



Laboratory Equipment Pty Ltd

**INSTRUCTION MANUAL
FOR DEHYDRATING OVENS**

Laboratory Equipment Pty Ltd
"Proudly Australian Owned and Operated."
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Introduction

Congratulations on the choice of an Australian made quality product. Labec products are manufactured, tested and calibrated to meet published standard specifications under our strict quality assurance guidelines.

This Instruction Manual is for the guidance of operators of Labec Ovens and should be read before the oven is connected to the electricity supply.

It is hoped that this manual will supply all the information that the customer should require for satisfactory operation of the oven. If, however, there are any questions that remain unanswered then the customer should contact our Service Department.

Unpacking

Remove all packing and protective wrapping from both the interior and exterior of the unit. Check the unit for any possible transit damage. Ensure all ordered accessories are present. If any physical damage or shortage is evident, do not discard the packaging material until the unit is inspected by the distributor, agent or manufacturer.

NOTE: All claims for shortage or damage must be made within fourteen days (14) from delivery.

Subject to our standard published conditions of sale, we have reasonable grounds to believe that we have ensured, so far as is reasonably practical, that the products listed in our catalogue and brochures have been designed and constructed so as to be safe and without risk to health when properly installed and used in their environment by appropriate and trained personnel, and where applicable, in accordance with our published instructions.

Installation Electrical

This equipment must be tagged and tested according to AS/NZS3760:2010 prior to use and thereafter on a regular basis dependent upon the environment.

It is preferable to locate the oven close to a powerpoint and recommend that double adaptors are not used. Check the total wattage if connecting to multipoint outlets. Check the rating plate for power requirements. Installation is to be carried out by a qualified electrician in accordance with the power requirements of the product specifications.

Location

Select a location free from draughts and away from direct sunlight or other heat sources. As the unit releases hot moist air from the extraction vents the oven should not be placed in an enclosed room without ventilation that will disperse the air and moisture from those vents.

Temperature Control

Labec ovens are fitted with solid state proportional action digital temperature controllers which operate from a sensitive thermocouple or Rtd inserted in the working space of the chamber. The controller has been calibrated at 60°C and 105°C and before any adjustments to temperature settings are made allow the oven temperature to stabilize for at least one hour. If a thermometer port is located in the top of the cabinet it is

important to ensure that the sensor for the thermometer is located well into the chamber when checking the chamber temperature. A digital controller is fitted, please read the enclosed operating instructions when setting the controller temperature.

Safety Thermostat

The oven is fitted with an overheat safety thermostat. It must be set to slightly above the desired setpoint temperature and will prevent overheating. It will maintain the temperature you set on the thermostat. Set the thermostat by turning to full and allowing the chamber to stabilise at the desired set temperature. Then slowly turn the dial anti clockwise until the power to the heaters turns off (thermostat will click on and off as you pass the chamber temperature), note the temperature on the thermostat at this point. Then turn the dial clockwise again to switch the power back on. Turn the dial anti clockwise again until it is slightly above the temperature at which point you noted the chamber switched off. This is now set around 5°C above the desired setpoint and will switch off all power to the elements should the oven reach this temperature.

Timer

If a timer is fitted, set the time period (allowing for heat up time) required by turning the dial around to the correct time period. Adjust the screw at the bottom of the timer to adjust time periods (do not adjust the screw at the top). After the time period elapses the fan and controller remain on but the heaters will switch off. To reset, turn the mains power off then on again.

Single Pass Drying Fans

Dehydrating ovens are fitted with a single pass drying fan at the top of the chamber, blowing air downwards through the chamber. **DO NOT SWITCH THE OVEN OFF** when the chamber temperature is above 50°C, as there is a risk of burning/melting the fan motor.

When you have finished your process, turn the safety thermostat to zero and let the oven run with the fan on until cooled below 50°C.

Description of Controls

See Appendix A

Caution

Please observe the following safety measures before using your LABEC equipment. Please read and follow the IQOQ document supplied with this oven each and every use.

1. These units are **NOT FLAME PROOF** and under no circumstances should inflammable, combustible or explosive material be placed in the unit.
2. Low ignition temperature materials and those materials which give off inflammable or explosive vapors should not be placed in the unit.
3. Avoid heating substances which give off corrosive vapor.
4. Users are advised of the dangers of heating combustible materials. The manufacturer can recommend special types of elements which will prohibit the unit's temperature reaching known ignition points.
5. Observe those rules pertaining to wiring and installation of electrical appliances

as recommended by the local supply authority.

WARNING

It is detrimental for any of the substances listed below to be inside this equipment. The interior of the unit may be damaged if exposed to any of them. Corrosion of the stainless steel and other surfaces will be directly attributable to the presence of one or more of these substances and will not be a defect or failure for which the manufacturer will accept responsibility.

ORGANIC SUBSTANCES	SALT	ACIDS	MISCELLANEOUS
ALKAFORM	AMMONIUM BROMIDE	ACETIC	BROMIDE
ANAESTHESIA	AMMONIUM CHLORIDE	BORIC	CHLORINE
CARBON	CALCIUM CHLORIDE	CARBOLIC (PHENOL)	FLUORINE
TETRACHLORIDE	CALCIUM HYPOCHLORITE	CHROMIC	IODINE
FORMALDEHYDE	FERRIC CHLORIDE	HYDROCYANIC	SULPHUR DIOXIDE
LYSOL(CRESOLS ETC)	HYDROGEN PEROXIDE	NITRIC	
TRICHLORETHYLENE	MAGNESIUM CHLORIDE	OXALIC	
	MERCURIC CHLORIDE	HYDROCHLORIC	
	POTASSIUM CHLORIDE	PHOSPHORIC	
	POTASSIUM HYPOCHLORITE	SULPHURIC	
	POTASSIUM HYPOCHLORITE	SULPHUROUS	
	SODIUM CHLORIDE	TARTARIC	
	SODIUM HYPOCHLORITE		

Operation

Connect the chamber to an alternating current supply of voltage specified on the rating plate mounted on the side or rear of the chamber.

DANGER: THIS UNIT MUST NOT BE CONNECTED TO DIRECT CURRENT SUPPLY

Turn on the mains and check to see that the illuminating lamp is illuminated. Set the target temperature or setpoint temperature using the up and down arrows on

the front of the controller.

Final adjustment of the temperature controller may be required after the chamber has reached operating temperature and this should be checked with a suitable thermometer located in the chamber (A thermometer is not supplied with the chamber).

Loading the oven shelves shall be of such design as will not impede the circulation of fresh air or the exhaust from the oven. It has been demonstrated experimentally, that the use of grid-type shelves covering more than one half of the shelf area may lead to considerable increase in temperature differential. Notwithstanding the requirements of this clause, serious blockage may occur when the oven is heavily loaded with stock.

The best procedure in such cases is to insert the loaded shelves after heating up the oven. **To ensure even heat and air distribution leave gaps between the products on the shelves and a minimum of 50mm from each of the walls, back and door to allow air to pass around the product.** Never allow product to touch or contact the rear wall where the elements are located as this may result in fire as the element surface temperature is much hotter than the overall air temperature in the oven and may ignite if in contact with.

Troubleshooting

SYMPTOM	REMEDY
No Power (Indicator Light is off)	<ol style="list-style-type: none">1. Check oven is plugged in and power switched on.2. Ensure the mains power supply point is functioning by using a test appliance on the power socket.3. Check the internal RCD has not tripped.
Failure to heat or maintain temperature (Indicator light is on)	<ol style="list-style-type: none">1. Check the timer is set correctly.2. Check the timer is reset (turn off/on)3. Ensure the temperature controller set point is above ambient.4. Check the safety controller fitted is above the main controller setting.

If the fault cannot be found, call your distributor or the manufacturer quoting the serial number of the unit from the manufacturer's label.

Heating

Heating of the oven is by means of heating elements located in the air duct behind the working chamber. Ensure products or samples inside the oven are placed away (minimum 50mm) from the rear wall where the elements are located.

Safety Information

Isolate the oven from the electrical supply before changing elements or thermocouples or undertaking other routine maintenance. Ensure that the oven is cold.

When reconnecting the oven, ensure that the electrical connections are sound including earth supply continuity.

Wear appropriate safety clothing when operating the oven, including a heat resistant face shield (tinted for eye protection), gloves and apron.

Load and unload "hot" work with oven tongs.

Do NOT use the oven in the presence of inflammable or combustible chemicals, fire or explosion may result. To avoid fire, do not expose combustible materials to heat from the open oven door.

Safety Note Insulation

This oven contains rockwool fibres in its thermal insulation. The materials used may be in the form of fibre blanket or felt, vacuum formed board or shapes, mineral wool slab or loose fill fibre. Normal use of the oven will not result in any significant level of airborne dust from these materials but much higher levels may be encountered in maintenance or repair.

Whilst there is no evidence of any long-term health hazards, we strongly recommend that safety precautions are taken whenever the materials are handled.

Exposure to dust from fibre which has been used at high temperature may cause respiratory disease.

When handling fibre always use an approved mask, eye protection, gloves and long sleeved clothing.

After handling, rinse exposed skin with water and wash work clothing separately.

Before commencing any major repairs we recommend reference to:

- ECFIA Bulletin Number 11
- Guidance Note EH46 (U.K. Health and Safety Executive.)

We will be pleased to provide further information on request. Alternatively our Service Department will quote any repairs to be carried out at your premises or at our works.

Maintenance

The chamber is manufactured from stainless steel and may be cleaned with a cloth and solvent. If the chamber is grained stainless steel a stainless steel scratch pad may be used. The pad should be rubbed in the same direction as the grain pattern of the stainless steel.

Ovens are fitted with a fan motor with pre-lubricated and sealed bearings which should not require maintenance for some time depending upon extent of usage. The shelves are manufactured from chrome plated steel and a cloth and a non abrasive cleanser should be used. The silicone door gasket should be cleaned with detergent only, ensuring it is dried completely after washing.

Declaration of Conformity

Each product is thoroughly inspected and tested to not only ensure that it meets the specifications provided, but to also meet Australian Electrical Standard AS3820 and EMC Standard AS/NZ1044:1995, and therefore being accredited with a C Tick label.

Appendix A

FCH60L0 CONTROLLER MANUAL

Temperature controller instruction

1. Panel instructions



2. Operation and usage

1. When the controller is powered on, the display window shows "indexing number (P, C, K, S)" on the upper row, and "range value" on the lower row. It will enter the normal display state after about 3 seconds.

2. Reference and setting of temperature and constant temperature time

Click the "Set" button to enter the temperature setting state, the lower window displays the prompt "SP", the upper row displays the temperature setting value (the first digit value flashes), you can use the shift, increase and decrease keys Modify to the required setting value; then click the "Set" button to enter the constant temperature time setting state, the display window shows the prompt "St" in the lower row, and the constant temperature time setting value is displayed in the upper row (the first digit value flashes)), can be modified to the required setting value through the shift, increase and decrease keys; then click the "setting" button to exit this setting state, the modified setting value is automatically saved.

After the operation is completed, long press the "shift/rerun" key for 3 seconds to restart the timer operation.

3. When the over-temperature alarm occurs, the buzzer sounds continuously, and the "!" alarm lamp lights up. If an over-temperature alarm is generated due to a change in the temperature setting value, the "!" alarm lamp lights, but the buzzer does not sound.

4. When the buzzer sounds, you can press any key to mute the sound.

5. "Shift/Self-tuning" button: Press and hold this button for 6 seconds in the non-setting state to enter or exit the system auto-tuning; click this button in the setting state to make the setting

value shift and flash to modify.

6. "Decrease/Rerun" button: In the non-setting state, when the operation is completed, long press this button for 3 seconds to restart the operation; click this button in the setting state to decrease the set value, long press this button Continuously pass the set value.

7. "Add/Backlight" button: click this button in the non-setting state to make the LCD backlight turn on or off (this function is only available for LCD series); click this button in the setting state to increase the setting value, long press This key can continuously increase the set value.

8. In the setting state, if no key is pressed within 1 minute, the controller will automatically return to the normal display state.

9. If "----" is displayed on the upper row of the display window of the controller, it indicates that the temperature sensor or the controller itself is faulty. Please check the temperature sensor and its wiring carefully.

3. System self-tuning

When the temperature control effect is not ideal, the system self-tuning can be performed. There will be a large overshoot in the temperature during auto-tuning. Please fully consider this factor before the system auto-tuning.

In the non-setting state, long press the "shift/auto-tuning" key for 6 seconds to enter the system auto-tuning program, the "Hai Hong" indicator flashes, the indicator stops flashing after the auto-tuning, the controller will get a group better system PID parameters, parameter values are automatically saved. During the system auto-tuning process, long press the "shift/auto-tuning" key for 6 seconds to stop the auto-tuning process.

If there is an over-temperature alarm during the system auto-tuning process, the "!" alarm light will not turn on and the buzzer will not sound, but the heating alarm relay will automatically turn off. The "Set" key is invalid during the system auto-tuning process. Regardless of whether there is constant temperature setting in the system auto-tuning process, the lower row of the controller display window always displays the temperature setting value.

4. Reference and setting of internal temperature parameters

Press and hold the setting key for about 3 seconds, the lower display of the controller displays the password prompt "Lc", as shown in Figure 3, the upper display shows the password value, and the increase, decrease and shift keys are used to modify the required password value. Click the setting button again, if the password value is incorrect, the controller will automatically return to the normal display state, if the password value is correct, then enter the temperature internal parameter setting state, and then click the setting button to modify each parameter in

turn. Press and hold the set button for 3 seconds to exit this state, and the parameter value is automatically saved.

Internal parameter table -1

Parameter indication	parameter name	Parameter function description	(Range) Factory value
Lc-	password	When "Lc=3", you can view and modify the parameter value.	0
AL-	Over temperature Deviation alarm	When "Temperature measurement value>Temperature setting value+AL", the alarm light is on, the buzzer sounds (see V.3), and the heating output is disconnected.	(0~100°C) 5.0
T-	Control cycle	Heating control period.	(1~60s) Note 1
P1-	Proportional zone at low temperature	Time proportional action adjustment.	(1.0~Range value) 35.0
I1-	Integration time in low temperature area	Integral adjustment.	(1~1000s) 200
d1-	Differential time at low temperature	Differential action adjustment.	(0~1000s) 200
P2-	Proportional band	Time proportional action adjustment.	(1.0~Range value) 35.0
I2-	Integration time	Integral adjustment.	(1~1000s) 200
d2-	Differential time	Differential action adjustment.	(0~1000s) 200
dc-	Low temperature zone inflection point	When the set temperature is $\leq dc$, it belongs to the low temperature zone	(0~Range value)80.0
Pb-	Zero adjustment	Correct the error produced by the sensor (low temperature) measurement. Pb=actual temperature value-meter measurement value	(-50~50°C) 0

PK-	Full scale adjustment	Correct the error caused by the sensor (high temperature) measurement. PK=1000* (actual temperature value-instrument measured value) / instrument measured value	(-999~999) 0
Et-	Timing function	When ET=0, there is no timing function; when it is 1, it starts timing when power on, when it is 2, it starts timing when it is set	(0~2) Note 2

Internal parameter table -2

Parameter indication	parameter name	Parameter function description	(Range) Factory value
Lc-	password	When "Lc=9", you can view and modify the parameter value.	0
Co-	Turn off heating output deviation	When "temperature measurement value \geq temperature set value + Co", turn off the heating output.	(0.0~50.0°C) 5.0
Hn-	Constant temperature timing	0: minute timing; 1: hour timing	(0~1) 0
En-	End of operation	En=0 Turn off the output at the end of operation; En=1 Continue to keep constant temperature after running;	(0~1) 0
Lt-	Maximum power output	The maximum power percentage of heating output;	(0~100)100
oP-	Gating function	0: Turn off the door open judgment function; 1: Turn on the door open judgment function.	(0~1) 1
rH-	Range value	Set according to the temperature measurement range.	FCD:(0~400.0 °C)400.0 FCH:(0~500.0 °C)500.0
ad-	mailing address	The communication address of this	(1~32) 1

		machine.	
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Internal parameter table -3 (this parameter table for LCD series is standard, and this parameter table for digital series is optional)

Parameter indication	parameter name	Parameter function description	(Range) Factory value
Lc-	password	When "Lc=33", you can view and modify the parameter value.	0
LK-	Button backlight time	No operation backlight automatic extinguishing time, 0 always on	(0~10)0min

Name and parameter indication symbol comparison table

██████	SP	St	Lc	AL	Γ	P	I	d
██████	■	■	■	■	■	■	■	■
██████	Pb	PE	Co	Hn	oP	rH	En	Lt
██████	■	■	■	■	■	■	■	■