

L&L J SERIES JUPITER MANUAL KILN INSTRUCTIONS



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CAUTIONS

See the *cautions.pdf* in the CAUTIONS section. **READ THESE CAUTIONS.** They will help protect you and your property. Not all of the cautions are obvious - even experienced operators will need to pay attention.

INSTALLATION

See the INSTALLATION section (*install.pdf*) in this Instruction Manual. There is important information on electrical hookup, ventilation requirements, clearances, codes, etc. You must pay attention to these issues or you could create a dangerous situation.

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TEMPERATURE RATINGS

The J Series kilns are rated for use to 2350°F (1287°C) (Cone 10). DO NOT FIRE ANY HIGHER THAN THIS. The elements, element holders and firebrick will melt. (Although the JD23 is only rated to go to Cone 5 this is simply because of the lower power per square inch in that kiln; if you can get it to go above Cone 5 it won't hurt the kiln as long as you don't go above Cone 10).

PREPARATION & ASSEMBLY

See the ASSEMBLY section in this Instruction Manual for instructions on how to assemble your kiln.

UNDERSTANDING THE DESIGN

BASIC CONCEPT OF THE KILN

A J Series electric kiln is an insulated polygonal heating device designed specifically for firing of ceramics. Coiled elements made of a special high temperature alloy (iron-aluminum-chrome) are mounted around the perimeter of the kiln.

SECTIONAL CONSTRUCTION

In the Jupiter Series the kiln is made up of one to five separate sections that sit on top of a separate kiln floor. Each section has a plug that plugs into a separate instrument/control panel. You can increase or decrease the size by adding or removing a section without removing the hinge or top. See hotkilns.com/section.pdf.

SEPARATE CONTROL BOX

The control panel is mounted on the floor away from kiln heat for more reliable operation. The switches and other sensitive components last longer. The panel weight will not affect the kiln. The panel can be sent to factory for repairs if ever necessary.

STURDY ALUMINIZED STEEL STAND

Aluminized steel resists corrosion at the high temperatures experienced in the important stand. The stand has a full plate of aluminized steel under the bottom brick. This allows the bottom brick to move freely while expanding and contracting - which helps

prevent broken bottoms! The legs, which have two bends for stiffness, are bolted onto the stand plates. There are plastic feet that slip over the metal legs.

SOLID STAINLESS STEEL CASE

Resists corrosion and strengthens construction. Stainless steel screws are used throughout for long-term corrosion resistance.

"EASY-OPEN, EASY-LOAD" LID

This is standard on the J2900 series and optional on J2300 Series. The 'Easy-Open, Easy-Load' spring-assisted hinge is counterbalanced with a torsion spring which dramatically lightens the weight of the lid and makes it easy to open and close. A lighter lid also reduces lid and lip damage. A spring loaded safety latch holds the lid in place while loading. The lid, when open, is tilted away from the kiln opening allowing greater access to the interior. There are no lid supports in the way when loading your kiln. You can safely and easily load from both sides. Anyone who has tried to load a large kiln with a lot of work can fully appreciate this great feature. The hinge extends over three kiln sections and ties the kiln together for stability. All hinge parts are aluminized or galvanized steel for corrosion resistance.

STANDARD HINGE FOR SMALLER MODELS

The standard hinge for the smaller models (J1800 and J2300 series) is made of stainless steel. You must use the provided safety chain system with these lids. (See [cautions.pdf](#) in the CAUTIONS section of your manual).

THREE CASE CLAMPS PER SECTION

The stainless steel case of each kiln section is held together by three adjustable stainless steel hose clamps. Behind the hose clamps the stainless steel case is reinforced with a piece of aluminized steel to prevent distortion. The clamps are easily accessible for adjustment. Two clamps are used on lids and bottoms.

STAINLESS CLIPS HOLD BRICK LID IN PLACE

Some manufacturers rely on the metal band around the kiln to hold the entire weight of the firebrick. L&L screws on several stainless steel clips that hold the

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firebrick in the band.

HEATING ELEMENTS IN CERAMIC HOLDERS

The heating elements are designed to have a low watt density (radiating watts per square inch of element surface area) and good stretch ratio (ratio of stretched length to original coiled length). These are supported in hard ceramic element holders (a unique L&L feature).

CHOICE OF 2-1/2" OR 3" OF INSULATION

The insulation is a special hand picked lightweight firebrick, which is 2-1/2" or 3" thick (depending on the model). This firebrick resists temperatures up to about 2450°F. It is highly insulating. See *btu.pdf* in the INSTALLATION section for a chart of BTUs that are given off by a hot kiln. The case temperature, when the kiln has reached final set point and the firebrick is saturated with all the heat it will absorb, can be several hundred degrees. After the heating elements are turned off the insulation will slowly lose its heat and the kiln and ware will cool down.

LARGE DIAMETER PEEPHOLES

There is one 1" diameter peephole per section for ventilation and cone sighting. These are full diameter all the way through the firebrick, which allows greater visibility into kiln than with the tapered holes that are often used in other kilns. One ceramic peephole plug is supplied per hole.

MANUAL CONTROL SYSTEM

The manual control box has infinite zone switches. On smaller models (J18, J18X, J23, J230 and J23-PB) these infinite switches are the final power control device; on large kilns and all three phase kilns the infinite switches control contactors. These provide accurate temperature gradients from top to bottom by controlling each separate 9" high zone with a separate switch. The infinite switches also act as an on/off switches. There are pilot lights for each switch so there is no guessing which zones are firing. A Dawson kiln sitter/timer turns the kiln off when a pyrometric cone bends. Zone control is accomplished by using the zone infinite switches to control the amount of time on for the various sections. Often this is used in conjunction with our Tru-View multi-thermocouple

pyrometer system, which allows you to see what your kiln is doing.

DAWSON KILN SITTER/TIMER

In addition, there is a Dawson Kiln Sitter, which breaks power to either the whole kiln (on single phase models that are 50 amps or less) or power to the contactor coils. The kiln sitter uses a pyrometric cone to sense when you have reached your desired maximum temperature.

OPTIONAL TRU-VIEW PYROMETER SYSTEM

See *trueview-instruct.pdf* for more information.

BOTTOM ELEMENT OPTION

Optional bottoms with elements are available on 23" and 29" diameter units. This improves heat up time and uniformity. (These bottoms are not reversible).

REVERSIBLE BOTTOM

The brick bottom can be easily reversed in case of a firing mishap. (Not true for kilns with powered bottoms).

KILN FURNITURE

L&L supplies ceramic kiln furniture for all our kilns. See the catalog and price sheet for details about what is included.

VENT-SURE VENT OPTION

The Vent-Sure kiln ventilation system by L&L vents harmful fumes away from a kiln to the outside. Carbonaceous materials in clay, china paints and glazes containing oils, glue from decals, and certain glazes and other miscellaneous products generate fumes. Each vent is capable of handling 20 cubic feet of kiln. They can be easily added. See the separate installation and operation instructions (*ventsure-instruct.pdf*) in the VENT section.

c-UL-US LISTED

All Jupiter kilns are c-UL-us listed except for 480-volt kilns. The Vent-Sure vent is listed for use with L&L Jupiter kilns. No. 789C. File E26330. Listed under the USL standard for Miscellaneous Heating Appliances & CNL for Canadian Standard C22.2, 122-M1989 and 88-1958. This mark is applicable in

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the US & Canada and is recognized the world over for its integrity.

POWER SUPPLY

VOLTAGE

Jupiter Series kilns are normally 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 work on 220 Single Phase or 380 volts, 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.**

WIRING DIAGRAM

See your specific wiring diagram and data nameplate which has all electrical connection information for your kiln listed.

480 VOLTS OPTION

480 volts is available as a special option for J2918, J2927, J2936 and J2945 . The voltage of the elements is 277 volts and the connection is a "Wye" 3 phase. The control box is a special NEMA rated box and connections between the kiln sections and the control box are hard wired. These kilns are not c-UL-us listed. See your wiring diagram for more information. See hotkilns.com/480.pdf.

WHY PROPER GROUNDING IS IMPORTANT

All electrical appliances should be properly grounded. This can be to either a cold water pipe or proper system ground in your building. (NOTE: Grounding

is normally provided in NEMA 6-50 type hook ups). 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 line 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!**

ELEMENT VOLTAGE

The elements on all Jupiter Series kilns work on line voltage (208, 220 or 240 or 277 volts). Elements may be wired in series or parallel depending on the kiln. See your wiring diagram.

POWER HOOK UP

From the wiring diagram, have your electrician install the proper receptacle and safety switch at your kiln location. Note that L&L has available 50 Amp NEMA 6-50R receptacles from stock if you can't find them locally. Have receptacle placed in such a manner that the plug-in cord can in no way touch the body of the kiln. Some models hook up permanently to power supply. 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. Anticipate future needs (such as adding an extension) to save yourself from future electrical installation costs. If this is being used in an industrial application or environment be sure to follow lock out/tag out requirements and procedures. Be sure to ground kiln properly. **DO NOT USE ALUMINUM WIRE FOR HOOKING UP A KILN.**

FUSING YOUR CIRCUIT

The National Electrical says that you should fuse a resistance circuit (kilns are a resistive load rather than an inductive load like a motor) for 125% of their rated full load amps. The full load amps are listed on the data nameplate of the kiln. **CHECK WITH A QUALIFIED ELECTRICIAN.** See volts.pdf for a complete description of fuses.

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KILN SECTIONS AND INSTRUMENT PANEL

The kiln consists of from two to five separate sections and a separate control/instrument panel. All the control of kiln is done from the control instrument panel. This contains the zone switches, contactors (if included) and pilot lights.

MODELS WITH A POWER CORD

MODELS J14, J14R, J14X, J18, J18X, J23 AND J230 Single phase versions with 50 amp power cords included. In addition the J23-PB with a powered bottom gets a 50 amp cord. These models all are rated under 50 amps. They have 72" power cords with 6-50P male plugs. These can get plugged into a NEMA 6-50R female receptacle. The power cord is wired to the Dawson Kiln sitter, which breaks the power line. There is an intermediate connection cord (L&L Part No L-G-INCD/00) that connects the Dawson Kiln Sitter/Timer to the Instrument /Control panel. There are from one to three zone switches in these models. The zone switches are the actual power switching "contactor" that turns power on and off to each kiln section. Each zone is wired to a special female receptacle. Each kiln section plugs into one of these receptacles. Note that the plugs that go from the kiln sections to the receptacles are not standard plugs. This is so that you can not accidentally plug these into standard 120 volt outlets. The plugs and receptacles on these models are rated for 20 amps at 250 volts. NOTE: jumper cords are different lengths (36" and 45"). Be sure to order the proper length. NOTE: Older kilns had 15 amp cords and receptacles. We still carry 15 amp receptacles and 36" long cords as replacement parts.

DIRECT HOOK UP MODELS

These are all three phase units, and J236, J245, J2918, J2927, J2936, J2945. All direct hook up models have a power connection board (with grounding lug) in the instrument/control panel. An electrician needs to wire these kilns direct to a fused power circuit. We recommend using a flexible cable such as a liquid tight cable so that the panel can be removed easily. See electrical specifications at end of instructions for details. Each section is controlled with a separate "branch circuit" which includes fusing

both legs of the power. The zone switch actually controls a separate 30 amp power contactor. (On older models the contactor is a Potter-Brumfield 25 amp relay, which we still make available. See the parts list for information). The switching power does not go directly through the zone switches. From the contactor the power goes to the female receptacles in the instrument/control panel. The kiln sections plug into these receptacles. Note that the plugs that go from the kiln sections to the receptacles are not standard plugs. This is so that you can not accidentally plug these into standard 120 volt outlets. The plugs and receptacles on these models are rated for 20 amps at 250 volts. NOTE: jumper cords are different lengths (36" and 45"). Be sure to order the proper length. NOTE: Older J236 and J245 kilns had 15 amp cords and receptacles. We still carry 15 amp receptacles and 36" long cords as replacement parts. The Dawson kiln sitter/timer breaks the power to the coils of the contactors rather than breaking the main power line coming in.

REPAIRING OR REPLACING THE INSTRUMENT PANEL

The entire instrument panel is removable from the kiln. This is a unique L&L Kiln design feature and allows easy factory repair of your instrument panel. Disconnect power, unplug the kiln (if it has a plug), unplug all sections from the control box, disconnect the wires from the Dawson kiln sitter (or physically remove the Dawson kiln sitter from the furnace while keeping it attached to the panel), pack it carefully in a box with protective cushioning, and send it to L&L Kiln for inspection and/or repair. If your panel is hard wired then disconnect power, mark the wires and lugs where they come into the power connection board at the bottom of the control panel and remove the power wires. If the kiln is out of warranty there is still only a nominal charge for inspection (see the *part.pdf* in the PARTS section). Repairs will be quoted before any work is done. In addition complete instrument panels can be ordered for replacement.

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FUSES

MODELS WITH NO FUSES

MODELS J14, J14R, J14X, J18, J18X, J23 AND J230 Single phase versions with 50 amp power cords included.: There are no fuses for these models.

OLD STYLE 3 PHASE (BEFORE 1997)

J18, J18X, J18R, J23 AND J230, J236, J245: These use 30 amp fuses (L&L Part No L-G-FS30/00) and panel mount fuse holders (L&L Part No L-G-FSPB/30) mounted on the front of the instrument/control panel.

OLDER LARGE SINGLE PHASE AND 3 PHASE

J2918, J2927, J2936, J2945: The fuses for all J2900 models are located in the control panel. Remove the cover to see the fuses and fuse blocks. The fuse blocks are L&L Part No L-G-FH30/20 (two pole) or L-G-FS30/30 (3 pole). These are all 30 amp fuses (L&L Part No L-G-FS30/NL).

NEW STYLE (AFTER 1997)

There is no distinction between single and three phase with regards to fusing. All models that use more than 50 amps are fused with branch circuits. All that have less than 50 amps total use are not fused. These models are fuses: J236, J245, J2918, J2927, J2936, J2945. The fuses for all these models are located in the control panel. Remove the cover to see the fuses and fuse blocks.

CONTROL SYSTEM

INFINITE ZONE SWITCHES

Each section of the kiln has an input control switch provided on the instrument panel. This type of switch will give you infinite control over the rate of speed of the firing. You can fire as slowly as you like, or as fast as the kiln is capable of attaining a certain temperature. Since this switch controls the amount of electrical current coming into the kiln, you can also maintain a desired temperature manually. (This requires a pyrometer system, as you must be able to know what degree or temperature the kiln is set for). At the desired temperature, you simply turn the switch

knob until the needle on the pyrometer is stationary. This is the procedure to balance out the heat input against the heat loss. LOW means a 22 1/2% on time setting, MEDIUM means a 50% on time setting and High a 100% on time setting on the infinite control switch. A 240-volt Infinite Switch can replace a 208-volt switch. The timing is slightly different but negligible for the purposes of controlling the kiln.

REPLACING INFINITE ZONE SWITCHES

Often when an INFINITE ZONE switch burns out it exhibits overheating on the switch body at one of the spade connectors. When this occurs the mating female connector on the wire may not give good electrical contact if reused (due to oxidation which acts an electrical insulator). a bad electrical connection can lead to localized heating at this point. To reduce the possibility of the new switch we recommend replacing the female connector with a new connectors. You may also need to replace the wires (check to see if they look oxidized or burnt). If the switch body looks O.K. then you normally do not need to replace the female spade connectors. To replace the female spade connector simply cut off the old connector with wire cutters, strip the end of the wire, insert the stripped end of the wire into the new female spade connectors and squeeze very tightly with a squeeze tool such as pliers or an electrical squeeze connector tool (available at the hardware store).

POTENTIAL CHATTERING OF INFINITE ZONE SWITCHES

The Robert-Shaw infinite input switches work by moving an armature arm with a contact relative to another contact attached to a magnet. A bimetal strip with a heater moves the armature arm as it heats and cools. When you turn the dial it moves the position of this armature arm varies the time between contact actuations. It is a great and simple switch. However, on some switches the balance between the force of the magnet and the force of the bimetal can be too fine. When this happens the switch can chatter which means it is turning on and off too fast. (The chattering is something you can generally hear). If this starts to happen you should replace the switch (contact factory).

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TURN OFF KILN POWER AFTER EACH FIRING

On models where the infinite zone switch controls a separate power relay, the relay contacts can fuse, which will keep one section of the kiln on. In most cases where this has happened, only one kiln section has been affected (which is not enough to cause the kiln to overfire). Keep in mind that, on the relay controlled kilns, the Dawson shuts off the kiln by breaking the voltage to all of the relay coils, not to the relay contacts which transfer power to the elements. Therefore, if the contacts of one of the relays becomes fused the kiln sitter will not shut off that section. The best thing to do as standard practice is to manually turn off the kiln at the fused disconnect switch or circuit breaker at the end of each firing.

PILOT LIGHTS

There is a pilot light for each switch. The red light will turn on and off at all switch settings except HIGH. This is a normal operating characteristic of the switch and shows that it is functioning properly. When the infinite zone switch is near "high" the pilot light will be on longer and when the zone switch is on or near low the pilot light will be off longer. The switch and light operate just like an oven control on the average electric range. The switches are designed to maintain the temperature that you desire. When heat is required, the switch is on; when not required, it is off.

The light simply shows when the switch is on or off. When your firing schedule calls for the switches to be set on HIGH, the switch will always be "on" and the light always stays illuminated. When the ware reaches maturity, and the kiln sitter turns the kiln off, then, of course, both switches and lights will be "off". The red "pilot lights" are warning lights to guard against over-firing the kiln. At a glance you can check whether the kiln is on or off. If they are still on beyond the expected firing time, then check the kiln carefully. L&L Part No is L-G-PILO/00.

KILN SITTER/TIMER

L&L Kiln Mfg. Inc. cannot assume any responsibility for a kiln sitter. We purchase this item. We install it, and supply you with the material to test it, prior to doing your regular firings. (All kiln manufacturers purchase the kiln sitter). It is a safety back up device; however, they can and do fail. L&L does not

recommend unattended firings. See *cautions.pdf* in this OPERATION.

PUT KILN WASH ON THE CONE SUPPORT (NOT SENSING ROD) FOR ACCURATE CONE ACTION. CLEAN OFF THE OLD WASH AND REAPPLY NEW WASH EACH TIME YOU FIRE.

Read your Dawson Kiln Sitter manual CAREFULLY AND COMPLETELY BEFORE USING YOUR NEW KILN. This control is the shut-off system for your kiln, and must be properly set to prevent over-fire of your kiln. With your kiln you have received two (2) 020 test cones for the initial test. You do not have to use 020 cones for the test but these are the ones that are provided.

NOTE: The Timer must be set so that it is not on "0" (Off). If it is the Dawson Kiln Sitter will not engage and the kiln will not turn on.

Be sure to read the section in the Dawson instruction book about Witness Cones. This is the most accurate method of determining temperature in the kiln.

TESTING THE DAWSON FOR MANUAL KILNS

In testing, you will use high heat only. When you are ready to test the kiln sitter, turn all of the switches to the highest point. The cone should go over within an hour, making the sitter cut off the kiln. An additional hour may be needed if you have a low voltage problem.

If, at the end of 2 hours, the kiln sitter has not turned off the kiln, turn it off manually. It probably needs an adjustment. Check the Dawson kiln Sitter book for instructions on how to make this adjustment. Be sure to check the action of the kiln sitter against cones that you put in the kiln. Be sure to keep your firing gauge for future adjustment.

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OPTIONAL POWERED BOTTOM

The 23" diameter (J2300) and 29" diameter (J2900) kilns have optional powered bottoms available. See the J Series literature for more information. These are useful if you need to fire faster, have a heavy load or are going to very high fire (they will improve overall element life because the elements won't have to work as hard to get there). The powered bottoms also offer more control over the accuracy of the temperature at the bottom of the kiln. There should be a 1" to 1-1/2" air space between the bottom and the first hearth shelf (in other words, set the first hearth shelf on 1" or 1-1/2" ceramic spacers). Keep spacers at least 1/2" away from the edge of the element grooves on the bottom.

FIRST FIRING OF THE KILN

Follow the FIRST FIRING INSTRUCTIONS in the *first-firing.pdf* in this OPERATION section.

SERVICE AND MAINTENANCE

REGULAR KILN MAINTENANCE

See *maintain.pdf* in the MAINTENANCE Section. NOTE: Failure to properly maintain your kiln could lead to a dangerous condition and could lead to premature aging of the kiln (like elements burning out).

WARRANTY

Jupiter kilns carry a three year limited warranty. See *warranty.pdf* in the SERVICE Section.

SERVICE FOR YOUR KILN

See *service.pdf* in the SERVICE Section.

TROUBLESHOOTING

See the separate TROUBLESHOOTING SECTION.

ELECTRICAL SPECIFICATIONS

NOTE: You can get more information about the electrical specifications from *jupiter-ohms.pdf* (located in the TROUBLESHOOTING SECTION). This will give you resistance values for elements and kiln sections. Also see *jupiter-electric.pdf* for complete electrical specifications in the INSTALLATION section.

WHERE TO BUY PARTS

See *parts.pdf* in the PARTS Section.

REPLACEMENT ELEMENTS

See *parts.pdf* in the PARTS Section. Also see the *troubleshoot-elements.pdf* in the TROUBLESHOOTING Section.

CRACKS IN THE TOP & BOTTOM

It is quite normal to get hairline cracks in both the top and the bottom firebricks. They are caused by the expansion and contraction of the firebrick as it heats and cools. As long as the bottom is fully supported by the stand the cracks in the bottom will not adversely affect the operation of the kiln. Note that it is possible to put another bottom under the original bottom as a second layer (this can also improve performance and heat up rate of the kiln). It generally does not make sense to cement these hairline cracks.

SPARE PARTS

WHERE TO BUY PARTS

See *parts.pdf* in the PARTS Section.

PARTS TO KEEP ON HAND

If you are operating in a production environment it is imperative that you stock certain spare parts if you must prevent down time. While we do our best to ship parts quickly and to keep all parts in stock we cannot be responsible for your downtime. We recommend the following parts be kept on hand:

- Complete set of elements
- Complete set of fuses
- One Zone Switch
- One power contactor (on some kilns)
- Jumper cable to element box
- Several element holders
- Brick Repair kit (See *brickrepair.pdf*)

PYROMETRIC CONES

See the LOG, CONES & CERAMIC PROCESS section.

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WHERE TO LEARN MORE ABOUT CONES

Visit the Orton Website at ortonceramics.com. There is lots of great information on how to use cones and troubleshooting cone problems. See the Orton Cone Chart in the ORTON TIPS section. Note that the kilns tend to slow down considerably in the higher temperature ranges to 50°F to 100°F per hour.

FIRING LOG

We recommend keeping a firing log. Keep track of firing times, approximate load weight, firing temperatures and notes on results of the firing. There is a template in the LOG, CONES & CERAMIC PROCESS section of your instruction manual ([log.pdf](#))

MORE ABOUT FIRING CERAMICS

See the sheet called [ceramic-firing.pdf](#) in the LOG, CONES & CERAMIC PROCESS section.

CONFIGURATIONS

UNHEATED SECTIONS

NOTE: Unheated 4-1/2" high sections are available for all kiln configurations. These may, in some cases, create heat up problems because the internal surface area of the kiln is increased without any extra power. Where possible, we recommend locating unheated sections near the middle of the kiln.

POWER SUPPLY

IMPORTANT CAUTION NOTE: If you change you kiln configuration BE SURE TO CHECK YOUR POWER SUPPLY To make sure it will handle the extra load. We will supply you with a new data nameplate.

J18

RINGS: Consists of two 9" high rings.

WHAT CAN BE ADDED: Another 9" high ring (JX18) can be added to make this a J18X.

ELEMENTS: The elements in a J18 and J18X are all the same.

LENGTH OF ELEMENT JUMPER CORDS: 36"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 2. An extra zone can be added adding a thermocouple and thermocouple lead wire.

WHERE CONTROL PANEL IS MOUNTED: On top 9" high section

J18R

NOTE: The J18R kiln is no longer made but is included in these instructions for reference for customers who have these kilns.

RINGS: Consists of two 9" high rings and one 6-1/2" high ring. The 6-1/2" high ring is on the bottom.

WHAT CAN BE ADDED: Nothing.

ELEMENTS: The elements in the two 9" high sections are J18 elements. The elements in the JR18 (6-1/2" high) section are a lower power rating than the J18/J18X elements.

LENGTH OF ELEMENT JUMPER CORDS: 36"

NUMBER OF INPUT SWITCHES ON J18R: 3

AMPERAGE RATING OF RECEPTICAL AND JUMPER CORD: 15 amps

WHERE CONTROL PANEL IS MOUNTED: On top 9" high section

SPECIAL ELEMENTS FOR J18R KILNS

The J18R Kilns have one 6-1/2" high extension. This 6-1/2" extension gets special elements. They are a different resistance value than the regular J18 elements. They are a lower value because not as much power is needed in these shorter extensions. A J18R gets a total of 4 regular J18 elements and 2 JR18 elements. The J18X extension, on the other hand, is 9" high and gets the same elements as the J18. Note: The J14 and J14R elements have the same value (there is no distinction as there is with the J18 and JR18). NOTE: We no longer make JR18 6-1/2" high kiln rings. However, the special elements are still available for them.

L&L J SERIES JUPITER MANUAL KILN INSTRUCTIONS

J18X

RINGS: Consists of three 9" high rings.

WHAT CAN BE ADDED: Nothing.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 36"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On top 9" high section

J23

RINGS: Consists of two 9" high rings.

WHAT CAN BE ADDED: A third 9" high ring (JR23) can be added. This makes the kilns a J230. You can add a JB230 powered bottom and plug it into the extra receptacle on the J23 kiln. (A wire also needs to be switched inside the box - contact factory for assistance). You can add more JR23 rings to make the kiln a J236 or a J245 but you have to change the control box to accept the increased number of circuits. If you add a JR23 ring and a JB23 powered bottom you will need the larger control box as well.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 36"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 2. An extra zone can be added adding a thermocouple and thermocouple lead wire. You do not need an extra thermocouple if you are adding a powered bottom.

WHERE CONTROL PANEL IS MOUNTED: On top (second) section

J230

RINGS: Consists of three 9" high rings.

WHAT CAN BE ADDED: You can add up to two JR23 rings to make the kiln a J236 or a J245. You can add a JB23 powered bottom but you have to change the control box (A five circuit J245 control box) to accept the increased number of circuits. When adding rings you may need to change the length of the jumper cords to 45".

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 36"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On top section (third from bottom)

J236

RINGS: Consists of four 9" high rings.

WHAT CAN BE ADDED: You can add one JR23 ring to make the kiln a J245. You can add a JB23 powered bottom. . (A wire also needs to be switched inside the box - contact factory for assistance). If you change the control box to a 6 zone box you can add both a ring and the powered bottom.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 5

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On the third section from bottom.

L&L J SERIES JUPITER MANUAL KILN INSTRUCTIONS

J245

RINGS: Consists of five 9" high rings.

WHAT CAN BE ADDED: You can add a powered bottom if you get a 6 zone control box.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 5

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On the third section from bottom.

J2918

RINGS: Consists of two 9" high rings.

WHAT CAN BE ADDED: You can add a JR29 ring to make the kiln a J2927 or you can add a JB29 powered bottom. (A wire also needs to be switched inside the box - contact factory for assistance). By changing the control box you can add more rings and make the kiln a J2936 or J2945.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 2. An extra zone can be added adding a thermocouple and thermocouple lead wire. You do not need an extra thermocouple if you are adding a powered bottom.

WHERE CONTROL PANEL IS MOUNTED: On both rings.

J2927

RINGS: Consists of three 9" high rings.

WHAT CAN BE ADDED: You can add JR29 rings to make the kiln a J2936 or a J2945. You can add a JB29 powered bottom. (A wire also needs to be switched inside the box - contact factory for assistance). To do any of this, however, you will need a new 5 circuit box.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 3

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On the top two rings.

J2936

RINGS: Consists of four 9" high rings.

WHAT CAN BE ADDED: You can add one JR29 ring to make the kiln a J2945. Or you can add a JB29 powered bottom. (A wire also needs to be switched inside the box - contact factory for assistance). If you change the control box to a 6 zone box you can add both a ring and the powered bottom.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 5

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On the second and third ring from the bottom.

J2945

RINGS: Consists of five 9" high rings.

WHAT CAN BE ADDED: You can add a powered bottom if you get a 6 zone control box.

ELEMENTS: All the same.

LENGTH OF ELEMENT JUMPER CORDS: 45"

NUMBER OF CIRCUITS: 5

NUMBER OF THERMOCOUPLES: 3.

WHERE CONTROL PANEL IS MOUNTED: On the second and third ring from the bottom.