $300 - $500. Plus I would have to get the city out to do an inspection. The bottom line was a price tag of $3,000 - $4,000 plus the cost of natural gas, which is always going up and already very expensive. Needless to say, I decided against the idea and started looking around for an alternative heat source.

I was fortunate that I own a small business where I could build and develop my idea for a wood fired pool heater. We experimented with numerous versions until we had one that performed up to our expectations.

I have had a wood fired pool heater at my home now for 13 years and am very pleased with its performance. In the spring, when we open the pool, the water temperature is usually about 50-60 degrees. It takes us about 24 hours to raise the water to about 85 degrees (our pool is about 20,000 gallons.) When I run the heater, I keep a solar thermal blanket on my pool at all times. The solar blanket eliminates almost all of the heat loss, especially during cool nights. During the day, I add wood every 1.5 to 2 hours, depending on the size of logs I use and how seasoned or dry they happen to be. At night, around 9pm, I fill the firebox with wood and completely close the draft door, this makes the fire burn long and slow. I leave my pump running all night. The next morning around 7-8 a.m. there is still a good bed of coals, and I start the process all over again by adding more wood to the fire. The majority of heating occurs during the daytime fire and the night operation is mostly to maintain the pool temperature, especially when we have a cool night. During the 13 years that I've had my heater, I have not used more than 1 cord of wood per season.

The second year I had my heater, a close friend of mine was over at the house and noticed my heater; he really liked it, so I built him one. He just loved it and his results are about the same as mine, you can see his testimonial on our website.

When I first started experimenting with these heaters, my wife thought I had lost my mind, and she didn't want one. But, when I removed the heater from my yard and brought it into my shop to inspect it and see how well it was holding up after the first year. She said I had better bring it right back and get busy heating up the pool! It only took her one season to become hooked on how nice it was to extend our swimming season, and swim so much longer than ever before.

The year after my first season with the new wood heater, we decided there must be more pool owners in our same situation who just can't justify spending the money for natural gas or propane. Many customers can only get propane and the cost is always going up. We decided at this time to start producing our heaters in quantity, for sale across North America. Today, we are still the only professional manufacturer of wood fired pool heaters in the United States and we stand behind our heaters 100%.

*Richard Norton*

# Safety Instructions

**The heat exchanger must be grounded** to the pool pump or a grounding rod, see 'Grounding' in this owner's manual for details.

**NEVER** burn a fire in the unit unless water is flowing through the heat exchanger.

If for any reason the water flow is disrupted, extinguish the fire immediately with water, or shovel out the hot coals. This will avoid damaging the PVC fittings attached to the heater.

If your pump has an automatic timer, make sure it is in manual override mode before burning a fire in the heater. This will avoid an accidental shut off of water flow.

**NEVER** turn off your pool pump until the fire is completely out and the stove has cooled off below 100 degrees on the chimney stack thermometer.

**NEVER** use flammable liquids of any kind to start your fire.

**NEVER** insert a gas burner or torch inside the firebox to start a fire or to produce heat.

**NEVER** install your unit inside a building, enclosure, or under a deck.

**ALWAYS** keep the area around the wood heater clear of dry weeds, leaves and flammable material.

# Installation

## Handling

When the heater arrives, inspect it for shipping damage before the delivery driver leaves. Any damage should be reported to the shipping company immediately.

The heater should remain shrink-wrapped until it is moved to its final location. This will protect the painted finish.

When the unit is close to its final position, remove the shipping straps, walk the stove to the edge of the shipping pallet, and slide a utility dolly under either long side. Use the dolly to move the heater to its final position.

Always lift the unit from the bottom. The top plate of the heater is not made to support the full weight of the unit.

## Location

Picking an appropriate location for your new wood heater is a very important step in the installation process. The heater should be placed on a 36” by 36” concrete or brick foundation.

The heater can be placed as close as 2’ from your pool pump, and installing the heater close to the pump is the most efficient way to heat your pool. The heater can be installed up to 50’ from the pump, if a remote installation is desired. 1.5” PVC piping is fine for short distances, but 2” PVC should be used when the heater is placed further than 10’ to 15’ from the pool pump. Insulating and burying long runs of piping is also recommended.

4’ of clearance is required between the heater and any building or structure. Check with your local building inspector for further restrictions. It is the responsibility of the user to comply with all state or local building codes.

## Assembly

1) Unwrap the shrink wrap packaging.

2) Open the firebox and remove the enclosed accessories.

3) Slide the stove cap over the end of the stove pipe without the sealing bead.

4) Insert the end of the stove pipe with the sealing ring into the top of the stove. There are metal tabs inside the stove top opening which can be bent in or out to obtain a tight fit.


5) Attach the magnetic thermometer to the middle of the stove pipe one foot up from the top of the heater.

# Glass Door Installation (optional)

In heaters with a glass door upgrade, the glass is held in place by two flexible tabs and two stationary tabs. Figure 7 shows the two sets of tabs located on the inside of the door.

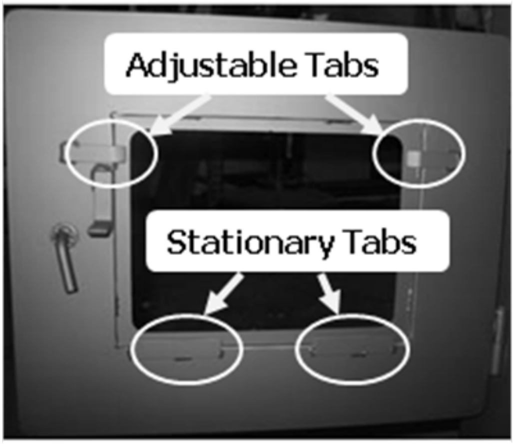


**Figure 7**

To install the glass, bend the adjustable tabs out if needed, then insert the glass from the top down into the stationary tab groove. Set the pane flush into the window opening and press the adjustable tabs in until they lightly hold the glass in place, as seen in figure 8.

**Figure 8**

# Plumbing

The heater is designed to be plumbed into your pool's filtration system. The pool heater is inserted into the filtration circuit after the pool filter and before any chlorinator as seen in figure 1. The heater must be installed upstream of any chlorinator or chemical dispersion system. Passing undiluted pool chemicals through the heater can cause corrosion, and reduce the life of the heat exchanger.

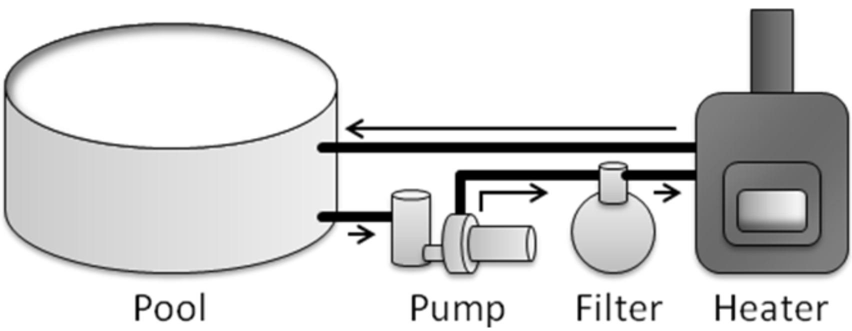


**Figure 1**

The most basic installation, shown in figure 2, uses two drain plugs, two 90° elbows, and a few lengths of PVC pipe.

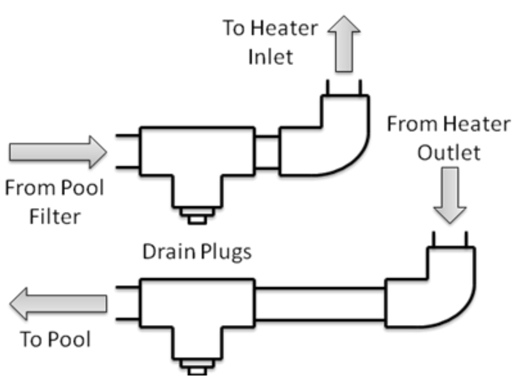


**Figure 2**

The 90° elbows are attached to the PVC inlet and outlet pipes coming down the back of the heater. The drain plug tees are installed with the plugs pointing down so that the unit can be fully drained when winterizing. Water left in the unit during a freeze can damage the heat exchanger.

The optimal installation, shown in figure 3, includes a three valve bypass system, drain plug tees, flexible hose connections, and a digital thermometer kit. Omitting various components of the optimal installation allows for many possible installation configurations.

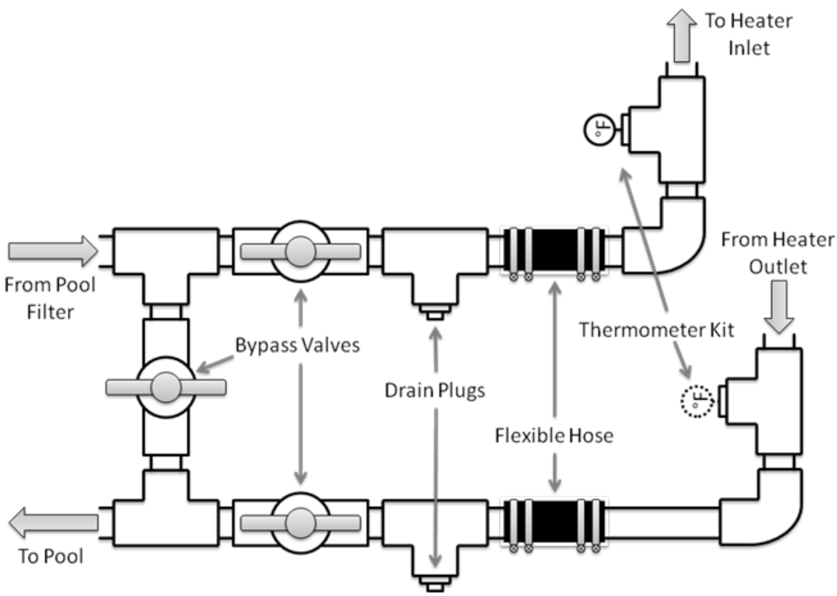


**Figure 3**

<u>The bypass kit</u> allows your pool's filter system to partially or fully bypass the pool heater. Removing the heater from the filter circuit can be useful when winterizing the unit or to reduce wear on the heat exchanger when the heater is not needed for any length of time.

The bypass kit consists of two standard 1-1/2” PVC tees and three 1-1/2” PVC ball valves. This kit can be purchased from Extenda Swim, or bought locally. Figure 4 shows the correct bypass valve settings to run water through the heater, and the settings to bypass the heater.

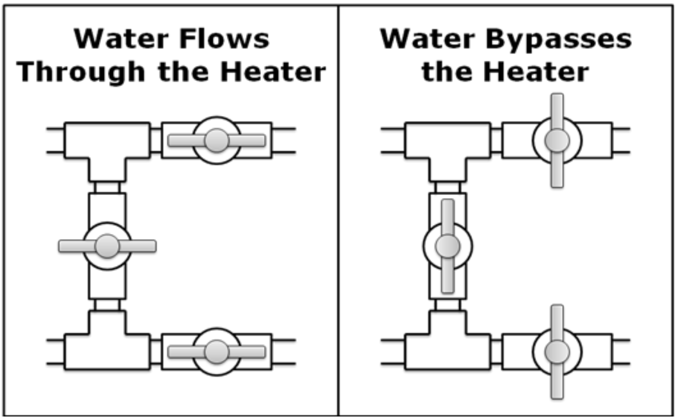


**Figure 4**

<u>The digital thermometer kit</u> allows you to easily measure heater performance by comparing the inlet and outlet water temperature. This is very useful when determining an effective wood burning routine, and when comparing different species of firewood. The digital thermometer kit includes two 1-1/2” PVC tees, two ½” NPT Pete Ports, and a probe style digital thermometer.

<u>Flexible hose couplings</u> make it easy to align the heater to rigid PVC connections. A flexible hose installation uses eight 2” hose clamps and two 6” to 12” lengths of 1-7/8” ID radiator hose. These items should be available at a local auto parts store.

If your pool uses 2” PVC, the plumbing can be reduced to 1-1/2” PVC at the heater with two PVC reducers. An alternate bypass system is recommended with 2” tees and a 2” middle ball valve as seen in figure 5.

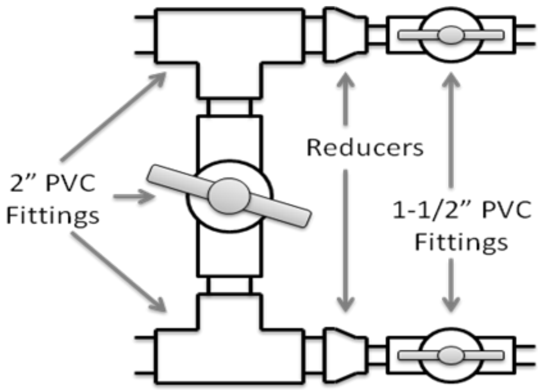


**Figure 5**

## Grounding

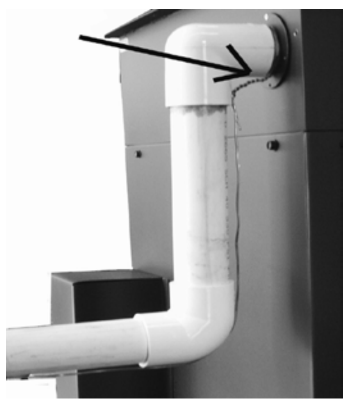

**Figure 6**

To prevent corrosion of the heat exchanger, it must be grounded to the pool equipment ground or to a copper grounding rod driven 6 to 8 feet deep into the earth. For proper grounding, remove the protective inlet or outlet cover and connect one end of a 12 gauge solid copper grounding wire to one of the metal heat exchanger nipples. The connection is made by stripping bare approximately 15” of wire, wrapping it twice around either the inlet or outlet stainless steel nipple, and twisting the wire until a secure connection is made. Figure 6 shows an example of a tight connection. Connect the other end of the ground wire to your pool pump ground or to a copper grounding rod.

# Operation

Before starting a fire, make sure water is being pumped through the heater! If no water is running through the heater, the PVC fittings attached to the stainless steel heat exchanger will melt and detach. The unit is designed to fail in this manner to prevent the buildup of steam and very hot water, which could possibly damage other pool components. The stove body and heat exchanger are designed to survive a dry burn, and any damaged PVC fittings and piping can be easily replaced.

To start a fire in the firebox, begin by opening the main door and lowering the damper door. Load paper, kindling, and small starter logs. Next, add small wood and a few bigger pieces (split wood works better than full logs for starting a fire because the loose fibers in split wood burn easier.)

Use matches to light the fire. DO NOT use flammable accelerants like liquid fire starter!

Once a fire has been started, close and latch the main door. Leave the damper door open about 4-5 inches. The fire receives all of its air through the damper and you want it open when starting the fire. Close the damper door to about 2 inches after the fire gets burning good. This will restrict the air flow and allow the fire to burn long and hot.

Depending on the type of wood you are burning, you will need to add wood every 1 to 2 hours. Hardwood generally lasts longer and generates more heat. Page 16 contains a BTU output table comparing the energy potential of different wood species. Wood can be loaded as often as you'd like depending on how fast you want to heat your pool.

Remember to NEVER turn off your pool pump until the fire has been out and cold for at least an hour, this will avoid overheating and possibly melting the inlet and outlet piping.

When the pool has reached the desired temperature, simply let the existing fire burn out while the pump is still circulating water (this can take 2-6 hours.) A gentle stream of water can be used to extinguish the fire quickly, but flooding the firebox is unnecessary and can lead to excessive rust. The heater does have a drain hole which will allow excess water to disperse.

After a few weeks of operating your pool heater you should find a comfortable wood loading routine to effectively heat your pool.

# Maintenance

- In the fall or before any freezing conditions, be sure to drain all water from the heat exchanger, flush with fresh water, and blow out any remaining water.

- In the spring and fall, use a wire brush to remove any rust and touch up the heater's exterior with a high temperature BBQ paint.

- In the fall and spring, apply a high temperature grease to the four door hinges.

- During the winter or periods of non-use, it is highly recommended to use an Extenda Swim custom fit vinyl cover or a heavy duty tarp to protect your heater from the elements.

# Frequently Asked Questions

**Q. How fast can I raise the temperature in my pool?**
**A.** This depends on the size of your pool and the use of a solar blanket. In all of our testing and customer responses, the following results are common. To achieve these results you must use a solar blanket, tend the fire often, use split seasoned hardwood, and the ambient temperature needs to be at or above 60°F.
<u>Small heater: 1°F per hour, per 9,000 gallons.</u>
<u>Large heater: 1°F per hour, per 18,000 gallons.</u>
<u>X-Large heater: 1°F per hour, per 26,000 gallons.</u>

**Q. How can a solar pool blanket help heat my pool?**
**A.** A solar pool blanket traps heat in your pool and reduces both convection and evaporative cooling. Large amounts of pool heat can be lost through the water's surface, especially in cold and windy conditions. Using a pool blanket helps your pool heat up faster and stay warm longer. For the best heating results, a pool blanket should be used whenever the pool is not in use, especially at night.

**Q. How much wood will I use to heat my pool?**
**A.** Generally, our customers use one to two cords of wood per season, but the amount of wood used in a season depends on many factors including pool size, use of a solar blanket, how warm you keep your pool, and the length of your swimming season.

**Q. How do I empty the ashes from the fire box?**
**A.** After your fire is totally out, open both doors and use a small shovel to scoop the ashes into a metal container; in case there are any hot coals. Also, keep a small fireplace brush handy to sweep off the damper door after removing ashes.

**Q. How hot is the water coming out of the heater?**
**A.** With good dry hardwood and a blazing fire, the outlet water can be from 3°F to 12°F warmer than the inlet water at a flow rate of 50 gallons per minute.

**Q. How often do I need to add wood to the fire?**
**A.** To heat the pool quickly, hardwood should be added every 1-1/2 to 2 hours; this will keep the fire blazing hot. Softwoods like pine require more frequent loading.

**Q. How hot should the chimney thermometer get?**
**A.** The chimney thermometer should read between 300 and 500°F when bringing your pool to up to temperature. High temperatures indicate a better fire which will heat your pool quicker.

**Q. How do I maximize my chimney temperature?**
**A.** When burning wood in the heater, be sure to use the entire firebox. Before adding wood to your fire, spread the hot coals to all four corners of the firebox and lay split hardwood across all the coals. After the fire is set, close the main door and open the draft door to the second hanger position. Following these steps should result in a chimney temperature of 300-700°F. The temperature will go down as the fire burns down. After an hour or so, when your chimney temperature drops to 150-300°F, it is time to add more wood.

**Q. Can I extend the length of my chimney?**
**A.** Yes, the heater uses a standard eight inch single wall chimney pipe. Extension pieces can be purchased from Extenda Swim or at a local hardware store.

**Q. The metal lining inside the fire box is warped, is that normal?**
**A.** Yes, it is normal for the internal stainless steel panels to warp due to the intense heat of the fire and the warping does not affect stove performance.

**Q. Can I burn the heater during a rainstorm?**
**A.** Yes, rain will not significantly affect the performance of the heater.

**Q. Can I burn coal, fuel pellets, trash, or leaves in the stove?**
**A.** The heater is designed to burn wood only. Burning other materials in the heater may void your warranty, and usually results in unsatisfactory heating performance.

**Q. My pool is not heating up as advertised, what should I do?**
**A.** Many factors affect raising the temperature of your pool. The first thing to do is check that water is flowing through the heater correctly. See figure 4 on page 9 for proper bypass valve settings. Check that there is a strong and steady flow from the pool's return jets. Next, follow the suggestions in the previous question, "How do I maximize my chimney temperature?" Maintaining a good fire is necessary to achieve good pool heating. Covering the pool with a solar blanket is imperative during cool or windy weather. Without a pool blanket, water freely evaporates from the pool surface and cools the pool. If your pool is still not heating as well as expected, call our support team at (866)636-8181. We stand behind our heaters 100%.

**Q. Where can I go for more information on heating my pool?**
**A.** Please visit our website: www.extendaswim.com, email: service@extendaswim.com, or call us at (866)636-8181.

# Wood BTU Output chart

| Wood Species | Weight (lbs./cord) | Energy (MBTU/Cord) |
|---|---|---|
| Hickory | 4,330 | 27.7 |
| Hop hornbeam | 4,270 | 27.3 |
| Apple | 4,100 | 26.5 |
| White Oak | 4,010 | 25.7 |
| Beech | 3,760 | 24 |
| Red Oak | 3,760 | 24 |
| Sugar Maple | 3,760 | 24 |
| Yellow Birch | 3,690 | 23.6 |
| White Ash | 3,690 | 23.6 |
| Hackberry | 3,250 | 20.8 |
| Tamarack | 3,250 | 20.8 |
| Paper Birch | 3,180 | 20.3 |
| Cherry | 3,120 | 20 |
| Elm | 3,050 | 19.5 |
| Black Ash | 2,990 | 19.1 |
| Red Maple | 2,920 | 18.7 |
| Box Elder | 2,800 | 17.9 |
| Jack Pine | 2,670 | 17.1 |
| Norway Pine | 2,670 | 17.1 |
| Black Spruce | 2,480 | 15.9 |
| Hemlock | 2,480 | 15.9 |
| Ponderosa Pine | 2,380 | 15.2 |
| Aspen | 2,290 | 14.7 |
| Balsam Fir | 2,240 | 14.3 |
| White Pine | 2,240 | 14.3 |
| Basswood | 2,110 | 13.5 |
| Cottonwood | 2,110 | 13.5 |

1 MBTU = 1,000,000 BTU

# Warranty

Rogers Machine & Tool, Inc. warrants the Extenda Swim Pool Heater, to the original owner, to be free of manufacturing defects for the limited term of two years. This warranty period begins on the purchase date and includes parts and labor for the repair or replacement of the stove body and/or the heat exchanger. Any covered warranty repairs must be preauthorized by Rogers Machine & Tool, Inc.

This warranty is void if the stove body or heat exchanger is repaired or altered in any way without the preexisting consent of Rogers Machine & Tool, Inc. This warranty is applicable only if the unit has been installed, operated, and maintained in strict congruence with this owner's manual.

If the entire unit must be returned to the factory for repairs, the owner is responsible for preparing the unit to be shipped by securing it to a wooden pallet and making it accessible to our shipping company for pick up. Upon return to our factory, we will inspect the unit, and if the defect is determined to be the result of a material or manufacturing deficiency, the heater will be repaired and returned to the owner at no cost. If it is determined that the defect was caused by misuse, the owner then becomes responsible for the cost of shipping the unit to and from the factory as well as the cost of any desired repairs.

The liability of Rogers Machine & Tool, Inc. does not exceed the original purchase price of the heater or the amount required to repair or replace any defective parts.

The limited warranty explicitly does not cover the following conditions:

1. Warped steel caused by burning the stove
2. Melted PVC fittings due to insufficient water flow
3. Rust or paint fading
4. Broken or cracked firebrick
5. Leaks in the heat exchanger due to improper pool chemistry, improper grounding, or improper winterization

EXTENDA SWIM™

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