ECONOMY INCUBATOR

MODEL: EI1 & EI2

INSTALLATION AND OPERATIONAL MANUAL

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LAB Online Exhibition

Operation Manual

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REV. 1/04
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These units are general purpose air incubators for professional, industrial or educational use where the preparation or testing of materials is done at approximately atmospheric pressure and no flammable, volatile or combustible materials are being heated. These units are not intended for hazardous or household locations or use.

Section 1

RECEIVING AND INSPECTION

Your satisfaction and safety require a complete understanding of this unit. Read the instructions thoroughly and be sure all operators are given adequate training before attempting to put the unit in service. NOTE: This equipment must be used only for its intended application; any alterations or modifications will void your warranty.

1.1 **Inspection:** The carrier, when accepting shipment, also accepts responsibility for safe delivery and is liable for loss or damage. On delivery, inspect for visible exterior damage, note and describe on the freight bill any damage found, and enter your claim on the form supplied by the carrier.

1.2 Inspect for concealed loss or damage on the unit itself, both interior and exterior. If necessary, the carrier will arrange for official inspection to substantiate your claim.

1.3 **Return Shipment:** Save the shipping crate until you are sure all is well. If for any reason you must return the unit, first contact your customer representative for authorization. Supply nameplate data, including model number and serial number.

1.4 Verify that all of the equipment indicated on the packing slip is included with the unit. Carefully check all packaging before discarding. These units are equipped with 2 shelves, 8 shelf clips, thermometer and thermometer clip.

Section 2

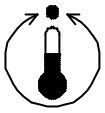
GRAPHIC SYMBOLS

Your incubator is provided with a display of graphic symbols to help in identifying the use and function of the available adjustable components.

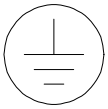
2.1  This symbol, when shown, indicates that you should consult your manual for further description or discussion of a control or item.

2.2  Indicates **"AC Power"**

2.3  Indicates **"Heating"**

2.4  Indicates **"Adjustable Temperature"**

2.5  Indicates **"Manual Control"**

2.6  Indicates **"Earth Ground Symbol"**

2.7  Indicates **"Potential Shock Hazard"** behind partition

Section 3

INSTALLATION

Local city, county or other ordinances may govern the use of this equipment. If you have any questions about local requirements, please contact the appropriate local agency. Installation may be performed by the end user.

Under normal circumstances this unit is intended for use indoors, at room temperatures between 5° above ambient to 70°C, at no greater than 80% Relative Humidity (at 25°C) and with a supply voltage that does not vary by more than 10%. Customer service should be contacted for operating conditions outside of these limits.

3.1 **Power Source:** The electrical supply circuit to the incubator must conform to all national and local electrical codes. Consult the incubator's serial data plate for the voltage and ampere requirements before making connection. VOLTAGE SHOULD NOT VARY MORE THAN 10% FROM THE SERIAL PLATE RATING. This unit is intended for 50/60 Hz application. A separate circuit is recommended to prevent possible loss of product due to overloading or failure of other equipment on the same circuit.

3.2 **Location:** When selecting a site for the incubator, consider all conditions which may affect performance, such as extreme heat from steam radiators, stoves, ovens, autoclaves, etc. Avoid direct sun, fast-moving air currents, heating/cooling ducts, and high traffic areas. To ensure air circulation around the unit allow a minimum of 5cm between incubator rear and sides and any walls, partitions or obstructions to free airflow.

3.3 **Lifting / Handling:** These units are heavy and care should be taken to use appropriate lifting devices sufficiently rated for these loads. Units should only be lifted from their bottom surfaces. Doors, handles and knobs are not adequate for lifting or stabilization. The unit should be completely restrained from tipping during lifting or transport. All moving parts, such as shelves and trays should be removed and doors need to be positively locked in the closed position during transfer to prevent shifting and damage.

3.4 **Leveling:** The unit must sit level and solidly. The unit is equipped with non-adjustable rubber feet to raise it off the counter and prevent sliding; however, the counter must be level to provide optimum safety and working conditions.

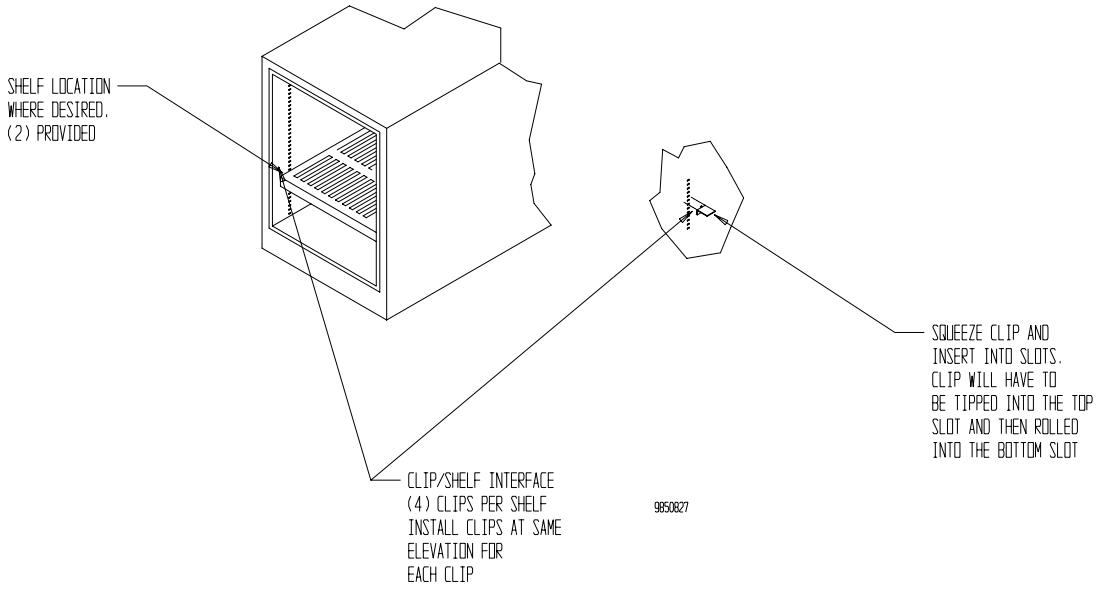
3.5 **Cleaning:** The incubator interior was cleaned at the factory, but not sterilized. Remove all interior parts, including shelves and shelf clips if assembled. Clean

with a disinfectant that is appropriate for your application. DO NOT USE spray cleaners that might leak through openings and cracks and get on electrical components, or that may contain solvents that will harm coatings. DO NOT USE chlorine-based bleaches or abrasives, as they will damage the stainless steel interior. Regular periodic cleaning is required. Special care should be taken when cleaning around sensing heads to prevent damage.

WARNING: Never clean the unit with alcohol or flammable cleaners with the unit connected to the electrical supply. Always disconnect the unit from the electrical service when cleaning and assure all volatile or flammable cleaners are evaporated and dry before reattaching the unit to the power supply.

3.6 Shelf Placement: Place the two shelves in the desired position. See Figure 1.

Figure 1



Section 4

CONTROL PANEL OVERVIEW

(SEE FIGURE 2)

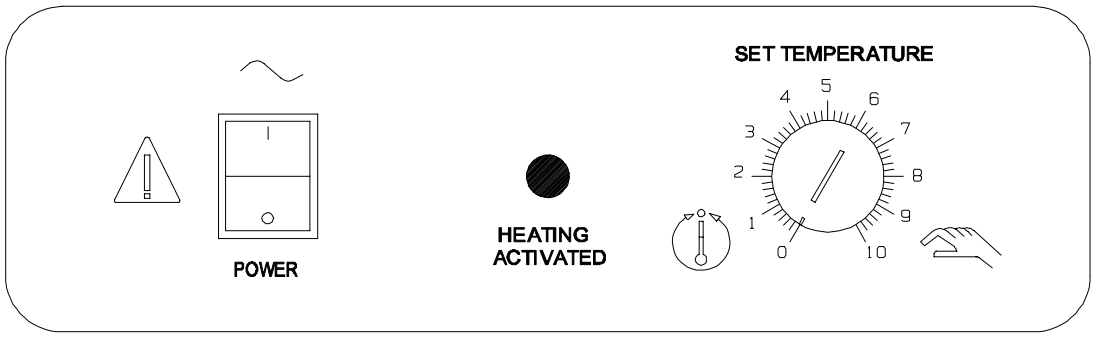
4.1 **Power Switch:** The main power I/O (on/off) switch controls all power to the unit and must be in the I or ON position before any systems are operational.

4.2 **Temperature Controller:** The controller is marked SET TEMPERATURE and is equipped with an adjustment knob and a graduated dial. The graduated dial is marked with 10 major increments and 50 minor increments. These increments can be used as index points for setting and returning to set point temperatures.

4.3 **Heating Lamp:** This green pilot lamp is marked HEATING ACTIVATED. It indicates when the element has been activated and the incubator is heating. When set point is reached the pilot light will cycle on and off as the elements maintain set point.

4.4 **Circuit Breaker / Fuse:** This control is adjacent to the power cord and provides protection for the unit's electrical circuitry against power fluctuations. The circuit breaker, when tripped, must be reset by pushing in the extended button for the unit to continue operation. The fuse, when blown (on CE units in place of the circuit breaker) must be replaced before the unit can continue operation.

Figure 2



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Section 5

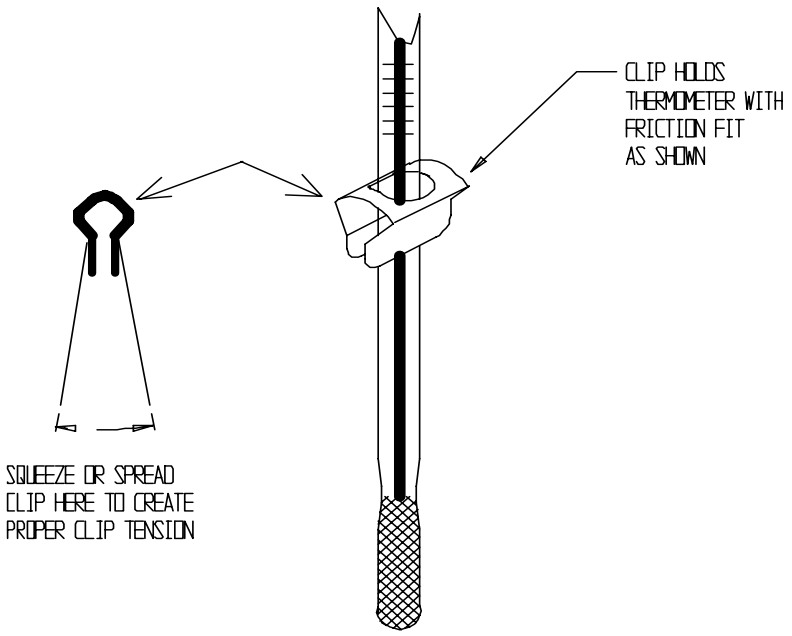
OPERATION

5.1 Check power supply against unit serial plate; they must match. Plug service cord into the grounded electrical outlet and turn the power switch ON.

5.2 **Thermometer Placement:** Place the thermometer and clip (provided in the accessory kit) through the hole at the top of incubator. The thermometer is to verify operating temperature. **See Figure 3.**

5.3 **Set Temperature Controller:** The temperature range for this incubator is 5°C above ambient to 70°C. The increments of the graduated dial should be used as reference points; for example, if 37°C is the desired set point, start with an initial control knob setting at or near mid point on the dial. Clockwise adjustments increase the temperature. Wait at least two hours for the temperature to stabilize, view the thermometer and adjust the control as necessary to reach the desired temperature. Make small adjustments when final fine-tuning is being done. When temperature is at the desired set point, place samples into the chamber.

Figure 3



Section 6

MAINTENANCE

NOTE: Prior to any maintenance or service on this unit, disconnect service cord from the power supply.

6.1 **Cleaning:** Clean interior of the incubator on a regular basis. Remove shelves and shelf clips and sterilize the incubator with a disinfectant that is appropriate for your application. The shelves and clips are autoclavable, or can be cleaned with the same solution as the incubator. DO NOT USE spray cleaners that might leak through openings and cracks and get on electrical components, or that may contain solvents that will harm coatings. DO NOT USE chlorine-based bleaches or abrasives, as they will damage the stainless steel interior. Regular periodic cleaning is required. Special care should be taken when cleaning around sensing heads to prevent damage.

WARNING: Never clean the unit with alcohol or flammable cleaners with the unit connected to the electrical supply. Always disconnect the unit from the electrical service when cleaning and assure all volatile or flammable cleaners are evaporated and dry before reattaching the unit to the power supply.

6.2 When washing interior, handle the door gasket carefully so as not to impair the positive seal.

6.3 NO maintenance is required on the electrical components. If the incubator does not operate as specified, please see the Troubleshooting guide before calling for service.

Section 7

TROUBLESHOOTING

FOR PERSONAL SAFETY, ALWAYS DISCONNECT THE POWER BEFORE SERVICING. Always make a visual inspection of the incubator and control panel when troubleshooting. Look for loose or disconnected wires that may be the source of the trouble.

TEMPERATURE

Temperature too high	
	1/ controller set too high-see section 5.3 2/ controller failed on – call Customer Service 3/ wiring error – call Customer Service
Temperature too low	
	1/ controller set too low – see section 5.3 2/ unit not recovered from door opening – wait for heating indicator to turn off. 3/ unit not recovered from power failure or being turned off – incubators will need 2 hours to warm up and stabilize 4/ element failure – see if heating indicator is on; compare current draw to data plate. 5/ controller failure – confirm with heating indicator that controller is calling for heat. 6/ wiring problem – check all functions and compare wiring to wiring schematic in manual – especially around any areas recently worked on.
Unit will not heat over a temperature that is below set point	
	1/ confirm that amperage and voltage match data plate. 2/ check connections to sensor 3/ check calibration – using reference thermometer, follow instructions in section 5.2 and 5.3
Unit will not heat up at all	
	1/ verify that controller is asking for heat by looking for Heating indicator light – if pilot light is not on continuously during initial start-up, there is a problem with the controller. 2/check amperage – amperage should be virtually at maximum rated (data plate) amperage. 3/ has the fuse/circuit breaker blown?
Indicated chamber temperature unstable	
	1/ ±0.1 may be normal.

	2/ is ambient radically changing – either door opening or room airflow from heaters or air conditioning? – stabilize ambient conditions. 3/ calibration sensitivity – call Customer Service.
Will not maintain set point	
	1/ assure that set point is at least 5 degrees over ambient room temperature. 2/ see if ambient is fluctuating; if so, stabilize ambient.
MECHANICAL	
Door not sealing	
	1/ check physical condition of gasket 2/ assure that gasket is in original location 3/ Verify that door latch is operating correctly and not miss-aligned or broken.
OTHER	
Unit or wall fuse/circuit breaker is blown	
	1/ check wall power source. 2/ compare current draw and compare to specs on data plate. 3/ see what other loads are on the wall circuit. 4/ has the circuit breaker on the front panel been tripped? If so, see section 4.4
Unit will not turn on	
	1/ check wall power source 2/ check fuse/circuit breaker on unit or in wall 3/ check all wiring connections, esp. around the on/off switch
Unit is smoking – out of box	
	This is not an uncommon occurrence when the protective coatings heat up during initial operation. Put unit under vent and run at full power for one hour until the smoke dissipates.
Contamination in chamber	
	1/ see cleaning procedure in section 6.1 2/ develop and follow standard operating procedure for specific application; include definition of cleaning technique and maintenance schedule.

If following these troubleshooting suggestions does not solve the problem, call Customer Service for assistance. Please see the manual cover for information on where to contact Customer Service.

Section 8

PARTS LIST

Description	115V	220V
Circuit Breaker	1100505	1100505
Heating Element	210023	2350500
HEATING Pilot Lamp	200021	200021
I/O Switch	103351	103351
Power Cord, European	NA	1800500
Power Cord, USA	100014	101990
Temperature Controller	10000J	10000J

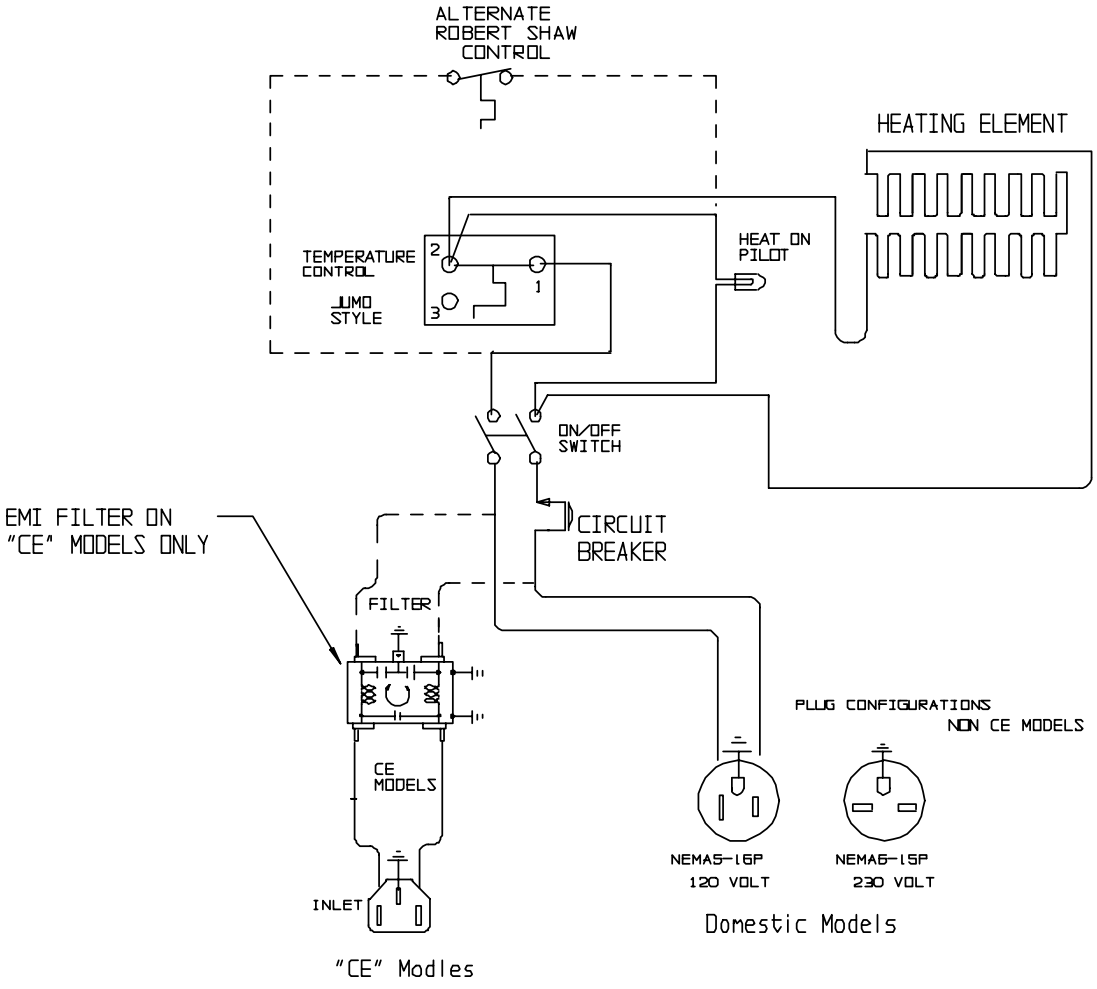
CE Units Only

EMI 10 amp Filter	NA	2800502
Fuse	NA	103555
Inlet With Fuse Holder	NA	4200505

UNIT SPECIFICATIONS

Unit	Dimensions WxDxH		Weight		Capacity	Temperature
	Exterior	*Interior*	*Shipping*	*Net*	*Cubic Ft*	°C
EI1	16.75x17.75x22.25	12x12x14	53 lbs.	44 lbs.	1.0	Amb. +5°-70°
EI2	21.5x18x25.5	17x12x17	71 lbs.	57 lbs.	2.0	Amb. +5°-70°

WIRE DIAGRAM
EI1 & EI2



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"CE" MODELS MAY REQUIRE ONE OR TWO FUSES. MOST MODELS WILL NOT REQUIRE AN IN-LINE FUSE. FUSE INCLUDED BY CUSTOMER REQUEST ONLY.