



Instruction Manual
Professional Series
Hotplates, Stirrers, Hotplate-Stirrers



TABLE OF CONTENTS

Package Contents	1
Warranty	1
Installation	2
Maintenance & Servicing	2
Intended Use	2
Environmental Conditions	2
Safety Instructions	3-4
Standards & Regulations	3-4
Control Panel	5
7 x 7 Specifications	6
10 x 10 Specifications	7-8
Heating Operating Instructions	9
Stirring Operating Instructions	9-14
Function Mode	14
Technical Service	14
Troubleshooting	15-17
Replacement Parts	18

PACKAGE CONTENTS

Hotplate, Stirrer or Hotplate-Stirrer

92" (234cm) detachable power cord (except 10 x 10, 120V heating models)

Spin bar (stirring models only)

Probe Kit (heating models only): 8" stainless steel probe, 18" support rod, thermometer/
temperature probe extension clamp, hook connector

Instruction manual

WARRANTY

Manufacturer warrants this product to be free from defects in material and workmanship when used under normal conditions for five (5) years. Register your equipment of instrument online at www.vwrsp.com/warranty for US residents or www.vwrcanlab.com/warranty for Canadian residents. For your reference, make a note of the serial number, date of purchase and supplier here.

Serial Number: _____

Date of Purchase: _____

Supplier: _____

INSTALLATION

Upon receiving the VWR Hotplate/Stirrer/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 the Hotplate/Stirrer/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 six (6) inches (15.2cm) from vertical surfaces. Always place the unit on a sturdy work surface.

The Hotplate/Stirrer/Hotplate-Stirrer is supplied with a power cord that is inserted into the IEC connector on the back of the unit first, then it can be plugged into a properly grounded outlet. The 120V unit plugs into a 120 volt, 50/60 Hz source. The 230V unit plugs into a 230 volt, 50/60 Hz source. Be sure the power cord is fully and correctly installed into the IEC connector before powering the unit.

Note: 10 x 10, 120V heating models have a fixed power cord terminated with a NEMA 5-15P appliance connector.

MAINTENANCE & SERVICING

The Hotplate/Stirrer/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. If the unit ever requires service, contact your VWR representative.

CLEANING CERAMIC TOPS:

First remove any burnt-on deposits or spills from the top plate with a scraper (similar to scraping paint off of windowpanes in your home). For your safety, please wear an insulated mitt when using a metal scraper. When the top plate has cooled, apply a few dabs of a non-abrasive cleaner over the surface with a damp paper towel. As a final step, clean with water and wipe surface with a clean, dry paper towel.

MAINTENANCE & SERVICING CONT'D

CLEANING ALUMINUM TOPS:

For simple dust and dirt, clean the aluminum top by using a damp cloth with soap and water. For more stubborn deposits, try using a flat edge wooden spatula to scrape off as much as possible. For more stubborn stains, try using a couple of tablespoons of white vinegar to two pints of water and mix well. Dip a clean cloth into the mixture and gently rub the exterior of the aluminum surface. Generally, it is not a good idea to use abrasive pads or cleaners on aluminum, as the metal will scratch easily. If you must use some type of abrasive, try applying baking soda to the surface and then rubbing with a moist cloth. This will work as well as most scouring pads and is less likely to create deep scratches in the surface. Be careful not to use steel wool or scouring pads as they can leave the aluminum riddled with little scratches that make it harder to clean in the future. If you feel you must use steel wool, use the finest grade you can find and use as sparingly as possible with as little pressure as possible. Go with the grain rather than using circular motions.

INTENDED USE

These Hotplates/Stirrers/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

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

SAFETY INSTRUCTIONS

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



WARNING! DO NOT use the Hotplate, Stirrer, 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 500°C, **DO NOT** touch the heated surface. Use caution at all times. 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.

Replace the ceramic top immediately if damaged. A damaged top can break in use.

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

SAFETY INSTRUCTIONS CONT'D



Earth Ground - Protective Conductor Terminal



Alternating Current

STANDARDS & REGULATIONS

Troemner, LLC hereby declares under its sole responsibility that the construction of this product conforms in accordance with the following standards:

Safety standards:

IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use. Part: General Requirements.
IEC 61010-2-010	Part II: Particular requirements for laboratory equipment for the heating of materials.
IEC 61010-2-051	Part II: Particular requirements for laboratory equipment for mixing and stirring.
UL Std. No. 61010-1	

EMC standards:

EN61326-1 Class A	EN61000-3-3/3-2
EN6100-4-5	EN61000-4-4
EN55022-B	EN61000-4-3
EN61000-4-11	EN61000-4-6

Associated EU guidelines:

EMC directive 2004/108/EC
LVD directive 2006/95/EC
RoHS directive 2011/65/EU

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003.

CONSIGNES DE SÉCURITÉ

Veuillez lire la totalité du manuel d'instruction avant d'utiliser le dispositif Agitateur/Agitateur à plaque chauffante.



AVERTISSEMENT! N'UTILISEZ PAS le dispositif Plaque chauffante/Agitateur/Agitateur à plaque chauffante dans une atmosphère dangereuse ou avec des matériaux dangereux pour lesquels l'emploi du dispositif n'a pas été conçu. L'utilisateur doit en outre toujours être conscient du fait que la protection fournie par le fabricant peut être désactivée si le dispositif est utilisé avec des accessoires non fournis ni recommandés par le fabricant ou s'il est utilisé de manière non stipulée par le fabricant.

Utilisez toujours le dispositif sur une surface à niveau pour optimiser non seulement la performance mais la sécurité.

NE SOULEVEZ PAS le dispositif en saisissant la plaque supérieure.



ATTENTION! Pour éviter tout choc électrique, coupez le courant vers le dispositif en débranchant le cordon d'alimentation du dispositif ou de la prise murale. Débranchez le dispositif de l'alimentation avant d'effectuer toute opération de maintenance ou de réparation.

Les liquides renversés doivent être nettoyés tout de suite après le refroidissement du dispositif. **N'IMMERGEZ PAS** le dispositif pour le nettoyer. Les produits déversés comme les alcalis et les acides hydrofluoriques et phosphoriques peuvent entraîner un choc thermique.



ATTENTION! La plaque supérieure peut atteindre 400°C, **NE TOUCHEZ PAS** la surface chauffée. Faites preuve de prudence à tout moment. Tenir le dispositif loin des vapeurs explosives et des papiers, rideaux et autres substances inflammables. Tenir le cordon d'alimentation loin de la plaque chauffante.

N'UTILISER PAS le dispositif à des températures élevées si un récipient/échantillon n'est pas sur la plaque supérieure.

AVERTISSEMENT! Les dispositifs **NE SONT PAS** antidéflagrants. Faites preuve de prudence lors du chauffage de substances volatiles.

CONSIGNES DE SÉCURITÉ CONT'D

Remplacez la plaque céramique immédiatement si celle-ci est endommagée. Une plaque endommagée peut se fendre si elle est utilisée.

N'UTILISEZ PAS le dispositif s'il y a des signes de dommages électriques ou mécaniques.



Mise à la terre - Borne du conducteur de protection



Courant alternatif

NORMES ET RÉGLEMENTATIONS

VWR International déclare par la présente sous sa seule responsabilité que la conception de ce produit répond aux exigences des normes suivantes:

Normes de sécurité:

- CEI 61010-1 Conditions de sécurité des composants électriques pour la mesure, le contrôle et l'utilisation en laboratoire. Partie: Conditions générales.
- CEI 61010-2-010 Partie II: Conditions spécifiques à l'équipement en laboratoire pour le chauffage de matériaux.
- CEI 61010-2-051 Partie II: Conditions spécifiques à l'équipement en laboratoire pour le mélange et l'agitation.

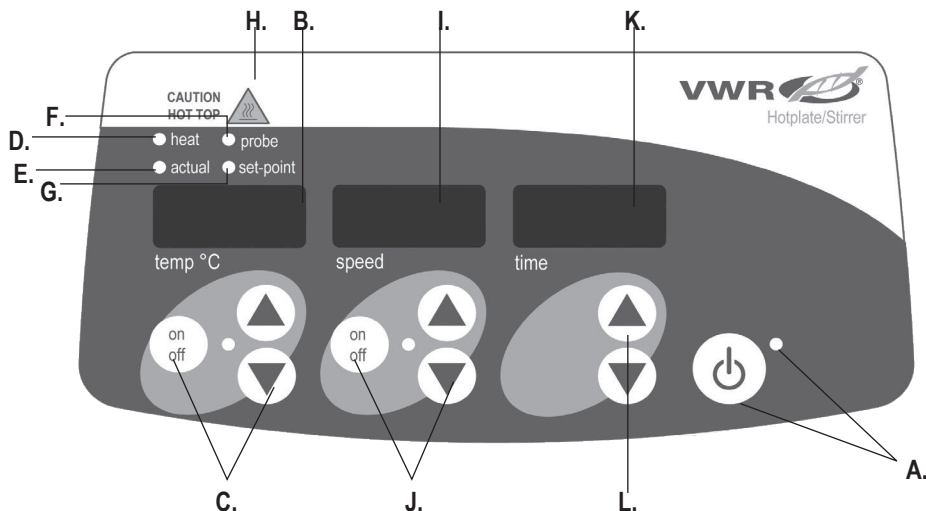
Norme UL No. 61010-1

Normes EMC:

EN61326-1 Catégorie A	EN61000-3-3/3-2
EN6100-4-5	EN61000-4-4
EN55022-B	EN61000-4-3
EN61000-4-11	EN61000-4-6

Directives UE associées:

Directive CEM 2004/108/EEC
Directive LVD 2006/95/EEC
Directive RoHS 2011/65/EU



CONTROL PANEL

The front panel of the Professional Series Hotplate/Stirrer/Hotplate-Stirrer contains all the controls and displays needed to operate the unit.

A. Standby button/standby indicator light: The standby indicator light will illuminate when the unit is plugged in. The unit will be in standby mode. Press the standby button to illuminate the temperature, speed, and time displays.

B. Temperature display: Temperature display: Displays the actual/setpoint temperatures in conjunction with the actual/setpoint indicator lights. **C.** Up/down arrows for set-point control. On/off button starts/stops the heating function.

D. Heat indicator light: Illuminates when the external temperature probe is not being used. The actual temperature displayed is the heater temperature.

E. Actual indicator light: Illuminates when the temperature displayed is the actual temperature of the heater/temperature probe.

F. Probe indicator light: Illuminates when the external temperature probe is plugged in. The actual temperature displayed is the probe temperature.

G. Set-point indicator light: Illuminates when the set-point temperature is displayed.

H. Caution hot top indicator light: Illuminates when the heat is turned on and warns the top plate is too hot to touch. Remains on until the top plate has cooled down.

I. Speed display: Displays the speed of the unit. **J.** Up/down arrows for set-point control. On/off button starts/stops the stirring function.

K. Time display: Displays accumulated time (continuous mode) or how much time is remaining (timed mode). The display range is from 0 to 9,999 minutes in one (1) second increments. The display will indicate minutes and seconds until the timer reaches 99 minutes and 59 seconds (99:59), then the display will automatically display minutes up to 9999. **L.** Up/down arrows for set-point control.



*glassware not included

7 x 7 HOTPLATE/STIRRER/HOTPLATE-STIRRER SPECIFICATIONS

Dimensions (L x W x H): 14.77 x 9.85 x 4.27" (37.5 x 25 x 10.8cm)

Top plate dimensions (L x W): 7 x 7" (17.8 x 17.8cm)

Electrical (50/60 Hz):

Hotplate:
120V: 7.9 amps/950 watts
230V: 4.4 amps/1000 watts

Stirrer:
120V: 0.4 amps/50 watts
230V: 0.2 amps/50 watts

Hotplate-Stirrer:
120V: 8.3 amps/1000 watts
230V: 4.6 amps/1050 watts

Fuses:
HP/HPS: 5mm x 20mm, 10 amp slow blow
Stirrer: 5mm x 20mm, 5 quick acting

Temperature range:
ceramic: ambient +5°C to 500°C
aluminum: ambient +5°C to 400°C

Temperature stability*: +/-1%

Speed range: 60 to 1600rpm

Speed stability: +/-2%

Capacity: 2500mL, gross weight should not exceed 40lbs

Controls: see page 5

Ship weight: 12.0lbs (5.4kg)

* Plate Control: Below 100°C +/-2°C. Environmental and sample conditions permitting.

* Probe Control: Below 100°C +/-1°C. Environmental and sample conditions permitting.

10 x 10 HOTPLATE/STIRRER/HOTPLATE-STIRRER SPECIFICATIONS

Dimensions (L x W x H):		17.90 x 13.00 x 4.27" (45.5 x 33.0 x 10.8cm)
Top plate dimensions (L x W):		10 x 10" (25.4 x 25.4cm)
Electrical (50/60 Hz):		
Hotplate:		120V: 10.8 amps/1300 watts 230V: 6.7 amps/1550 watts
Stirrer:		120V: 0.4 amps/50 watts 230V: 0.2 amps/50 watts
Hotplate-Stirrer:		120V: 11.2 amps/1345 watts 230V: 7.0 amps/1600 watts
Fuses:	120V	HP/HPS: 1 1/4 x 1/4 in, 15 amp quick acting (internal)
	230V	HP/HPS: 5mm x 20mm, 16 amp slow blow
		Stirrer: 5mm x 20mm, 5 quick acting
Temperature range:	ceramic:	ambient +5°C to 500°C
	aluminum:	ambient +5°C to 400°C
Temperature stability*:		+/-1%
Speed range:		60 to 1600rpm
Speed stability:		+/-2%
Capacity:		6000mL, gross weight should not exceed 50lbs
Controls:		see page 5
Ship weight:		17.4lbs (7.9kg)

* Plate Control: Below 100°C +/-2°C. Environmental and sample conditions permitting.

* Probe Control: Below 100°C +/-1°C. Environmental and sample conditions permitting.

PROFESSIONAL SERIES 10 x 10



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:

- Plug power cord into a properly grounded 3-prong outlet.
- 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.
- Press the standby button to move the unit from standby mode. The temperature and time displays will illuminate. On power-up, allow the unit approximately 30 seconds to stabilize before accurate temperature readings are displayed.

2. Setting temperature:

- Press the up/down arrows below the temperature display until you reach the desired temperature. Press the on/off button below the temperature display to start the heating function. The indicator light below the temperature display will illuminate to indicate the heating function is in use. Audible beeps will sound to indicate the set-point temperature has been reached. (LED display will toggle between actual and set point temperatures. Indicator lights will toggle between actual and set point to indicate what is displayed).
- Set-point temperature adjustments can be made without interrupting heating using the up/down arrows below the temperature display. Removing or adding more to a sample content could cause the temperature to fluctuate.
- To stop heating function, press the on/off button below the temperature display. Your vessel can then be removed.

3. Setting temperature with probe:

- Probe must be connected to the unit before turning on the heating function.
- Follow step 2a through 2c.

Caution hot top indicator:

The caution hot top indicator light warns that the top plate is too hot to touch. The caution hot top indicator light will illuminate when the heat is turned on and remain on until the top plate cools down.



4. Set timed mode:

- Press the up/down arrows below the time display until you reach the desired time.
- When the unit is started, by pressing the on/off button below the temperature or speed display, the unit will run for the selected time. There are audible beeps to indicate the time down function is complete. The unit will shut off automatically.
- To repeat for the same time, simply depress the on/off button again.
- To interrupt an automatic timing cycle before it is completed, press the on/off button below the temperature or speed display.

5. Set time to continuous mode:

- Set timer to zero (0) using the up/down arrows below time display.
- When the unit is started, by pressing the on/off button below the temperature or speed display, the time display will show actual running time.
- To stop, press the on/off button below the temperature or speed display.

Max Temperature:

If the unit has an aluminum top, the max temperature setting is 400°C. If the unit has a ceramic top, the max temperature setting is 500°C. The only exception is if the unit is a Professional Series with a ceramic top. In that case when using probe control, the software limits the Professional ceramic top unit to 400°C. If the probe is not plugged in, the unit can be set to 500°C.

*** CAUTION: If you are using a probe accessory with a Professional unit, make sure you don't exceed a sample temperature of 250°C, otherwise the probe tip might become damaged!**

HEATING OPERATING TIPS

Overshoot:

The unit may overshoot the temperature up to 10°C before stabilizing at the set-point. The two methods suggested to minimize overshoot are:

- 1. Metal containers minimize overshoot. **CAUTION!** When heating metal containers on a ceramic top it is recommended to use the lowest temperature setting possible to limit thermal stress to the ceramic top.
- 2. If a glass vessel is used, anticipate overshoot. Start with a setting 5 to 10°C below the desired temperature. When the temperature stabilizes at this lower setting, press the up/down arrows to the final temperature. Overshoot is then reduced to about 1°C.

The temperature display on the units show the actual temperature of the heater not the top plate or sample. The vessel contents being heated may be at a lower temperature depending on the size and insulating qualities of the vessel. It may be beneficial to monitor the temperature of the vessel contents and adjust the set-point temperature accordingly. If you need precise control a probe will be necessary.

TYPICAL TIME TO BOIL WATER

The chart below is an example of an approximate time to boil for the specified amount of water in a specific vessel.
These values are only approximate and can vary from unit to unit. Values are based on 23°C water in an ambient environment of 23°C.

CERAMIC TOP			ALUMINUM TOP		
Size of Top Plate	Volume of Water	Time	Size of Top Plate	Volume of Water	Time
7 x 7	1500ml in 2000ml beaker	45	7 x 7	1500ml in 2000ml beaker	60
10 x 10	5000ml in 6000ml Erlenmeyer Flask	60	10 x 10	5000ml in 6000ml Erlenmeyer Flask	70

TEMPERATURE CALIBRATION PROCEDURE (SINGLE POINT CALIBRATION)

This method can be used for calibrating the RTD probe or the top plate surface of the unit.

NOTE: RTD probe set points can only be set or cleared with the external probe connected to the unit. Top plate set points can only be set or cleared with the RTD probe not connected.

1. If unit is in standby mode press the standby button to take unit out of standby mode.
2. To set a Single Point Calibration adjustment:
 - a. Set the unit to the desired temperature, turn the temperature control system on and let the system stabilize to the user input temperature.
 - b. While pressing and holding the standby button, press and release the temperature up button.
 - c. The unit will beep two times (if not in silent mode) and the temperature display will blink to indicate a Single Point Calibration adjustment is in progress.
 - d. Measure the sample or top plate with a traceable thermometer or temperature probe.
 - e. Use the temperature up and down buttons to adjust the display to read the actual measured temperature indicated on the external temperature measuring device. (Example: Desired temperature is 80°C. Set unit at 80°C per step (a). Follow steps (b & c). Display reads 80°C and the external temperature measuring device reads higher at 84°C. Push the temperature up arrow so the display will match the external temperature device and also read 84°C. By doing this a biased offset for 80°C will be used any time the unit is set to 80°C.
 - f. Press the standby button to save the Single Point Calibration adjustment. The temperature display will stop blinking and the decimal point will flash periodically to indicate that a Single Point Calibration adjustment is in use. This indication will occur whenever the temperature is adjusted to the temperature used in part “a” of this procedure.

- g. This process may be repeated for up to three separate set points (three RTD probe set points, and three top plate set points). If a fourth calibration set point is entered, the first set point will be overwritten.
- h. The adjustments are limited to the maximum and minimum temperature range of the particular model.

The unit will now use the biased offset for that specific temperature setting and increase or decrease temperature accordingly to bring the unit temperature to set-point. The decimal point of the display will flash to indicate a biased offset is being used. All other temperature settings will use the factory default settings. The offset will be stored in memory and retained until reset.

3. To clear existing Single Point Calibration adjustments:
 - a. Top plate Single Point Calibration adjustments can only be cleared with the RTD probe not connected to the unit. RTD probe Single Point Calibration adjustments can only be cleared with the RTD probe connected to the unit.
 - b. While pressing and holding the standby button, press and release the temperature down button.
 - c. The unit will beep two times (if not in silent mode) to indicate all Single Point Calibration adjustments have been cleared.

STIRRING OPERATING INSTRUCTIONS

The micro-processor controlled ramping feature slowly increases speed until the set-point is reached. This feature helps to avoid splashing, improves magnetic coupling and provides excellent low end control. The micro-processor also monitors and regulates the stirring speed, sensing your requirements whether you're stirring an aqueous, viscous or semi-solid solution.

Initial stirring speed may exceed set speed if the following conditions exist:

1. The stirrer is set at a low speed and the stirrer has not been operated for a extended period of time.
2. The stirrer is set at a low speed and it is the stirrer's initial use.

1. Getting ready:

- a. Plug power cord into a properly grounded outlet.
- b. Place a vessel with solution and the appropriate accessories in the center of the top plate. This is important because the spin bar will be well within the magnetic field.
- c. Press the standby button to move the unit from standby mode. The speed and time displays will illuminate.

2. Setting speed:

- a. Press the up/down arrows below the speed display until you reach the desired speed.
- b. To start stirring function, press the on/off button below the speed display.
- c. The indicator light below the speed display will illuminate to indicate the stirring function is in use.
- d. Speed adjustments can be made without interrupting stirring by using the up/down arrows below the speed display.
- e. To stop stirring function, press the on/off button below the speed display.

3. Set timed mode:

- a. Press the up/down arrows below the time display until you reach the desired time.

- b. When the unit is started, by pressing the on/off button below the temperature or speed display, the unit will run for the selected time. There are audible beeps to indicate the time down function is complete. The unit will shut off automatically. To repeat for the same time, simply depress the on/off button again.
- c. To interrupt an automatic timing cycle before it is completed, press the on/off button below the temperature or speed display.

4. Set time to continuous mode:

- a. Set timer to zero (0) using the up/down arrows below time display.
- b. When the unit is started, by pressing the on/off button below the temperature or speed display, the time display will show actual running time.
- c. To stop, press the on/off button below the temperature or speed display.

Stir protection for Hotplate-Stirrers:

If stirrer motor stops or fails, the unit will automatically shut down the heater.

OPERATING TIPS

The stirrer increases speed at a steady rate until the set-point is reached, if the spin bar is too large or the liquid is too viscous, the stirrer may not reach its set-point. The set-point speed needs to be reduced. The magnetic strength of stir bars reduce over time and may need to be replaced.

Stirring vessels in oil baths:

When heating and stirring a reaction vessel within an oil bath or similar set-up, the stirring function will stir up to approximately one (1) inch (2.54cm) from the top plate. The stirring speed will vary according to liquid viscosity, spin bar length and distance from the top plate. Adjust one or all of these to achieve the desired stirring speed.

EXAMPLE: The closer the reaction vessel is to the top plate the stronger the magnetic connection.

FUNCTION MODE

Hotplate-Stirrers and Stirrers (Hotplate only models see page 14):

The steps listed below allow you to customize the functionality of your Hotplate-Stirrer or Stirrer unit.

Enable/Disable Function Settings

To enter into the Function Modes, perform the following steps:

1. Place unit in standby mode.
2. Press and hold the time down button.
3. While pressing and holding the time down button, press and release the standby button.

The speed up/down arrows allow you to toggle between functions. The time up/down arrows allow you to turn the function off or on. Press the standby button at any time to exit the Function Mode and save the current settings.

BEEP DISABLE (this function will disable the beep, except one caused by an error). Speed display will show "bEEP" and time display will show current setting "on" or "off".

- a. Press the time up or down button to toggle beeper on/off.
- b. Press the speed up button to select the next option or speed down button to select the previous option.

PLATE LIMIT SETTING (this procedure will limit the top plate temperature when the probe is **NOT** being used). Speed display will show "SEtL" and time display will show current setting (degrees C).

- a. This option will be skipped on Professional Stirrer models.
- b. The heat LED will be on during this step.
- c. Press the time up or down button to adjust the current plate temperature limit.
- d. Press the speed up button to select the next option or speed down button to select the previous option.

E3 (motor error) DISABLE (Disabling this function will enable a Hotplate-Stirrer to continue to heat in the event of a motor error or E3 error which could be caused by highly viscous liquids). Speed display will show "SEr" and time display will show current setting "on" or "off".

- a. Press the time up or down button to toggle Speed Error (motor error) on/off.
- b. Press the speed up button to select the next option or speed down button to select the previous option.

E7 (Probe Out of Sample) DISABLE (Disabling this function will enable a unit to continue to heat a sample in the event the sample can not reach the set point. This may be due to the fact the set point is above what the sample can achieve. Speed display will show "POOS" and time display will show current setting "on" or "off").

- a. This option will be skipped on Professional Stirrer models.
- b. Press the time up or down button to toggle Probe Out of Sample on/off.
- c. Press the speed up button to select the next option or speed down button to select the previous option.

POWER FAILURE AUTO-RECOVERY DISABLE

Speed display will show "PF" and time display will show current setting "on" or "off".

- a. Press the time up or down button to toggle Power Fail option on/off. On means that the unit will automatically recover from a power failure, OFF means that the unit will indicate that a power failure has occurred, but always return the unit to standby mode in the event of a power failure.
- b. Press the Speed Up button to select the next option or Speed Down button to select the previous option.

During normal operation (factory default setting) if power failed while heating, stirring, or timing the unit will recover and resume the operation being performed. If the unit was running in continuous mode, it will resume in continuous mode, if the unit was running in timed mode, the time will reset to the original set time and begin counting down again. Turning this feature off will disable this function. In the event of a power failure if the function is turned off, the unit will not recover, but indicate a power failure occurred by a "PF" in the time display. To clear the "PF" indication (and place the unit in standby) press and release the standby button.

FUNCTION MODE

TIMER DISABLE FUNCTIONS

The factory default setting allows for both heating and stirring functions to turn off simultaneously when the timer reaches zero. The Heater/Timer and Speed/Timer Disable functions below allow you to change the default setting and program what is turned off when the timer reaches zero.

HEATER/TIMER DISABLE

Speed display will show "tHEt" and time display will show current setting ("on" or "off").

- a. This option will be skipped on Professional Stirrer models
- b. Press the time up or down button to toggle Heater/Timer interaction option on/off. On means that the unit will shut off the heater when the timer counts down to zero, OFF means that the heater will continue to run when the timer counts down to zero.
- c. Press the speed up button to select the next option or speed down button to select the previous option.

SPEED/TIMER DISABLE

Speed display will show "tSPd" and time display will show current setting ("on" or "off").

- a. Press the time up or down button to toggle Speed/Timer interaction option on/off. On means that the unit will shut off the motor when the timer counts down to zero, OFF means that the motor will continue to run when the timer counts down to zero.
- b. Press the speed up button to select the next option or speed down button to select the previous option.

Press the standby button at any time to exit the Function Mode and save current settings. Power Fail setting, Temperature Limit, and Timer functions are saved in the memory. All other options are not stored in the memory and restored to the default setting (enabled) when power is cycled.

Probe Controlled Plate Temperature Limit (Flash point Setting): (for Hotplates and Hotplate-Stirrers)

To adjust the maximum probe controlled plate temperature

1. Place unit in standby mode and ensure probe is properly connected.
2. Press and hold the temperature on/off and time down buttons.
3. While pressing and holding the temperature on/off and time down buttons, press and release the standby button.
 - a. The probe LED will be on during this step.
 - b. If maximum probe controlled plate temperature (flash point) is set below the maximum, the temperature LED will be off for the first 1 second of the actual and set temperature display while heating.
 - c. Use the temperature up and temperature down buttons to adjust the maximum probe controlled plate temperature (flash point).
 - d. The minimum value for this temperature is 60°C for both aluminum top and ceramic top units.
 - e. The maximum value for this temperature is 400°C for aluminum top units and 430°C for ceramic top units.
 - f. Press and release the standby button to return to standby mode.

NOTE: The indicator light below the temperature display will blink every 3 to 4 seconds to indicate this function is enabled.

EXAMPLE:

Change the plate over-temperature limit from the current 430°C to 200°C.

1. Start with the unit turned off.
2. Press and hold the on/off button below the temperature display and the time down arrow while turning the unit on, by pressing the standby button. The temperature displayed is the current plate over-temperature limit setting, 430°C.
3. Press the up/down arrows until the display reads 200°C. After approximately 2 seconds, the display will blink off, then on again to store the new setting.
4. The new over-temperature limit is now set for 200°C. Turn the unit off before using.

FUNCTION MODE

Hotplates (Hotplate-Stirrers and Stirrers see page 12):

The steps listed below allow you to customize the functionality of your Hotplate only unit.

Enable/Disable Function Settings

To enter into the Function Modes, perform the following steps:

1. Place unit in standby mode.
2. Press and hold the time down button.
3. While pressing and holding the time down button, press and release the standby button.

The temperature up/down arrows allow you to toggle between functions. The time up/down arrows allow you to turn the function off or on. Press the standby button at any time to exit the Function Mode and save the current settings.

BEEP DISABLE

Temperature display will show "bEEP" and time display will show current setting ("on" or "off").

- a. Press the time up or down button to toggle beeper on/off.
- b. Press the temperature up button to select the next option or temperature down button to select the previous option.

PLATE LIMIT SETTING (this procedure will limit the top plate temperature when the probe is NOT being used). Temperature display will show "SEtL" and time display will show current setting (degrees C).

- a. The heat LED will be on during this step.
- b. Press the time up or down button to adjust the current plate temperature limit.
- c. Press the temperature up button to select the next option or temperature down button to select the previous option.

E7 (probe out of sample) DISABLE (Disabling this function will enable a unit to continue to heat a sample in the event the sample can not reach the set point.

This may be due to the fact the set point is above what the sample can achieve). Temperature display will show "POOS" and time display will show current setting ("on" or "off").

- a. Press the time up or down button to toggle Probe Out of Sample on/off.
- b. Press the temperature up button to select the next option or temperature down button to select the previous option.

POWER FAILURE AUTO RECOVERY DISABLE

Temperature display will show "PF" and time display will show current setting ("on" or "off").

- a. Press the time up or down button to toggle Power Fail option on/off. On means that the unit will automatically recover from a power failure, OFF means that the unit will indicate that a power failure has occurred, but always return to standby mode in the event of a power failure.
- b. Press the temperature up button to select the next option or temperature down button to select the previous option.

During normal operation (factory default setting) if power failed while heating, stirring, or timing the unit will recover and resume the operation being performed. If the unit was running in continuous mode, it will resume in continuous mode, if the unit was running in timed mode, the time will reset to the original set time and begin counting down again. Turning this feature off will disable this function. In the event of a power failure if the function is turned off, the unit will not recover, but indicate a power failure occurred by a "PF" in the time display. To clear the "PF" indication (and place the unit in standby) press and release the standby button.

Press the standby button at any time to exit the Function Mode and save current settings. Power Fail setting and Temperature Limit are saved in the memory. All other options are not stored in the memory and restored to the default setting (enabled) when power is cycled.

Probe Controlled Plate Temperature Limit (Flash point Setting):
(for Hotplates and Hotplate-Stirrers, see page 13-14)

TECHNICAL SERVICE

For information or technical assistance contact your local VWR representative or visit vwr.com.

TROUBLESHOOTING

If the unit gives an error code, immediately switch the unit off. See error table below for proper corrective action. If the error cannot be cleared, please contact your VWR representative for repairs.

Error	Cause of Error	How to Fix
E1	An "E1" error means the heater sensor is open or malfunctioned	This error cannot be fixed by the end user. Please contact your VWR representative for repair.
E2	An "E2" error means the heater sensor shorted or malfunctioned.	This error cannot be fixed by the end user. Please contact your VWR representative for repair.
E3	An "E3" error means there is either no motion on the motor or the motor is not working properly.	Reset the unit by pressing the on/off button for speed. (Also the heater will shut off. If you were heating, press the On/Off button for heat to reset). If it still doesn't work, please contact your VWR representative for repair.
E4	An "E4" error means there is an open probe. It is detected when the heating is started in probe control (with probe connected); after heating begins, the probe fails or is unplugged during the heating process. (If you want to run unit in PLATE control, heating must be started without external probe plugged in.)	Reset the unit by pressing the heat on/off button twice. Also make sure the probe is plugged in to the back of the unit. If it still does not work, please contact your VWR representative for repair.
E5	An "E5" error means the probe shorted or malfunctioned.	Reset the unit by pressing the heat on/off button twice. Also try plugging in another probe that is known to be working. If this doesn't work, please contact your VWR representative for repair.

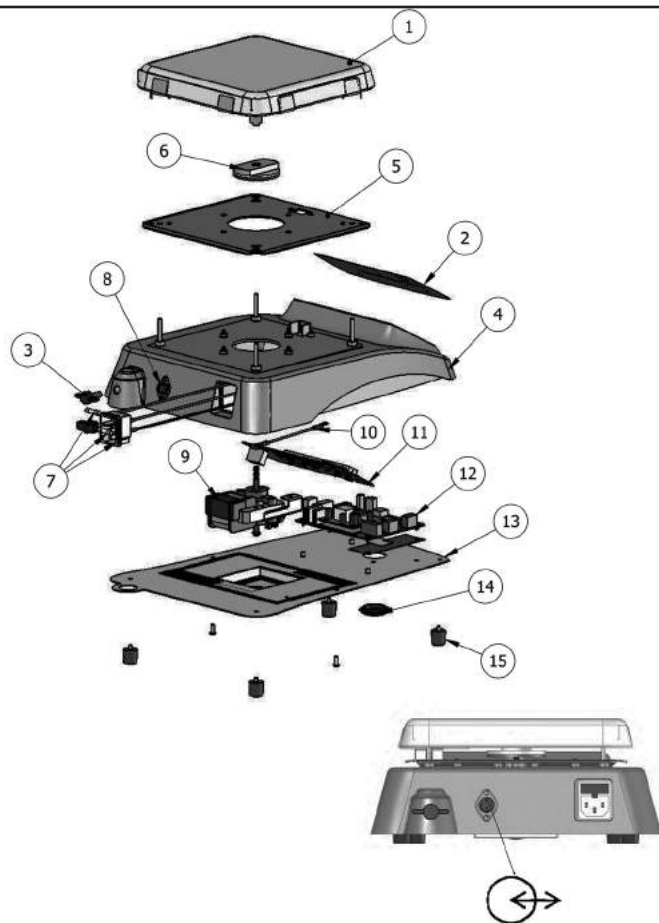
Error codes continued on next page.

TROUBLESHOOTING

Error	Cause of Error	How to Fix
E6	An "E6" error means there is an internal electronics system error.	This error cannot be fixed by the end user. Please contact your VWR representative for repair.
E7*	An "E7" error means the probe is not able to reach set point. It could mean the probe is out of the sample, or the temperature of the probe doesn't rise after a certain amount of time, or the probe temperature falls when the heater temperature is rising.	Reset the unit by pressing the heat on/off button twice. Also make sure the probe is in the sample. If it still does not work, please contact your VWR representative for repair.
E8	An "E8" error means the unit had a catastrophic over temperature condition or temperature runaway condition (temperature greater than 600°C) and therefore automatically shuts down to prevent damage.	This error cannot be fixed by the end user. Please contact your VWR representative for repair.
E9	An "E9" error means the heater failed. This might occur if the heater temperature fails to rise when asked to, or there is a sudden drop in heater temperature for no apparent reason.	This error cannot be fixed by the end user. Please contact your VWR representative for repair.

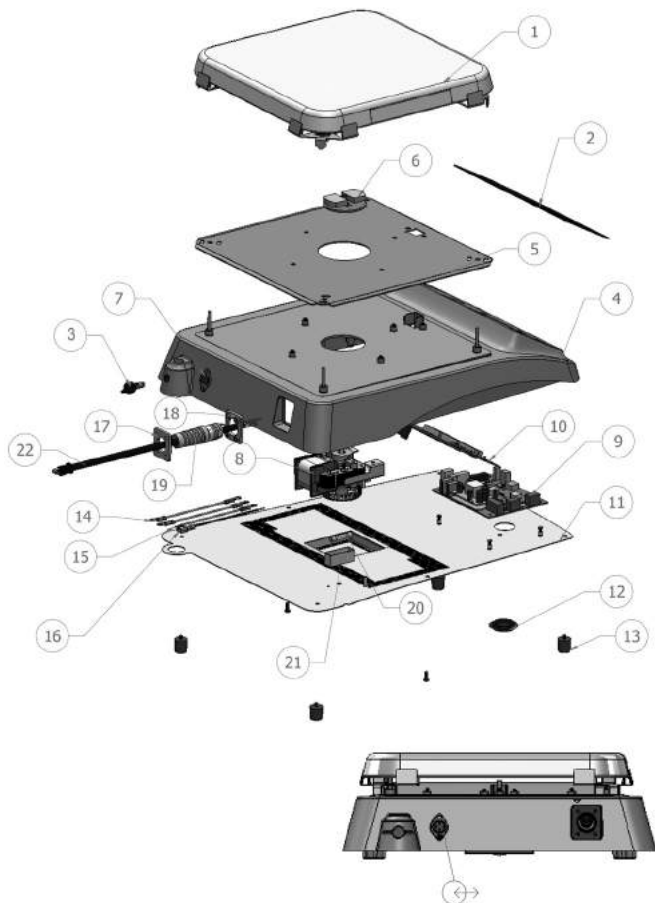
* When using probe control, the temperature setpoint should be adjusted to the desired sample temperature. If the temperature setpoint is higher than the sample can achieve, an E7 error will occur. Reduce sample volume or temperature setpoint value. For Example: Water has a theoretical temperature limit of 100°C (boiling). A temperature setpoint greater than 100°C will cause an E7 error.

7 x 7 REPLACEMENT PARTS



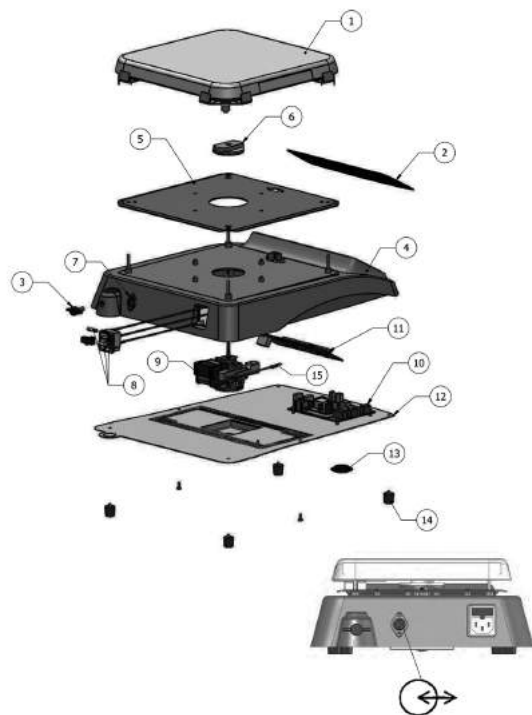
DESCRIPTION	PART NUMBER
1. Top plate assembly:	
120V, ceramic, Hotplate, Hotplate-Stirrer	886316-00
230V, ceramic, Hotplate, Hotplate-Stirrer	886317-00
120V/230V, ceramic, Stirrer	886318-00
120V, aluminum, Hotplate, Hotplate-Stirrer	886319-00
230V, aluminum, Hotplate, Hotplate-Stirrer	886320-00
120V/230V, aluminum, Stirrer	886321-00
2. Front panel overlay:	
Professional Series Hotplate	386268-00
Professional Series Hotplate-Stirrer	386269-00
Professional Series Stirrer	386267-00
3. Support stand thumb knob	186208-00
4. Housing	286614-00
5. Heat Shield	286608-00
6. Magnet assembly:	
Hotplate-Stirrer, Stirrer	286616-00
7. IEC module	
Fuse 10 Amp	Hotplate, Hotplate-Stirrer 386005-00
Fuse 5 Amp	Stirrer 380238-00
8. Assembly, Wire, DIN and MTA	386677-00
9. Motor:	286627-00
10. Ground Jumper Wire	aluminum top units 386678-00
11. Digital Display PCB	386664-00
12. Main PCB:	386660-00
13. Bottom Plate	286611-00
14. Bottom Plate plug	186201-00
15. Feet	186200-00
Detachable 92" (234cm) power cord:	
	120V 330100-00
	Euro plug 330101-00

10 x 10, 120V HOTPLATE, HOTPLATE-STIRRER REPLACEMENT PARTS



DESCRIPTION	PART NUMBER
1. Top plate assembly:	
120V, ceramic, Hotplate, Hotplate-Stirrer	886322-00
120V, aluminum, Hotplate, Hotplate-Stirrer	886325-00
2. Front panel overlay: Professional Series Hotplate	386276-00
Professional Series Hotplate-Stirrer	386277-00
Professional Series Stirrer	386275-00
3. Support stand thumb knob	186208-00
4. Housing	286615-00
5. Heat Shield	286609-00
6. Magnet assembly: Hotplate-Stirrer, Stirrer	286616-00
7. Assembly, Wire, DIN and MTA	386677-00
8. Motor:	286623-00
9. Main PCB:	386660-00
10. Digital Display PCB	386664-00
11. Bottom Plate	286612-00
12. Bottom Plate plug	186201-00
13. Feet	186200-00
14. Motor to Chassis wire, Al plate	386696-00
15. PCBA to Chassis wire	386697-00
16. PCBA to fuse holder wire	386698-00
17. Face plate	286644-00
18. Retention plate	286645-00
19. Strain relief bushing	386688-00
20. Fuse 15 Amps	386034-00
21. Fuse holder	386126-00
22. Fixed AC power cord	380109-00

10 x 10 REPLACEMENT PARTS - 120V STIRRER, 230V ALL UNITS



DESCRIPTION	PART NUMBER
1. Top plate assembly:	
230V, ceramic, Hotplate, Hotplate-Stirrer	886323-00
120V/230V, ceramic, Stirrer	886324-00
230V, aluminum, Hotplate, Hotplate-Stirrer	886326-00
120V/230V, aluminum, Stirrer	886327-00
2. Front panel overlay:	
Professional Series Hotplate	386283-00
Professional Series Hotplate-Stirrer	386284-00
Professional Series Stirrer	386282-00
3. Support stand thumb knob	186208-00
4. Housing	286615-00
5. Heat Shield	286609-00
6. Magnet assembly:	Hotplate-Stirrer, Stirrer
	286616-00
7. Assembly, Wire, DIN and MTA	386677-00
8. IEC module	386681-00
Fuse 16 Amp	Hotplate, Hotplate-Stirrer
	386033-00
Fuse 5 Amp	Stirrer
	380238-00
9. Motor:	286623-00
10. Main PCB:	386660-00
11. Digital Display PCB	386664-00
12. Bottom Plate	286612-00
13. Bottom Plate plug	186201-00
14. Feet	186200-00
15. Ground Jumper Wire	aluminum top units
	386678-00
Detachable 92" (234cm) power cord:	
	Stirrer 120V
	Euro plug
	330100-00
	330101-00

MANUFACTURED BY:

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