K-SYSTEMS®

IVF L100 Series Workstations

Instruction Manual

a CooperSurgical Fertility Company

CE

CooperSurgical

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1 GENERAL INFORMATION & SERVICE

1.1 General Description

The IVF K-SYSTEMS® L100 Series is a complete workstation for human and animal reproduction. It has a warmed stainless steel table plate and the table plate maintains a temperature in the range 35-43 °C. The L124/L126 is heated by means of an electronically controlled heating system.

The vertical laminar airflow passes through a HEPA main filter and protects the cell culture against contamination.

1.2 Operating Principles and Features

The workstation provides a confined workspace in which the stable vertical unidirectional flow (laminar flow) protects the product that is being handled against particulate contamination from the surroundings and the operator.

All operations take place through the front opening. Pressure in the work chamber keeps the clean air flowing from the work chamber to the surroundings, avoiding the introduction of particulate contamination to the work chamber.

1.3 Copyright

Users of K-SYSTEMS products should not hesitate to contact us if there are any unclear points or ambiguities in this manual.

1.4 Customer Service Contact Information

European Service Representatives

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CAUTION

If the equipment is used in a manner not specified by this manual, the safety of the user may be at risk and the equipment may be damaged. Always use the equipment as outlined in this Instruction Manual.

2 GENERAL OPERATIONAL INSTRUCTIONS

2.1 Pre-Operational Notes

- The workstation fan must be run at normal speed for at least 15 minutes prior to working inside the workstation.
  - ⓘ A green control light indicates proper operation.
- The work chamber is to be carefully cleaned and/or disinfected (See Section 14: Maintenance).
- For reliable operation it is important that the air-flow conditions are as undisturbed as possible. Therefore, never overload the work chamber - insert only those utensils necessary for the actual work.
- Objects and utensils must be carefully cleaned and/or disinfected before bringing them into the work chamber.
- Necessary utensils for use during work must be placed within reach to avoid unnecessary movement inside the workstation.
- Put on necessary personal clothing for reducing particle emission from operator (i.e. gloves, masks and general clean room clothing). Special attention should be given to hands and lower parts of the arms, as these are the parts of the operator most likely to emit particles near the product.
- All work in the workstation must be performed with tranquil movements. Rapid arm movements in the chamber may cause slipstreams, which will draw contaminated air into the work chamber.
- The number of transports into the work chamber must be minimized.
- Transport of possibly contaminated material may create airflows that can contaminate the product.

2.2 Moving the Unit

The L100 is designed as a stationary unit and it should not be moved once it has been installed in the proper way according to descriptions in the Installation Manual.

If the workstation must be moved, it is strongly recommended that lifting equipment always be used due to the weight of the device.

Use the lifting gear to move the unit by lifting in all 4 corners of the table top upward at the same time. It is recommended that 1 person controls the lifting gear and at least 4 more people support each side of the unit while the unit is being moved around.

CAUTION

Never try to lift or move the unit alone.

Never try to move the unit by lifting the middle part of tabletop.

Never use the handles found on each side of the unit to lift the unit with.

Always make sure to wear shoes that protect your feet while moving around the unit. During transportation on medium long and long distances it is strongly recommended to use the original casing that was delivered with the unit.

2.3 Instruction of the Operating Personnel

These operating instructions describe the L100 Workstation series covering the following models:

- L124 IVF Workstation,
- L126 IVF Workstation,
- L126 DUAL IVF Workstation,
- L126 MP Workstation
- L124 ICSI Workstation.

The L100 IVF Workstations have been manufactured in keeping with the latest technologies and developments. It has been tested during assembly and before delivery to ensure correct operation. However, it may present potential hazards to user, if this unit is used in conditions that lies outside of its intentional way of use.

It is strongly recommended that:

- Only trained and authorized personnel perform any operation on the cabinet.
- Only trained and authorized service personnel perform any repairs to the device.

CAUTION

If the equipment is used in a manner not specified by this manual, the safety of the user may be at risk and the equipment may be damaged. Always use the equipment as outlined in this instruction manual.

2.4 Applicability of the Instructions

- Keep these instructions close to the device. This way you ensure having easy access to the safety instructions and important information.
- Please note that the contents of this manual are subject to change without further notice.
- If you encounter problems that are not mentioned in this manual in detailed, please contact your local Customer Service Representative for more information.

2.5 Warranty

CooperSurgical, Inc. warrants the operational safety and correct system operation of the whole unit under the condition that:

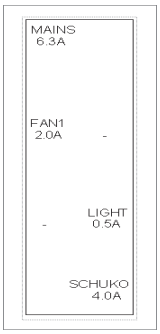
- The device is operated as described in the manuals
- The device has not been modified
- All service intervals are kept according to manuals
- Only original spare parts and accessories that have been approved by CooperSurgical are used

3 INTRODUCTION

3.1 Safety Symbols Used on the Unit

The L100 Workstation contains high voltage components that may be hazardous. It is strongly recommended not to remove the back cover. This equipment doesn't contain any user serviceable parts inside. It is recommended to have qualified service personnel perform any service needed on the equipment.

Fuse Label



High Voltage Hazard Label

Warning Label on Mains Wire (Schuko).

Product Model Label

Warranty Label – Warning

Ground Label

Earth Warning

UV Light Warning (Optional, only if UV Light is Installed)

Warning for 110V Countries

Warning for 230/240V Countries

3.2 Precautions / Warnings

- Read and understand the user manual completely before use.
- Do not use product if package is damaged.
- Do not use device without the front windows correctly attached.
- Perform temperature calibration in the intervals described in the manuals.
- Do not use this product at temperatures exceeding 30 °C.
- Always use HEPA filter for input gas to unit.
- Never use a non K-SYSTEMS filter.
- Use only premix gas (eg.5% CO_2 in air).
- Make sure that the gas supply pressure is kept stable at 0.5-0.7 bar.
- The power cord is to be used for mains disconnection.
- Always connect power cord to a proper grounded outlet.
- To reduce the risk of fire or electric shock, this equipment should not be exposed to rain or moistures and objects filled with liquids.
- Always use fuses according to the manufacturer descriptions.

3.3 Important Safety Instructions

- Read this safety instruction carefully before using equipment.
- Always keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Refer all servicing to qualified service personnel.
- Do not use this apparatus near water.
- Do not block any ventilation openings.
- Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.
- Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third prong is provided for your safety. If the provided plug does not fit into your outlet, consult and electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the unit.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart and stand specified by the manufacturer or sold with the unit.
- Unplug the unit during lightning, storms or when unused for a long period of time.
- Servicing is required according to service manual or if the unit has been damaged in any way, such as if it has been dropped, exposed to rain or moisture, or does not operate normally.

4 GENERAL DESCRIPTION

IMPORTANT: THIS UNIT DOES NOT CONTAIN ANY USER-SERVICEABLE PARTS. PLEASE LEAVE ALL MAINTENANCE WORK TO QUALIFIED PERSONNEL.

4.1 Setup Precautions

To avoid any possible damage to this system, follow all setup precautions described in this section.

Finding a Suitable Location

Place this unit on a flat, hard and stable surface.

Never place other heat generating equipment under the tabletop.

Space for Ventilation

Place this unit in a location with adequate ventilation to prevent internal heat build up. Allow at least 2 cm clearance from the rear, 30 cm from the top and 20 cm from left and right to prevent overheating.

Avoid High Temperature, Moisture, Water and Dust

This unit must not be exposed to dripping or splashing.

This unit is intended for indoor purposes only.

4.2 Electromagnetic and Other Interferences

All electronic devices, especially electronic equipment containing radio senders and/or receivers such as mobile phones, computers, and antennas, give off electromagnetic emissions. This radiation is a byproduct of electrical or magnetic activity. The emissions from such devices can interfere with other devices, causing potential problems.

Equipment can be affected by electromagnetic interference from other devices in two major ways: The first is direct effects through proximity with other devices, and the second is electrical interference over the power lines.

It is strongly recommended to:

- Make sure that all devices emitting electromagnetic radiation are kept a reasonable distance away from the workstations in order to avoid any potential electromagnetic or other interferences.
- Have separate power circuits that are intended for use for medical equipment only.

4.3 Ambient Condition

In order to maintain operational safety and correct function of the equipment ensure that this unit is installed at a location that meets the ambient conditions listed below:

- The temperature within the room must be between 20 °C-30 °C
- The relative humidity must not exceed 75% (non-condensing)
- The location must be equipped with appropriate ventilation system
- The unit must be kept away from heat generating devices
- The flooring of the location must be hard, non-flammable and flat
- The power outlet should be out of casual reach to prevent accidental shut off
- Make sure that the device is correctly attached to ground using grounding-type plug

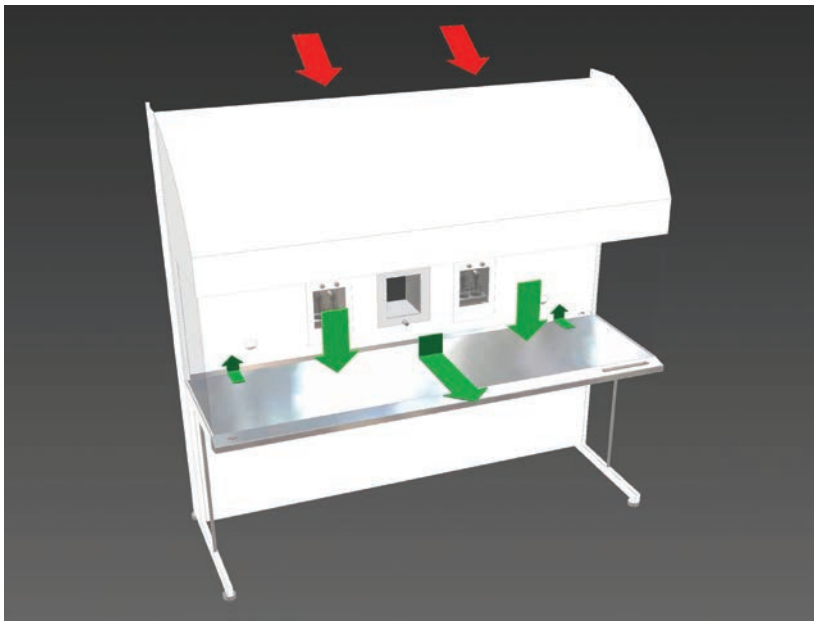
5 FEATURES

5.1 Laminar Flow

The L124 and the L126 IVF Workstations are supplied with two laminar flow modes:

- The Normal Mode must be used when working inside or nearby the laminar flow hood.
- The Standby Mode maintains the workstation interior under aseptic conditions, but working inside the workstation or near the workstation may cause changes in the airflow.

5.1.1 Flow Pattern Diagram



5.1.2 Pre-filter

Air entering the workstation is pre-filtered with an efficiency of 83%.

WARNING

Only use original K-SYSTEMS VOC filters.

5.1.3 Fan

The air is drawn into the fan in the top of the workstation where it is pressurized. From the pressure plenum the air passes through the HEPA main filter.

5.1.4 Main Filter

The filter efficiency of the HEPA main filter is 99.995% of particles 0.3 µm (D.O.P. test).

The air flows from the main filter through the work chamber in a vertical unidirectional flow of clean air. Immediately before reaching the tabletop, the air separates and flows out through the back wall, and through the work opening. The air returns to the suction opening of the workstation passing through the surrounding space.

5.1.5 Gassing Station

Most of the culture media that is used in assisted reproduction techniques is sensitive to changes in pH, it is important to flush the media with CO_2.

The pH of the media in the test tubes and dishes may be controlled by flushing with appropriate gas mixtures.

The pre-mixed CO_2 gas supply is connected to the back of the IVF Workstation. It is being heated and humidified by the gas washing bottles placed in the inner wall of the IVF workstation and coming out through the gassing nozzles built into the table plate. An incubator hood should be placed above the nozzles at all times.

The flow rate can be adjusted as well as read at the display in the inner wall

For optimal use, only distilled water should be used.

5.1.6 Gas Mixture

Follow indications from the culture media provider for correct handling of media. Culture media must be maintained at a pH of about 7.4, this can be obtained by gassing with an atmosphere of 5% CO_2.

The most frequently used gas mixtures are 5% CO_2-in-air, and 5% CO_2, 5% O_2 and 90% N_2 .

5.2 Stereo Microscope

A stereo microscope with light source is installed in the table plate. For the MP Version of the L100 Workstation, an inverted microscope can also be installed.

Mount the microscope stand by placing the light pillar on top of the table plate and insert the screws from underneath the table plate.

5.3 Interior Light

The interior light provides overhead illumination.

5.4 Power Supply

The power supply is 220-240V/50 Hz or 110-115V/60 Hz.

5.5 Electrical Outlet

WARNING **Do not put any metal parts or fingers into the power supply plug.**

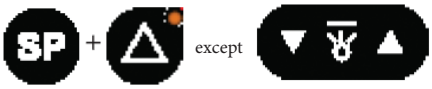
5.6 Front Window

Placement of clamps

Picture of clamps

WARNING **Do not remove clamps fastened to the window. This can cause the window to fall down.**

6 KEYBOARD FUNCTIONS

K-SYSTEMS Microscope Light Source	
Fan ON, Reduced Fan Speed, Fan OFF	
Alarm, Disable/Enable Acoustic Alarm	
Interior Light ON and OFF	
Heated Surface ON and OFF	
Set-Point Key	
Adjust Set-Temperature	
Keyboard Lock/Unlock	
Hold both keys for 3 seconds to enter the menu or exit the menu	
Temperature Display: Change between left and right on the display (L126 Dual or fully Heated)	
Change between left and right camera (L126 Dual and L126 MP)	
Change between hour and temperature reading	
Heat area ON/OFF (only L126 Dual or Fully Heated)	

6.1 The Interior Light

ACTION	KEY
Press the switch to turn the interior light ON, indicated by the yellow light. Press again and the interior light turns OFF.	

6.1.1 Operating the Laminar Air Flow

ACTION	KEY
Activating the laminar flow. Press one time and the fan will run at full speed, indicated by the green light (normal model). A five digit number will run though the display showing the total hour count for the HEPA filter. Press one more and the fan will operate at reduces speed, indicated by the green light flashing (standby mode). Press one more time and the fan will switch OFF, and the time will be shown.	
 **CAUTION**	**There will be an alarm when the fan has run for 17,000 hours, indicating that the HEPA filter must be checked. When the alarm goes on the fan can still be used.**

6.2 HEATING SYSTEM

6.2.1 Table Heating Unit

ACTION	KEY
Press one time and the HEAT will turn ON. The display shows the actual table temperature. Press again and the HEAT will be turned OFF.	

6.2.2 Setting the Temperature

ACTION	KEY
Press the key with the symbol SP, the display will flash between the SET-POINT temperature and the unit that the temperature is shown in.	
Hold down the SP key and press the UP **or** DOWN key to change the SET-POINT temperature. When the SET-POINT is set, release both keys.	

NOTE: If the SP key and the UP **or** DOWN keys are pressed continuously, the temperature setting will change quickly. To change the temperature slowly, press one step at a time.

The L126 Dual can have separate SET-POINTS for each heated surface.

Press the DOWN key to change between right and left temperature readings.

Right Temperature Reading:

ACTION	KEY
Press the SP key, and the display will flash between "r °C" / " r °F" and the SET-POINT temperature. ("r °C" / " r °F" means the SET-POINT for the right side).	
Hold down the SP key and press the UP or DOWN key to change the set-point temperature. When the SET-POINT is set, release both keys.	

Left Temperature Reading:

ACTION	KEY
Press the SP key, and the display will flash between "L °C" / " L °F" and the SET-POINT temperature. ("L °C" / " L °F" means the SET-POINT for the left side).	
Hold down the SP key and press the UP or DOWN keys to change the set-point temperature. When the SET-POINT is set release both keys.	

NOTE: It is only possible to have two SET-POINTS if the SP function in the menu is set to "L-r".

6.2.3 Alarm

The workstations have an alarm that warns if the temperature is too high or too low. The system also has an error mode alarm. The alarm is a visual red light on the keyboard display with an audible pulsating alarm tone. The alarm will sound the first time the unit is powered up or **after a power shortage. The alarm can be turned off by pushing the SP key.**

When the heating system is first activated, it will warm until the set-temperature has been reached. During this period the alarm will not be activated.

The following messages can be shown on the display in case of alarm:

DISPLAY	MESSAGE
	Temperature alarm on Zone-1 (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-2 (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-3 (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-L (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-r (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-4 (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-5 (See Section 7: Different Heated Surfaces).
	Temperature alarm on Zone-6 (See Section 7: Different Heated Surfaces).
	Temperature alarm on the heat area (See Section 7: Different Heated Surfaces).
	Error mode: Reset the workstation by disconnecting the power (sound can't be muted).

NOTE: Warming up from 20 °C to 37 °C takes approximately 45 minutes without warming blocks on the table. After placing an aluminum block on the table, it may take up to 30 minutes for the block temperature to stabilize, depending on the initial block temperature.

6.3 Alarm Key

ACTION	KEY
When the workstation has an alarm, press the ALARM key to mute the sound.	

6.4 Keyboard Lock

ACTION	KEY
Press the SP key and the temperature ALARM key at the same time to lock the keyboard. When pressing a random key, except the microscope light, the display will show "lock", while the keyboard is locked. Note that the alarm can still be muted.	

6.5 Keyboard Unlock

ACTION	KEY
Press the SP key and the ALARM key at the same time to unlock the keyboard.	

6.6 Operating the Microscope Light

ACTION	KEY
The microscope light source can be turned on and adjusted when using K-SYSTEMS light source (LS112), by pressing either ▲ (increase intensity) or ▼(decrease intensity). The microscope light is switched off by simultaneously pressing both switches (▲ and ▼) and then releasing them.	

NOTE: Always turn off the light when it is not in use. This will increase the lifetime of the bulb.

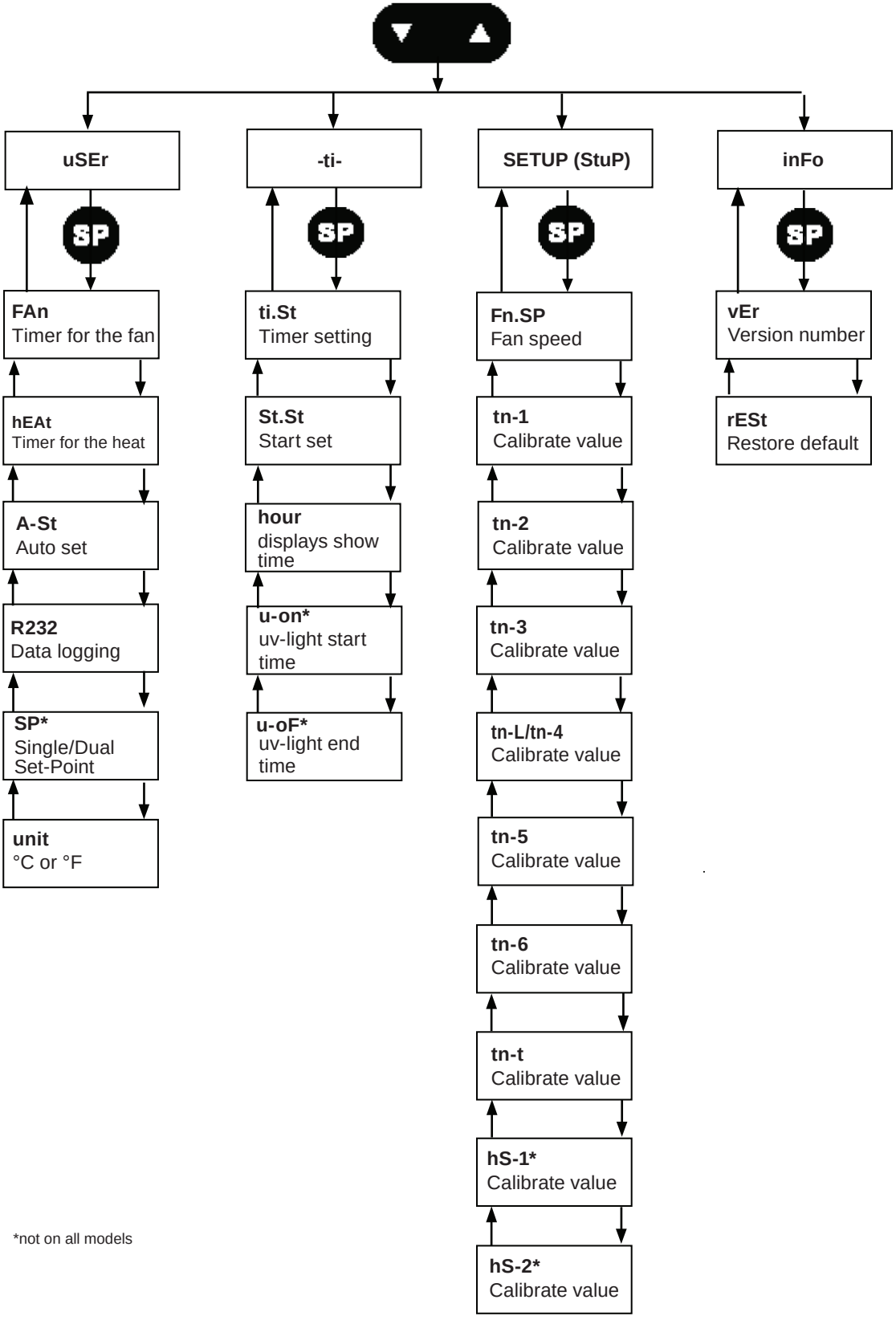
6.7 Menu Function

The workstations have a number of advanced functions that the user can access. The four main menus are listed in Section 6.8.

ACTION	KEY
Enter the menu function by pressing and holding the UP **and** DOWN keys for 3 seconds.	
Press the UP **or** DOWN keys to navigate within the menu	
Press the SP key once to enter each main menu. Press and hold the SP key to change values within one of the options in each menu.	
The letters “uSEr” (the main menu) will then appear in the display. Press the UP **and** Down keys again for 3 seconds to exit the menu.	

A short explanation is also listed in each box of the figure. For further details, consult the descriptions in the following sections.

6.8 Overview of Menu Functions



*not on all models

6.9 User Menu (uSEr)

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The first main menu “uSEr” will appear in the display.		
Press the SP key once to enter the “uSEr” menu.		
Press the DOWN key to move to the next main menu.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.9.1 Timer for the Fan (FAn)

The FAn option is used for the fan to **turn on at a certain time**.

WARNING **Keep fingers away from the running fan.**

NOTE: This function only works in conjunction with St.St. If St.St is set to 8.00 and fan function is ON, the fan will automatically turn on at 8:00 AM using 24-hour clock.

Follow these steps to navigate in the FAN (FAn) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The menu “uSEr” will appear in the display.		
Press the SP key once, the “FAn” option appears in the display.		
Press and hold the SP key to change the values.		
While holding the SP key in, press either the UP **or** DOWN key to select between OFF, FAST or SLOW. When the required setting is activated, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: A dot will turn on in the right side of display, indicating that the Heat function is active.

If you are setting the fan to fast "-FA-", the fast speed for the fan will be activated at the St.St time.

If you are setting the fan to slow "-SL-", the slow speed for the fan will be activated at the St.St time.

(When the fan is set to "-FA-" or "-SL-", a dot shows in the right side of the display).

For example: If St.St is set up to 8.00 and function is set to "-FA-", the fan will automatically turn on at 8:00 AM.

6.9.2 Timer for the Heat (hEAt)

The HEAT option is used for the heater to **turn on at a certain time**.

NOTE: This function only works in conjunction with St.St. If St.St is set to 8.00 and heat function is on, the heater will automatically turn on at 8:00 AM using 24-hour clock.

Follow these steps to navigate in the HEAT (hEAt) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The option “uSEr” will appear in the display.		
Press the SP key once, then press the DOWN key until the option “hEAt” appears on the display.		
Press and hold the SP key to change the values.		
While holding the SP key, press either the UP **or** DOWN key to select between ON **or** OFF. When the required setting is activated, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: A dot will turn on in the right side of display, indicating that the Heat function is active.

6.9.3 Auto-Start (A-St)

The A-St (Automatic Start) option is used to **repeat the timer** (St.St) function **every day of the week.**

NOTE: This function works in conjunction with St.St, FAn and hEAt. If St.St is set to 8.00 and hEAt function is on, the heater will automatically turn on at 8:00 AM every day.

Follow these steps to navigate in the Auto-Set (A-St) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The menu uSEr will appear in the display.		
Press the SP key once, then press the DOWN key until the option "A-St" appears on the display.		
Press and hold the SP key to change the values.		
While holding the SP key, press either the UP **or** DOWN key to select between ON **or** OFF. When the required setting is activated, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: If this function is set to ON, the HEAT and/or FAN function will be repeated every day, but if the A-St function is set to OFF, the HEAT and/or FAN function will only be activated automatically one time.

6.9.4 Data Logging (Serial Communication) of Temperature through RS232

The use of this function warrants extra equipment software and on some base models addition of a Serial PCB.

The parameters ON or OFF will not affect normal usage when Serial Communication is not connected.

6.9.5. The Dual Set-Point (SP)

This option is for the L126 Dual Workstation to have different set-points for the right and left sides of the workstation.

Follow these steps to navigate in the Dual Set-Point (SP) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The menu “uSEr“ will appear in the display.		
Press the SP key once, then press the DOWN key until the option SP appears in the display.		
Press and hold the SP key to change the values.		
While holding the SP key, press either the UP **or** DOWN key to choose between "onE" or "L-r".		
Press and hold both the UP **and** DOWN key for 3 seconds to exit the menu.		

If the SET-POINT is set to “onE”, there is one temperature Set-Point for the right and left sides of the workstation.

If the SET-POINT is set to "L-r", there are two different Set-Points, one for the right side and another for the left side of the workstation.

6.9.6. Temperature UNIT (unit)

In the UNIT option the **displayed temperature** can be set to either degrees **Celsius** or **Fahrenheit**.

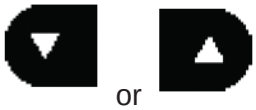
Follow these steps to navigate in the Temperature Unit (unit) option.

ACTION	KEY	DISPLAY
Press and hold both the UP and DOWN keys for 3 seconds to enter the menu. The menu “uSEr” will appear in the display.		
Press the SP key once to enter the uSEr menu.		
Press the DOWN key until the option “unit” appears in the display.		
Press and hold the SP key to change the values.		
While holding the SP key, press either the UP **or** DOWN key to select the required unit. When the required type has been selected release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.10 Time Menu (-ti-)

This is the main menu for the time and timer items. See the following sub-sections for the description of the time and timer menu items.

Follow these steps to navigate in the TIME (-ti-) menu.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The first menu “uSEr” will appear in the display.		
Press the DOWN key once and the menu "-ti-" appears in the display.		
Press the SP key to enter the time menu.		
Press the DOWN key to move to the next main menu. Press the UP key to move to a previous main menu.	 or	
Press and hold both the UP **and** DOWN keys to exit the menu.		

6.10.1 Time Setting (ti.St)

The ti.St (Time Set) option is for setting the time.

Follow these steps to navigate in the TIME Setting (ti.St) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "-ti-" appears in the display.		
Press SP key once and the option "ti.St" appears in the display.		
Press and hold the SP key to change the values.		
While holding the SP key, press the UP key to change the minutes and the DOWN key to change the hour. When the time is set, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.10.2 Start Set (St.St)

The St.St (Start Set) option is the **timer function** for the **HEAT** and the **FAN**. By using this option, the workstation can be ready for use before procedures start in the morning.

For example: If you want the heater to turn on at 8:00 AM but no fan, set the St.St (timer) to 8.00 and set the HEAT to ON.

NOTE: This function will only work correctly if the clock is set (ti.St).

Follow these steps to navigate in the Start Set (St.St) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "-ti-" appears in the display.		
Press the SP key once to enter the time menu. Press the DOWN key until the option "St.St" appears in the display.		
Press and hold the SP key to the change values.		
While holding the SP key, press the UP key to change the minutes and the DOWN key to change the hours. When the time is set, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

St.St is connected with HEAT and FAN. It must be chosen when the timer starts. To turn the heater ON, **see the option HEAT/FAN (sub-sections 6.9.1 and 6.9.2).**

The options are: Heat (ON/OFF) and Fan (SLOW speed, FAST speed or OFF). These can be combined with the timer in any way desired.

CAUTION

Always make sure when the timer function is being used, that the heated area is clear of any objects that might be damaged by the heat or adversely affected by it in any way. Caution should always be exercised when a heated area is turned on without any supervision.

6.10.3 Show of Time (hour)

The HOUR option gives the opportunity to **show the time** on the display when the **heat is OFF**.

Follow these steps to navigate in the Show of Time (hour) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "- ti-" appears in the display.		
Press the SP key to enter the time menu. Press the DOWN key until the option “hour” appears in the display.	 	
Press and hold the SP key to see the actual setting.		
While holding the SP key, press either the UP **or** DOWN keys to select between ON **or** OFF. When the required setting is activated, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

If you want to see the time on the display when the HEAT is turned on, follow these steps to switch between time and temperature.

ACTION	KEY	DISPLAY
Press and hold the SP key.		
While holding the SP key in, press the HEAT key one time, then release the SP key. The display now shows the time.		
To change back to the temperature reading, press and hold the SP key.		
While holding the SP key, press the HEAT key once, then release both keys. The display now shows the temperature.		

If the HOUR function is set to ON, and the workstation is OFF, the time will be shown on the display.

6.10.4 UV Light On (u-on)

This function is only activated if a UV light is installed in the workstation. This option sets a start time for the UV light.

Follow these steps to navigate in the UV Light On (u-on) option.

ACTION	KEY	DISPLAY
Press and hold both the UP and DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "- ti-" appears in the display.		
Press the SP key to enter the time menu. Press the DOWN key until the option "u-on" appears in the display.	 	
To set the timer, press and hold the SP key.		
Press the DOWN key to set the hour and the UP key to set the minutes. Press both the UP **and** DOWN keys to turn off the timer.		
Press and hold both the UP and DOWN keys for 3 seconds to exit the menu.		

This function only works correctly if “ti.St” is set.

When the UV light is on, do not stand in front of the workstation.

NOTE: To turn off the UV light press any key.

CAUTION

Never turn on the UV light when specimens are kept on the tabletop or persons are near the Workstation.

This Ultraviolet Light label should be posted outside laboratories containing equipment capable of generating ultraviolet light above the NIOSH published recommended exposure limit (REL) for occupational exposure. At 254 nm, the wavelength for ultraviolet germicidal irradiation (UVGI), the REL is 0.006 joules per square centimeter (0.006 J/cm^2). The permissible irradiance for an 8 hour workday exposure is <0.2 W/cm^2 or 6000 Wsec/cm^2.

6.10.5 UV Light Off (u-oF)

This function is only activated if a UV light is installed in the workstation. This option sets a timer for the UV light and the light will automatically turn OFF at "uv-oF".

Follow these steps to navigate in the UV Light off (uv-oF) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN key for 3 seconds to enter the menu. Press the DOWN key until the menu "-ti-" appears in the display.		
Press the SP key once to enter time menu. Press the DOWN key until the option "u-oF" appears in the display.	 	
To set the timer, press and hold the SP key.		
Press the DOWN key to set the hour and the UP key to set the minutes.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: This function only works correctly if “ti.St “is set.

6.11 Setup Menu (StuP)

This is the main menu point for setting up the fan speed and calibrating the different heat zones and the airflow.

Follow these steps to navigate in the Setup (StuP) menu.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. The first main menu “uSEr” appears in the display.		
Press the DOWN key until the menu “StuP” appears in the display.		
Press the SP key to enter the “StuP” menu.		
Press the DOWN key to move to the next main menu. Press the UP key to move to a previous menu.		
Press and hold both the UP **and** DOWN keys to exit the menu.		

6.11.1 Fan Speed (Fn.SP)

This function gives the ability to change the fan speed.

Follow these steps to navigate in the Fan Speed (Fn.SP) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN key for 3 seconds to enter the menu. Press the DOWN key until the option "StuP" appears in the display.		
Press the SP key once and the option "Fn.Sp" Appears in the display.		
Press and hold the SP key to change the values.		
While holding the SP key, use the UP **or** DOWN keys to change between 90, 95, 100 or 120. When the required time is set, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.11.2 Calibrate Value Zone-1 (tn-1)

The tn-1 option is for the calibration of temperature on Zone-1 (See Section 7: Different Heated Surfaces).

If there is an offset between the value shown on display and any measurements made with a high precision external temperature sensor, this can be corrected. The new temperature reading will be kept as the displayed value, with temperature control conducted on this basis. When the power is disconnected default values will be restored (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Zone-1 (tn-1) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-1" appears in the display.	 	
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.3. Calibrate Value Zone-2 (tn-2)

The tn-2 option is for the calibration of the temperature on Zone-2 (See Section 7: Different Heated Surfaces).

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new temperature reading will be kept as the displayed value, with temperature control conducted on this basis (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Zone-2 (tn-2) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN key for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-2" appears in the display.		
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP key **or** the DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.4 Calibrate Value Zone-3 (tn-3)

The tn-3 option is for the calibration of temperature on Zone-3 (See Section 7: Different Heated Surfaces).

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept as the displayed value, with temperature control conducted on this basis (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Zone-3 (tn-3) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-3" appears in the display.	 	
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.5 Calibrate Value Zone-4/Zone-L (tn-4/tn-L)

This is only activated in the L126 Dual Workstation. The tn-4/tn-L option is for the calibration of temperature on Zone-4/Zone-L, only one option is active (See Section 7: Different Heated Surfaces).

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept as the displayed value, with temperature control conducted on this basis (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Zone-4/Zone-L (tn-4/tn-L) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN key for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-4" / "tn-L" appears in the display.	 	 or 
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.6 Calibrate Value Zone- 5 (tn-5)

This is only activated in the L126 Dual Workstation. The tn-5 option is for the calibration of the temperature on Zone-5 (See Section 7: Different Heated Surfaces).

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept as the displayed value, with temperature control conducted on this basis (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Zone-5 (tn-5) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-5" appears in the display.	 	
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.7 Calibrate Value Zone-6 (tn-6)

This is only activated in the L126 Dual Workstation. The tn-6 option is for the calibration of temperature on Zone-6 (See Section 7: Different Heated Surfaces).

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept as the displayed value, with temperature control conducted on this basis (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Zone-6 (tn-6) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-6" appears in the display.	 	
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.8 Calibrate Value of Tunnel (tn-t)

This function will only apply in a workstation with a tunnel. The tn-t option is for the calibration of the temperature in the tunnel.

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept as the displayed value, with temperature control conducted on this basis.

Follow these steps to navigate in the Calibrate Value of Tunnel (tn-t) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "tn-t" appears in the display.		
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to select the calibration value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.9 Calibrate Value Heated Glass/Heated Glass on Right Side L126 Dual (hS-1)

This option is for the calibration of all the workstations that have a heated glass or for the calibration of the right side of the L126 Dual (to calibrate the left side of the L126 Dual, see Section 6.11.10).

The hS-1 option is for the calibration of the temperature on the Heated Glass. If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibration Value Heated Glass/Heated Glass on Right Side L126 Dual (hS-1) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "hS-1" appears in the display.		
Press and hold the SP key to see the current value.		
While holding the SP key, press either the UP **or** DOWN key to change the value. When the required value has been selected, release the SP key.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.11.10 Calibrate Value Heated Glass: Left Side (hS-2)

This option will only apply for the heated glass on the left side of the L126 Dual.

If there is an offset between the value on the display and any measurements made with a high precision external temperature sensor, this can be corrected. The new calibration value will be kept (See Section 9: Temperature Calibration).

Follow these steps to navigate in the Calibrate Value Heated Glass: Left Side (hS-2) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the menu "StuP" appears in the display.		
Press the SP key once to enter the Setup menu. Press the DOWN key until the option "hS-2" appears in the display.		
Press and hold SP key to see current value.		
While holding the SP key in, press either the arrow UP **or** DOWN key to change the value. When the required value has been selected, release the keys.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

NOTE: Always wait for the temperature to be stabilized before calibrating.

6.12 Info Menu (inFo)

Follow these steps to navigate in the INFO (inFo) menu.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. First main menu uSEr will appear in the display.		
Press the DOWN key until the menu inFo appears in the display.		
Press the SP key once to enter the inFo menu.		
Press the UP key to get back to a previous main menu.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.12.1 Version Number (vEr)

This function allows you to read the logic and hardware version.

Follow these steps to navigate in the Version Number (vEr) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the option inFo appears in the display.		
Press the SP key once to enter the inFo menu. The option vEr will appear in the display.		
Press and hold the SP key to read the current version.		
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

6.12.2 Reset (rESt)

The REST function will restore all factory set values.

NOTE: The calibration value in the "StuP" menu will remain and not be reset.

NOTE: All the setup values will remain and not be reset.

Follow these steps to navigate in the Reset (rESt) option.

ACTION	KEY	DISPLAY
Press and hold both the UP **and** DOWN keys for 3 seconds to enter the menu. Press the DOWN key until the option “inFo” appears in the display.		
Press the SP key once to enter the inFo menu. Press the DOWN key and the option “rESt” appears in the display.		
Press and hold the SP key. Press either the UP key **or** the DOWN key to reset. When the display shows “----”, release both keys. All factory values have now been restored.	 	
Press and hold both the UP **and** DOWN keys for 3 seconds to exit the menu.		

CAUTION

All the user data will be lost when resetting.

7 DIFFERENT HEATED SURFACES

The L100 Series Workstations have different heated surfaces.

Find the type of heated surfaces your workstation has, and find out which calibration value belongs to which heat area.

Single T845/MP (3xregulation) right side

Type: T845/MP

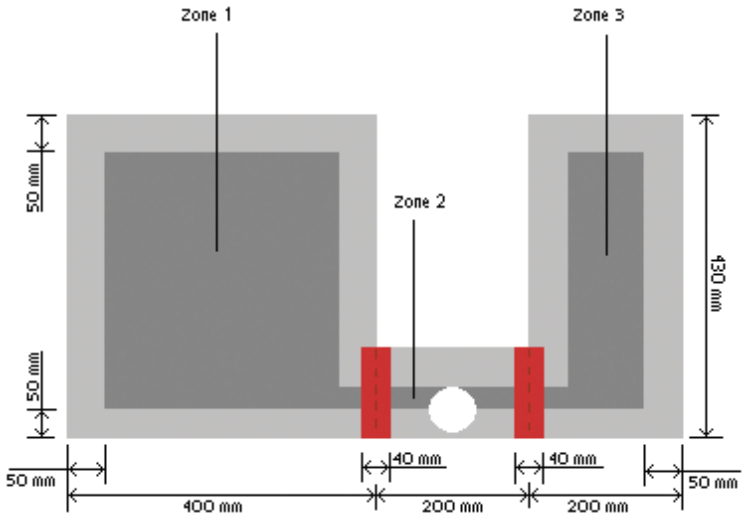
Size: 800 x 430 mm

Size-MP 700 x 430

Regulation: 3

The safe area is located 50 mm from the edge. In this case there are three different temperature sensors that may need to be calibrated. Each zone most be calibrated separately, to calibrate "Zone 1", measure only temperature in "Zone 1".

The red zone on the picture is "cross-heat" zone; do not measure the temperature in the cross-heat zone.



Single T845/MP (3xregulation) left side

Type: T845/MP

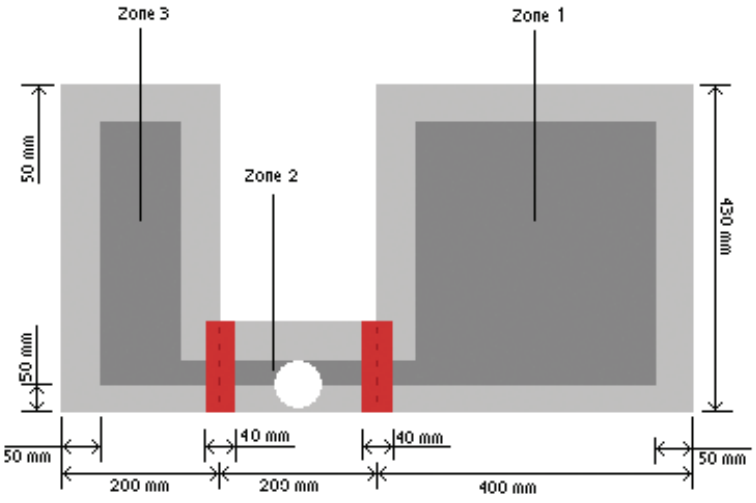
Size: 800 x 430 mm

Size-MP: 700 x 430

Regulation: 3

The safe area is located 50 mm from the edge. In this case there are three different temperature sensors that may need to be calibrated. Each zone most be calibrated separately, to calibrate "Zone 1", measure only temperature in "Zone 1".

The red zone on the picture is "cross-heat" zone; do not measure the temperature in the cross-heat zone

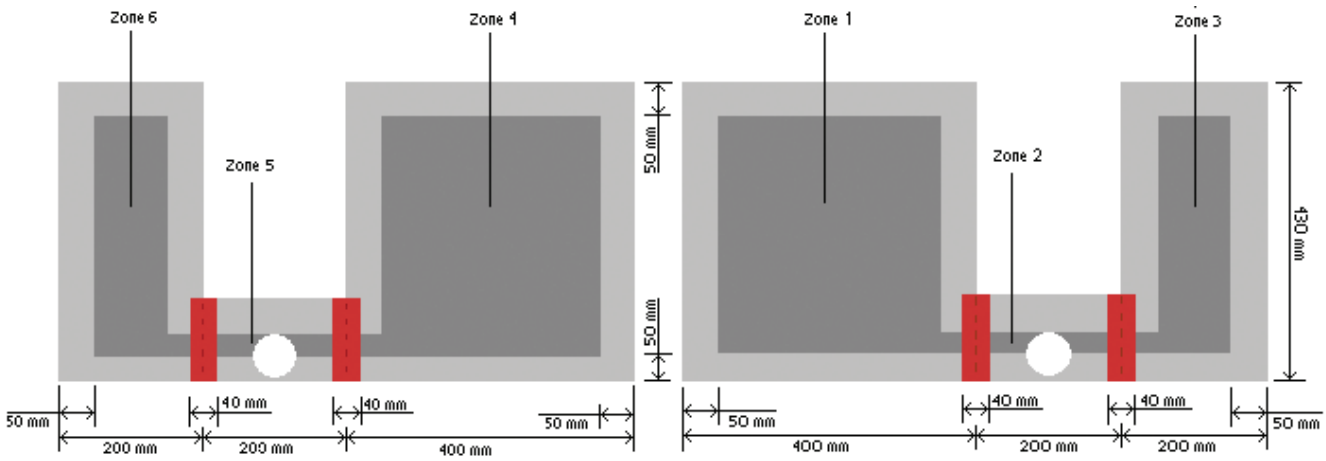


Dual 2xT845 (6xregulation)

Type: 2xT845
Size: 2 x 800 x 430 mm
Regulation: 6

The safe area is located 50 mm from the edge.
In this case there are three different temperature sensors on each side that may not be calibrated.
Each zone most be calibrated separately, to calibrate "Zone 1", measure only temperature in "Zone 1".

The red zone on the picture is "cross-heat" zone; do not measure the temperature in the cross-heat zone.



8 CONNECTIONS

The L100 Workstations have connections on the back and inside.

8.1 Connectors on the Back

On the back of the workstation there are 8 circuit fuses, a main connector, a main switch, a mains fuse, and the gas inlet.

In the following sub-sections, the connectors are explained in more detail.

8.1.1 Circuit Fuses

This equipment is protected by fuses. The fuse ratings are printed on the label attached next to each fuse holder (See Section 10: Fuses).

NOTE: Note that some of the fuse holders may be empty due to various configuration possibilities. Only replace with same type fuse.

8.1.2 Mains Connection

Mains are connected with the cable supplied with the unit. If this is not present or does not fit, contact your local Service Representative. Do not use a non-original cable, this could be dangerous and will void the warranty.

Before connecting the mains, check the markings on the side of the workstation and verify that the yellow mains label reflects the correct voltage.

When marked 220-240V AC, the workstation can be connected to mains in the range of 220-240V AC 50 Hz.

If the markings correspond with the local mains power the unit can be connected and switched ON.

IMPORTANT: CONNECTING THE UNIT TO A WRONG VOLTAGE WILL CAUSE SERIOUS DAMAGES TO THE SYSTEM.

WARNING

Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

8.1.3 Gas Connections

If the workstation is connected to gas bottles, be sure to use a high quality regulator that can be adjusted around the required 0.5-0.7 bar (7.25-10.15 psi).

If the workstation is connected to plumbed gas circuits, verify that the pressure is in the correct range.

Connect the gas to the inlet on the workstation with a suitable silicone tube (1 tube is supplied with the unit). Contact your Customer Service Representative if this piece is missing.

The inlet should have a gas source of 5-6% premixed CO_2 in air.

9 TEMPERATURE CALIBRATION

The number of temperature regulators and how to measure the temperature is located in Section 7: Different Heated Surfaces.

To perform the temperature test the following items are needed:

- F100 Precision thermometer
  Order Code: 11010

- Probe for workstations, incubators and heat stage
  Order Code: 11006

NOTE: The thermometer and probes must be calibrated together.

9.1 Calibrating Temperature on the Tabletop

To locate the zones on the workstation, see Section 7: Different Heated Surfaces. In this section, the temperature validation of the tabletop is explained in more detail. For each zone, two measurements are taken on either side of the center of the zone. An example of the correct measurement location can be seen in Figure 9-1, this is for a single T845-2 Right Side.

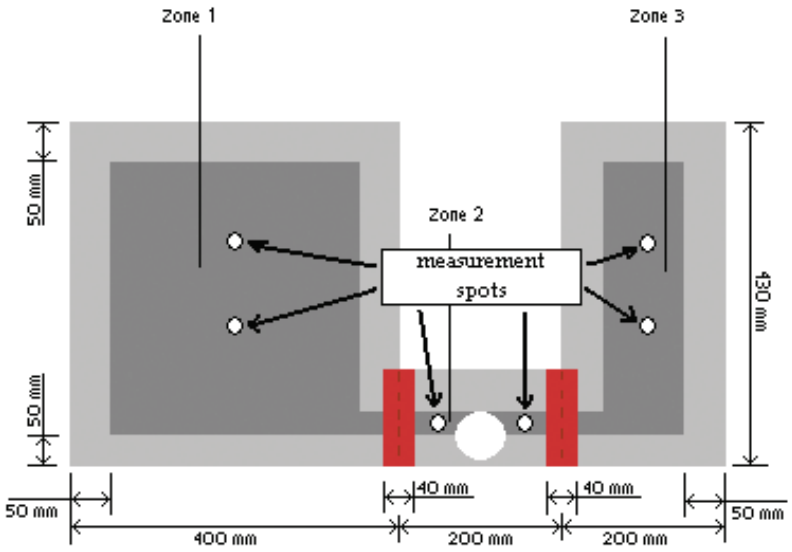


Figure 9-1: Single T845-2 Right Side with measurement spots.

NOTE: Always measure the temperature on the whole tabletop before any adjusting is conducted. Refusing to do so will cause heat crossover to other zones and make it very difficult to adjust the temperature.

Follow these steps for a detailed instruction of how to validate/calibrate the temperature of the tabletop.

1. Switch on the workstation ( ) and the fan ( ). Then wait for at least 40 minutes for the temperature to stabilize at set -point (e.g. 37.0 °C).

2. Place the dish containing oil-based liquid and temperature sensor on the tabletop.

3. Wait for the temperature to stabilize. When temperature is stabilized, write down the value and move on to the next spot within the same zone.

4. When the temperature of both spots has been measured, the average value must be calculated using the following formula, where “x” is the number of the zone:

$$Temp\_avr_{tn\text{-}x} = \frac{Temp1_{tn\text{-}x} + Temp2_{tn\text{-}x}}{2}$$

5. If there are more zones, repeat steps 2 through 4 for each zone.

When all the average values are calculated, they should be compared with what is being shown by the system. This is done by entering the menu and checking the values. Adjust only if the calculated values are different than the ones displayed by the system for each zone.

NOTE: Refer to sub-section 6.11.2 through 6.11.7 for more information regarding the calibration functions for the tabletop.

CAUTION

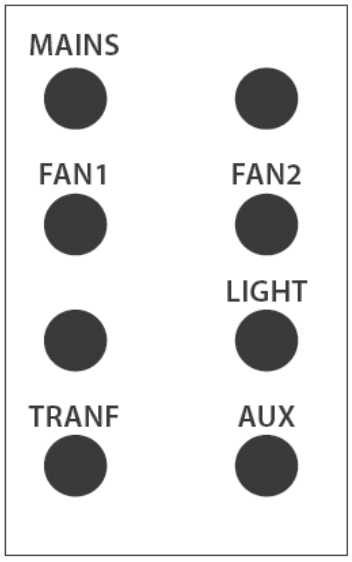
Extreme care must be taken here, as any wrong changes or adjustments will have a direct affect on the surface temperature of the tabletop.

9.2 Calibrating of Heated Glass

The heated glass is calibrated in the same way as the tabletop; except there is only one measurement location taken in the middle of the glass.

NOTE: Refer to sub-sections 6.11.9 and 6.11.10 for more information regarding the calibration functions for the heated glass.

10 FUSES



	115 V	230 V
FS1	6.3A	6.3A
FS2	6.3A	6.3A
FAN1	2A	2A
FAN2	2A	2A
LIGHT	0.5A	0.5A
TRANF	4A	2A
AUX	6.3A	4A

- FAN2 is only used for the L126 Workstation.
- The L126 Dual requires an additional transformer.
- AUX is only used if monitor or power plug is installed.

WARNING

Do not insert foreign objects in fuse holders. Insert only corresponding fuses. Do not use liquid cleaning agents directly on fusebox.

To replace the main fuse, open the fuse holder in the main connector as shown. Use a T15Ah (250V) fuse only.

NOTE: To replace the fuses, unplug the workstation and use a suitable screwdriver.

11 GASSING STATION OPERATION

Gas Mixture Connection

The gas supply is connected at the back of the workstation.

A maximum regulated gas mixture pressure is 0.5-0.7 bar (7.25-10.15 psi).

WARNING **Exceeding this pressure could damage your workstation.**

11.1 Establish the Flow Rate

The flow rate is adjusted by a needle valve connected to a flow meter. The regulating range is 0-50 liters per hour.

A flow rate should be chosen between 5 and 20 liters per hour, depending on the application and how often the CO_2 incubation hood is lifted.

11.2 Humidifying the Gas Mixture

In order to reduce evaporation from the culture media, humidification of the gas mixture is necessary.

- The built-in gas washing system optimizes the humidification.
- By flowing the gas through the table plate, the temperature and humidity of the gas are maintained.
- Fill the gas washing bottles to 2/3 with distilled water.

11.3 Purging

When the CO_2 hoods are opened the gas mixture is partly replaced with atmospheric air. It is necessary to work rapidly and only lift the gassing hoods when it is absolutely necessary. The atmospheric air must be replaced with the correct gas mixture as quickly as possible.

The regulating valve may be set to a higher flow rate for some seconds and afterwards, must be turned back to the lower value.

11.4 Operating the Microscope Light

The workstations may be fitted with various types of microscopes. Refer to the appropriate Instruction Manual for operating the microscopes.

ACTION	KEY
The microscope light source can be turned on and adjusted when using K-SYSTEMS light source (LS112) and pressing either the ▲ (increase intensity) **or** ▼ (decrease intensity). The microscope light is switched OFF by pressing both the ▲ and ▼ then releasing them.	

NOTE: Always turn off the light when it is not in use. This will increase the lifetime of the bulb.

12 LIGHT SOURCE (LS112/LS114 LED)

12.1 General Description

The LS112/LS114 Light Source with LED Light is designed for inspection of gametes and embryos.

The design of the mirror makes it possible to position the light, which enhances different morphological characters of the cells. Additionally, the Light Source has virtual dark field illumination and slots for green, red or blue filters.

LS112 and LS114 are designed to be installed in K-SYSTEMS Workstations.

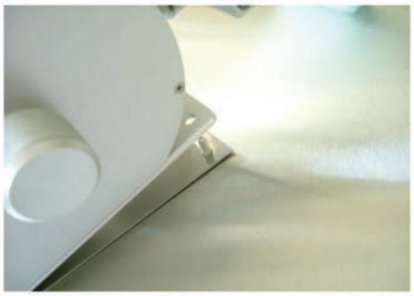
ORDER CODE	DESCRIPTION
41093	LS112 LED Light Source for 100, 400, and 600 series
53794	LS114 LED Light Source for 200 series

12.2 Unpacking and Inspection

Check that all accessories are included. Check the Light Source for external surface damage.

12.3 Installation

1. Position the Light Source under the workstation tabletop with the lamp house pointing toward the rear of the workstation.



2. Fasten the Light Source to the workstation table plate as shown, using the finger nuts provided. Be sure that the light source is in level and the nuts are fastened.

3. Connect the 2-pin Light Source power cord to the socket.

12.4 Operating Instructions

When installed in the K-SYSTEMS Workstation, the Light Source will be connected to the workstation's keyboard.

12.4.1 "ON" Function

Turn ON the Light Source by pressing the UP key. The light will now illuminate.

12.4.2 To Increase the Light Intensity

Hold the UP key until preferred light intensity is reached.

12.4.3 To Decrease the Light Intensity

Hold the DOWN key until preferred light intensity is reached.

12.4.4 "OFF" Function

The microscope light is switched OFF by simultaneously pressing both the UP **and** DOWN key.

12.4.5 Adjusting the Mirror

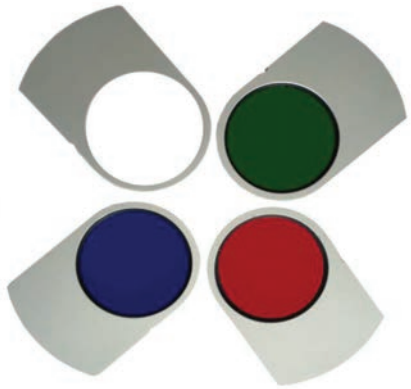
The knob for adjusting the mirror is placed on the left hand side of the Light Source. The rotating mirror has two different sides. One side is a plane mirror, while the other is concave.

The plane mirror is used when a high magnification is needed and the concave mirror is used for when lower magnification is needed. Virtual dark field is obtained by positioning the mirror almost vertically.

The mirror can be rotated 360 degrees in a rotational pattern and moved 45 mm horizontally, which enables positioning for an optimal lighting of the object.

The LS112/LS114 can be supplied with filters for specific light conditions:

1. No filter inserted (included)
2. Green filter
3. Red filter
4. Blue filter



12.5 Maintenance

12.5.1 Cleaning

Clean all surfaces with a 70% alcohol solution on a clean cloth or lint-free paper towel.

12.5.2 Replacement of LED Lamp House

Any replacement of the housing for the LED light must be performed by qualified service personnel.

12.6 Accessories

FILTERS	DESCRIPTION
41103	Green Filter
41104	Red Filter
41105	Blue Filter

12.7 Troubleshooting

PROBLEM	SOLUTION
No Light	Not connected to the power supply—check connection
	The light can be OFF. Press and hold the UP key (▲) for 5 seconds
	The LED is broken, contact your authorized service provider.
	The bulb has to be replaced.

12.8 Technical Data

LIGHT SOURCE	
Weight	1.8 kg
Width	96 mm
LED	
Lumen	800 lm
Material	Aluminum

12.9 Spare Parts LS112/LS114 LED Light Source

ORDER CODE	DESCRIPTION
41094	LS112 Lamp Holder
53795	LS114 Lamp Holder
51039	Connector 2-pin socket male
51040	Cable for LS112/LS114
52238	Glass mat for LS112/LS114
51041	Glad Spiral Top
52159	Brass Nut

13 TROUBLESHOOTING

Heating System

SYMPTOM	CAUSE	ACTION
No heating, display is OFF	The heating switch is OFF	Press the heating switch.
No heating	The alarm is ON	The temperature is more than 0.5 °C off the set temperature.
No heating.	Set-point is too low	Raise the Set-point
No heat on one side, display flashing off	Heat area is OFF	Turn on the heat area by pressing HEAT and the DOWN key at the same time.

Laminar Flow

SYMPTOM	CAUSE	ACTION
Alarm when the fan turns on	HEPA filter needs to be checked	Contact your Service Representative for details.

Humidification System

SYMPTOM	CAUSE	ACTION
No Gas Flow	Gas washing Bottle is empty	Re-fill the Gas Washing Bottle. Check and tighten gas connections on the back of the Workstation.
	Loose tube connection	Check and tighten the bottle connections.
	Blocked gas dispersion nozzle	Remove and clean the dispersion nozzles.
Nothing on Display	Loss of power	Check power cord. Check fuses.

Keyboard

SYMPTOM	CAUSE	ACTION
Missing segment in display - Absent or erratic function of operation keys.	Failure in the PCB	Contact your Service Representative for details.
Key not working on keyboard	Failure in keyboard	Contact your Service Representative for details.

Microscope Light

SYMPTOM	CAUSE	ACTION
No Microscope Light	Light is switched off	Press and hold the UP key
	Bad light bulb.	Replace the bulb-refer to appropriate light source manual.
	Faulty electrical connections	Check all connections to the light source.
	Keyboard	Contact your Service Representative for details.
	Blown fuse	Contact your Service Representative for details.
	Defective light source PCB	Contact your Service Representative for details.

AntiVibration System (L126MP)

SYMPTOM	CAUSE	ACTION
Vibration	The floating table plate is touching the table plate of the workstation.	Center the floating table plate so it does not touch the rest of the workstation.
	Loose tightening bolts	Tighten the four securing bolts.
	Grease on the springs	Clean the springs with 70% alcohol.

14 MAINTENANCE

14.1 Routine Maintenance

In case of contamination and/or spillage, moisten a cloth with distilled water and wipe internal surfaces of the workstation.

NOTE: The heated area is able to withstand some liquid spills, If any liquid is spilled on the surface, unplug the power cord, and wipe dry with a dry cloth.

CAUTION

If water gets inside the unit, contact your Service Representative to check electrical safety.

14.1.1 Daily Maintenance

1. Moisten a cloth with distilled water and wipe internal surfaces of the workstation.
2. Wipe all internal surfaces of the workstation with sterile wipes moist with a 0.12% active chlorine disinfection solution
3. Leave it for 15 minutes. The solution will be active even when it is dry.
4. Wipe all disinfected surfaces with a sterile cloth moist with purified or distilled water.
5. After cleaning, turn on the flow at full speed for sufficient time to ensure that all fumes have dissipated.

NOTE: It is not recommended to use alcohol solutions for the daily cleaning as alcohol contains VOCs.

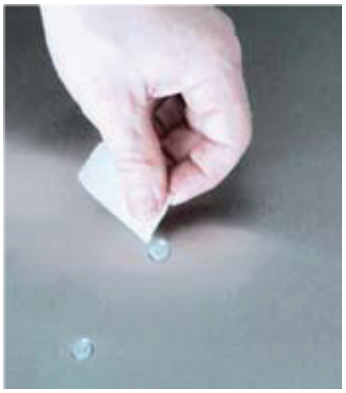
14.1.2 Monthly Maintenance

- Take off the front panel by unscrewing the four (4) finger nuts and gently lifting off the panel.
- Clean as per the daily procedure but pay special attention to the microscope, window backsides and edges near the main filter.
- **Do not wipe the HEPA filter!**
- Use the same procedure as in the daily cleaning for degassing the unit after monthly cleaning.

To avoid contamination of the humidification system, it is recommended to decontaminate the system once or twice per month depending on usage.

14.1.2.1 Rinsing of Humidification System Procedure:

1. Turn off the gas flow.
2. Empty the gas washing bottles.
3. Pour approximately 40 ml 70% alcohol into each gas washing bottle.
4. Set the gas washing bottles back into the gassing station.
5. Remove the gas dispersion nozzles using a small piece of tape as shown.



6. Turn on the gas flow to approximately 30 l/h and leave the flow running for one hour.
7. Take some tissue paper and clean the gassing hole within the table plate with 70% alcohol while the gas is flowing.
8. After an hour, turn the gas flow off and empty the remains of the 70% alcohol left in the bottles.
9. Rinse the bottles with distilled water to ensure complete removal of the alcohol from the humidification system.
10. Fill the gas washing bottles to 2/3 with distilled water.
11. Re-establish gas flow to the system at 20-25 l/h and leave it running for 20 minutes.
12. Turn OFF the gas flow.
13. Refitting the gas dispersion nozzles to the table plate complete the cleaning procedure.

14.1.3 Three Month Maintenance

The pre-filters should be checked at regular intervals.

14.1.4 Annual Maintenance

Reliable operation of the workstation is based on the following conditions:

- Correct air velocities
- Efficiency of installed HEPA filter

These parameters should be tested by a qualified technician after approximately 17,000 hours of operation or at least once a year by a qualified technician.

Testing of air velocities involves measurements of the air velocity in the vertical unidirectional flow. (See enclosed test report).

Testing of the efficiency of the installed HEPA filters. By means of special measuring equipment – particle counter or photometer–the effectiveness of the HEPA filter is tested. (See enclosed test report).

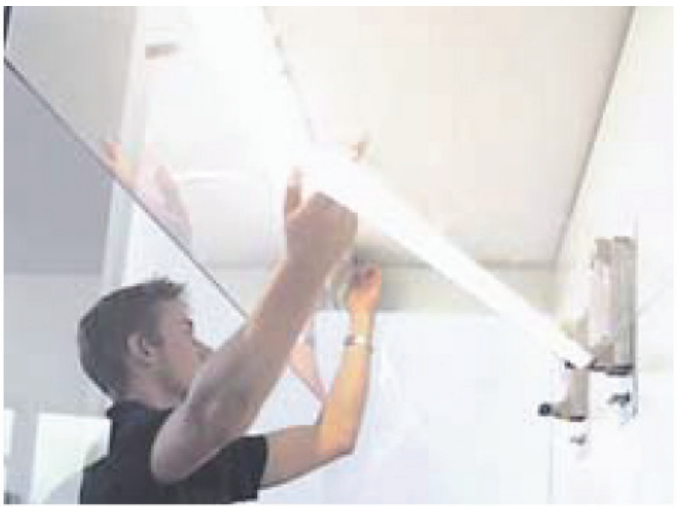
14.2 Specific Service Operations

14.2.1 Replacing the Pre-filter

Every three months change the pre-filters.

14.2.2 Replacing the Interior Light

1. Disconnect the workstation power cable at the mains.
2. Remove the Plexiglass lamp cover, gently grasp the light bulb by the ends, rotate the light bulb 90° until it loosens.
3. Carefully remove the light tube.



Replacement is the reverse of removal.

Light tube for L124:

Ø=16 mm; L= 1449 mm; 28 Watt

Light tube for L126:

Ø=16 mm; L=1449 mm; 35 Watt

It is recommended that for the L126 Workstation that 2 persons rotate the light tube one at each end for removal.

15 MONITOR

15.1 Description

The monitor is a high-grade Liquid Crystal Display (LCD) dual-input flat panel monitor. It features a 19" Thin Film Transistor (TFT) with anti-glare treatment. A super wide 170° viewing angle and 1600 X 1200 resolution.

The monitor has 3 inputs allowing it to be connected to most types of computers, cameras or video units. One is digital (VGA) and the two others are analog inputs (composite and S-VHS).

A composite (yellow) cable and a VGA cable (blue or black) will be connected to the monitor when the workstation is shipped. The monitor will be set up for auto switching between the signals. This means that the monitor will recognize the input type itself and adjust the picture to it. When there is no signal, the monitor will remain black.

NOTE: Only connect one type of signal to the monitor at a time or use the switch function on the keyboard.

See the following for a description for other types of connectors and suggested alternative connection possibilities.

15.2 Connectors and Cables

15.2.1 Composite Video Connector

This is for a camera or video recorder.

15.2.2 Composite to S-VHS Adapter

A converter piece is supplied that will allow S-VHS input on the composite cable.

15.2.3 S-VHS Video and Audio Connector

(Not connected as standard from the factory)

15.2.4 DE–15 Male VGA Connector

This cable is for a computer to use the monitor as a screen.

15.3 Connecting the Monitor to a Computer

Connect the monitor to a computer by attaching the VGA cable (blue or black) to the output connector of the computer. If the computer only features a DVI output, a VGA to DVI adapter must be used (not supplied with the workstation).

15.4 Connecting to a Camera

CCD cameras come equipped with varied types of connectors. The most common are Composite or S-VHS. The yellow cable is connected to the camera by using the composite or S-VHS adapter supplied with the workstation.

15.4.1 BNC Connectors

Some cameras also use a BNC connector

15.4.2 BNC to Composite

Converts the BNC connector on the camera to a female composite that will fit the installed cable on the workstation (This converter is not supplied with the workstation).

15.5 Service

To access the monitor inputs, the back panel of the workstation must be taken off. This should be done only by qualified and trained persons.

15.6 Monitor Controls and Functions

The monitor features a jog wheel on the lower right-hand side. When this is pressed and held for a second, a menu will appear on the monitor. The menu is described in detail in the following pages.

1 CONTROLS & FUNCTIONS

PreVu™ On-Screen Display

The LCD monitor features an PreVu™ On Screen Display (OSD) menu with easily identifiable icons designed to make adjusting your monitor display settings a more user friendly process. When highlighted, the icon illustrates the control function and brief instruction to assist the user in identifying which control needs adjustment.

The OSD menu is activated by pressing the Control Dial inward and you can select and adjust the function of your choice by rotating and clicking the Control Dial. The main menu displays a list of submenu icons and the current video input mode. Rotate the dial to move the highlights to the control you would like to adjust, then press the Control Dial inward to select that control or to activate that function. Depending on the control you selected, a submenu of the control with a status bar will appear. The status bar indicates in which direction, from the factory preset, your adjustments are being made. Rotate the Control Dial to adjust the control.

When you have finished making the adjustments, the setting is saved automatically by exiting the control function. If you do not touch the control dial for 20 seconds, the OSD is automatically exited saving your current settings.

Auto Setup

Selecting and executing this control makes automatic adjustments to the horizontal and vertical size, horizontal and vertical positions, frequency and phase for a quick and easy setup of the display. There will be a few seconds of delay while the Auto Setup function is in process.

2 CONTROLS & FUNCTIONS

Picture

Selecting this control allows you to select brightness, contrast, black level, sharpness, position, clock/phase.

Brightness

Selecting this control allows you to make adjustments to the luminosity level of the display screen in the scale of 0 to 100.

Rotating the Control Dial up/down to adjust the Brightness any time while the OSD is off.

Contrast

Selecting this control allows you to make adjustments to the contrast level of the display screen in the scale of 0 to 100.

Black Level

Selecting this control allows you to make adjustments to the black level of the display screen in the scale of 0 to 100.

Sharpness

Selecting this control allows you to make adjustments to the sharpness of the display screen in the scale.

Position

Selecting this control, then rotate contral dial to select the Horizontal or Vertical position control on the screen.

3 CONTROLS & FUNCTIONS

H-Position

Select this control and then use the Control Dial to center the image horizontally on the screen.

V-Position

Select this control and then use the Control Dial to center the image vertically on the screen.

Clock/Phase

Select this control and then use the Control Dial to select clock or phase.

Clock

Selecting this control allows you to adjust the frequency, sampling rate of horizontal pixels, to equal the video source's value, thus minimizing the screen artifacts of shimmering vertical lines.

Phase

Selecting this control allows you to adjust the screen image appear crisp and focused. Normally, the Auto Tune is sufficient to complete this task in the automatic way without user intervention, the Phase control allows you to adjust it manually in more precise manner.

4 CONTROLS & FUNCTIONS

Color Temp

Select this control, then use the Control Dial to select preset color temperature of Cool, Neutral, Warm or User for customized red, green and blue levels.

Cool : Selecting this control then use control daial to select cool.

Cool Ideal for general use. CAD/CAM.

Neutral : Selecting this control then use control daial to select neutral.

Neutral Ideal for desktop publishing.

Warm : Selecting this control then use control daial to select warm.

Warm Ideal for photo retouching.

USER : Adjust the Red (R Gain), G (G Gain) and B (B Gain) individually to match personal preference.

5 CONTROLS & FUNCTIONS

Management

Selecting this control, then use Control Dial to select Scaling, OSD Display, Language, Source or Recall.

OSD Display

Selecting this submenu allows you to adjust various settings of the OSD to make the display adjustment process an easier task.

H.Position (OSD Horizontal Position)

Selecting this control allows you to move the OSD menu horizontally on the screen.

V.Position (OSD Vertical Position)

Selecting this control allows you to move the OSD menu vertically on the screen.

6 CONTROLS & FUNCTIONS

Language

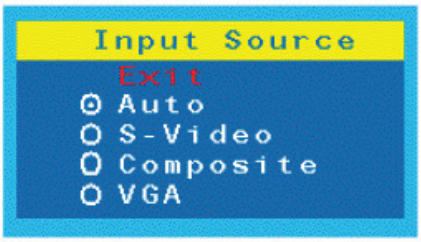
Selecting this control, then rotate the Control Dial to select the language you want. Press the Control Dial to excute when selected.

Recall

Selecting this control restores all of the OSD control adjustments to the factory default settings.

Input Source

Selecting this control allows you to manually select S Video Composite VGA or to automatically detect input sources all.



Volume

Selecting this control to Volume a scaling.

Exit

Selecting this exits the OSD.

16 DISPOSAL PROCEDURE

Cabinet devices or the whole unit contains re-usable materials. All components (with the exception of the HEPA filter) can be discarded after having been cleaned and disinfected.

Note that the filters from this device must be discarded in accordance with the applicable national regulations for special solid waste.

The table below contains a list of the recyclable components.

Component	Material
Table Plate	Stainless steel
Exterior Housing	Steel–painted
Interior Housing	Aluminum–painted
Device Back Panel	Steel–painted
Printed Circuit Board	Enclosed electronic components mounted on a PCB board
Front Window(s)	Polycarbonate windows, with UV protection.
Light Source	Aluminum, anodized

CAUTION

Contamination Hazard!

Since this device might have been used for processing and treating infectious substances, it might be contaminated. Prior to disposal, the whole device (including light source) must be decontaminated.

17 TECHNICAL SPECIFICATIONS

DIMENSIONS	L124	L126
Overall Dimensions (H x L x D)	2015 x 1246 x 735 mm (79.3" x 49" x 29")	2015 x 1846 x 735 mm (79.3" x 72.6" x 29")
Table Plate	1225 x 490 mm (48" x 19")	1825 x 490 (72" x 19")
Warmed Surface	Optional	Optional

Technical Specifications (continued)

POWER	L124	L126
Power Consumption	850 watts	1250 watts
Mains Voltage	230V or 115V	230V or 115V
Mains Frequency	50 Hz/60 Hz or 60 Hz	50 Hz/60 Hz or 60 Hz
Current	5.6A or 11.2A	6A or 12A

SPECIFICATIONS	L124	L126
Heating System	Electrical controlled heating system	Electrical controlled heating system
Temperature Range	Ambient - 43.0 °C	Ambient - 43.0 °C
Temperature Accuracy	+/-0.2 ˚C	+/-0.2 ˚C
Temperature Set/Read	Digital Readout	Digital Readout
Laminar Flow	Vertical	Vertical
Mains Power Supply	230V 50 Hz, 230V 60 Hz, or 115V 60 Hz	230V 50 Hz, 230V 60 Hz, or 115V 60 Hz
Fuse, Workstation	15A, slow blow	15A, slow blow
Heating Rate	0.3 °C / minute	0.3 °C/minute
	Audible/Visual alarm for filter change out of range temperature.	Audible/Visual alarm for filter change out of range temperature
Pre-filter	ASHRAE 52/76 (grav.) corresponding to EUROVENT 4/5 classification EU 3	ASHRAE 52/76 (grav.) corresponding to EUROVENT 4/5 classification EU 3
Main HEPA Filter	Classification H-14 with resistance of 130 Pa and an efficiency of MPPS of 99.995%. Grid on the inlet. Distribution cloth on the outlet. *Dimensions:* 1214 x 464 x 69 mm. **Order Code: 11153**	Classification H-14 with resistance of 130 Pa and an efficiency of MPPS of 99.995%. Grid on the inlet. Distribution cloth on the outlet. *Dimensions:* 1814 x 464 x 69 mm. **Order Code: 11154**

Technical Specifications (continued)

EQUIPMENT	L124	L126
Electrical Outlet	2 safety wall sockets, each may be loaded to maximum 4A	2 safety wall sockets, each may be loaded to maximum 4A
Required Main Fuse	15A	15A
Sound Level	51 +/- 2 dB (A)	51 +/- 2dB (A)

Component	Material	Treatment
Front and Side Windows	Polycarbonate / Glass	
Workstation Body	Mild Steel Plate EN 10130 DC01 (FePO1) Aluminum AW-1050	60 µm polyester coating pre-treated to corrosion class 1
Stand	Mild Steel Tube EN 10219-1 Stainless Steel Tube ST1203 ISO 127/DIN 2462	60 µm polyester coating pretreated to corrosion class 1
	Mild Steel Plate EN 10130 DC01 (FePO1) Aluminum EN AW-1050 Aluminum EN AW-1050 (FePO1)	60 µm polyester coating pre-treated to corrosion class 1
Heating System	Aluminum Heat Exchanger with copper element	
Tabletop	Stainless steel-AISI 304	

18 ACCESSORIES

18.1 Warming Blocks

There is a wide portfolio of warming blocks to be used when performing the various procedures in the workstation. We offer options with warming blocks, tubes, culture dishes, syringes and media flasks.

18.2 Mixed Gas Supply

The workstation can be connected to a mixed gas supply. The mixed gas can be humidified in the built-in humidification system and is delivered through nozzles in the tabletop. Using glass hoods over such a nozzle provides a short-term incubation environment suitable for the procedures performed in the workstation.

18.3 Gas Washing Bottles

The glass washing bottles in the Humidification System may be replaced. Order part number Humidifier Flask (52545) and/or top with Fritte for Humidifier Flask (52543).

19 WARRANTY INFORMATION AND LIMITS ON LIABILITY

CooperSurgical warrants that the workstation will be free from defects in materials and workmanship for one year from the date of initial purchase.

If CooperSurgical determines that a workstation fails to conform to that warranty during the one-year warranty period, CooperSurgical will, as the sole remedy for that failure to conform, repair or replace that workstation, at CooperSurgical's discretion, free of charge.

To return a workstation to CooperSurgical, a customer must comply with CooperSurgical's Returned Goods Policy described in this manual. A customer will not have any remedy if a workstation does not conform to the warranty for that workstation unless that workstation is returned to CooperSurgical in accordance with that Returned Goods Policy. CooperSurgical will ship returned products that it repaired or replaced under warranty to the customer who returned those products, at CooperSurgical's expense F.O.B. the customer's facility. Under all other circumstances, CooperSurgical will ship returned products to the customer who returned those products at the customer's expense F.O.B. CooperSurgical's facility.

CooperSurgical's warranties do not cover damage caused by misuse, improper care, improper use of chemicals or cleaning methods, loss, theft, servicing by non-authorized personnel or negligent or intentional conduct on the part of the owner or user of the workstation, nor do they cover normal wear and tear or general maintenance. Any modifications or changes to a workstation will void that workstation's warranty. CooperSurgical's warranties do not apply to any single- or limited-use, disposable or consumable components or items.

CooperSurgical is not responsible for, and the owner and operator of the workstation shall defend, indemnify and hold harmless CooperSurgical from and against, all claims, damages, and other losses resulting from the improper servicing, maintenance, repair use or operation of the workstation or the owner or operator's negligence or willful misconduct.

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19.1 Returned Goods Policy

1. Goods will be accepted for return for the following reasons:
   - If shipment was made without the customer's authorization or order
   - If incorrect items were shipped
   - If defective items were shipped
   - If defective goods are covered by the standard warranty
2. To return goods, you must contact a Customer Service Representative by telephone at the numbers listed in Section 20 for a Returned Merchandise Authorization (RMA) number. Items will not be accepted without an RMA number.

   Please have the following information:

   - Reason you wish to return the goods
   - Quantity, description, part number, serial number of the goods
   - Date of receipt of order
   - Customer's purchase order and the CooperSurgical invoice number

   All used goods must be cleaned and sterilized prior to shipment.

3. Shipment must be sent prepaid by the customer. Freight collect shipments will not be accepted, and goods will be returned to sender.
4. If Customer intends to return equipment ordered in error, the following restocking charges and terms will apply:
   - 25 percent within 60 days from date of shipment
   - Goods must be returned unused, in the original carton, and in marketable condition
   - Refurbishing and replacement charges will be added to the restocking charges for damaged or missing items
   - No return after 60 days
   - No refund on sterile, single-use disposable products

Send international returns to:

CooperSurgical European
Distribution Center B.V.

Celsiusweg 35
5928 PR Venlo
The Netherlands

Send U.S. returns to:

CooperSurgical, Inc.
95 Corporate Drive
Trumbull, CT 06611
United States

20 CUSTOMER SERVICE CONTACT INFORMATION

European Service Representatives

ORIGIO a/s
Knardrupvej 2
2760 Måløv
Denmark

Customer Service:

Tel: +45 46 79 02 02

Fax: +45 46 79 03 02

New Purchases:
customerservice@origio.com

Service Related E-mail:
service@origio.com

www.origio.com

U.S. Service Representatives

CooperSurgical, Inc.

95 Corporate Drive

Trumbull, CT 06611 USA

Customer Service:
Phone: (800) 243-2974
Fax: (800) 262-0105

International
Phone: +1 (203) 601-9810
Fax: +1 (203) 601-4747

Service Related E-mail:
service@origio.us.com

www.coopersurgical.com

21 EXPLANATION OF SYMBOLS

Reorder number

Serial number

Consult instructions for use

WARNING

WARNING
A warning alerts the reader about a situation, which if not avoided, could result in death or serious injury. It may also describe potential serious adverse reactions and safety hazards. The designation of a hazard alert as a “warning” is reserved for the most significant problems. The word **WARNING** is generally used as a signal word for this type of hazard alert.

CAUTION

CAUTION
The term precaution is used for the statement of a hazard alert that warns the reader of a potentially hazardous situation that, if not avoided, may result in minor or moderate injury to the user or the patient or damage to the equipment or other property. It may also be used to alert against unsafe practices. This includes the special care necessary for the safe and effective use of the device and the care necessary to avoid damage to a device that may occur as a result of use or misuse. The word **CAUTION** is generally used as a signal word for a precaution statement.

Recycling. Valuable raw materials can be recycled.

Do not use if package is damaged

Protective Earth

UV Light

This symbol is used in the presence of HIGH VOLTAGE parts which presents a significant electrical shock hazard to service personnel and others who could be required to work inside the ME equipment while it is energized

Fuse

EC REP

Authorized Representative in the European Community

Date of manufacture

Manufacturer

In order to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally-do not dispose of waste electrical or electronic equipment (WEEE) as unsorted municipal waste. Contact local WEEE disposal sites.

SYSTEMS

a CooperSurgical Fertility Company

Assembled in Lithuania

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