

Sweetwater Hot Tubs

Memorandum

To: Vincent Fiorello, President
From: Bo Bayles, Student consultant
Date: 10 June, 2005
Subject: Improving Hot Tub Operating Instructions

As requested, I studied the Operating Instructions at <http://www.sweetwatertubs.com/OperatingInstructions.htm> to see how they could better include safety information and better explain operation procedures to users. Notes on my revisions are below.





Discussion

Headings and Structure

The current instructions have two sections, “Starting the stove” and “Temperature control and efficiency.” I renamed them to “Heating Instructions” and “Notes On Temperature Control and Efficiency” to better reflect their content. I also moved some of the tips from the Temperature Control section into the Heating Instructions section, since they applied there. Placing these tips in the instructions section allows users to see them as they are performing the heating steps. I also gave both sections consistently styled headings to increase the instructions' readability.

Safety

It is vitally important to include all relevant safety information in operation instructions, and to present this information clearly. Failure to do so could result in the injury of customers and/ or costly lawsuits. The current operating instructions have a number of safety notes and warnings, but they are not coherently grouped or consistently emphasized. To remedy this, in my revision, I divided all notes into four categories:

- ◆  **DANGER:** The “Danger” category is for actions that could result in serious injury or death to users.
- ◆  **WARNING:** The “Warning” category is for actions that could potentially result in injury.
- ◆  **Caution:** The “Caution” category is for actions that could damage the hot tub.
- ◆  **Note:** The “Note” category is for advice on how to perform a step, or a tip.

I gave each category its own icon and style to help draw attention to the safety notes and distinguish them from the rest of the instructions. All the safety warnings are in bold text that is a

different font from the body text. The most serious categories, Danger and Warning are written in caps to make them stand out, and the Danger category has a red border.

I moved the safety notices from their places in the current instructions to places where I thought they were more useful, and made revisions to some to increase their effectiveness:

- The current instructions say “Drinking and hot tubs do not mix.” While this gets the message across, I put this notice at the top in a “DANGER” box, since the action it describes could result in serious injury or death.
- There is not mention of a drowning hazard in the current instructions. While this is may be obvious, I think it is important to prominently state the risk. I put a notice to always supervise children around the hot tub in the “DANGER” box at the top of the first page.
- There is a note on health concerns for pregnant women, heart patients, and fertility patients at the bottom of the current instructions. I think this notice would be more effective at the beginning of the instructions – users should know the risks before they've followed the instructions to use the hot tub. This warning's action could result in injury or health problems, so I put it as a “Warning” item.
- There is a note on what not to use to clean the hot tub in the current instructions. Since improper cleaning could result in damage to the tub, I put this notice as a “Caution” item. Since this note isn't on Heating or Temperature Control, I placed it outside those sections, at the top, for easy access to readers.
- Since they involve the heating process, I moved the two notices about making sure there is enough water in the stove chamber to the Heating Instructions section.
- The last step of the current instructions, “Check the water temperature before entering the tub,” I thought was better suited as a “Warning,” since its action could result in injury.

One of the notes in the Temperature Control section says:

“If you are leaving for the day and want a hot tub on your return, fill the stove with wood and use the damper to slow the rate of burn so the fire will continue for hours. It should be hot when you return. This is not recommended in high fire season. It is always a good idea to have someone attending a wood-burning stove.”

While this might be desirable to some customers, I don't think it is in Sweetwater's best interest to recommend this practice in its operating instructions. There is a chance for injury or property damage, and Sweetwater could be named partially responsible. I omitted this tip, and added a “DANGER” box at the top of the section about not leaving a burning stove unattended.

Directions

I made some minor modifications to the operating instructions to make them more clear. I separated each instruction part from its result, e.g. “Light the kindling” is followed by “Air will draw in through the air intake.” I also added some notes from the Temperature Control section that were relevant to a step in the Heating Instructions. All the changes are in the attached instructions sheet.

I have two ideas for improvements that I could not implement, but I think would enhance the instructions:

- I think a labeled drawing with the parts mentioned in the instructions would be helpful for readers. It could be placed alongside the instructions. I think it should label the “stack plate,” “intake baffle,” and “damper,” since these terms are used in the instructions, but might not be well-known.
- There is a note on what not to use to clean the hot tubs in the current instructions, but not any note on what someone should use. It might be helpful to include some information on safe cleaning practices for a Sweetwater tub.


Conclusions


I made a number of revisions to the online instructions that I think help improve their clarity. While the current instructions do a good job of explaining how to use a Sweetwater hot tub and what precautions to take, I think that changing the layout can help users better understand what they need to do to be safe and enjoy their hot tubs. My revised instructions are attached. Please contact me if you have any questions.


Attachments: Revised Operating Instructions

Hot Tub Operating Instructions

When using your Sweetwater Hot Tub, observe the following safety guidelines:


 **DANGER:** Never leave children near the hot tub unattended. Do not use your hot tub while intoxicated. Doing so increases risk for burns, drowning, and serious injury.


 **WARNING:** Using a hot tub can result in an accelerated heart rate and a lower sperm count. Do not use your hot tub without first consulting your physician if you are pregnant, if you have a heart problem, or if you have a fertility problem.

 **Caution:** Do not apply urethane to or treat the inside or top edges of any Sweetwater hot tub. This could cause the tub to leak.

Many problems occur when friends who are unfamiliar with the hot tub's operation attempt to use the stove. Make sure everyone who uses the hot tub has a copy of these instructions.

Heating Instructions

 **Caution:** Always make sure the stove chamber contains enough water. The label on the end of the stove indicates the minimum water level. The stack plate (the horizontal plate from which the chimney stack emerges) must be covered with at least 1" of water. If the stack plate is exposed to air when a fire is burning in the stove, it can melt in a matter of minutes.

 **Caution:** The stove is made of aluminum and will melt at the hot temperatures produced by wood fires if not adequately cooled by water.

1. Place several pieces of wadded newspaper or cardboard on the bottom of the stove.
2. Lay enough kindling or small logs in a criss-cross pattern until the newspaper or cardboard is covered.



Note: To produce a clean burn, fuel your fire with clean, dry kindling. If you get excessive smoke, reduce the amount of wood with which you are starting your fire.

3. Open the damper if your model has one.
4. Use a match or lighter to light the newspaper or cardboard. Set the door to the edge of the intake baffle (steel divider).
 - Air will draw up through the intake.
5. Once the fire has taken hold, add more wood to the stove.

- Start by adding small pieces slowly. Give the fuel a chance to catch fire before adding more. Add wood until the stove is filled with burning wood.
6. While the tub is heating, occasionally stir the water with a paddle or piece of flat wood. This will prevent stratification (hot water staying at the top of the tub) and allow for more accurate temperature readings.
 7. Keep filling the stove with wood until the thermometer says the tub's water is 10 degrees from your desired bathing temperature (approximately 104 degrees Fahrenheit). Then let the fire burn down.



Note: If you overheat the water, it is easy to cool the tub back down. Add cold water to the tub until the temperature is reached. After using the stove a few times, you will be able to gage fairly accurately the heating time required

- Keeping the stove filled with wood while it heats the tub for the optimum heating rate. The hotter and faster the fire burns, the more quickly the tub heats.



WARNING: Always check the water temperature before entering the tub.

Notes on Temperature Control and Efficiency



DANGER: Never leave a burning stove unattended. Risks include injury, property damage, and death.

- Heating time depends on the size and type of wood used for fuel, its dryness, and how frequently the stove is refueled.
- For maximum heating speed, cut your wood small, fill the stove as full as possible and set the air intake to allow maximum draw.
- For longer burns and better efficiency, use the damper to decrease airflow.
- If you use your tub daily, you can prepare for the next day by heating the water when you are finished. Follow the Heating Instructions and heat the tub to between 110 and 120 degrees Fahrenheit. Extinguish the fire. The tub should cool to near bathing temperature by the next day (depending on outside temperature).