



Intelligent Hotplate Stirrer

Model Series YR02937

## Instruction Manual

Thank you very much for purchasing our Kalstein's Intelligent New model Hot Plate Stirrer Model YR02937

Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the "Warranty" at a hand place for future reference.



Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.



OUR SERVICES

## Benefits and Support

In Kalstein France, we take care of the full satisfaction of our customers, that is why we provide value-added services of the highest level based on our experience.



### Online Inductions and Trainings

In any part of the world, receive your induction or training from our specialized team of engineers



### Quick Response

Our work team is always available to response all your consults or questions, in order to support you in any situation.



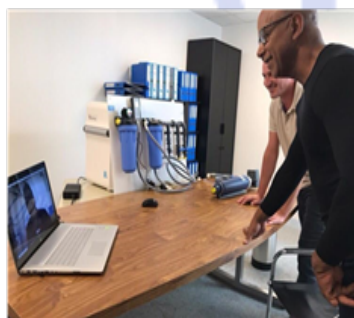
### #Letsgivemore

Thanks to your purchase, a donation will be made to a non-profit foundation that fights against breast cancer and helps most vulnerable communities.



### Technical Support

Enjoy of personalized advice for the correct preventive and corrective maintenance of your equipment, thanks to Kalstein's manuals and articles, special catalogues and video tutorials.



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## INSTALLATION

Upon receiving the Hotplate-Stirrer, check to ensure that no damage has occurred in shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage the carrier must be notified immediately.

After unpacking, place Hotplate-Stirrer on a level bench or table, away from explosive vapors. Ensure that the surface on which the unit is placed will withstand typical heat produced by the unit and place the unit a minimum of 30 cm from vertical surfaces. Always place the unit on a sturdy work surface.

The Hotplate-Stirrer can be plugged into a properly grounded outlet. The 110V unit plugs into a 110-volt, 50/60 Hz source. The 220V unit plugs into a 220-volt, 50/60 Hz source.

## MAINTENANCE & SERVICING

Hotplate-Stirrer is built for long, trouble-free, dependable service. It needs no user maintenance beyond keeping the surfaces clean. The unit should be given the care normally required for any electrical appliance.

Avoid wetting or unnecessary exposure to fumes. Spills should be removed promptly after the unit has cooled down. Do not use a cleaning agent or solvent on the front panel or top plate which is abrasive or harmful to plastics, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning.

## INTENDED USE

These Hotplate-Stirrers are intended for general laboratory use.

## ENVIRONMENTAL CONDITIONS

**Operating Conditions:** Indoor use only.

Temperature: 5 to 40°C (41 to 104°F)

Humidity: 20% to 80% relative humidity, non-condensing

Altitude: 0 to 6,562 ft (2000 M) above sea level

**Non-Operating Storage:**

Temperature: -20 to 65°C (-4 to 149°F)

Humidity: 20% to 80% relative humidity, non-condensing

## SAFETY INSTRUCTIONS

Please read the entire instruction manual before operating Hotplate-Stirrer.

**WARNING! DO NOT** use the Hotplate-Stirrer in a hazardous atmosphere.

or with hazardous materials for which the unit was not designed. Also, the user should be.

aware that the protection provided by the equipment may be impaired if used with accessories not provided or recommended by the manufacturer or used in a manner not.

specified by the manufacturer. Always operate unit on a level surface for best performance and maximum safety.

**DO NOT** lift unit by the top plate.

**CAUTION!** To avoid electrical shock, completely cut off power to the unit by disconnecting.

the power cord from the unit or unplug from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing. Spills should be removed promptly after the unit has cooled down.

**DO NOT** immerse the unit for cleaning. Alkalis spills, hydrofluoric acid or phosphoric acid spills may damage the unit and lead to thermal failure.

**CAUTION!** The top plate can reach 350°C, **DO NOT** touch the heated surface. Use

caution always. Keep the unit away from explosive vapors and clear of papers, drapery and other flammable materials. Keep the power cord away from the heater plate.

**DO NOT** operate the unit at high temperatures without a vessel/sample on the top plate.

**WARNING!** Units are **NOT** explosion proof. Use caution when heating volatile materials.

**DO NOT** operate the unit if it shows signs of electrical or mechanical damage. Earth

Ground - Protective Conductor Terminal Alternating Current

**Top plate dimensions (L x W):** 140 x 140mm

**Electrical (50/60 Hz):**

	<b>Hotplate</b>	<b>Stirrer</b>	<b>Hotplate-Stirrer</b>
220V:	450 watts	450 watts	450 watts

**Fuses:** 5mm x 20mm, 5-amp quick acting

**Temperature range:** ambient +5°C to 380°C

**Temperature stability:** +/-3%

**Speed range:** 100 to 1800rpm

**Speed stability:** +/-2%

**Capacity:** 50- 500mL, gross weight should not exceed 20lbs

**Controls:** see diagram

\* *Below 100°C +/-2°C. Environmental and sample conditions permitting.*

**NOTE:** *On all units, the Max. temperature setting on the display is*

*400°C for hot plate top*

#### **18X18cm HOTPLATE-STIRRER SPECIFICATIONS**

**Top plate dimensions (L x W):** 180 x 180mm

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#### **14X14cm HOTPLATE-STIRRER SPECIFICATIONS**

**Electrical (50/60 Hz):**

	<b>Hotplate</b>	<b>Stirrer</b>	<b>Hotplate-Stirrer</b>
220V:	550watts	550 watts	550 watts

**Fuses:** 5mm x 20mm, 5-amp quick acting

**Temperature range:** ambient +5°C to 380°C

**Temperature stability:** +/-3%

**Speed range:** 100 to 1800rpm

**Speed stability:** +/-2%

**Capacity:** 50- 2000mL, gross weight should not exceed 20lbs

**Controls:** see diagram

\* Below 100°C +/-2°C. Environmental and sample conditions permitting.

**NOTE:** On all units, the Max. temperature setting on the display is

*400°C for hot plate top*



**23X23cm HOTPLATE-STIRRER SPECIFICATIONS**

Top plate dimensions (L x W): 230 x 230mm

Electrical (50/60 Hz):

	Hotplate	Stirrer	Hotplate-Stirrer
220V:	750 watts	750 watts	750watts

Fuses: 5mm x 20mm, 5-amp quick acting

Temperature range: ambient +5°C to 380°C

Temperature stability: +/-3%

Speed range: 100 to 1800rpm

Speed stability: +/-2%

Capacity: 50- 10000mL, gross weight should not exceed 20lbs

Controls: see diagram

\* Below 100°C +/-2°C. Environmental and sample conditions permitting.

**NOTE: On all units, the Max. temperature setting on the display is**

**400°C for hot plate top**

**28X28cm HOTPLATE-STIRRER SPECIFICATIONS**

Top plate dimensions (L x W): 280 x 280mm

Electrical (50/60 Hz):

	Hotplate	Stirrer	Hotplate-Stirrer
220V:	1000 watts	1000 watts	1000 watts

Fuses: 5mm x 20mm, 5-amp quick acting

Temperature range: ambient +5°C to 380°C

Temperature stability: +/-3%

Speed range: 100 to 1800rpm

Speed stability: +/-2%

Capacity: 50- 13000mL, gross weight should not exceed 20lbs

Controls: see diagram

\* Below 100°C +/-2°C. Environmental and sample conditions permitting.

**NOTE: On all units, the Max. temperature setting on the display is**

**400°C for hot plate top**

## HEATING OPERATING INSTRUCTIONS

The Hotplates and Hotplate-Stirrers have a micro-processor-controlled heater that is designed to bring samples to temperature quickly and accurately.

### 1. Getting ready:

a. Fix the support rod into the screw hole (at the back of the instrument); Adjust the height of the cross clip and fasten the glassware tightly with clip .



b. Place a vessel with solution and the appropriate accessories in the center of the top plate. This is important because the vessel should be over the hottest part of the top plate.

c. Put the inner thermocouple on the machine.

### 2. Operating Instruction for Temperature Adjustment





- A. PV windows displays the measured temperature value of the plate.
- B. SV windows displays the settled temperature value.
- C. Heating Power Button
- D. R/min windows display the stir speed value.
- E. Set button: to set temperature value and stir speed.
- F. Self-tuning Button / Translocated button
- G. Reduce stir speed and temperature Button.
- H. Add Stir speed and temperature button.
- I. Stir Power knob.


**• Set Temperature adjustment**


a. Turn on the red color power button in the lateral (as the following photos).



PV windows display the ambient temperature, and SV display the settled temperature last time. (Notice: The hotplate stirrer can reach the settled temperature automatically, and stop working when the hotplate stirrer temperature is the same as the settled temperature if you don't set the temperature you need. And it can work automatically when the product temperature is lower than the settled temperature)

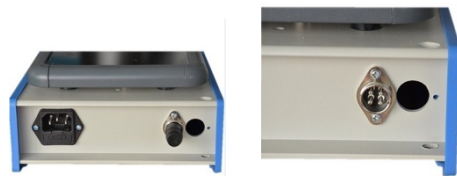
b. Press  or  to for more than 2 seconds quickly to set the temperature you required. The SV windows displays the changed value, PV windows display the ambient temperature. (Notice: the settled

temperature can be reached quickly, if you press  or  to for long time)

d. When press  self-tuning button 5 seconds, the hotplate stirrer temperature can be reached the settled temperature quickly.

**• Measured the liquid temperature adjustment**

a. Pull out the inner thermocouple at the back of the product by hand. The PV windows displays HHH, SV windows displays the settled temperature last time. (As following)



b. Connect the outer thermocouple 4 holes with the hotplate stirrer 4 spins.

PV windows display ambient temperature, and SV display the settled temperature.

c. Put another stainless-steel part of outer thermocouple into the liquid you measured.

PV windows display the changed temperature and SV display the settled temperature.

d. Burn out protection Function, when outer thermocouple disconnected, window display "hhh", green light off, hotplate stirrer stops working. When this occurred check it before using.

e. Pull out the outer thermocouple and put on the inner thermocouple again when you don't need to operate the temperature.

**• Stirring Speed Operation**



a. Press the knob.


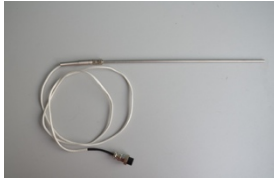

b. Turn the stir knob clockwise 30 rpm for one scale, stir speed range 100 to 1800rpm.

c. Speed adjustments can be made without interrupting stirring by turning the stir knob clockwise to increase speed, or counterclockwise to decrease speed.

d. To stop stirring, turn the stir knob to the off position. Your vessel can then be removed.

**• Standard accessories**

Photos	Item	Quantity
	Can be Removed Holder 1. Length 280mm 2. Diameter 10mm 3. Material: stainless steel.	1 PC
	Clamp with screw	1 PC

	Inner Thermocouple 4 -spin	1 PC
	Outer Thermocouple 4-spins Stainless Steel Length: 235mm Wire length: 1000mm	1 PC
	<ul style="list-style-type: none"> <li>•Designed specifically for round bottom flasks</li> <li>•PTFE-coated</li> <li>Length: 20mm</li> <li>Diameter: 10 mm</li> </ul>	1 PC

• **Optional accessories**

c. One ps clip

**WARNINGS**

- Use an electrical outlet that operates with a fuse or circuit breaker and a ground fault interrupt circuit (GFCI)
- Disconnect the mantle from the power supply prior to maintenance and servicing

To avoid personal injury:

- Don't use in the presence of flammable or combustible materials, fire or explosion may result.
- Refer servicing to qualified personal only.
- Flask or vessels should be handled with care. Appropriate safety clothing, glasses, gloves, and coats should be worn when operating all mantles.

**CAUTION!** To avoid electrical shock, completely cut off power to the unit by disconnecting.

the power cord from the unit or unplug from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing. Spills should be removed promptly after the unit has cooled down.

**CAUTION!** The heating mantle can reach 400°C, **DO NOT** touch the heated surface. Always use caution. Keep the unit away from explosive vapors and clear of papers,

drapery and other flammable materials. Keep the power cord away from the heating mantle.

**DO NOT** operate the unit at high temperatures without a vessel/sample into the heating mantle.

