# INSTALLING YOUR L&L EASY-FIRE OR SCHOOL-MASTER KILN

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## CAUTIONS

See the CAUTIONS section of the Instruction Manual. (or ***hotkilns.com/cautions***)

## DATED INFORMATION

The information in these installation instructions is believed to be correct to the best of our knowledge at the time of publication (see the date at the bottom). You can download the most recent update from our web site at ***hotkilns.com/easy-fire-install.pdf*** at any time.

## SAFETY APPROVALS & LISTINGS

### LOCAL CODES

Local fire and safety codes supersede information that is provided in these installation instructions or in our caution instructions.

### MET LISTING TO UL STANDARDS

You may want to check with your local building inspector if you are uncertain what codes may apply to the installation of a kiln. This does vary from place to place. It may also be a requirement of your insurance policy. In any case, you will never go wrong in having a UL499 listing label on any appliance. Most building inspectors will accept this as adequate evidence of proper adherence to national safety standards.

All Easy-Fire and School-Master kilns are listed to UL 499 Standards for both the US and Canada by MET (An NRTL - Nationally Recognized Testing Laboratory). The Vent-Sure vent is listed in both the US and Canada for use with L&L listed kilns. UL 499, CSA C22.2, No. 122, CSA C22. Listing No E112742.

### NATIONAL ELECTRICAL CODE

Be sure your electrician follows the National Electric Code and any other local requirements when hooking up the kiln. **One of the requirements of this code that bears particular mentioning is the fact that you must fuse your kiln appliance for 125% of its rated maximum amperage draw.** This explains why you see fusing requirements in our electrical specifications that is in excess of the amperage draw of the kiln. The fuse for the kiln is either a circuit breaker or a fused disconnect switch.

### NATIONAL FIRE PROTECTION ASSOCIATION

To the best of our knowledge, the NFPA has nothing specific about the installation of kilns. The NFPA 86 goes into considerable detail about industrial furnaces and ovens but generally with respect to internal processes and gas-fired equipment. There is one section in the NFPA 86 (Section 2-1.5 concerning Floors and Clearances) that might be construed as applicable to kilns. It requires that temperatures at combustible ceilings and floors be kept below 160°F (71°C). In general the NFPA recommends installing furnaces on noncombustible surfaces and has specific requirements if this is not possible. You can order a copy of this by going to their web site at ***www.nfpa.org*** or by calling 617-984-7249.

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### UNIFORM MECHANICAL CODE

Section 920.0 specifically discusses Small Ceramic Kilns and their installation. Some of the clearance information from this is given further on. However, it is best to refer to this book for complete details. This is published by the International Association of Plumbing and Mechanical Officials and can be purchased online at ***iapmomembership.org***.

## CLEARANCES & SURFACES

### CLEARANCES IN KILN ROOM

L&L strongly recommends an 18" clearance to all walls.

Make certain floor is not flammable.

The Uniform Mechanical Code 2000 Edition states that "the sides and tops of kilns shall be located a minimum of eighteen (18) inches (457 mm) from any noncombustible wall surface and three (3) feet (914 mm) from any combustible wall surface."

The National Fire Protection Agency states that temperatures at combustible ceilings and floors be kept below 160 Deg F (71 Deg C) near industrial furnaces (which are like kilns).

Note that, when L&L tested kilns for UL, temperatures where measured 12" from the walls of the kiln and found to be safe from a flammability standpoint. However, locating a kiln just 12" from a wall may violate the Uniform Mechanical Code and possibly local fire codes so do this at your own risk.

### WALL MATERIALS

Check with local building codes for recommended non-combustible wall materials for walls that are adjacent to the kiln. Cement board, cinder blocks, and masonry tile are possible choices.

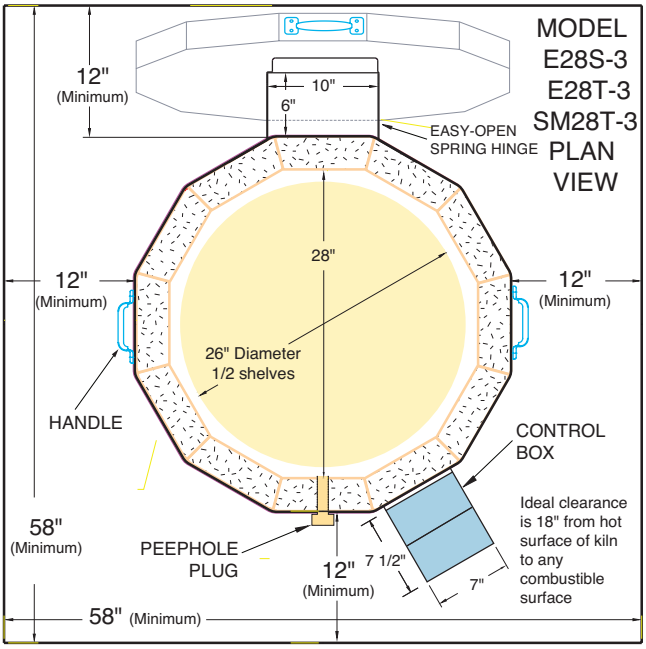
### FLOORS

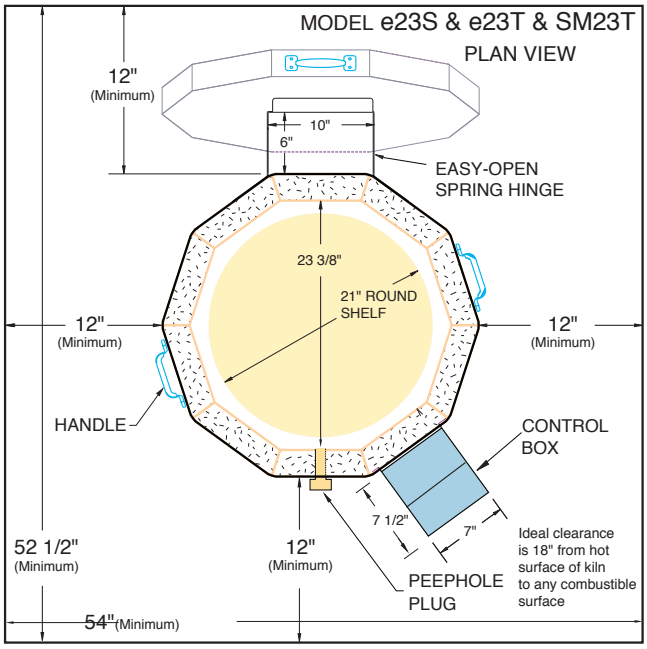
The Uniform Mechanical Code 2000 Edition states that "kilns shall be installed on noncombustible flooring consisting of at least two (2) inches (51 mm) of solid masonry or concrete extending at least twelve (12) inches (305 mm) beyond the base or supporting members of the kiln."

Recommended floor surfaces are cement, ceramic tile, stone, slate, cinder blocks or brick. Do not install on a wood floor or on carpet. Vinyl flooring may be combustible. Protect linoleum flooring from discoloration with a noncombustible covering.

BE VERY CAREFUL ABOUT IMPLEMENTING THESE SUGGESTIONS. Remember that the kiln is putting out heat over a long period of time and that this could very well start a fire under certain conditions. Also, if an overfiring occurs, materials like glass and glazes can be super-heated and electrically conductive, and they can melt right through the kiln floor. If there is a combustible floor, this could cause a fire. Also keep in mind the continued heat of the kiln can dry out combustible surfaces over time and reduce their flash point.

The NFPA 86 (Section 2-1.5 concerning Floors and Clearances) that might be construed as applicable to kilns requires that temperatures at combustible ceilings



and floors be kept below 160°F (71°C). In general the NFPA recommends installing furnaces on noncombustible surfaces and has specific requirements if this is not possible.

### USE THE SUPPLIED KILN STAND

**Do not use kiln without the factory supplied stand.**

L&L stands typically raise the floor of the kiln by 8" (20 cm).

It is CRITICAL to have air circulation under the kiln. This prevents heat from being directly conducted to the floor surface. If the floor (or subfloor) is combustible a fire could result. Even if the floor is non-combustible (like solid cement) you would create a very inefficient system by placing the kiln directly on the floor.

Using a proper stand is critical because, without a kiln stand that moves the radiant heat of the kiln away from the floor, some flooring could catch on fire. For instance, over time the radiant heat from the kiln can cause wood to lose its moisture and lower the autoignition temperature. (The autoignition temperature is the specific temperature at which a substance ignites and causes a fire.)

### OTHER CLEARANCES

Make sure there is adequate clearance in the room for opening the kiln lid, and for periodic maintenance such as opening the element connection boxes, opening the control panel, thermocouple replacement, etc. 18" to 24" clearance around the outside wall of the kiln is usually sufficient.

Combustible surfaces that stay below 71°C (160°F) are generally considered safe from the point of view of starting a fire. However, this is a maximum and we recommend keeping surface temperatures near the kiln under 52°C (125°F).

## KILN ROOM ENVIRONMENT

### KEEP KILN DRY & IN PROTECTED SPACE

The kiln must be kept dry so it must be kept in an enclosed room away from inclement weather. The electrical circuits must not get wet. If for some reason they do get wet they must be thoroughly dried before operating the kiln. Kilns can corrode fairly rapidly if kept in rooms that have no climate control. The constant heating and cooling in an unheated shed, for instance, can cause dew to form on the cold metal and this can cause corrosion. Also exposure to salt air will accelerate corrosion dramatically. Also failure to adequate vent the kiln will allow the corrosive fumes that are generated in the firing process to corrode the metal, the wiring and even the firebrick. This sort of damage is specifically excluded from warranty coverage.

### AMBIENT TEMPERATURE

The kiln should operate in an environment that is between 0°F and 100°F. Some people keep their kilns in unheated garages or sheds. This is OK as long as the room is dry. The DynaTrol has a specification that says it can work from 32°F to 125°F. These limits can be exceeded on the low end. (The control won't deal with negative numbers so if you go below 32°F you must have the control set up for Deg F - not Deg C) On the low end it has more to do with the accuracy of the control. As the kiln reaches the point where accuracy is an issue then the control will most likely be warmed sufficiently by the kiln to insure that it is operating within specification. However, on the high end, the electronics could degrade if operated for long periods above 125°F.

### SURFACE IS HOT AND CAN CAUSE BURNS

Kiln surface can be extremely hot: up to 260°C (500°F). Display a sign near the kiln that warns everyone of how hot the kiln is.

### FIRE EXTINGUISHER

We recommend that an adequate fire extinguisher be kept near the kiln and checked on a regular basis. You may want to check with your local fire authorities to see if there are any specific requirements they have such as sprinkler systems, automatic foam extinguishers, etc. **Use a fire extinguisher that is rated for electrical fires. We recommend an ABC fire extinguisher.**

### FIRE SPRINKLERS

**If you have a sprinkler system be careful to check the temperature rating and location of the heads so that you do not inadvertently cause them to actuate under normal firing conditions.**

Position the sprinkler heads in the ceiling away from the kiln(s). The rising heat from the kiln, under normal operating conditions, could set off the sprinklers which will cause water damage. Use the highest temperature rating on your sprinkler heads that is allowed by code. Or consider using a higher one that is set off by smoke.

Be sure to monitor temperature while the kiln is at its highest firing temperature and conditions are at their worse (for instance when the door to the kiln room is closed or the ventilation fan is turned off).

**Serious damage to the kiln and your premises can take place if the sprinkler system goes off when the kiln is at high temperature - especially if no one is in the building when it happens.**

## KILN ADJUSTMENTS

### LEVELING THE KILN

Level the kiln while you are installing it. Use thin metal shims under the legs to accomplish the leveling (never wood or other combustible materials). Make sure that the base will not wobble.

### ADJUST THE HINGE PROPERLY

See the assembly instructions for your specific kiln. (Assembly instructions are available at ***hotkilns.com/assembly-instructions***) The hinge of any kiln must be adjusted so that expansion caused by the heating process has room to expand up and down. (L&L includes expansion slots in the hinges.)

### THERMOCOUPLES

Thermocouples must be inserted into the kiln at least 1" (2.5 cm) in from the inside surface of the kiln. They must protrude into the kiln itself because, if the measuring tip of the thermocouple is buried inside the insulation, the thermocouple will measure a lower temperature than the actual temperature in the kiln. This could cause an overfire of the kiln.

NOTE: Replace thermocouples once they are no longer reasonably accurate. (Note: Type K thermocouples last about the same as kiln elements so it is recommended to change thermocouples when you change elements.)

If you have taken the kiln apart carefully observe the thermocouple polarity and zone placement. See the DynaTrol instructions in your manual or ***hotkilns.com/tc-polarity.***

## VENTILATION REQUIREMENTS

### VENTILATION IS ESSENTIAL

Kilns generate harmful fumes when firing ceramics. Fumes can include carbon monoxide, formaldehyde, sulfur dioxide, heavy metal vapors, and fluorides (all of which can be very toxic). Install kiln in well-ventilated area.

Never operate in an enclosed space such as a closet unless you have good ventilation. Aside from issues of ventilating the fumes from the firing, the heat build up in an enclosed room could present a significant fire hazard.

Severe corrosion can be caused by kiln fumes, salt air or other environmental conditions. Good venting can minimize these problems.

Ventilation must be to the outside. We recommend room ventilation of at least 25-50 times the cubic feet of the kiln per minute. For example, if a kiln has 10 cubic feet then 250 to 500 CFM should be adequate. See ***hotkilns.com/calculate-kiln-room-ventilation*** for a more precise method of calculating heat removal requirements. Our suggestion is to get a variable speed fan for ambient room ventilation and keep a thermometer on the wall. That way you can vary the ventilation to suit the needs of ambient heat conditions in the room.

### VENTILATION FOR THE KILN

In addition, we recommend our VENT-SURE downdraft kiln vent system. This will take care of most of the venting of the fumes of the kiln, will improve uniformity of firing in the kiln, and will help maintain the oxygen level in the kiln (which is important for certain glaze effects as well as good element life). See the separate instructions in this book for the VENT-SURE vent system. Although you can use other kiln venting systems please note that the VENT-SURE is c-UL-us listed for use with the Easy-Fire kilns. If UL listing is an issue then you may want to ensure that another brand of vent will be acceptable to your local authorities. Also if you use another brand of vent be sure to check with the vent manufacturer for specific installation requirements with our specific kiln model. See ***hotkilns.com/vent-sure*** for more inforamtion

### CARBON MONOXIDE MONITORING

We recommend the use of a carbon monoxide monitor in your kiln room.

### VENTING CODES

The following information is provided courtesy of The Edward Orton Jr. Ceramic Foundation.

OSHA has set standards for carbon monoxide exposure of 35 ppm (parts per million) for long-term exposure and 200 PPM for short-term exposure. Independent testing has shown that fumes near the kiln can exceed 200 PPM near the kiln during the firing of greenware. This can cause headaches, fatigue, sore throats and nausea. When properly installed and operated, a downdraft vent removes all harmful fumes and provides a safer working environment.

Most states and localities have set venting requirements for firing kilns in public places. Your local and state health board should have this information. The Uniform Mechanical Code says that you must vent ceramic kilns. It says that you can use a canopy-type hood (and gives specific requirements for such use) or that "listed exhaust blowers may be used when marked as being suitable for the kiln and installed in

accordance with manufacturer's instructions." Our Vent-Sure vent is UL listed and is appropriate to meet this ventilation requirement. If you decide to use a vent other than the UL listed Vent-Sure vent make sure you check with the manufacturer of the vent to be certain that it is an approved application. L&L takes no responsibility for improperly installed vents or kilns nor do we take responsibility for the use of other vents with our kilns. The manufacturer of the vent must specifically approve it for use with our kiln.

**Note about canopy type vent hoods:** While canopy type vent hoods can be suitable for venting a kiln from a safety point of view, they will not give you the superior advantages of a downdraft type vent like our Vent-Sure. A downdraft type vent pulls the rising hot air down to the bottom of the kiln which helps even out the firing. In addition it provides uniform distribution of oxygen in the kiln.

### HVAC AND AIR CONDITIONING ISSUES

Kilns put out a lot of ambient heat. If you need to size HVAC units to handle this see the chart below. This shows the BTU output if the kiln was held at these temperatures under steady-state conditions (which is rarely the case for a ceramic kiln). Typically it would never be worse than what is shown in the this chart which makes this a safe figure to use for sizing HVAC systems.

**MAXIMUM BTU PER HOUR WHEN FIRING**

| MODEL NUMBER | 1800 Deg F (Approx Cone 05) | 2350 Deg F (Approx Cone 10) |
|---|---|---|
| e23S | 9816 | 14267 |
| e23S-3 | 8135 | 11800 |
| e23T | 12791 | 18593 |
| e23T-3 | 10643 | 15439 |
| e28S | 10871 | 15769 |
| e28T | 13928 | 20204 |

Voltage is not an issue with regards to BTU output. e28S and e28T have only 3” brick.

## ELECTRICAL INSTALLATION

### VOLTAGE

EASY-FIRE and SCHOOL-MASTER kilns are wired to work on either 240 Volt single phase, 240 Volt three phase, 208 Volt single phase or 208 Volt three phase. Some non-US kilns (sold to countries with 380 Volt power systems) work on 220 Single Phase or 380 volt 3 phase wye.

**It is important that the kiln be hooked up to the proper voltage.** 208 volt kilns hooked up to 240 volt power supplies will generate too many amps. 240 volt kilns hooked up to a 208 volt power supply will heat up about 25% slower than they should and may not reach the higher temperatures. Although it is possible to hook a single phase kiln to two legs of a three phase supply it will cause an unbalanced load on your electrical supply. CHECK WITH A QUALIFIED ELECTRICIAN. It is best to get a three phase kiln for a three phase power supply.

In addition to the power wires there is, on all L&L kilns, a ground wire. The ground wire is not used as a neutral (i.e. no electricity normally flows through the ground). **BE SURE TO GROUND THE KILN PROPERLY USING THE GROUND WIRE. AN UNGROUNDED KILN IS A DANGEROUS KILN.** Also it is important for the control operation to have a good earth ground as well (to get rid of electrical noise).

### HOOKING UP TO POWER

All EASY-FIRE and SCHOOL-MASTER kilns include either a 6-50P plug (for single phase kilns) or a 15-50P plug (for three phase kilns). (The only exception are kilns made for non-USA markets.)

Using the chart on page six as a reference, have your electrician install the proper receptacle and safety switch at your kiln location. Be sure that your fuse ampere capacity is enough to carry the electrical load required. Also, ensure that your power lines are heavy enough to carry the required electrical load. If this is being used in an industrial or institutional setting be sure to follow lock out/tag out requirements and procedures.

### NOTE ABOUT PLUG & FUSE RATINGS

L&L Kiln uses a UL listed NEMA 6-50P or 15-50P plug and cord that is robustly designed, and marked for 50 amperes at up to 250 Volts AC, 1 Phase (or 3 phase for the 15-50P), with a grounding prong. The (2 or 3) current carrying conductors are 6 AWG, which according to the 2002 NEC (National Electrical Code) Table 400.5 for flexible cables have an allowable ampacity of 55 amperes, and the grounding conductor is 8 AWG, which does not normally carry any current. The plug, or cap, is designed and constructed so that there are no exposed current-carrying parts except for the prongs, which only carry current when the plug or cap is safely inserted into its mating receptacle.

This plug and cord set is UL listed for carrying 50 amperes at the proper voltage and phase. All L&L kilns which use these plugs and cords are also UL listed as complete appliances, with the ratings as listed in L&L Kiln Mfg, Inc., catalogs. When installed, the circuit that supplies power

to the kiln must be designed per NEC requirements, and in many cases must be provided with conductors and overcurrent protection rated for 60 amperes, or 125% of the ampere listing of the kiln. (E.g., the E23T is listed at 48 amperes. 48 * 1.25 = 60 ampere rating for overcurrent protection and power supply conductor rating.) This may initially create some confusion, but remember that the kiln is UL listed with the NEMA 6-50P plug and cord set as a component of the appliance - it is the power supply circuit that must be protected at 125% of the listed rating, not the individual components inside the appliance.

### PROTECT POWER CORD FROM KILN CASE

Rout Power Cord away from kiln in such a way that it can not touch the hot case of the kiln. Secure it so it can not move. If cord touches the hot case it could melt and cause a short circuit and/or fire.

### USE A FUSED DISCONNECT

We recommend having a separate fused disconnect box with a lockout provision mounted near the kiln, even if you also have a separate circuit breaker for your kiln. This way you can easily turn off power to the kiln and prevent unauthorized people from turning it on. We recommend this even for kilns with plugs because it makes it so much easier to disconnect all power to the kiln when not using it. Note that if you unplug a kiln frequently the spring tension in the outlet can weaken over time. A Fused Disconnect switch allows you to positively turn off power to the kiln without unplugging it.

### LOCATE KILN WITHIN 50 FEET OF BREAKER

Try to locate the kiln within 50 feet of your breaker box. For longer runs you will probably have to increase the size of the hook up wire that we recommend in our literature. In any case, be sure to have a licensed electrician who knows the National Electrical Code hook up the kiln and size the hook up wire.

### FUSING YOUR CIRCUIT

Be sure your electrician follows the National Electric Code and any other local requirements when hooking up the kiln. The full load amps is listed on the data nameplate of the kiln. CHECK WITH A QUALIFIED ELECTRICIAN.

### USE PROPER GROUNDING

Make sure your electrician properly grounds the kiln and then tests for proper grounding after the installation. All electrical appliances should be properly grounded. This can be to either a cold water pipe or proper system ground in your building. If there is ever a short circuit (where the electricity flows through to the case or control panel and where you might touch it) you could be electrocuted if the kiln is not grounded. This is especially important with the high voltage used on kilns. The higher the voltage the more easily it could flow through your body. In addition, because of the heat generated in a kiln, wires are subject to potential deterioration over time and expansion and contraction can move insulators and cause short circuits. BE SURE TO REPLACE ANY DETERIORATED WIRES!

### USE COPPER WIRE FOR HOOK UP

Don't use aluminum wire. It is cheaper to use aluminum wire and you may be tempted to do so. Many electricians will tell you that, with the new types of connectors, it is OK. However, it is of particular importance with kilns not to use aluminum wire for the hook ups. The specific reason particular to kilns is that the wire tends to get hotter near the kiln than it might going into some other types of appliance. Also, being a resistive load, there is constant heat being generated by the conductors. When aluminum wire gets hot it accelerates oxidation. Aluminum oxide is a resistor; copper oxide is not as much. If the connection at the terminal board gets oxidized it will really heat up - to the point where it could cause a fire. Braided copper wire is preferred.

### DIRECT HOOK-UP

All L&L power cords are rated for 105°C. Anything less than this can cause a malfunction and possible fire where the power leads connect to the control box.

It is OK, and will not void the warranty, to remove the plug that comes with the kiln and direct wire the kiln. However, the connection wires must be rated for a minimum of 105°C.

### DO NOT USE EXTENSION CORDS

Extension cords are only OK to use for the 120 volt vent system. Do NOT use an high power extension cord for the kiln.

### OFF-PEAK ELECTRICAL USAGE

Some utilities offer special rates for running energy intensive appliances (like kilns) during off-peak hours. Check with local utility. This would require a special time-of-use electrical meter.

### WHERE TO GET MORE INFORMATION

See ***hotkilns.com/volts*** for a complete description of electrical theory, fusing, hook-up wire sizes, etc. as they apply to kilns or, for a more basic description, at ***hotkilns.com/basic-electric-kilns.***

# INSTALLING YOUR L&L EASY-FIRE OR SCHOOL-MASTER KILN

## ELECTRICAL SPECIFICATIONS

| MODEL NUMBER | VOLTS | PHASE | LOAD WATTS | FULL SIZE AMPS | FUSE WIRE AMPS | HOOK-UP PLUG SIZE* | NEMA TYPE |
|---|---|---|---|---|---|---|---|
| e18S-240 | 240 | 1 | 5737 | 23.9 | 30 | 10 ga | 6-50P |
| e18S-240-3P | 240 | 3 | 5737 | 20.7 | 30 | 10 ga | 15-50P |
| e18S-208 | 208 | 1 | 4980 | 23.9 | 30 | 10 ga | 6-50P |
| e18S-208-3P | 208 | 3 | 4980 | 20.8 | 30 | 10 ga | 15-50P |
| e18T-240 | 240 | 1 | 8400 | 35.0 | 50 | 6 ga | 6-50P |
| e18T-240-3P | 240 | 3 | 8400 | 20.2 | 30 | 10 ga | 15-50P |
| e18T-208 | 208 | 1 | 8400 | 40.4 | 60 | 6 ga | 6-50P |
| e18T-208-3P | 208 | 3 | 8400 | 23.3 | 30 | 10 ga | 15-50P |
| e23S-240 | 240 | 1 | 9460 | 39.42 | 50 | 6 ga | 6-50P |
| e23S-240-3P | 240 | 3 | 9460 | 34.1 | 50 | 6 ga | 15-50P |
| e23S-208 | 208 | 1 | 8320 | 40.0 | 50 | 6 ga | 6-50P |
| e23S-208-3P | 208 | 3 | 8320 | 34.6 | 50 | 6 ga | 15-50P |
| e23T-240 & SM23T-240 | 240 | 1 | 11520 | 48.0 | 60 | 6 ga | 6-50P |
| e23T-240-3P & SM23T-240-3P | 240 | 3 | 11520 | 27.71 | 40 | 8 ga | 15-50P |
| e23T-208 & SM23T-208 | 208 | 1 | 9980 | 47.98 | 60 | 6 ga | 6-50P |
| e23T-208-3P & SM23T-208-3P | 208 | 3 | 11000 | 30.54 | 40 | 6 ga | 15-50P |
| e28S-240 | 240 | 1 | 11500 | 47.92 | 60 | 6 ga | 6-50P |
| e28S-240-3P | 240 | 3 | 11500 | 41.5 | 60 | 6 ga | 15-50P |
| e28S-208 | 208 | 1 | 9984 | 48.0 | 60 | 6 ga | 6-50P |
| e28S-208-3P | 208 | 3 | 9984 | 41.6 | 60 | 6 ga | 15-50P |
| e28T-240 & SM28T-240 | 240 | 1 | 11520 | 48.0 | 60 | 6 ga | 6-50P |
| e28T-240-3P & SM28T-240-3P | 240 | 3 | 16620 | 39.98 | 50 | 6 ga | 15-50P |
| e28T-208 & SM28T-208 | 208 | 1 | 9980 | 47.98 | 60 | 6 ga | 6-50P |
| e28T-208-3P & SM28T-208-3P | 208 | 3 | 14340 | 39.80 | 50 | 6 ga | 15-50P |

*** Note 1:** Wire hook up size is a general recommendation. It may vary with the length of the electrical run and other localized conditions. Your electrician needs to follow the rules of the National Electrical Code to make this final determination.

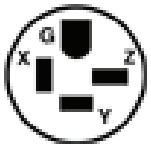
**Note 2:** All three phase circuits are balanced on kilns with three sections (27" high); i.e. each leg carries the same amount of amperes. This is not true on 18" high kilns which will run on two phases of a three phase system.

**Note 3:** 220 volt and 380 volt kilns are for non-US applications. Do not confuse this with nominal 220/110 Edison systems in the US. Treat those as if it were 240 volts. See your specific wiring diagram for electrical ratings and information.

**Note 4:** 240 volt kilns may be run on 208 volt circuits; however, they will lose about 25 % of the power. **208 volt kilns MAY NOT be run on 240 volt circuits.** The kilns will pull a dangerous amount of amperage if this is done.

**Note 5:** e23S-3 has the same electrical specifications as the e23S. e23T-3 has the same electrical specifications as the e23T, etc..

This is a 6-50P Plug Configuration for single phase Easy-Fire and School-Master kilns.




This is a 15-50P Plug Configuration for three phase Easy-Fire and School-Master kilns