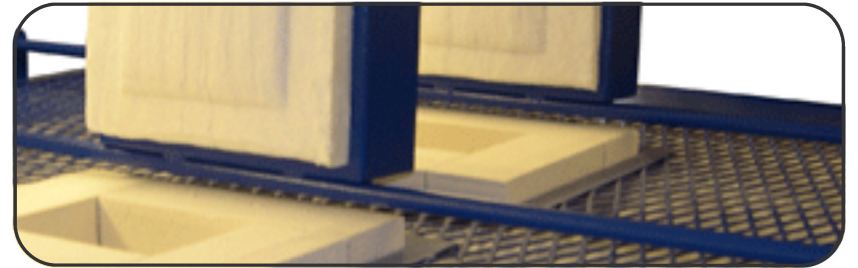**Trojan Range
Instruction manual.**

2022

KILNcare

Trojan Range Instructions

KILNcare

Thank you for choosing to purchase one of the Trojan range of kilns for your glass work.

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

The Trojan range is very much a tried and tested formula. One that has seen this range of kilns provide reliable service in both educational and studio use for over 3 decades.

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

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Safety notices

Your Trojan 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.

Electricity
The Trojan range meets all Electrical Safety Directives, including a door safety interlock switch. However, the kilns are electric and as such certain measures should be taken.

Keep the kiln dry.

CE   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.
Trojan range of kilns.

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.
Glass casting kiln

Purpose of use.
For the firing of glass items to the maximum temperature shown..

Product serial number.
As per affixed data plate.

Manufacture year.
2022

Technical documentation is held for this product.

Lee Sherwin,
Director,

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Never attempt to remove any of the kiln covers or do any repair work when the kiln is plugged into a mains electricity socket or with the isolator turned on.

Never use the kiln if external cables are damaged.

Have the kiln tested by a competent person at least every 12 months.

Hot Surfaces
The kiln will have hot surfaces. Do not touch the kiln when it has been on for any period of time as the case temperatures will rise with time.

Keep pets clear at all times.

Keep the kiln clear of flammable items such as curtains etc.

Your new arrival

For your records
Date of purchase. _____

Company purchased from _____

First date of use _____

Unpacking your kiln
Once unpacked please show consideration to the environment when disposing of your kiln packaging.

Where to install your kiln
Position the kiln allowing a minimum of 30cm clearance around both sides. The kiln casing will get hot and so any combustible material must be kept at a safe distance. Never leave combustible materials on the kiln or touching the kiln during a firing.

Do not site the kiln close to flammable items such as curtains etc.

The floor must be capable of carrying the weight of the kiln.
Consideration must also be given to the ceiling area above the kiln as heat will radiate upwards from the kiln.
Also there will be high temperatures vented through the roof chimney if it is used to cool the kiln especially. For this reason we recommend a minimum of 800mm clearance between the lid of the kiln and the room ceiling.
If in any doubt use a vented canopy or some other form of heat protection for the room ceiling.

IMPORTANT. It is advised that the kiln is left untouched until the kiln has finished it's given program and fully cooled. Remember, whilst the kiln is cooling it may be possible that the external case temperature actually increases.

KEEP PETS AND CHILDREN AWAY FROM THE KILN DURING ITS FULL CYCLE AND UNTIL COOL.

Do not site the kiln outside.

It is advised to site the kiln in a room that has ventilation.
After the first couple of firings there is almost no emissions from the kiln but there will always be vapour etc released by whatever you are firing in the kiln, especially stains so room ventilation is always advisable.
The type of room venting required depends on many factors and so it is best to contact a ventilation specialist if in any doubt.

Electrical connection
Trojan kilns will require connection to a suitable electrical supply.

If the kiln is to be used on a 3-phase supply a neutral must also be supplied.

The electrical supply MUST have a sound earth connection.

The terminals are for use with cable of a size up to 10mm.

REMEMBER that if the kiln is then re-connected to a 3-phase supply then this link MUST be removed. The black and green terminals are for Neutral and Protective Earth respectively.
As always we recommend that the connections are done by a qualified electrician.

KILNS AND R.C.D. "TRIPS"
On initial testing, the kiln may show a low insulation resistance reading, this is normal and will improve as the kiln dries. Kilns are porous by nature and will absorb moisture from the atmosphere, especial if the kiln is new or has had a period of inactivity.

Due to the reasons stated above and to 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

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R.C.D.
Consult us or a fully qualified electrician for advise.

Connecting the controller
The controller supplied with your kiln will be fitted with a connecting plug. It will mate to a matching socket fitted to the lower rear of the kiln.
The socket is sided and so will only allow the plug to be inserted in the correct manner.

Once the plug is inserted lock it into place using the securing clamp.
Always ensure the mains power to the kiln is turned off before fitting or removing the plug.

Initial firing

Before using the kiln it is advisable to fire the kiln empty to a temperature of 800 degrees centigrade at a rate of around 100 degrees per hour.
Leave the top vent open.
This will dry and "settle" the kiln.

Also if you have purchased the kilns furniture set with the kiln it is advisable to load the furniture into the kiln for drying. The kiln furniture will have been cut with a wet cutter and invariably contains a large amount of water.
Load the kiln furniture using the props supplied to allow air space between the batts.

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

We also recommend that the kiln controller is set to fire the kiln at full power to a low temperature and then end, say 50 degrees, whilst being monitored to ensure that it is switching off the kiln and that no problems have occurred during transport.
At such low temperatures the kiln will overshoot the set point temperature by some amount.
This is normal as the controller is set to full and not a controlled rate of climb.
It may also cause the controller to show an Error message or code, again, this is normal as the controller may believe that the overshoot is caused by the kiln having a fault.

This test is to ensure that the controller shuts the kiln power off, whether it be due to the correct temperature being reached or by it going into fault mode.

Control

The 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 controller will have already been put through a test firing at the factory.
Please read the instructions on control before starting to use your Trojan kiln.

Operation

The vents

Trojan kilns have a door vent, which is manual and most useful as a spy hole and motorised roof vents which will do the real work automatically.
The main principle of the roof vents is to release moisture from the kiln while it is firing, to release vapours from glazes or colours and to aid in cooling of the kiln.

It is advised to have the roof vents open when releasing moisture and vapours or when requiring the kiln to cool quickly but have them closed during the high temperature of the firing to enable the kiln to remain efficient or to be closed during periods of the cycle when temperature uniformity in the kiln chamber is required..

For colour vapour release, the vents will be closed after the colour has finished releasing.

For cooling, the vents can be opened at any point after the final temperature has been reached. At this point it may be of advantage to open the front / side vents also to increase cooling. However, when and how the vents are opened for cooling is very much a preference action.
After removing hot bungs take care use heat resistant clothes and clothing and to sit the hot bungs on a suitable, non combustible surface in an area that is away from children and pets.

Closing the door

Gentle operation of the door will ensure less shock to the kiln brickwork.

The kiln is fitted with toggle clamps then they are preset at the factory.
Close the door and lift/press the handle section of the clamp until it hits the door locator then apply more pressure until the clamp locks closed..
If over time the door seal compounds slightly it may be that the clamps need adjusting to maintain a good seal.

Continued use will almost certainly result in the connection failing.

Kiln is not reaching temperature or is slow.
This could be either an element failure, a burnt connection a loss of supplied power or a component failure.
Get the kiln checked by a competent kiln engineer.

Cracks in the kiln brickwork.
Minor cracking is to be expected, see page 10 of this manual.

Roof vents not opening. (Optional Automatic Roof Vents)
Check the event has been properly programmed with the event light lit in the sections where you want the vents to be closed.

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

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

Trouble shooting

Control has no lights
If the "mains on" light is not illuminated on the kiln :-
Check that the mains isolator is turned on.

With the kiln turned off, check the cable from the kiln to the
controller for damage.

Check the mains fuses.

Check the condition of the mains cabling and the mains isolator/socket.

If the "mains on" light is illuminated:-
Check that the black switch on the underside of the controller is "on".

Check that the controller is securely plugged into the kiln.

With the mains turned off, a competent person should be used to check the
condition of the two glass 1 amp fuses in the rear of the kiln.

If the above appear correct contact Kilncare.

**The control is working correctly, is showing that the kiln is
receiving power but the kiln is not heating up.**
With the kiln turned off, check the cable from the kiln to the controller for
damage.

Check that the controller is securely plugged into the kiln.

With the mains turned off, a competent person should be used to check the
condition of the internal wiring and electrical contact points.
If there is no obvious damage, then the kiln will need to be checked over with an
electrical meter.

Check that the lid limit switch at the rear of the kiln is still securely fitted.
A competent person should check the heat fuse, which is situated with the element connection panel on the side of the kiln lid.

Controller shows an ERROR message.
Consult the controller 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.

This is done with two correctly sized spanners. Release the nuts on the toggle
clamp plunger pin, close the door and adjust the plunger pin until it applies a
gentle pressure to the door when it is in the closed position.
Do no over adjust as this will make the clamp difficult to operate and will apply
unwanted pressure to the door.
To adjust the toggle clamp it does not need to be removed from the kiln body

The Interlock
On all Trojan kilns a captive style interlock is used to protect the user from
electric shock.
After the door is closed and the clamps set, engage the interlock into its slot in
the kiln front plate.
The interlock key is rectangular in will only fit in the correct way.
To turn the interlock on, turn 90 degrees clockwise, to disengage turn 90
degrees anti-clockwise. This movement is spring assisted and requires only
slight effort. Once it starts to turn it will engage fully with the help of its internal
spring,
**DO NOT FORCE THE INTERLOCK ONCE ITS FINAL POSITION IS
REACHED.** The interlock will not be "any more on" but you may damage the
internal mechanism.

Loading

Before loading the kiln it is advisable to turn the kiln off at the mains supply,
event though your safety is ensured by the door interlock switch.

You may have purchased the kiln with a kiln furniture set or you may be using
your existing furniture.
The primary consideration when stacking kiln furniture is stability.
How you load the shelves is very much a matter of preferance.
How and where you place your ware will also be very much a matter of
preference.
If the kiln is supplied with half batts, i.e. two shelves per layer, you may find that
3 props will be suffice or you may be happier using a prop in each corner.
There is not fixed way of loading kiln furniture, the important thing is that the
batt has adequate support.

When loading the kiln furniture be careful, remember, the batts are harder than
the brick wall of the kiln and in our experience a large proportion of kiln wall
damage is caused by careless kiln furniture loading.

For obvious reasons, care must always be taken when loading larger objects
into deeper kilns to avoid back strain.

What to expect on the initial firing

Once the interlock has been engaged and the power turned on the red "mains on" light on the kiln should illuminate and the controller should illuminate.
If there is no display on the controller at this point check that the on-off button on the controller is in the "on" position (where fitted).
Once the controller has been programmed and started a click will be heard, this initial click will be the safety relay being energised and putting the kiln into a ready state.
Once the controller is ready a second or second series of click will be heard and the orange "heat on" light will illuminate. This click and the orange light will simultaneously go on and off as the controller operates the kiln.
The kiln is now firing, ensure that the door clamps are fully closed and that the vent plugs are in or out as required. (or lid dampers in the required position).

As mentioned earlier, initially there may be resin odours from the kiln.

Kiln brickwork cracking.
After the initial firing small or hairline cracks may appear at various points in the kiln brickwork and possibly again at the first higher temperatures. This is normal and is due to expansion and contraction of the kiln bricks. After only a few firings the cracking will stop.
Please don't hesitate to call of if you have any concerns about this.

Looking after your kiln

A large contributing factor to element failure is often that debris from general kiln use starts to clog up the grooves that the elements sit in causing them to overheat.
Periodically clean out these grooves and remove the dust and debris.
This can be done by brushing gently with a suitable brush or by using a filtered vacuum cleaner.
REMEMBER. After the first few firing the elements become less supple and so when cleaning the grooves be gentle with the elements and try not to disturb them too much.
As always when working with refractory materials, wear protective clothing and use a suitable dust mask.

If an element starts to "curl" out of the groove it can be saved but the earlier you try the better the result.
Heat around the area that is starting to curl out with a gas gun and, once the element is orange, ease it back into position with a heat resistant tool.
This repair can result in burns if care is not taken and so if in doubt, contact a recognised kiln engineer.

Example program
If you require the kiln to start a 7am, fire as fast as it can to 800c with the dampers open, then hold for 10 hours with the dampers closed. 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 4 in the top display.
Press "step" Use "up" or "down" keys to select a delay time of "14.00" hours.
Press "step". Use "up" or "down" keys to enter "FULL" for ramp rate.
Press "fn" and "step" to select damper closed, green light illuminated.
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 "fn" and "step" to select damper open, green light extinguished.

Press "start" twice. Top display will flash program number then"14.00" with a flashing dot. The bottom window will show"- -" and the delay triangle will flash.

The firing cycle has now begun and the kiln will start to heat in 14 hours.

GATEway

Full instructions on WIFI access to the Kilncare GATEway are in the separate GATEway instruction manual provided with your Trojan.

will go blank.
Press "start" again and the top display will briefly display the Program number then it will begin the program. Depending on the program contents the delay triangle or the ramp triangle will flash and the segment number will be displayed in the bottom display.
If a delay has been set the delay triangle will flash and the top display will act as a count down timer showing the hours and minutes remaining before the kiln starts to fire.
As the kiln fires the top display will show the kiln temperature and the bottom display will show the segment number. If the kiln is climbing the upward facing ramp triangle will flash. When the kiln is holding temperature the dwell light will flash.

To stop a program
Press "start".

To pause a program
Press and hold the "Function" key then press the "Pause" key.
The top display will alternate between the current temperature and
" - - ". This temperature will be held indefinitely or until the pause key is pressed again. A warning reminder will be sounded every 10 seconds during the pause. When the pause is stopped the kiln will continue through the program from where it was paused.

To forward a program
 At any time the controller can be made to skip to the next segment. To do this, hold the "Function" key and press "advance". This can be useful if the pause button is used.

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. Once viewed, press the "start" key once to return the control display to kiln temperature.

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. Press the "start" key once and the new value will be stored and the kiln will continue to fire.

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

It is advisable to have the kiln periodically checked by a qualified person to ensure all electrical components are in a healthy condition.

Safety contactor circuit

All kilns are fitted with a safety contactor and KCX electronic policeman unit as secondary back up against any failure or incorrect setting of the controller.
This is an electronic monitoring system within the kiln and is preset at 1050c.
If the KCX triggers you will here and audible beeping and the kiln will cease to fire and will result in an error message appearing on the controller.

The KCX is only reset by powering down the kiln and waiting 20 seconds before reapplying the power.

Kiln control instructions

For full instructions for the controller supplied with your kiln consult the separate instruction manual supplied with the controller.

The power switch for the KCR335C WIFI is located on the under side of the controller.

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.

Trojan kilns are designed to be multi-zone controlled.
This is handled internally by the controller and requires no further input from the user.
The zones, generally three, each have their own thermocouple. As the kiln fires it is not unusual for one zone to creep slightly hotter or to remain a little cooler than the other zones. The controller will not allow this to happen and will compensate by applying extra power, or reducing power to the zones that require action. This can mean that there will be sometimes be multiple clicks from the kiln as the controller makes the adjustments.

Buttons index

Start / stop ▶ ⬛

Step ▷

Back ◁

Up △

Down ▽

Function **Fn**

Advance **Fn and** △

Pause **Fn and** ▽

Event **Fn and** ▷

Information **Fn and** *i*

To set a program
If whilst in programming mode no buttons are pressed for a few seconds the controller will time out and go back to kiln display.
The KCR535C WIFI has 32 settable programs. Each program has 32 segments.

Press the step key. The top display shows the program number, for instance 1 . The bottom display shows "Pn". Use the up or the down keys to select the program required.

Press "step" again and the top display will show a time, for instance "0.10" or "PASS". The bottom display will show " - - " and the delay triangle will light.
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.

Press "step". Top display will show a ramp rate, for instance "85", "FULL" or "END". The bottom display will show 1, this is segment 1. This segment is how fast you would like the kiln to reach its first temperature in degrees 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".

If the roof vents are required to be closed during this first ramp, hold the Function key and press the Event key. The event light should illuminate to show the roof vents will be closed. When the event light is not illuminated the dampers will remain open.

Press "step" and the top display will show a temperature for instance "600". The bottom display will still show 1 and a light will illuminate above temperature. This temperature is in Celsius. This temperature is your first temperature. Use the "up" or "down" keys to select the desired temperature.
Press "step". The top display will show a time, for instance "0.30" or "PASS". The bottom display, again will show "1" and the triangle above dwell will illuminate. Dwell is the time in hours and minutes that you require the kiln to hold the first temperature.

Again, choose by holding the Function Key and pressing the Event key whether your roof vents will be open or closed during this soak period.
Press "step". Top display will show a time, for instance "85", "FULL" or "END". The bottom display will show 2, this is segment 2. . This segment is how fast you would like the kiln to reach its second temperature.

Again, choose by holding the Function Key and pressing the Event key whether your roof vents will be open or closed during this ramp period.
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 00.
All the above is segment 1, the controller has 32 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.
Press "start" and the controller will display kiln temperature again.

To run a program
Press "step" bottom display will show "Pn" and the top display will show the program number. Use the "up" or "down" keys to select the program number required.

Press "start" the top display will show kiln temperature and the bottom display