

KILN REPAIR WORKSHOP Oct. 5, 2013

...Every kiln has specific elements. Be SURE to buy the correct elements or you can ruin your kiln.

-relays are devices with power to them and it switches power on and off. Power goes into it.

...Check and be sure lids sits well, you shouldn't see glowing heat around the edges.

...Best way to keep lid from cracking is to NOT open kiln until it has cooled completely naturally.

....Ramp? I think they can be calibrated to your specific needs.

.....Pyro metric cones are more accurate when you raise the kiln temperature slowly.

.....Elements at the top and bottom heat MORE than the middle elements because of top and bottom escaping heat.

.....Soaking makes temperature in kiln more homogenous

.....If things don't seem to fire correctly, put a cone on EVERY shelf in the center of the shelf and see what happens.

.....Making cone packs: make clay coil . Cones are numbered with cone numbers. Example..

Use 3 cones, 4, 5, 6 with 5 being the target cone temp.Make a long clay reservoir so when low fire cone melts, it doesn't touch the shelf. Put lowest cone first and work your way up.

Poke pin tool holes in the clay coil after setting the cones so it won't blow up. Make up cone packs ahead of time and get them bone dry before using them.

.....Things blow up because of too thick clay and too moist.

.....Bisque on the raw side and glaze on the washed side.

....."Advancer" shelves are best, silicone carbide shelves. Nitrite bonded so stiff doesn't stick. You kiln wash them too. Even more light weight than Corelite.

.....If shelves have a crack, only use them for bisque or break them apart and use as corner shelves.

.....Kiln wash should be the consistency of heavy cream. Nice to roll it on. Use a big scraper to get kiln wash off. Don't worry about getting it all off unless it fused to the shelf and the it should come off. You don't have to kiln wash shelves every time, only if they need it.

.....Use scraper or chisel to remove glaze. Be gentle and don't work on the same spot for too long or, you ruin the shelf.

.....Diamond tip grinder is also great to remove glaze from shelf.

.....1/4 EPK CALCIDE, 1/2 ALUMINUM hydrated, 1/4 EPK HYDRATED is the formula for homemade kiln wash that works at all temps.

.....If shelves wobble, they will warp over time. Use 3 or 6 posts, not 4. If you use 4 also use wadding which is kiln wash in malleable form and use it on the bottom of each post.

.....Bottom of kiln heats faster so put smaller pieces on bottom since they take thermal shock better than large pieces.

.....you should be able to put your hand between the kiln wall and pots on shelves.

.....there should be a finger width distance between all parts of pieces in a glaze firing.

....it is ok to stagger half shelves if you need to.

.....should be no more than a 1/2 cone difference throughout a digital kiln.

....always catch elements as soon as they start sagging from the channels. DO NOT TOUCH WHEN COOL BECAUSE THEY WILL BREAK! Instead, heat element with torch and when they

are red hot, move the, back into the channel with a pair of pliers. Use a fishhook-like heat resistant pin and pin the element back into the channel's firebrick. Put pin in so that it holds element against kiln wall and pin it in front of element and stick pin in brick below in front of element.

.....do not worry about broken firebrick channels unless there is a very large break.

.....preheat kiln for two hours at 180 to dry pieces before bisque firing with lid propped.

.....glaze expanding quickly from alpha to beta particle so go slowly between 400-600 and 900-1200 degrees. Go very slowly is 70-90 degrees per hour. This is most important with larger pieces.

.....paper combusts at about 600 degrees.

...do not open or crack kiln lid at end of firing until the temp is well under 200 to preserve your kiln.

....pin holing in glaze is caused by: glaze not viscous enough. Biggest thing is either not getting to mature temp. Or not soaking.

.....05 is good setting for most basques.

....04 is recommended by Rovins for all of their clays

....luster glazes are over glazes that are applied after glazing in order to add gold or iridescent embellishments. The luster fire is only about 1100, very low fire.

.....mid range is considered cone 6

.....high fire is cone 8-12

....slow cooling encourages development of matte glazes

....if you use luster metal glazes do not be in the room while firing bec. The fumes are toxic.

....wax melts between 300-600 degrees.

....problems... Overheating could be a stuck relay that is stuck open.

....call the manufacturer with specific problems

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KILN REPAIR

....rubber mallet, drill-electric, screwdrivers, crescent wrench, socket drivers for hex screws, Allen wrenches, needle nose pliers, tape for labeling, wire cutters, screws,

-serial number usually on right side of red box and tells you lots of info about requirements

....pyrometers sticks out inside the kiln I think

.....do not use connectors in the red box that need to be squeezed or crimped

...ELEMENT REPLACEMENT:..ELEMENT contacts are shielded with a ceramic tube material around the end of each element. This tube goes thru the side of the kiln and into red box.

...the elements are coils in the kiln. When pulling them out, they are very brittle. May need to torch them before trying to move them with pliers. DO NOT DAMAGE THE FIRE BRICK,

....be sure you run your finger thru. Handles and get all the pins out.

....replace all elements at the same time

...elements are labeled as top (T), bottom (bottom)' or center (c).

Top elements are more tightly wound and longer than others.

.....put whole new element down inside kiln as you start to replace it. VACUUM inside the kiln before replacing elements. Be sure you buy per-stretched elements.

..feed the new elements by hand into the channels.

..if the element is too long, go back and scrunch the coil more tightly, feed it into the channel until it fits. You do not have to take the whole thing out of the channels to start scrunching. If you need to pin it to keep it in place, pinning in the corners is a good place.

WIRES..if you label and remove all the wires, use a needle nose plier and twist the wire ends so they are tight. When threaded back out through the ceramic tube shrouds, cut the extra wire end so the wire is about 1/2 inch long coming out of the tube and then use the connectors to connect the end of the element wire to the labelled wire it belong with.

To test elements, take. Small strips of paper are folded and placed against elements at different points. Turn the kiln on fast and see where it blackens. Turn off kiln. If paper does not blacken then the relay may be bad.

RELAYS.. SYMPTOMS OF A BAD RELAY

....temp ramps up too fast

RELAYS look like 2-3 inch rectangular plastic box with plug things. Relays let power go to the kiln.

...relays are located inside the red box.

..if wire crimping is needed, use a good pair of wire cutters with a crimping tool
Or change to the screw connectors.

....avoid replacing fire bricks if possible. Loosen exterior steel jacket. If there is an insulation blanket, be very careful. If you replace bricks, do ahead and replace elements too.

...bonding material for fire bricks does not work too well.

TROUBLESHOOTING

.....use. Cone packs to test a too hot or cool spot. Also use the paper trick where you turn on kiln to high for 10 seconds and see if paper blackens everywhere.

...if arcs occur at the connector in the red box where it attaches to the element through the ceramic shielding tube, you will see a black spot on the steel jacket and that helps, you locate the short where connectors are not tight.

OXIDIZING YOUR NEW ELEMENTS

fire to 1922 degrees and hold for 6 hours oxidizes your elements to protect elements when you fire often at cone 6 or higher.