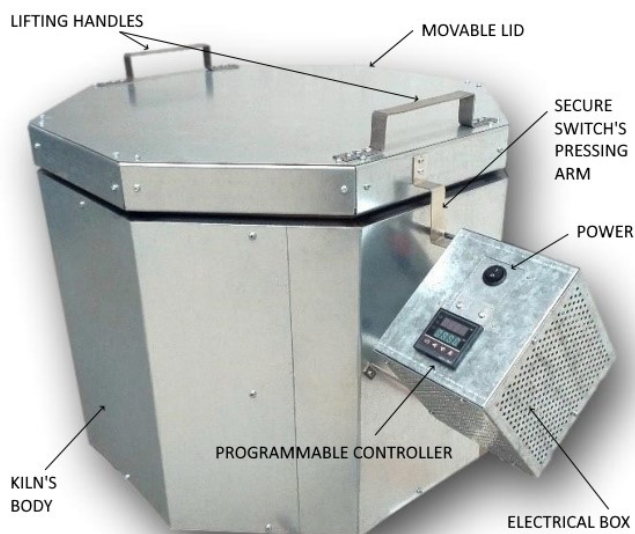


## RO-45L TOP-LOADING PROGRAMMABLE ELECTRIC MUFFLE KILN USER MANUAL

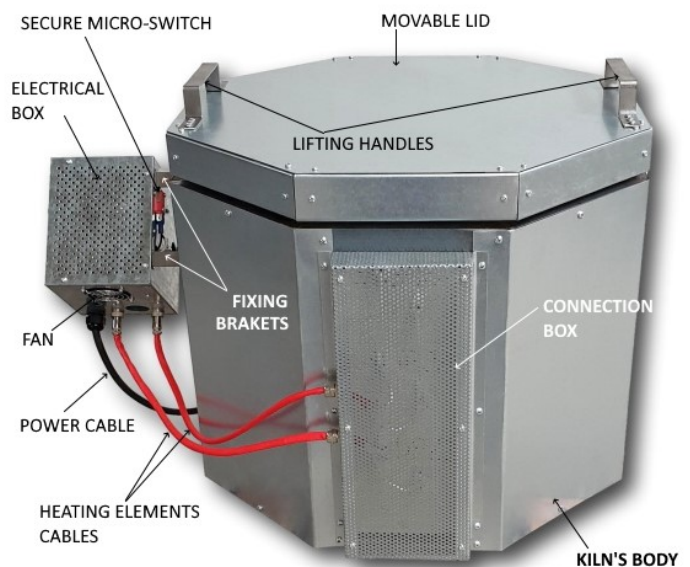
### PRODUCT INTRODUCTION:

THIS RO-45L (1,240°C/2,264°F) TOP-LOADING ELECTRIC MUFFLE KILN WITH A 32-SEGMENT (TEMPERATURE/TIME STEPS) PROGRAMMABLE TEMPERATURE CONTROLLER AND 45 CUBIC LITRE CHAMBER HAS BEEN SPECIFICALLY DESIGNED TO WORK WITH MANY TYPES OF MATERIALS INCLUDING: GLASS, PORCELAIN, CERAMICS, CLAYS, ENAMELS, GLAZES AND OTHER MATERIALS WITH FIRING TEMPERATURES OF UP TO 1,240°C/2,264°F. THE CHAMBER IS HEATED UNIFORMLY BY THE THREE HEATING ELEMENTS LOCATED AROUND THE KILN'S WALLS. THE KILN'S PROGRAMMABLE CONTROLLER HAS A DIGITAL OVER/UNDER-TEMPERATURE SAFETY SYSTEM FOR MAINTAINING A SINGLE TEMPERATURE DURING THE ENTIRE SOAKING PROCESS. IT ALSO HAS A SMOOTHING CIRCUIT TO CORRECTLY READ AND STABILISE ELECTRICITY FLUCTUATIONS, WHICH IS ESSENTIAL FOR MOST FIRING PROCESSES. EASY-TO-USE ONLINE TECHNICAL SUPPORT, FREE FOR ONE YEAR, COVERS RE-SETTING AND RE-PROGRAMMING.

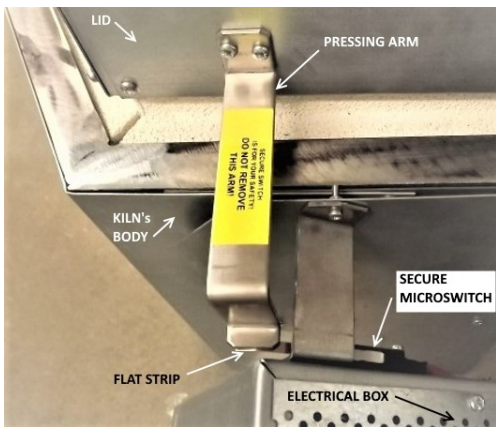
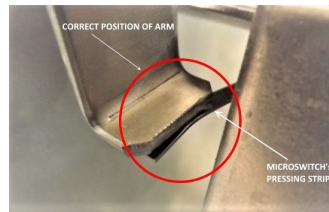
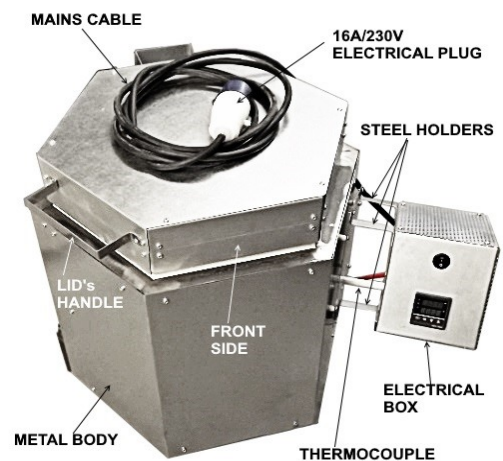
**Pic. 1 FRONT VIEW:**



**Pic. 2 BACK VIEW:**

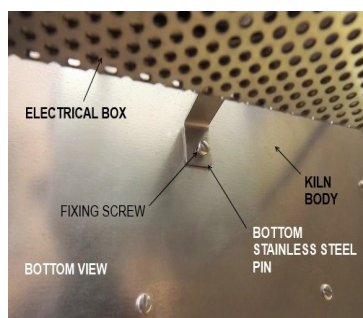
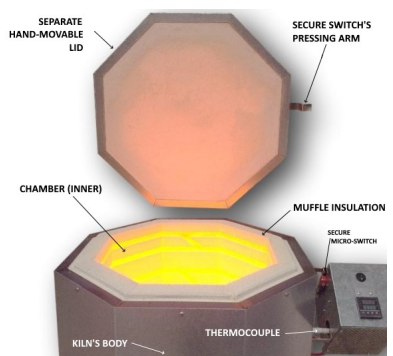


|                                               |                                      |                                                        |                                                        |
|-----------------------------------------------|--------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| MODEL:                                        | RO-45L                               | CALIBRATION:                                           | YES, C-class                                           |
| INPUT (ON REQUEST):                           | 230 V +/-10% 50-60 Hz                | SOAKING PROCESS ACCURACY:                              | +/- 1°C                                                |
| POWER:                                        | 5.700 WATT                           | DOOR TYPE:                                             | TOP-LOADING                                            |
| CONNECTION TYPE:<br>(SINGLE PHASE, 32A FUSE)  | 220-240 V, SINGLE PHASE,<br>32A FUSE | HEATING ELEMENT TYPE:                                  | 3 HEATING ELEMENTS<br>AROUND CHAMBER                   |
| ESTIMATED HEATING TIME<br>TO 1,240°C:         | 300 MINUTES                          | ESTIMATED MAXIMUM HEATING<br>TEMPERATURE:              | 1,240°C/2,264°F                                        |
| CONTROLLER TYPE:                              | PROGRAMMABLE, 32-STEP<br>(SEGMENTS)  | CHAMBER DIMENSIONS MM<br>(INCH):                       | 400 (diameter) x 340 (h)<br>(16" (diameter) x 13" (h)) |
| MAX. CONTINUOUS WORK-<br>ING TIME AT 1,240°C: | 20 MINS                              | KILN DIMENSIONS MM (INCH):<br>(WITHOUT ELECTRICAL BOX) | 560 (w) X 560 (d) X 500 (h)<br>(22" x 22" x 20")       |
| CONTINUOUS WORKING<br>TIME BELOW 1,000°C:     | 12 HOURS                             | WEIGHT (NET):<br>WEIGHT (ON PALLET)):                  | 45 KG<br>60 KG                                         |

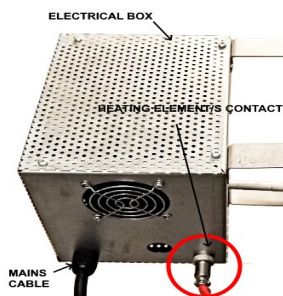
**Pic. 3 SECURE SWITCH MECHANISM:****LID:****Pic. 3a****Pic. 4 FRONT VIEW:****PREPARATION:**

Please remember that this kiln weighs about 45 kg and physical damages are NOT under warranty — you may need some help lifting the kiln and moving it to your workshop.

- Please only put this kiln on a heat-resistant worktop such as a metal stand, stones or ceramic tiles. Please note that the worktop should be very stable and be able to hold up to 50 kg of weight in total, for your safety.
- Now remove the kiln's lid and, if your kiln delivered disassembled, CAREFULLY take out all the accessories and packing materials from the chamber. Please do not lift the electrical box from the chamber using the ceramic stick (thermocouple) you can see attached to the inside of it (Pic 5).
- Now start to assemble the kiln by attaching the electrical box (Pic. 2) to the kiln's body. To do this:

**Pic. 5:****Pic. 6:****Pic. 7**

- ◆ Take the electrical box with 3 stainless steel brackets (holders) and mains cable out of the kiln's chamber. This electrical box usually already has the K-thermocouple (ceramic stick - Pic. 5) installed.
- ◆ Attach the electrical box to the right side of your kiln using three screws (supplied) as shown in Pics. 5 and 6.

**Pic. 8**

- ◆ Now, connect all your kiln's heating elements (two RED cables) to the back side of the electrical box with programmer using the two-part metallic cable gland circled in Pic. 8. To do this:

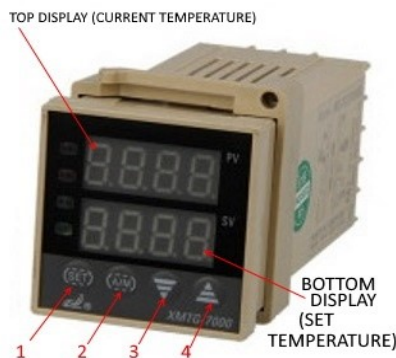
Using its metallic connector, pull the RED cable (Pic. 2) from the back side of your kiln and connect it to a special terminal on the back side of the electrical box (Pic. 7). **IMPORTANT:** please ensure that you have inserted and fixed this aviation cable gland to its terminal properly using the circle nut. This is important for ensuring good contact between the kiln's power supply and its heating elements. **You can connect any red cable to any socket.**

When everything is assembled, please attach the safety switch's pressing arm (Pics. 3 and 3a) to the lid (using two screws supplied) - this is for your own safety. Before starting your work, please ensure that this arm properly presses down onto the flat strip of the secure switch fixed on the internal side of the electrical box (see Pics. 3 and 3a).

**Now your kiln is fully assembled. Insert your desired firing item(s) into the kiln's chamber, close the lid, turn your kiln ON by pressing the ON-OFF switch (on the front panel of the electrical box), input the required setting into the programmable temperature controller and start your work.**

## **TEMPERATURE CONTROLLER FOR RH-16L MODEL (HOW TO PROGRAM):**

The programmable temperature controller (XMTG-7000) has already been set up for chamber drying by the manufacturer (if you have not requested a different setting). If you want to re-program this controller, please refer to the controller's user manual or contact us for FREE help on Skype. Below are some useful tips for using this controller:



1. *"SET" – setting/confirmation button (used for setting all of the controller's parameters).*
2. *"Arrow Left" or "A/M" – segment selector (to choose from four segments).*
3. *"Arrow Down" – decrease (used to set the required temperature).*
4. *"Arrow Up" – increase (used to set the required temperature).*

**Example program:** Increase from room temperature up to 450°C within 99 minutes, soak at 450°C for 4 minutes and then decrease to room temperature within 145 minutes.

### **Example instructions:**

1. Open your kiln's door to trigger the safety-switch mechanism, which will disconnect the power supply from the heating element (s) and prevent the kiln from heating up while you program the temperature controller. Alternatively, simply press button 4 for 3 seconds until you see "STOP" on the bottom display. Now you can start programming your controller.
  2. Each of the following steps consists of first setting the temperature and then setting the time period in which the NEXT temperature should be reached. There are 32 available input slots each consisting of a pair of temperature and time inputs, i.e. there are a total of 32 temperature inputs alternating with 32 time inputs. To start programming, short-press the 'SET' button.
  3. After you have pressed the 'SET' button, you have to set the kiln's starting temperature ("C1" on the top display line). In this case, input the desired temperature (usually 1°C), i.e. "0001", into the BOTTOM display line using buttons 2, 3 and 4. Now press 'SET' to confirm this initial temperature ("Starting point") and to proceed to the next input ("Γ1"). This input is the required TIME to reach the NEXT required temperature. For this example, insert "0099" (99 minutes) into the BOTTOM display, and then press 'SET' again to set this input and to proceed to the next step.
  4. The next step begins by setting the second required temperature ("C2"). To set this, insert "0450" (450°C) into the bottom display. Next, press 'SET' again to proceed to the next input ("Γ2"), where you will set the required time to the NEXT temperature. In this case, this is our soaking time of 4 minutes - "0004". Press 'SET' again to confirm this time and to proceed to the next step.
  5. The next step begins by setting the third required temperature ("C3"), in this case the required soaking temperature. Enter "0450" (450°C) into the bottom display again. Next press 'SET' once more to proceed to the next time input ("Γ3"), which in this case will be 145 minutes. Input "0145" into the bottom display, then press 'SET' again.
  6. For the next step, set the fourth and final required temperature ("C4") – "0020" (20°C or room temp.).
  7. To indicate the end of the program, press the 'SET' button again, insert "0000" into the bottom display and press the 'SET' button once more. Your program will automatically finish when it reaches this last input.
- A. When you have finished programming the controller, short-press the 'SET' button or simply leave the controller for about 30 seconds for the new setting to be remembered and for your job to start.
- B. Close the kiln door to disconnect the safety-switch mechanism, allowing your kiln to start heating up. Alternatively, if you pressed button 4 in step 1 above, now press button 3 for 3 seconds until the word "RUN" appears on the bottom display line.
- C. Important: you'll have about 20 seconds to change EACH temperature/time setting. Please do not worry if you take too much time and the controller resets and starts displaying the current temperature inside the chamber again. Simply restart the programming process by short-pressing the 'SET' button again. If you are a beginner and are having difficulty programming your controller, please feel free to contact the manufacturer or agent/shop for free help with this matter anytime during the warranty period.

## **SAFETY INSTRUCTIONS and USEFUL TIPS FOR BEGINNERS:**

- ⇒ When using the kiln for the first time, it must be heated up for approximately 90 minutes (factory setting) to allow any water to evaporate from the chamber. Please do not be alarmed if light smoke and/or a smell appears (when using the kiln for the FIRST time). This is normal for new kilns as any water, grease or oils burn out from the heating element(s), shelves, chamber and from inside the kiln. It should not happen again after the first time it is heated. If your kiln is used less than once a month then please repeat this process each time you use it.
- ⇒ Please also note that the temperature shown on the controller is the temperature around the thermocouple inside the kiln's chamber. You may have to wait up to two hours for the inside of your kiln to heat up fully and reach the same temperature everywhere inside the chamber.
- ⇒ The lid of this kiln should be lifted with gloves and placed only on a fire-resist top like concrete or thick blocks (bricks).
- ⇒ To avoid electrical shocks when working inside the chamber never disconnect the secure switch on the electrical box and/or remove the pressing arm for this secure switch, which is fixed to the lid. This safety system (arm + switch) will disconnect your power supply from your kiln's heating elements when the lid is open or has not been properly closed.
- ⇒ To avoid problems with heating elements that are not under warranty - please make sure that the object(s) and/or accessories don't touch the heating element(s) when the lid is closed when you place or lift object(s) into or out of the chamber.
- ⇒ It is always better to conduct some tests on a small quantity of firing material that you plan to use before you start your work.
- ⇒ Using this kiln at temperatures higher than 1,240°C/2,264°F or for longer than 20 minutes at these temperatures may cause problems with heating element(s) and/or with the kiln's metal body that are NOT under warranty.
- ⇒ This kiln must be positioned on a level surface that will not be damaged by heat and/or weight. A masonry or concrete floor is recommended, but other protective materials like metal or ceramic (tiles) sheet may be used. For an additional charge, this kiln can be also supplied with a metal stand for placing on a heat-resistant worktop.
- ⇒ Always make sure that the lid is closed properly in order to reach the highest possible temperatures inside the chamber. Only open/close the lid with gloves on.
- ⇒ Always use heat-resistant gloves for removing or inserting firing object(s) from/into the chamber.
- ⇒ This kiln should be kept away from all inflammable materials and other heating devices.
- ⇒ When opening the lid at temperatures higher than 200°C (392°F), always keep as much distance as possible between you and the hot chamber. Please also wear dark glasses to avoid problems with your eyes.
- ⇒ This kiln can reach high temperatures – never leave it unattended when it is in use.
- ⇒ Never touch the kiln's metal body, lid handle or top of the lid without gloves on as these can burn your hands.
- ⇒ **KEEP OUT OF REACH OF CHILDREN.**
- ⇒ Please disconnect the kiln from the power supply when it is not in use.

**DANGER: This is a very hot piece of electrical equipment: always follow any applicable health and safety rules and regulations for electrical equipment and hot work in your country.**