

Operating Instructions For The Xts-384 Variable Temperature Sealer



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Declaration of Conformity

- The xts-384 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 xts-384 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.

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 1).
- 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.



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.

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1. GENERAL DESCRIPTION OF APPARATUS

- i. The xts-384 variable heat sealer provides a safe, controlled method of sealing microplates and pcr 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.
- ii. 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. SEALER FUNCTION

- i. The xts-384 variable heat sealer is intended to provide a platform with which to load and thermally seal biological plates to prevent sample evaporation or degradation. 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.
- ii. 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

- i. The xts-384 variable temperature sealer should be removed from its 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.
- ii. **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 1, Fig 2 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.

fig 1.



Voltage selector switch set to 115V



Voltage selector switch set to 230V

fig 2.

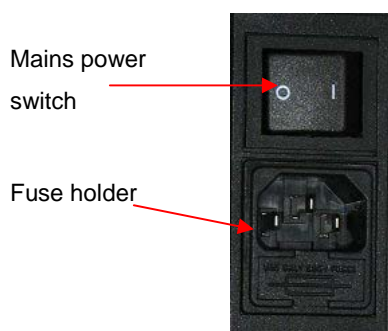
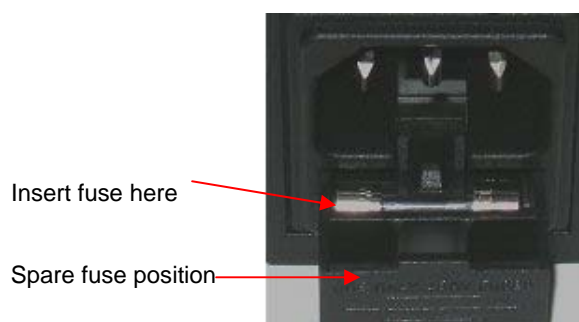


fig 3.



4. TYPES OF CONSUMABLE

The xts-384 variable temperature sealer is designed to be used with the following consumables:

SEALING FILMS

| Cat No. | Description |
|---------|---|
| 44-1003 | Clear Seal. Clear material forming a peelable seal for polypropylene and polystyrene plates. Good optical clarity. Some solvent resistance. Temperature range: -80°C to 120°C. |
| 44-1001 | EZ Peel. Peelable heat seal for polypropylene plates. Can be peeled directly from freezer. Good barrier to aqueous solutions. Moderate resistance to solvents at room temperature. Temperature range: -80°C to 120°C |
| 44-1002 | EZ Pierce. Heat seal for polypropylene plates that can be pierced with a tip or peeled off by hand. Very good solvent resistance, including DMSO. Resealing onto existing seal is possible. Temperature range: -80°C to 120°C. |

Heat seals from other manufacturers can also be used on the xts-384, however performance cannot be guaranteed.

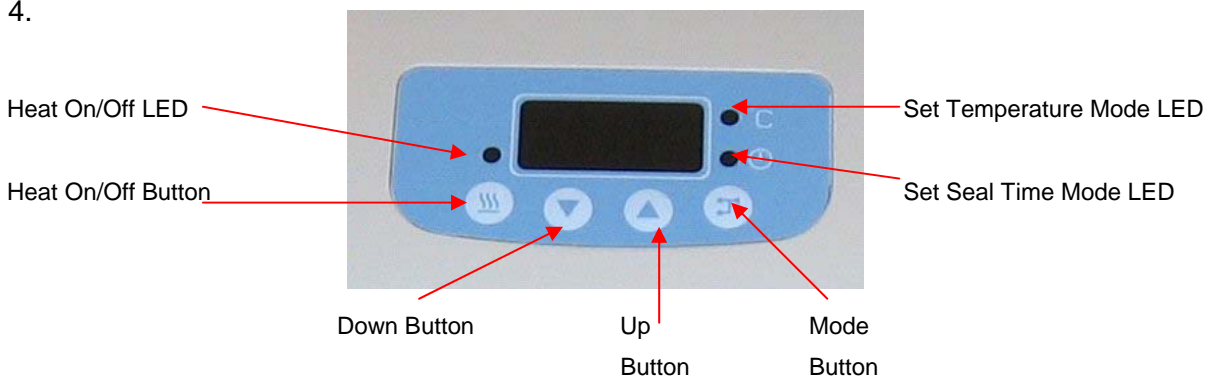
PLATE CARRIERS

| Cat. no. | Description |
|----------|---|
| 42-1001 | Adaptor for all SBS footprint plates and standard deep well blocks. |
| 42-1002 | Adaptor for frame less PCR plates |
| 42-1003 | Adaptor for deepwell Bio-blocks or other plates with a flat bottom. |

5. OPERATING INSTRUCTIONS

- i. 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 4 for location of user interface components and Fig 2 for the location of the power switch.
- ii. When the instrument is first turned on, the LED display shows the current setting for sealing temperature which is retained from the last seal. A new setting between 125°C and 200°C may be set by pressing the up and down arrow keys. The " °C" LED indicates the desired temperature setting. Pressing the mode switch causes the seal time to be displayed. This is also adjustable via the up and down keys in 0.5 second increments between 1 - 9 seconds. Pressing the mode button again switches back to the sealing temperature adjustment. If the up or down arrow keys are held for more than 1 second, the key will auto-repeat.
- iii. 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.

Fig 4.



6. TYPICAL OPERATING SEQUENCE

- i. Switch instrument on and set required sealing time and heater set-point temperature for the desired sealing process, via the keypad and LED display.
- ii. Enable the heater by pressing the Heat on/off button. 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 ($\pm 2^{\circ}\text{C}$) is reached.
- iii. 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.
- iv. Hold the handle with one or two hands as appropriate (see Fig 5a). Lower handle to raise the plate and seal to the heater platten.
- v. When correct clamping pressure is achieved feedback is provided 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. NB. Applying too much force may result in uneven sealing across the plate.
- vi. On zero seconds, 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.
- vii. Remove sealed plate for subsequent processing (see Fig 5c).
- viii. 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 5a

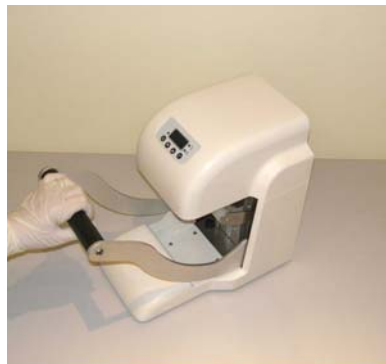


Fig 5b



Fig 5c

7. CLEANING

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

8. SPECIFICATIONS

| | |
|-----------------------------|--|
| 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 | 7.2kg |
| Power Supply | 100-130V AC 50/60Hz or 220 - 240V AC 50/60Hz |
| Power Rating | 350W 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, CRFR 47 Part15. BS EN 61326:1998 |

9. OVER TEMPERATURE SAFETY CUT OUT

- i. 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.

10. SWITCHING OFF AUDIBLE WARNING

(If audible sounder fitted)

- i. 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.

ii. To turn off the audible warning.

- a. Place the sealer in Temperature Set Mode (Temperature Mode LED on).
- b. Press the Mode button and the Heat On/Off button simultaneously. The display will show "01" to indicate that the audible warning is on.
- c. Press the "Down" button to turn the audible warning off.
- d. The display should now read "00". Press the Mode button to save this configuration and the audible warning remains off. The display will return to the Set Temperature Mode.
- e. To turn the audible warning on, repeat this process but press the "Up" button to display "01".

11. LIFTING AND MOVING INSTRUMENT



- i. The instrument should be lifted by holding by the handle. Care should be taken when lifting the instrument due to its weight. Refer to current Health and Safety procedures.

12. WARRANTY AND RETURNS

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Manufactured for FluidX by:

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13. APPENDIX 1 - Heat Sealing Parameters For Heat Sealing Films And Foils

| Cat. Number | Name | Dwell time and temperature for a 96 well plate | Dwell time and temperature for a 384 Well Plate |
|--------------------|-----------------|---|--|
| 44-1001 | Peel-Seal | 175°C / 3 Sec. | 175°C / 2 Sec. |
| 44-1002 | Pierce-Seal | 175°C / 2.5 Sec. | 175°C / 2 Sec. |
| 44-1004 | Foil-Seal | 175°C / 2.5 Sec. | 175°C / 2 Sec. |
| 44-1003 | Clear-Seal | 170°C / 2 Sec. | 170°C / 2 Sec. |
| 44-1005 | Clear Weld Seal | 170°C / 2 Sec. | 170°C / 2 Sec. |
| 44-1007 | Gas Permeable | 175°C / 2.5 Sec. | 175°C / 2 Sec. |
| 44-1006 | Thermal Bond | 175°C / 2.5 Sec. | 175°C / 2 Sec. |

These values are for guidance only. It is advisable to conduct individual trials depending on the type of plate to be sealed.

The values stated above are pertinent for plate sealing using a FluidX Xts-384. If using an automated sealer, reduce the dwell time by 0.5 - 1.0 second.

Some seals, such as the Peel-Seal, have a tendency to curl prior to sealing. To overcome this issue place a weighted metal sheet over the seal, before sealing, to keep flat. When using a Peel-Seal, increase the dwell time by 1 second.