

## IMPORTANT INFORMATION!

### CAUTIONS for all desiccator cabinets:

- Do not place in front of a heating/ac duct.
- Do not place near a heating device.
- Do not place in direct sunlight.
- Do not place in areas with smoke, or steam.
- Do not attempt to introduce pressure or vacuum inside the cabinet.
- Do not place any explosive or hazardous chemicals in the cabinets.
- Do not autoclave.
- Indoor use only.
- Use only with ambient temperature range of 5°C to 40°C.

The user should be aware that if the equipment is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired. All of the Secador Desiccator Cabinets are molded in sections which are sealed tight by unexposed steel bolts. This hardware is factory assembled and no attempt should be made to alter the tightness of the nuts.

### \*Digital Hygrometer Details

Please see the enclosed document titled "Scienceware Digital Hygrometer Specifications and Calibration Procedure" for all information regarding the digital hygrometer supplied with these desiccators.

### ELECTRICAL RATING

• 230 volt Model • 24 VAC • 20VA • 50 Hz



**Bel-Art Products**

WAYNE, NJ 07470-6814 USA  
TEL: 1-800-4BEL-ART • FAX: 973-694-7199 • [www.belart.com](http://www.belart.com)

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## INSTRUCTIONS



# Secador® Auto-Desiccator Cabinets with 230VAC Automatic Drying Module

### General Secador Auto-Desiccator Information:

All Secador Desiccator Cabinets (except the Mini-Secador, Carrying Cases, and Refrigerator Ready Secador) are molded of a durable co-polyester resin in clear, blue or amber color, and that blocks over 99% of all harmful UV light. Doors feature a patented seal and are fitted with a precision digital hygrometer\*. A loop on the door permits a padlock or a tamper evident tag to be used to prevent unauthorized opening. Each cabinet has a removable bottom shelf under which desiccant cartridges can be placed. Shelves are made of clear polystyrene, which are ribbed for strength and perforated for air exchange.

Vertical profile Secador Desiccator Cabinets have two door latches on the right side, and are interchangeably stackable up to three units high (4.0 units stackable to two high). Leave space in front for the door to swing open. Shelves must be angled 45 degrees to fit through the door opening, then leveled to rest upon the desired shelf rail. With all shelves in place and secure on the shelf rails, the distance between the shelves is 110mm (4 $\frac{3}{8}$ " minimum).

Unlike acrylic desiccators, the co-polyester resin construction of the Secador Desiccator Cabinets can be cleaned (and disinfected) with ethanol, or similar laboratory detergents. Do not use abrasive cleansers as these may scratch the surface. We recommend the use of a clean, soft cloth and Bel-Art Products Aquet® Detergent, Catalog No. F17094-0030.

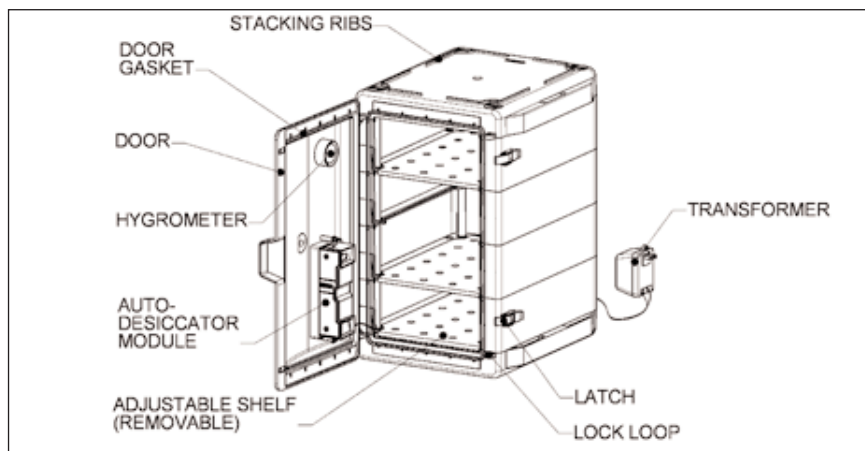


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## SECADOR 2.0, 3.0, and 4.0 AUTO-DESICCATOR CABINET, VERTICAL PROFILE

Catalog No. F42072-1220, F42072-1228, F42073-1220, F42073-1228,  
F42074-1220, F42074-1226, F42074-1227, F42074-1228

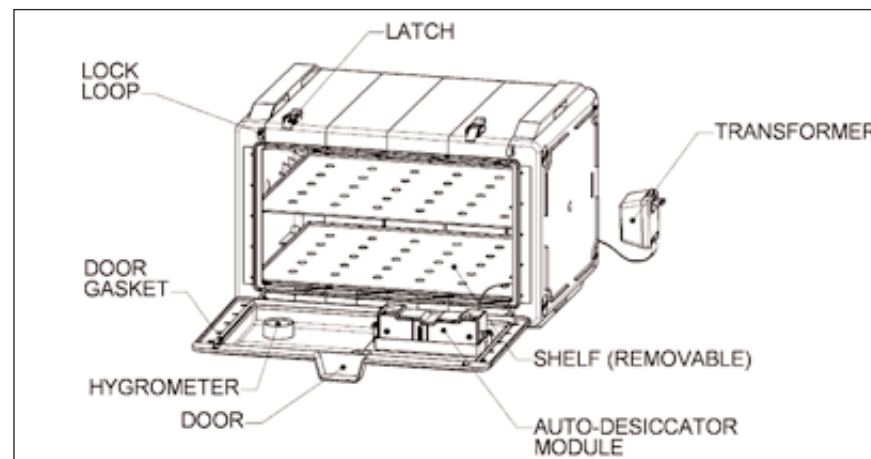


Installation of the Secador Auto-Desiccator is fast and simple. Begin by placing the desiccator on a flat horizontal surface, leaving room in front for the door to swing open. The door is fitted with the Secador Auto-Desiccator Module, which is housed in a polycarbonate case. The two apertures in the door exterior must be left unobstructed to permit proper venting of the Secador Auto-Desiccator Module. Next, you need to connect the electrical cord to the supplied transformer. Locate the transformer and remove it from its packaging. Locate the electrical cord extending from the desiccator. With the transformer UNPLUGGED from the power source, fully insert each of the two terminals, at the end of the electric cord, under each of the screw covers on the transformer (one terminal per screw cover). The Secador Auto-Desiccator Module is not polarized so either terminal can be attached to either screw. Fasten the terminals to the transformer by tightening the screws with a screwdriver. Plug the transformer into a properly functioning 230VAC electrical outlet. The internal green light inside the Secador Auto-Desiccator Module glows indicating the unit is in operation.

Once plugged in, the dehumidifying cycle will start immediately and the cabinet's moisture will be absorbed by the silica gel beads contained within the Secador Auto-Desiccator Module. This will be followed by a brief heating cycle within the electric unit and then by a discharge cycle when the moisture is released to the external atmosphere. Initially the cabinet should be left closed for approximately 8 hours to bring the relative humidity level to 25% rH or lower. The Secador Auto-Desiccator Module contains four air flow ports that are opened and shut by flapper valves. These valves were carefully aligned during factory installation to ensure proper function. DO NOT tamper with or pull on the valves.

## SECADOR 4.0 AUTO-DESICCATOR CABINET, HORIZONTAL PROFILE

Catalog No. F42074-0220, F42074-0226, F42074-0227



Installation of the Horizontal Secador Auto-Desiccator is fast and simple. Begin by placing the desiccator on a flat horizontal surface, leaving room in front for the door to swing open. The cabinet should be placed such that the two door latches are at the top. The door is fitted with the Secador Auto-Desiccator Module, which is housed in a polycarbonate case. The two apertures in the door exterior must be left unobstructed to permit proper venting of the Secador Auto-Desiccator Module. Next, you need to connect the electrical cord to the supplied transformer. Locate the transformer and remove it from its packaging. Locate the electrical cord extending from the desiccator. With the transformer UNPLUGGED from the power source, fully insert each of the two terminals, at the end of the electric cord, under each of the screw covers on the transformer (one terminal per screw cover). The Secador Auto-Desiccator Module is not polarized so either terminal can be attached to either screw. Fasten the terminals to the transformer by tightening the screws with a screwdriver. Plug the transformer into a properly functioning 230VAC electrical outlet. The internal green light inside the Secador Auto-Desiccator Module glows indicating the unit is in operation.

Once plugged in, the dehumidifying cycle will start immediately and the cabinet's moisture will be absorbed by the silica gel beads contained within the Secador Auto-Desiccator Module. This will be followed by a brief heating cycle within the electric unit and then by a discharge cycle when the moisture is released to the external atmosphere. Initially the cabinet should be left closed for approximately 8 hours to bring the relative humidity level to 25% rH or lower. The Secador Auto-Desiccator Module contains four air flow ports that are opened and shut by flapper valves. These valves were carefully aligned during factory installation to ensure proper function. DO NOT tamper with or pull on the valves.



## **Bel-Art Products**

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# **Auto Secador Check List**

### **Routine Maintenance**

1. Observe if the drying module goes through its self test procedure when it is first plugged in. This should consist of 3 different stages.
2. Open door and observe if the red / green light is on inside the drying module.
3. Open door and observe if the silica gel beads are blue in color
4. Inspect door gaskets; the door gasket consists of sections of gasket material which may shift over time with the opening and closing of the door causing a gap to appear in between the sections thereby causing leaking. **Daily**
5. Door gasket may have taken a memory, this can be resolved by removing the gasket and turning over, it is important that the gasket sections meet when replacing the gasket in the door channel. **Every 3-4 Months**
6. If 1 thru 6 is okay, follow Hygrometer instruction.
7. If the beads do not begin to turn blue after 4 hours please call customer service for a replacement drying module or pre measured container of replacement silica gel beads. You will need the serial number in order for us to determine if you need a complete drying module or just the silica gel beads.

**PLEASE NOTE THAT THE 25% RH MENTIONED IN THE MANUAL IS BASED ON THE CABINET BEING IN AN ENVIROMENT OF 70%, ENVIRONMENTS ABOVE 70% RH MAY INCREASE THE RH LEVEL INSIDE THE CABINET. ALSO THE 25% IS BASED ON THE ENVIRONMENTS BEING APPROX. 68°F, LOWER TEMPERATURES MAY AFFECT THE ABILITY OF THE HEATING UNIT TO REGERERATE THE DESICCANT SUFFICIENTLY.**

### **Replacement Parts List**

420741001 - Shelf Vertical

420740001 - Shelf Horizontal

420701400 - Hygrometer

942070050 - Electronic Drying Module (115V & 220V)

942070053 - 115V Transformer/adapter

942070074 - 220V Transformer/adapter

420740020 – **Pre measured desiccant**



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## SECADOR DIGITAL HYGROMETER



For All Secador® Desiccators and General Purpose Use

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These replacement digital hygrometers fit any Secador® Desiccator equipped with a door mounted hygrometer. CE marked.

- Displays a 2-digit number followed by %rH for relative humidity (rH) values between 10% and 80%rH (%rH values below 10% will show "<10%rH" and %rH values above 80% will show ">80%rH")
- Hygrometer display is refreshed every 10 seconds
- For %rH values from 20 to 80% the Hygrometer accuracy is ±3%rH.
- For %rH values from 10 to 20% the Hygrometer accuracy is ±7%rH.
- The long term drift in the accuracy of the Hygrometer is 0.5%rH per year
- Powered by a CR-2032 Battery; provides approximately 1 year battery life (Low Battery symbol will appear in the display when the remaining battery is approximately 3 to 4 weeks)

[Instructions](#)

[Warranty](#)

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| Catalog No.:                | Quantity / Pack | Price / Pack: | Order Quantity                 |
|-----------------------------|-----------------|---------------|--------------------------------|
| <a href="#">H42070-1400</a> | 1               | \$70.90       | <input type="text" value="0"/> |

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# I N S T R U C T I O N S



## Digital Hygrometer Specifications and Calibration Procedure



### Catalog No. H42070-1400













The digital hygrometer supplied in this kit (or as part of a Secador® desiccator assembly) is a purposely designed, highly precise hygrometer for use in measuring the relative humidity (%rH) levels inside a desiccator. A display protector is installed at the factory and should be removed to improve display at the same time that the battery isolator strip (see below) is removed. Use a fingernail or edge of a credit card to gently peel the protector from anywhere along the circular display. Discard protector.

In order to preserve battery life, this Hygrometer ships with a battery isolator strip that must be removed to activate the Hygrometer. To remove the isolator strip, locate the battery cover on the rear of the Hygrometer. Unscrew the cover, grasp the free end of the battery isolator strip, and pull to remove it. Contact with the battery is now active and the Hygrometer will function as indicated in the specifications below. NOTE: If the Hygrometer is pre-installed in the door housing of a Secador® desiccator, then you will first need to remove the Hygrometer from the housing. This is very easily accomplished by removing the plastic retaining tube surrounding the Hygrometer. Remove Hygrometer from housing and follow instructions above to remove the isolator strip. Reinstall Hygrometer into housing by refitting plastic retaining tube.

#### Technical Specifications:

|                                      |   |
|--------------------------------------|---|
| <b>Display</b>                       | Hygrometer will display a 2-digit number followed by %rH for relative humidity (rH) values between 10% and 80%rH.   |
|                                      | If Hygrometer senses %rH below 10%, then display reads "<10%rH".    |
|                                      | If Hygrometer senses %rH above 80%, then display reads ">80%rH".    |
|                                      | Hygrometer Display is refreshed every 10 seconds.   |
| <b>Accuracy (at 25°C)</b>            | For %rH values from 20 to 80% the Hygrometer accuracy is ±3%rH.   |
|                                      | For %rH values from 10 to 20% the Hygrometer accuracy is ±7%rH.   |
|                                      | The long term drift/variation in the accuracy of the Hygrometer is 0.5%rH per year (See Two Point Calibration Procedure below).   |
| <b>Operational Temperature Range</b> | 5°C to 37° (40°F to 100°F).<br>NOTE: Hygrometer sensor will be permanently damaged if exposed to temperatures above 70°C (158°F).   |
| <b>Battery</b>                       | Hygrometer is powered by a CR-2032 Battery (3 Volt), which is readily available from numerous battery suppliers.  |
|                                      | Battery Life is 1 year.   |
|                                      | Low Battery symbol (LoBat) will appear in the display when the remaining battery voltage level is low. The Hygrometer will continue to operate normally for approximately 3 to 4 weeks from the first appearance of the "LoBat" symbol. |

## Scienceware® Digital Hygrometer Two Point Calibration Procedure:

|  |   |
|--|---|
| <b>Calibration Note</b>                | The long term drift/variation in the accuracy of the Hygrometer is 0.5%rH per Year. Bel-Art Products recommends that the Hygrometer be calibrated once every 2 years. Calibration may be performed more frequently at user's discretion. For additional information on calibration, including for-fee calibration by Bel-Art Products, please contact Bel-Art Technical Support at 800-423-5278 x4269.  |
| <b>Two Point Calibration Procedure</b> | <p>Process described below uses two pre-determined %rH levels (33%rH and 75%rH) to which the Hygrometer will be independently and serially exposed. Internal software will then allow the Hygrometer to self-calibrate to attain the Accuracy Range values described above. The following materials are needed to perform this calibration:</p> <ul style="list-style-type: none"> <li>• Hygrometer to be calibrated</li> <li>• Phillips Head Screwdriver with small drive tip</li> <li>• Humidity Calibration Standard to produce 33%rH*</li> <li>• Humidity Calibration Standard to produce 75%rH*</li> <li>• Small tweezers or forceps to reposition Jumper Wire</li> </ul> <p>*Bel-Art Products recommends humidity calibration standards from Cole-Parmer or Ambient Weather Company. Follow manufacturer's instructions for all humidity calibration standards.</p> |
|  | 1. Prepare the 75%rH Humidity Calibration Standard by following the instructions supplied with the standard.  |
|  | 2. Locate the battery cover on the rear of the Hygrometer. Unscrew the cover and remove battery from the Hygrometer by releasing the spring tab on the left of the battery.   |
|  | 3. The Jumper Wire Terminal is located in the top left of the batter compartment. Notice the factory default position of the Jumper Wire  . Remove Jumper Wire from the factory default and reposition onto the 75%rH calibration location  . NOTE: The Jumper Wire positioning diagram for both 33%rH and 75%rH calibration points is also engraved on the bottom left of the Hygrometer housing.  |
|  | <p>4. Working as quickly as possible, insert battery and secure battery cover. The following symbol should appear in the display  indicating the Hygrometer is now in calibration mode. Place Hygrometer into container with the 75%rH Humidity Calibration Standard and allow 10 minutes to elapse.</p> <p>4a. If the 75%rH Calibration was successful then the  symbol will disappear and the display will steadily show "75%rH". If this is true, please proceed to Step 5, else go to Step 4b.</p> <p>4b. If the 75%rH Calibration failed, then the display will continuously flash "75%rH". If this happens, please go back to Step 2 and repeat this process.</p>                             |
|  | 5. Remove the 75%rH Humidity Calibration Standard from the container.   |
|  | 6. Prepare the 33%rH Humidity Calibration Standard by following the instructions supplied with the standard.  |
|  | 7. Locate the battery cover on the rear of the Hygrometer. Unscrew the cover and remove battery from the Hygrometer by releasing the spring tab on the left of the battery.   |
|  | 8. Remove Jumper Wire from 75%rH calibration location  and reposition the Jumper Wire to the 33%rH calibration location  .  |
|  | <p>9. Working as quickly as possible, insert battery and secure battery cover. The following symbol should appear in the display  indicating the Hygrometer is now in calibration mode. Place Hygrometer into container with the 33%rH Humidity Calibration Standard and allow 10 minutes to elapse.</p> <p>9a. If the 33%rH Calibration was successful then the  symbol will disappear and the display will steadily show "33%rH". If this is true, please proceed to Step 10, else go to Step 9b.</p> <p>9b. If the 33%rH Calibration failed, then the display will continuously flash "33%rH". If this happens, please go back to Step 7 and repeat this process.</p>                        |
|  | 10. Locate the battery cover on the rear of the Hygrometer. Unscrew the cover and remove battery from the Hygrometer.   |
|  | 11. Remove Jumper from 33%rH calibration location  and reposition the Jumper Wire to the factory default location  , reinsert battery and secure battery cover.   |
|  | 12. The two point calibration process is complete. Return Hygrometer to the desiccator. NOTE: There is a white space provided on the battery cover panel onto which you can write the future date on which you would like to perform a recalibration of the Hygrometer.   |

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