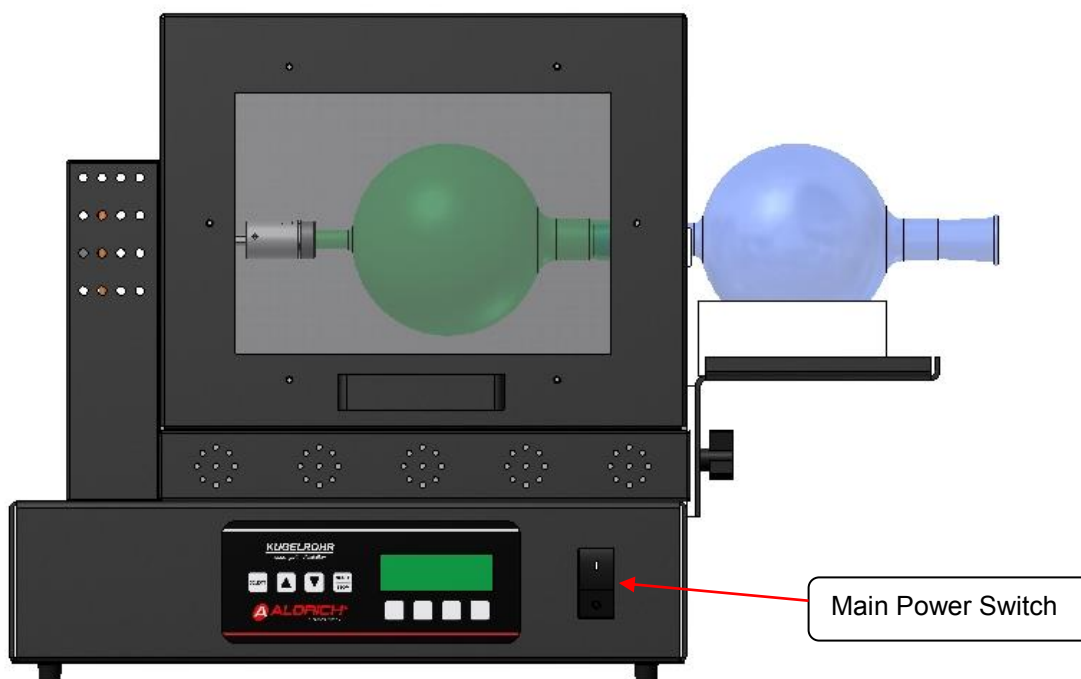


## OPERATING AND SAFETY INSTRUCTIONS for Aldrich Kugelrohr

**Model #'s:** Z683477, 10.0A, 120V, 60 Hz  
Z683485, 8.0A, 240V, 50/60 Hz, with CEE/7 plug  
Z683493, 8.0A, 240V, 50/60 Hz, with UK plug



### General Description: Distills the most difficult materials!

- Distills heat-sensitive compounds
- Distills liquids and low-melting solids from polymers and tars
- Removes color and particulates
- Distills with minimal holdup and sample loss
- Can be used for sublimation/solvent evaporation

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## Intended Use:

- Distillable product is placed in the load (oven) flask (25 mL to 2000 mL and 1/3 full) in the heated air-bath. Controlled temperatures to 220°C are possible with the control system.
- Distillate collects in the horizontally adjacent receiving flask/s outside the air bath.
- The load (oven) flask and receiving flask/s are turned by the oscillating motor drive to speed distillation, ensure heating and prevent bumping.
- Vacuum tubing connects the receiving flask/s.
- A vacuum trap between the receiving flask/s and vacuum source is highly recommended.

## General Usage:

Do not use this product for any purpose other than its intended usage.



## Warnings:

1. This unit is not explosion proof.
2. Use caution when using with volatile materials.
3. Keep area well ventilated.
4. Do not immerse or allow unit to become wet.
5. Do not put any samples or liquid directly into the oven chamber. All chemicals must be in a glass flask.
6. Do not cover the oven with insulation pads or materials.
7. Use only properly grounded outlets to avoid shocks.
8. Do not attempt to modify or repair this unit. For repairs contact your local Sigma-Aldrich representative.
9. Space unit at least 12" from walls, 48" from ceilings and 12" between other apparatus.
10. Always wear safety glass and other appropriate protection when operating this equipment
11. Not for industrial use. The Kugelrohr is designed for use in laboratory environments using safe laboratory practices.
12. Keep oven chamber clean. Use a non-abrasive cleaner. Spills may damage the oven, heater or thermocouple. Unplug the unit and remove spills promptly. Should the oven chamber or internal parts become damaged by etching or corrosion, contact your Sigma-Aldrich representative.

## Specifications:

Accuracy: This is dependent on the set point temperature. See table below for these tolerances. Temperatures listed below depict the on-screen temperature.

| Set Point Temp<br>(Degrees C) | Duty Cycle<br>(%) | Temp Range<br>On Screen<br>(Degrees C) |
|-------------------------------|-------------------|--|
| 60                            | 40                | +/- 4                                  |
| 80                            | 45                | +/- 4                                  |
| 100                           | 45                | +/- 4                                  |
| 120                           | 45                | +/- 6                                  |
| 150                           | 50                | +/- 8                                  |
| 180                           | 55                | +/- 10                                 |

Power: 120/240 VAC +/-10%, 50/60Hz. +/- 3%

Heaters: 750 watt

Operating Environment: 32 to 104 °F / 0 to 40 °C; 0 to 90% RH, non-condensing.

Size: 25 in. wide (included cooling tray) x 11 in. deep x 18 in. tall (30 in. tall with door open)

Rotation: The load (oven) and receiver flask/s rotate approximately 270° each direction

### Air Bath Oven

Aluminum/Steel inner lined

Grounded heating element

Detachable power cord, on/off power switch, PTFE bearing for flask

Hinged door

Maximum temperature of 220° C

Safety over-temperature limit

Membrane Overlay Control: Time, Rotation, Vacuum and Temperature

Accommodates flask sizes 25ml to 2L

**Warning Labels Defined:**

Indicates a Hot Surface.



Indicates Caution

**Directives:**

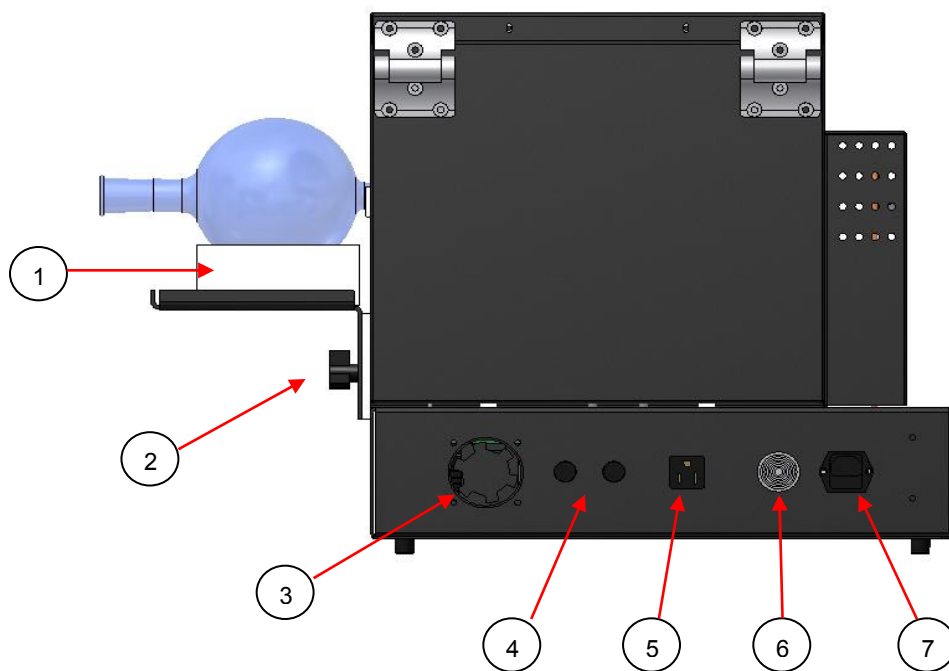
Application of Council Directive(s)

204/108/EC

2006/95/EC using EN61010-1

**Spare Parts:**

**Please visit our website for replacement Kugelrohr glassware and accessories: [www.aldrich.com/kugelrohr](http://www.aldrich.com/kugelrohr)**



**Figure 1: Back View of Kugelrohr System**

| Number | Description  |
|--------|--|
| 1      | Cooling Tray   |
| 2      | Adjustable Tray Knobs                                |
| 3      | Cooling Fan  |
| 4      | Fuses: Heater 7.5 A, Vac 2.5 A                       |
| 5      | Vacuum pump output voltage                           |
| 6      | Alarm  |
| 7      | Power input with fuses: 10.0 A (120V)<br>8.0A (240V) |



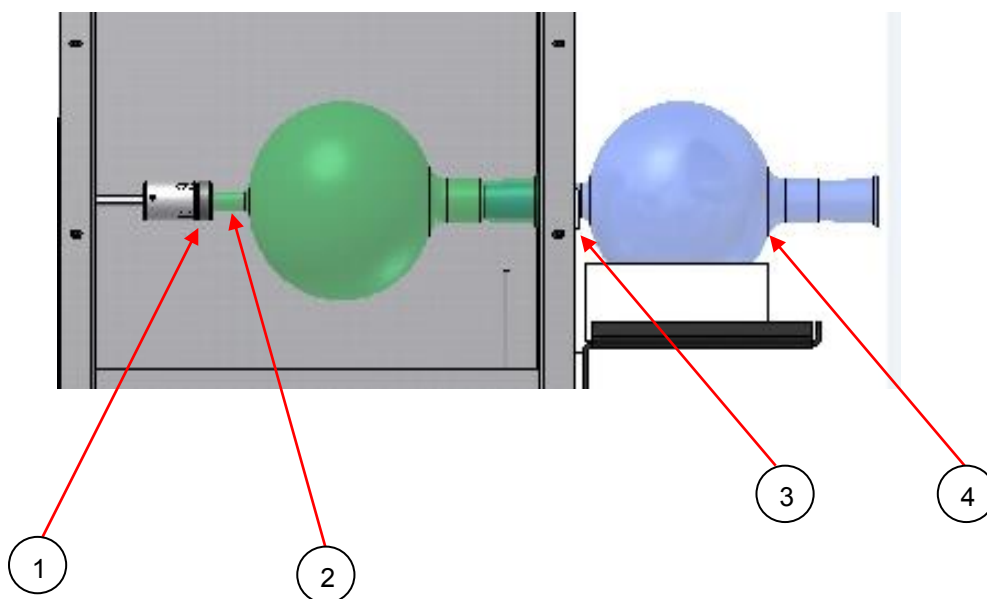
### Set-Up:

Plug the power cord from the control into a grounded outlet. The power switch for the control is located on the front of the unit. **Place unit at least 12 in. from walls, 48 in. from ceilings and 12 in. between other apparatus.**

Install the round bottom load flask (oven) assembly with content to be distilled and not exceeding 1/3 of the volume of the flask. Place the stem on the load flask into the flask-drive device and tighten the knurled nut. There is a removable silicone gland in the Drive Flask assembly that will grip the Load flask stem during operation.

Place the receiving flask ground joint section thru the hole on the right side of the oven and secure to the load flask. It may be necessary to adjust the PTFE bearing on the outside of the oven where the receiving flask resides to assure proper alignment. Next install the straight tube adaptor to the receiving flask and attach vacuum line. If controlling the vacuum through the Kugelrohr system, plug the vacuum pump to the outlet receptacle on the back of the system as shown in Figure 1.

The unit is now ready for operation.



**Figure 2: Flask Connection and Setup**

| Number | Description  |
|--------|--|
| 1      | Flask-drive device with knurled tightening nut & thumb nut |
| 2      | Load (oven) flask stem                                     |
| 3      | PTFE adjustable bearing (large & small)                    |
| 4      | Receiver flask   |

## Operating the Unit:

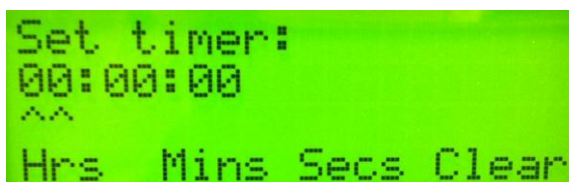
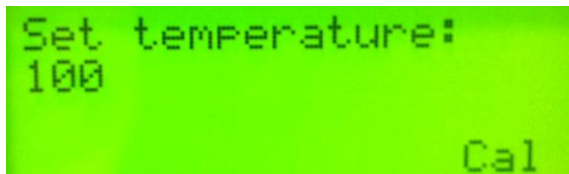
To set the operating temperature, press up and down arrow keys to the desired temperature setting. Maximum temperature of the system is 220° C. The system will not start heating unit the **HEAT** key is pressed. The control is factory set and cannot exceed the maximum temperature limit. **TIME**, **VACUUM** and **ROTATION** functions will not start until the corresponding Function key is pressed. Pressing a Function key again stops that function. Function status is displayed on the screen as either **Off** or **On**.

**Figure 3: Display Showing Main Screen**



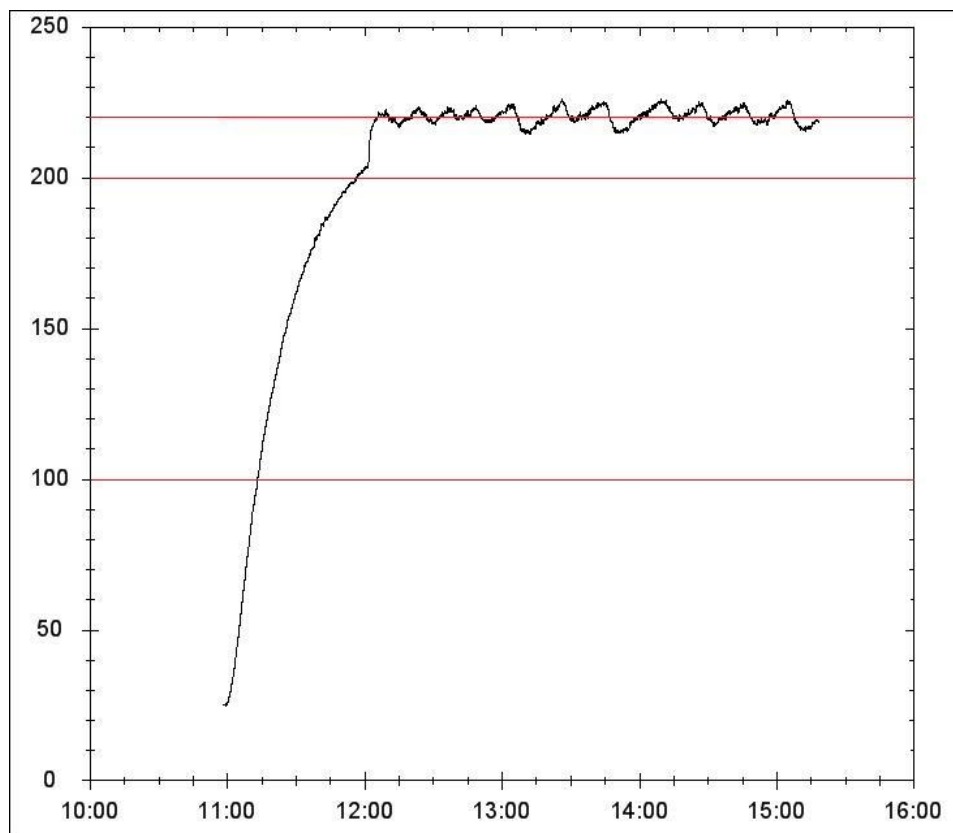
**Pressing any of these Function Keys will start or stop that function:  
Time, Vacuum, Heat or Rotation**

Pressing the **Select** key will show the screen to the right. On this screen you can change the set-point temperature by pressing the up/down arrow keys. Pressing the **Select** key again will display the timer screen and allow input in Hours, Minutes or Seconds up to 48 hours. Pressing the **Select** key will bring you back to the main screen. **When using a timer function, once the time counts down to zero, all functions will be turned off.**



If the temperature is not reading the set point raise the duty cycle by going into the Cal menu. You can get to the cal menu, as seen in the screen picture above, by going into the main menu with the select button. Then you will press the button on the far right of the button panel with no writing on it, directly under the text. The duty cycle will be the first option in this menu. The table in the accuracy section of the specifications gives the suggested starting point at each temperature. **YOU SHOULD NOT CHANGE ANY OTHER SETTINGS IN THIS MENU. IT WILL THROW OFF YOUR TEMPERATURE READING.**

### Typical Heat-Up Times:



Ambient to 100°C: Approximately 20 minutes

Ambient to 200°C: Approximately 45 minutes

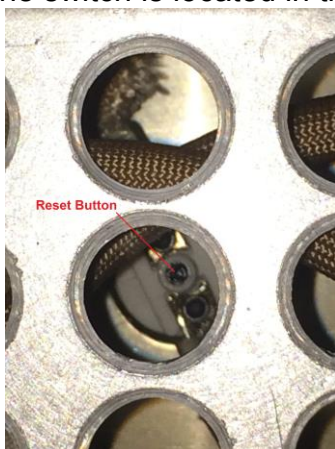
Ambient to 220°C: Approximately 60 minutes

**Note:** Temperature was recorded with oven sensor.

## Reset Temperature Limit Switch:

If the oven has exceeded the safe operating temperature, inside the oven, the safety switch will automatically go to the open position. When the switch changes to the open position it will cause the oven to not heat. After the oven has cooled to room temperature, the switch needs to be reset to the closed position for the oven to return to normal operations. Follow these steps:

1. Remove the main input power from the oven.
2. Open oven door and let the oven cool to room temperature if oven has been in operation.
3. The switch is located in the back left corner, under the heat plate.



4. Use a pencil or something similar to press the button down into the closed position. Very little force needs to be applied to the button when pressing it down. If excess force is applied to the reset button it could cause catastrophic damage to the temperature limit switch.
5. Connect input power to the oven and turn heat on to validate that oven is heating.

## Maintenance:

Aldrich Kugelrohr does not require regularly scheduled maintenance. However, regular inspection is recommended. The unit should be protected from chemical spillage, mechanical damage and corrosive atmospheres **as much** as possible. Contamination, overheating and general misuse will greatly reduce the life of the block heater. Disconnect power before performing any inspections.





## **Limited Warranty:**

Aldrich warrants products of its manufacture to be free from defects in material and workmanship for one year and agrees to repair or replace without charge any products found defective upon examination at the factory. With proper care and operation, Aldrich products will give long and efficient service. Chemical spillage, overloading and general misuse will greatly reduce the service life. Aldrich is not responsible for damage to apparatus due to improper installation or through attempts to operate the apparatus beyond its rated capacity, intentional or otherwise.

## **Limitations of Warranties :**

APART FROM SUCH WRITTEN STATEMENT OF WARRANTY, THERE ARE NO WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCTS ON THE FACE HEREOF.

Aldrich products are intended only for legal and legitimate purposes in commercial laboratory and industrial settings.

Aldrich reserves the right to make product refinements without prior notice.

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**SIGMA-ALDRICH Inc. P.O. 14508, St. Louis, MO 63178 USA 317-771-5750**  
**SIGMA-ALDRICH CHEMIE GmbH P.O. 1120, 89552 Steinheim, Germany 49-7329-970**