

L&L JD SERIES JUPITER AUTOMATIC KILN INSTRUCTIONS



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MORE ABOUT FIRING CERAMICS

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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 JD 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 JD 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 contactors 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.

CONTROL SYSTEM

Each section has a plug that plugs into a separate instrument/control panel. In the panel are the control and contactors that control the time on that the elements get electrical power. In addition, there may be an optional Dawson Kiln Sitter, which breaks power supply to the DynaTrol before the control transformer. The Dynatrol automatic program control uses three separate thermocouples to sense temperature in each of three zones. (For two section kilns it is programmed for two zone operation and uses only two thermocouples). The control then automatically adjusts power output (turns the contactors for each zone on and off) to evenly heat up the kiln. The Dynatrol is a program control, which varies the target set point for the temperature

according to various ramps and soak periods that are programmed in the control. If the Dawson kiln sitter/timer is used it is meant to be a back up safety system which is meant to turn the kiln off in the event of a control failure or overfire condition.

OPTIONAL "KISS" SOFTWARE

Software is available to provide communications between the DynaTrol and a PC. This is called KISS software. It does require some simple hardware modifications. See *kiss.pdf* in the ACCESSORIES section.

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

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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 JD2918, JD2927, JD2936 and JD2945 . 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 hotkilns.com/volts.pdf for a complete description of fuses.

OPTIONAL 120 VOLT CONTROL SUPPLY

Some automatic kilns are supplied with an optional 120-volt power supply for the control circuit. This

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120-volt cord plugs into a grounded 120-volt outlet. Ideally it should be plugged into a UPS (Uninterruptable Power Supply) or computer surge protector because the whole point of this option is to allow you to protect your electronics from power surges and outages. The 120-volt supply is filtered through an electrical noise filter located within the cabinet. See hotkilns.com/noise.pdf for a complete sales information. This is an option that can be retrofitted into your system if ever needed.

KILN SECTIONS AND INSTRUMENT PANEL

The kiln consists of from two to five separate sections and a separate control/instrument panel. All the controlling of the kiln is done from the control instrument panel. This contains the DynaTrol, contactors and receptacles. Normally the Dynatrol is mounted in the control box, which is mounted on the kiln. However, as an option, the DynaTrol may be mounted in a separate box that hangs on the wall away from the kiln and that plugs into the main power panel.

MODELS WITH 50 AMP CORDS

This includes models JD18, JD18X, JD23 & JD230 Single phase versions with 50 amp power cords included. In addition the JD23-PB with a powered bottom gets a 50 amp cord.

The 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.

DIRECT HOOK UP MODELS

This includes all three phase units, JD236, JD245, JD2918, JD2927, JD2936, JD2945. Also all kilns with powered bottoms except the J23-PB.

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.

ELEMENT BOX CORDS

There are from two to five contactors in all JD Jupiter kilns. 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" long). Be sure to order the proper length.

DAWSON OPTION

If included as an option the Dawson kiln sitter/timer breaks the power to the DynaTrol.

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, remove the screws that hold the panel on the kiln, pack it carefully in a box with protective cushioning, and send it to L&L Kiln for inspection and/or repair. 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. 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 you have an optional Dawson kiln sitter/timer disconnect the wires from the Dawson kiln sitter (or physically remove the Dawson kiln sitter from the kiln while keeping it attached to the panel).

BRANCH FUSES

For models JD18, JD18X, JD23 AND JD230: There are no fuses for these models except for the panel mounted control fuse.

For models JD236, JD245, JD2918, JD2927, JD2936, JD2945: The fuses for all models are located in the main instrument/control panel. Remove the cover to see the fuses and fuse blocks. The fuse blocks and

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fuses vary with the model. See the wiring diagram for specific information on your model. See *volts.pdf* for a complete description of fuses.

DYNATROL AUTOMATIC CONTROL

Please see the separate Basic DynaTrol Operation instructions (*dynatrol-basic-operation.pdf*) in the OPERATION section and the complete DynaTrol instructions in the CONTROL Section (*dynatrol-instruct-blue.pdf*) concerning this control and its operation.

THERMOCOUPLES

The standard thermocouple used on the JD Series is an 8 gauge Type K thermocouple protected with an industrial grade mullite thermocouple protection tube.

These work by creating a slight millivoltage at the junction of the two dissimilar metals. This millivoltage varies proportionately with temperature. The thermocouple ends insert into a ceramic junction block.

When testing a thermocouple that has a mullite protection tube do not heat up with a torch. Heat shock could crack the mullite tube.

METALLIC THERMOCOUPLE OPTION

Note that there is also a Pyrocil metallic sheathed thermocouple option which allows you to remove the thermocouple offsets but has the disadvantage of shorter life in the high temperature ranges and metal spalling in the kiln. See *tc-protect.pdf* in the ACCESSORIES section. Also see *hotkilns.com/tc-metallic.pdf*.

PROPER INSERTION OF THERMOCOUPLES

The thermocouples must be inserted at least 1" into the interior of the kiln. Keep a few things in mind. First: the thermocouple end is where the sensing takes place. Second: the thermocouple end must never be inside the kiln wall insulation (this will cause the kiln to overfire because of an incorrectly low reading).

KILN SITTER/TIMER

NOTE: This is standard equipment on the manual kilns and an option of automatic kilns in which case it is used as a safety back up control.

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 the CAUTIONS section.

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 overfire 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 AUTO KILNS

The whole point of having this option is to act as a back up safety to shut off the kiln in the event of a control failure. It is not meant to actually control the kiln temperature. Use a cone that is one to two cones higher than where you set your automatic control.

To test the operation of the system, simply program the DynaTrol for a higher cone than the cone you put in the Dawson. This way, if you use witness cones also, the Dawson kiln sitter will shut off the kiln BEFORE the DynaTrol and you can compare the kiln sitter cone to the witness cones. That way you can see if adjustments are needed on the kiln sitter. (See the kiln sitter instructions for more details on adjustments).

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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. Be sure to read the section on programming powered bottoms in the DynaTrol Manual (*dynatrol-instruct-blue.pdf*) in the CONTROL section. Read chapter 4.4 (HIDDEN "OTHER MENU & Programming the Powered 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.

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 TROUBLE-SHOOTING 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.

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.

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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 power contactor
Jumper cable to element box
Set of spare thermocouples
Several element holders
Brick Repair kit (See *brickrepair.pdf*)

PYROMETRIC CONES

See *the LOG, CONES & CERAMIC PROCESS* section.

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.

JD18

RINGS: Consists of two 9" high rings.

WHAT CAN BE ADDED: Another 9" high ring (JX18) can be added to make this a JD18X.

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

JD18X

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

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JD23

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 JD230. You can add a JB230 powered bottom and plug it into the extra receptacle on the JD23 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

JD230

RINGS: Consists of three 9" high rings.

WHAT CAN BE ADDED: You can add up to two JR23 rings to make the kiln a JD236 or a JD245. You can add a JB23 powered bottom but you have to change the control box (A five circuit JD245 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)

JD236

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.

JD245

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.

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JD2918

RINGS: Consists of two 9" high rings.

WHAT CAN BE ADDED: You can add a JR29 ring to make the kiln a JD2927 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 JD2936 or JD2945.

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.

JD2927

RINGS: Consists of three 9" high rings.

WHAT CAN BE ADDED: You can add JR29 rings to make the kiln a JD2936 or a JD2945. 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.

JD2936

RINGS: Consists of four 9" high rings.

WHAT CAN BE ADDED: You can add one JR29 ring to make the kiln a JD2945. 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.

JD2945

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.