



MODELS

Studio Pro 24

Studio Pro 28

Studio Pro 41

TECHNICAL SPECIFICATION

Digitally Controlled Glass Kilns

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1. Technical Specification

1.1 Physical Characteristics

Maximum usable temperature – 1800°F (982°C)

Model	Internal Dimensions (inches)	External Dimensions (inches)	Load Capacity (lb.)	Weight (lb.)
Studio Pro 24	24" W x 24" D x 13.5" H	29.0" W x 35.0" D x 37.25H	250lb	257
Studio Pro 28	28" W x 28" D x 13.5" H	33.0" W x 38.0" D x 37.25H	250lb	314
Studio Pro 41	40.5" W x 25.5" D x 13.5" H	45.5" W x 35.5" D x 37.25H	250lb	340

Recommended lifting points:

When moving with a pallet jack or fork truck, bring forks into the lower, front center of the base. Do not attempt to come in from the sides. Ensure that fork tines are completely under the base and extend slightly out of the rear of the base before lifting.

When moving by hand, the kiln must be disassembled. Refer to the installation instructions for step by step instructions for disassembly and re-assembly.

When moving the lid, carry lid at front handle and at both rear hinge ears.

When moving the chamber, carry chamber at front handle and at both rear hinge ears.

When moving the base, carry from the bottom of each side. It is permissible to rotate the base onto its side for access through doorways. It is also permissible to slide the base along a floor surface although we highly recommend using a blanket or some other material between the base and floor for easy movement and to avoid damaging the base finish.

1.2 Functional description

Refer to the diagram below for identification and location of the key components of the Kiln.

The kiln chamber and floor are constructed of stainless steel and insulated with firebricks. The lid is constructed of stainless steel and insulating fiber. The kiln base is constructed of steel.

The chamber and lid are provided with a power interrupt switch that removes electrical power from the chamber and lid heating elements when either the chamber or lid is opened.

Heat for the chamber and lid is provided by electrical resistance wire (heating elements).

Kiln control is performed via purpose designed electronics which enables the user to set the firing/heating parameters including temperatures, ramp intensity and hold times over multiple stages. See the controller user manual for more details.

Operating programs can be stored in the controller for future recall and use.

Operating temperature range is 350°F (175°C) to 1800°F (982°C).



A. Temperature Control Power Switch	G. Chamber Safety Catch
B. Temperature Controller	H. Lid Vent
C. Lid	I. Lid Element Cover
D. Chamber	J. Leveling Feet
E. Lid Handle	K. Kiln Base
F. Chamber Handle	

A. Temperature Control Switch

The Temperature Control Switch is used to turn temperature control power on and off.

B. Temperature Controller

Evenheat kilns are equipped with various temperature controls. These controls perform all chamber heating functions. Refer to your Controller documentation for technical details and programming methods.

C. Lid

The kiln lid is hinged and allows access to the chamber for loading work. The lid is made of insulating fiber and a stainless steel frame.

D. Chamber

The chamber consists of the kiln floor, walls and lid. Using the chamber handle the user can open the chamber and expose the brick floor of the kiln for easy placement of work.

E. Lid Handle

The Lid Handle is used to open the chamber lid to provide access to the chamber for loading and unloading of work. We recommend a two-handed lift.

F. Chamber Handle

The Chamber Handle is used to open the chamber from the front to provide access to the chamber for loading and unloading of work. We recommend a two-handed lift.

G. Chamber Safety Catch

The Chamber Safety Catch prevents the chamber from movement when lifting the lid section. To access the chamber section of the kiln, simply undo the chamber safety catch.

H. Lid Vent

Studio Pro Series kilns feature an integrated lid vent system. To operate, lift up on the lid and rest the lid vent points in either the lower or upper diamond shaped positions.

I. Lid Element Covers

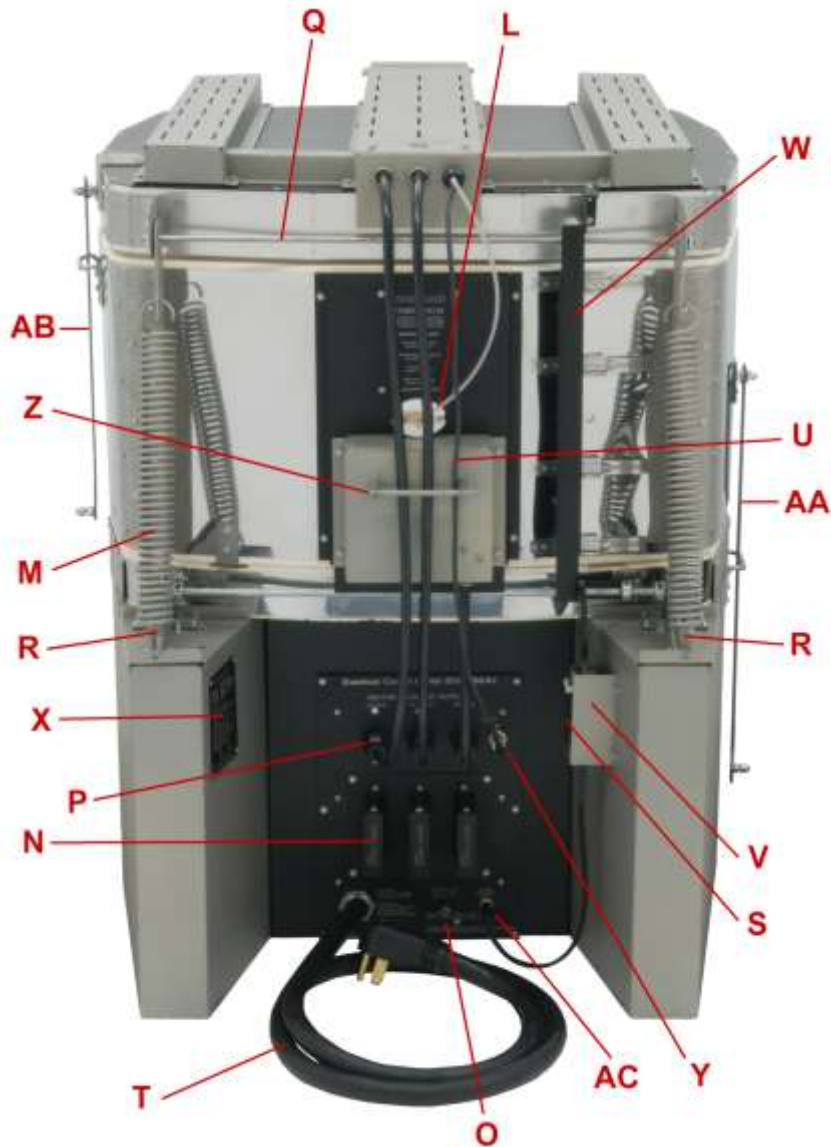
The covers on the lid protect the lid element leads that exit the top of the lid. If lid heating element service is needed these covers can be removed to expose the heating element leads making service very easy.

J. Leveling Feet or Casters

Leveling feet are mounted to the bottom of the base and are adjustable using a 7/16" open-end wrench. Glass work depends upon gravity and a level base is a great thing! Rolling casters, if installed, are not adjustable for setting level.

K. Kiln Base

The kiln base provides support for the kiln chamber and houses the control circuitry and lift assist mechanism.



L. Thermocouple	U. Data Cable
M. Lift Assist Springs	V. Power Interrupt Switch
N. Solid State Relays	W. Power Interrupt Switch Pushrod
O. Control Fuse	X. Serial Tag
P. Element Power Connections	Y. Data Cable Connection
Q. Lid Hinge Rod	Z. Cable Management Rod
R. Counter Yokes	AA. Chamber Safety Bar
S. Power Interrupt Switch Gauge	AB. Lid Prop Bar
T. Power Cord	AC. Power Interrupt Jack

L. Thermocouple

The thermocouple is used to sense the temperature in the Chamber. The thermocouple passes through the chamber and is connected to a block fastened to the outside of the kiln body. The thermocouple is known as a "Type K". The term Type K refers to the type of alloys used to manufacture the thermocouple. The Thermocouple wire gauge is sized to respond quickly to temperatures yet be robust.

M. Lift Assist Springs

The Studio Pro Series comes with a spring operated lift assist system for the chamber of the kiln. This system helps to reduce the weight of the chamber for the user.

N. Solid State Relays

The Studio Pro Series utilizes Solid State Relays to direct power to the heating elements. Solid state relays are located on the Evenheat Control center and are special switches used to turn the heating elements on and off. Solid state relays enhance control performance, extend the life of the heating elements and are expected to last the life of the oven.

O. Control Fuse

The electronic controls are protected with a control fuse in the Fuse Holder located on the Evenheat Control Center. The fuse is rated at 250V/250mA "slow-blo" 3AG (1-1/4" x 1/4"). If replacement is necessary, replace only with a fuse of the same size and rating. This is a user replaceable component. The Fuse Holder cover simply unscrews providing access. Once the fuse is inserted replace the cover.

P. Element Power Connections

The lid and chamber elements are powered by plugging into the receptacles on the back of the Evenheat Control Center. There are 3 plugs and 3 receptacles, see image above for positioning of the power cords.

Q. Lid Hinge Rod

The lid is secured to the chamber using the Lid Hinge Rod, this rod is removable for service if needed. Instructions on removal can be found in the Installation Instructions.

R. Counter Yokes

The Counter Yokes are located on the back of the base and mount over the chamber hinge rod. The counter yokes act as a "Stop" for the chamber as it is fully opened.

S. Power Interrupt Switch Gauge

The Power Interrupt Switch Gauge is used to correctly position the power interrupt switch in relation to the cam on the pushrod. See Installation manual for testing and adjustment details.

T. Power Cord

The power cord supplies the Evenheat Control Center with electrical power.

U. Data Cable

The data cable connects the temperature controls to the Evenheat Control Center via an 8 pin male connection. This cable transmits data from the temperature controller to the Evenheat Control Center.

V. Power Interrupt Switch

The Power Interrupt Switch is located on the back of the base and removes electrical power from all heating elements when either the lid or chamber is opened. The action of the switch is controlled by a cam and pushrod. Proper setting of the power interrupt mechanism can be found in the Installation documents.

W. Power Interrupt Switch Pushrod

The Power Interrupt Pushrod rotates the cam that is mounted to the chamber hinge rod whenever the lid is opened. The cam, in-turn, activates the power interrupt switch thereby removing electrical power from all heating elements. Proper setting of the power interrupt mechanism can be found in the Installation documents.

X. Serial Tag

The Evenheat serial tag is mounted on the back of the base. This tag will include information about your kiln such as manufacture date, serial number, watt, voltage, and amperage.

Y. Data Cable Connection

The data cable connection located on the back of the Evenheat Control Center is an 8 pin female connection. This connects the data cable to control circuitry.

Z. Cable Management Rod

The Cable Management Rod ensures the position of the electrical power cables and data cable from the lid enclosure to the Evenheat Control Center.

AA. Chamber Safety Bar

As the chamber of the kiln is fully opened the Chamber Safety Bar automatically engages with the wire form catch on the kiln base and prevents the chamber from falling back to the floor without direct interaction of the operator. Once engaged, work can safely be placed into and out the chamber. To disengage the chamber safety bar and lower the chamber, place your right hand on the chamber handle and use your left hand to pull the chamber safety bar towards you. Begin to lower the chamber. Once the chamber safety bar notch has cleared the wire form catch, transfer your left hand to the chamber handle and lower the chamber fully to the floor using both hands.

It should be noted that the chamber safety bar does not hold the chamber in the open position. That is accomplished by the lift assist springs. The sole purpose of the chamber safety bar is to prevent the chamber from closing unless purposely and directly acted upon by the operator.

AB. Lid Prop Bar

The Lid Prop Bar automatically locks into the wire form catch located on the chamber of the kiln when the lid is lifted to its fully open position. Once the lid prop bar notch falls into the wire form catch it is in the locked position and the lid will remain in place and work can safely be loaded and unloaded into the chamber section of the kiln.

To lower the lid, push the lid slightly back with your left hand while clearing the lid prop bar notch from the wire form catch with your right hand. Slowly lower the lid until the lid prop bar notch clears the wire form catch. Once the lid prop bar notch has cleared the wire form catch, transfer your right hand to the lid handle and lower the lid fully to the chamber using both hands.

AC. Power Interrupt Switch Jack

The Power Interrupt Switch cable plugs into the Evenheat Control Center via a male jack. This jack must be fully inserted for proper operation.

Evenheat Studio Pro Series glass kilns are powered electrically. It is recommended that the kiln be operated from a dedicated circuit. That is, the kiln should be the only device being operated from the circuit. It is also recommended that all electrical installations be performed by a licensed electrician.

Listed below are the electrical specifications for standard, North American production. Studio Pro models are available in a variety of voltage and phase configurations including 380V/400V/415V. Please contact Evenheat Kiln directly for electrical specifications regarding non-standard production models.

Models	Voltage	Phase	Frequency	Amperage	Watts	Plug Type
Studio Pro 24	240V	Single	50-60Hz	32A	7680W	NEMA 6-50P
Studio Pro 28	240V	Single	50-60Hz	40A	9600W	NEMA 6-50P
Studio Pro 41	240V	Single	50-60Hz	45A	10,800W	NEMA 6-50P

1.3 Environmental Requirements

This unit is suitable for use in ambient air temperatures between 40°F (5°C) and 105°F (40°C).

Refer to Installation and Operation Manual for further guidance.

1.4 Electric Circuit diagrams

For maintenance and troubleshooting refer to the electric circuit diagrams below relating to your specific model.

For further details see www.evenheat-kiln.com.

Models	Element Connections	Evenheat Control Center	Controls	Thermocouple
Studio Pro 24 200V – 240V Single Phase	Studio Pro 24 – G2 Heating Element Diagram	EEC SS3/A1-116411-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 24 200V – 240V 3 Phase Delta	Studio Pro 24 – G2 Heating Element Diagram	EEC SS3/A3-116711-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 24 380V -415V 3 Phase Wye	Studio Pro 24 – G2 Heating Element Diagram	EEC SS3/B4-116611-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 28 200V – 240V Single Phase	Studio Pro 28 – G2 Heating Element Diagram	EEC SS3/A1-116411-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 28 200V – 240V 3 Phase Delta	Studio Pro 28 – G2 Heating Element Diagram	EEC SS3/A3-116711-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 28 380V -415V 3 Phase Wye	Studio Pro 28 – G2 Heating Element Diagram	EEC SS3/B4-116611-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 41 200V – 240V Single Phase	Studio Pro 41 – G2 Heating Element Diagram	EEC SS3/A1-116411-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 41 200V – 240V 3 Phase Delta	Studio Pro 41 – G2 Heating Element Diagram	EEC SS3/A3-116711-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple
Studio Pro 41 380V -415V 3 Phase Wye	Studio Pro 41 – G2 Heating Element Diagram	EEC SS3/B4-116611-00	TAP Electronic Controls Or Genesis Electronic Controls	Thermocouple



MODELS

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INSTALLATION OPERATION AND MAINTENANCE MANUAL

Digitally Controlled Glass Kilns

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2 Critical safety information and key warnings

Read and understand this Installation, Operation and Maintenance manual as well as the associated Controller manual before running your kiln. If you have any questions please contact your distributor, or Evenheat Kiln directly by phone: 989-856-2281, via email: info@evenheat-kiln.com, or see www.evenheat-kiln.com.

Evenheat Kilns are as safe as any other quality built electrical appliance when used in the recommended way and operating conditions. To create and support this safe environment please observe all safety precautions.

2.1 Warning Symbol Descriptions

Warning symbols are used on the kiln and throughout this manual. These symbols alert the operator to certain hazards and important information. Pictured below are symbols used along with a description of each.



Mandatory – Refer to Installation, Operation and Maintenance manual before operating.



Caution – Refer to accompanying documentation.



Caution – Hot Surface - Risk of burns.



Caution – Risk of Electric Shock - Electric shock may result in injury or death.



Protective earth (ground) – maintain connection to an external earth for protection against electric shock in case of a fault.

2.2 Key Warnings



Prior to installing and operating this equipment, read and understand these instructions. A **risk assessment** considering all installation, operation, and maintenance tasks, including potential unexpected personnel and events, should be conducted considering your specific conditions and any risks arising from this assessment should be mitigated. If in doubt – ASK.



Do not modify the Kiln, Controller, Base or Power Supply Cables in any way. Alterations can be dangerous. Alterations may negate any relevant Standards markings or regulatory approvals.

Installation and surroundings



Due to the extremely hot operating temperatures of this equipment and the items being heated it is critical that the installation guidance is read, understood, and followed.

Emergency Shut Off Provision



The kiln's power supply connection (plug/receptacle, breaker or disconnect) acts as the emergency electrical power shut off. Access to these devices should be unobstructed and safe for emergency power shutoff.

Electrical Safety



A licensed electrician should be used for all electrical installation and service. All applicable electrical codes must be followed.



Refer to the “Technical Specification” document. Electrical specifications for the Kiln are indicated on the included circuit diagrams. Data for choosing the proper electrical service, supply connections and cable plug are indicated.



Protective earth (ground) – maintain connection to an external earth for protection against electric shock in case of a fault.

Kiln Access Safety



If you access the kiln when hot, heat will escape very quickly. Keep your hair tied back, and head and body far away from the chamber. It is recommended that you wear suitably protective clothing and eye protection capable of filtering Ultraviolet and Infrared light.

General Safety



Do not modify or machine the brick structure in any way. Avoid conditions where the creation of brick dust is possible. Dust from the bricks poses a risk of irritation to the eyes, skin, and respiratory systems. It may also aggravate chronic lung conditions like bronchitis, emphysema, and asthma. Repeated and prolonged exposure may cause delayed lung injury.



The glass firing process in this kiln is designed to work with the given, ambient atmosphere. Do not attempt to provide or inject gases into the firing chamber, i.e. - reduction firing. Doing so may negate built-in safety features and may produce hazards. Injected gases may also damage heating elements and other electrical as well as non-electrical items.

2.3 Electrical Emergency

Prior to Installation of the kiln establish an emergency response procedure for potential electrical emergencies.

2.3.1 If an incident occurs

If an incident occurs with suspected electrical origin, follow your emergency procedure, or as a minimum;

- Stay clear of potential conductors (including people).
- Disconnect the power supply at a safe location. (e.g., the power outlet feeding the machine or the supply circuit breaker)
- Seek emergency medical assistance/advice.

2.4 Intended Use

Evenheat Kilns are a controlled heat source designed for the sole purpose of firing glass products.

DO NOT use the kiln for anything other than this intended purpose.

DO NOT use the kiln;

- to heat treat metal using salts – gases produced are toxic.
- to prepare food. The kiln is not designed to dry or dehydrate meats, wood, produce, grains, etc.
- to heat a living or working space.
- as a dryer of any sort. This means clothes, fabrics, etc.
- to melt ice or ice laden articles.
- as a storage device.

It is the operator’s responsibility to determine the suitability and safety of any material to be heated. **Many materials are unsafe to heat such as tempered glass which may explode when heated.** Please contact your materials supplier for guidance on the materials response to elevated temperature, suitability and required safety precautions. If you are not completely sure as to the safety of heating a particular material, DO NOT do it.

3 Installation

Before installing your kiln Read and understand the following documents;

1. Operation and Maintenance manual (this document).
2. Installation Manual in PDF form available at evenheat-kiln.com/evenheat-support
3. Wiring Schematics in PDF form available at evenheat-kiln.com/evenheat-support
4. Controller Manual for the Controller installed on your Kiln available at Evenheat-kiln.com/evenheat-support
5. Technical Specification for your specific Kiln available at Evenheat-kiln.com/evenheat-support

3.1 Installation Safety - Location



The kiln is capable of producing very high temperatures in the firing chamber. It is capable of producing an exterior temperature hot enough to cause severe skin burns. When the kiln is opened during use, extremely hot air will escape into the installed location. Do not install or use kiln on or near combustible surfaces. Refer to distance requirements below.



Observe all building, fire and safety codes when installing the kiln.



Do not store flammable or combustible products near or in the same room as the kiln.

Glass Kiln use can involve the manipulation of VERY hot material during firing. To keep this activity as safe as possible Evenheat recommends that the kiln remain placed on the factory supplied base. The base has been designed to position the chamber at a comfortable working height.

The installed location should allow you room to move freely.

The surface on which the kiln is placed shall be capable of safely supporting the combined weight of the kiln, kiln load and any operating personnel.

Spacing of a minimum of 12" (31cm) shall be provided to the front, back, sides and door opening zone. A minimum of 36" (92cm) shall be provided to any ceiling or surface above. Cement board or other non-combustible material is recommended. Special attention shall be paid to kilns fitted with mobile, rolling casters to verify minimum clearances before and during use or at elevated temperatures.

Do not remove the metal base attached to the kiln by Evenheat Kiln, Inc.

Install in a covered, well-ventilated area that is capable of safely dissipating all heat produced by the kiln. Avoid areas that are subject to outdoors weather. Never install a kiln outside. Avoid moisture.

Position where protected from exposure to airborne solids (including grinding dust) and liquids

Never place the kiln in a small, enclosed area such as a closet, cabinet, very small room, carport or screened porch.

The area around the kiln should be free of obstructions that interfere with the proper and safe operation of the kiln.

Position the power supply cable in such a way as not to create a tripping or tangling hazard.

Never place anything under or above the kiln for storage. Absolutely nothing should be propped against the kiln.

It is the user's responsibility to be knowledgeable regarding any and all contaminants produced by the kiln contents during firing, and take steps to properly and legally contain and dispose of these contaminants.

It is the user's responsibility to provide ventilation capable of removing all gases, fumes and other airborne contaminants produced by the kiln contents during firing safely from work the area and building structure.

The kiln should be located in an area with good lighting.

3.2 Installation Safety Electrical

Kiln electrical requirements are located on the kiln control panel nameplate. Refer to the "Technical Specification" relating to your specific kiln for further details.



A licensed electrician should be used for all electrical installation and servicing. All applicable statutory and regulatory requirements must be followed.



A voltage check should be performed before placing the kiln into service. The kilns operating voltage must match the applied voltage (actual electrical service voltage). If it does not, do not install or operate the kiln as potential electrical and fire hazards exist.

All electrical installations for direct wired models (those without a plug/receptacle connection) must include a power disconnect near the kiln that is easily accessible and safe for emergency power shutoff.



The Emergency Stop device for the Kiln consists of the supply cable plug and other protection devices such as the supply circuit breakers. In an emergency, remove the supply cable plug from the supply service socket. If the Kiln is hardwired, switch the inline isolator or breakers to the OFF position. These protection devices are to be sized and installed by licensed personnel only and conform to all relevant standards.

The kiln must be properly grounded.



The "Protective earth (ground)" symbol alerts you to specific electrical terminations that must be firmly connected for protection against electric shock in case of a fault.

Use correct voltage, wire size and fuse or breakers. Make sure all electrical connections are tight.

Always use the proper electrical receptacle. Never alter the kilns cord set or plug. Alterations can be dangerous. Alterations will void any warranties along with nullifying any regulatory authority approvals / Listing Agency markings.

Never, ever use an extension cord to supply power to the kiln.

Consider "Electromagnetic Compatibility" (EMC) environment and avoid conditions with potentially high levels of electromagnetic interference.

3.3 Installation Steps

You are required to visit our website, evenheat-kiln.com, to view the Installation Instructions. These instructions are presented in a PDF format and contain step-by-step images and text of the entire installation and set-up process.

If for some reason the connection to our web site is down, you can request a copy of the installation instructions to be sent via email. They will be provided in PDF format.

Refer to the Technical Specification for your kiln's weight and dimensions. Lifting locations can be found in the Installation Manual PDF as noted above. Use a suitable number of capable people or equipment to assist with positioning.

The following steps are meant as a simple outline of the Installation and are not intended to replace the complete Installation Manual PDF noted above. They are presented here as a general reference.

Carefully un-strap and unpack the kiln

Remove the kiln lid – set aside gently

Remove the kiln chamber – set aside gently

Install optional rolling casters on kiln base bottom if ordered

Place the kiln base in its installation location (where you intend to operate it). Refer to this manual for Installation Location information

Re-install the kiln chamber - gently

Re-install the kiln lid – gently

Check Power Interrupt Switch calibration – see Maintenance section of this manual for details

Completely read the remainder of this manual for operating instructions

4 Operation

4.1 ***Read and understand this Installation, Operation and Maintenance manual as well as the controls manual before operating your kiln.***

4.2 ***Operation Safety***



The surface of the kiln is hot and burn injuries are possible. Keep all children and unsupervised personnel away. Always wear protective clothing, gloves and eyewear when operating and handling a hot kiln.



There should be no flammable environments allowed around the kiln. Nothing flammable should be placed in, around or near the kiln. If a flammable environment is suspected the Kiln should not be switched on or used.



Your kiln is installed with a Power Interrupt Switch that removes power to the heating elements as the lid or chamber is opened. Under no circumstances should you attempt to bypass the Power Interrupt switch. Under no circumstances should you touch the heating elements with your body or any other devices like tools or work piece. Electrical shock may result in serious injury or death.



Use care when accessing or looking into a hot kiln. High heat escapes quickly and burn injury may result - Always wear protective clothing when working with the kiln. Protective clothing includes, but is not limited to, heat resistant gloves, eyewear capable of filtering infra-red (IR) and ultra-violet (UV) radiation. Keep your head and body clear of the possible paths of extremely hot air. Long hair should be secured.



It is the user's responsibility to have knowledge of the material intended to be heated. If you are unsure as to the safety of heating a particular material contact your materials supplier for guidance before doing so. If you remain unsure as to the safety of firing a particular material do not do it. Firing hazards include materials that explode or produce toxic gases. Finished ware hazards include materials containing lead.



Do not heat salts or cyanide. Gases produced are TOXIC. Serious injury or death may result.

Do not operate the kiln over the maximum temperature rating printed on the nameplate.

Never leave a kiln unattended when in operation or above ambient temperature.

Keep the kiln lid and chamber closed when not in use.

Never allow the power cord to touch the kiln. If the power cord, plug or receptacle becomes damaged discontinue use and replace immediately.

It is recommended that a fire extinguisher, capable of dousing an electrical fire, be accessible in the event of fire. Smoke detectors within the kiln room are also recommended.

Fire all materials according to the material manufacturer's instructions. Improper firing may result in damage to the kiln or material.

Do not use the kiln to prepare food, heat a living space, dry clothes or ice laden articles or use as a storage device. The kiln is designed for one purpose and one purpose only: the firing of glass.

A kiln will remain very hot long after the firing is complete. All safety recommendations should be followed, even with the kiln unpowered, to avoid any burn injuries.

Keep children and other unauthorized personnel away at all times.

When firing is complete, and during periods of non-use, remove power from the kiln by unplugging or by switching the disconnect or breakers to the OFF position.

Do not operate, adjust or otherwise handle the kiln while it is in use or at temperatures above ambient room temperatures. Burns can result.

4.3 Operation – Pre-Start Checks



Prior to operating the kiln, check the surroundings have safe access and are free from combustible objects. Check for safe access to the kiln and operation of the Emergency Stop/isolation device.

- Check the Kiln and external cables for signs of damage.
- Check the mechanical and electrical function of the Power Interrupt Switch.
- Check the inside of the heating chamber and clear any unwanted items.

4.4 Operation - Accident or Breakdown

- If an accident or breakdown occurs, disconnect the power supply via the power equipment installed during installation.
- If necessary, contact your local emergency service to be assisted by professionals.
- Once the situation has been made safe restart beginning with 4.3. Pre-Start Checks

4.5 First Time Use

Lid and Chamber Operation - The Studio Pro Series of glass firing kilns are designed to allow chamber access via the lid or chamber. We term this "Dual Access". We recommend that you first learn to operate the lid and chamber to become familiar with the process.

To operate the lid: verify that the Chamber Safety Catch spring is secured to the chamber as shown below (Fig. 1). Grasp the lid handle and raise the lid until the lid prop bar notch automatically drops into the wire form catch located on the side of the chamber. The lid will now stay in the upright/open position. To lower the lid, grasp the lid handle with your left hand while simultaneously grasping the lid prop bar with your right hand. Move the lid enough to allow you to free the lid prop bar notch from the wire form catch. Gently lower the lid.

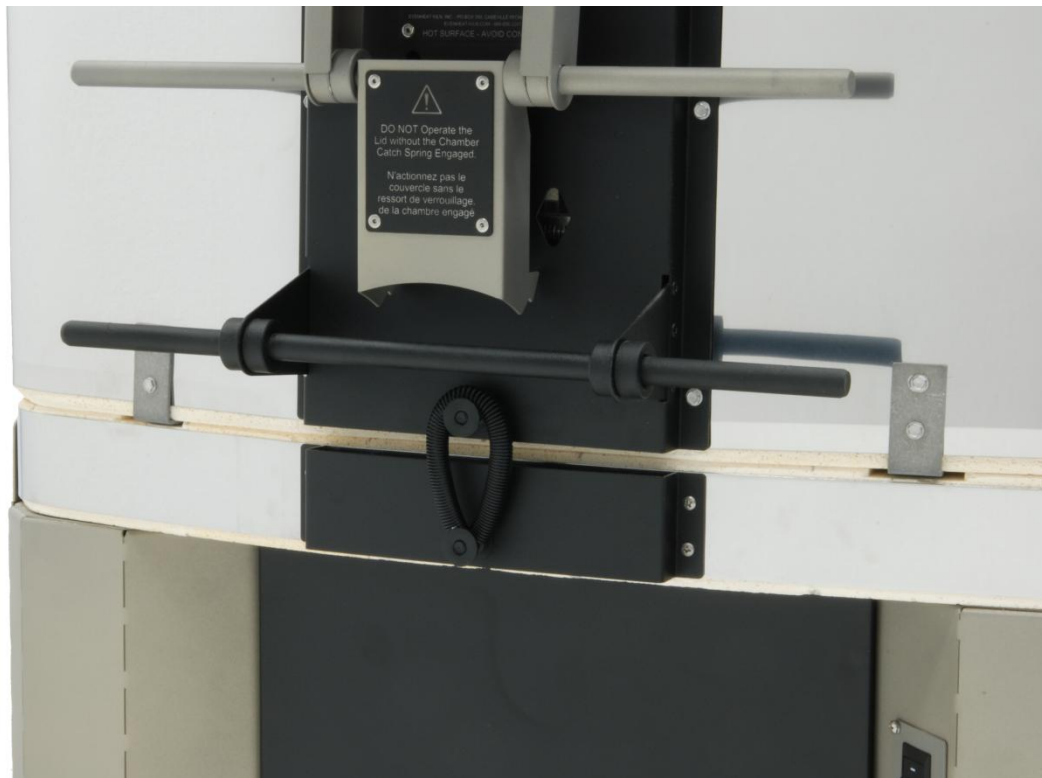


Figure 1 - Chamber Safety Catch Engaged

Note that before you operate the lid, the chamber must always be closed, and the chamber safety catch spring must be secured to the chamber (as shown above). This prevents accidental movement of the chamber while operating the lid.

To operate the chamber: verify that the lid is closed, and the Chamber Safety Catch spring is not secured to the chamber as shown (Fig. 2). Grasp the chamber handle with both hands and raise the chamber back until it automatically stops. As it stops, the Chamber Safety Bar notch will drop into the wire form catch located on the base. The chamber will now stay in the fully open position. To lower the chamber, grasp the chamber handle with your right hand and the chamber safety bar with your left hand. Pull the chamber safety bar towards you. Begin to lower the lid until the notch in the chamber safety bar clears the wire form catch. Once it does, remove your left hand from the chamber safety bar and grasp the chamber handle with both hands. You are now able to gently lower the chamber to the closed position.



Figure 2 - Chamber Safety Catch Unsecured

Note that before operating, the chamber the lid must always be fully closed and the chamber safety catch spring must not be secured to the chamber as shown above (Fig. 2). This prevents accidental movement of the chamber beyond its stopping point and prevents equipment damage.

Empty Chamber Firing – We recommend that you fire your kiln empty for your first firing. This allows you to become familiar with the operation of the kiln and controls without the possibility of destroying any glass.

Close both the lid and chamber – the kiln will not heat if either the lid or chamber are open.

Throw the power switch to the On position.

Refer to the controller manual and program your controls for a rate of 500°F/hour to 1200°F (260°C/hour to 650°C).

Start the firing.

As the firing starts you may notice a click sound or a series of click sounds (depending upon control type). This is normal and will end briefly. The Studio Pro Series uses solid state relays to control the heat of the kiln. Solid state relays do not make any audible noise and you should not hear any clicking sounds as the firing progresses.

Allow the kiln to heat up to temperature and shut off. Once off, allow the kiln to cool to a safe, low temperature of about 200°F (95°C) before throwing the control power switch to the Off position and opening the kiln.

4.6 Operation – Firing

Actual operation of the kiln is a straightforward process. Consider the safety points above, and follow these steps;

4.6.1 Loading

- Ensure that the Kiln control power switch is thrown to the off position.
- Check that the items to be heated are of suitable size, weight and material.
- Position yourself to be able to safely access and handle the items to be heated.
- You may load your shelves and glass through an open lid or an open chamber – Dual Access!
- Take care not to contact the elements or the Thermocouple and minimize impacts with the inner surfaces of the kiln.
- We recommend to always use a primed refractory shelf as your firing surface with posts below it (1" posts are a good starting point) and placing your glass on the shelf for firing. To say it another way, do not place your glass directly on the kiln floor and always post-up your shelves.
- When placing shelves with the chamber open, always **slowly lower** the chamber to identify any contact of the shelves with the chamber. If contact is made, re-position the shelves.
- The thermocouple works best if it's not crowded against your work. Give it as much room as practically possible. Your firing surface and glass should be positioned below the thermocouple. Avoid placing shelves above the level of the thermocouple.
- Check that you will be able to comfortably access and manage lid, chamber, shelves and glass when needed.
- Follow any manufacturers' recommendations for materials being heated.

4.6.2 Setting Temperature and duration

- Kilns are equipped with temperature Controllers.
- Refer to the Controller documentation included with the kiln for programming methods. The controller manual for the Controller installed on your Kiln is available at Evenheat-kiln.com/evenheat-support
- Follow all manufacturers' recommendations for materials being heated.

4.6.3 Monitoring the firing

- Never leave a kiln unattended when in operation.
- Observe the kiln and surrounding area for any indication of a problem. Stop the firing if in doubt.
- If an interruption occurs during your firing, e.g., lose power/ no heat/ errors on controller, we recommend;
 - Powering off the unit via the control power switch and allow it to cool.
 - Once cooled, remove any work/ware that is in the unit. Note: It's possible that the work/ware is compromised, this would be for the user to determine.
 - Restart the unit and run a "test cycle" - take it up to 500°F/hour to 1000°F and determine if it is operating as normal.
 - Continue as usual or begin further trouble shooting.

4.6.4 Shutdown

- Under normal conditions the Controller will complete the programmed cycle and move to the Off or standby mode.
- Throw the control power switch to the Off position.

4.6.5 Unloading

All safety recommendations should be followed to avoid any burn injuries.

- Ensure the area around the kiln is free of obstructions.
- Position yourself to be able to safely access and hand the items to be removed.
- Take care not to contact the elements or inner surfaces of the kiln.
- Carefully remove the items.
- When complete, close the lid and chamber.

Note - A kiln will remain hot long after the firing is complete.

4.6.6 Periods of Non-Use

When you have finished use for the day;

- Complete the "shutdown" steps
- Isolate from the power source by throwing the breaker or disconnect to the Off position

Do not store anything on or around the kiln.

Note - A kiln will remain very hot long after the firing is complete.

5 Troubleshooting

5.1 Controller display error codes

- Controller display error codes - refer to Controller Manual for details.

5.2 Controllers display not showing

- Controllers display not showing – investigate as per the following steps;
 - Check power is on at supply
 - Check power is at the correct voltage
 - Check control panel fuse and replace if necessary
 - Enlist assistance from a licenced electrician before continuing
 - Check correct voltage is present at the input (240Vac) and output (24Vac, blue / whites wires) of the transformer (refer to wiring schematic)
 - Check voltage at the control board input tabs (blue / white wires). If 24Vac is being supplied the controller is considered faulty.
 - Contact Evenheat

5.3 Chamber not heating

- Chamber not heating – investigate as per the following steps;
 - Check power is on at supply and control panel.
 - Check that your heating program on the controller is not using a delayed start.
 - Check Safety relay/s and Power Interrupt switch – Open and close lid or chamber listening for a distinct “click”. – no click indicates an issue with either the following;
 - Power Interrupt switch - check for free movement and calibration of the switch. Refer to Installation Manual in PDF form available at evenheat-kiln.com/evenheat-support. If and when calibrated and ok,
 - Safety relay - is possibly faulty. Electrically check relay – replace if faulty.
 - Inspect the elements for damage;
 - Look for burned or broken parts of the elements. If no breaks or burnt areas are identified;
 - Test continuity throughout the element. Isolate the kiln from power. Check continuity (licensed electrician required). If there is no continuity;
 - Check connections and resolve
 - Replace faulty elements
 - If problem continues please contact Evenheat for further assistance.

5.4 Erratic Temperature

- Erratic temperature swings on the display – investigate as per the following steps;
 - This can be caused by the thermocouple or thermocouple wires grounding out somewhere.
 - Check and ensure the Thermocouple wires are not touching each other at the terminal block located on the back wall of the kiln.
 - Check and ensure the thermocouple wire leads are not touching the kiln jacket
 - Broken thermocouple – various error displays will be displayed on the controllers if broken or the circuit is no longer complete. Refer to controller manual.

6 Maintenance and cleaning

Evenheat kilns require little maintenance, but to ensure safe and long-lasting operation it is important to carry out a few minor tasks and checks and continuously monitor performance and check for potential issues arising.

Replace any worn, damaged or defective parts immediately with Evenheat Kiln replacement parts only. Discontinue kiln use until parts are replaced.

Refer to the “Technical Specification” document supplied with your kiln for details of items noted below.

Below are specific tasks to be conducted at recommended frequencies.

6.1 Maintenance Safety



Disconnect electrical power from the kiln before performing any kiln maintenance. Failure to disconnect the electrical power supply may result in electrical shock which can cause serious injury or death.

Evenheat Kiln, Inc. – evenheat-kiln.com – 989-856-2281



A licensed electrician should be used for all electrical installation and maintenance. All applicable local, state and federal electrical codes must be followed.



If a flammable environment is suspected, maintenance should not be conducted.



When vacuuming the kiln, use only HEPA filters on the vacuum. Prolonged exposure to brick dust and other refractory materials can cause lung injury. Do not use compressed air for cleaning.



Test "Protective earth (ground)" circuit between the stainless jacket and Control Panel to the power supply plug earth to ensure correct function during electrical system maintenance or after removal of the Control Panel."



Test insulation resistance values of the conductors to earth and to each other during electrical system maintenance.

6.2 Maintenance tasks

6.2.1 Cleaning

Do not use compressed air for cleaning.

Periodic vacuuming of the kiln chamber removes debris that may damage the heating elements. A gentle vacuuming with a soft brush is perfect. Pay particular attention to the element grooves. Unplug the kiln before vacuuming.

Keep the Stainless Steel kiln jacket and Controls free of dust and debris.

6.2.2 General Mechanical

Due to the expanding and contracting nature of the Kiln and its components it is important to make periodic inspections of its parts.

After each of the first 3 firings, check;

- Power Interrupt Switch – check for Cam/Roller Alignment, Cam/Roller fit and Operating Angle. Refer to Installation Manual in PDF form available at evenheat-kiln.com/evenheat-support

After the 2nd and 5th firings, check;

- Tighten Jacket Clamps – see details below

After every 50 firings, check;

- Power Interrupt Switch – check for Cam/Roller Alignment, Cam/Roller fit and Operating Angle. Refer to Installation Manual in PDF form available at evenheat-kiln.com/evenheat-support
- Tighten Jacket Clamps – see details below

Tightening Jacket Clamps Procedure

Dis-engage the chamber safety catch and slowly raise the lid to the open position. Remove the chamber handle assembly using appropriate tool (Fig. 3), exposing jacket clamps (Fig. 4).

Grip each clamp with a pair of pliers and tighten the clamp screws. Fig. 5 illustrates using a screwdriver for tightening while Fig. 6 illustrates using a 5/16" socket. We prefer the use of the socket because it allows for a tighter clamp.

Once all clamps have been tightened, re-install the chamber handle assembly and lower the lid.



Figure 3 - Remove Chamber Handle Assembly



Figure 4 - Expose Jacket Clamps



Figure 5 - Tighten All Clamps



Figure 6 – Tightening with 5/16” Socket

6.2.3 Fire Brick

The insulating fire brick while strong can be damaged with rough handling. Generally speaking, damage such as small grooves, chips or minor cracks are acceptable. Any brick damage that potentially affects performance, such as a brick that holds the heating elements in place, should be repaired. If you think a brick needs repair, please contact Evenheat for assistance and preferred repair methods. If in doubt – ask.

6.2.4 Controllers

All our Controllers are maintenance free. In the unlikely event that you do need to replace a controller, instructions will be supplied with the replacement part.

6.2.5 Control Fuse

The electronic controls are protected with a control fuse. Refer to the Technical Specification for location and type details. Failure of the fuse is identified by a non-illuminated controller. This is a user replaceable part. If replacement is necessary, replace only with a fuse of the same size and rating.

6.2.6 Thermocouple and Thermocouple Wire

The thermocouple needs no maintenance other than replacement if it fails. Failure of the thermocouple is displayed as an error message on the controls.

If thermocouple replacement is necessary, it should only be replaced with the genuine Evenheat replacement part. Replacing it with any other thermocouple will introduce an error into the temperature reading.

Care should be taken to see that the extension wire be kept from harm. If the extension wire becomes damaged, it should only be replaced with the genuine Evenheat replacement part. Replacing it with any other type of thermocouple will introduce an error into the temperature reading.

6.2.7 Control Relays

The kiln uses devices called relays to control power to the heating elements. A set of relays (mechanical) are connected with the Power Interrupt switch and enables power only when the kiln lid and chamber are closed. Another relay set (solid state) controls the temperature of the heating chamber.

Mechanical relays are a service part and will likely need to be replaced at some point. Solid state relays are generally considered to be a non-service part and are expected to last the life of the kiln.

Access to the mechanical relays for replacement is via the Evenheat Control Center located at the back, rear of the base.

6.2.8 Heating Elements

The heating elements are made of special alloys that promote long life and element retention. Under normal operating conditions, elements should last 10+ years. To maximize life, avoid getting debris on the elements and do not go beyond the rated kiln temperature.

In the event of heating element failure, contact Evenheat directly for instructions on replacement.

Loose debris that may accumulate in the sidewall grooves should be removed by periodically vacuuming the elements and element grooves. Prior to vacuuming, ensure that the kiln is cold, unplug the kiln and gently and carefully vacuum the entire element groove.

6.3 Spare Parts

Genuine spare parts are available directly from Evenheat.

Go to www.shopevenheat.com/shop-evenheat and filter by your kiln specification for a selection of genuine spare parts specific to your kiln. Or send inquiries to info@evenheat-kiln.com or contact your distributor.

7 De-Commissioning, Relocation/Transportation, Disposal

7.1 De-Commissioning

To decommission ensure that the electrical supply is safely disconnected and terminated.

7.2 Relocation/Transportation

Refer to the Technical Specification for your kilns weight, dimensions. Use a suitable number of capable people or equipment to aid with repositioning.

During relocation and/or transportation ensure that the kiln is covered and safely restrained suitable to the mode of transport.

7.3 Disposal

The kiln can be dismantled with basic tools and most materials safely recycled or put to general waste. Check with local Authorities for guidance. Beware of dust and sharp edges. Wear appropriate breathing and hand protection. Electrical items should be recycled following local waste regulations.

8 Accessories

There are accessories available for Evenheat kilns to help you to get the most out of your kiln.

Evenheat offers a variety of refractory shelving and posts designed to fit your new Evenheat kiln. Visit shopevenheat.com to find exactly what you need.

9 Additional Information

Please see www.evenheat-kiln.com for additional information including;

- Installation, Operation and Maintenance manuals

Evenheat Kiln, Inc. – evenheat-kiln.com – 989-856-2281

- Controller Manuals
- Technical Specifications

See www.shopevenheat.com/shop-evenheat and filter by your kiln specification for a selection of genuine spare parts specific to your kiln. Send inquiries to info@evenheat-kiln.com or contact your distributor.

10 Warranty

LIMITED KILN WARRANTY

Evenheat Kiln, Inc. guarantees to the original purchaser that for a period of two full years from the date of purchase, the kiln will be free of defects in workmanship and materials when used under normal and proper operating conditions. Evenheat will replace or repair any defective part as specified below.

FOR THE WARRANTY TO BE EFFECTIVE THE PURCHASE MUST:

Provide written proof of date of purchase.

Notify the Evenheat Distributor/Dealer from whom the kiln was purchased, within 10 days after defect has been discovered.

Make kiln immediately available for inspection.

FOR WARRANTY REPAIRS:

Warranty repairs should be handled through the Distributor/Dealer from whom the kiln was purchased, who will arrange for any repairs or replacement of parts under the terms of this warranty upon receipt of the kiln (or defective part). Otherwise, the defective part may be returned (postage prepaid) to Evenheat Kiln, Inc. P.O. Box 399, 6949 Legion Drive Caseville, MI 48725. If, after factory examination, the original part is found to be defective, a new or repaired part will be shipped prepaid by Evenheat Kiln, Inc.

If the entire kiln is to be returned to the factory, all transportation costs will be borne by the purchaser. The purchaser should notify Evenheat Kiln, Inc. (989) 856-2281 prior to shipping. Evenheat will help advise the best shipping method and if it is necessary to return the entire kiln or only certain parts. Warranty work will be performed within 30 days after defective part is returned to the factory.

Evenheat Kiln, Inc. reserves the right, at its option, to replace the entire kiln or any part of it in order to fulfil its obligation under this warranty.

THIS WARRANTY DOES NOT COVER:

Freight damage, kilns altered in any way, abuse or neglect, moisture, improper storage or installation.

Kilns over fired (reaching temperature higher than the melting point of ware inside kiln) regardless of cause.

Kilns operated on incorrect voltage.

Improper electrical installation.

Kiln furniture other than Evenheat supplied.

Kilns used for purposes other than the firing of glass firing.

Kilns operated in excess of the temperature on the rating plate.

Damage to Property or personal injury that may occur from kilns that are fired on or near wood floors or combustibles.

Damage to property or personal injury that may occur from improper ventilation of the work area and building structure.

This warranty is in lieu of all other warranties, expressed, or implied.

Evenheat Kiln, Inc. neither assumes nor authorizes any Distributor/Dealer, Retailer or employee to assume for it any other obligations or liabilities in connection with Evenheat Kilns.

This warranty is limited as specified above and excludes incidental or consequential damages. Some states or providences do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

11 Basic Firing Guide

Basic Glass Firing Guide

We've included this Basic Glass Firing Guide to provide you with a general overview and simple discussion of typical glass firing. This guide is in no way the definitive answer to glass firing, far from it. We urge you to seek out various sources of knowledge such as books, seminars, formal training and the Internet.

Glass firing is not a "paint-by-numbers" proposition. While not difficult, it does require an fundamental understanding of the process. There are many types of glass firing. Among them are fusing, slumping, painting, casting and annealing. While they're all different, they do use many of the same firing steps. Once you get to know these basic steps, making changes and trying new things will happen with confidence.

The temperature controls we offer on our glass kilns do contain preset firing schedules for various glass firing techniques. While these preset programs can be helpful they may not give you the results you are looking for. We freely admit we were never a big fan of preset glass programs but offer them as a way to get you started in a particular direction. We recommend that you learn as much as you can and begin to create your own firing programs when you feel comfortable in doing so. We would call that full artistic control and is worth seeking out.

Please note that this guide assumes that you are using "compatible" glass. Glass expands and contracts at measurable rate when heated and cooled. For successful kiln work all glass must expand and contract at the same rate. Glasses are labeled with a COE number and only glasses with the same COE are considered compatible and may be used together. Doing otherwise will lead to frustration and breakage.

For this guide we will consider 4 firing steps: Initial Heating, Working or Process Temperature, Cooling Rate and Annealing.

Initial Heating

It's generally considered proper to heat the glass from room temperature up to 1000°F at a given rate of temperature increase. This is called Initial Heating. If heated too quickly the glass is at risk of breaking (thermal shock). If you have ever broken a cold drinking glass by running hot water over it you have seen thermal shock in action! Heating too slowly at this point really doesn't present problems other than increasing the total firing time.

How fast is fast enough? The answer to this question depends largely upon the total thickness of the glass. The thinner the glass, the faster it can be fired. Conversely, the thicker the glass the slower the rate of firing. Thicker glass takes longer to absorb heat which calls for a slower rate.

1/8" thick	600°F per hour
3/16" thick	525°F per hour
1/4" thick	250° to 450°F per hour
3/8" thick	250° to 375°F per hour
Casting Work	120°F per hour

Working Temperature

Once the glass is heated to 1000°F it can now go to the ultimate working or process temperature (temperature at which your fusing, slumping, casting, etc. takes place). What is the magic temperature and how fast do we need to go?

Let's talk temperature first. Slumping usually begins to takes place around 1200° to 1250°F. Fusing offers a range of effects from fuse-to-stick to full fuse, it's really wide open here depending upon the desired effect. Fuse-to-stick (just beginning to fuse) happens anywhere between 1220° and 1350°F. Full fuse (completely smooth) generally occurs around 1450° to 1520°F. Casting temperatures are generally slightly higher than fusing temperatures.

What about rate of temperature increase during this period? The answer varies considerably according to the glass manufacturers data. Bullseye suggests using the same rate as the Initial Heating Rate when slumping and a rate of 1000°F per hour when fusing. Uroboros gives a rate of 250°F regardless of the type of firing. Spectrum ranges anywhere between 650° and 2000°F depending upon the work. Sorry, no easy answer here. It should be noted that firing too slowly during this time may contribute to devitrification (a matte / scum looking finish on the final piece).

It's quite common to Hold or Soak the glass at the working temperature for a period of time. This process tends to equalize the temperature of the glass. It also allows the glass to continue to move (fuse, slump, etc.) in a uniform and slower fashion. To put it another way, soaking doesn't stop the action it slows it down. How much time to soak? Manufacturer data varies on this point as well, but anywhere between 5 and 15 minutes is a good start. When the precise effect is achieved simply stop the action by skipping ahead to the cooling portion of the firing (which does stop further action).

Cooling to Anneal

Once the glass has achieved the desired effect it's time to cool. Cooling prevents any further changes and takes the temperature down to the annealing point. At this point, cool as fast as possible down to the annealing temperature. This step is often referred to as the "crash cool" or "flash vent". What often takes place is that the lid of the kiln is opened and closed a few times to get rid of heat quickly. This is done until it reaches around 1100°F or so. Take

care to wear heat resistant gloves, eye protection and other protective clothing when flash venting. Hot gases will exit the kiln quickly and may cause burns.....so do this maneuver with great care and an understanding of what will happen when the lid is lifted.

It should be noted that the temperature of the kiln will begin to rise once the flash vent is completed. This is normal as the kiln and glass continue to release heat. This increase in temperature will not normally cause the glass to change, so rest easy.

Annealing

The process of firing introduces stress into the glass. If this stress is not relieved the finished glass will break at some point: either immediately or over time. The process of relieving this stress is called annealing. Each glass has a specific temperature at which annealing takes place. Bullseye and Spectrum use an anneal temperature of around 960°F with a soak time at this temperature of anywhere between 10 and 45 minutes for glass up to 3/8" thick. Uroboros takes a slightly different approach by cooling very slowly (20° to 60°F an hour) through the temperature range of 1000°F to 800°F.

Glass thickness is an important factor during the anneal portion of the firing. The thicker the glass the longer the soak or the slower the cooling.

Once annealing has been completed it is still necessary to allow the glass to cool to about 800°F at a rather slow rate. This tends to promote a more complete annealing. Rates vary from 60° to 250°F per hour. Again, glass thickness will determine this.

Programming Hints

We've explained the general process of firing glass with its temperature rates, temperatures and soak times. Now, how does the controller do all this?

First we need to explain a term known as Segment. A segment is a grouping of a rate of temperature increase (or decrease), the temperature you're going to and any soak time you need at that temperature. That's as tough as it gets. Your program will be made up of these segments. The control allows programming of multiple segments per firing.

Developing your program is actually a pen and paper operation first. Using the enclosed firing data from the glass manufacturers let's program the control for a 12" plate, 1/4" thick, full fuse. Here's our pen and paper take on this firing. For a step by step description of actual programming keystrokes please refer to the controller manual included with your kiln.

Segment 1 (Initial Heating)

450°F/hour
to 1000°F
0 soak time

Segment 2 (Working Temperature)

1000°F/hour
to 1500°F
10 minute soak time

Segment 3 (Cooling to Anneal and Anneal)

9999°F/hour or Full*
to 960°F
30 minute soak

Segment 4 (Cool Down)

210°F/hour
to 750°F
0 soak time