
# *EASY FIRE QUICKSTART GUIDE*

## FOR EASY FIRE PROGRAMS ONLY

### FOR KILNS WITH A DYNA-TROL AUTOMATIC CONTROL (EASY-FIRE, JUPITER, DAVINCI, RENAISSANCE & EASY-LOAD KILNS)

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# GETTING STARTED

## *BEFORE TURNING ON*

1. Assemble your kiln according to the ASSEMBLY tab in manual.
2. Remove all loose packaging material and flammables from around the kiln.
3. Connect power.
4. Install the vent if supplied.
5. Seat any loose elements inside the ceramic element holders, as they may have shifted during shipment.
6. Thoroughly vacuum inside of kiln.

## *FIRST: WATCH INCLUDED VIDEO*

This plays on any computer. This is done by chapters and you can watch as much or as little as you want to begin with.

## *SECOND: READ CAUTIONS*

Read CAUTIONS in the manual, located at the first tab. It is important to know the dangers – before you start.

## *THIRD: READ OPERATION SECTION*

Read over this Quickstart Guide and also become familiar with the OPERATION section (second tab) in your manual. The OPERATION section is an expanded version of what you have here and will

explain all the procedures in detail. (Pages 2 to 7 of the OPERATION section).

## *FOURTH: EXPLORE THE DYNATROL*

Turn on your kiln and become familiar with the basic controls. Try out the buttons and try entering information or programs. You can turn off the kiln any time with the toggle switch on the left side of the control panel if the kiln starts to operate or you aren't sure what to do next. This will turn the system off. Returning the toggle to the "on" position will reactivate the control box but the kiln will remain off. See the illustration on page 1 of the OPERATION section.

## *FIFTH: DO THE FIRST FIRING*

Do the FIRST FIRING according to the steps listed in the OPERATION section of the manual. This is called "First Firing Instructions for L&L Kilns" and comes after "Basic Operation of L&L Kilns with a DynaTrol 700".

# GENERAL CONSIDERATIONS:

## *Understand Your Clay*

Determine the temperature range of your clay. It is usually marked on the box. If you can't find it, call the manufacturer or distributor where you bought the clay. The proper temperature is listed in pyrometric cone numbers, for example, "6 – 8". This is the final or vitrifying temperature appropriate for the clay body. Be sure not to confuse "06" with "6".

There are usually two firings used; a bisque firing, and a glaze firing. The bisque firing will result in taking the clay from the green stage to the bisque stage, where it is harder but still porous. This helps in the application of glaze, as the ware will absorb the water in the glaze and leave a fine powder of material on the surface. The second, or glaze firing, will be to a higher temperature, and result in the melting of the glaze to develop its color and surface, as well as vitrifying the clay to make it non-porous. Bisque firing can take place anywhere from cone 010 to cone 05 (for medium range clays,) while glaze firing will be hotter. You want to know the temperature range of both the clay and glaze before attempting to run either of the two firings. Underfired clay will leak and the

glaze color will not develop, while overfired clay or glaze will melt, run, and possibly damage the kiln.

You can find more in-depth information about the ceramic firing process in the LOG, CONES, TIPS, CERAMIC PROCESS section in your manual.

## *Thermocouple offsets*

The thermocouples are the temperature probes that sense the interior temperature, firing rates, and the evenness of temperatures in the various zones inside the kiln. L&L thermocouples are housed in ceramic sleeves, which protect them from contaminants and damage while in use. This cover also requires an adjustment to the thermocouple due to the fact that it changes the way temperature is sensed. L&L sets the offset at 18 degrees F (10 degrees C) at the factory, however, the offsets should be "fine tuned" for the environment where the kiln in used, as other factors such as ambient temperature, location of the kiln, type of venting, variations in thermocouples and thermocouple tubes, and so-on also have an effect on how temperature is sensed by the thermocouple. Please see the section marked **THERMOCOUPLE OFFSETS** in this Quickguide for directions. As always, an expanded version of the same information is located in the manual. This does not have to be done immediately but can be done once you are more familiar with the kiln.

## *Cone packs*

Users should use “cone packs” to determine the final firing temperature of their kiln and adjust the thermocouple offsets accordingly. Once this is done, it does not need to be repeated unless something changes. A cone pack consists of a cone for the target temperature, one above, and one below. One cone pack should be set up in each zone. Generally, there are two or three elements and one thermocouple in each zone. Please see the section marked **CONE PACKS** in this Quickstart Guide for a tutorial on how to set up and use them. There is also an article in the LOG, CONES, TIPS, CERAMIC PROCESS section called “Troubleshooting Kiln Firing with Cone Packs”.

# NORMAL PROCEDURES

## *Loading Greenware*

One of the most important principles of loading either greenware or glaze is to remember to keep the zones intact. A zone consists of one thermocouple and two or three elements usually in one 9" high kiln section. Shelves should never divide zones on the thermocouple side, but they can in fact be divided with half-shelves on the side of the kiln away from the thermocouples. In this manner temperature sensing will remain efficient and error codes can be avoided.

Greenware need not be loosely loaded, as there is no glaze to stick pieces together. However, there are a few techniques that should be employed for the best results: When stacking pieces, they should be stacked rim-to-rim rather than nested. While they may touch each other, they should not touch the sides of the kiln. This should prevent anything from touching an element, which could cause a hot spot and possible burnout. Keep in mind that good air circulation will result in more efficient burning of the organic matter in the clay, and this leads better glaze results.

If items loaded have handles, try to either load them in the center of the shelf, or with the handle facing away from the heating elements.

Keep in mind that the EASY-FIRE routines are an excellent means of firing in almost all cases and are the simplest and most efficient way of running the kiln. If you have unusual work like very thick pieces, sculpture, or want to cool down slowly, for instance, then you will need to master the VARY-FIRE programming techniques. You can find good instructions for this beginning on page 16 of the "DynaTrol Reference Manual" in the CONTROL section.

## *Bisque Firing*

Enter the cone number to which you normally fire greenware in a bisque firing:_____

1. Turn kiln on using toggle switch on the left of the kiln. A **WAIT** message will flash for a few seconds and then disappear. Then the messages **IdLE** and **TC2** will alternate. Your kiln is ready for use now.

2. Press **SLOW BISQUE,** then **ENTER.**

3. Display will flash **CONE** followed by a number.

4. Using the keypad, enter the **cone number** (e.g., "0 – 6" for cone 06. **WARNING:** Do not confuse cone 06 with cone 6!). Verify entry on the display and then lock-in by pressing **ENTER.**

5. If an incorrect entry is made before pressing **ENTER**, simply press **00** to reset the cone number, then the correct number (e.g., 0 – 6.) If the incorrect entry is not noticed until after pressing **ENTER**, simply press **ENTER** until returning to **IDLE** and **TC2,** and then reenter the correct information from the beginning. This can be done at any point in the programming.

6. Display will show **HLd 0.0** next. This is a hold AT THE TARGET TEMPERATURE. Enter hold time desired. Hours are to the left of the decimal, and minutes are to the right. Check to make certain the display reflects the correct hold time. To enter a 5 minute hold time, press **05**, then **ENTER**. **0.05** will show on the display. If the wrong time is entered, simply press **00** to reset, or scroll back to **HOLD 0.0** then enter the correct time. **IDLE** and **TC2** will appear, indicating the temperature at thermocouple number two (the middle thermocouple on a three-zone kiln, and the top one on a two-zone kiln). Note that this will read higher than room temperature, as the offset is added to the ambient temperature.

## *Delay To Control Start Time*

This function is provided to delay the start time and is found under **EASY FIRE OPTIONS**. It is programmed by entering the hours and minutes before the intended start time. Once the correct amount of

time is verified, press **ENTER**. The display will return to **IDLE** and **TC2**. DO NOT FORGET to press **START** when finished. The hours and minutes until the kiln starts to fire will be displayed and count down. If a vent is used, remember to turn it on as well.

### *Preheat To Fully Dry To Work*

This function is intended for use when ware is not fully dry or when the dryness of the pieces in the kiln is uncertain. It will hold the temperature at around 180 degrees F (82 degrees C) for the selected amount of time before launching into the firing program. It is recommended especially when firing hand built or heavy pieces, as cracking and other damage related to entrapped water can be reduced or eliminated. It is programmed the same way as the DELAY function, and may be used in conjunction with it if desired. Remember that if both functions are used, the preheat will not begin until the delay is exhausted. Since little or no heat escapes at this temperature, it can be used in lieu of the delay function in most instances.

## REMEMBER: START THE VENT FAN IF USED!

## *After Firing*

**CPLT** alternating with a number will flash. The number indicates the hours and minutes the kiln required to finish the programmed firing routine and should be noted in the firing log.

## *Review Program*

This function will review all the settings in the current program. It will scroll through the following items in order. This is a good safety check!:

a) The program name (like **S-bC** for Slow Bisque, **FbC** for Fast Bisque.

b) **PRHT** (preheat) followed by its value in time.

c) **CONE** followed by its value (for instance **05**).

d) **°F** (or **°C)** followed by a value like **1888;** which is the final firing temperature (enter this information into your kiln log.)

e) **CNOS** followed by **9020** or some other number which could also be **0000**. The **9020** represents the Cone Offset that may be preprogrammed into the control. This allows you to adjust the final shut-off temperature. See the section A.15, page 36 in the "DynaTrol Reference Manual" in the CONTROL section of your manual for a detailed explanation.

f) **HOLd** followed by the value in time of the hold time programmed into the control.

g) **dELA** (delay) followed by the value in time if used.

h) **ALRM** (alarm) followed by the value in temperature, like **2000**.

i) **ERCd** (error code) followed by **ON** or **OFF** Typically Error Codes should be **ON**. (See section H18, page 61 in the "DynaTrol Reference Manual" in the CONTROL section of the manual for an explanation of this).

j) **FIRE** followed by the number of firings the kiln has started.

## *Loading Glaze*

Generally, glaze should be loaded in such a manner as to facilitate good air circulation and preclude the glaze on one item from contaminating others around it, or the kiln itself. Check all items to be loaded for potential running or dripping, and to see that the bottoms are clean of glaze. Look for areas where glaze has built up into a thick mass, such as undercuts and below handles. Many glazes foam and "spit" at high temperature, so keeping ware a minimum of one finger width apart is recommended. See the "ORTON FIRING TIPS" in the LOG, CONES, TIPS, CERAMIC PROCESS section in the manual for a full explanation of glaze, how it works, potential problems and remedies.

## *Glaze Firing*

Enter the cone number to which you normally fire glazed ware here:_____

1. Turn on the kiln at the toggle switch
2. After **WAIT** message disappears press **SLOW GLAZE**
3. Enter **CONE** number (usually cone 6)
4. Press **ENTER**
5. Enter desired hold time, if any
6. Display will indicate **IDLE** and **TC2**
7. Enter delay and/or preheat times (as described under Greenware Firing.)
8. Press **START**

**REMEMBER: START VENT FAN IF USED!**

# UNLOADING

Ware should not be unloaded until the indicated temperature near or below 175 degrees F (80 Degrees C). Unloading too hot can result in cracking of bisque ware and/or crazing/crackling of glazes, plus you can burn yourself. The temperature is easily confirmed by looking at the display, which should be indicating **CPLT** alternating with the current temperature at thermocouple 2. To check the other zones, simply depress "**1**" or "**3**" to view the current temperature in those zones. Remember, the slower a kiln cools the better for the ware inside.

## *SHELVES*

When moving shelves during unloading, be aware that some of the kiln furniture may "frit" onto other pieces. In other words, a short leg under a shelf can and often does stick temporarily to the underside of a shelf. Lifting straight up on the shelf, without turning or tilting, is the best means to ensure one of these legs doesn't release and fall on some ware and damage it. If it does fall, kiln furniture is more likely to fall into an open space.

Kiln shelves and furniture should be cleaned between each firing.

**CAUTION: Inhaling kiln wash dust is a health hazard (it contains silica). When using kiln wash, or cleaning kiln shelves, wear a NIOSH approved particulate respirator for dust and use proper ventilation and safety glasses. (See page 4 of the CAUTIONS section in the manual).**

## *CONE PACKS*

**(Adjusting thermocouple offsets)**

Cone packs are used to determine the final firing temperature of the kiln. While the thermocouples are capable of accurately detecting the temperature inside, they must be "fine tuned" for the conditions where the kiln is actually used. Pyrometric cones will melt at a very specific temperature. A "pack" consists of a cone for the target temperature, one above, and one below. One should check and adjust for glaze temperatures, as the bisque temperatures are more forgiving and less critical. Assuming one fires glaze to cone 6, then large, self-supporting cones 5, 6, and 7 should be kept on hand for the purpose. Set up one cone pack in each zone, allowing enough space around them so they don't slump and melt onto anything or each other. One should expect cone 5 to completely melt, while cone 6 should deform about 90 degrees, and cone 7 should not deform at all, or very little. See the illustration in the "What Cone Numbers Mean: Why

You Should Care" article in the LOG, CONES, TIPS, CERAMIC PROCESS section of the manual for a depiction of a cone pack which indicates a proper firing temperature.

## *THERMOCOUPLE OFFSETS*

Thermocouple offsets compensate for the difference in the way temperature is sensed caused by ceramic covers, ambient temperature, and all the variables in the environment where the kiln is located. One can add or subtract degrees to what the thermocouples sense, achieving an accurate and reliable result. The offsets usually need to be increased to get them right, so expect the first firing of glaze to indicate a little hotter than it should. The factory offsets are installed using an empty kiln, and the amount of ware loaded and the way it is loaded, among other things, cause a difference. Use cone packs to verify this.

To adjust offsets, first press **STOP**, and verify the system is off by viewing the **TC2** and **IDLE** message on the control.

1. Press **OTHER** eight (8) times. The screen will scroll to **TCOS** for Thermocouple Offset.

2. Press **ENTER. TC1** will appear.

***3.*** Press **ENTER** again and **°FOS** (degrees Fahrenheit Offset) alternating with a number (if

never adjusted, you will see **0018**). This is the number of degrees added to what the thermocouple senses. In other words, ***to lower the temperature inside the kiln, increase the offset.***

If the offset is set, for example at 18, and one sees a full deformation of cone 7 (the hottest one,) you may want to add 10 degrees to the offset. If only slightly deformed, perhaps 5 is more to the point. To change the offset simply press in the new total – that is change **0018** to **0028** for a 10 degree increase, and press **ENTER.**

4. **TC2** will show in the display. Press **ENTER** again to see the offset. Here is where the individual cone packs come in handy. The offsets for each zone should be set according to the information yielded by the cone pack IN THAT ZONE. Perhaps cone 7 in zone 2 is only slightly tilted. In this case possibly 5 degrees is a better option, and changing 18 to 23 is more accurate. Once the temperature is entered, press **ENTER** again and **TC3** will show.

5. Press **ENTER** and the offset will appear. Press in the new value and press **ENTER** one more time. The system will return to **TC2/IDLE**, indicating your adjustments were successful.

To check the offsets, simply press **STOP**, then press **OTHER** 8 times until **TCOS** appears. Then scroll

through all the information by pressing **ENTER** to see each setting. After **TC3** the system will return to **TC2** and **IDLE.**

When satisfied with the offsets, enter them here so others will know what they are:

| **Initial** | **Reset to** |
|---|---|
| Date:_____ | _____ |
| TC1_____ | _____ |
| TC2_____ | _____ |
| TC3_____ | _____ |

**For more information:** see "Basic Operation of L&L Kilns with a DynaTrol" in the OPERATION section, page 5 and section 4.3.3.8 of the "DynaTrol Reference Manual" in the CONTROL section of the manual.

# COMMON ERROR CODES

Here are the most common error codes you might encounter. Please be certain to see the full explanation in the book, as this will help you analyze the symptoms. Should you be unable to repair the issue without assistance from L&L, giving the technical support section as much accurate data as possible will allow them to correctly diagnose the difficulty and get you back on the road.

**For more information:** See Appendix G and H in the "DynaTrol Reference Manual", pages 55-64, in the CONTROL section of the manual.

Error codes can appear at any time during the firing. They always refer to a problem that, if allowed to continue, could end with unknown or even disastrous results. **Errd, Err1, ErrP** and the **FAIL** message make the most frequent appearances.

**Errd** means there is a temperature difference of more than 100 degrees F (55 degrees C) between the zones. There are more often than not air circulation problems, or if the kiln has been recently reassembled for some reason, a wire left disconnected.

**Err1** indicates that the kiln is climbing too slowly in an Easy-Fire program to calculate what the final temperature should be, based on what cone you have

programmed it to fire to. It can mean an element or other electrical component is not functioning properly.

**ErrP** indicates that there was either a very quick power outage (**ErrP** will flash along with the temperature and the kiln will still be heating), or there was a longer power outage (**ErrP** will be the only thing in the display and the kiln will not be heating).

**FAIL** refers to a specific thermocouple failure. It will appear after displaying a '**tC**' (thermocouple) number **1, 2** or **3**.

For all error codes, please refer to the manual. L&L kilns are designed to be easily repaired, and detailed information is included in the manual to make this possible. When necessary technical assistance is only a phone call away.

# LOGGING FIRING RESULTS

Maintaining an accurate firing log will assist in keeping the kiln running smoothly and help you diagnose impending problems before they cause firing difficulties. The log is available either in your manual for copying, or on line at www.hotkilns.com/firing-log.pdf

BISQUE: CONE _____

GLAZE: CONE_____

DELAY:_____

PREHEAT:_____

**TC OFFSETS:**

TC 1. _____

TC 2. _____

TC 3. _____

# NOTES:

## *DATA NAMEPLATE INFORMATION*

You can find this on the back of your manual and on the data nameplate attached to your kiln. Record it here for easy reference.

Model No:_____

Serial No:_____

Voltage:_____ Phase:_____

## *DISTRIBUTOR*

Distributor:_____

Distributor Phone No:_____

## *TECHNICAL SUPPORT & SERVICE*

Contact your distributor first for questions about your kiln and how to fire it.

Also see "Service for Your L&L Kiln" in the SERVICE & WARRANTY section of your manual.

## *CONTACT US*

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