



FANFARE 23

OWNER'S MANUAL

CONGRATULATIONS!

Congratulations on being the owner of a new CRESS Fanfare™ ceramic kiln, the safest and most popular automatic kiln on the market today. Your kiln gives you the fastest most energy efficient firing possible with the least amount of heat shock because it gradually increases power throughout the process, unlike the heat shocking step increases achieved by other automatic kilns. Your appliance senses and adjusts for room temperature and small voltages changes incoming to your home giving you more repeatable and more consistent firing results than any other hobby kiln on the market. Unlike most other kilns, the elements from top to bottom are each adjusted electrically to give the most uniform firing possible. The FIREMATE® has been patented for its excellent and unique control system. The Patented multiport exhaust system vents air independently from the top/middle/and bottom section to help keep cross contamination of colors to a minimum. It mixes this air with air from the panel and exhausts fumes so the air you breath is as fresh as possible. The use of fire-brick will give you the slowness in firing that museum quality art requires while the FIREMATE® has the unique ability to add more speed to the age-old process without hurting the quality of the ware.

Cress has been at the forefront of firing processes for over 49 years. Cress was first with ultra reliable element connections, first with infinitely variable power controls, and first with inexpensive automated firing and first with multiport venting for brighter colors.

We sincerely wish you many years of creative and rewarding use of your CRESS Fanfare™ kiln.

CRESS MANUFACTURING COMPANY, INC.
4736 Convair Dr., Carson City, NV 89706
702-884-2777

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Limited kiln warranty

Your Cress kiln is warranted for one year from the date of purchase to the original purchaser. If any defects in workmanship or material appear during this time, Cress Manufacturing Company, Inc. will replace or repair defective parts. Written proof of purchase date is required. This warranty is limited to the original purchaser. Warranty repairs are normally handled through the dealer from whom the kiln was purchased. Otherwise, the purchaser may return the defective part to Cress Manufacturing Company, Inc., 4736 Convair Dr., Carson City, NV 89706 along with serial number, model number, voltage, proof of purchase date, and statement of what is thought to be wrong with the product. If a defect is confirmed, a new or repaired part will be shipped, postage paid by Cress Manufacturing Company. A Cress kiln may be returned for warranty work to Cress Manufacturing Company 4736 Convair Dr., Carson City, NV 89706. All transportation costs will be borne by the purchaser. Before shipment, the purchaser will notify Cress Manufacturing Company (phone (702) 884-2777) so that we may help advise in order to keep costs at a minimum, should it not be necessary to ship the entire kiln to us. An RMA (return material authorization) number is required before a return may be accepted. This number must be placed on the outside of the returned part or kiln. Repair or replacement of defective kiln parts shall be considered as complete fulfillment of this warranty.

This warranty does not include: kiln damaged by overfiring (exceeding the melting temperature of the material being fired) regardless of cause, kilns damaged by transporting, abuse, improper use, reactive materials being fired (i.e. reduction firing, salt firing, or carbon contamination), moisture, contents being fired, improper electrical installation, kilns used for any purpose other than firing ceramic materials, or ware, kiln furniture or contents being overfired. Kiln elements are specifically not warranted.

Cress Manufacturing Company is not responsible for consequential damage to contents being fired. Cress Manufacturing Company does not authorize any wholesaler, retailer, or employee to assume any other obligation or liability in regard to Cress kilns.

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FX FIRING CHART

KILN #



FIRING NUMBER	DATE	KILN SITTER TYPE	KILN SITTER MODEL	KILN SITTER TYPE OF FUEL	SILTY TAPER SETTINGS	SPEED CONTROL SETTINGS	TOTAL FIRING TIME		FURNACE TEMPERATURE	REMARKS
							HRS	MIN		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										

FIRING CHARTS

It is a valuable practice to keep a written record of each firing, noting the settings, (even the degree of deformation of witness cones and their locations). This firing chart allows you to repeat good results and successful firings and avoid repeating less than satisfactory firing with undesirable results.

PREFACE

HOW TO USE THIS MANUAL

The purpose of this manual is to help you begin using your new CRESS FANFARE kiln as quickly as possible. This manual explains the Firemate speed control, timer, and Dawson kiln sitter operating procedures, describes options for your kiln, and contains wiring diagrams and a helpful appendix.

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UNPACKING INSTRUCTIONS ...READ CAREFULLY

IMPORTANT

When the package was given to the carrier neither the carton nor the contents were damaged. If the carton is punctured or damaged, unpack immediately. In case of damage (either obvious or concealed) save all packing material and notify carrier within 15 days and have them make an inspection report. Our limited warranty covers manufacturing defects only. Call us if a freight problem occurs so we may help. 1-702-884-2777

KILN MAINTENANCE

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 recoat with kiln wash. Also recoat 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, recoat. 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.

Check Kiln Sitter[®]:

Test condition of the sensing rod. It must be centered in the porcelain tube and move freely in order to operate properly. During firing the pivot point may become corroded or residue from firing your ware may build up which can cause overfiring. Replace rod or remove and clean rod when necessary. Replace the rod if it becomes warped or bent even slightly.

Check cone supports and tube assembly. A thin layer of kiln wash must be maintained. Remove any accumulation of foreign material and recoat with kiln wash. If the cone supports are damaged either by bending or contamination by a non-removable material, replace them. Keep kiln wash off the tube assembly. If the end of the tube assembly breaks at the point which holds the cone supports, the tube assembly must be replaced to avoid erratic over and underfiring.

Check Kiln Sitter[®] adjustments whenever your firing was peculiar or every 10 firings as shown in the kiln sitter instruction manual. Heat, corrosion and mechanical wear cause changes in the adjustment over a period of time. Be careful!

Keep the outside of the kiln clean. It is easier to clean before burning contaminants onto the stainless jacket. Use glass cleaner when kiln is cool.

Lid Brace: Be aware of lid brace operation every time the kiln is fired. Replace lid brace if it becomes bent, or does not function perfectly. WARNING - Do not use kiln if lid brace is not in perfect operating condition.

Lid Band: Tighten lid band when necessary. The normal differential expansion and contraction of the brick and lid band cause a gradual loosening of the lid band.

Stainless Steel Case: Normally the case never needs tightening from ordinary use, but tighten if needed.

Pilot Lights: Replace pilot lights if the lens becomes damaged or they fail to operate.

Cord: Check 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.

IMPORTANT SAFEGUARDS!

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

1. Install kiln 18" or more from any wall or combustibles.
2. Fire only on stand or legs furnished.
3. Never fire hotter than cone 10 or 2350 °F.
4. Do not fire hotter than the manufacturer's recommendation for your clay, glazes, or decals or permanent damage may result to your kiln or ware.
5. Do not open lid until kiln has cooled.
6. Before opening lid, turn off all switches, then carefully open lid and lock lid brace securely. Gently test that lid is securely locked in place before allowing lid to stand freely.
7. Do not leave kiln unattended while firing.
8. Never use an extension cord.
9. Operate kiln only in a well ventilated room.
10. Unplug kiln before servicing or cleaning.
11. Dangerous Voltage - Do not touch heating elements with anything.
12. Do not touch hot sides of kiln or hot lid - Burns may result.
14. Never store anything under kiln; never lean objects against kiln.
15. Do not store or use flammable liquids or sprays in the same room with your kiln.
16. Do not store or use your kiln outside - keep rain and moisture away from kiln.
17. Do not use kiln if cord is damaged.
18. Wall receptacle must not be corroded.
19. Use kiln only with adequate electrical supply - with the correct voltage, amperage and correct fuse size (not too large or small). Be sure the wire size is large enough (avoid aluminum wiring). Do not use a 208 volt kiln on 220 volts.
20. Kiln must be grounded properly.
21. Wear goggles when looking thorough peephole.
22. Use only Orton small (junior) cones in the kiln sitter. Never use Orton large cones in the kiln sitter!
23. Use kiln only with exhaust piping connected.
24. Use only metal exhaust piping.

Please read all instructions before operating kiln.

KILN INSTALLATION

Placement

All kilns should be located in an area free from flammable materials such as drapes, boxes, paper, spray cans, paint, gasoline, etc. All kilns must be located a minimum of 18 inches from every vertical surface. Do not place any kiln under any overhead obstruction such as cabinets, shelf, drapes, hanging plastic, etc., and never lean anything against your kiln. Do not store anything under your kiln; keep this area clear at all times. Do not store anything between the kiln and a wall. Keep material off the top of your kiln; do not use the lid as a shelf.

Good housekeeping must be observed at all times in the kiln area for safety. Install 4" round metal dryer ducting to outside from exhaust system. Keep ducting as short as possible and do not use more than one long radius 90 elbo. Do not use plastic dryer ducting for exhaust system venting.

Do not leave the kiln unattended, such as firing over night. Even though your kiln has a Kiln Sitter[®], and limit timer, it is advisable to use a large cone visible through the peephole to check firing progress. Check witness cones at one hour intervals through firing, at the expected shutoff time and every half hour thereafter until the cone is properly bent or the Kiln Sitter[®] has turned off. Always check to see that the shutoff devices have operated correctly and manually turn the timer to "off" and the thumbwheel to " " and check that both pilot lights are out. Always monitor the progress of each firing with your built in pyrometer.

Never open the lid while the kiln is firing. This could cause serious burns as well as damage to the ware. After firing always allow the kiln to cool with the lid closed until it is cool enough for you to unload it with your bare hands.

Firing Speed:

The main consideration for firing speed is that you should not fire faster than the ware will absorb heat, and you should not cool faster than the ware will release heat. Firing and cooling rapidly will result in stressing and even cracking the ware due to uneven expansion. Very thick pieces, such as hand molded sculptures, require very slow heating and cooling. Normally set the speed control on normal or faster for pieces made in molds, while a setting of "E" can be used for most handmade pieces. For very thick handmade pieces or for low temperature soaking of these pieces or porcelain, use the manual setting for soaking, then turn the speed control to "normal" speed when you want to proceed.

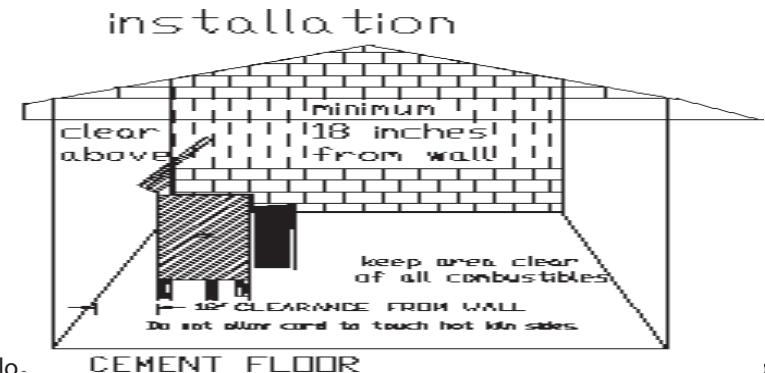
Remember that during firing you will not endanger your ware by turning the kiln off before maturity. If you ever hear pieces cracking or falling, or if your kiln has been jarred, turn the kiln off. Wait until it is cool, then open and check for problems that may have developed. Replace all cones with new ones before firing again.

BEFORE FIRING:

- Turn thumbwheel to the " " position so upper pilot light is off.
- Turn timer to "off" position.
- Raise lid and lock in place. Gently test that lid is locked in open position.
- When necessary, kiln wash cone supports and allow to dry.
- Place desired junior cone in kiln sitter[®].
- Load kiln placing senior cone behind peepholes. Lower lid to closed position.
- Insert all peephole plugs.

FIRING:

- STEP 1 Set timer on Kiln Sitter[®].
- STEP 2 Push in plunger on Kiln Sitter[®].
- STEP 3 Rotate thumbwheel to "1"
- STEP 4 Set FIREMATE[®] speed control as desired (usually "A" for items made in a mold



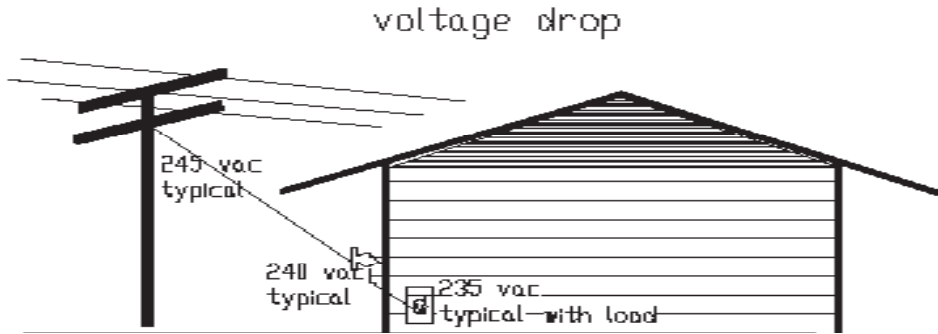
Choose a location... On a synthetic or wooden floor, use a sheet of fireproof material underneath your kiln and extending 18" beyond the kiln in all directions. A layer of hard firebrick is also acceptable for this purpose. Floor coloration may be sensitive to heat.

Your kiln must be fired on the metal stand provided; it has been designed specifically for the height and weight of your kiln. Do not use any other stand. Be sure to center the kiln on the stand so that it is stable, and position it so that the cord does not touch the sides of the kiln, which will be hot during firing. It is also important that the stand and kiln be level (use a bubble level for this purpose), otherwise there is a possibility of pieces falling during firing or the Kiln Sitter[®] malfunctioning. Screw the stand to the kiln with the screws provided.

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 FANFARE exhaust system may be overwhelmed if too much material reaction occurs inside the kiln during the firing or if a cross breeze or clogged vent pipe exists.

ELECTRICAL SPECIFICATIONS

Proper electrical wiring is necessary to safely and efficiently operate a kiln. Even though the voltage is a full 234 volts at the meter, the voltage on which the kiln operates will be somewhat lower at the kiln location. Make sure your electrical outlet has the correct electrical capacity and voltage to handle your kiln. It is necessary to measure the voltage at the location of the kiln with the kiln turned on. Voltage drops occur on all wiring. Proper electrical wiring will provide an adequate operation voltage and current at the kiln without significant voltage drop. (Voltage may be temporarily low during brownouts especially on a hot day in the summer when all your neighbors have their air conditioning turned on and during peak electrical usage periods in your area. If the wire coming from your power source to the kiln is too small or too long the kiln will not operate properly, even if the wire meets national electrical safety codes. If the voltage is low, the kiln may not reach the maximum desired temperature or will fire too slowly. This may reduce element life. 230 volt and 240 volt kilns may be used with 220 volt to 245 volt power.



SPECIFICATIONS ARE FOR THE VOLTAGE REQUIRED UNDER LOAD AT THE LOCATION OF THE KILN

Do not attempt to change the receptacle on an existing line without using the services of a licensed electrician. He will know whether the wire size is correct. It is advisable to use a larger wire size than absolutely necessary to prevent voltage drop., especially if the run to the meter is long. The increase in cost is usually very small compared to the long term savings in firing times and line loss. Never cut the plug off and replace it. If the plug becomes damaged, change the entire cord with a CRESS factory supplied cord which will meet temperature as well as electrical requirements. The outlet must be in good condition or heating of the cord and plug cap will occur. Do not use an extension cord at any time. Your electrician must make sure all local codes are met with your house wiring.

Be sure to keep pyrometric cones bone dry so that they will not crack in the kiln. Once dropped, roughly handled or exposed to moisture, cones develop small cracks which tend to make them bend prematurely and give an inaccurate temperature indication. The cones generally used in firing clays and glazes in pottery work are numbered ranging from 07 to 04. A very common one which works satisfactorily in most cases is 06. Cones used to fire china paint, gold, and decals range from 015 to 019. Cone 4 to cone 6 is used for porcelain. Stoneware may be fired to cone 8 or cone 10. All clay and glaze manufacturer's recommend the correct heat treatment for their products. Clays and glazes do vary, so check labels or ask your local ceramic supply dealer for advice on the proper cones to use, since he knows the characteristics of the clays and glazes he handles.

The second commonly used device for reading the temperature in the kiln is the pyrometer. This consists of a temperature sensing device (thermocouple) connected to a meter which indicates the temperature inside the kiln. Its principle value to the hobbyist is as a monitoring device which gives warning when the maximum firing temperature is neared. It is also very valuable in working with glass, which is extremely sensitive to differences in heat of only a few degrees. In firing ceramic materials, the ideal situation is to fire with both pyrometric cones and a pyrometer, since cones reveal what is happening to the ceramic in the the kiln only at the final firing stage and the pyrometer shows the actual air temperature continually through the firing. The pyrometer does not take into account the effects of time on the firing process as does the cone.

Another way of gauging the approximate temperature is by the color produced by different heats. A kiln can be fired visually with sufficient experience and a knowledge of the corresponding colors and temperatures. For example, the temperature of the lowest visible red heat (observing the entire kiln atmosphere not just the elements) is 1060°F.

Kiln Break in:

The purpose of the first (break in) firing is to get rid of any moisture in the kiln, to burn off the oil coating on the elements, and to test the operation of the Kiln Sitter[®]. Read all safe guards (page 3) and study directions on firing before breaking in your kiln. Fire the kiln empty to cone 020 (using the cones supplied). This should take approximately 4 hours. Set your limit timer for 4 hours.

On the second firing , we recommend that you fire up to cone 05 to get a good oxide coating on the elements which will help protect them. This firing should take about 5 hours; Set the timer for 5 1/2 hours.

We do not recommend firing glaze in the second kiln firing. (the fumes could be hard on the unprotected elements). We also recommend that you fire with the kiln furniture in place. This will test the shelves, a very small percentage of which may crack on the first firing. (Test firing shelves is a wise precaution for any new shelves.)

Firing:

A kiln is designed to produce the extremely high temperatures necessary to chemical-ly alter ceramic materials. It is therefore imperative that you observe all safety precautions.

SAFETY CAUTIONS:

FIRING

Methods Of Temperature Indication:

There are two basic devices for monitoring the temperature inside the kiln. The first, most essential and most widely used method is the pyrometric cone. A cone is a small elongated pyramid shaped indicator made of ceramic material which is formulated to melt when subjected to a sufficient amount of heat. It does not indicate temperature per se but the effects of temperature over a period of time. Cones react very similarly to the ceramic ware, since they are similar in composition. They deform as a result of the influence of heat, time, and kiln atmosphere, revealing what is happening in the kiln and when the proper firing temperature has been reached. There is a whole series of cones available (see cone number - temperatures chart), made to melt at different temperatures. Cones are available in two sizes. The large (senior or witness) cones may be used at any location in the kiln to check temperature uniformity and firing progress, and the small (junior) cones are designed for use in the Kiln Sitter[®] (shutoff).

Always use a large cone of the number corresponding to the maximum desired temperature behind each peephole during every firing in order to monitor firing progress and check the operation of the Kiln Sitter[®]. Place the cone 2" to 3" behind the peephole to avoid cooling drafts and obtain an accurate indication. Do not place it too close to the elements. Be sure to position it so that you will be able to see the tip when it bends. It is important always to stand pyrometric cones at the pre-cut angle provided by the base of each cone; this should be approximately 8 degrees away from vertical in the direction the cone is expected to bend. Setting the cones consistently at this angle assures that each cone (of the same number) will bend at uniformly the same temperature. Cone plaques or wire cone holders are commercially available. Holders may also be made from brick or clay. Holders made from fire brick are generally reusable and trouble free.

An excellent way to check the temperature on any shelf in any location in the kiln is to use a cone plaque containing three large cones. One is for the desired maximum firing temperature. The other two should be numbered above and below the firing cone. For example, if firing to cone 06, use a cone 05, 06, and 07 (use a small cone 06, 05 or 04 in the Kiln Sitter[®]. (The weight of the rod and adjustment of the Kiln Sitter[®] may require the hotter small cone in the sitter to achieve the desired firing temperature.) These are often referred to as the guide cone, firing cone, and guard cone. The lower temperature (guide) cone bends as a warning that the desired temperature will soon be reached, the firing cone should bend until the tip is level with the base of the cone, and the guard cone, if bent too far, signals overfiring.

Junior size cones are intended specifically for use with the Kiln Sitter[®] (automatic shutoff) mechanism (see section on Kiln Sitter[®] operation). It may be that there will be a slight difference in the reaction of the cone in the sitter[®] relative to the large cone of the same number in a holder, due to the fact that the large cone is heavier, more upright, and bends under its own weight, while the small cone in the sitter is encouraged to bend slightly sooner by gravity and the weight of the Kiln Sitter[®] rod on top of it. If you find this to be true, it may be necessary to use a small cone one number hotter in the Sitter[®] than the correct large cone number to achieve the desired results. Normally if firing to cone 04 or colder you will need one cone hotter in the kiln sitter[®]. If firing to cone 5 or hotter you will normally use the same cone number. When you get to know your kiln and the typical cone reactions you will be able to achieve consistent firing results.

or for china paint using the fastest speed. Use "E" for handmade pieces which corresponds to the slowest speed other than "manual").

STEP 5 Periodically check senior cone: when senior cone bends or kiln sitter[®] turns off, manually turn thumbwheel to " " position and Kiln Sitter[®] timer to "off". Turn speed control to "stop". Allow to cool before opening.

NOTE: Firemate[®] will click on and off during its operation. This audible noise is caused by a relay lowering average power as required by the programmer. The blue-white flash which can be seen in the panel vents is caused by the relay contacts interrupting power as necessary for its proper operation.

MANUAL FX OPERATION

1. Set speed control to "stop" or "manual."
2. Rotate thumbwheel to desired position.
 - "1" is low
 - "4" is medium
 - "7" to "10" is high

BENEFITS OF THE FANFARE KILN INCLUDE:

Elements are all tuned for excellent temperature uniformity.

Kilns all have an automatic voltage compensation circuit to help even out results when your house voltage varies during operation.

Fanfare models have an integral clean air exhaust system that cools the panel and reduces cross contamination of colors during the firing process.

These kilns have an automatic room temperature compensation circuit. For instance, cold room temperatures cause the thumbwheel to turn up slightly faster to cause the kiln heating to be constant from firing to firing.

The exhaust fan automatically stops when the firing stops to help slow the cooling process and decrease crazing and stress cracks in the ceramic ware.

Firing Glass: Glass is very sensitive to variations in temperature of only a few degrees. We strongly recommend that you use a pyrometer to measure temperature when working with glass. Glass must be allowed to pass through the lower temperatures slowly to prevent shattering, then it may be fired rapidly up to temperature (firing rapidly at this point helps preserve colors). Glass softens quickly once the critical temperature is reached and sagging begins (usually approximately 1500°F for glass slumping); it is wise to check it often at this point (at 10 minute intervals) and when it has slumped properly, turn off all switches, crack the lid at the lower lid prop position for up to ten minutes to prevent oversoftening of the glass, then close the lid and allow to cool completely.

Glass is slumped onto terra cotta molds dusted with whiting (calcium carbonate) to prevent sticking. Be sure to read the glass loading section.

For firing glass (slumping or stretching):

STEP 1 Set lid at lower lid prop position.

STEP 2 Set thumbwheel to "1" and speed control to manual. Fire to 700 °F (approximate-

ly one hour.)

STEP 3 Close lid. Turn thumbwheel to 9.

STEP 4 Fire to approximately 1500 °F, checking at intervals for proper slumping.

STEP 5 When proper slumping is reached, turn thumbwheel switch to " " and timer to "off", crack lid at the lowest lid prop position for up to ten minutes.

STEP 6 Close lid. Allow to cool completely.

The standard firing schedules given above may be varied when necessary depending upon individual circumstances. If your voltage is high and your kiln is firing too rapidly, or if you are firing an extremely thick, heavy piece and you wish to fire very slowly, you may use slower firing in step 3 above by leaving thumbwheel on "1" and just turning the speed control to "normal". This will allow the power to gradually increase to higher settings for a slower less heat shocking firing schedule.

AFTER FIRING:

After every firing, check the limit timer. There should be approximately 10 to 15 minutes left at time of Kiln Sitter® shut off. You should correct the timer on the next firing if there is more than 30 minutes left on the timer so that the timer works as an effective backup on the firing. Should the Kiln Sitter® fail and you forget, this could be a very important safety factor in saving the kiln and your work from destruction.

Also check the Kiln Sitter®. Observe the pilot lights (both should be off) and the position of the Kiln Sitter® weight: make sure it has fallen and has actually turned the kiln off. Correct any misadjustment problems early before damage is done to the kiln and ware.

Always turn the thumbwheel to " " and the limit timer to "off" after each firing even if the kiln sitter appears to have functioned correctly. The kiln sitter is used for added safety and for controlled firing; it is not fail proof and can not be guaranteed to turn off every time. Set the speed control top "stop".

Always allow plenty of time for the kiln to cool (at least twice as long as it took to fire) before opening the lid. Do not unload it until you can do so with bare hands.

fired in the same load, since they are normally fired at different temperatures and since this could cause discoloration. Bisque is normally fired one cone hotter than the same piece when glazed fired. Do not stack or nest glazed pieces. Do not fire glazed pieces requiring lids with the lids in place as they will stick together permanently.

Loading overglaze, China Paint, Lusters, and Gold

Loading for overglaze pieces is the same as for your glazed ware, except that lusters should be spaced at least 1" apart to avoid cross contamination.

Loading stoneware and porcelain

It is necessary to fire stoneware and porcelain at a much higher temperature than that used for low fire ware or glaze. At this heat the ware becomes much softer than ceramic bisque. For this reason it may stick to other pieces and so should not be stacked or nested. It will also tend to distort in shape unless the maximum temperature is accurately controlled and the piece is properly supported. Hollow greenware pillars made of the same material as the ware are often used for support so that the expansion and shrinkage of the support is the same as that of the ware. Do not support high-fire ware on ordinary stilts. Often simpler shapes are supported by a reusable "setter" shaped for a particular piece. Do not place ware closer than 3/4" from the elements to avoid uneven heating and distortion of the piece. Use high fire kiln wash. Some prefer to load stoneware onto surfaces sprinkled with silicaflour, sometimes called "flint". Keep "flint" away from the elements.

Loading glass

Do not fire small thin pieces of glass and large thick pieces in the same load. Glass sagging is very sensitive to variation in temperature. Load only one or two shelves; keep the bottom shelf 3" or more off the kiln floor and keep glass pieces at least 3" or more from the kiln top. Do not crowd pieces at any time. Terra cotta molds, dusted with whiting (calcium carbonate) to prevent the glass from adhering to the mold, are used in sagging sheet glass to shape. Do not use ceramic bisque molds for sagging glass.



them to allow for air circulation underneath. It is best to fire with a shelf at least 1/2" off the floor of the kiln.

Never place ware closer than 1/2" from the elements in the kiln. One inch is preferable. Place large, flat pieces that take up the full width of the kiln so that their edges are between element grooves. This will prevent the edges from heating up before the center of the piece, causing possible damage by cracking from uneven expansion. To prevent unstable objects from falling during firing use stilts to make sure they do not wobble. Take care that stilts will not strain rims and other delicate areas.

It is important to always place shelves so that there is at least one element groove between shelves or between a shelf and the lid. This will allow each compartment to heat evenly up to the proper temperature. KEEP SHELVES AND WARE AT LEAST 1/2" AWAY FROM ANY PART OF THE KILN SITTER. WHEN PLACING POSTS, LINE THEM UP SO THAT EACH POST IS DIRECTLY ABOVE THE POST BELOW TO PREVENT STRESSING AND POSSIBLE WARPING OF SHELVES. POSTS MUST RUN IN COLUMNS THROUGHOUT THE KILN. Remember when loading to place a large (witness) cone behind each of the peepholes for each firing so that you can monitor the progress of that firing. For an accurate reading, cones should be placed 2" to 3" behind peepholes to avoid a cooling draft. Also check the operation of the Kiln Sitter[®] and remember to put a small cone in the Kiln Sitter[®] (see Kiln Sitter[®] operation). For more information on cones and their use, see the section on temperature indication.

There are variations in loading techniques depending upon the type of ware being fired. The following are recommendations for loading different kinds of ware.

Loading Bisque:

Low fire ceramic greenware pieces will not adhere to each other when fired, therefore they may touch one another. They may be stacked and set directly on shelves without sticking. In some cases they may be nested or placed on top of one another, if the weight is evenly distributed on the piece below. Do not, however, place a heavy piece upon a small piece or the weight may cause the lower piece to warp or crack. Tile and large flat pieces should be fired flat on a shelf so they do not warp. Slow firing is required in such cases because the shelf mass effects the temperature uniformity across the flat piece. Strain on any delicate portion of a piece could result in distortion. Fire bisque items with their lids in place to assure a good fit. Remember that although low fire greenware pieces may be touching there must still be enough room for sufficient air circulation around pieces for even firing results.

Loading for glaze firing:

Glaze is finely ground glass suspended in a liquid. Two glazed pieces, if allowed to touch each other will adhere to one another when the glazes melt and re-solidify. Glaze will also adhere to the kiln or kiln shelf. Therefore stilts are used when firing most glazed pieces. Stilts are small ceramic or pointed metal supports; a wide variety is available (see the kiln accessories section). In some cases a piece may be dry footed (the base left unglazed). Be sure that the glaze is not applied too heavily, or it may "run" and stick to the shelf or the bottom of the kiln. Remember to prepare the kiln with kiln wash, as described earlier, especially when firing a glaze to prevent any glaze from permanently adhering to the kiln bottom or shelves. Glazed pieces should not be placed closer than 1/2" to one another since glaze bubbles before it smooths to its final surface. Bubbles and fumes from this process will contaminate adjacent pieces if spacing is not at least 1/2". We do not recommend that glazed pieces and bisque be

CONE / TEMPERATURE CHART

temperature equivalents for Orton Standard Pyrometric Cones

CONE NUMBER	LARGE CONES	
	60° C.	106° F.
O22	576 C.	1069 F.
O21	602	1116
O20	625	1157
O19	668	1234
O18	696	1285
O17	727	1341
O16	764	1407
O15	790	1454
O14	834	1533
O13	869	1596
O12	866	1591
O11	886	1627
O10	897	1629
O9	915	1679
O8	945	1733
O7	973	1783
O6	991	1816
O5	1031	1888
O4	1050	1922
O3	1086	1987
O2	1101	2014
O1	1117	2043
1	1136	2077
2	1142	2088
3	1152	2106
4	1168	2134
5	1177	2151
6	1201	2194
7	1215	2219
8	1236	2257

NOTE: For reproducible results, care should be taken to insure that the cones are set in a plaque with the bending face at the correct angle of 8 degrees from the vertical, with the cone tips at the correct height above the top of the plaque. (Large cone 2")

KILN OPERATION

The kiln is used to apply a certain amount of heat over a period of time to a ceramic piece to produce a chemical change, resulting in a finished piece. Firing too fast causes stress to occur that can physically break the piece or stress the ceramic piece so that it breaks on its own sometime after the firing. The patented FIREMATE control system applies the heat smoothly, (not in stepped increases) permitting faster firing without damaging the ceramic ware. The firebrick retains just enough heat so that when the cooling process starts, the bubbles from chemical gases from the vitrification process can escape the glazed surface. Rapid cooling fiber kilns can produce imperfections from trapped air in the glaze. Your ceramic pieces will achieve their best possible finish because you have the best firing equipment available. The maximum degree of heat and the length of time necessary vary widely according to many factors, such as the type of ware (porcelain, earthenware, stoneware, etc.) or glaze, paint or decal, the thickness of the piece, the size of the load being fired, and the voltage available.

Shut-off Devices Kiln Sitter[®]

CAUTION: The Kiln Sitter[®] control is a valuable aid when firing your kiln and is engineered to give you years of trouble-free operation when it is properly adjusted and maintained as outlined in the Kiln Sitter[®] operating manual. It is, however, recommended that the Kiln Sitter[®] not be left unattended beyond the estimated firing time. An uncontrollable accident, such as greenware falling against the end of the Kiln-Sitter[®] tube, may cause an overfiring which could damage your kiln. Should this occur, the operator should be in attendance to shut off the kiln manually, using the witness cones behind the peepholes as a guide.

The Kiln Sitter[®] should be used mainly to achieve consistent firing from one firing to the next and not as a failsafe shut off device. Note: because the small cone is placed on its side in the Kiln Sitter[®] with the weight of the rod pressing down on it, the small cone may bend one to two cone numbers before the witness cone. With experience, you may use one or two cone numbers higher in the Kiln Sitter[®] than the actual cone you wish to achieve. Never use lubricant of any kind on the Kiln Sitter[®]!

The Kiln Sitter[®] does not take the place of watching the large cones through peepholes, but can help achieve repeatable and uniform firings. It must be kept in good working order and adjustments checked before each firing. Before leaving the factory, every Kiln Sitter[®] is adjusted and its operation carefully checked. However, it is possible that the adjustments have changed in shipment or uncrating. Therefore, the following adjustments must be checked and readjusted if necessary before each firing.

WARNING: You are responsible for the adjustment and maintenance of the

PREPARATION FOR FIRING

Before loading the kiln, there are several things you should do to prepare for a firing:

1. A. Make sure timer is set to "off"
B. Check to make sure that Kiln Sitter[®] button is out and therefore off.
C. Thumbwheel should be set to "0".
D. Do not open lid if either pilot light is on.
2. Remove all dust and chips that may have resulted from shipping (or previous firing). A small vacuum cleaner is very useful in keeping your kiln clean. Dust in the kiln could cause imperfections in glazed pieces.
3. Prepare a small amount of kiln wash. Kiln wash is a refractory material that prevents glazed pieces from sticking to shelves. It is usually purchased as a dry powder and is then mixed with water to the consistency of heavy cream. Use only high fire kiln wash. Clean all your new shelves, then kiln wash only the top side of each shelf and the floor of the kiln, applying with a paint brush. This will seal the dust and prevent glazes from adhering to these surfaces. Apply a paper thin coat, or it may chip off. When the kiln wash wears off, these spots only should be recoated keeping the kiln wash thin but the shelves covered. If glaze has dripped onto shelves, chip it off, smooth and re-apply kiln wash to these areas. Sandpaper may be used to smooth these small areas before re-applying kiln wash. **CAUTION:** Do not coat the sidewalls, lid or bottom of shelves. Keep kiln wash off of the elements to avoid burning out elements. Also kiln wash the top edges of the metal cone supports and the underside of the rod of the kiln sitter, being careful not to get any in the sitter tube or on any cones. Apply only a thin coat (a thick coat could cause the sitter to overfire) and apply it only to the metal parts that come in contact with the cone before and during firing.
4. Plug in kiln, checking that cord does not touch kiln case.

LOADING

CAUTION; Make sure timer is set to "off", thumbwheel is set to "0" and both pilot lights are off to prevent any possibility of electrical shock and burns from the heating elements.

The insulating firebrick used in ceramic kilns is soft and fragile. Care should be taken to avoid damaging the liner when loading (or unloading) the kiln.

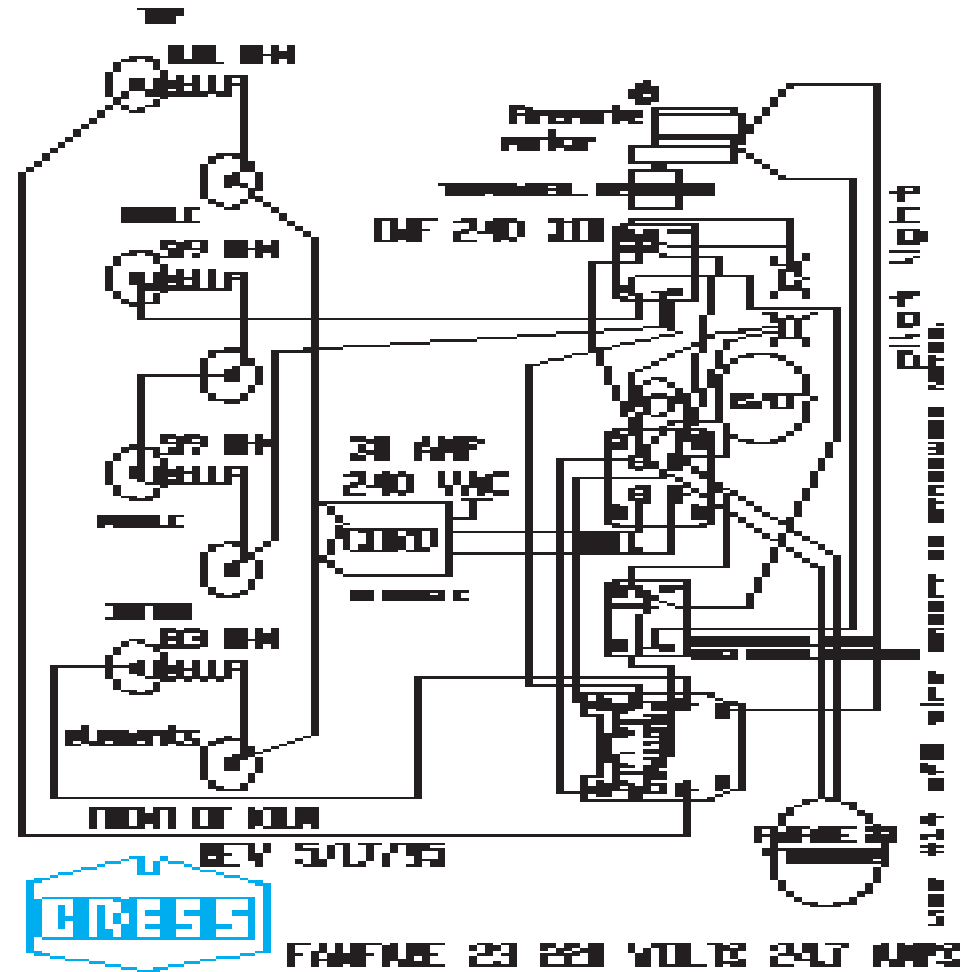
Make sure that any ware you put into your kiln is bone dry (not cold to the touch). If pieces are hand molded make sure that no air pockets remain in the clay. This causes small "explosions" when fired, since the air expands and the moisture turns to steam. Hollow out the solid pieces whenever possible. Thick solid pieces can be fired safely only at very slow heating and cooling rates. Solid pieces tend to crack and break more easily during firing than hollowed pieces.

Your kiln is designed to provide as uniform a heat as possible throughout the firing chamber. The kiln should be loaded in a balanced manner; mix heavy pieces and light pieces. When firing in the same load, light and heavy ware should be alternated on the same shelf and distributed throughout the kiln to help the kiln heat evenly. This will assure that all pieces receive the same heat treatment.

Your ware will fire more evenly if you allow for sufficient air circulation around pieces. If it is necessary to place pieces on the floor of the kiln, it is recommended that you stilt

completed by lifting up the Kiln Sitter[®] weight, pushing in the plunger, and letting the weight down gently, You then fire manually turning all switches off when the witness cone (behind the peephole) bends.
 5. Turn the timer switch to "off", and the thumbwheel switch to " " after every firing even if the Kiln Sitter[®] appears to have operated properly.

FANFARE 23 WIRING DIAGRAM



Switches:
 Power is switched on and the amount of power flowing to your kiln is controlled by the infinitely variable switch. This is accomplished by cycling off and on (which causes an intermittent snapping or popping noise). When the 100 setting is reached the switch is 100 % on and therefore no longer cycles. Viewing inside the dark panel through the top of the panel a blue light may be seen flashing as the contacts make and break. This is the same thing that happens every time you switch a light on or off in your home. Turning the switch to higher numbers on the dial increases the power that is applied to your kiln. This percentage power control is turned by the thumbwheel and motor. It allows you to increase the rate of temperature climb and fire at precisely the speed that you want. The speed control makes the motor turn at the rate you set or stops the motor (manual setting) to allow you to control the kiln's power with the thumbwheel directly.

Pilot lights:
 Two neon pilot lights are provided to indicate when the power switch is on and when the Kiln Sitter[®] is on. The lower pilot light indicates when the Kiln Sitter[®] is switched on providing power to the kiln. The upper pilot light indicates when the thumbwheel controlled power switch is on. The upper pilot light correctly indicates this only when the lower Kiln Sitter[®] pilot light is on since all power is off when the Kiln Sitter[®] and timer are off.

Kiln Sitter®. The warranty does not cover overfiring regardless of cause. The kiln will not overfire if witness cones are watched and the kiln shut off manually. Because the FIREMATE® kiln is very repeatable as compared to a manually operated kiln or most other automatic kilns, the timer should be used. The FIREMATE® kiln helps compensate for voltage fluctuations and room temperature changes, but cannot correct for load variations. Heavy loads will take longer than very light loads.

Adjustments:

The firing gauge is used for adjustment only, and must never be left in place on the refractory tube during firing. Remove the rubber band to release the firing gauge. Store the firing gauge for future use after you complete the kiln sitter adjustments.

Check the centering of the actuating rod with the firing gauge in place. The actuating rod must travel freely in the center of the oblong slot without touching the sides at any point, or the rod will stick and the Kiln Sitter® will fail to operate. If additional adjustment is needed, loosen two screws that hold the guide plate and move the plate to the right or left as required. Re-tighten screws and recheck its position until the actuating rod is centered. Press down on the release claw and check full travel of the actuating rod. See that it does not touch the sides of the refractory tube.

Lift the Kiln-sitter® weight to its vertical position. The release claw should just barely clear the trigger. If not, loosen the set screw in the center of the weight and slide the trigger up or down and retighten set screw securely so that it does.

Make sure all switches are off., including the timer, Kiln Sitter®, and thumb-wheel switch. Remove the firing gauge and store in a safe place for future adjustment checks. Raise the weight to its vertical position with one hand, with your other hand raise the actuating rod on the inside of the kiln until the claw engages the trigger. Let go of the weight and push the plunger all the way in until it locks. (limit timers must be set above the off position for this test) Slowly let the actuating rod down until the weight is released. The weight should not stick in the vertical position. It should fall freely and cause the plunger (button) to pop out into its original "off" position. Repeat several times to make sure all moving parts are free and functioning properly. Now raise the weight only 1/2 of the way up. Push in plunger and allow weight to drop. Plunger should pop out to its original position. This checks that the weight's pivot is not too tight.

KILN SITTER® OPERATION

1. Check Kiln Sitter® adjustments.
2. Turn all switches to "off" position.
3. Remove firing gauge and store. Serious damage to the kiln and the Kiln Sitter® will result if the kiln is fired with its gauge in place on the refractory tube.
4. Apply a thin coat of high fire kiln wash to the top edges of the metal cone supports

and the lower side of the actuating rod being careful not to apply any in the slot of the refractory tube. Warning: remove kiln wash from the actuating rod and cone supports and recoat with high fire kiln wash before each firing. Failure to do this will cause the cone to stick to the metal parts (when the cone softens at high heat) and will cause overfiring.

5. Lift the weight up and press down on the release claw to hold it up in position.
6. While holding the release claw down with one hand, place a small cone (1 1/8" long) under the actuating rod using your other hand. Be careful not to knock any kiln wash off the metal parts while inserting the cone. The cone should be resting with a flat side down on the cone supports.

WARNING: Keep the cone away from the refractory tube. If the cone touches the tube during firing, it will stick to it and cause overfiring.

7. When loading, keep shelves and objects at least 1/2" from the tube, cone supports, cone and actuating rod (interior of kiln), also keep the area around the kiln and Kiln Sitter® (exterior) clear of all objects. Nothing must interfere with the weight when it falls or the kiln will overfire.

8. Push plunger in so that it remains locked in. The indicator pointer on the limit timer must be above the "off" position to allow the button lock to engage.

9. FIRE WARE CHECKING LARGE PYROMETRIC CONES BEHIND PEEPHOLES. (SEE METHODS OF TEMPERATURE INDICATION) DO NOT USE KILN SITTER® AS AN AUTOMATIC SHUT OFF BUT ONLY AS AN AID TO REPEATABLE FIRING.

10. TURN TIMER "OFF" MAKING SURE THE PILOT LIGHT GOES OUT. MAKE SURE THE KILN SITTER® BUTTON POPS OUT AND TURN THE THUMBWHEEL TO "0" AND THE SPEED CONTROL TO "MANUAL". UNPLUG THE KILN IF THE KILN WILL NOT BE USED FOR LONG PERIODS OF TIME.

LIMIT TIMER: The limit timer is a clock motor driven device that causes the Kiln Sitter® to shut power off to the kiln after a preset number of hours. It is not a substitute for firing with cones, but a backup to the Kiln Sitter® to help prevent severe damage to the kiln caused by Kiln Sitter® failure. The timer may be set for any period up to 20 hours and may be readjusted during firing. Of course, to be of use as a backup device, the unit must be set properly for a time great enough to fire your ware, but for a time less than required to overfire. It should be set 30 minutes longer than the estimated firing schedule. The FIREMATE® is so repeatable that the timer will have significant value as a backup device.

Warning: We can not extend our warranty to cover damage caused by overfiring for any reason, since we have no control on proper use of the limit timer. Do not leave any kiln unattended while firing. Watch pyrometric cones placed behind peepholes, to prevent overfiring.

LIMIT TIMER OPERATION

1. Use the Kiln Sitter® instructions and the following steps.
2. Set the indicator knob for the estimated time of firing plus 30 minutes. This is required before the plunger will stay locked-in.
3. The time does not start until the plunger is pushed in. It runs even when the kiln switches are turned off, if the plunger is pushed in.
4. If the timer shuts the Kiln Sitter off before your ware is fired, the firing may be