



**Cub-fuser
Instruction Manual**

2022

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Instructions

 **MADE IN
BRITAIN**[®]



Thank you for choosing to purchase a Cub-Fuser or Cub-fuser-D kiln for your glasswork.

We hope you will have many years happy use out of your kiln.

These kilns underwent a huge amount of research and testing in order to make them, what we believe, two of the most robust and reliable kilns in the world.

Please read this manual fully to get to know your kiln before use.

Index

Page	2	Safety notices.
	3	For your records.
	4	Where to site your kiln. Optional stand.
	5	Electrical connection. Initial firing.
	6	Initial firing.
	7	Operation.
	9	Damaged brick, element replacement.
	11	KCR32C Instructions.
	15	Trouble shooting.
	16	Contact us.
	17	Your notes.
	20	CE Certificate

Safety notices

Your Cub-fuser is designed and built to meet all European Directives and British Standards. However, as with all kilns, there are certain measures that you must take to achieve optimum safety.



European Declaration of Conformity.

Kilncare Limited, The Kiln Works, 907 Leek New Road, Baddeley Green, Stoke on Trent, Staffordshire, United Kingdom, ST2 7HQ.

We declare that the equipment described below was manufactured ourselves to comply with directives listed.

We do not give any assurance that the equipment is suitable for any purpose other than that listed below and must be operated and maintained in accordance with our operating instructions.

Products.

Cub-fuser kiln.
Cub-fuser-D kiln.

Directives.

LVD - Low Voltage Directive 2006/95/EC.

EMC - Electromagnetic Compatibility Directive 2004/108/EC#

##The equipment is intended for use only in premises having a service current capacity of 100 A per phase, supplied from a distribution network having a nominal voltage of 400/230 V, The user should determine in consultation with the supply authority, if necessary, that the service current capacity at the interface point is sufficient for the equipment.

Harmonized Standards.

BS EN 1088:1995+A2:2008, BS EN 55014-1:2006, BS EN 55014-2:1997.

Description.

General Glass Kiln.

Purpose of use.

Glass fusing, slumping and colouring up to the maximum temperature stated on the kiln data plate.

Product serial number.

As per affixed data plate.

Manufacture year.

2022

Technical documentation is held for this product.

Lee Sherwin,
Director,

The floor or bench must be capable of carrying the weight of the kiln. The Cub-fuser does have air clearance under it and so there should be no need to protect the bench top, however, if your firings are to be prolonged then it is advisable to sit the kiln on a heat resistant material.

Consideration must also be given to the ceiling area above the kiln as heat will radiate upwards from the kiln.

IMPORTANT. The top of the lid and the sides of the Cub-fuser will see high temperatures, so careful consideration must be given to siting with regard to the safety of children and pets.

It is advised that the kiln is left untouched until the kiln has finished its given program and fully cooled.

Remember, whilst the kiln is cooling it may be possible that the external case temperature actually increases.

Do not site the kiln outside.

It is advised to site the kiln in a room that has ventilation.

The floor or the bench that the kiln is to be sited on should be as flat as possible. If there is a twist or unevenness in the surface it can cause the kiln lid to sit slightly to one side or the other. Although this will have no damaging effect to the kiln, it can cause the lid catch to be difficult to operate as it may then be out of line.

Optional Stand

If you have chosen the optional stand it will have been delivered with the kiln in "flat pack" guise.

You will have 2 x shelves, 4 x legs, 1 x KCR32C mounting bracket, 32 pins and 32 locking nuts.

Note that the fixing holes in one of the shelves are wider apart than in the other. The shelf with the wider holes is the top shelf.

For best results in achieving the flattest possible stand for the kiln, we recommend that the stand is positioned in its final position with all of the pins located and the locking nuts only "pinch" tightened.

Next, place the kiln onto the stand. The fact that the pins are not fully tightened will allow the weight of the kiln to level the stand.

Once the kiln is in its final position the locking nuts can be fully tightened.

If the KCR32C bracket is to be used, it mounts using the top 2 pins in the right

Notes

A crackling noise can be heard when the kiln is firing.

This will be a loose connection and needs to be fixed immediately by a competent person.

Continued use will almost result in the connection failing.

The door catch doesn't line up

Check the surface that the kiln is sitting on. It is almost certain that it is uneven or twisted.

Level the surface or relocate the kiln and the catch will line up.

Damaged lid seal

There are no repairs available for a damaged lid seal. If glow from the inside of the kiln is not visible whilst the kiln is firing it is unlikely that the work will see any ill effects.

If the inside of the kiln is clearly visible when the kiln is at temperature then you may need to return the lid or hole kiln to Kilncare for relining.

Back up

We pride ourselves on our back up and after sales service and so in the unlikely event of any problems please do not hesitate to call our staff for friendly help and advise.

Contact us at

Kilncare Ltd,
The Kiln Works,
907 Leek New Road,
Baddeley Green,
Stoke on Trent,
Staffordshire,
United Kingdom
ST2 7HQ,

Tel +44 1782 535915,/ 535338

E-mail sales@kilncare.co.uk,

Web www.kilncare.co.uk

hand side leg (looking from the front).

KCR32C mounting bracket when attached to stand mount bracket.



Electrical connection

The Cub-fuser comes fitted with a 13 amp plug top fitted. It is designed to work from standard 230v socket outlets.

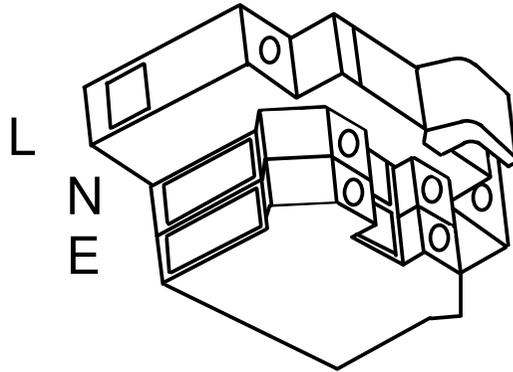
It is not advisable to use the kiln from an extension lead.

The electrical supply MUST have a sound earth connection. It is advisable to have your chosen socket outlet tested by a qualified electrician prior to use to ensure its sound condition.

The Cub-fuser-D is a 4.5 kw unit and can be connected to a suitable 230v supply as in diagram 1.4 The electrical supply MUST have a sound earth connection.

It is advisable to have your Cub-fuser-D connected to the electrical supply by a qualified electrician.

Figure 1.4



KILNS AND R.C.D. "TRIPS"

Due to the nature of kilns and to the insulation material properties, a certain amount of leakage to earth will probably be evident, therefore the fitting of a 30ma R.C.D. in the circuit can create a fault condition at low temperatures if the kiln is damp, at higher temperatures as the kiln insulation heats up, when first fired or used after a long period of inactivity.

This problem is relatively rare but can be solved by the fitting of a 100ma R.C.D.

Consult us or a fully qualified electrician for advise.

Initial firing

Before using the kiln it is advisable to fire the kiln empty to a temperature of 600 degrees centigrade at a rate of around 85 degrees per hour.

Program 23 is pre-set for this firing. Consult the KCR32C instructions later in this manual.

On the first firings, a slight odour will be emitted, this is the remnants of binding resins in the boards and should stop after two or three firings depending on temperature of the firings.

There may also be the appearance of smoke coming from the panels on the side of the lid. This the resins burning out from the end of the quartz element tubes and should be gone within a firing or two.

Kiln trouble shooting

KCR32C has no lights

Check that the isolator that the kiln is plugged into/connected to is turned on.

Check the KCR32C is turned on via its power switch on the top of the KCR32C

With the kiln unplugged/disconnected, check the control plug attached to the KCR32C is correctly inserted into the control socket at the rear of the kiln and that it is secured with the socket clamp.

If the above appear correct contact Kilncare.

KCR32C is working correctly, is showing that the kiln is receiving power but the kiln is not heating up and orange light is not illuminating.

With the kiln unplugged, check the control plug attached to the KCR32C is correctly inserted into the control socket at the rear of the kiln and that it is secured with the socket clamp.

Is the lid safety switch operating correctly? Inside the right hand lid element panel there is a tilt switch which shuts off as the lid opens. The lid has to be in the closed position before the tilt switch will allow the elements to heat.

If the above appear correct contact Kilncare.

KCR32C is working correctly, is showing that the kiln is receiving power but the kiln is not heating up even though the orange light is illuminating.

A kiln element problem. Either the kiln has lost an element or there is a faulty connection on an element.

Contact Kilncare.

KCR32C shows an ERROR message.

Consult the KCR32C manual and contact Kilncare.

A crackling noise can be heard when the kiln is firing.

This will be a loose connection and needs to be fixed immediately by a competent person.

Continued use will almost result in the connection failing.

The door catch doesn't line up

Check the surface that the kiln is sitting on. It is almost certain that it is uneven or twisted.

Level the surface or relocate the kiln and the catch will line up.

Prog No.	Program Description	Seg 1 Ramp Rate C/Hr	Seg 1 Soak Temp C	Seg 1 Soak Time Hr. mins	Seg 1 Ramp Rate C/Hr	Seg 2 Ramp Rate C/Hr	Seg 2 Soak Temp C	Seg 2 Soak Time Hr. mins	Seg 3 Ramp Rate C/Hr	Seg 3 Soak Temp C	Seg 3 Soak Time Hr. mins	Seg 4 Ramp Rate C/Hr	Seg 4 Soak Temp C	Seg 4 Soak Time Hr. mins	Seg 5 Ramp Rate C/Hr
1	4-6mm Float Glass Fuse	150	538	00:10	FULL	840	00:20	FULL	FULL	538	00:45	182	427	00:15	END
2	4-6mm Float Glass Slump	150	538	00:00	200	700	00:20	FULL	FULL	538	00:15	182	427	00:00	END
3	6mm Bullseye Fuse	222	677	00:30	333	795	00:10	FULL	FULL	482	01:00	83	371	00:01	END
4	6mm Bullseye Slump	167	640	00:10	FULL	482	01:00	56	FULL	371	00:01	END			
5	6mm System 96 Fuse	200	500	00:20	FULL	804	00:12	FULL	FULL	540	00:40	150	510	00:20	END
6	6mm System 96 Slump	155	704	00:00	FULL	540	00:30	FULL	FULL	510	00:10	26	371	00:00	END
7	Bottle Firing Cycle	170	510	00:00	250	780	00:10	FULL	FULL	510	00:00	70	400	00:30	END
8	Low Stain	200	570	00:10	FULL	516	00:30	100	FULL	300	00:00	END			
9	High Stain	200	665	00:10	FULL	550	00:20	FULL	FULL	516	00:30	100	300	00:00	END

For this initial firing we recommend that the kiln is in a well ventilated area. We suggest that prior to the initial firing, that you use this instruction manual and the controller manual to ensure you are familiar with all aspects of the kiln and usage of the KCR32C

Control
The KCR32C controller supplied with this kiln has already been set and the characteristics of the kiln have been entered in to it.

The kiln and the KCR32C will have already been put through a test firing at the factory.

Please read the instructions on control before starting to use your Cub-fuser.

The controller plugs into the kiln at the socket at the rear right hand side of the kiln. It will only plug in one way.

Once fitted close the clamp to ensure sound connection.

The small blue stand supplied in your Cub-fuser is for the KCR16. It can be used to sit the controller at a convenient angle on a bench top or to mount the controller to an adjacent wall using the fixing holes in the rear of the stand.

Operation

The front vent
The kiln can be fired with the vent closed totally. If there is a concern that the item to be fired may be a little damp then it is advisable to leave the vent open until a temperature of around 550c is reached.

However, the vent is best used for releasing moisture as described above or for cooling.

If the vent is to be used for viewing the process during the firing then eye protection must be worn.

Loading

Load the kiln with the glass items that are to be fired.

Remember glass will stick to the bricks so a separating medium must be used. This can take many forms including fibre paper or a refractory batt (shelf) covered with batt wash.

It is not necessary that a kiln shelf is used and the work can be placed straight on the kiln floor if a separator is used, such as a fibre paper etc to keep the glass from sticking to the kiln floor bricks when hot.

If a kiln shelf is to be used, it does not need to be raised from the kiln floor and the batt does not need to have a separator between itself and the kiln floor bricks.

The glass will need a separator between itself and the batt for the same reasons as it need to be separated from the brick.

The kiln bricks do not need to be painted with battwash, just protect the area where the glass can touch with a separator.

Once the kiln has been loaded with the glass to be fired, lower the lid and clamp shut the clasp to ensure the lid seal remains tight throughout the firing.

Enter the firing cycle and start the KCR32C

What to expect on the initial firing

Once the KCR32C has been started and after a slight delay a red dot will appear on the controller display and a quiet click will be heard from the kiln. This is the relay of the kiln turning the kiln power on.

This click will be heard to click on and off at various points through the cycle as the KCR32C regulates the kiln temperature.

As mentioned on previous pages, a slight odour will be released and the insulation binders burn out.

Looking after your kiln

REMEMBER, the kiln is for stained glass applications, fusing and slumping. IT IS NOT A MOULD DRYER.

Moulds used for slumping can contain a huge amount of water, it is recommended that the mould is thoroughly dried prior to insertion in the kiln.

The kiln will operate with a wet mould in it but the kiln was not designed to expel large quantities of water vapour from its chamber. Continued use of wet moulds in the kiln chamber could result in premature deterioration of the kiln structure.

beeps will be heard.

This temperature will be held indefinitely or until the pause button is pressed again. When the pause is stopped the kiln will continue through the program from where it was paused. Again a confirmation beep will be heard.

To forward a program

At any time the controller can be made to skip to the next segment. To do this, press and hold the "up" key for 4 seconds. This can be useful if the pause button has been used. It may be that at the end of the manual pause you do not require the kiln to finish the rest of that section and so the program can be moved on to the next section or end using this key.

To view entered program data

This can be done whether the kiln is firing or not. Press the "step key", each press will forward the display to the next section.

To alter program data while the kiln is firing

Press the "step" key until the desired value is displayed. Alter it using the "up" or "down" keys.

Example program

If you require the kiln to start a 7am, fire as fast as it can to 800c then hold for 10 hours. It would be programmed like so. We will presume that it is being programmed at 5pm the evening before. We will make this program 4.

Press "step". Use "up" or "down" to select "Pr 4" in the main display.
Press "step". Use "up" or "down" keys to enter "FULL" for ramp rate.
Press "step". Use "up" or "down" keys to enter "800" for temperature.
Press "step". Use "up" or "down" keys to select a dwell time of "10.00" hours.
Press "step" Use "up" or "down" keys to enter "END" for ramp rate.
Press "start" Use "up" or "down" keys to select a delay time of "14.00" hours.
Main display will show "14.00" with a flashing dot as the time counts down.
After 14 hours the kiln will start.

For more detailed KCR32C instructions consult the KCR32C manual supplied separately.

Press "step". The main display will show a temperature, for instance "85", "FULL" or "END". The segment display will now show "2", this is segment 2. The ramp light will illuminate above the main display.

This segment is how fast you would like the kiln to reach its second temperature.

At this point, if the kiln is required to finish, press the "down" key until "END" is shown in the top display. End is below 0000 on the main display.

All the above is segment 1 and the start of segment 2, the controller has 9 segments and so for more complicated firings carry on as above by setting the next time, temperature and dwell.

When you have programmed all you require, select "END" at the start of the following segment.

After a few seconds the display will time out and show the kiln temperature.

To run a program

Press "step" the main display will show "Pr" and the program number. Use the "up" or "down" keys to select the program number required.

Press "start" and the main display will show a time, for instance "00.10" or "PASS". The segment display will show "1" and the time light above the main display will illuminate.

Delay is the time in hours and minutes before the kiln will actually start. Set the desired time using the "up" and the "down" keys. If no delay is required hold the down key until the display shows "PASS". Pass is below 0.00. The kiln starts automatically after a few seconds if no time is entered.

If a delay has been set the main display will act as a count down timer showing the hours and minutes remaining before the kiln starts to fire. A flashing dot in the main display will indicate the timer is running.

As the kiln fires the main display will show the kiln temperature and the segment display will show the segment number. If the kiln is climbing, the upward facing ramp triangle will illuminate, the downward facing triangle will illuminate on a cooling ramp and when the kiln is holding temperature both will illuminate.

To stop a program

Press "start/stop".

To pause a program

Press and hold the "down" button. The top display will alternate between the current temperature and "Paused". As the program pauses two confirmation

Care must be taken not to load the kiln to a height that will result in the elements being closed on to the load. This invariably results in broken element tubes.

When shutting the kiln lid, gentle operation will also prevent accidents.

Depending on use, it is advisable to check all electrical connections are tight every 6 months or so and that no cables are discolouring due to heat.

Damaged Brick replacement

In the event of an accident during loading or an unfortunate mishap during the firing, the bricks of the bed are fully replaceable.

To remove a brick, simply loosen it by hand and lift clear. You may need to dig a screwdriver into the brick to aid the lift.

Ensure that the remaining hole is clear of any left behind pieces of brick then slide in the new one. The kiln can then be used immediately.

Remember, always wear a dust mask and carry out work in a well ventilated area when repairing or replacing refractory items that have been previously fired.

Element Replacement.

In the event of an element failure, replacement is easily done.

Firstly, unplug the kiln from the electrical supply or ensure that the electrical supply is safely off, then unscrew the two side cover boxes that cover the element connections and let them hinge downwards.

It is now possible to replace the elements with the side boxes in the lowered position and still attached to the kiln lid. If the cover boxes do need to be removed take extreme care so as to not let the power cables pull at the element tubes.

Determine which element has blown, (for this a circuit tester may be required). There are three elements in the Cub-fuser-D, each element consists of a pair of tubes.

Disconnect both ends of the elements from their porcelain connector blocks and remove the two collars from the two tube ends.

Now slide out the element and both tubes out as one.

IMPORTANT. For this step it is strongly advised that the room is ventilated and

that a suitable P3 standard respiratory mask is used.

Never handle the element tubes with bare hands, use the disposable gloves provided. From the left hand side of the kiln slide in the new element.

Take care and be gentle, even though the tubes have a high strength once in position, they can be chipped or crack if handled carelessly.

Insert the element into the kiln in the same manner that the last one came out.

Once the element is through both sides of the case then level up the element and tubes so that the element which is visible through the tube is sitting central in the roof space with the gap between the element and the fibre wall of the lid being the same on both sides.

Before connection it is worth checking on the non-connection side of the kiln lid that the element has stayed fully inserted into the tube, if not then apply gentle pressure to the element where it links the two tubes together and ease the element back to its fully inserted position in the tube.

Slide on the two collars then reconnect the element tails to each porcelain block as before.

Again take care to hold the porcelain connector block steady as you re-connect to avoid cracking the end of the tube.

Re-fit both side cover boxes ensuring that any wires present are clear of the protruding element tubes and connector blocks.

A slight odour will be emitted during the first firing as the element burns out binders in the element seal compound.

There is no need to “bed” the elements in. The kiln can be fired immediately.

KCR32C instructions

On power up controller will go into test mode then after a few seconds will settle down and show kiln temperature in the top display.

Before starting, make sure that only the top display is illuminated, if any other lights are lit press the “start” key to extinguish them.

Buttons index

Start / stop 

Step 

Up 

Down 

Pause Hold  for 4 seconds. To un-pause hold again for 4 seconds.

Energy used  and  when not in programming mode.

To set a program

The KCR32C has 32 settable programs. Each program has 32 segments.

Press the “step” key. The main display shows the program number, for instance “Pr 1”. The segment display shows “1”. Use the “up” or “down” keys to select the program required.

Press “step”. The main display will show a ramp rate, for instance “85”, “FULL” or “END”. The segment display will show “1”, this is segment 1. The ramp light will illuminate above the main display.

This segment is how fast you would like the kiln to reach its first temperature in degrees centigrade per hour.

A slow firing might require the first temperature to be reached “50” degrees per hour. Whilst a fast firing would be set to reach temperature as quickly as possible so the rate required would be “FULL”. “FULL” is above “1000” on the display.

Press “step”. The main display will show a temperature for instance “600”. The segment display will still show “1” and the temperature light will illuminate above the main display. This temperature is in Celsius.

This temperature is your first temperature. Use the “up” or “down” keys to select.

Press “step”. The main display will show a time, for instance “0.30” or “PASS”. The segment display will show “1” and the time light above the main display will illuminate. Dwell is the time in hours and minutes that you require the kiln to hold the first temperature.