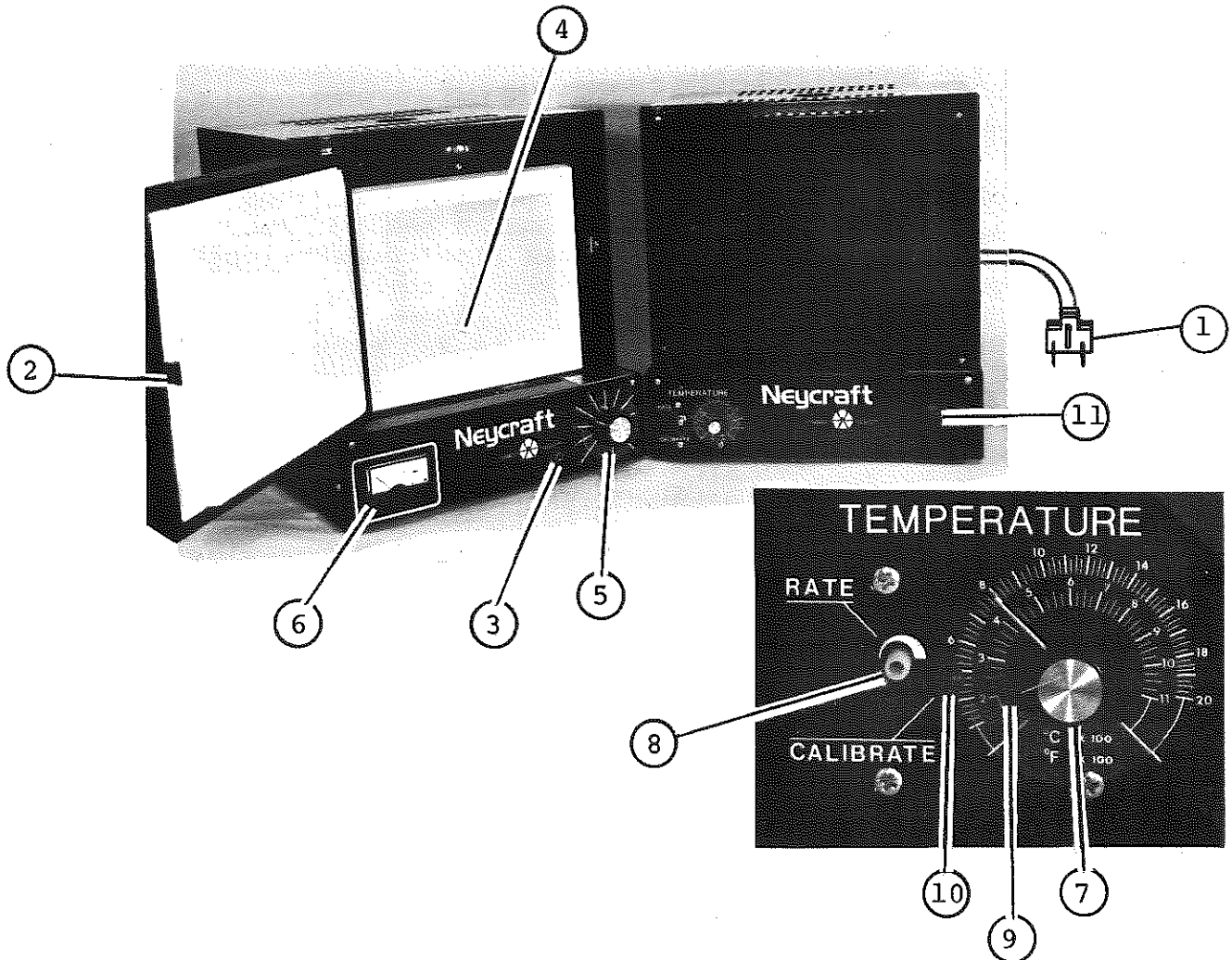


OPERATING INSTRUCTIONS

Fiber Furnace™, Models JFF2000 and JFFA2000 from Neycraft

Congratulations on your purchase of the Fiber Furnace™ from Neycraft. We feel that you have purchased the finest engineered bench top burnout and enameling furnace available at any price! Please read the following directions carefully before plugging in your furnace to ensure safe and trouble-free operation.



(1) 3-Prong Power Cord. Operates on standard residential electrical outlets (115V/50-60 Hz and 11 AMPS). *NOTE:* The product is grounded for protection against electrical shock. If your electrical receptacle is of the 2-prong type, you will need a standard adapter (available at a local hardware store). Make sure that the adapter is properly grounded. If you are using an extension cord, use only a heavy duty cord (16 GA or heavier) rated for 15 AMPS. Also, use the shortest possible extension cord.

(2) Positive Door Latch. To open, push directly in on the square rubber button, and at the same time swing door open. To close, push directly in on square rubber button while swinging door fully closed, then release pressure on button. *NOTE*: Before operating furnace always be sure that the door is fully closed and the latch engaged.

(3) Pilot Light. Glows to indicate when furnace is operating.

(4) Ceramic Trays. Four ceramic trays are included. These serve as reservoirs for melted wax in burnout and as protection for the fiber floor from gouging or scratching from flasks and tongs. Place them on furnace floor, as shown in picture, for burnout. They are not needed for enameling.

Manual Controller

(5) Controller/Power Switch. Read the index line on the clear plastic skirt against the reference marks behind. Turn index line down to turn furnace off. Turn index line counterclockwise to increase power from lowest position at LO to highest position at HI.

(6) Dual-Scale Pyrometer. Indicates in Fahrenheit and Celcius the interior temperature as read by the thermocouple.

Automatic Controller

(7) Temperature Dial. The inner numbers are in hundreds of degrees Celsius and the outer numbers are in hundreds of degrees Fahrenheit. With this dial you may set the temperature that you wish the furnace to control at. The accuracy is rated at 2% full scale.

(8) Rate. This sets the time required to reach the desired temperature. Completely counterclockwise will take approximately 2 hours and 45 minutes to heat from room temperature to 1200°F (650°C). Completely clockwise will take approximately 40 minutes to heat from room temperature to 1200°F (650°C).

(9) Temperature Indicator. This light indicates when the furnace has reached or exceeded the desired temperature.

(10) Calibrate. This potentiometer adjustment is used to fine tune the temperature accuracy.

(11) Power Switch. This will remove all power from the furnace.

SAFETY NOTE: Furnace should be seated on a clean and level surface such as a bench or table top. Leave a 3" clear area around furnace. Keep the furnace area clear of all combustible materials, especially the area immediately above.

CAUTION NOTE: A little care in loading and unloading your furnace will greatly increase the life of the fiber insulation. The fiber is a superior insulation, but can be damaged by hasty or careless loading and unloading. Please use the proper tools. You should have protective gloves to insulate your hands and the proper flask tongs or enameling fork for retrieving hot flasks and enameled pieces.

MAINTENANCE

The Fiber Furnace™ does not require any routine preventive maintenance.

If proper caution and care is taken in loading and unloading of the furnace, the fiber insulation should be quite durable. However, if the fiber insulation in the door or furnace interior should be accidentally damaged, we have included a small bottle of fiber hardening agent.

To repair torn or gouged area:

1. Unplug furnace and allow to cool.
2. Apply liquid hardening agent generously to the damaged area with a small brush or swab.
3. Plug in furnace. Heat to 400°-600°F and bake for approximately 2 hours.

Automatic Controller Calibration. As the thermocouple ages, its temperature response changes. This is compensated for by occasionally calibrating the furnace. Depending on the temperature at which you normally work, the following calibration materials are available:

94-90-912	1500°F, 815°C	Temperature Pellets
94-90-911	1300°F, 704°C	Temperature Pellets
99-82-561	Silver Calibration Coupon Kit, 1761°F, 960°C	

1. Turn the calibration screw 5 turns counterclockwise.
2. Place the pellet or coupon on a firing tray in the center of the muffle.
3. Set the furnace for minimum heat rate.
4. Set the temperature to the pellet or coupon temperature.
5. Turn the furnace on and wait until the temperature reaches the set temperature. Allow to stabilize.
6. Check the pellet or coupon. If it has not melted, turn the calibrate screw clockwise 1/2 turn.

7. Allow to stabilize. When the door is opened, a minimum of 5 minutes must be allowed to stabilize.
8. Continue checking the pellet or coupon and repeat steps 6 and 7 until it does melt.
9. Place another pellet or coupon in the furnace.
10. Repeat steps 5 through 8 to verify calibration.

OPERATING INSTRUCTIONS

LOST-WAX BURNOUT

The burnout process is one of burning clean the investment mold cavity in preparation for casting. This process is achieved when the investment cavity slowly rises to a temperature of 1100°-1300°F for most commercial investments. The time required for burnout varies with the size of flask used. A variable period of time is needed for the flask to saturate -- that is, for the temperature inside the flask to equal the furnace temperature as indicated. A small flask, such as a 2" x 2" will heat saturate in 20-30 minutes. That means that once the furnace reaches 1100°-1300°F, the inside of the flask will reach that temperature within 20-30 minutes and should be cleanly burned out. On the other hand, a large flask, such as a 4" x 4" or 4" x 5", will require as much as 1 1/2 to 2 hours to heat saturate after the furnace has reached the desired temperature.

Manual Controller

You will need to experiment with various controller settings and elapsed burnout times to find the burnout cycle which suits you best. For example, if you are burning out 1 - 4 small flasks (2" x 2"), try a controller setting of approximately 7 and a duration of 1 1/2 to 2 hours to complete burnout. By noting the pyrometer reading at 30 minutes, 1 hour, and 1 1/2 hours, you can modify the controller setting slightly, or the length of time for the burnout cycle until you find the best combination. However, if you are burning out 3 - 4 large flasks (4" x 4" or 4" x 5"), slightly higher setting of 8 on the controller might be needed, with a considerably longer burnout cycle, such as 3 to 4 hours.

Automatic Controller

You need only set the dial to the desired temperature and set the heat rate based on the amount of time you would like to take. Start out by setting the heat rate control mid-range (about 1 1/2 hours to 2 hours to reach 1200°F), and adjust the temperature dial to the desired temperature. Once the desired temperature is reached,

the small red light (#9 on photo) will turn on. Allow the furnace to hold this temperature for an hour or so. As with the manual furnace, larger flasks or greater quantities of flasks will require more time for a complete burnout. Use slower heat rises if your flasks are not fully dried before heating.

These are very general instructions. Refer to a good lost-wax instruction text for more complete details.

ENAMELING

The Fiber Furnace™ offers the enameling artisan the advantage of quick heat-up and even heat distribution. The ceramic trays used to cover the furnace floor in burnout are not needed in enameling. Trivets, or racks, should be placed directly on fiber floor. If some form of floor protection from enamel spillage is desired, a protective silica floor plate (P/N 93-53-004) may be purchased from your local Neycraft dealer. Since most enameling is done at 1400°F to 1600°F, it is especially important that you use proper handling equipment -- asbestos gloves, a sturdy enameling fork and trivets. By taking adequate time and caution in loading and unloading the furnace, the risk of injury to both operator and fiber insulation is reduced.

REPLACEMENT & OPTIONAL PARTS LIST

<u>P/N</u>	<u>Description</u>
94-91-040	Replacement Muffle Assembly
94-91-008	Replacement Burnout Trays (2/pkg.)
93-53-004	Silica Floor Plate for Enamelists
94-91-010	Investment Flask Tongs
*94-91-079A	Retrofit NCA Package

*Necessary to upgrade a manual controller to an automatic controller.

