

ELECTRIC KILN MODEL C100-6

CONGRATULATIONS!

Congratulations on being the owner of a new CRESS kiln. Your kiln gives your ware the least amount of heat shock because it uses a percentage power control unlike the heat shocking step switches employed in other kilns. This power control senses and adjusts for room temperature and small voltage changes incoming to your kiln giving you more repeatable and more consistent firing results than other kilns on the market. We sincerely wish you many years of creative and rewarding use of your CRESS kiln.

IMPORTANT SAFEGUARDS!

Notice: Please read and observe the following safety warnings before operating your kiln.

1. Install kiln 8" or more from any wall or combustibles. Do not place under any shelf or other obstruction.
- 2. Never fire hotter than cone 03 or 2000 oF.**
3. Do not fire hotter than the manufacturer's recommendation for your clay, glazes, decals or other material or permanent damage may result to your kiln or ware.
4. Before opening door, turn off switch, then carefully open door and gently test that door is securely in place before allowing it to stand freely. Do not let the door stand open while the kiln is in use or unattended.
- 5. Do not leave kiln unattended while firing.**
6. Never use an extension cord.
7. Operate kiln only in a well-ventilated room.
8. Unplug kiln before servicing or cleaning.
9. **Dangerous Voltage** - Do not touch heating element with anything.
10. Do not touch hot sides of kiln or hot door - Burns may result.
11. Never store anything against kiln; never lean objects against kiln.
- 12. Do not store or use flammable liquids or sprays in the same room with your kiln.**
13. Do not store or use your kiln outside - keep rain, water and moisture away from kiln.
- 14. Do not use kiln if cord is damaged.**
15. Wall receptacle must not be corroded. This can cause dangerous heating of plug, cord and wall receptacle.
16. Use kiln only with adequate electrical supply - with the correct voltage (120 VAC), amperage and correct fuse size (15 amperes). Avoid aluminum wiring.
17. The kiln must be grounded properly. The wall receptacle must have a separate ground terminal. Do not use a two wire receptacle. Do not alter or change the plug on the kiln.
18. Wear protective welding goggles when looking into a heated kiln. Infrared heat may otherwise damage eyes.
19. When firing material containing lead and/or other toxic matter avoid breathing fumes. Fumes may also contain carbon monoxide.
20. Keep children away from the kiln at all times.
21. Maintain kiln in perfect operating condition. Do not fire if kiln, cord, and wall receptacle are not all in perfect operating condition.

INSTRUCTIONS

C-100-6 CRESS FURNACE

SPECIFICATIONS: 2000 OF MAXIMUM INTERMITTENT TEMPERATURE, 1700 OF MAXIMUM CONTINUOUS TEMPERATURE, 115 VOLTS, 12 AMP SINGLE PHASE

NOTICE: PLEASE READ, UNDERSTAND, AND OBSERVE THE FOLLOWING INSTRUCTIONS AND SAFETY WARNINGS BEFORE OPERATING THE FURNACE.

INSTALLATION:

Placement

The C1006 kiln must be located a minimum of 8 inches from every wall or vertical surface. Care should be taken to keep the furnace away from combustible surfaces. Do not use the furnace under a shelf or other obstruction to the flow of air. All kilns should be located in an area free from flammable materials such as drapes, boxes, paper, spray cans, paint, gasoline, etc. Keep all flammable liquids out of the room with the furnace. Be sure no curtains or other material that could change position with wind or opening of a door or window can come within an unsafe distance of the furnace. The room in which the furnace is operated should be well ventilated. Before plugging the furnace into your outlet or connecting the furnace to a power source, be sure that the kiln's power switch is "off". Be certain that your electrical wiring, receptacle, circuit breaker, and fuses are in good condition before plugging it into the wall socket. If you are not sure, consult a qualified, licensed electrician. The metal case of the furnace is grounded through the three wire cord ground terminal on the plug. Good housekeeping must be observed

at all times in the kiln area for safety. Choose a location carefully. If it is necessary to put your kiln on a synthetic or wooden surface, use a sheet of fireproof material underneath your kiln that extends 18" beyond the kiln in all directions. Surface coloration may be sensitive to heat. A layer of hard firebrick is also acceptable for this purpose. It is also important that the kiln be level (use a bubble level for this purpose), otherwise there is a possibility of pieces falling during firing. Use your kiln only in a well ventilated room. Vapors containing poisonous gases are possible when firing certain materials. Do not breath fumes from kiln when firing. The temperature meter indicates the temperature at the tip of the thermocouple. That is the point the two alloy wires are welded. Therefore, this thermocouple must extend into the furnace 1-1/2" to 2" to obtain a correct temperature reading. It should not be bent out of the way to make room for larger loads. You should keep in mind that contamination from products fired may alter its calibration. Change the thermocouple should you doubt the temperature control readings. Pyrometric cones are an inexpensive way to check the meter reading. If the furnace is to be used for a lost wax process, wax burnout or assaying, drill a 1" hole through the center top of the furnace chamber.

WARNING: DO NOT USE FOR LOST WAX PROCESS OR ASSAYING UNLESS VENT HOLE IS DRILLED THROUGH THE TOP OF THE FURNACE REMOVE ALL WAX EXCEPT RESIDUE BELOW 400 F (205 C) TO PREVENT EXCESS CONCENTRATION OF CONTAMINANTS FROM DESTROYING THE ELEMENTS.

OPERATION:

LOADING: Unit may be loaded "cold" or "hot". Turn off power to the elements before the door is opened. Avoid the possibility of shock by not touching the heating elements with your hand or tongs. Load should be placed as near the center of the chamber as possible to give you a uniform temperature. For those operations requiring very accurate temperatures the hearth plate should be raised on ceramic blocks to provide air circulation below the hearth plate. Load must not touch the thermocouple (2 wires covered by ceramic beads at the rear of the chamber) as this will tend to give you the temperature of the load rather than the air and cause overheating. Thermocouples should not be bent against the wall, but remain at least 1-1/2" into the chamber. Loads should not be placed against the walls or elements. Space your load as much as possible for air circulating between parts to give you even heating throughout the chamber.

HEATING:

Turn on the switch. If the pilot light does not light, check that the furnace is connected to a live power source. After the control starts indicating temperature, set the control to the desired (set point) temperature. Check the temperature reading on the control after the furnace has been on for about fifteen minutes. If the temperature has moved up scale go on to the next paragraph. If the temperature reading has not moved up scale, turn the switch to "off". Open the door carefully and slowly and carefully feel the interior air temperature (do not touch elements). If the interior is warm, the thermocouple or the meter is defective. Contact your dealer or Cress Manufacturing Company. Do not attempt to use the furnace in that condition. When the furnace approaches the desired temperature, turn the power control down until power "on" and "off" slows the heating rate down to zero as the temperature set point is reached. It is normal to hear a popping sound when the switch turns power "on" and "off". Do not heat the furnace to temperatures higher than necessary for your process and not for longer periods than required. The higher the temperature and the longer the time in use the shorter the element life and the thermocouple life. The thermocouple should be replaced about once a year in heavy use. The calibration of the thermocouple can be affected by contaminants fired in the furnace. We do not recommend changing heating elements until they burn out or are so worn that they slow the heating time materially. All controls, switches, and electrical components are subject to failure; therefore, you should check the furnace periodically to be sure it is heating properly. A list of spare parts is shown below:

Part Number Description Number

*ELC1006 Element, C-100-6 1
*ESINF12032 Power switch 1
PYROMETER Pyrometer (meter only) 1
*ESTCLWS 14" thermocouple lead wire 1
HSS Small door spring 2
KPC1006BD Brick door, C-100-6 1
PIBB Porcelain element bushing 2
*S100 Hearth plate 8" x 8" 1
WLC1006 Wired liner, C-100-6 1
ELPR 6" Porcelain rods 14
*TC81.5 Thermocouple (1.5 large bead)1

UNLOADING:

Furnace may be unloaded hot or cold. Avoid the possibility of shock by not touching the heating elements with your hand or tongs. Turn switch to "off" before opening door. The furnace brick may develop cracks due to the heat shock of the cold air if

loaded or unloaded when hot. When opening the door "hot" you should wear fire protective gloves to prevent burns on hands and arms. If very hot, you should wear a face shield also. Wear welder's goggles to prevent infrared heat from damaging your eyes. Do not wear loose clothing that could catch on fire should it come in contact with very hot air or heated furnace parts or heated furnace loads. Keep your face and eyes as far away from the hot opening as possible. Be sure your tongs or lifting tool has a secure electrically insulated grip.

Never use them without turning off the kiln. Do not touch the heating elements, which can cause electrical shock. Have a non combustible temperature resistant surface on which to place parts removed from the furnace.

GENERAL:

Parts placed in furnace must be degreased and dry. Oil, paint, wax, or other matter that could give off fumes may coat elements or bricks with enough conductive material to cause arcing between element coils. Zinc or tin plated articles should not be placed in furnaces exceeding 800 F. The chamber should be cleaned whenever a deposit or oxide or other material collects on floor or walls. Acid or other corrosive particles in room atmosphere will react with metal elements causing them to fail. Reasonable care should be taken in opening and closing furnace door. If furnace is operating at high temperatures, fire proof gloves or other protective material should be used by the operator. The insulating brick will last longer if not subjected to excessive thermal shock (opening the door at high temperature) or allowing the door to "bang" open or closed. Combustible materials must not be placed on or close to the furnace. Heat will build up over a period of time if the air circulation around the furnace is impaired and combustion will result.

INPUT CYCLING SWITCH. This is a percentage switch that cycles the elements off and on. i.e. low =20%, medium=50%, high=100%. The switch makes a popping sound when power is switched "on" and "off".

KILN ACCESSORIES:

There are several items which are either necessary or are commonly used in conjunction with your kiln. The most important are shown below:

Kiln Wash: Kiln wash is a refractory material that is used as a coating on parts of the kiln and kiln shelves to prevent ware or glazes from adhering to them. It is usually purchased as a dry powder, and then is mixed with water to the consistency of heavy cream and applied with a paintbrush.

Kiln Furniture: Kiln furniture consists of shelves and posts (available in a variety of shapes and heights). They are used so that ware may be fired in several layers to take full advantage of the space in the firing chamber of the kiln. Kits containing the most commonly needed assortment of furniture for each kiln model are available.

Stilts: Stilts are small (high temperature) metal or ceramic prong supports used to raise glazed or overglazed ware off the kiln shelf to avoid sticking problems. They are available in a wide variety of shapes and sizes.

Pyrometric Cones and Cone Holders: For firing ceramics, pyrometric cones are the most widely used method of indicating temperature in the kiln. They are small elongated-pyramid shaped indicators made of ceramic material especially formulated to melt at various specific heats. They are available in a wide range of temperatures. Various types of holders for the large cones are available to insure that they are held uniformly at the correct angle. Also available in some cone numbers are self supporting large cones with wide bases, which do not require cone holders. Cones may be used to double check your pyrometer calibration.

KILN MAINTENANCE

You can protect your kiln and add many extra years to its life by using this maintenance guide. Before each loading: Visually check kiln and its furniture. Remove glaze spots on shelves, posts, kiln bottom or kiln sidewalls. Clean kiln by removing chips and dust. A vacuum cleaner works well for this purpose. Check kiln shelves for cracks. Sand any rough spots on shelves and retouch with kiln wash. Also retouch areas where the kiln wash has worn off. Avoid thick kiln wash layers. There is no need to kiln wash shelves every time you fire. Kiln wash floor where it has worn thin. This may not be required every firing. Sand rough spots and retouch. Keep a smooth layer not over 1/16" thick. Kiln wash built up to a thick layer may damage kiln floor by pitting due to differential thermal expansion. Whenever possible, use a clean kiln-washed shelf on the kiln floor to protect it. Keep the outside of the kiln clean. It is easier to clean before burning contaminants onto the painted case.

WARNING - Do not use kiln if kiln is not in perfect operating condition.

Pilot Light: Replace pilot light if the lens becomes damaged or it fails to operate.

Cord: Check the cord every three months for heating. If cord becomes hot during firing, replace cord and wall receptacle. Check cord for heat near wall plug after the kiln has been firing for over three hours. Have a licensed electrician replace the cord with a CRESS cord and receptacle to make sure the heat specification as well as the amperage and voltage specifications are met.

PYROMETER REPLACEMENT INSTRUCTIONS: Your pyrometer is equipped with a 14" Chromel Alumel lead wire attached to a heavy gage type "K" thermocouple. Insert the thermocouple through the hole and fasten the porcelain bushing to the side of the kiln by means of the two #8 by 1 1/4" sheet metal screws furnished. Do not over tighten the screws. The tip of the thermocouple should not be closer than 1" to the inside kiln wall. Make sure that the thermocouple does not touch the heating element and

that the lead wire does not touch the outside of the kiln.

Maintenance: The pyrometer face is glass and will break if hit. A cracked glass will allow humidity and dust to interfere with the operation of the meter. Replace the meter if it becomes cracked. The thermocouple will oxidize in use and either crack or just become thin until there is no connection. Replace the thermocouple when the heated tip becomes thin. Contaminants may hurt the accuracy of the thermocouple. High temperature firing can damage the accuracy of the thermocouple. If you notice a sudden change in the agreement between the cones and meter, change the thermocouple.

Thermocouple Replacement instructions:

Thermocouple Replacement instructions: The thermocouple has been marked with a minus sign (-) on the end of the large white bushing. The thermocouple lead wires must be connected with the red wire to the minus and the yellow wire to the plus side of the thermocouple. **RED TO THE - and YELLOW TO THE +** If you hook up the thermocouple incorrectly, your pyrometer will not operate properly. If your thermocouple is not marked, or if you believe it is incorrectly marked, you can check it with a magnet. The magnetic side is always the minus (-) and must be connected to the red wire. After replacement of your thermocouple, we advise that you do a test fire without a load to be sure that the thermocouple is connected properly, otherwise the indicator needle will go the wrong direction. Be careful not to hit the thermocouple when loading and unloading your kiln. We advise that you periodically check the thermocouple visually for cracks and thinning of the wire.

CRESS ELEMENT REPLACEMENT INSTRUCTIONS

C-100-6

1. Unplug furnace, close door and wire door in a closed position so it does not spring open. Carefully place the furnace on its back while holding the door closed.
2. Remove metal bottom cover and plastic feet.
3. Locate element ends that go through porcelain insulators. Remove nut, bolt, washers and wiring from both element ends after labeling wiring for use later.
4. Do one of the following: Cut off looped element ends at the porcelain insulator or straighten looped ends with needle nose pliers. (Unwind the loop).
5. Carefully place the furnace in an upright position while holding the door closed so it does not accidentally spring open.
6. Locate and remove element staples ("U" shaped wire pins). Staples are spaced every 3" to 5". Pull out element ends from floor of furnace and remove old element. Notice that the "U" pins are stapled into kiln wall at a 45o angle to the wall's surface. This helps hold the element securely in place.
Check and clean grooves of any left over staples. Clean grooves with a flat screwdriver blade. Remove dust and loose particles with a vacuum cleaner.
8. Secure one end of the element to a hook or nail in a doorway or wall. With pliers slightly pinch the first coil loop.
9. Take hold of opposite end of element and walk out away from wall to stretch element holding element parallel to the floor.
10. Insert new porcelain rods. Note that the C-100-6 use 15 rods. Stretch the element to accommodate all rods, and no longer.
11. Pinch the last coil loop half closed so porcelain rods will be contained.
12. Remove element from wall hook and squarely cut off loops at each end.
13. Install one end of the element through floor and bend 90o where the coil starts. Feed element into groove working towards the rear of the furnace. Break rods as you turn to the next groove.
14. Continue until the element reaches the top rear of the chamber. Take approximately 2 1/2" to 3" of the element and stretch it the length of the back wall. This section of element should have no rods.
15. Work back on the opposite side in reverse manner. Bend end 90 and push through floor. Secure element to kiln wall by using staples supplied. Staples will need to be compressed to fit into grooves. Install staples approximately every 3" to 5"
16. Close door and carefully place furnace on its back. Cut off element 1 1/2" from porcelain insulator. Form a loop with needle nose pliers and reconnect wires, nut, bolt and washers, Make sure connections are tight.
17. Check with ohmmeter for any shorts to metal casing.
18. Replace metal bottom and plastic feet.
19. Vacuum chamber to remove all brick dust and chips.