

# Fyrematic Operating Instructions

## What is the Fyrematic....

The Fyrematic Automatic Kiln is designed to automatically regulate the turn up rate of a ceramic kiln and to provide a means of regulating its heating capacity.

Until now, electric kilns have often been equipped with either "3-way" or "infinite" control switches. These switches provide fixed low, medium or high settings. Heating rates and soak temperatures are therefore limited to these three choices. To control the heat-up rate these switches are turned up from off to low to medium to high, according to an experimentally predetermined schedule. To hold the temperature at a given level these switches are set at either low or medium and temperature eventually stabilizes at a level appropriate to the heat provided by that setting.

Infinite switches have an infinite number of settings between off and full on, but are otherwise used in the same manner as 3-way switches.

In both cases the user must manually control the heat-up rate during the early stages of each firing in order to prevent undue stress on, and possible damage to, the ware being fired. Even if the kiln is equipped with infinite switches, convenience usually dictates a three step switching schedule which defeats the main advantage of these controls. Large, potentially stressful, steps in temperature occur each time these switches are turned up. Since the switch schedule usually involves hours, it is often difficult to exactly duplicate firing schedules and firings which are otherwise identical may produce differing results. Finally, when one cannot get back to the kiln at a planned turn up time, or simply forgets, the firing process becomes inefficient and un-necessarily costly.

The Fyrematic turns the kiln up from off to full on automatically and steplessly. It therefore promotes reduced thermal stress, improved load to load repeatability, maximum firing efficiency and the ultimate in convenience.

## What the Fyrematic isn't....

The Fyrematic Automatic Kiln switch is not a temperature controller or firing period timer.

A practical, fully automatic hobby kiln can be provided by combining this switch with a shutoff device such as the Dawson Kiln Sitter. The switch automatically controls the turn up and the shut off device automatically terminates the firing at the proper cone.

It is always good practice to include some sort of back-up for the automatic systems. A Dawson Kiln sitter / Timer combination is suggested.

## How the Fyrematic Works...

The Fyrematic switch is a compact electronic device. Its front panel features a single control knob, a timing light and a heating light.

The single control knob has four functions: 1. Serves as the On/Off switch for the kiln. 2. Provides a means of manually setting the heating capacity. 3. Holding the heating capacity at a set level. 4. Used to set the turn up time for the firing.

The 1 through 9 calibrations on the adjustment knob loosely represent the resulting turn up time in hours. Four example: with the knob set at 5, the kiln will be automatically turned up from 0% to 100% power over a period of 5 hours.

When the adjustment knob is moved to the Set position the turn up ramp is increased at a rate of about 0.1 volt per second. Since it's 0-10v range corresponds to 0%-100% the heating capacity increases at a rate of about 1% per second with the knob at this position. Meanwhile, the proportioning signal causes the switch and heating indicator to actuate once every 10 seconds. Each flash of the indicator therefore signals that the kiln has been turned up another 10% and this may be used as a means of manually adjusting the heating capacity. For example: to set the kiln at about 30%, move the control to the Set position for 30 sec., 3 flashes of the heating light, then move it back to the Hold position.

The Hold setting stops the counter, causing the turn up ramp voltage to remain at its existing level indefinitely and holding the kiln at that heating level. The knob may be returned to a turn up operation it will then resume and the firing will be completed.

The Fyrematic switch automatically compensates for preset heating levels. For example: if the heating level had first been manually advanced to 30%, then turn up time set at 5 hours the remaining 70% turn up would be completed in 70% of 5 hours or in 3-1/2 hours.

## **Pre-Firing Test**

When desired, the operation of the Fyrematic Kiln can be checked by simply moving the Fyrematic control knob from the Off to Set and observing the operation of the heating light.

In approximately 10 seconds the light will be switched on for about 1 second. Every ten seconds thereafter the light will be switched on again, with the "on" time lengthening 1 second per cycle. In about 100 seconds the light will be switched on for the last time and it will then remain on indefinitely.

Move the knob back to the Off position to reset the switch.

## **Operation**

For routine firings, simply turn the Fyrematic switch on, set the desired turn up time and let it do the job automatically. The numbers on the dial are approximate hours. A setting of 5 will turn up the kiln from Off to Full within about 5 hours.

It is important to realize that the switch always starts at zero, and this may result in 'dead time' at the beginning of the firing. The length of this inactive period will vary from switch to switch and with the turn up time setting. For otherwise normal switches, this initially inactive period may vary from zero to 12 minutes with a turn up setting of 5.

When it is desired to set the kiln manually use the Set position of the control knob to turn up the kiln at a rate of 1% per second. For example: to set the kiln on low overnight (approx. 30% on) move the knob to the Set for 30 seconds, three flashes of the heating indicator light, then return the knob to the Hold position. When ready to complete the firing move the knob to the desired turn up time.

## **Firing Instructions**

The Fyrematic Automatic Kiln Switch is an electronic, time proportioning heating capacity controller for ceramic kilns. It automatically controls the kiln's heat up rate according to the schedule set by the user at the beginning of the firing. It eliminates the inconvenience of manual switch schedules and the thermal stress which can result from irregular, widely spaced turn up steps.

### **Operation**

The Fyrematic switch has a single 4-function control knob, a Timing light and a Heating indicate light.

OFF – Turns the control on and off

Hold – Stops the automatic turn up operation and holds at the present setting indefinitely.

Set – To turn the kiln up automatically, turn the knob to the Set position and observe the heating indicator light. Each flash of the Heating light represents a 10% increase in power. For example: to start the kiln at 30% power let the light flash 3 times. Next, turn the knob to the desired turn up hours.

1-9 – The numbers on the dial represent the turn up time in approximate hours. For example: when the dial is set at 5 the power goes from 0% to 100% in about 5 hours. In 5 hours the kiln will be at 100% power. The kiln could fire less than 5 hours or longer than 5 hours depending on the cone used.

Note: The Heat indicator light will go On and off during the entire firing. As the power increases the light will be on for a longer period of time. At 100% power the heating light will remain on.

Note: The timing indicator light will flash during the period of time in which the Fyrematic is holding or increasing the power to 100%. Once the Fyrematic switch has completed reaching 100% power the Timing light then goes dark.

## **Recommended Settings**

Make sure the Fyrematic Switch knob pointer is in alignment. Align the pointer to the OFF position (bottom line in the faceplate). Tighten set screw. This knob may get out of adjustment through use.

### **Evenheat kiln Models 1802A and 1827A**

#### **Low Fire** (China, Overglazes, Decals)

All peepholes open, Lid on first notch – optional

Set Fyrematic at 20% (2 flashes on Heating light)

Move Fyrematic knob to 6

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

#### **Ceramic Fire** (Bisque, Glazes)

All peepholes closed, Lid closed

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 4

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

#### **High Fire** (Porcelain, Stoneware)

All peepholes closed, Lid closed

Set Fyrematic at 20% (2 flashes on Heating light)

Move Fyrematic knob to 5

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

Suggestion: Cover vent hole in lid after 2 hours if the top of the kiln seems cooler

## Evenheat Model 2320A

### Low Fire (China, Overglazes, Decals)

All peepholes open, Lid on first notch – optional

Set #1 knob to 1 (low for 022 cone)

Set Fyrematic at 20% (2 flashes on Heating light)

Move Fyrematic knob to 9

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

### Ceramic Fire (Bisque, Glazes)

All peepholes closed, Lid closed

Set #1 knob to Medium

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 4

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

### High Fire (Porcelain, Stoneware)

All peepholes closed, Lid closed

Set #1 knob to High

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 5

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

Suggestion: Cover vent hole in lid after 2 hours if the top of the kiln seems cooler

## Evenheat Model 2329A

### Low Fire (China, Overglazes, Decals)

All peepholes open, Lid on first notch – optional

Set #1 knob to low

Set #2 knob to 1

Set Fyrematic at 20% (2 flashes on Heating light)

Move Fyrematic knob to 9

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

### Ceramic Fire (Bisque, Glazes)

All peepholes closed, Lid closed

Set #1 knob to Medium

Set #2 knob to Medium

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 3

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

### High Fire (Porcelain, Stoneware)

All peepholes closed, Lid closed

Set #1 knob to High

Set #2 knob to High

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 5

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½" posts on bottom with one full shelf

Suggestion: Cover vent hole in lid after 2 hours if the top of the kiln seems cooler

## Evenheat Models 2927A & 2541A

### Low Fire (China, Overglazes, Decals)

All peepholes open, Lid on first notch – optional

Set #1 knob to Medium

Set #2 knob to Medium

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 9

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

### Ceramic Fire (Bisque, Glazes)

All peepholes closed, Lid closed

Set #1 knob to Medium

Set #2 knob to Medium

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 4

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

### High Fire (Porcelain, Stoneware)

All peepholes closed, Lid closed

Set #1 knob to High

Set #2 knob to High

Set Fyrematic at 30% (3 flashes on Heating light)

Move Fyrematic knob to 5

Kiln will fire until Kiln sitter shuts off

Suggestion: Use ½” posts on bottom with one full shelf

Suggestion: Cover vent hole in lid after 2 hours if the top of the kiln seems cooler

**Options:**

If 100% power is desired immediately:

Turn Fyrematic dial from Off to Set position. The kiln will now fire automatically at 100%

If a soak period is desired:

Turn the Fyrematic dial from Off to Set position

Set power percentage as in all other firings (10% to 100%). Recommend 10% for porcelain.

Turn dial to Hold. The kiln will then hold the programmed power percentage.

Leave on Hold for desired soak period.

When you are ready to start the firing procedure turn the dial to desired turn up time hours.

For models 2320A, 2329A, 2927A and 2541A

If you find that the top section of the kiln is too hot, you may turn the top indicator knob to a lower number to reduce the heat in that area. Likewise, if the top section of the kiln is too cool, you may turn the knob to a higher number to increase the temperature. The higher the number, the higher the heat. For example: number #1 is a cooler setting than #7. The second knob from the top will adjust the upper middle section of the kiln in the same manner. The proper use of witness cones will help you achieve the correct temperature balance.