8/01

OPERATION MANUAL

MANUAL NO. 057-616-00
REV. H

LAB-LINE®
IMPERIAL III GENERAL PURPOSE INCUBATORS

MODEL NO.

Gravity Convection:
302, 302-1
305, 305-1 With Outlet
306, 306-1
310, 310-1 With Outlet
311, 311-1

Mechanical Convection:
305M, 305M-1 With Outlet
306M, 306M-1
310M, 310M-1 With Outlet
311M, 311M-1

DESIGNERS AND MANUFACTURERS
A SUBSIDIARY of Barnstead|Thermolyne
1999 North 15th Ave., Melrose Park, IL 60160-1491 USA
PHONE: (563) 556-2241 or (800) 522-5463; FAX: (563) 589-0516

CERTIFICATION OF DECONTAMINATION:

We cannot accept for service or credit a product that has been exposed to or contaminated with chemically or biologically toxic or infectious substances or subjected to radioactivity without first being certified as free from said contamination.

Please have your Medical and/or Safety Officer sign this form certifying that proper decontamination procedures have been followed to render the product safe and free from hazards.

Any product forwarded to us which is not accompanied by this form and a proper Return Goods Authorization Number will be returned to the sender. To obtain Return Goods Authorization Number, contact: Customer Relations Department at 1-800/522-5463.

We hereby certify that the LAB-LINE INSTRUMENTS, INC. product:

Model No. _____ and Serial No. _____,

which is being forwarded has been properly decontaminated and is free from all toxic hazards, infectious agents, radioactivity and/or other hazards.

Company/Institution Name:

Street Address: _____

City: _____ State Zip _____

Name (please print): _____ Title _____

Signature: _____

Phone: _____

DECONTAMINATION PROCEDURE (Be Specific):

_____

_____

_____

Nature of Hazard That Required Decontamination:

_____

_____

_____

_____

TABLE OF CONTENTS

SECTION 1

INTRODUCTION

THANK YOU

for selecting Lab-Line Instruments for your equipment needs. For maximum value and ease of start-up,

PLEASE PROCEED AS FOLLOWS:

- Inspect the carton and contents for shipping damage. Notify the carrier immediately if damage is found.
- Use the Accessory Checklist when unpacking to verify that the complete unit has been received. Do not discard packing materials until all is accounted for.
- Read this Operation Manual thoroughly *before* deciding upon an appropriate location for the unit: you will want to consider the availability of power and other unit requirements, as well as user convenience.
- Insist that every operator of this unit becomes familiar with the Operation Section of this manual.
- Be sure to fill out the Warranty Registration Card and mail it in to Lab-Line Instruments within seven (7) days after receiving the unit.

IF

after reading this manual you should have any difficulties with the installation or operation instructions, please call:

Lab-Line Customer Relations Department
(563) 556-2241 or (800) 522-5463

SECTION 2

DESCRIPTION

Lab-Line Imperial III General Purpose Incubators are useful in all types of general incubating and paraffin imbedding.

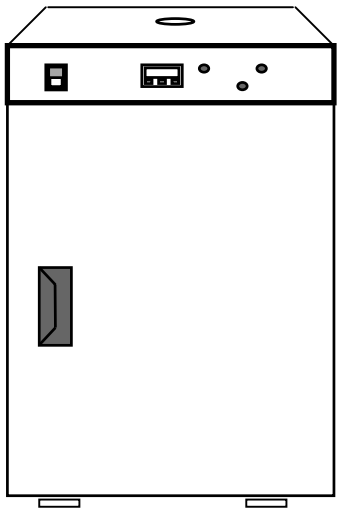
Cabinets are made of heavy-gauge steel with a powder-coated finish for optimum appearance and easy cleaning, while the interior walls are stainless steel to spread warm-wall radiant heat evenly throughout the chamber. Sheathed, low-watt density heaters are in direct contact with chamber walls to allow close temperature control and quick recovery after door openings. This arrangement also minimizes temperature gradients and offers a large working area in the chamber.

A double set of doors, the inner of tempered glass, permit unobstructed viewing of chamber contents without disturbing the interior environment. Slide-out shelving can be positioned to meet user requirements.

A PID microprocessor based controller maintains chamber temperature. An over-temperature safety thermostat controls temperature in the event of primary control failure. A status lamp above each control is lit when the respective control is maintaining power to the heaters.

Incubators are available in three sizes. A grounded 3-prong convenience outlet is supplied in midsize model chambers and 2 outlets are installed in larger models. Models are built for either 120 VAC or 240 VAC power requirements. Models 305M, 306M, 310M and 311M have the same characteristics as those listed above but, in addition, provide mechanical convection. These models use a blower and plenum design to circulates the air within the chamber that allows for rapid temperature and uniformity recovery after door openings.

MODEL 302:



SECTION 3

SPECIFICATIONS

POWER REQUIREMENTS:

302:	120 V, 50/60 Hz, 2.1 amps, 250 watts
302-1:	240 V, 50/60 Hz, 0.7 amps, 155 watts
305:	120 V, 50/60 Hz, 3.3 amps, 400 watts (1 ELECTRICAL OUTLET, 120 V, 500 W TOTAL LOAD)
305M:	120 V, 60 Hz, 3.3 amps, 400 watts (1 ELECTRICAL OUTLET, 120 V, 500 W TOTAL LOAD)
305-1:	240 V, 50/60 Hz, 1.7 amps, 400 watts (1 ELECTRICAL OUTLET, 240 V, 500 W TOTAL LOAD)
305M-1:	240 V, 50Hz, 1.7 amps, 400 watts (1 ELECTRICAL OUTLET, 240 V, 500 W TOTAL LOAD)
306:	120 V, 50/60 Hz, 3.3 amps, 400 watts
306M:	120 V, 60 Hz, 3.8 amps, 450 watts
306-1:	240 V, 50/60 Hz, 1.7 amps, 400 watts
306M-1:	240 V, 50 Hz, 1.9 amps, 450 watts
310:	120 V, 50/60 Hz, 5.0 amps, 600 watts (2 ELECTRICAL OUTLETS, 120 V, 500 W TOTAL LOAD)
310M:	120 V, 60 Hz, 5.0 amps, 600 watts (2 ELECTRICAL OUTLETS, 120 V, 500 W TOTAL LOAD
310-1:	240 V, 50/60 Hz, 2.5 amps, 600 watts (2 ELECTRICAL OUTLETS, 240 V, 500 W TOTAL LOAD)
310M-1:	240 V, 50 Hz, 2.5 amps, 600 watts (2 ELECTRICAL OUTLETS, 240 V, 500 W TOTAL LOAD)
311:	120 V, 50/60 Hz, 5.0 amps, 600 watts
311M:	120 V, 50/60 Hz, 5.8 amps, 700 watts
311-1:	240 V, 50/60 Hz, 2.5 amps, 600 watts
311M-1:	240 V, 50/60 Hz, 2.9 amps, 700 watts

TEMPERATURE:

Range:	From slightly above ambient to 65ºC

UNIT DIMENSIONS:

	INSIDE	OUTSIDE
302 Prefix Models:	13"W x 17"D x 20"H (33 x 43 x 51 cm)	16"W x 21"D x 29½"H (41 x 53 x 75 cm)
305 Prefix Models:	17"W x 21"D x 25"H (43 x 53 x 64 cm)	20"W x 25"D x 34½"H (51 x 64 x 88 cm)
306 Prefix Models:	17"W x 21"D x 25"H (43 x 53 x 64 cm)	20"W x 25"D x 34½"H (51 x 64 x 88 cm)
310 Prefix Models:	37"W x 21"D x 25"H (94 x 53 x 64 cm)	40½"W x 25"D x 34½"H (103 x 64 x 88 cm)
311 Prefix Models:	37"W x 21"D x 25"H (94 x 53 x 64 cm)	40½"W x 25"D x 34½"H (103 x 64 x 88 cm)

	USABLE VOLUME	SHELVES	SHELF AREA
302 Prefix Models:	2.6 cu. ft.	2	2.8 sq. ft.
305 Prefix Models:	5.2 cu. ft.	3	6.9 sq. ft.
306 Prefix Models:	5.2 cu. ft.	3	6.9 sq. ft.
310 Prefix Models:	11.2 cu. ft.	6	13.8 sq. ft.
311 Prefix Models:	11.2 cu. ft.	6	13.8 sq. ft.

SPECIFICATIONS: (Con't)

SHIPPING WEIGHT:

302 Prefix Models	75 lbs. (34 kg)
305, 306 Prefix Models:	120 lbs. (55 kg)
310, 311 Prefix Models:	215 lbs. (98 kg)

UNIT'S ENVIRONMENTAL OPERATING CONDITIONS:

INSTALLATION CATEGORY:	II
ALTITUDE:	2000 Meters MSL (Mean Sea Level)
HUMIDITY:	80% maximum, non-condensing
ELECTRICAL SUPPLY:	120VAC or 240VAC
VOLTAGE TOLERANCE:	±10% of normal rated line
TEMPERATURE:	15ºC to 40ºC
PRODUCT USAGE:	This product is intended for use indoors **only**

SECTION 4

INSTALLATION

√*SHIPPING CARTON:*

This should be inspected upon delivery. When received, carefully examine for any shipping damage before unpacking. If damage is discovered, the delivering carrier should both specify and sign for the damage on your copy of the delivery receipt.

Open the carton carefully making certain that all parts are accounted for before packaging materials are discarded—after unpacking, if damage is found, promptly report it to the carrier and request a damage inspection promptly.

IMPORTANT: Failure to request an inspection of damage within a few days after receipt of shipment absolves the carrier from any liability for damage: you must call for a damage inspection promptly.

LOCATION:

Place the unit on a level surface protected from drafts, strong air currents and large fluctuations in ambient temperature. It must be located near an electrical outlet that meets the unit nameplate requirements. Allow clearance around the unit for free air convection, accessory equipment, and user convenience. Do not cover the vent on top of the incubator.

LEVELING:

It is important that the unit is level before operation. DO NOT REMOVE THE UNIT'S RUBBER FEET—they assist proper air circulation inside and outside of the chamber. Removal can result in erratic control and excessive heat build-up beneath the unit.

SHELF INSTALLATION:

Each shelf bracket has 2 prongs at each end for attachment to the chamber sidewall. Insert the longer top prongs into slots of equal height on one side of the chamber, then push the bracket up and insert the lower prongs. Push down on the bracket to insure proper seating.

Repeat this procedure for the opposing bracket, making sure it is on the same level as the first bracket (count the slots). Install other shelf brackets in the same way, then slide shelves into place.

ELECTRICAL REQUIREMENTS:

120 VAC models require a 120 VAC, 50/60 Hz power source. They are supplied with a 3-wire line cord. It should be plugged into an outlet designed for 3-prong plugs. If an extension cord is used, it also should be the 3-wire grounded type. For an outlet designed to accept 2-prong plugs (ungrounded), it is required that a qualified electrician replace the outlet with a new grounded type.

240 VAC models require a 240 VAC, 50/60 Hz power source. Because of the variety of plug configurations in use worldwide for 240 VAC power, the unit is furnished with the plug removed. The user must install a plug to conform with local code and configuration requirements.

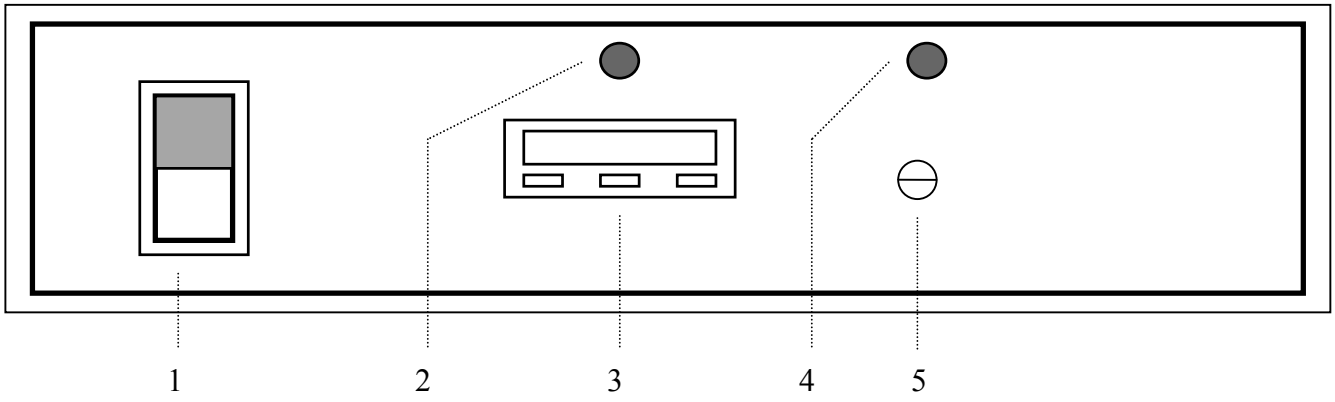
If a plug must be installed, use only the 3-prong grounded type, rated for the unit load requirements and matching the power outlet. Make sure the green ground wire is secured to the plug ground terminal.

NOTE: LEAVE THE ROTATOR DISCONNECTED WHEN NOT IN USE.

SECTION 5

FEATURES

CONTROL PANEL:



1. POWER SWITCH: This 2-position rocker switch controls power to entire unit. The switch is lit when power is **ON**.
   #440-359-00, 120V*
   #440-292-00, 240V*

2. CONTROL STATUS LAMP: This lamp is lit when power is being supplied to heater and not lit when power to the heater is OFF.
   #360-234-00 (LENS)*

3. PROGRAMMABLE CONTROLLER: Maintains chamber temperature and provides a display of either chamber or set point temperatures.
   #485-360-00*

4. OVER-TEMPERATURE STATUS LAMP: This lamp is lit when either an over-temperature condition exists or the over-temperature thermostat is improperly set too low.
   #360-235-00 (LENS)*

5. OVER-TEMPERATURE THERMOSTAT: This hydraulic thermostat is set by the operator to back up the control thermostat and safeguard the incubator.
   #920-301-00*

*AS LISTED ON UPCOMING REPLACEMENT PARTS LIST

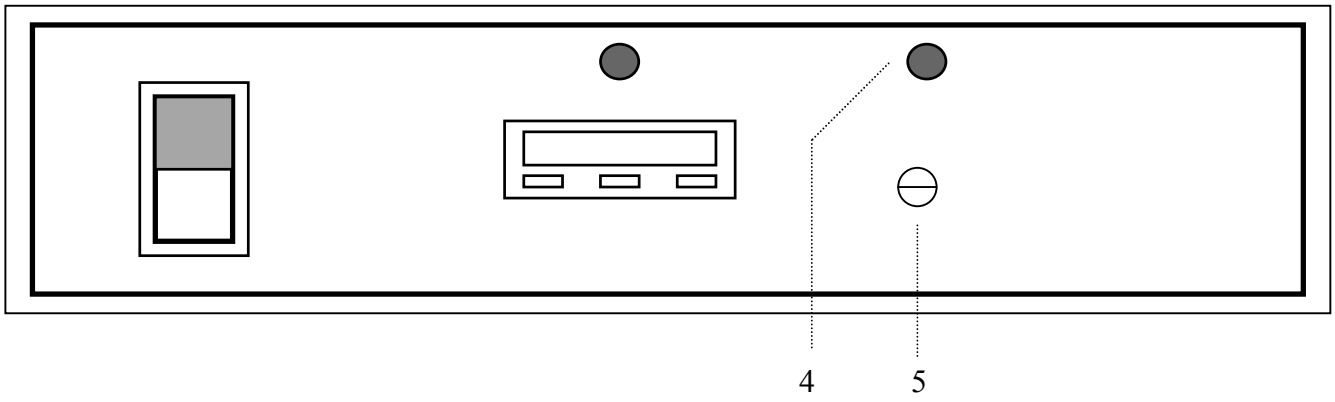
SECTION 6

OPERATION

DANGER: DO NOT USE IN THE PRESENCE OF FLAMMABLE OR COMBUSTIBLE MATERIALS OR EXPLOSIVE GASES. DO NOT USE IN THE PRESENCE OF PRESSURIZED OR SEALED CONTAINERS—FIRE OR EXPLOSION MAY RESULT, CAUSING DEATH OR SEVERE INJURY.

WARNING: DO NOT HEAT ANY SUBSTANCE ABOVE A TEMPERATURE WHICH WILL CAUSE IT TO EMIT TOXIC FUMES—DEATH OR SEVERE INJURY MAY RESULT

CONTROL PANEL:



START-UP:

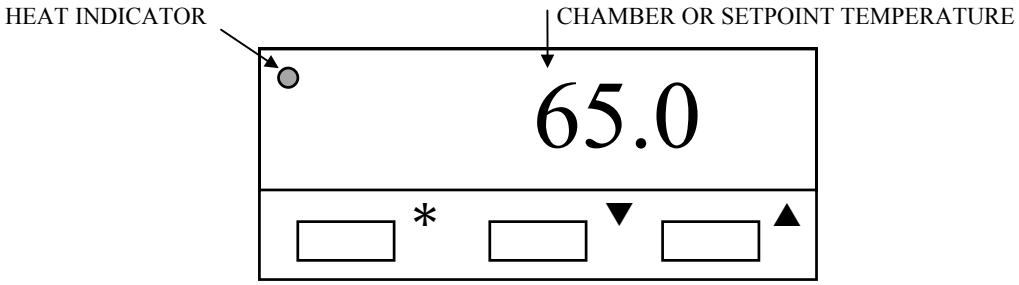
Insert a flat-blade screwdriver into the panel opening and rotate the over-temperature thermostat stem completely clockwise. After making sure the unit is plugged in, press the power switch to **ON**.

SETTING THE OVER-TEMPERATURE THERMOSTAT:

After the unit has reached set point, rotate the over-temperature thermostat stem counterclockwise until the over-temperature status lamp (4) is lit. Then rotate it clockwise approximately 5 degrees past the point at which the lamp is no longer lit. At this point, the over-temperature thermostat will control heaters only at temperatures above the controller set point.

OPERATION: (Con't)

TEMPERATURE CONTROLLER:



1. CONTROLLER SELF-TEST: When the incubator is powered up the controller will display **8888** along with the three decimal points and the heat **ON** indicator lamp. The display will then blank out for 2 seconds before showing the chamber temperature.

2. HEAT **ON** INDICATOR: The heat **ON** indicator lamp is lit when the chamber heater is receiving power. The lamp will normally flash when the chamber temperature is at set point.

3. SETPOINT ADJUSTMENTS: The temperature controller normally displays the chamber temperature. To view or change the temperature set point proceed as follows:

PRESS	CONTROLLER
*	View set point
*▼	Decrease set point
*▲	Increase set point

A. Press and hold the star key and use either the up or down arrow key to adjust the set point to the desired temperature. Release the star key.

B. Allow at least 30 minutes for the chamber temperature to stabilize.

OPERATION: (Con't)

TEMPERATURE CONTROLLER: (Con't)

AUTOTUNE:

The auto tune program automatically adjusts the controller parameters to achieve optimal temperature control.

It is not necessary to run the auto tune program when setting up the incubator. However, if the temperature appears to be unstable, the auto tune program can be run using the procedure shown below:

FOR BEST RESULTS:

- Set the usual set point temperature and use normal load conditions.
- Allow the incubator to stabilize at set point for at least 30 minutes.

AUTOTUNING PROCEDURE:

A. Enter the program mode by pressing and holding BOTH the up and down arrow keys for 3 seconds.

B. Release BOTH arrow keys when **tunE** is displayed.

C. The controller display should now be alternating between **tunE** and **oFF.**

D. Press and hold the "**STAR**" (✻) key. Press and release the up arrow key until **At.SP** is displayed. Release the "**STAR**" (✻) key.

E. After one minute has elapsed, the controller display will begin to alternate between showing the **chamber temperature**, **tunE** and **At.SP**.

F. Allow the program to run until the display again shows only the chamber temperature.

OPERATION: (Con't)

TEMPERATURE CONTROLLER: (Con't)

TEMPERATURE CALIBRATION:

A. Place a calibrated thermometer near the approximate geometric center of the chamber in a position that would allow it to be read through the glass door.

B. Press and hold the **"STAR"** (✻) key and using the up or down arrow key, adjust the set point to the desired temperature.

C. Allow the unit to run for at least 30 minutes.

D. The controller display should now be indicating the setpoint temperature. Make note of the thermometer reading without opening the glass door.

E. Press and hold both arrow keys until the controller display indicates **tunE**. Release the arrow keys. Press and release the down arrow key, the display should now indicate **LEUL**. Press and hold the **"STAR"** (✻) key and using the up arrow key adjust the display to read **3**. Release the **"STAR"** (✻) key. Press and release the up arrow key until the display indicates **Zero**. The display should now alternate between **Zero** and a numerical value.

F. Using the examples shown below and the thermocouple value obtained in step above, enter the correct **Zero** value into the controller by pressing the **"STAR"** (✻) key and using the up or down arrow keys. If there is already a **Zero** value present then add the new value to the one already present.

Thermometer	=	60 °C	Thermometer	=	70 °C
Controller Reading	=	65 °C	Controller Reading	=	65 °C
Subtract	=	-5 °C	Subtract	=	+5 °C
Enter **Zero** value of -5 °C			Enter **Zero** value of +5 °C		

G. When the correct **Zero** value has been entered, press and hold the two arrow keys together until the display again indicates the chamber temperature. If the procedure was done correctly, the controller display should now agree with the thermometer reading to within ±0.5ºC.

H. Allow the unit to run for at least 30 minutes.

I. Re-check the thermometer reading, the controller display and the thermometer should agree to within ±0.5ºC. If not repeat steps D, E and F above.

SECTION 7

MAINTENANCE

BE ADVISED:

NOTE: MAKE NO ATTEMPT TO SERVICE OR REPAIR A LAB-LINE PRODUCT UNDER WARRANTY BEFORE CONSULTING YOUR LAB-LINE DEALER. AFTER THE WARRANTY PERIOD, SUCH CONSULTATION IS STILL ADVISED, ESPECIALLY WHEN THE REPAIR MAY BE TECHNICALLY SOPHISTICATED OR DIFFICULT.

IF ASSISTANCE IS NEEDED BEYOND WHAT THE DISTRIBUTOR CAN PROVIDE, PLEASE CALL THE LAB-LINE CUSTOMER RELATIONS DEPARTMENT AT (563) 556-2241 OR (800) 522-5463. NO MERCHANDISE, HOWEVER, SHOULD BE RETURNED DIRECTLY TO LAB-LINE WITHOUT PRIOR APPROVAL FROM LAB-LINE.

CAUTION: DISCONNECT PLUG FROM ELECTRICAL OUTLET BEFORE ATTEMPTING ANY MAINTENANCE OR REPAIR OF THIS UNIT.

CHECKING CONTROLS:

- While using the unit, occasionally check that both control panel status lamps are functioning as described in the previous OPERATION section.
- During normal operation, with controls properly set, the over-temperature status lamp is not supposed to be functioning. If it is and continues to be lit after re-calibration as described in the previous OPERATION section, follow the procedures described in the upcoming TROUBLESHOOTING section to locate the source of the problem.

CLEANING:

- Clean any spills immediately. Use only soap or mild detergent and water with a soft cloth for cleaning. Do not use abrasives on the glass inner door. Refer to following section for care of stainless steel surfaces.
- Wipe exterior with soft damp cloth as necessary to remove dust, fingerprints or other smudges.

MAINTENANCE: (Con't)

CARE AND CLEANING OF STAINLESS STEEL:

CAUTION: DISCONNECT UNIT FROM POWER SOURCE PRIOR TO CLEANING. WE RECOMMEND ALL SERVICE BE PERFORMED BY QUALIFIED SERVICE PERSONNEL.

WARNING: ELECTROLYSIS CAN DAMAGE STAINLESS STEEL. THIS OCCURS WHEN AN OBJECT IS ALLOWED TO REST DIRECTLY ON THE SURFACE OF STAINLESS STEEL, TRAPPING MOISTURE THAT BECOMES OXYGEN-STARVED, BUT IS SURROUNDED BY WATER-CONTAINING OXYGEN.

THE ALLOY CALLED STAINLESS:

Stainless steel is an alloy of steel with chromium and nickel that increase the metal's resistance to rust and corrosion. Yet, if not properly cared for, stainless steel can rust and corrode.

Exposure to air provides the passivation, or oxide layer coating, for clean stainless by producing a thin, durable chromium-oxide film that forms rapidly on the alloy surface to give stainless its characteristic "stainless" quality. Also exposure of the surface to other oxidizing environments can produce a passivating film or coating.

However, if free oxygen is not available due to scale or contamination buildup the metal surface may become vulnerable to rusting and corrosion as well as pitting. But by maintaining neutral pH and conducting frequent cleanings with detergent and water, years of trouble-free service from stainless steel products can be obtained.

SOME STAINLESS GUIDELINES TO CONSIDER:

Distilled water is recommended. Please note: if this water is very pure it may be corrosive to stainless. When filling a bath or incubator, ALWAYS ADD 2 to 40 PPM (20 TO 40 MG/LITER) DISODIUM PHOSPHATE OR SODIUM BICARBONATE, ADJUSTING DOSAGE TO PROVIDE A pH VALUE OF 7 TO 9.

If not available, use clean, aerated soft tap water provided the total solids concentration is < 500 PPM.

WE DO NOT RECOMMEND USING 18 MEG OHM DEIONIZED WATER.

If this is the only source of treated water available—mix with regular tap water at a 50/50 ratio.

THE pH FACTOR:

Check pH regularly. If pH is <6.0, add disodium phosphate to increase pH to a 7 to 9 value. Sodium carbonate or sodium bicarbonate may be used but they tend to form scale that must be rinsed out regularly. If pH is >10.0, add sodium bisulfate to decrease pH to a 7 to 9 value. Avoid adding harsh alkalines or acids since these may cause localized corrosion and result in unstable pH.

SPECIAL CONSIDERATIONS:

WARNING: IF IT IS NECESSARY TO USE THE FOLLOWING CHEMICALS, LIMIT EXPOSURE TIME TO A MAXIMUM OF 3 HOURS—ALWAYS CLEAN SURFACES IMMEDIATELY AFTER USE.

MAINTENANCE: (Con't)

SPECIAL CONSIDERATIONS: (Con't)

Chemicals which should be limited to a 3 hour maximum exposure time to stainless steel are:

Aluminum chloride	E.D.T.A.	Potassium permanganate
Barium chloride	Ferrous chloride	Potassium thiocyanate
Calcium chloride	Lysol	Sodium hypochlorite
Chlorinated Lime	Mercury salts	Stannous chloride
Citric acid (boiling)	Phenol	Tartaric acid
Dakin's solution		

BE ADVISED: NEVER USE THE FOLLOWING ON STAINLESS STEEL:

Aqua regia
Ferric chloride
Iodine
Sodium acid
Sodium azide

Chemical spills, especially those agents listed here, should be removed as soon as possible and the stainless steel surface cleaned with mild soapy water followed by a clean water rinse.

CLEANSING AGENTS:

Anti-fungal and anti-bacterial additives are permissible to use as long as the pH of the aqueous solution is kept within the range of 7 to 9. These are available through laboratory distributors—but be sure to CONFIRM that they are not harmful to stainless steel.

Do not use any metallic pads. Instead, for stubborn stains, use a plastic light-duty cleansing pad and rub GENTLY in the direction of the metal grain.

If stains persist, use one of the following chemicals and methods.

CLEANING METHODS:

CAUTION: EXTREME CARE MUST BE TAKEN WHEN HANDLING THESE MATERIALS. ALWAYS WORK IN AN AREA WITH ADEQUATE VENTILATION. USE THE PRECAUTIONS AS OUTLINED IN THE *MATERIAL SAFETY DATA SHEET* (MSDS) AND THE MANUFACTURER'S INSTRUCTIONS FOR THE PRODUCT BEING UTILIZED. ALSO, FOLLOW THE PERSONAL PROTECTION INDEX FOUND IN THE *HAZARDOUS MATERIALS INFORMATION SYSTEM* (HMIS) SECTION OF THE *MSDS*.

NOTE: THE USE AND DISPOSAL OF THESE CHEMICALS MAY BE REGULATED BY YOUR LOCAL CITY CODES; CONSULT THOSE REGULATIONS BEFORE DISPOSING OF THESE MATERIALS.

- Any of a variety of "scale removers" available at local supermarkets or hardware stores used for the cleaning of coffee marks, humidifiers or vaporizers.

MAINTENANCE: (Con't)

CLEANING METHODS: (Con't)

- A 15% to 35% phosphoric acid solution available from laboratory supply distributors for scale and rust removal. Allow solution to soak the surface affected until rust and scale is loosened. Immediately follow with a clean water rise.
- Citric acid based cleaners.
- Bathroom tub and tile cleaners.
- A mixture of 20% nitric acid and 1.5% hydrofluoric acid (or hyrochloric acid). Swab solution on surface allowing it to remain until rust is loosened. Immediately follow with a clean water rise. This method should ONLY be used if SEVERE rust and scale stains are present.
- Oxalic acid 2% to 5% in warm water. Swab solution on surface allowing it to remain until rust is loosened. Immediately follow with a clean water rise. This method should ONLY be used if SEVERE rust and scale stains are present.

  Regardless of the approach utilized, ALWAYS follow the manufacturer's directions and allow the chemicals to do the cleaning with MINIMAL scrubbing. Always follow cleanings with a clean water rinse. Air dry.

MATERIALS EFFECTIVE IN DISINFECTING:

- Glutaraldehyde
- Alcohol

BE ADVISED: THIS INFORMATION IS INTENDED AS **GUIDELINES ONLY** AND LAB-LINE INSTRUMENTS, INC. MAKES NO CLAIM AS TO THE SUITABILITY TO ANY PARTICULAR SITUATION. CONSULT YOUR STAFF CHEMIST TO DETERMINE WHAT WOULD BE BEST FOR YOUR STAINLESS STEEL PRODUCT AND LABORATORY.

SECTION 8

TROUBLESHOOTING

The following is intended as a guide to help in servicing this unit, if problems should occur.

NOTE: BEFORE ATTEMPTING ANY REPAIR, DISCONNECT POWER CORD FROM OUTLET.

NOTE: MAINTENANCE AND REPAIRS MUST BE PERFORMED BY A QUALIFIED CONTROLS SERVICE TECHNICIAN.

SYMPTOM	POSSIBLE CAUSES OF PROBLEM
Power switch lamp is not lit when the power switch is ON:	Check that unit is plugged in and that the plug is good. Press the power switch to **OFF** and then back **ON**. If the lamp remains unlit, reset the back panel circuit breaker(s) by pushing in the reset button(s). Check the outlet to be sure power is available to the unit.
Power switch lamp is the only one lit when following the directions in the previous OPERATION section:	Using a screwdriver rotate the over-temperature thermostat stem completely clockwise (to highest temperature settings). If unit still does not heat up, the problem most likely involves the heater status lamp. If the lamp is good, check the heaters and heater wiring.
Convenience outlets are not powered when unit is plugged in:	Check that the other features of the unit are functioning. If not, proceed with the first step listed above. Remove any plugs from the convenience outlet(s). Press in the circuit breakers (located on the back panel) to reset. If the circuit breaker pops repeatedly, check the equipment that is connected to the convenience outlet; check wiring from circuit breaker to the convenience outlet.

SECTION 9

SERVICE GUIDE

NOTE: IT IS RECOMMENDED THAT THE FOLLOWING MAINTENANCE PROCEDURES AND REPLACEMENT OF PARTS BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

CAUTION: DO NOT ATTEMPT REPAIR OR SERVICE OF THIS UNIT BEFORE FIRST REMOVING PLUG FROM ITS ELECTRICAL OUTLET.

HEATER REPLACEMENT:

Heaters should be replaced when the unit does not heat properly and multiple meter measurements of resistance show a significant deviation from 144 ohms.

After unplugging the unit, move it out into an open area to provide easier access to the back of the unit. Remove the back cover, then slide heaters out from their positions under the floor and along the side-walls. Disconnect heater leads from the terminals after carefully noting where the leads attach.

Re-install heaters by reversing the above procedure.

THERMOSTAT REPLACEMENT:

After unplugging the unit, remove the top cover of the unit to reach control components. Expose 2 screws holding thermostat to the mounting bracket. After removing thermostat from control panel, disconnect wiring while noting where each lead attaches.

Remove back cover of unit to reach thermostat bulb, set in a bracket under the chamber floor. Slide the bulb out of the bracket and through the top hole to completely remove the thermostat.

Install new thermostat by reversing above procedure.

SWITCH OR STATUS LAMP REPLACEMENT:

Power switch and status lamps are snap-in mounting type.

Unplug unit, remove top cover and disconnect leads after noting where each attaches. Push the switch out from the back. Slide the lamp body sideways to remove lens. Reverse procedure to install new lamp.

Press replacement switch in from the front of the panel and then reconnect the leads as noted. Switch is to be oriented so that the green lamp is toward the top.

REPLACING TEMPERATURE CONTROLLER:

1. Place ON/OFF switch in **OFF** position.
2. Unplug incubator from outlet power supply.
3. To remove controller from control housing:
   - use both hands to firmly grip each side of the controller bezel
   - press on the bezel side grips until the bezel tabs release
   - slowly pull controller from housing
4. To install new, factory configured controller:
   - Carefully slide new controller into controller housing.

   NOTE: *PCB contacts at rear of controller fit into contacts at rear of controller housing*
   - Press controller bezel into controller housing until bezel tabs securely lock controller into place
5. Plug incubator into outlet power supply.
6. Place ON/OFF switch in **ON** position.

SECTION 10

REPLACEMENT PARTS

DESCRIPTION	PART NUMBER
Axial Fan:	160-136-00
Cordset:	470-105-00
Gasket, Body:	
Models 302, 302-1:	530-186-00
Models 305, 305-1:	530-182-00
Models 306, 306M, 306-1:	530-182-00
Models 310, 310-1(2):	530-182-00
Models 311, 311-1(2):	530-182-00
Gasket, Outer Door:	
Models 302, 302-1:	530-185-00
Models 305, 305-1:	530-181-00
Models 306, 306M, 306-1:	530-181-00
Models 310, 310-1(2):	530-181-00
Models 311, 311-1(2):	530-181-00
Heaters, 100 watts:	
Models 302, 302-1 (4):	340-152-00
Models 305, 305-1 (4):	340-152-00
Models 306, 306M, 306-1 (4):	340-152-00
Models 310 & 310-1(6):	340-152-00
Models 311, 311-1(6):	340-152-00
Inner Door, Tempered Glass:	
Model 302:	540-177-00
Model 305, 306, 306M, 310 (2):	540-176-00
Model 310 (2):	540-176-00

REPLACEMENT PARTS: (Con't)

DESCRIPTION	PART NUMBER
Motor, 305M, 306M, 306M-1, 305M-1, 310M, 310M-1, 311M, 311M-1:	370-278-00
Receptacle (120 V), Models 305 & 310:	420-036-00
Receptacle (240 V), Models 305-1 & 310-1:	420-214-00
Shelves:	
Models 302 & 302-1 (2):	810-353-01
Models 305 & 305-1(3), 306 & 306-1(3), 310 & 310-1(6), 311 & 311-1(6):	810-352-01
Status Lamp Base (2):	360-233-01
Status Lamp Lens (Amber):	360-235-00
Status Lamp Lens (Red):	360-234-00
Lamp Base:	360-233-01
Switch, Power, 120V:	440-359-00
Switch, Power, 240V:	440-292-00
Thermostat, Over-temperature:	920-301-00
Configured Temperature Controller:	485-360-10
RTD Temp. Sensor:	410-632-00
Circuit Breaker 5 Amps:	330-118-00
Circuit Breaker 10 Amps:	330-119-00
Wiring Schematics:	
Model 302:	229-200-00
Model 302-1:	229-214-00
Model 305:	229-206-00
Model 305-1:	229-215-00
Model 305M:	229-208-00
Model 305M-1:	229-228-00
Model 306:	229-237-00
Model 306-1:	229-241-00
Model 306M:	229-239-00
Model 306M-1:	229-243-00
Model 310:	229-205-00
Model 310-1:	229-216-00
Model 310M:	229-209-00
Model 310M-1:	229-229-00
Model 311:	229-238-00
Model 311-1:	229-242-00
Model 311M:	229-240-00
Model 311M-1:	229-244-00

NEED A PART? CALL THE LAB-LINE PARTS HOTLINE.
CALL: (563) 556-2241 or (800) 522-5463; FAX: (563) 589-0516.

WARRANTY

LAB-LINE INSTRUMENTS, INC. ("Lab-Line") warrants that the product manufactured by Lab-Line shall be free of defects in materials and workmanship for a period of time defined on the following page from the first to occur of (i) the date the product is sold by Lab-Line or (ii) the date the product is purchased by the original retail customer (the "Commencement Date"). Except as expressly stated above,

LAB-LINE MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of Lab-Line must perform all warranty inspections. In the event of a defect covered by Lab-Line's warranty, Lab-Line shall, as its sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold by Lab-Line within the continental United States or Canada, Lab-Line shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

Lab-Line's warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than Lab-Line or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of Lab-Line.

IN NO EVENT SHALL LAB-LINE BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

The name of your nearest authorized Lab-Line dealer may be obtained by calling 1-800-522-5463.

DESIGNERS AND MANUFACTURERS
A SUBSIDIARY of Barnstead|Thermolyne
1999 North 15th Ave., Melrose Park, IL 60160-1491 USA
PHONE: (563) 556-2241 or (800) 522-5463; FAX: (563) 589-0516

WARRANTY

12 MONTH PARTS WARRANTY:

- All Environmental Chambers
- Low Temperature B. O. D. Incubators
- Animal Study Chamber
- Controlled Environment Centers
- Biological Work Station
- Refrigerators, Freezers
- Chromatography Refrigerators (5 year parts warranty on compressor only)
- Large Capacity Refrigerators and Freezers (5 year parts warranty on compressor only)

24 MONTH PARTS WARRANTY:

- Frame Clamps, Frame Sets, Lab Jacks
- Saybolt Viscosimeter
- Timers, Samplers, Flasks
- Saf-T-Shield, Safety Tongs
- All Incubators & Ovens
- Dual Action Open Air Shaker
- Reciprocating Shakers (open air and water bath)
- Rockers and Rotators
- Low Cost Shakers
- Environ Blok Shaker
- Titer Plate Shaker
- Multi Wrist Shaker
- Water Baths (excluding Aquabaths), Ultrasonic Cleaners
- Slide Warmers
- Mixers, Stirrers, Hotplates
- Thermal Cyclers
- Blok Heaters
- Aquabaths, lifetime warranty on heaters

LIFETIME PARTS WARRANTY:

- All **ORBITAL** Shakers (not carrying a 24 month parts warranty) offer a lifetime parts warranty on the drive mechanism and a 5 year warranty on all other parts
- Refrigerated Orbital Shakers carry a lifetime warranty on the drive mechanism, 1 year parts warranty on the compressor, and a 5 year warranty on all other parts.

FIRST IN INSTRUMENTS SERVICING SCIENCE, INDUSTRY, RESEARCH AND EDUCATION SINCE 1908.

ACCESSORY CHECKLIST

The following loose parts and accessories are packed with this unit. Before discarding any packing materials, please be sure that nothing has been overlooked.

MODEL NO. S: 302, 302-1, 305, 305-1, 306, 306-1, 310, 310-1, 311, 311-1, 305M, 305M-1, 306M, 306M-1, 310M, 310M-1, 311M, 311M-1

CHECKED BY: _____

DATE _____

PACKED BY _____

CHECKED	ITEM	PART NUMBER	QUANTITY
_____	Operation Manual	057-616-00	1
	Shelves:		
_____	Models 302 & 302-1	810-353-01	2
_____	Models 305 & 305-1	810-352-01	3
_____	Models 306 & 306-1	810-352-01	3
_____	Models 310 & 310-1	810-352-01	6
_____	Models 311 & 311-1	810-352-01	6
_____	Warranty Card	528-022-00	1
_____	Voltage Warning Tag (240 Volt)	528-009-00	1