SKUTT
GLASS KILNS

FireBox Operating Manual

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FireBox 8 Operating Manual

Be Safe

Tens of thousands of kilns are used safely in homes, schools, and professional studios throughout the world. With a good understanding of your kiln and a little common sense you can avoid any accidents. Please observe the following safety recommendations:

- **The stainless steel jacket and some of the other fixtures surrounding the kiln will get hot enough to burn your skin when the kiln is heated. Therefore it is important to be extremely careful when working close to the kiln.**
- **Keep small children and pets away from the kiln when it is firing.**
- **Be careful when opening the kiln door while the kiln is heated. We recommend you use gloves to protect your skin from the hot air that can escape from the chamber of the kiln when opening the lid.**

- **The elements inside the kiln chamber will cause an electrical shock if touched. Never insert metal instruments into the kiln while it is firing. T♦ Always be sure to unplug the kiln before working on the electrical components of the kiln.**
- **Plan on being with the kiln at all times while it is firing.**
- **Remove all potentially combustible materials from the kiln area.**
- **Long term viewing inside the kiln chamber can cause damage to your eyes. Therefore, it is recommended that you use IR and UV protective glasses when looking into the kiln for extended periods of time. #3 welders green or gray glasses will protect your eyes.**

- **Always make sure the latches that hold the body of the kiln to the floor of the kiln are attached before starting the kiln. If the latches are not secure and you try to open the lid, it could tip over backwards.**

Location

1. Locate your kiln near your present 120 V, 20 Amp, electrical outlet or where a new circuit can be installed with the least cost. Position the kiln to the left of your electrical outlet so the cord will have an easy run and will not place a strain on the plug or outlet.
2. Install it in a well ventilated, sheltered area such as a carport, garage, utility or hobby room. It should be convenient to where you are working, and out of the way of traffic areas.
3. Allow at least 18" (46 cm) of space between your kiln and adjacent walls.
4. Do not locate the kiln where flammable materials will be stored.
5. Never fire your kiln within a four sided cabinet or closet. The fourth side must always be open to room air to prevent the kiln from overheating surrounding surfaces. .
6. The kiln must be placed on a non combustible surface such as cement, brick, metal or ceramic.
7. When installing a kiln in a room with a fire control sprinkler system, please check the sprinkler head rating to insure that heat emitted from the kiln will not activate the sprinkler system.

Preparation Before Firing

UNPACK KILN

Once you have located a spot for your kiln it is time to unpack it and set it up. Below is a list of all the components that should be included:

- Fire Box Kiln
- Stand
- Pyrometer Stand Box
- Pyrometer Box

Goodie Bag Contents

- Thermocouple Flange
- 2 Screws
- Warranty Card
- Glass Kiln Catalog
- FireBox Manual

If there are any items missing or you notice any freight damage contact your distributor immediately. Freight companies will not honor claims if too much time has passed from the time the item was received. You will notice that the seams between the brick will be missing mortar in certain areas. This is normal and will not affect the performance of the kiln. Mortar is intensionally left out of the seams near the elements so it will not come in contact with the element itself.

Remove the stand from the box and place it where you have chosen to locate your kiln. The stand should be oriented so the channels are on the sides. Place the kiln on top of the stand and center it. Plug the kiln into a 120 V receptacle. Make sure the receptacle is wired to a 20 Amp breaker and the proper gauge wiring has been installed. See the Electrical Specifications section for electrical installation guidelines.

Vacuum the Kiln

Often times during shipping brick dust will accumulate in the element grooves and on the bottom of the kiln. We recommend that you vacuum the inside of the kiln to remove any dust that accumulates during shipment.

Prime Kiln Shelves

You will want to apply a shelf primer, also referred to as kiln wash, on your kiln shelf (purchased separately) to protect them from melted glass adhering to them. There are a number of different formulations with different instructions for application so be sure to follow the directions of the brand you choose. Be sure newly coated shelves are dry before firing them in the kiln.

Install Thermocouple and Pyrometer

- Install the Thermocouple Flange by placing it over the hole on the left side of the kiln and lining up the screw holes with the holes in the base of the flange. Use a Phillips head screwdriver to attach the flange to the side of the kiln using the screws in your goodie bag.
- Remove the pyrometer and thermocouple from the box and place the 9 volt battery in the pyrometer. Attach the thermocouple to the pyrometer as pictured. Be sure the "+" and "-" symbols on the plug of the thermocouple match those found on the face of the pyrometer. Hold the tip of the pyrometer under a flame to make sure the meter is operating. If the connection is reversed the temperature will fall when it should be climbing.
- The stand included with the pyrometer can be either wall mounted or set on the table next to the kiln. In either case be sure that the pyrometer is at least 8 inches from the kiln to prevent overheating. If you are mounting the pyrometer to the wall, fasten the stand to the wall using the screws included in the pyrometer stand box. Tuck the top of the pyrometer under the flange on the top of the stand. If you wish to have the stand just set on the table next to the kiln simply tuck the top of the pyrometer under the flange on the top of the stand and set it at least 8 inches from the kiln.
- Place the thermocouple in the thermocouple flange as far as it will go. This should be up to the beginning of the larger ceramic insulator. Tighten the set screw so it is snug, but not too tight. Overtightening may crack the insulator. As the thermocouple ages it will become more fragile so exercise extreme caution when removing and inserting it.

Test Firing

Seating the Elements

The elements of your kiln need to be properly seated into the grooves of the brick. Elements have stress in them much like glass before it is annealed. This stress is caused by winding and stretching the elements. By bringing the elements up to a minimum temperature you allow the elements to settle into the grooves and relieve this stress. After the elements have been seated, the element is more stable and less likely to pop or crawl out of the grooves.

Before you test fire the kiln read the section on Kiln Operation to gain a firm understang of how the kiln operates.

To seat the elements fire the kiln up to 1650 F and hold at this temperature for 15 minutes. After 15 minutes turn the switch to off and let the kiln cool back down to room temperature. The first time the elements are fired they will give off some smoke. This is normal and expected. It is also common for hairline cracks to appear in the floor of a kiln. This is caused by the expansion and contraction of the mortared brick and is considered normal. It will not affect the firing of your kiln nor the life of the kiln floor.

Test Fire Procedure

- Post up a shelf in the kiln chamber using 1" posts. Fuse with the shelf in this position relative to the thermocouple whenever possible for accurate and consistent results.
- Place a sample glass project using scrap fusible glass in the kiln. Fire the kiln to the temperature recommended for a fused or tac-fused project.
- Let the kiln fire and then cool to room temperature before opening the lid. If the project is fused or slumped to your satisfaction the kiln is operating correctly. Each kiln will fire slightly different and it is normal to make slight adjustments to your switch setting to attain the results you are looking for.

Congratulations you are now ready to use your kiln!

Infinite Switch Control

DESCRIPTION

The Infinite Switch is the main temperature control device for your kiln. The switch, located on the front of the control box, is called an "infinite " switch because it has an infinite number of settings between Low and High. As the switch is turned up the kiln heats at a faster rate and will achieve a higher temperature. The markings on the switch are meant to be used as reference points not as specific settings. Therefore it is ok to position the switch anywhere inbetween these markings. Factors such as the mass of the load, the age of the kiln and fluctuations in voltage will affect the rate at which the kiln fires.

OPERATION

When using your kiln you will want to control the heating/cooling rate and hold at specific temperatures. As mentioned earlier the performance of your kiln will be affected by several factors the main one being the mass of the load in the kiln. Over time you will get a feel for how your kiln performs in different situations. Here are some tips to give you a head start.

The Heating/Cooling Rate

For many smaller items the heating rate is often not important however for certain materials such as larger glass projects, ceramics, and molds, a slower heating rate may be neccessary to avoid thermal shocking the ware. When in doubt bring your kiln up to temperature slowly.

The slowest setting on the FireBox 8 is LOW. At a low setting with the kiln empty the kiln will average about 300 ºF/hr.. To calculate the heating rate as it is firing simply measure the temperature rise over a one minute period and times that number by 60. This should be done every 10 or 15 minutes since the rate will begin to slow as the kiln reaches it's peak temperature for that setting.

To increase the rate turn the switch up and to decrease the rate turn the switch down. To achieve a slower rate than 300 ºF/hr. you will want to either prop the lid or turn the switch alternately from OFF to LOW. Everytime you turn the switch you should recalculate your heating rate to see if further adjustment is needed.

For many smaller projects simply turning the switch to OFF and letting the kiln cool naturally is fine. For other items that require a slow cool or annealing you will want to lower the switch setting and measure your rates just as you did with heating the kiln. If you want to cool faster than the kiln is allowing you can crack the lid to allow heat to escape.

Holding At Temperature

In order to set the kiln at a particular temperature it will be necessary to make adjustments to the settings until it stabilizes. As you work more with your kiln you will get a feel for what settings will achieve particular temperatures. Keeping notes will help you achieve a stabilized temperature with fewer adjustments. The faster the heating or cooling rate the more likely you are to overshoot your holding temperature. If your kiln is set to a fast rate,turn down the switch setting before you reach your temperature. Consult your notes to find the settings that hold at certain temperatures. It may be neccessary to turn the switch up and down a few times before finding a setting that holds it at your desired temperature.

THIS KILN WAS DESIGNED TO FIRE VERY FAST THEREFORE IT HAS A LOT OF POWER FOR IT'S SIZE. NEVER LEAVE YOUR KILN UNATTENDED. AT SETTINGS ABOVE 4 THE KILN TEMPERATURE CAN CONTINUE TO CLIMB AND COULD PERMANANTLY DAMAGE THE BRICK AND THE ELEMENTS. NEVER ALLOW THE KILN TO FIRE OVER THE RATED TEMPERATURE.

Using the Pyrometer

The digital pyrometer provided with your kiln is very simple to use and understand. Once you have it set up (see instructions under "Kiln Set-Up"), all you need to do is use the switch located on the front to turn it on and off. The pyrometer reads temperature in Degrees Fahrenheit. If you need a Celsius pyrometer one can be special ordered.

The meter will read temperatures up to 1999 ºF. The kiln is capable of achieving temperatures beyond this rating. If the temperature exceeds 1999 ºF. the pyometer will read "1". If you see the pyrometer with this display turn the kiln (not the pyrometer) off immediatly. Once the temperture drops below 1999 ºF the pyromter will read the correct temperature and you can turn the kiln back on. When the battery is low the pyrometer will display "LO BAT" in the top left corner.

Operating the Lid

The lid of the FireBox is designed to open beyond 90 degrees for several reasons. The first is to give the artist full access to the kiln chamber when manipulating glass. The second is to position the lid far enough back so the lid does not radiate heat back towards the artist while they are working.

Since the elements are capable of shocking the user if they come in contact with them, we highly recommend that you turn the switch to the OFF position before working in the kiln.

Always be sure the buckles that hold the firing chamber to the bottom of the kiln are secure before opening the kiln lid. Without these secured the kiln could tip over backwards. If this happens immediately turn the switch to the off position and do not try to replace on the stand without fire rated gloves.

To open the lid simply grab the wooden ball and lift up slowly. As the id goes over 90 degrees towards the back of the kiln gently rest it down until the stops on the back hold it in place.

Loading Tips

- When placing shelves always try to post them off the kiln floor at least 1 " to allow heat to reach under the shelf.
- Never fire anything directly on the kiln floor as it will act as a heat-sink and heat the glass unevenly.
- Always try to position your work a minimum of 1 " from the elements to avoid uneven heating.
- Never place your artwork or a shelf closer than 1" from the thermocouple as it can bias the reading and possibly overfire the kiln.
- Allow for proper spacing between pieces to avoid them fusing together and allow good heat flow.
- Always check your shelf primer coverage is satisfactory or use fiber paper before firing a piece to avoid sticking to the shelf.
- Try and leave at least an inch gap between your artwork and the lid. Artwork placed too close to the lid could fuse to it.

What Can I Make?

Your FireBox Kiln is an extremely versatile tool. It can be used for a wide variety of projects, here are just a few:

- Fusing Glass
- Slumping Glass
- Casting Glass in Molds
- Precious Metal Clay Jewelry Making
- Knife Making
- Low Fire Ceramics
- China Painting
- Enameling
- Lampwork Annealing

Contact your distributor or visit the Skutt website for more information on firing programs and instruction on these various art forms.

Warranty and Service

Skutt has 2 full time technicians available to help with questions on operating and troubleshoot your kiln. If you have a question regarding technique or how to use specific products, please contact the supplier of that particular product. You kiln comes with a limited 2 year warranty. icopy of this warranty has shipped with your kiln. You can register online at:

http://www.skutt.com/glass/warranty/index.html

Electrical Requirements

The chart below shows the recommended electrical specifications for the FireBox 8. If you are uncertain about your existing power, have it checked by an electrician. If you are installing a new kiln, have the electrician follow this guide.

Electrical requirements for FireBox 8 Kiln

	Voltage	Amp	Watts	Wire Size*	Breaker Size	Max Temp	NEMA Receptacle
FireBox 8	115	15	1725	12	20	2000	5-15

The FireBox 8 is equipped with a type K thermocouple.

***For each additional 50 feet use heavier wire,** numerically two numbers lower—for example, instead of #12, use #10. If you anticipate installing any larger kiln in the future, use the heavier wire. Never use an extension cord.