

The Kiln Corner— Kiln Diagnostics

by Arnold Howard

Though I work for Paragon Industries, L.P., the information in this column applies to all brands of glass kilns. I welcome your questions for this column no matter what type of kiln you own.

How complicated is a digital kiln to repair?

There isn't much to go wrong in a digital kiln. The system is simple and easy to understand. The components include the:

- 1/2 amp fuse to help to protect the controller
- Transformer, which sends 24 volts AC to the controller
- Controller, which decides when the elements turn on
- Thermocouple, which sends a temperature reading to the controller
- Relays, which receive a 12 volt DC signal from the controller telling the relays to turn on the elements
- Elements, which heat the kiln

Once you understand that basic system, you can understand digital kilns of all brands. And once you understand how they work, you can fix them yourself.

My controller display doesn't light up. I have tried replacing the switch box fuse.

The fuse holder may be defective. If so, then the controller will not receive power even if you have a new fuse in the fuse holder. Test the fuse holder with a voltmeter.

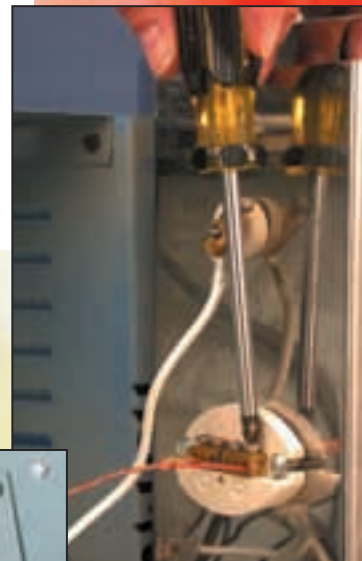
I recently replaced the controller. It now shows an erratic temperature display. It jumps up 5 or 6 degrees and then down 3 or 4.

Minor variations in temperature readout are normal. Usually there is nothing to worry about, because the actual kiln temperature does not fluctuate. Since you just replaced the controller, the thermocouple wire connections on the back of the controller may be loose. This can cause the temperature display to become unstable. If the kiln is showing the wrong temperature and tapping the switch box makes the correct temperature display, this can also be a sign of loose thermocouple connections. Please check the connections by tugging on the two thermocouple wires at the back of the controller.

Is there a way to test a mechanical relay while it is outside the kiln?

Yes. You will need a 12-volt lantern battery and an ohmmeter. Unplug the kiln and remove the relay. Look at the kiln's wiring diagram and find the two terminals on the relay where the wires from the controller are connected. Using two wires with alligator clips on each end, hook up the 12-volt lantern battery to those two terminals. The battery acts as the signal from the controller. When you make the connection, you should hear the relay click. Use the ohmmeter to test the action of the electromagnet inside the relay.

Tighten the wires on the thermocouple block, since loose wires can cause an erratic digital controller display.



Unplug the kiln before removing the digital controller. The red and yellow thermocouple wires are attached to the bottom of the controller.

Does a bad relay always look burned?

Sometimes a relay can burn out and not only still look new but also continue to make the clicking noise during operation. Test the relay with a voltmeter. It takes the guesswork out of kiln diagnostics. You can also use a neon test light if you don't have a voltmeter.

I have tested the coil on my relays with an ohmmeter, but the kiln still does not heat up properly.

Testing the relay coil is not a complete test. The relay contacts can be burned out even though the relay passes the coil test. A short in the relay coil causes the kiln's switch box fuse to blow. The relay coil test is to determine the cause of blown fuses.

Half of the elements in my digital kiln remain on even when I press the stop button.

A relay has burned out. Please disconnect the power to shut off the elements and repair the relay before firing the kiln again.

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