BICO ELECTRIC ASSAY FURNACE

The Bico Electric Assay Furnace comes complete with Pyrometer, Temperature Control, Hearth Plate and Vent Hood.

Both the 115 Volt and 230 Volt Furnaces will reach a maximum temperature of 2300 degrees F.

The 115 Volt Furnace operates on 15 AMPS and the 230 Volt operates on 8 AMPS.

MODELS 415-15 AND 415-24

The inside chamber dimensions (W)9" X (D)10" X (H)6 1/2", and will hold from four (4) to six (6) 30 gram crucibles or sixteen (16) to twenty (20) 1 1/2" cupels.

MODEL 415-13

Inside chamber dimensions (W)12" X (D)12" X (H)8" and will hold approximately six (6) to eight (8) 30 gram crucibles.

INSTALLATION

First you should select a proper location for your Furnace, keeping in mind the following.

1. Avoid locating the Furnace near any readily flammable materials such as curtains, newspapers, gasoline and any other flammable liquids.

2. Be sure the area is well ventilated and the furnace is not exposed directly to the weather. Keep it in a covered, protected area.

3. Provide at least six (6) inches of air space around the Furnace.

4. Be sure the Furnace is set on a stable platform that is level.

5. Be sure that you have room to open the door of the Furnace so that it may be loaded easily.

6. Have the Furnace located in an area that is out of the traffic flow so as to avoid bumping into it while it is firing or cupelling.

7. Keep all unsupervised children away from the Furnace.

8. Set the Furnace at a height that is most comfortable for you to see and operate.

POWER REQUIREMENTS

Now that you have located your Furnace in the proper place you are ready to hook up the electricity and check out the operation of the Furnace.

1. Be sure that your outlet is the proper one for your Furnace. The name tag tells you the Voltage and the Amperage of your Furnace. If you are not sure, call an Electrician or your Power Company.

2. Check the Furnace for any damage and report such to your dealer.

3. Remove all packing materials (if any) from the Furnace.

4. Your Bico Furnace comes with a Hearth Plate for the bottom. This plate is provided so that if anything spills, it will not ruin the bottom of your Furnace.

5. Your Bico Furnace was test fired at the factory so it is not necessary to test fire your Furnace to **TEMPER** or break it in.

6. It is a good idea to plug the Furnace in and turn the switches to **HIGH** just to see that all is working. The pilot lights will come ON and you should be able to see the temperature rise on the Pyrometer in a few minutes.

7. When the Furnace is OFF and cool, the Pyrometer will read ambient temperature (Room temperature), not **ZERO**.

8. **NEVER** wash the sides of your Furnace.

9. Vacuum or brush out your Furnace before you fire it. Always keep your Furnace clean.

10. You are now ready to fire your Furnace.

***** CAUTION - WARNING *****

Never leave a hot Furnace unattended. You don't have to be there 100% of the time, but you should check on its progress regularly. Remember your Furnace can easily reach 2300 F.

Always remember that all controllers are aids, and they do not remove the need to be present when the Furnace is being fired.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE
1. Furnace fails to heat	Furnace not plugged in, fuse or breaker failure, burned out elements, bad switch, loose connection somewhere.
2. Furnace heats too slowly	Low Voltage (less than the rated voltage).
3. Fuse or Breaker trip off	Overloaded circuit, short circuit after furnace has been fired for sometime.
4. Hot plug or outlet.	Defective plug or outlet.

If you are unsure of what to do, call an Electrician.

Do not operate the furnace until the problem has been corrected.

ELEMENT REPLACEMENT

BICO Furnaces have been designed for easy replacement of elements. With proper care your elements should last a long time, ,but you will eventually need to replace them. To do so:

1. Unplug Furnace. Remove the pins that hold the elements in the grooves.

2. Remove the screened back of the Furnace.

3. Remove the nuts that fasten the elements to the terminal block.

4. Cut the element wire where it goes into the Furnace.

5. Remove the element from the Furnace Chamber.

6. Stretch the new element to the proper length using one motion to do so. (Fasten one end in a vice and pull the other end to desired length).

7. Bend elements where they form the corners. Use old elements as a guide.

8. Install the new elements in the Furnace.

9. Use new pins provided to secure the new elements.

10. Fasten elements to terminal block as they were and reconnect the electrical leads as they were.

11. Replace the back onto the Furnace.

12. Be sure all is back as it was before plugging in the Furnace. If in doubt, call an electrician.

THERMOCOUPLE REPLACEMENT

To replace the Thermocouple:

1. Unplug Furnace
2. Remove screened back from Furnace
3. Undo nuts that hold thermocouple to Pyrometer
4. Take OFF insulation from old thermocouple wires and put it on new thermocouple.
5. Remove old Thermocouple
6. Insert new Thermocouple into Furnace
7. Place lighted match near Thermocouple in Furnace and see if the needle goes up scale. If the needle goes *down* scale when heat is applied, then reverse the leads to the Pyrometer.
8. Replace Furnace back
9. Plug in Furnace

BICO ELECTRIC FURNACE SPARE PARTS

CATALOG #	DESCRIPTION	LBS/KG
415-05A	Vent Hood W/Hinge and Damper	15/7
415-06	Pyrometer - 115 & 220 Volt	1/.4
415-07	Thermocouple - 115 & 220 Volt	1/.4
415-081	Switch - 115 Volt	1/.4
415-082	Switch - 220 Volt	1/.4
415-09	Switch Knob - 115 & 220 Volt	1/.4
415-101	Pilot Light - 115 Volt	1/.4
415-102	Pilot Light - 220 Volt	1/.4
415-11	Heating element (2 required for models 415-15 & 424-24 and 3 required for # 415-13).	1/.4
415-12	Hearth Plate (setter) 8 x 8 x .5"	3/1
415-AS7	AS7 control (for model 415-13 only)	1/.4
415-13	Rebuild kit for Furnace Model #415-13, only 9 Grooved Bricks — 1 Door Brick 6 Ungrooved Bricks — 1 Thermocouple 1 Arch Plate — 3 Heating elements 1 Hearth Plate (setter)	35/17
415-131	Grooved Bricks, each	
415-14	Ungrooved Bricks, each	