Kalstein®

Model Series YR02937 to YR02944

Intelligent Hot Plate Magnetic Stirrer

# Instruction Manual

## INSTALLATION

Upon receiving the Hotplate-Stirrer, check to ensure that no damage has occurred inshipment. It is important that any damage that occurred in transport is detected at thetime 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 heatproduced 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 plugsinto 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-condensingAltitude: 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 notspecified 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 acidspills may damage the unit and lead to thermal failure.

**CAUTION!** The top plate can reach 350°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 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 of mechanical damage. Earth Ground - Protective Conductor Terminal Alternating Current

## 14X14cm HOTPLATE-STIRRER SPECIFICATIONS

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

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

| | Hotplate | Stirrer | Hotplate-Stirrer |
|---|---|---|---|
| 220V/110v: | 450 watts | 450watts | 450 watts |

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

**range:** ambient +5°C to 400°C**Max**

**Temp for top plate surface:** 325°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 is325°C for hot plate top***

## 18X18cm HOTPLATE-STIRRER SPECIFICATIONS

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

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

| | Hotplate | Stirrer | Hotplate-Stirrer |
|---|---|---|---|
| 220V/110V: | 550watts | 550 watts | 550 watts |

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

**range:** ambient +5°C to 400°C**Max**

**Temp for top plate surface:** 325°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 is325°C for hot plate top***

## 23X23cm HOTPLATE-STIRRER SPECIFICATIONS

**Top plate dimensions (L x W): 23**0 x 230mm

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

| | Hotplate | Stirrer | Hotplate-Stirrer |
|---|---|---|---|
| 220V/110V: | 750 watts | 750 watts | 750watts |

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

**range:** ambient +5°C to 400°C**Max**

**Temp for top plate surface:** 325°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 is325°C for hot***

***plate top***

## 28X28cm HOTPLATE-STIRRER SPECIFICATIONS

**Top plate dimensions (L x W): 28**0 x 280mm

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

| | Hotplate | Stirrer | Hotplate-Stirrer |
|---|---|---|---|
| 220V/110V: | 1000 watts | 1000 watts | 1000 watts |

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

**range:** ambient +5°C to 400°C**Max**

**Temp for top plate surface:** 325°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 is325°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:**

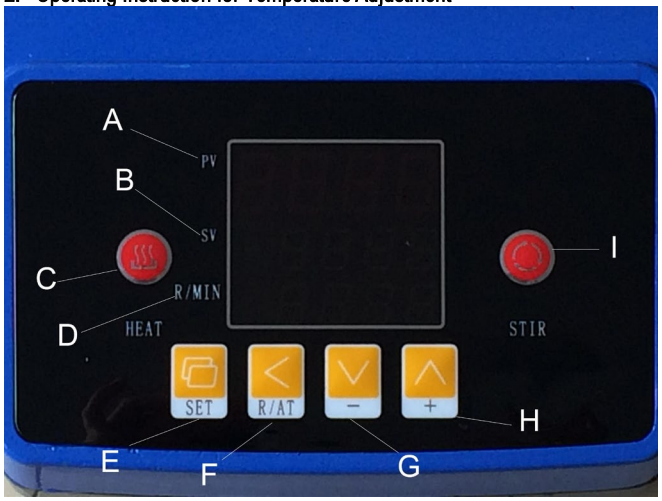
a. Fix the support rod into the screw hole (at the back of the instrument); Adjust theheight of the cross clip and fasten the glassware tightly with clip.

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.

(Inner Thermocouple)

## 2. Operating Instruction for Temperature Adjustment




A. PV windows displays the measured temperature value of the plateB.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-tunning Button / Translocated button

G. Reduce stir speed and temperature Button

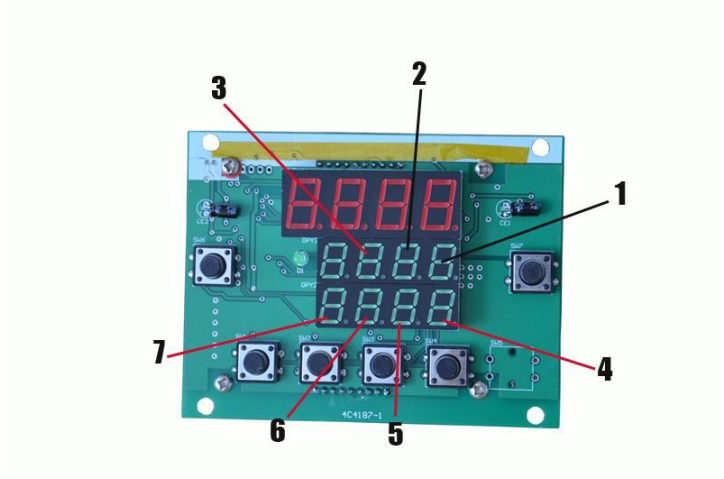
H. Add Stir speed and temperature buttonI. Stir Power Button

**• • How to set Temperature value**

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

b. Press 

button, PV windows display the ambient temperature, and SV display the settled temperature last time. (Notice: The hotplate stirrer can reach the settledtemperature automatically, if you don't set the temperature you need.)




**c.** Press SET button 3 seconds, The last figure flashes in the SV windows located display

d. Press ∧ or ∨ to for more than 2 seconds quickly to set the temperatureyou required. The SV windows displays the changed value, PV windows display the ambient temperature.

**e.** Press Self-tunning button / translocated button 2 seconds again when the 1 temperature finished if you need higher temperature.

Then 2 flashes, press ∧ or ∨ to set the temperature you required for tens digit. The SV windows displays the changed value, PV windows display the ambient temperature. (Note: Press SET again if you don't need the tens digittemperature, then settled temperature is finished)

F. Press Self-tunning button / translocated button 2 seconds again when the 2 temperature finished if you need higher temperature.

Then 3 flashes, press ∧ or ∨ to set the temperature you required forhundreds digit. The SV windows displays the changed value, PV windows display the ambient temperature. (Note: Press SET again if you don't need the hundreds digittemperature, then settled temperature is finished)

G: Press SET again when three digits finished their set. Then The SV windows displaysthe settled value, PV windows display the ambient temperature.

1

**• How to use the self-tunning function.**

1. Turn off the power button in the lateral when the PV windows temperature isincreasing higher than settled temperature.
2. Wait for the machine temperature return to ambient temperature.
3. Press self-tunning 8 seconds until your settled temperature flashes.
4. Self-tunning function is finished when the SV window stop flashing, then temperaturevalue of PV windows is the same as SV windows.

• **Measured the liquid temperature adjustment**

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

(Outer thermocouple)

(Inner Thermocouple).

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 length 20mm- 30mm intothe 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 '"hhhh", 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 youdon't need to operate the temperature.

• **Stirring Speed Operation (Two conditions)1. When the Heating Function is working**

a. Press the STIR 搅拌 button for stirring on. (Notice: The r/min windows display the changed stir speed until reaching the settled stir speed if you don't set again.)

b. Press the set button SET 2 seconds, The last figure 1 flashes in the SV windows

c. Press the set button SET 2 seconds again, The last figure 4 flashes in the r/ minwindows

d. Press ∧ or ∨ to for more than 2 seconds quickly to set the stir speed you required. The r/min windows display the settled stir speed. The SV windows displays thechanged value, PV windows display the ambient temperature.

E. Press Self-tunning button / translocated button 2 seconds again when the 4-stirspeed finished if you need higher speed.

Then 5 flashes, press ∧ or ∨ to set the temperature you required for

tens digit.

F. You can set 6,7 like 4,5

e. Press SET button 2 seconds again when the settled stir finished.

**2. When the Heating Function isn't working.**

A. Turn on the power button in the lateral (as the following photos).

b. Press the STIR 搅拌 button for stirring on. The r/min window display the stir speed (Notice: The r/min windows display the changed stir speed until reaching the settled stirspeed if you don't set again.)

c Press the set button SET 2 seconds again, The last figure 4 flashes in the r/ minwindows

d. Press ∧ or ∨ to for more than 2 seconds quickly to set the stir speed you required. The r/min windows display the settled stir speed. The SV windows displays thechanged value, PV windows display the ambient temperature.

E. Press Self-tunning button / translocated button 2 seconds again when the 4-stirspeed finished if you need higher speed.

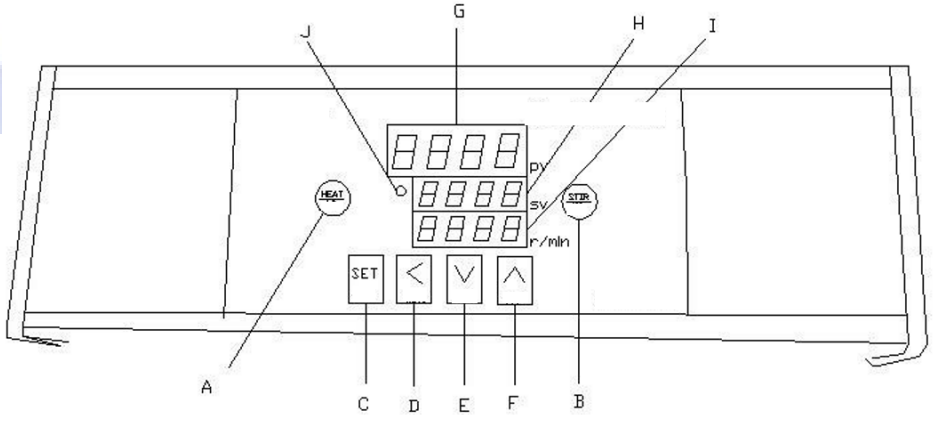
Then 5 flashes, press ∧ or ∨ to set the temperature you required fortens digit.

**F.** You can set 6,7 like 4,5.

G. Press SET button 2 seconds again when the settled stir finished.Note:

Then the r/min windows display the changed stir speed. And the figure can be storednext time if you don't set the stir speed again.

Front Panel Parts



A. Heating Power Button

B. Stir Power Button

C. Set temperature and stir speed button

D. Self-tunning Button

E. Reduce stir speed and temperature Button

F. Add Stir speed and temperature button

G. PV windows displays the surface temperature value of the plate

H. SV windows displays the settled temperature, stir speed valuel. R/min windows display the stir speed value.

• Standard accessories

| Photos | Item | Quantity |
|---|---|---|
|  | Can be Removed Holder<br>1. Length 280mm<br>2. Diameter 10mm<br>3. Material: stainless steel. | 1 PC |
|  | Clamp with screw | 1 PC |
|  | Inner Thermocouple<br>4 -spin | 1 PC |
|  | Outer Thermocouple<br>4-spins<br>Stainless Steel Length: 235mm<br>Wire length: 1000mm | 1 PC |
|  | •Designed specifically for round bottom flasks<br>•**PTFE**-coated<br>Length: 20mm<br>Diameter: 10 mm | 1 PC |

• Optional accessories

c. One ps clip

## WARMINGS

• Use an electrical outlet that operates with a fuse or circuit breaker and a ground faultinterrupt circuit (GFCI)

•Disconnect the mantle from the power supply prior to maintenance and servicingto avoid personal injury:

• Don't use in the presence of flammable or combustible materials, fire or explosion mayresult.

• 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 disconnectingthe 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 afterthe 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 heatingmantle.

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