



Relay Replacement

(Potter Brumfield or Deltrol)

REPAIRS

INSTALLING RELAYS

1. Unplug the kiln
2. Follow the instructions in your operating manual for opening and removing the Control Box and place it on a flat surface.
3. Detach the heat baffle from the control box by removing the screws located on the sides of the control box and fold it over to expose the relays. Leave All Wires Attached.
4. Detach each relay from the chassis by removing one mounting screw and loosening the other. Slide the relay out but do not remove any of the wires yet.
5. Take the wires from the old relay and place them in the same location on the new relay one at a time. Re-mount the new relay.
6. Make sure all your connections are very tight and secure.
7. Replace the baffle making sure not to pinch any wires.
8. Mount and secure the control box.
9. Follow the instructions in your operating manual for running a test fire.

FAQ'S

How Do I Choose the Correct Relay

In May 2004 we changed our relay supplier from Deltrol (clear case) to Potter Brumfield relays (Solid black) on most KilnMaster (KM) and GlassMaster (GM) Models. We are now suggesting that you use the relay that originally came with your kiln. You can tell which relay you need by counting the number of louvers on the top of your control box.

6 Louvers	Potter Brumfield	Part #2139
5 Louvers	Deltrol	Part #1517

Exceptions:

All PK Kilns use Mercury Relays and small pilot relays.

HotStarts and FireBox14 kilns have 1 Solid State Relay and 1 Deltrol which is used as a safety relay.

GM818-3CR kilns use 2 Solid State Relays and 2 Potter Brumfield used as safety relays.

How Many Relays Do I Need?

Each relay controls an individual section so if you have a 3 section kiln you will need 3 relays, and if you have a 2 section kiln you will need 2 relays. In one section kilns like the KM614 and KM714 we still use 2 relays. This is so we can split the power so that if one relay sticks you will not have an over-fire. The KM1218 is the exception. It has 2 sections with 3 relays.

What If I Installed A Relay Upgrade Kit?

No problem. We are going to suggest you go back to the original Deltrol relays and replace the harness wires. Just throw away the angled mounting plate that came with your kit. We are suggesting you go back to the Deltrol relay because they seem to perform better than the Potter Brumfield Relays in installations with older shallower boxes. The 12 Gauge wire in the new harness kit will help prolong the life of the relays over the original design.



DELTRON



POTTER & BRUMFIELD

KM RELAY REPLACEMENT

What is a Relay

A relay is the component located in the control box of the kiln that physically switches the power on and off when instructed by the controller on your automatic kiln. When the controller wants the power on, it closes the relay contacts. When it wants the relays off, it opens the contacts. Each section of your kiln is controlled by a separate relay. There are 3 sets of wires that are attached to your relay and together they make up the Relay Harness Wire Set.

Power In Harness Wires - These are either white or black depending on the age of the kiln. They go from the Terminal Block (Where the power cord connects to the control box) to the relay.

Power Out Harness Wires - These are also either white or black depending on the age of the kiln. They go from the relay to the terminal strip where the power flows through another set of feeder wires connected to the other side of the terminal strip and on to the elements.

Control Wires - These are the red, smaller gauge, wires that go from the controller to the relay to open or close the relay contacts. They are also used to carry power to and from the transformer.

How Do I Know When It Needs Replacement?

When a relay fails, it will either fail on or off. When it fails on, you will notice that the kiln will not cool completely. This is because the contacts have fused together. The temperature the kiln stays at depends on the model. If this happens turn off the circuit breaker, unplug the kiln, and replace the relay. The relay can also stick open, which would cause the kiln not to reach temperature and usually results in an Error 1 message appearing on your screen. It is important to know why your relay failed and correct the problem so the replacement will not prematurely fail.

What Causes a Relay to Fail?

Just Wore Out

Like brakes on your car, relays in your kiln have a limited useful life and will need to be replaced eventually. Their expected life is specified in terms of cycles (How many times they turn on and off) which is measured in the millions. Since all of the relays cycle together (Unless you have Zone Control) it is generally a good idea to change them out in sets so you can limit the number of times your kiln goes down for a relay wearing out.

Running Hot

Relays do not like extreme heat conditions. If your room is poorly ventilated and exceeds 105°F (41°C) While the kiln is firing, you will want to look into improving your ventilation in the room. Sometimes a box fan pointed at the control box can make a big difference without much cost.

Bad Connection

Sometimes relays fail prematurely due to poor connections. If this is the case, be sure to address the problem before re-firing your kiln. Check all of the crimped and screwed on connectors to make sure the connections are tight and clean (no carbon build-up from overheating). Also inspect the wiring (especially harness wires) to make sure they are not damaged. If the relay failed from a poor connection and the wire was damaged, installing the new relay with damaged wire will cause it to fail prematurely. If the wire shows signs of heat damage (discolored insulation), changing it out is inexpensive insurance. Also, we recommend changing out all 14 gauge harness wires with 12 gauge wire. We made this standard on all models rated over 15 amps manufactured after April 2009.