



Temperature Controlled *In Vitro* Slice
Holding Chamber

7470

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The purpose of this manual is to allow the user to achieve expertise in the use of the Instrument and to give the maintenance technician an insight into maintaining the instrument in peak operating condition.

Please read and understand the information contained in this manual before using the instrument. Only competent and capable personnel should use the instrument.

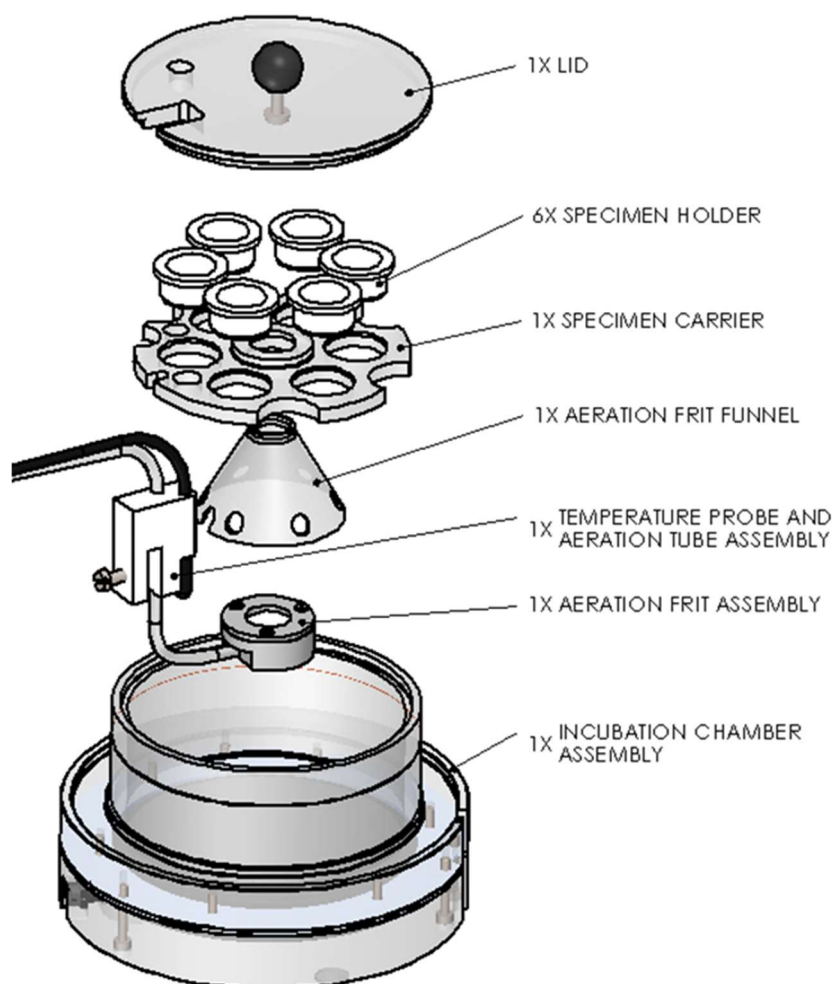
This document should be retained for future reference as it contains the name and address of the manufacturer within the EC

NOTE: The equipment rating label is positioned on the underside of the control unit due to space constraints.

01 Introduction

The 7470 Temperature controlled Slice Holding chamber, has been developed to accompany the Campden Instruments range of tissue slicers.

The 7470 has been developed according to the principles described in the Plymouth Microelectrode Handbook (Gibb, A.J. and Edwards, F.A., 1994. Patch clamp recording from cells in sliced tissues. In *Microelectrode Techniques: The Plymouth Workshop Handbook*, Chapter 10). This unit is designed to hold and maintain tissue slices in six sub-chambers at physiological temperatures with an aeration supply to allow recovery from slicing as well as incubation during the experimental day (10-12 hrs). The Proportional Integral & Derivative (PID) controlled heating element is integrated into the stainless-steel bath bottom plate. All of the metal components are manufactured from high-grade stainless steel to remove the risk of contamination of the slice by leached metal ions such as Zn^{2+} . Temperature feedback is via a thermistor probe attached to the bath wall at the same water level as the specimen holder rings. We have also designed the chamber to reduce the risk of thermal/osmotic shock by ensuring the condensation on the lid does not drip back down on to the slice. The aeration pathway has been arranged so that the slice is not disturbed by the bubbles and the created fluid current helps retain the slices within the sub-chamber.



02 Packaging

Please retain the original packaging for future use.

Instruments will not be accepted for service or repair unless the unit has been adequately and properly packaged. Additionally, instruments will not be accepted without prior authorisation and have been certified as being uncontaminated with any material that may be hazardous to the health of service personnel. A Returns Authorisation and Decontamination Certificate blank form is included at the end of this manual and may be photocopied as required. Blank forms can also be obtained by contacting Campden Instruments.

Packing List

Item	Quantity
Temperature Controller	1
Chamber	1
Chamber Lid	1
Frit Holder (with frit and gasket)	1
Specimen Carrier	1
Temperature Probe	1
Specimen holder	6
Aeration Tubing	1
Aeration Funnel	1
Instruction Manual	1
IEC Mains Power Cord	1

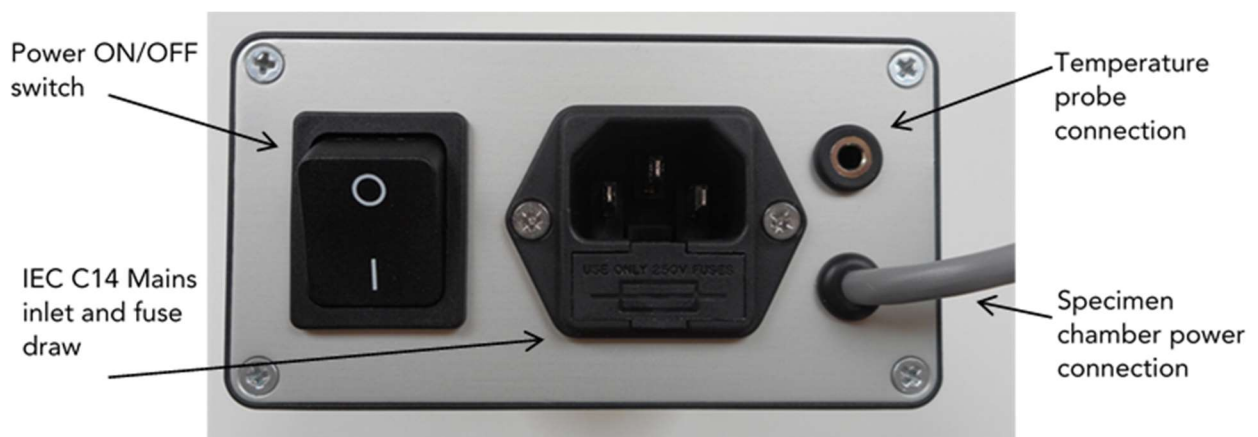
03 Set Up

The chamber components should be assembled as shown on the previous page. The Specimen Carrier assembly consists of an Aeration funnel, a Specimen carrier and 6 individual PTFE Specimen holder rings. The funnel should be gently pressed into the centre hole of the Specimen holder. Ensure the slots for the aeration tubing are aligned. The specimen holder rings have been supplied with netting attached. If new netting is required, then please refer to the maintenance section later in the manual.

The chamber is designed to be connected to a suitable aeration gas supply. The aeration gas is bubbled through a glass frit at the base of the aCSF chamber. The supply should be regulated until a stream of small bubbles appears from the glass frit (it may take a few minutes for any liquid to be expelled from the frit assembly before bubbles appear). This aeration together with heat provides a circulating flow within the chamber. This gentle circulation helps hold the tissue slices in their individual chambers. The aeration unit is supplied assembled. It is advisable that, to avoid the growth of bacteria and algae the frit is changed on a regular basis. Instruction for changing the frit is given in the maintenance section of this manual.

Add 290mL of aCSF solution to the chamber level indicated. For best results it is important that this solution level is maintained.

Electrical connections to the temperature control unit are shown in the picture below. Connection between controller and bath is via a 4-pin connection mounted on the bath base. This is a firm push fit. When disconnecting, try to pull the connector and not the cable. Pulling the cable may result in damage to the control unit.



3.1. Switching on

The chamber heater can be switched on or off using the power switch on the rear panel of the controller (above).

3.2. Setting the desired Chamber temperature.

Use the up or down buttons to select the desired chamber temperature. The selection will increment or decrement the set temperature in 0.5deg increments.

3.3. Heat up

From cold, the unit will typically take between 20 and 30 minutes to reach the set temperature.

During heat up, the RED status LED will flash. When the set temperature is reached and the temperature has stabilised, the red status LED will stop flashing and if enabled the alarm will set.

3.4. Alarm Function

Once the temperature has stabilised, if the temperature drifts by more than the selected alarm +/- window the alarm will trigger. The alarm is indicated by a high pitched noise, a flashing display back light and a flashing status LED. When the chamber temperature is stable again, the status LED will stop flashing and remain on. To indicate an alarm event has occurred, the alarm will remain active until reset by pressing the menu select button.

3.5. Incorrect setup

The chamber will fail to heat if the chamber power is disconnected, the probe is disconnected or the probe is not present in the chamber. The screen will display what fault is present. If one of these scenarios should occur and the chamber temperature has settled, the alarm will sound. This alarm cannot be disabled.

The unit should under no circumstances be used with low liquid levels. If there is low or no liquid in the chamber, power to the chamber heater will be cut off as a safety precaution and the alarm will sound. It cannot be guaranteed that damage will not be done to the unit.

3.6. Menu functions

Alarm on/off

Press the menu select button once, and then press the up or down buttons to toggle the alarm function on or off. This only switches the audible temperature window alarm.

Alarm +/- window

Press the menu select button until the ALARM+/- screen is available. Press the up or down buttons to set the desired alarm temperature window. (± 0.5 – ± 1.5)

Display illumination brightness

Press the menu select button until the 'BK LIGHT' screen is available. Press the up or down buttons set the desired display backlight illumination.

Display contrast

Press the menu select button until the 'CONTRAST' screen is available. Press the up or down buttons set the desired display contrast.

04 Cleaning and Maintenance (Chamber)

DO NOT submerge. The unit base contains electrical components.

DO NOT use any cleaning solvents. Using solvents for cleaning plastic parts may result in damage or destruction.

DO NOT autoclave. Acrylic parts must not be autoclaved as the temperature will lead to softening of the material.

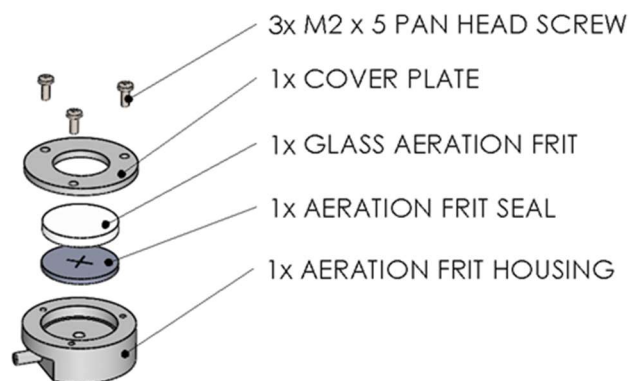
The Liquid Chamber should be cleaned on a regular basis. Bacteria and algae will start to accumulate quickly and grow in the warm, moist conditions found within the chamber. All parts should be cleaned using warm soapy water. Rinse well in clean distilled water.

4.1. Renewing the specimen holder ring netting

When using adhesives, please refer to manufacture instruction and Health & Safety data .

Glue a piece of nylon net to each ring. Best results are obtained using French stockings cleaned 2-3 times in a washing machine to remove any coatings or fabric treatment from the material. Stretch the nylon net over the opening of a large glass bottle. Put some fast acting glue (e.g. Loctite 406 + Loctite 770 Activator) on the edge of each ring and glue them to the nylon net. After drying, cut out the rings together with the glued nylon net.

4.2. Renewing the Aeration Frit



The Glass aeration frit will from time to time require replacement. The frit and seals are available from Campden Instruments (see spare parts and consumables). To replace the frit:

- Remove the aeration assembly from the temperature bath.
- Remove the cover plate retaining screws (x3) and the retaining plate.
- Carefully tap the frit holder upside down until the frit falls free.
- Clean all the components thoroughly in warm soapy water. Rinse well in clean distilled water.
- Replace the new frit and seal.
- Replace the cover plate and tighten screws sequentially to avoid fracturing the glass frit
- Should the heads of the M2 x 5 Pan Head screws become damaged, it should be ensured that their replacements are manufactured from A2 grade stainless steel.
- Allow two hours before use for the seal to settle into the frit surface.

4.3. Service

Should any problems arise that cannot be solved easily on site, the instrument may be returned to Campden Instruments for investigation and/or repair. Please note the following:

Instruments will not be accepted for service or repair unless the unit has been adequately and properly packaged. Additionally, instruments will not be accepted without prior authorisation and have been certified as being uncontaminated with any material that may be hazardous to the health of service personnel.

Returns Authorisation and Decontamination Certificate forms can be obtained by contacting Campden Instruments at the addresses given at the back of this manual.

05 Specifications

Set Temperature Resolution	0.5°C
Temperature Resolution	0.1°C
Temperature Probe Accuracy	±0.5°C
Temperature Range	35°C to 45°C
(Note that the actual temperatures achievable will be dependent upon the solutions used and local temperature conditions)	
Chamber Size (external)	130mm dia x 80mm (nominal)
Chamber Volume	290ml (nominal)
Temperature Controller Dimensions	60H x 105W x 170D (mm nominal)
Control Output	27VDC, 1A (PWM)
Control Algorithm	PID
Power Requirements	88-264VAC 50-60Hz
Power Rating	35W
Mains Inlet Fuse Rating	T500mA 250VAC
Mains Connection	IEC C14 Plug (accepts IEC C17 Socket)
Weight	1.4Kg
Boxed Shipping Weight	2.1Kg

06 Spare Parts and Accessories

When ordering, please order by part number and description.

Product	Model
Temperature Controller	7470-1-1
Chamber	7470-2-1
Chamber Lid	7470-2-2
Frit Holder (with frit and gasket)	7470-2-3
Specimen Carrier	7470-2-4
Temperature Probe	7470-2-5
Specimen holder (x6)	7470-2-6
Aeration Tubing	7470-2-7
Aeration Funnel	7470-2-8
Glass Frit (x5)	7470-2-3-1
Frit holder Gasket	7470-2-3-2

07 EC Declaration of Conformity

1. Product Model:

Model Type: 7470

2. Manufacturer:

CERTAIN INDEXES LTD

4 Park Road, Sileby, Loughborough, Leicestershire, LE12 7TJ, UK.

3. This declaration of conformity is issued under the sole responsibility of the manufacturer.

4. Object of the Declaration:

Slice Incubation Chamber

5. The object of the declaration described above is in conformity with the relevant Essential Health & Safety Requirements of the following relevant Union harmonisation legislation:

-2014/30/EU EMC Directive

-2014/35/EU Low Voltage Directive

-2011/65/EU RoHS Directive

-2015/863 Amendment to RoHS Directive

6. References to the relevant harmonised standards used in relation to which conformity is declared:

-EN 61010-1:2010

-BS EN 61326-1:2013

-BS EN 61000-3-2:2014

-BS EN 61000-3-3:2013

7. I hereby declare the equipment named above complies with the relevant CE Marking Legislation and I am the person authorised to compile the technical documentation.

Signed for and on behalf of:

Certain Indexes Ltd (address above) on 27TH November 2018

G. Prescott (Managing Director)



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