Variable Temperature Sealer
Operators Manual

953/Y/003 - Issue 6

Declaration of Conformity

The VTS unit has been designed in accordance with, and satisfies the requirements of, article 11 of the Low Voltage Directive 73/23/EEC as realigned by 93/68/EEC on the harmonisation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits, to the essential requirements of BS EN 61010-1:2001.

The VTS unit has been type tested by EMC Projects Limited (a UKAS and CAA approved test facility and UK appointed Notified Body), and issued a Certificate of Compliance No. 6091/06 to the following EMC standard:

BS EN 61326:1998, Electrical equipment for measurement, control and laboratory use. EMC requirements

Satisfying the EMC Directive(s) 89/336/EEC and 92/31/EEC as realigned by 93/69/EEC.

IMPORTANT This product is designed and constructed to be safe when properly used, in accordance with the supplied documentation, and when the operating precautions outlined in this document are fully observed.

IMPORTANT

IT IS ESSENTIAL THAT THE USER OF THIS MANUAL IS AWARE OF THE POTENTIAL HAZARDS ASSOCIATED WITH THE UNIT AND ITS ACCESSORIES.

ALL OPERATORS SHOULD BE FAMILIAR WITH THE SAFETY PRECAUTIONS AND WARNINGS GIVEN IN THIS SECTION PRIOR TO ATTEMPTING TO OPERATE THE UNIT.

IF THE UNIT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

The following symbols are used in this manual:

Description: **CAUTION** / **WARNING**

Description: **HEATED SURFACE**

WARNING: If the unit is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

- **The unit is intended for indoor laboratory use only, at an altitude of less than 2200m above sea level, within a temperature range of 18°C to 30°C and a relative humidity range of 20% to 80% non-condensing. If the instrument is stored outside these ranges, it should be left to stand until it equilibrates to within the above limits.**
- **Ensure the voltage selection switch is set to the correct voltage for the required region *(See Fig 3)*.**
- **Ensure the correct fuse for the required voltage setting is fitted (see Specifications section).**
- **Do not operate the unit outside the rated power supply range specified.**
- **There are no user accessible or serviceable parts inside the unit. Do not remove or open the unit's casework.**
- **Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.**
- **Ensure the unit is only connected to an earthed supply.**
- **Ensure adapter plate is fitted before use.**
- **Once timer starts, no additional handle pressure is required. Adjust time and temperature only for optimum seal.**

- **WARNING: The hot plate can reach temperatures up to 200°C. Care must be taken not to touch it or serious burns may occur.**
- **The unit will remain hot for a considerable time after it has been turned off and must be allowed to cool down to an acceptable level before cleaning.**
- **Foil sealed plates may remain hot for a number of seconds after sealing and should be handled with care.**

Table of Contents

1. General Description of Apparatus

The variable heat sealer provides a safe, controlled method of sealing sample plates made from various plastics. The sealer is adjustable for both sealing time and temperature and gives a visual countdown display during the sealing process. The variable heat sealer can seal deep well plates (Bioblocks) with various thermal sealing plastic or foil films and may be adapted to seal Microplates and PCR plates by using a suitable plate carrier.

2. Intended Function of Apparatus

The variable heat sealer is intended to provide a platform with which to load and thermally seal biological plates to prevent sample loss at high temperature or prolonged periods of storage. Various types of plate may be loaded onto a plate carrier and covered by a thermal sealing medium, which may be foil or clear plastic.

The operator may pre-set a precise temperature and seal time for the sealing operation. Sealing is initiated by pulling down a handle which raises the sample plate into contact with the hot plate. The plate sealer detects when the sample plate is in the correct position and starts a countdown timer. The countdown is displayed on a three digit LED display. When the display reads zero, the operator lifts the handle back to the upright position, which moves the sample plate away from the hot plate. The plate may then be manually removed for further processing.

3. Installation

The variable temperature sealer should be removed from it's packaging and all internal packaging removed. The instrument should be placed on a level surface, away from direct sunlight and drafts ensuring access to the power switch on the rear of the unit. Ensure that the vents on the back panel are not obstructed.

3.1 Mains inlet selection

The mains voltage selector switch should be checked to ensure that the desired voltage has been set and the correct value of fuse has been fitted (see FIG 3, FIG 4 and the specification section). The instrument should now be connected to an earthed mains supply with an IEC 320 connector type C13 mains lead ensuring there is sufficient space around it so that the mains connection is not obscured.

4. Types of consumable

The variable temperature sealer is designed to be used with the following consumables:-

Plate Types: Polypropylene, polyethylene or polystyrene.

1. Deep well plates (Bioblocks) without a carrier.
2. PCR (Polymerase chain reaction) plates with carrier.
3. Microplates with carrier.

Sealing film types:

1. Foil polypropylene laminate.
2. Clear polyester polypropylene laminate.
3. Clear polymer.
4. Thin clear polymer.
5. Foil laminate.
6. Foil.

Plate Carriers:

1. Enclosed Well Plate Carrier	S120530.
2. Open Well Plate Carrier	S120529.
3. Bio Block Plate Carrier	S120531.

5. Operating Instructions

If the instrument has been removed from storage, it should be left to reach ambient room temperature. For correct operating conditions, please see specification section.
Please refer to FIG 2 for location of user interface components and FIG 4 for the location of the power switch.

When the instrument is first turned on, The LED display shows the current settings for either sealing temperature or seal time and the heater on/off status retained from the last seal. Pressing the mode switch toggles the display between seal time and temperature setting. A new temperature setting between 125°C and 200°C may be set by pressing the up and down arrow keys. The "°C" mode LED lights to indicate that the adjustable field is temperature. Seal time is adjustable via the up and down keys in 0.5 Second increments between 1 – 9 seconds. If the up or down arrow keys are held for more than 1 second, the key will auto-repeat.

When the desired settings have been set the heat on/off button may be pressed to begin heating the sealing plate to the set temperature. The heat LED flashes at a slow rate to indicate that the heater is on but not yet up to temperature. The heater should heat up to the set point in about ten minutes. When the heater is within two degrees of the set point, the heat LED will be continuously on and the sealer is ready to begin sealing plates.

A Typical operating sequence is:

1) Switch instrument on and set required sealing time and heater set-point temperature for the desired sealing process, via the keypad and LED display.
2) Enable the heater by pressing the Heat on/off button.
3) Allow sufficient time for the instrument to reach desired temperature. The Heat on/off LED will flash whilst the sealer is coming up to temperature and will remain on permanently when the set point (±2°C) is reached.
4) Load sample-plate onto plate carrier and add the sealing film. Care should be taken not to touch the heating surface whilst loading the sample plate.
5) Grasp the handle with one or two hands as appropriate (see FIG1a).
6) Lower handle to thermally compress sealing film onto sample plate (see FIG1b).
7) When correct clamping pressure is achieved an audible warning will sound (if audible sounder fitted) and the "timer" will count down to zero. Care should be taken not to apply more pressure to the handle than is necessary to operate the micro switch.
8) On zero seconds, the display will flash and an audible warning will sound. Release the heater plate from the sealed sample plate by raising the handle to its upper position and review the seal that has been made. Failure to raise the handle could ruin the sample plate.
9) Remove sealed plate for subsequent processing (see FIG1c).

The seal temperature and time may vary with each type of plate. It is recommended that the temperature and time settings for the sealer are reviewed empirically to determine optimum seal integrity.

FIG 1a.

FIG 1b.

FIG 1c.

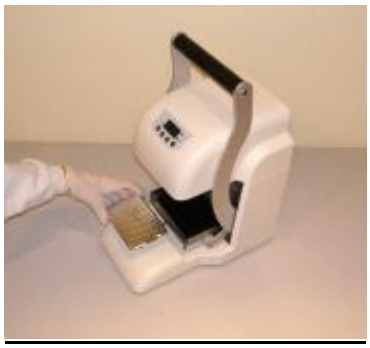


FIG 2.

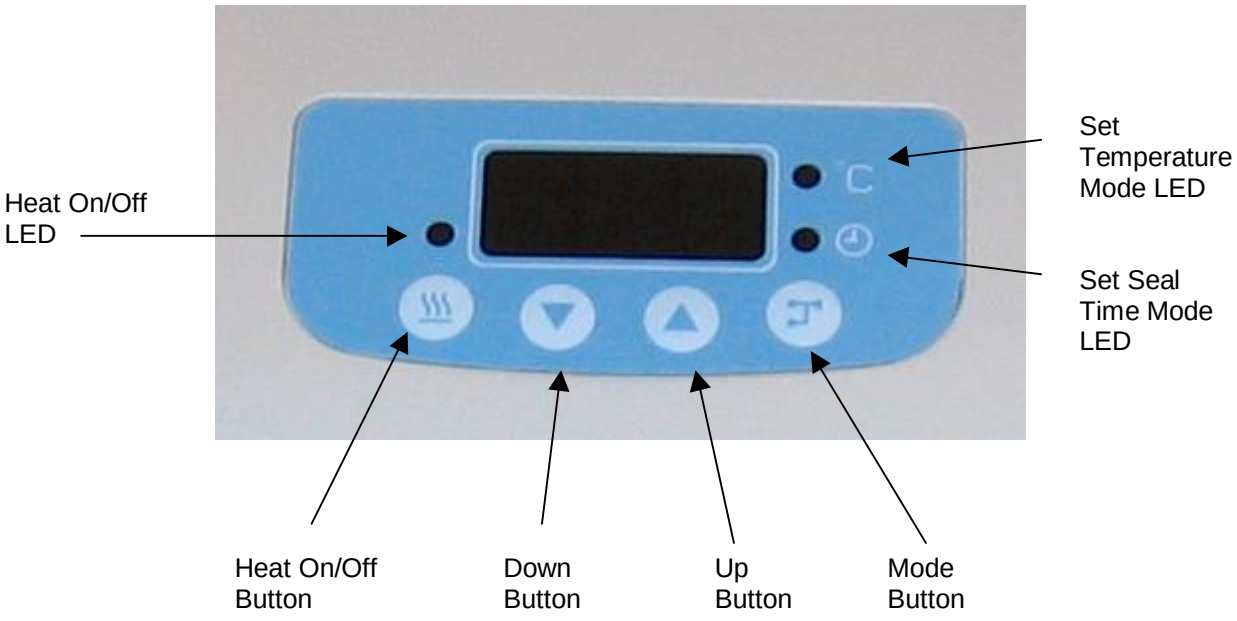


FIG 3.

Voltage Selector Switch
Set to 115V

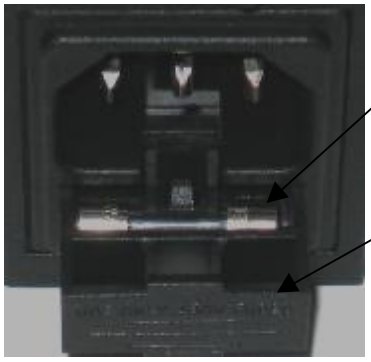
Voltage Selector Switch
Set to 230V

FIG 4.

Mains Power Switch

Fuse Holder

FIG 5.



Insert Fuse Here.

Spare Fuse Position

6. Cleaning

The instrument is to be cleaned only by wiping Virkon solution at the manufacturer's guideline concentration. No parts are to be autoclaved.

7. Specification

Equipment Reference: Variable Temperature Sealer.	
Model No: 953-A	
Specification:	
Temperature Set Point Range	125°C to 200°C in 1°C increments.
Time Set Range	1 to 9 seconds in 0.5 second increments.
Operating Humidity Range	20% to 80% non-condensing.
Operating Temperature Range	18°C to 30°C.
Size	220 x 321 x 425 mm
Weight	7.2 kg
Power Supply	100 - 130V AC 50/60Hz or 220 – 240V AC 50/60Hz.
Power Rating	350 W Max.
Fuse	100 - 130V - T3.15A (IEC 127) or 220 - 240V - T1.6A (IEC 127).
Mains Input Connector	IEC 320
Applicable Standards	FCC Class A, CFR 47 Part 15. BS EN 61326:1998

8. Over Temperature Safety Cut Out

The instrument is protected against a fault condition leading to the sealing plate heating up to a temperature exceeding it's maximum set point. Protection is provided by a single use thermal cut out, operating in the range 235°C to 240°C. In the unlikely event that this cut out should operate, it would necessitate the sealer being returned to the manufacturer for repair.

9. Switching off the Auible Warning (if audible sounder fitted)

Some units are fitted with a sounder which give an audible warning at the end of the seal time. The sounder is on by default but may be programmed to be on or off. To turn the Audible warning off, place the sealer in Temperature set mode (Set Temperature Mode LED on) and simultaneously press the Mode button and the Heat On/Off buttons together. The display will show "01" to indicate that the audible warning is ON and both Set Temperature Mode and Set Seal Time Mode LEDs will be off. Pressing the Down button turns the audible warning OFF. The display should now show "00" . Pressing the Mode button will save this configuration so that the audible warning is always off and the display will return to the Set Temperature Mode. To turn the audible warning back on repeat this process but instead press the Up button to display "01".

10. Lifting and Moving the Instrument.

The instrument should be lifted by holding by the handle. Care should be taken when lifting the instrument due to it's weight. Refer to current Health and Safety procedures.

11. Warranty and Returns

Name and Address of Responsible Person:

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Name and Address of Manufacturer:

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Name and Address of Ditrubutor:

12. DOCUMENT HISTORY

Date	By	Issue	Reason
29th Jan 2006	MAH	1	Initial issue
26th Apr 2006	MAH	2	Update Photographs
30th May 2006	MAH	3	Update operating instructions section to incorporate audible warning at end of seal time.
8th Dec 2006	MAH	4	Update operating instructions section to incorporate audible warning at start of seal time.
16th Feb 2007	MAH	5	Update operating instructions section to incorporate the preservation of operating status when the unit is turned on and add additional warnings.
27th Feb 2007	MAH	6	Update pictures of voltage selector.