

# Electric Kiln Repair Guide

.....compliments AIM Kilns

Many repairs to your kiln can be made with minimal time and effort. Many times it is as simple as removing an old or damaged part and inserting a new one. For troubleshooting an electric kiln, a volt-ohm meter (VOM) is a valuable tool. A VOM checks the continuity of your kiln, picks out weak elements, reveals faulty switches and checks for proper voltage from the wall receptacle. The VOM allows the trouble-shooter to proceed in a sequence through the kiln to the source of an electrical problem.

We suggest this sequence for trouble-shooting a kiln for electrical problems:

1. Check fuses or breakers.
2. Check the wall outlet for proper voltage.
3. Check the wall outlet and kiln plug for loose or discolored blades or connections.
4. Check the kiln by doing a resistance check at the power cord.
5. If the resistance check reveals a problem, determine in which section it is.
6. Do visual inspection of the kiln wiring. Look for burned or discolored wires or connections. Also, check for broken elements and faulty inter-box connections.

## **Please note:**

*When doing replacement repairs, install the new part in the same position as the old part. Transfer wires one at a time from the old to the new part. Discolored wires and plugs must be replaced or cleaned with sandpaper or steel wool until clean and bright. If this is not done, a bad connection will result.*

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## **Removal of the Electric Switch Box**

1. Unplug the kiln from the wall outlet.
2. Rotate or remove kiln rings in order to disconnect interbox connections between rings.
3. Remove screws that attach the switch box to the kiln.
4. Pull the box away from the kiln. When removing the KilnSitter switch box, be careful to pull the box straight out so the KilnSitter tube does not break the brick.
5. After the box (es) has been pulled away from the kiln, repairs may be accomplished.

## **Replacing Elements**

1. Remove all pins holding the defective element in the grooves. Needle-nose pliers work well.
2. Gently remove the old element through the terminal brick then work toward the other end by carefully placing the new element in the groove of the brick. The element should fit smoothly in the groove and project out slightly at the "corner". It may be necessary to gently stretch or compress the coil to obtain the length necessary to allow the pigtail to pass through the brick.
3. Insert one twisted pigtail of the new element through the terminal brick then work toward the other end by carefully placing the new element in the groove of the brick.

The element should fit smoothly in the groove and project out slightly at the “corner”. It may be necessary to gently stretch or compress the coil to obtain the length necessary to allow the pigtail to pass through the brick.

4. Re-pin the element at each “corner” with the staple pins. Bend the staple into the shape of a narrow hair pin and push into place with the needle-nose pliers. The pins should hold the element down while the lip of the groove holds it in.

## Repositioning Elements

Elements become very brittle after a few firings. If reshaping is necessary, heat the element either by turning on the kiln or with a torch until it has a dull red glow. Then **unplug the kiln** before repositioning the hot element using needle-nose pliers. A brittle element normally will not break if it is above 500° F.

## Replacing Switches

1. Do not cut any wires.
2. Remove knob from the switch.
3. Remove Pal nut with a wrench.
4. Transfer the wires from the old switch to the new switch, **one wire at a time**. Tighten all terminal screws firmly (if applicable).
5. Put the Pal nut on the switch and tighten.
6. Put the knob on the switch.
7. Attach the electrical switch box to the kiln.

## Replacing Interconnecting Plugs and Receptacles

1. Note and mark the position of the ground prong of interconnection before starting.
2. Loosen the screws holding the interconnection to the electrical switch box.
3. Remove the power and ground wires from the receptacle or plug, and attach them **one at a time** to the new part.
4. Re-install the plug or the receptacle with the ground prong in the same position as before.
5. Always replace the interconnections in pairs for best results.

## Replacing KilnSitter Tube

1. Remove the two screws holding the guide plate. Withdraw guide plate from the faceplate.
2. Remove claw from sensing rod by loosening the set screw.
3. Remove the two screws behind the guide plate which holds the shut-off tube. Remove the tube.
4. Position the new tube and install the attaching screws.
5. Insert claw on the sensing rod and fasten the guide plate to the KilnSitter faceplate.
6. Readjust the KilnSitter.

## Replacing the Sensing Rod

1. Remove the two screws holding the guide plate. Withdraw the guide plate from the faceplate.
2. Remove the claw from the old sensing rod (if still attached) by loosening the set screw.
3. Remove the two screws behind the guide plate which holds the shut-off tube. Remove the tube.
4. Remove the sensing rod by loosening the set screw on the retaining collar.
5. Slide the new sensing rod into the shut-off tube. Adjust the rod position until the end is even with the end of the cone supports. Tighten the set screw.
6. Position the shut-off tube and secure with the attaching screws.
7. Insert the claw on the sensing rod and fasten the guide plate to the KilnSitter faceplate.
8. Readjust the KilnSitter and test fire.

## Repairing Bricks

The bricks in your new kiln will withstand many firings without deteriorating. When breakage and damage does occur, it is usually the result of carelessness. Brick replacement is complicated by the risk of breaking a brittle element. Often temporary repairs can be made until the time the element needs to be replaced. It is difficult to cement bricks together when they break, however large pieces such as the element groove lip, can be pinned with pins even if the supporting brick below the element is missing.

## Replacing Bricks

Replacement of terminal bricks involves cutting and replacing element connectors. Whenever possible, this should be accomplished when elements are being replaced.

1. Be certain you have the proper replacement bricks before starting. Remove the lid from the kiln by unscrewing the hinge attached to the kiln jacket (necessary only when the top ring is being repaired).
2. Remove the pins securing the element at each end of the damaged brick.
3. Place the ring on a flat surface with the damaged side up.
4. Loosen the hose clamps until the bricks are loose.
5. Gently lift the elements from the groove with needle-nose pliers and carefully bow them far enough into the firing chamber to allow removal of the brick. Insert the new brick with the element groove in line with the other bricks.
6. Set the elements into groove and pin down.
7. Tighten the jacket clamps taking care to align peepholes. Replace lid and tighten screws.
8. Use sandpaper over a wooden block to sand the new brick down until it is even with the adjoining brick.
9. Vacuum the kiln, and check the adjustment of the KilnSitter before firing.

10. Retighten the jacket of the kiln again during a firing while the kiln is hot.

### **Repairing Kiln Floor or Lid**

The easiest repair to make when your kiln floor is damaged, is to simply turn it over. Holes in the floor can be patched with kiln wash, mixed to the consistency of paste. After applying, scrape it flush with the surface of the floor and allow to dry before firing.

If the lid becomes chipped or otherwise damaged, simply smooth the surface of the area with sandpaper and vacuum clean. A top coating of refractory paint may be spread thinly over the exposed brick to seal it and prevent dusting.

### **Conclusion**

You can do most kiln repairs yourself. However, if you have a problem beyond the scope of this discussion, call your nearest kiln dealer or the kiln manufacturer for assistance.