

Biotronette, Mark IV Plant Growth Chambers

Model No.
849-6

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Introduction

Thank you for selecting Barnstead|Lab-Line instruments for your equipment needs.

Product Overview

Barnstead|Lab-Line's Biotronette Mark IV Plant Growth Chamber provides controlled light and temperature conditions for most plant growth studies. Four light banks, two located in the adjustable shelves, allow four different configurations for the testing chambers. There are two 24-hour timers for separate control of the light and dark periods in the left and right chambers.

The cabinet doors are interior-reflective glass so that ambient light will not enter the chamber; however, the operator can view the plants clearly from the front. Under the chamber are two spacious storage areas for supplies. A locking control panel cover assures tamper-proof settings.

Specifications

Power Requirements

120 VAC, 60 Hz, single phase, 1300 Watts

Timer

24-hour cycle; can be set in 15-minute increments.

Chamber Capacity

17.6 cubic feet (798.4 liters)

Dimensions

Exterior:

Height	74 in (188 cm)
Width	56 in (142 cm)
Depth	28-1/2 in (72 cm)

Interior:

Height	45-1/2 in (116 cm)
Width	26-1/2 in (67 cm)
Depth	25-1/4 in (64 cm)

Net Weight

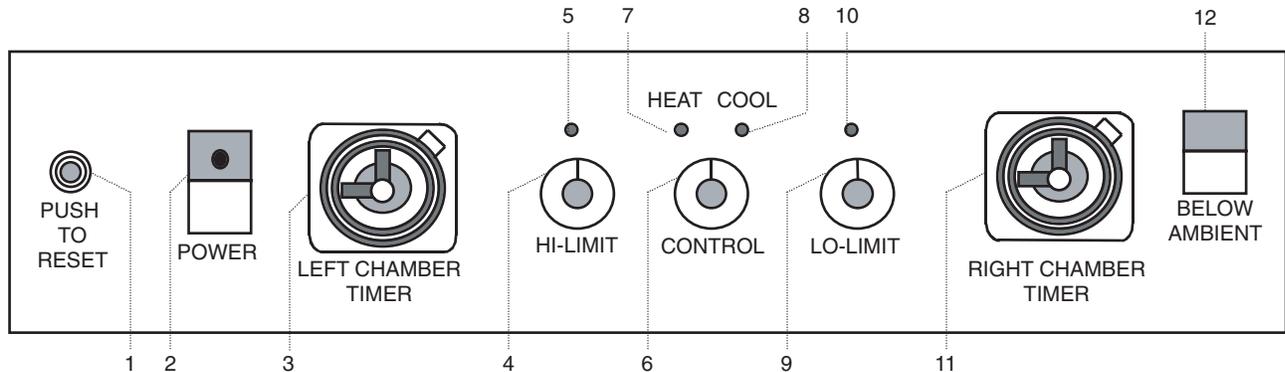
620 lbs. (281 kg)

Operating Environment

POLLUTION DEGREE:	2
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:	15°C to 40°C
PRODUCT USAGE:	This product is intended for use indoors only

Features

Control Panel



1. **PUSHBUTTON RESETTABLE CIRCUIT BREAKER:** An overload current of 15 amps will open the breaker and the button will project from its housing. To re-set the breaker, turn the power switch off and push this button in until it clicks. Turn power on to resume operation. If circuit breaker re-opens frequently, check all electrical components for the source of trouble before resetting the circuit breaker again.
2. **POWER SWITCH:** An on/off switch controls all power input to the unit.
3. **LEFT CHAMBER LIGHTS TIMER:** Turns left upper and lower fluorescent light banks on and off at predetermined times.
- 4 & 5. **HI-LIMIT THERMOSTAT & STATUS LAMP:** Hydraulic thermostat sets the acceptable high temperature limit. Thermostat takes control should the control thermostat fail. It sounds an alarm when the temperature exceeds the high limit, cuts off power to the heaters and lights a status lamp above the thermostat knob. The alarm and status lamp operate intermittently as the safety thermostat cycles on and off.
- 6, 7 & 8. **CONTROL THERMOSTAT, HEAT STATUS:** This hydraulic thermostat maintains desired temperature set point. It controls power to the heaters in the lower plenum. Status lamp located above the thermostat knob lights to indicate heaters are energized.
- 9 & 10. **LO-LIMIT THERMOSTAT & STATUS LAMP:** This hydraulic thermostat sets the acceptable low temperature limit. It takes control should the control thermostat fail. It sounds an alarm when the temperature falls below the low limit and lights the status lamp above the thermostat knob.
11. **RIGHT CHAMBER LIGHTS TIMER:** Turns right upper and lower fluorescent light banks on and off at predetermined times.
12. **Refrigeration Switch:** This option is no longer available.

Unpacking and 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 cabinet in a convenient location that is free from excessive drafts and vibration.

Set-up

- Clean any shipping debris from the top and bottom chambers.
- Install the shelf clips for the light shelves at the desired level. Position each light shelf over the clips and slide the shelf carefully into the chamber.
- Insert the glass doors. The outer door has the lock. Note the labels on each door designate the exterior glass surface. Install the inner door in the upper track, then lift the door up and over the lower track. Gently lower the door into position on the lower track. Install the outer door the same way.
- Insert all fluorescent tubes into the light banks.
- Slide the drawers into position just below the doors.

Electrical Connection

Check the outlet to make sure it provides the electrical characteristics listed on the nameplate. Outlet must be properly fused. Plug in line cord.

Light Shelf Connection

Plug the light cable from the top light bank into the receptacle under the light shelf. Twist the connector to lock it in place. This connects power to the light shelf and ties the operation to the light timer. Refer to diagram below:



Proper Installation of Shelf Lamp Connection

Door Lock

Furnished with the unit is a locking mechanism consisting of two parts: a spring bracket and a key lock. To use this option for securing the chamber against unwanted entry, use the following procedure.

- Note cutout notch at approximate midpoint of the right hand door. Carefully align the spring bracket over the notch with the 7 holes in the bracket (long edge) facing outward. Slowly push the bracket over the notch, so that the end channel of the bracket is flush against the metal edge of the notch.
- Examine key lock and note that it has a track. This is designed to slide over and engage the bracket.
- With bracket securely in place, slide the right hand door completely to the left while simultaneously sliding left hand door completely to the right.
- Insert key in lock and turn the key in counter-clockwise direction to its final stop position.
- Slide the lock track (with 5/8-inch projecting edge facing to the right) over edge of bracket to point where it is over the holes in the bracket. Depending on point where you stop the lock in its travel, this will determine the degree of door closure. Sliding lock all the way to the right provides the greatest degree of door closing.
- By turning the key completely clockwise, you will lock and secure the plant growth chamber against any undesired entry.

Operation



Warning

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.

Setting Temperature Controls

- Turn main power switch on.
- Rotate low-limit thermostat fully counterclockwise and rotate high-limit thermostat fully clockwise.
- Place a thermometer (user supplied) in the chamber.
- Turn on the maximum number of lights to be used. Their heat will contribute to the temperature rise. (See next page for information on controlling lights.)
- Rotate control thermostat clockwise to raise the temperature and counterclockwise to lower it. Dial markings are for reference ONLY and do not indicate actual temperature.
- Allow at least 1/2- hour for temperature to stabilize before making additional adjustments.
- Read the thermometer and adjust thermostat setting for desired temperature.
- At temperatures near ambient, the heat from the fluorescent tubes can be dissipated by opening the sliding doors slightly and turning off some or all of the lights.

Setting Limit Thermostats

- Wait until the control thermostat status lamp is on before setting limit thermostat.
- Rotate the high-limit thermostat knob counterclockwise until its status lamp comes on and the alarm sounds. The control thermostat status lamp will go off, indicating that the high-limit thermostat is controlling.

- Rotate the high-limit thermostat knob clockwise until the control thermostat status lamp comes on. Then turn the high-limit thermostat knob a few degrees of rotation clockwise to set the high limit slightly higher than the control temperature.
- Wait until the control thermostat status lamp is off before setting the low-limit thermostat.
- Rotate the low-limit thermostat knob clockwise until its status lamp comes on and the alarm sounds. The control thermostat status lamp will go on, indicating that the low-limit thermostat is controlling.
- Rotate the low-limit thermostat knob counterclockwise until the control thermostat status lamp goes off. Then turn the low-limit thermostat knob a few degrees of rotation counterclockwise to set the low limit slightly lower than the control temperature.



Caution

Do not operate the unit, if any of the temperature controls become inoperative—a hazardous condition will develop which can result in injury or property damage.

Controlling the Lights

Note the toggle switches in the chambers which control 8 lamps in the upper chamber and 8 lamps in the lower chamber.

For Timer Control

Turn the toggle switches on. Set each 24-hour timer to correct time of day using the arrow on the timer. Light portion of the dial indicates 6 AM to 6 PM; dark portion indicates 6PM to 6 AM.

Set the ON and OFF periods. Each tab controls a 15-minute period. Set the tabs on either timer as follows:

1. For OFF operation, push tabs toward the outside.
2. For ON operation, push tabs toward center.

See the following chart guide to controlling the lights.

LIGHTS	TABS ON TIMERS	TOGGLE SWITCHES
All on	All pushed IN	All on
All out	All pushed OUT	On or off
On for selected periods	Tabs IN for the selected timing periods	All on

Guide to Controlling the Lights

Loading the Chamber

Distribute and space the load evenly in the chamber to obtain maximum air circulation and minimum temperature gradient.

Safety Notes

Make sure that *all personnel* operating this chamber have read and understand the following safety notes.

Two Fixed and Two Relocatable Trays

1. **Never** add water directly to either of the 2 shelving trays or the debris trays at the bottom of the chamber. Electrical components may become wetted due to water spills.
2. The two sliding lamp-trays are secured to the main chamber by means of the shelf brackets which they rest on... Although they can be lifted up and slid outward if necessary, **never** slide the tray out more than half-way (or to the point of imbalance) to avoid the tray from falling off of its shelving guides.

Installing or Relocating Shelving

When installing or relocating either of the two light bank shelves, first remove power from the chamber by unplugging the unit, followed by disconnecting the shelf's electrical cord completely before reinstalling it. When in place, reverse this procedure.

Changing Fluorescent Lamps

When changing any of the fluorescent lamps, remove power from the chamber by **unplugging the unit first**. Twist the tube to remove it from its socket. Place the new quick-starting tube in the socket and twist it to lock it in place.

Exposed Lamps

Remember that each of the four banks of fluorescent lamps are **exposed**. Take precautions from touching them or allowing any object from contacting the lamps.

Electrical Servicing or Ballast Replacement

Please refer all internal servicing, including ballast replacement if necessary to a properly qualified electrical service personnel.

Maintenance



Note

Make no attempt to service or repair a Barnstead|Lab-Line product under warranty before consulting your Barnstead|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, call Barnstead International Customer Service at 800-553-0039. No merchandise, however, should be returned directly to Barnstead International without prior approval.



Caution

Disconnect plug from electrical outlet before attempting any maintenance or repair of this unit.

Maintenance of the environment chamber is limited to replacing the fluorescent tubes and cleaning the exterior. The blower motors have sealed bearings and does not require lubrication.

Routine Cleaning

Clean all parts of the unit with a weak solution of mild detergent or soap and water. Use a soft absorbent cloth or a sponge. Rinse thoroughly with a damp cloth and dry all components completely.

DO NOT USE: Abrasives of any type or scouring pads—these may scratch or remove the reflecting layer of metal from the sliding glass doors.

Replacement Parts

<u>Description</u>	<u>Part Number</u>
Alarm	145-010-00
Ballast	TN1699X1
Circuit Breaker 20Amp	330-128-00
Circuit Breaker 7Amp	330-113-00
Linecord	CR1699X2
Door Assembly Inner Door	013-562-00
Door Assembly Outer Door	013-561-00
Fan	FA1699X1
Fluorescent Lamp, 30-Watt	Available Locally
Heater, 800-Watt	340-291-00
Light Shelf Assembly	013-968-00
Shelf Clips	170-029-00
Alarm Status Lamp	PL1699X1
Element Status Lamp	PL1699X2
Status Lamp Lens, Red	360-234-00
Switch, Power	440-359-00
24 Hour Timer	270-098-00
Timer Mounting Box	270-104-00
Thermal Cutout	WH1699X7
Thermostat, Control	920-125-00
Thermostat, Hi-Limit	920-098-01
Thermostat, Lo-Limit	920-098-01
Thermostat Knob	560-225-00
Wiring Schematic	LT1699X1
Wiring Schematic with Light Bank	LT1699X2

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead International** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead International**, please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material Returned without an RGA number will be returned.

One Year Limited Warranty

Barnstead International (“BARNSTEAD”) warrants that a product manufactured by Barnstead shall be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by BARNSTEAD or (ii) the date the product is purchased by the original retail customer (the “Commencement Date”). Except as expressly stated above, BARNSTEAD 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, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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

BARNSTEAD’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 BARNSTEAD 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 BARNSTEAD.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the BARNSTEAD factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, BARNSTEAD will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to BARNSTEAD’s factory, it shall be sent prepaid and a prior written authorization from BARNSTEAD assigning a Return Materials Number to the product or part shall be obtained.

IN NO EVENT SHALL BARNSTEAD 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 the authorized Barnstead International dealer nearest you may be obtained by calling 1-800-446-6060 (563-556-2241) or writing to:

 **Barnstead**International
Your Lab Starts Here

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