

OPTICHROME



USER AND MAINTENANCE MANUAL

VERSION:

Based on software version:
2.52

MANUAL

CODE :

DATE: 02 MAY 2005



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1 GENERAL INFORMATION

1.1 INTRODUCTION

Optichrome is an instrument used for optimising the quality of chromosome preparations in a controlled humidity and temperature environment.

Temperature and humidity may be set within a range that allows the operator to select the ideal conditions for the required working protocols

- The desired values are input through a membrane keyboard: data are shown on a display and can be saved for subsequent use in nine different programmes (cycles).
- Slides of different shapes may be used (e.g. Petri or Chamber slides) to satisfy all of the analysis requirements encountered by a cytogenetic laboratory (peripheral blood and bone marrow, amniotic fluid and other tissue preparations).

1.2 SYMBOLS

Some symbols are used in the manual as described below:



WARNINGS



IMPORTANT INFORMATION

2 SAFETY



All safety measures described in this manual should be read carefully and strictly followed. It is suggested that they are read also by personnel already familiar with the unit.

2.1 INTRODUCTION

This manual contains important recommendations about safe operation and maintenance of the OPTICHROME instrument.

The manual is an integral part of the instrument: it should be read carefully before use and should be kept near the unit.

2.2 SAFETY STANDARDS

The unit meets all safety regulations for electrical equipment. Specifically, OPTICHROME:-

- carries the CE mark according to CEE 89/336 directive on electromagnetic compatibility and to CEE 73/23 directive (low voltage equipment)
- conforms to CEI 88.5 specifications about electrical safety of laboratory equipment.

2.3 CARRIAGE AND ASSEMBLY



OPTICHROME must be carried only in a vertical position.

It has to be connected to the power supply using the manufacturer's cable: the socket must be earthed.

Use of the unit in a dangerous environment is forbidden.

In case of extreme temperature difference between the storage area and the installation area, as well in case of high humidity in the environment, some condensation may occur. Under either of these conditions the operator should wait for at least two hours before switching on the unit. Failure to do this may damage the equipment.

The unit must be installed on a perfectly level surface before switching it on.

2.4 CLEANING AND MAINTENANCE



The equipment may be opened for maintenance and repairs only by authorised technical personnel.

The unit should always be switched off and the power plug disconnected before cleaning. Solvents containing acetone, chloride or xylene must not be used for cleaning the unit's surface.

During operation, or when cleaning the unit, utmost care has to be taken to prevent any liquid from entering the unit.

Manufacturer's safety recommendation, in addition to the laboratory's own safety directives, must be followed when handling detergents.

Reagents disposal should be made following local legal requirements and general disposal directives issued by the company or laboratory where the unit is used.

3 OPTICHROME COMPONENTS

3.1 OVERALL VIEW



3.2 CONTROL PANEL



- Refrigerating group.
The group is used for cooling the water that controls and favours the decrease of temperature in the Peltier blocks. The temperature at which the water is maintained is normally between **11 °C and 15 °C** . Therefore the refrigerating group must be switched on first, possibly 15 to 20 minutes prior to operation.

- **Optichrome**

The active carbon **filters** are used to adsorb toxic fumes passively issuing from the unit owing to drying of the preparation fixative.

The **tank** contains distilled water, the level of which must be topped up before using the equipment. Accidental lack of water causes a failsafe shutdown and display of the “no water” message.

- Water tank stopper
- Evaporation drawers

3.3 TECHNICAL FEATURES

POWER SUPPLY	230 V / 50 Hz
POWER CONSUMPTION	1 K W (MAX)
STORAGE TEMPERATURE	0 +50 C°
ENVIRONMENT TEMPERATURE	+15 ... +30 C°
ENVIRONMENT RELATIVE HUMIDITY	20% ... 80% (ABSENCE OF CONDENSATION)
OPTICRHOME'S SIZE AND WEIGHT	WEIGHT 65 KG WIDTH: 730 mm HEIGHT: 600 mm DEPTH: 540 mm
TEMPERATURE RANGE	20°C - 40°C (adjustable in 1° C increments; accuracy +/- 0.5°C)
HUMIDITY RANGE	30% - 60% (adjustable in % unit increments; accuracy +/- 2%)

3.3.1 Programmability

Values for temperature and humidity required by the methodology employed are input directly by the operator: data are visualised on a LCD display and can be saved to a cycle number for subsequent use.

Up to nine cycles may be programmed for different sample preparations.

3.3.2 Temperature and humidity control

The two parameters are controlled in the evaporation chamber by a semiconductor probe, certified to a degree of accuracy of **+/- 1%**, and by six temperature sensors, with a resolution of +/- 0,1 % °C, enclosed in glass capsules.

The thermohygrometric probes are calibrated using certified reference probes.

3.3.3 Maintaining set parameters

Cooling and heating of the chamber is accomplished through system of Peltier cells. Heat dispersal and resulting holding of constant humidity values, without fluctuations, is obtained by a heat dispersal system with forced liquid circulation connected to an external refrigerating group.

3.3.4 Uniform conditions inside the chamber

This status is guaranteed by a ventilation system providing an upward draft. Input and output air passes through active carbon filters.

3.3.5 Operating capacity

The unit has four drawers, each equipped with an independent door. Each drawer may hold 4 rectangular slides or 6 to 8 circular slides, even when the latter are enclosed in Petri dishes, thanks to the shape of the drawers that can accommodate supports of different sizes and shapes. The actual operating capacity is therefore of 24 to 32 slides: the whole procedure is completed in only 3 to 4 minutes, but a longer cycle will not cause any problems.

3.3.6 Removal of toxic vapours





The evaporation of the methyl alcohol and acetic acid mixture would cause, under "normal" conditions", the input of toxic vapours into the environment that could, in the long run, present a serious health hazard. To prevent this, OPTICHROME is equipped with two active carbon filters that adsorb these vapours and safeguard personnel's health in the workplace.

The filter specification guarantees the adsorption of vapours generated by 80,000 round slides or 50,000 rectangular slides, sufficient for 6 to 12 months of operation even in laboratories working to tight schedules.

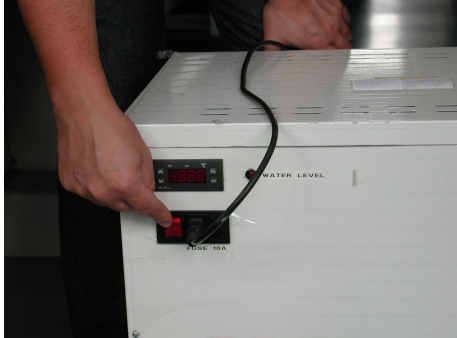




4 INITIAL SETTINGS

4.1 INSTALLATION AND EXTERNAL CONNECTIONS

The unit includes the following components:

		Slides evaporation chamber
		Refrigerating group
		Two plastic tubes (red and blue) used for connecting the unit to the external refrigerating group
		.

The unit must be assembled following the steps listed below:

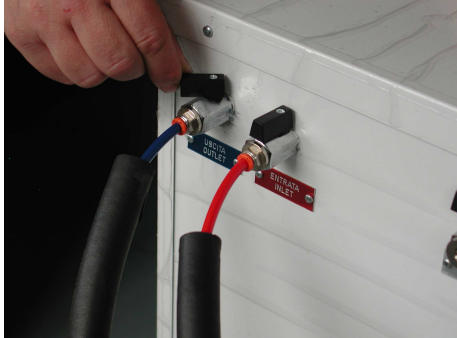
	<p>Check that all electrical switches are turned off and all taps on the refrigerating group are closed.</p>
	
	<p>Keep the refrigerating group away from obstructions that may prevent free passage of air through the grills.</p>
	<p>Press firmly the red and blue tubes into the corresponding connectors on the refrigeration group, making sure that the blue tube is connected to the OUTLET nozzle and the red tube to the INLET nozzle.</p>
	<p>Press firmly the red and blue tubes into the corresponding connectors on the refrigeration group, making sure that the blue tube is connected to the OUTLET nozzle and the red tube to the INLET nozzle</p>



Press firmly the red and blue tubes into the OPTICHROME's connectors, making sure that the blue tube is connected to the inlet "IN" nozzle and the red tube to the outlet "OUT" nozzle



Open the refrigerated water taps (failure to do this will result in the unit refusing to switch on).



Connect the refrigeration group to the power supply using the cable supplied



Connect OPTICHROME to the power supply using the cable supplied



5 OPTICRHOME's OPERATION

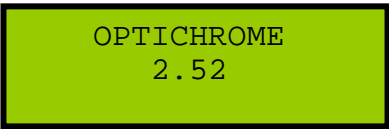
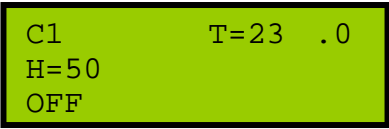
5.1 SWITCHING ON



Before switching the OPTICHROME on ensure that the external refrigerating group is operating and the temperature on its display shows a level between 11°C and 15°C. Ensure also that the air intakes are adequately free so as to guarantee a proper airflow: this is essential to ensure the group's correct operation.









To switch the Optichrome on press the switch located on the right end side of the rear wall.

Upon starting, the unit emits two beeps and the display will show the following information:



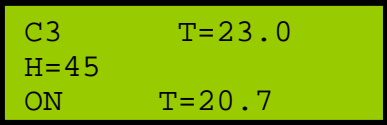



	OPTICHROME and the installed software version
	The temperature and humidity values of the last programme used and the OFF message to indicate that the unit is in a stand-by condition.

:

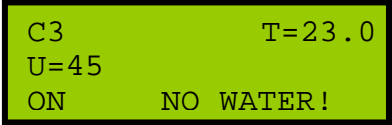



5.2 PROGRAMMING A WORK CYCLE

<pre>C1 T=23 .0 H=50 OFF</pre>	<p>Temperature and humidity values of the last programme used.</p>
<pre>C1 T=xx .x H=yy OFF</pre> <pre>C"n" T=xx .x H=yy OFF</pre> <pre>C9 T=xx .x H=yy OFF</pre>	<p>Pressing the keys  and  the operator can select one of the 9 cycles previously saved.</p>
	<p> Pressing the  key, new temperature and humidity values may be set. These values can be saved and will be available, by selecting the cycle assigned to them, when switching on the unit again. In this way up to 9 "temperature/humidity" cycles may be saved for the more commonly used routines.</p>
<pre>C1 T=23 .0 H=50 OFF</pre> <pre>C1 T=23 .0 H=50 OFF</pre>	<p>After pressing the  key, input the desired temperature value,</p> <p>then press the  key; input now the desired humidity value</p> <p>then press the  key.</p> <p>Last, press the  key to exit the programme mode.</p>

5.3 STARTING A WORK CYCLE

	<p>Lets select, for example cycle 3 with temperature = 23°C and humidity = 45%</p>
	<p>Pressing the  key activates the temperature and humidity control for the selected cycle</p>
	<p>ON will be shown on the display to indicate that the unit is operative and the temperature/humidity control is active. The current temperature and humidity levels in the controlled chamber are also displayed. In short the display is telling us that control is on, the current temperature is 20.7°C and humidity is 53%.</p>
	<p>When temperature and humidity are stabilised within the desired tolerances the unit will beep 7 times and display 'H=' on the second line on the left in front of the current humidity level. Now the drawers can be loaded with the material to be tested/analysed.</p>
	<p>Pressing the  key deactivates the temperature and humidity control.</p>
	<p>OFF is shown on the display to indicate that the unit is not operative, i.e. the temperature/humidity control is not active.</p>

5.4 MESSAGES

	<p>LOW WATER LEVEL</p> <p>During normal operation the unit uses distilled water stored in a tank. When the minimum water level is reached, the condition is signalled by a sound alarm and by the notice 'NO WATER' flashing on the display until the water tank is topped up. Since the low water level warning comes on well in advance, the operator can silence the alarm for 15 minutes by pressing the  key. If the tank is not refilled the message is repeated every 15 minutes.</p> <div style="border: 1px solid black; padding: 5px;">  <p>It is recommended to refill the tank after the first warning.</p> </div>
	<p>EXHAUSTED ACTIVE CARBON FILTERS</p> <p>After the unit has been operating for about three months, the CHG. FILTERS warning will flash on the display when the unit is OFF. In this case a technician should be called in to replace the active carbon air filters.</p>

5.5 SWITCHING OFF

At the end of the work session the unit can be turned off using the switch located on the right end side of the rear wall.

It is recommended to switch the unit off only when it is not in operation that is when the OFF message is displayed.

6 CLEANING AND MAINTENANCE

To avoid mycotic contamination of the distilled water stored in the tank and in the evaporation drawer (in all about two litres) add **Fungizone** weekly in a final concentration of 2.5 mg per litre (20 ml of a 100x solution).

Clean the evaporation drawer every week:

Ensure the unit is switched off and unplugged, remove the lateral panel, disconnect the two electrical connections, remove the fixing screws and extract the drawer.

Discard the water left in the drawer and rinse the drawer first under tap water and finally with distilled water. Failure to perform this maintenance routine regularly may result in the formations of debris that will block the free movement of the inlet water float, with resulting overflow and flooding of the surrounding area.

Active carbon filters need replacing every 6 to 12 months depending on the unit's workload: allow however a large safety margin and follow the filter manufacturer's instructions.

The probes for temperature and humidity need calibrating every six months.

7 GUARANTEE AND ASSISTANCE

We have carefully verified that this manual is coherent with the unit's software and hardware, but we cannot rule out possible errors, omissions and discrepancies.

A total correlation cannot therefore be guaranteed. Corrections and amendments will be included, if needed, in later versions and we would thank in advance all users for their feedback.

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Euroclone assumes no responsibility for any errors and omissions.

The product is guaranteed for two years starting from the date of delivery in accordance with European Union directives.

The guarantee is extended to the components supplied. The guarantee is valid only in case defects of units, components and accessories are attributable, with the support of adequate documentation, to faulty materials or manufacture and at the condition that the unit has been used properly and following the instructions for its use: in this case the unit will be repaired or replaced free of charge at our discretion.

Damages caused by improper use, not attributable to Euroclone (e.g. mechanical damages caused by incorrect installation, tampering, etc.) are excluded from the guarantee.