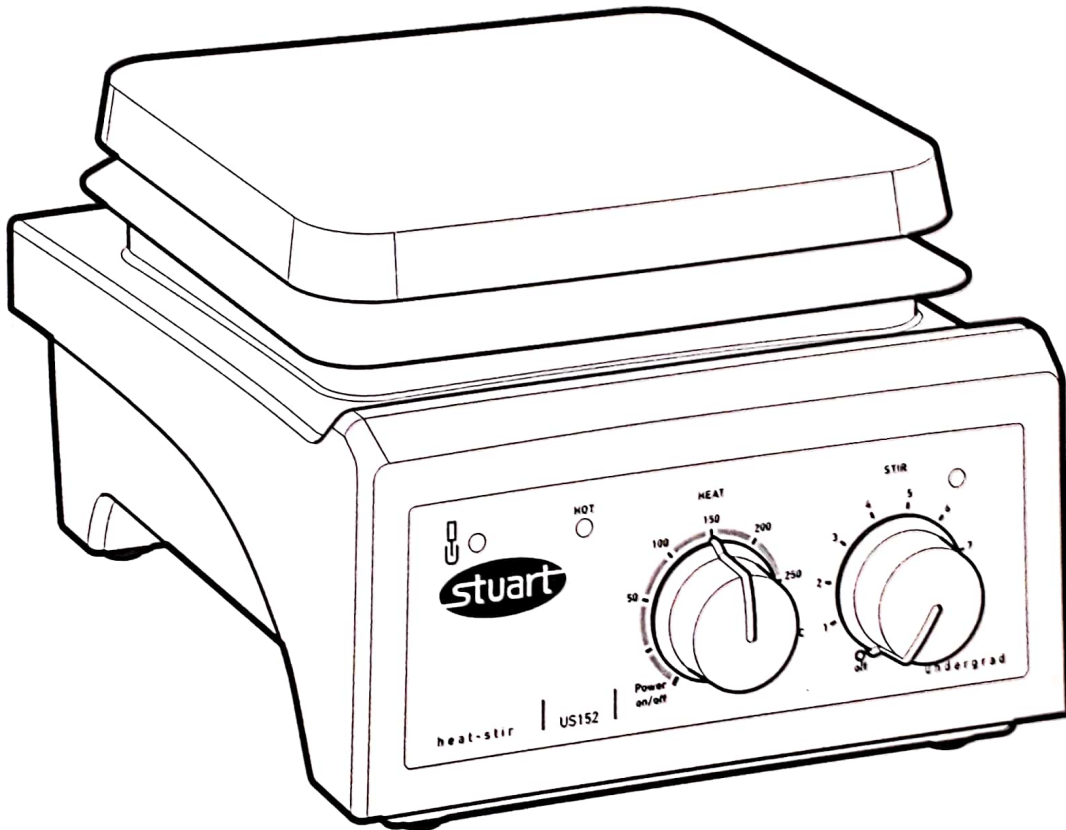




Hotplates & Stirrers  
UC150, UC151, UC152, UC152D,  
US150, US151, US152, US152D



## Instruction Manual

Version 1.5



Figure 1 - Front view

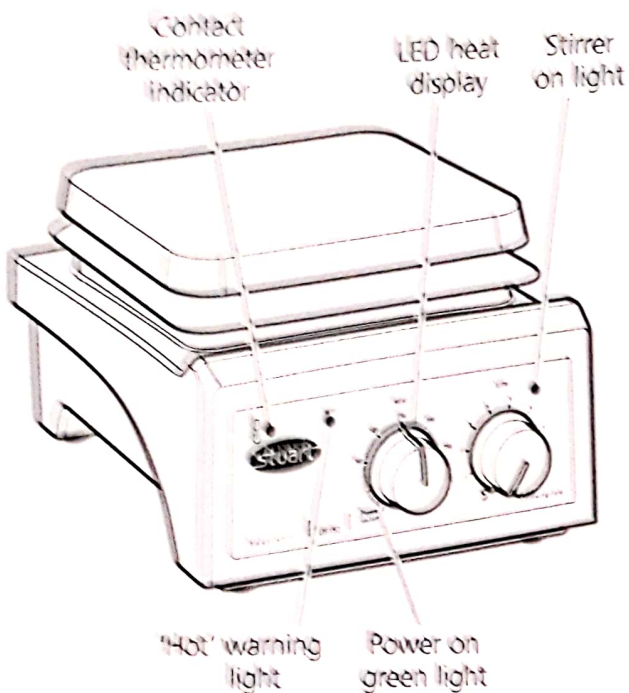


Figure 2 - Rear view

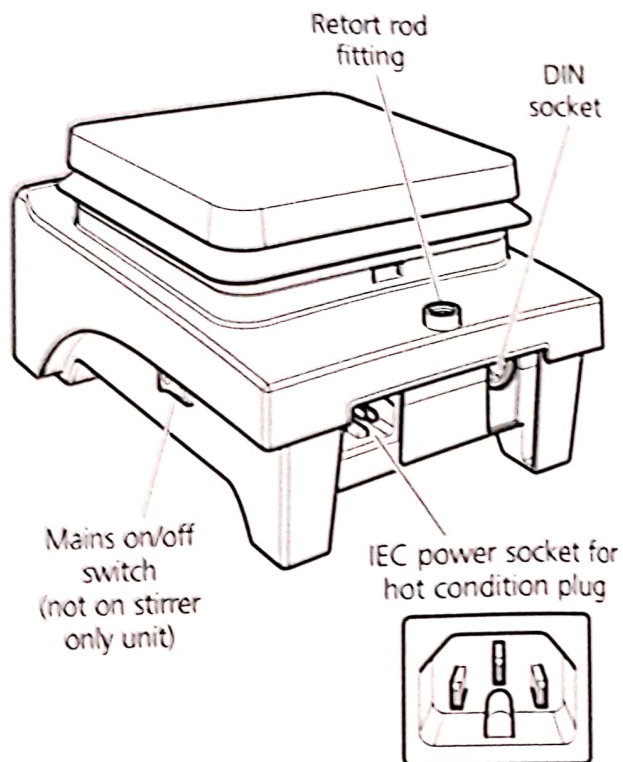


Figure 3 - Front panel (analogue versions)

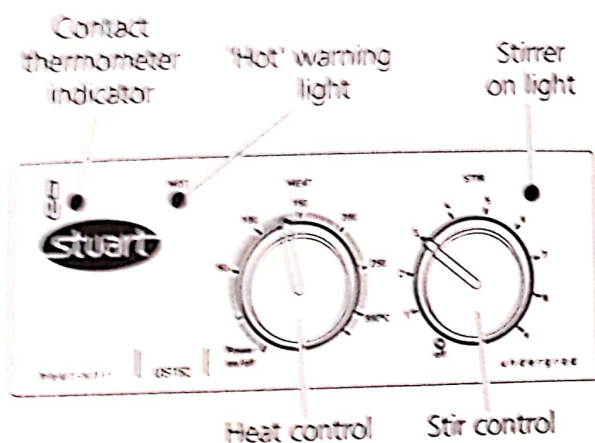


Figure 4 - Front panel (digital versions)

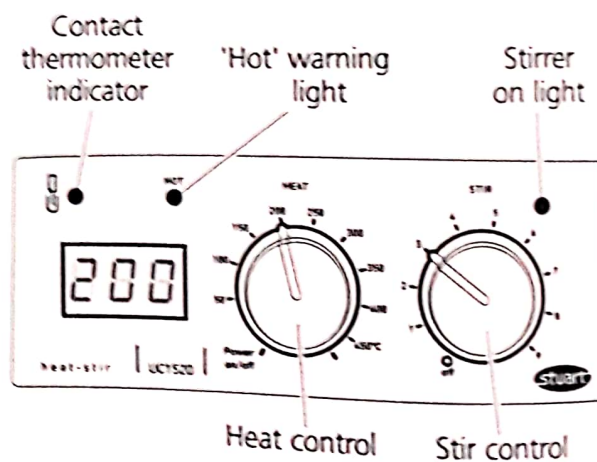
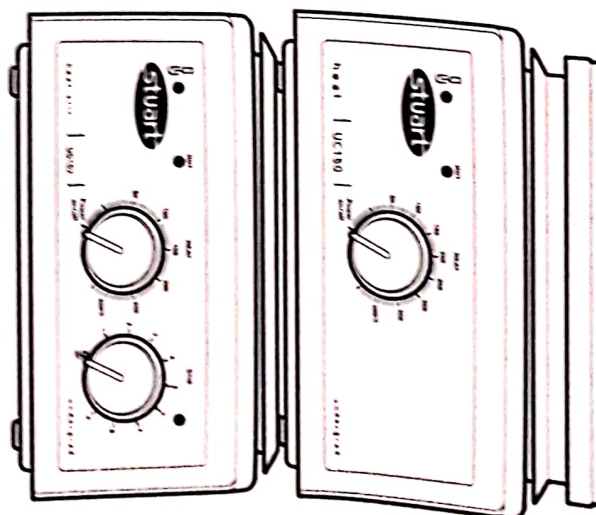


Figure 5 - Stored on side (as viewed from the front)





# Hotplates & Stirrers

UC150, UC151, UC152, UC152D  
US150, US151, US152, US152D

## Introduction

**Thank you for purchasing this Stuart product. To get the best performance from the equipment, and for your own safety, please read these instructions carefully before use. Before discarding the packaging check that all parts are present and correct.**

This equipment is designed to operate under the following conditions:

- ❖ For indoor use only
- ❖ Use in a well ventilated area
- ❖ Ambient temperature range +5°C to +40°C
- ❖ Altitude to 2000m
- ❖ Relative humidity not exceeding 80%
- ❖ Mains supply fluctuations not exceeding 10% of nominal
- ❖ Overvoltage category II IEC60364-4-443
- ❖ Pollution degree 2 IEC664
- ❖ Use with a minimum distance all round of 200mm from walls or other items

If the equipment is not used in the manner described in this manual and with accessories other than those recommended by Cole-Parmer, the protection provided may be impaired.

## Electrical Installation



**THIS EQUIPMENT MUST BE EARTHED**

**Before connection please ensure that the line supply corresponds to that shown on the rating plate located on the base of the unit.**

### Power requirements:

Model	Wattage	Model	Wattage
UC150	500W	US150	700W
UC151	50W	US151	50W
UC152	550W	US152	750W
UC152D	550W	US152D	750W

There is a hot condition IEC socket at the rear of the instrument for connection to the mains supply (see figure 2). The unit is supplied with a mains lead fitted with either a UK 3-pin or "Schuko" 2-pin hot condition IEC plug for connection to the instrument.

Should the lead not be suitable for connecting to the mains power supply, replace the plug with a suitable alternative.

**THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN.**

**NOTE:** Refer to the equipment rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated.

The wires in the mains cable are coloured as follows:

BROWN - LIVE

BLUE - NEUTRAL

GREEN/YELLOW - EARTH

Should the mains lead need replacement, a cable of 1mm<sup>2</sup> of harmonised code H05RR-F or H05RN-F connected to an IEC hot condition plug should be used.

**IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN**

## Safety Advice

- ❖ Do not use the instrument to heat inflammable liquids.
- ❖ Never lift or carry the instrument until it has been switched off and allowed to cool for at least 30 minutes. The hot warning light will give guidance.
- ❖ The unit should be carried using both hands with the fingers under the side edges.
- ❖ Never move or carry the unit with containers on the top plate or while still connected to the mains supply.
- ❖ There is a danger of liquid spillage if containers are over-filled and stirred at high speed. Always build stirrer speed slowly and never stir more rapidly than necessary.
- ❖ NEVER place a cold glass vessel onto a hotplate which is already hot.
- ❖ NEVER use a retort rod longer than 600mm.

- ❖ When a retort rod is installed with apparatus attached, or when swivelling support rods, take care that there is sufficient weight on the plate to prevent the whole unit tipping over.
- ❖ When using a retort stand, in order to provide the unit with adequate ventilation the base of the retort stand must NOT exceed 19.5 mm in height and 125 mm in width.

## Operation

**Note:** When using any of the ceramic hotplates (UC150, UC151, UC152 and UC152D) at temperatures over 180°C, the base of any equipment used must not make contact with the ceramic plate outside the **Hot Zone**, see figure 6. This is to avoid damage to the hotplate.

**Note:** Modular heating blocks are not suitable for use with ceramic top hotplates.

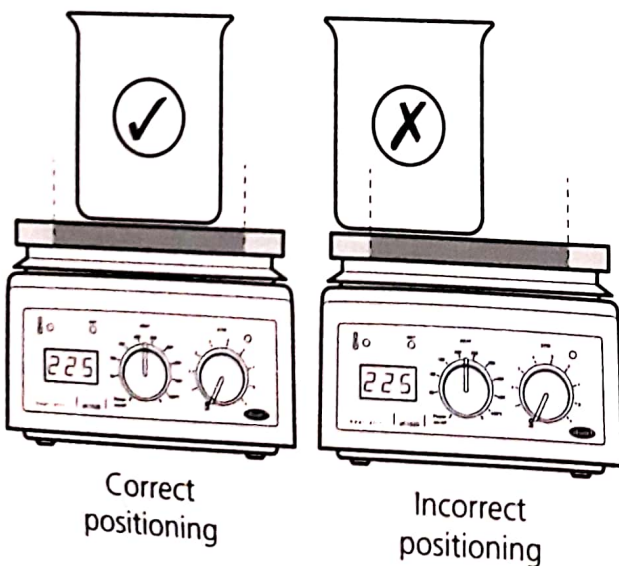
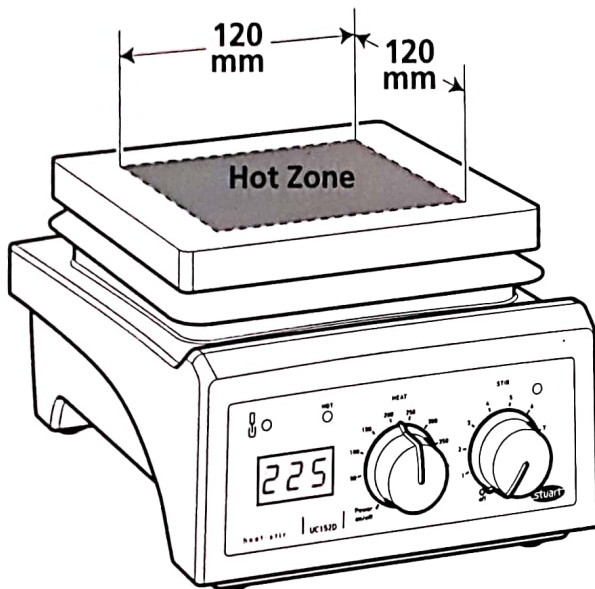
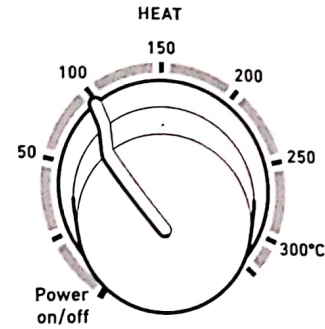


Figure 6

## Heating

### UC150, UC152, US150, US152

Switch the unit on using the mains on/off switch (see figure 2).



The control knob labelled "HEAT" on the front panel controls the heat output and hence the plate temperature. It is graduated with an approximate temperature scale. This scale refers to the temperature of the top plate and not to the temperature of the contents of the vessel being heated.

Turn the control knob clockwise to the required plate temperature. As the plate heats up the LED temperature segments around the dial will light up in turn and their light intensity increase until the set surface temperature is reached. Conversely if the unit is cooling, the LED temperature segments will go out as the plate approaches the set temperature.

### UC152D, US152D

Switch the unit on using the mains on/off switch (see Figure 2). When the control knob labelled "HEAT" is pointing to the Power on/off position, the LED display will show the word "OFF". Turn the control knob to the required temperature which will be shown on the LED display. The temperature will increment in 5°C steps. A few seconds after setting the temperature, the display will revert to showing the actual temperature of the hotplate.

If the unit is switched off using the mains on/off switch while the control is in a set position, the next time the unit is switched on the LED display will show the word "On" followed briefly by the previously set temperature. The display will then revert to the actual top plate temperature and the unit will then begin to heat to the set temperature.





**WARNING:** When the surface becomes too hot to touch the red "HOT" warning light on the front panel will begin to flash (see figure 1). This will continue to flash while the plate temperature is above 50°C for a maximum of 30 minutes, even if the unit is disconnected from the electricity supply.



**WARNING:** The plate may still be hot beyond 30 minutes when large masses are left on the plate, even though the "HOT" warning light has gone out.



**WARNING:** The top surface of the instrument may be **HOT**, especially in free air when a surface temperature of 450°C can be achieved on the ceramic top models and 325°C on the metal top models. Do not leave heaters switched on when not in use.

### Stirring

**UC151, UC152, UC152D, US151, US152, US152D**

Your unit is provided with a two 25mm PTFE stirrer bars. These should be placed in the liquid to be stirred. They are suitable for liquid volumes up to 500ml.

Switch the unit on using the mains on/off switch (see figure 2). The control knob labelled "STIR" on the front panel controls the stirrer speed. When switched on a green stir-on light illuminates, (see figure 1). The knob is graduated with an arbitrary 1-9 scale. Turning the knob to a higher number increases the stirrer speed.

### Using the Optional Accessory SCT1 Temperature Controller

**UC151, UC152, UC152D, US151, US152, US152D**

The SCT1 temperature controller allows accurate temperature control of aqueous and oil based samples in the laboratory and can be used in two different modes, as a precise temperature controller from 20 to 200°C or as a digital thermometer from -4 to 325°C.

Connection of the SCT1 temperature controller probe is via the DIN probe socket located at the rear of the hotplate (figure 2).

In control mode, the heat control of the hotplate is disabled, allowing precise control of sample temperature via the SCT1 temperature controller. The illuminated contact thermometer indicator LED indicates communication between the SCT1

temperature controller and hotplate (Figure 3).

When used in monitor mode, the SCT1 operates as a digital thermometer and the hotplate temperature is controlled by the "HEAT" control knob as described above. In this mode the LED temperature segments adjacent to the "HEAT" control knob (analogue models) or the LED temperature display (digital models) refer to the surface temperature of the hotplate not the sample.

For full instructions on use please refer to the SCT1 temperature controller manual.

## Cleaning and Care

### Before attempting cleaning:

Ensure that the top is cool, disconnect from the mains electricity supply.

The metal casing should be cleaned using a damp cloth and a mild detergent solution.

### Ceramic top units:

A damp cloth will normally remove most types of contamination. For more difficult stains a domestic cream cleanser is recommended.

Cleaning is made easier if spillages are attended to promptly. In any case, spillages of alkali, phosphoric acid and hydrofluoric acid **MUST** be removed immediately as these chemicals can attack and damage the glass ceramic. Ensure that the appropriate safety precautions are observed.

During cleaning and general operation take care not to scratch the surface of the top plate as this could result in subsequent thermal breakage.



**WARNING:** A ceramic top which is scratched, chipped, chemically etched or damaged must not be used.

### Metal top units:

The metal top plate should be cleaned using a damp cloth and a mild detergent solution.

Cleaning is made easier if spillages are attended to promptly. In any case, spillages of acids and alkalis **MUST** be removed immediately as these chemicals can attack and damage the surface of the coated aluminium alloy. Ensure that the appropriate safety precautions are observed.



## Preparation of media

Take particular care when heating liquids having a high viscosity. Viscous liquids can act as thermal insulators and can cause thermal breakage of the glassware. This is very important with media solutions as the viscosity will usually increase as the temperature rises.

- ❖ Check that the stirring action is sufficient to agitate the whole of the liquid. Unstirred areas in the liquid can result in uneven heat transfer and "hot spots" in the glassware. This can induce thermal stress and so cause failure.
- ❖ Check the stirring action regularly to ensure that it remains adequate as the viscosity of the solution increases.
- ❖ Always use the largest magnetic follower possible and if necessary, use a mechanical overhead stirrer.
- ❖ Do not use glass vessels with thick walls, e.g. Pyrex Heavy Duty Ware or standard beakers and flasks having capacities of 5 litres or greater.
- ❖ NEVER heat glass bottles on a hotplate.
- ❖ Ensure that the heat is built up slowly to avoid localised overheating.
- ❖ Ensure the glassware is completely free from scratches or other defects.
- ❖ Place the hotplate in a tray large enough to contain the liquid in the event of glassware failure.
- ❖ Wear the appropriate safety clothing e.g. gloves, goggles, protective apron etc.

## Storage

The unit is designed so that the top plate fits into the base plate of the next unit for easy and compact storage when placed on their side (see figure 5).

## Accessories

### SR1

The SR1 rod is available to support apparatus used with the instrument. The instrument is equipped with a fitting on the rear to accept the support rod catalogue number SR1 (see figure 2). To fit the rod to your instrument, first isolate from the mains supply and allow to cool. Screw the threaded end of the support rod into the fitting on the rear of the instrument. The shape of the base also allows a rectangular shaped retort rod

stand, whose dimensions must not exceed 19.5mm high and 125mm wide, to be placed directly underneath the unit. SR1 is 12 x 600mm (W x H).

### SCT1

For more information on the SCT1 temperature controller see page 4.

### Heating blocks

A complete range of modular heating blocks for heating round bottom flasks is available for use with the metal top hotplates. Please visit the Stuart website [www.stuart-equipment.com](http://www.stuart-equipment.com) for further information.

**Note:** Modular heating blocks are not suitable for use with ceramic top hotplates.

## Troubleshooting

### UC150, UC152, UC152D, US150, US152, US152D

The following error codes are displayed if the instrument detects an error condition. On the digital models the errors are shown as Er1, Er2 etc. on the LED display. On the analogue models the Er1 condition is shown by flashing the first LED on the temperature scale, Er2 would be shown by flashing the second LED and so on.

- ❖ **Er1** – Probe Range Error – If SCT1 reports probe temperature of  $>325^{\circ}\text{C}$  or  $< -99^{\circ}\text{C}$ .
- ❖ **Er2** – SCT1 Box Lost Error – Communications with the SCT1 have been lost.
- ❖ **Er3** – Hotplate Temperature Error – If the hotplate measures its temperature  $> 585^{\circ}\text{C}$  or  $< -9.9^{\circ}\text{C}$ .
- ❖ **Er4** – Hotplate Ambient Error – If the temperature sensed inside the hotplate (not the plate temperature) is  $85^{\circ}\text{C}$ .
- ❖ **Er5** – SCT1 Character Error – An unknown character was received from the SCT1.
- ❖ **Er6** – Probe Out Error – The instrument detects that the SCT1 probe has been removed from the solution being heated.
- ❖ **Er7** – SCT1 Timeout Error – The SCT1 did not respond to a request in the required time.

# Servicing and Repair

This product range does not require any routine servicing.

**Note: There are no internal user replaceable parts.**

In the event of product failure it is recommended that any repair is only undertaken by suitably qualified personnel. For advice or to receive a service manual please contact the Service Department of Cole-Parmer.

Only spare parts supplied by Cole-Parmer or its agent should be used. Fitting of non-approved parts may affect the performance of the safety features of the instrument.

**Note: The magnetic stirrer drive utilises strong magnets.**

If in doubt, please contact the Service Department:

Cole-Parmer Ltd.  
Beacon Road,  
Stone, Staffordshire,  
ST15 0SA, United Kingdom  
Tel: +44 (0)1785 810475  
Email: [cpSERVICE@coleparmer.com](mailto:cpSERVICE@coleparmer.com)  
Web: [www.stuart-equipment.com](http://www.stuart-equipment.com)

## Spares

For a comprehensive parts list please contact the Service Department of Cole-Parmer quoting model and serial number.

For any other technical enquiries, please contact the Technical Support Department.

# Warranty

Cole-Parmer Ltd. warrants this equipment to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of **three (3)** years. In the event of a justified claim, Cole-Parmer will replace any defective component or replace the unit free of charge.

This warranty does NOT apply if:

- ❖ A ceramic top has broken due to mechanical impact, scratching, chipping or chemical etching.
- ❖ Any repair has been made or attempted other than by Cole-Parmer or its agent.
- ❖ Minor coating chips and scratches appear from what is deemed normal use.
- ❖ Damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by installation, adaptation, modification or fitting of non-approved parts.



# Technical Specification

Hotplate Stirrers	US152	UC152	US152D	UC152D
Plate material	Coated aluminium/silicon	Glass ceramic	Coated aluminium/silicon	Glass ceramic
Plate dimensions, mm	150 x 150	150 x 150	150 x 150	150 x 150
Heated area, mm	150 x 150	120 x 120	150 x 150	120 x 120
Heater control	Analogue	Analogue	Digital	Digital
Heater power, W	700	500	700	500
Max. plate temp, °C	325	450	325	450
Min. set temp, °C	-	-	25	25
Stirrer speed, rpm	100-2000	100-2000	100-2000	100-2000
Max. stirring capacity, L*	15	15	15	15
Compatible with SCT1	Yes	Yes	Yes	Yes
Control accuracy with SCT1	±1°C	±1°C	±1°C	±1°C
Dimensions (w x d x h), mm	172 x 248 x 120	172 x 248 x 122	172 x 248 x 120	172 x 248 x 122
Net weight, kg	2.9	2.9	2.9	2.9
Power, W	750	550	750	550
Electrical supply	120V, 60Hz or 230V, 50Hz or 220V, 60Hz	120V, 60Hz or 230V, 50Hz or 220V, 60Hz	120V, 60Hz or 230V, 50Hz or 220V, 60Hz	120V, 60Hz or 230V, 50Hz or 220V, 60Hz

## Hotplates

	US150	UC150
Plate material	Coated aluminium/silicon	Glass ceramic
Plate dimensions, mm	150 x 150	150 x 150
Heated area, mm	150 x 150	120 x 120
Heater control	Analogue	Analogue
Heater power, W	700	500
Max. plate temp, °C	325	450
Compatible with SCT1	Yes	Yes
Control accuracy with SCT1	±1°C	±1°C
Dimensions (w x d x h), mm	172 x 248 x 120	172 x 248 x 122
Net weight, kg	2.2	2.2
Power, W	700	500
Electrical supply	120V, 60Hz or 230V, 50Hz	120V, 60Hz or 230V, 50Hz

## Stirrers

	US151	UC151
Plate material	Stainless steel	Glass ceramic
Plate dimensions, mm	150 x 150	150 x 150
Stirrer speed, rpm	100-2000	100-2000
Max. stirring capacity, L*	15	15
Compatible with SCT1	No	No
Dimensions (w x d x h), mm	172 x 248 x 109	172 x 248 x 107
Net weight, kg	2.0	2.0
Power, W	50	50
Electrical supply	120V, 60Hz or 230V, 50Hz or 220V, 60Hz	120V, 60Hz or 230V, 50Hz or 220V, 60Hz

\*Based on water contained in a 20 litre glass bottom flask



**CE** This product meets the applicable EC harmonized standards for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in its vicinity will meet these standards

and so we cannot guarantee that interference will not occur in practice. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advice before use, contact the manufacturer.



### EU Declaration of Conformity

<b>Product</b>	Laboratory Equipment	<b>File Number</b>	P225
<b>Manufacturer</b>	Cole-Parmer Ltd Beacon Road Stone, Staffordshire ST15 0SA United Kingdom		

**This declaration of conformity is issued under the sole responsibility of the manufacturer**

**Object of Declaration** Hotplates and Stirrers  
(reference the attached list of catalogue numbers)

The object of the declaration described above is in conformity with the relevant Union Harmonisation Legislation:

<b>Low Voltage Directive</b>	2006/95/EC	(until 19 April 2016)
	2014/35/EU	(from 20 April 2016)
<b>EMC Directive</b>	2004/108/EC	
<b>RoHS Directive</b>	2011/65/EC	

References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:

IEC/EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements.
IEC/EN 61010-2-010:2014	Particular requirements for laboratory equipment for the heating of materials.
IEC/EN 61326-1:2006	Electrical equipment for measurement, control and laboratory use. EMC requirements. Part 1: General requirements (Class A).

**Signed for and on behalf of the above manufacturer**

**Additional Information** Year of CE Marking: 2013

**Place of Issue** Stone, Staffordshire, UK

**Date of Issue** 16 December 2013. Revised 06 February 2017

**Authorised Representative** Steve Marriott

**Title** Technical Director

**Signature**

# INSPECTION REPORT

MODEL 1121521

SERIAL NO. 244000 3907

## ELECTRICAL SAFETY

1. Earth continuity



2. Insulation



3. Flash test



## FUNCTIONAL

1. Indicators



2. Heater/Stirrer control



3. Visual acceptance



QUALITY CONTROL INSPECTOR



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