

# **Guardian Jr. Airflow Monitor**

Models 4865000, 4865001

## **INSTRUCTION MANUAL**

Product designs are subject to change without notice

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48614 - Rev D / ECO 9946

Printed in U.S.A



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## ***PREFACE***

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Thank you for displaying confidence in us by selecting a Labconco Guardian Jr. Airflow Monitor. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that the new Labconco product meets our high standards of quality and performance.

### **IMPORTANT NOTICE**

This manual should be read carefully by all the end users in order to become familiar with the operation of the Guardian Jr. Airflow Monitor. Recommendations are made within the manual to help you obtain maximum performance and life from your product.

We have included sections on initial set up, operation, maintenance and troubleshooting to provide you with all the tools necessary to achieve maximum performance.

If you have questions or concerns, do not hesitate to call us at 1-800-821-5525 for assistance.

**Components Shipped**

Carefully check the contents of this package for damage that may have occurred in transit. Do not discard the carton or packing material until all components have been checked against the following component list and the equipment has been installed and tested.

As shipped, the carton should contain the following:

**Model 4865000 - Guardian Jr. Airflow Monitor - 115V 50/60 Hz**

| <b>Qty</b> | <b>Part Number</b> | <b>Description</b>              |
|------------|--------------------|---------------------------------|
| 1          | 4854900            | Alarm Module                    |
| 1          | 4860600            | Power Supply Assembly, 115V     |
| 2          | 1885608            | Machine Screw 632 x 1/2 (Black) |
| 1          | 4854800            | Elbow, Tubing Connector         |
| 1          | 1548104            | Probe                           |
| 1          | 1919200            | Velcro Loop, 1" wide            |
| 1          | 1919300            | Velcro Hook, 1" wide            |
| 1          | 1344000            | Strain Relief                   |
| 5          | 1342200            | Tie, Cable                      |
| 1          | 4861400            | Manual, Instruction             |
| 1          | 3605201            | Wire, Assembly (White) 50" long |
| 1          | 4861500            | Wire, Assembly Jumper           |
| 2          | 1346800            | Base, Wire Tie                  |
| 2          | 1342300            | Tie, Cable                      |

**Model 4865001 Guardian Jr. Airflow Monitor - 230V 50/60 Hz**

| <b>Qty</b> | <b>Part Number</b> | <b>Description</b>              |
|------------|--------------------|---------------------------------|
| 1          | 4854900            | Alarm Module                    |
| 1          | 4860601            | Power Supply Assembly, 230V     |
| 2          | 1885608            | Machine Screw 632 x 1/2 (Black) |
| 1          | 4854800            | Elbow, Tubing Connector         |
| 1          | 1548104            | Probe                           |
| 1          | 1919200            | Velcro Loop, 1" wide            |
| 1          | 1919300            | Velcro Hook, 1" wide            |
| 1          | 1344000            | Strain Relief                   |
| 5          | 1342200            | Tie, Cable                      |
| 1          | 4861400            | Manual, Instruction             |
| 1          | 3605201            | Wire, Assembly (White) 50" long |
| 2          | 1346800            | Base, Wire Tie                  |
| 2          | 1342300            | Tie, Cable                      |

## INTRODUCTION

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### General Description

The Guardian Jr. Airflow Monitor is designed to continuously monitor airflow through fume hoods. This permanently installed device provides both visual and audible alarms to alert the user of abnormal airflow conditions. A green light on the front of the monitor indicates normal flow conditions. When flow conditions lower than the setpoint are encountered, a red light is activated along with an audible alarm.

A test button is provided at the front of the monitor to allow the user to check the operation of the alarm.

### Performance

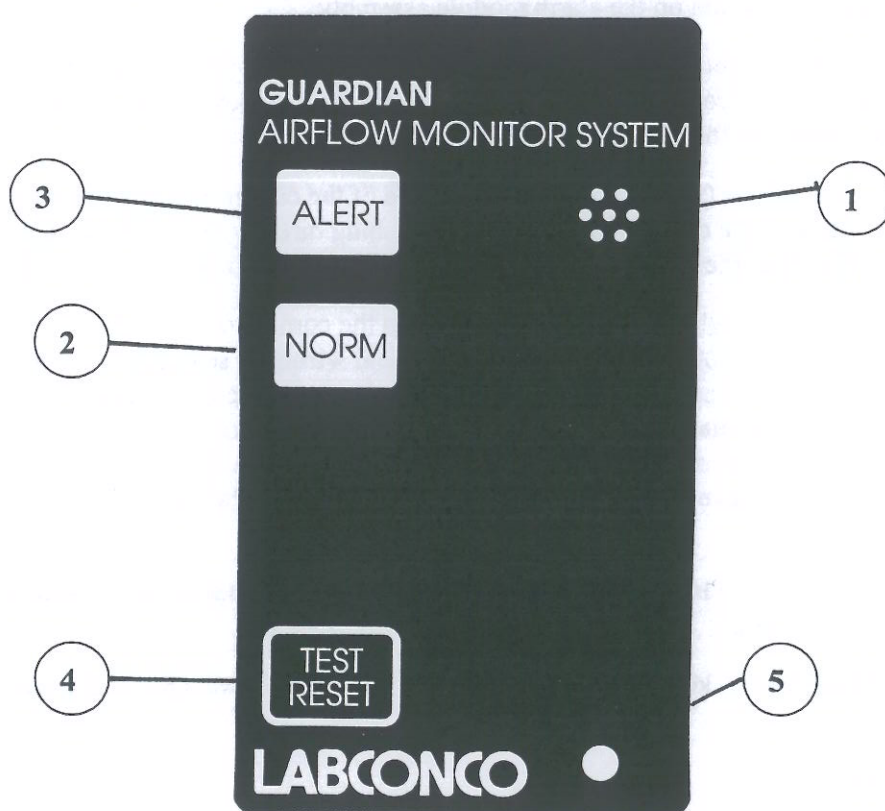
The Guardian Jr. Airflow Monitor is designed for operation on all new non explosion proof remote and integral style Protector Fume Hoods. It is also set up for operation for both the new Basic 47 and 70 inch style fume hoods. The monitor itself is available both as a field installed kit or a factory installed option.





### Component Identification

- |                                  |   |
|----------------------------------|---|
| 1. Air Inlet                     | A portion of the air coming into the hood passes through the air inlet and across the flow sensors.   |
| 2. Normal Flow Indicator         | This green light indicates normal flow conditions.  |
| 3. Alarm Indicator               | This red light is activated approximately 6 seconds after the low flow setpoint is reached.   |
| 4. Test/Reset Button             | If no alarm is present, this button will cause the red lamp to light and the audible alarm to sound. If an alarm is present, the button will silence the audible alarm. |
| 5. Adjustment for Alarm Setpoint | This potentiometer is used to set the low flow indicators for the alarm.  |



# **INSTALLATION**

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## **Installation**

Disconnect your fume hood from its electrical service prior to beginning the installation of your new monitor.

The installation of your monitor is separated into two segments. The alarm module and the power supply assembly. Installation is as follows:

### **Alarm Module**

1. Remove the right hand corner cover panel from your Protector Fume Hood. This is achieved by removing the service fixture knobs if provided, and then removing the three Phillips head screws retained in the corner cover. Remove the black outlet cover plate located in the top electrical position on this panel.
  - a. If installing the alarm on either the Basic 47 or Basic 70 inch hood, you would need to remove the right side access panel on the hood to gain access in removing the blank outlet cover plate.
2. Reinstall the corner cover panel to the hood using the screws that were removed in step 1.
3. On the Protector Fume Hoods only, attach the molded rubber elbow connector directly to the back port connection on the alarm module assembly.
4. Thread the gray colored power supply lead wire assembly through the back side of the corner post and out through the electrical cutout in the corner cover. Attach directly to the connector located on the back of the power module assembly.
5. Insert the clear tubing (9 ft.) through the back side of the corner post and out through the electrical cutout in the corner cover. Attach the tubing directly to the elbow connector (Protector Hood) or the connector located on the back of the power module assembly.
6. Locate the alarm module in the electrical cutout in the corner cover or side panel of your hood. Being careful not to pinch either the electrical wiring or sensor tube. Lock the bottom of the alarm module in place by sliding the bottom edge of the assembly down over the edge of the cutout. Next secure the top of the alarm with the two #6-32 screws. Mounting holes for these screws are located underneath the black label surrounding the electrical cutout. Leave the label in place and secure directly through it to the corner cover.
7. Route the wiring and plastic tubing up the back side of the corner posts and attach as shown. Figure 1 & 2.

**NOTE:** Make sure to keep the tubing and wiring out of the travel area of the sash weights.

### **Power Supply Module**

8. Locate the power supply module on the top of the fume hood liner assembly and use the supplied Velcro strips to secure in place.



9. Drill a 3/8" diameter hole in the hood exhaust collar or blower housing, depending upon your specific model of fume hood. See Figure 1 & 2 for exact locations.
10. Insert the velocity probe into the open end of the vinyl tubing and position the probe in the 3/8" diameter hole drilled in step #10. RTV the probe in position to complete your installation.
11. Locate caution label directly above the alarm on the appropriate corner cover.

### Electrical Connections

12. Note the separate green wire that is routed with the low voltage power supply lead wires (gray colored cable) that come from the power supply module. Route the separate green wire to the outlet box on the hood that powers the hood lighting fixtures. Route the green wire noted above into the rear connector on this outlet box and connect to a secure earth screw inside the outlet box. This green wire provides earth ground to the alarm module to make it less susceptible to electrical noise created by the fluorescent lights.
13. Route the power supply module AC voltage lead wires (black and white wires) down between the fume hood liner and outside wall to the back of the header panel. On standard Protector Fume Hoods, run this wiring inside the header panel through the access hole provided in the right side corner post. Remove the header panel cover plate to gain access for specific wiring connections. Instructions for wiring connections for each style of hood is as follows:

#### Protector Hoods

**115 Volt:** Locate the black wire which connects from the incoming AC power (in the junction box) to the hood light switch. Disconnect this black wire from the light switch terminal and connect to the solid black wire in wiring harness #48610-00. This black wire will have two extra terminals attached - one of these terminals should be re-connected to the light switch terminal. The other terminal should be connected to the unused blower switch terminal located near the center of the blower switch. Next, connect the black/white wire which is a part of harness #48610 to the remaining blower switch terminal. The final wiring step involves the white wire which is part of #48610. Locate the white wire that connects to the fluorescent lamps and find the point where it connects, via removable terminals, to the white wire from the junction box. Disconnect the removable terminals and use the white wire (part of #48610) to re-connect the white wires. The other attached white wire provides a connection to the air monitor power supply module.

**230 Volt:** Locate the black wire which is connected to the hood blower switch. Disconnect this black wire from the blower switch terminal and connect to the blue wire of #48611 using the attached terminal. Re-connect the remaining terminal of the blue wire (part of #48611) to the original blower switch terminal.



## **INSTALLATION**

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Locate the white wire on the blower switch which is adjacent to the blue wire just connected above. Disconnect this white wire from the blower switch terminal and connect to the brown wire in wiring harness #48611. Re-connect the remaining terminal on this brown wire to the blower switch terminal where the white wire was originally removed.

### **8 Foot, 230 Volt Hood with External Blower**

230 Volt: Locate the blue wire which is connected to the blower switch. Disconnect this blue wire from the blower switch terminal and connect to the blue wire in wiring harness #48611 using the attached terminal. Re-connect the remaining terminal of the blue wire (part #48611) to the original blower switch terminal. Locate the brown wire on the blower switch which is adjacent to the blue wire just connected above. Disconnect this brown wire from the blower switch terminal and connect to the brown wire in wiring harness #48611. Re-connect the remaining terminal on this brown wire to the blower switch terminal where the brown wire was originally removed.

### **Basic 47 and 70 Fume Hoods**

115 Volt: Locate the black wire which connects from the incoming AC power (in junction box) to the hood light switch. Disconnect this black wire from the light switch terminal and connect to the solid black wire which is part of #48610-00. This black wire will now have two extra terminals attached - one of these terminals should be re-connected to the light switch terminal. The other terminal should be connected to the unused blower switch terminal located near the center of the blower switch. Next, connect the black/white wire which is a part of wiring harness #48610 to the remaining blower switch terminal. Next connect the white wire from wiring harness #48610 to the terminal of the supplied white wire labeled #48616. After this is done, route the stripped end of this white wire along with the yellow blower switch wires into the hood junction box. Tie this white wire inside the junction box to the other white wires from the blower, light, etc., using a wire nut. Insulate the unused terminal on the white wire of wiring harness #48610 by removing the terminal, stripping the wire and installing a wire nut.

230 Volt: Locate the black wire which is connected to the hood blower switch. Disconnect this black wire from the blower switch terminal and connect to the blue wire of wiring harness #48611 using the attached terminal. Re-connect the remaining terminal of the blue wire in harness #48611 back to the original blower switch terminal location.

Locate the white wire on the hood blower switch which is adjacent to the blue wire just connected above. Disconnect this white wire from the blower switch terminal and connect to the brown wire of harness #48611. Re-connect the remaining terminal on this brown wire to the blower switch terminal where the white wire was originally removed.



### **Pherchloric Acid Hood**

Locate the black wire which is tied to wiring harness #48610. Cut the tie and discard the black wire which features 3 terminals as it is not required.

Locate the white wire in wiring harness #48610. Connect the terminal of this white wire back to the terminal of the white wire #48616-00.

After this is done, route the stripped end of this white wire along with the yellow blower switch wires into the hood junction box. Tie this white wire inside the junction box to the other white wires from the blower, light, etc. using a wire nut. Insulate the unused terminal on the white wire wiring harness #48610 by removing the terminal, stripping the wire and installing a wire nut.

Locate the yellow wire on the hood blower switch. Remove the yellow wire from the blower switch and connect the black wire #48615 to the blower switch terminal where the yellow wire was located. Re-connect the yellow wire to one of the remaining terminals of the black wire #48615 and connect the black/white wire from #48610 to the final remaining terminal of the black wire #48615.

### **Radio-Isotope Hoods**

115 Volt: Locate the black wire which connects from the incoming AC power (in the junction box) to the light switch. Disconnect this black wire from the light switch terminal and connect to the solid black wire which is part of wiring harness #48610-00. This black wire will have two extra terminals attached - one of these terminals should be reconnected to the light switch terminal. The other terminal should be connected to the unused blower switch terminal located near the center of the blower switch. Next, connect the black/white wire which is a part of harness #48610 to the remaining blower switch terminal. The final wiring step involves connecting the white wire in wiring harness #48610 to the terminal of the supplied white wire labeled #48616. After this is done, route the stripped end of this white wire along with the yellow blower switch into the junction box following the same path as the yellow blower wires. Tie this white wire inside the junction box to the other white wires from the blower, lights, etc., using a wire nut.

### **Initial Adjustment/Set-Up**

Each alarm module and fume hood is unique and needs to be individually calibrated in the field. The procedure for the adjustment is as follows:

1. Double check the installation to make sure that monitor and power supply are properly installed.
2. Allow 10 minutes for the monitor to warm up once power has been connected.
3. Determine the low flow set point for your monitor. This is the value where the monitor will first indicate a low flow condition. The red light will be on for this value. Refer to

## ***INSTALLATION***

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your industrial hygiene officer for the proper low flow set point.

4. Adjust your fume hood airflow to the low flow setpoint as been previously determined.
5. Using a properly calibrated thermoanemometer, determine the velocity through the face of the fume hood by taking a detailed velocity traverse. Divide the face area of the fume hood into equal increments. One reading per square foot of face area is normally recommended for an accurate traverse. Compute the average velocity for this area.
6. If the red light alarm is on, slowly turn the adjustment screw counterclockwise until the green light is activated. If the green light is on, slowly turn the adjustment screw clockwise until the red light comes on. Slowly turn the adjustment screw back counterclockwise until the green light is activated. It is important that these adjustments be done in small increments, at intervals about 10 seconds apart to allow for delayed reaction of the alarm itself.
7. Readjust the fume hood airflow to its normal levels.

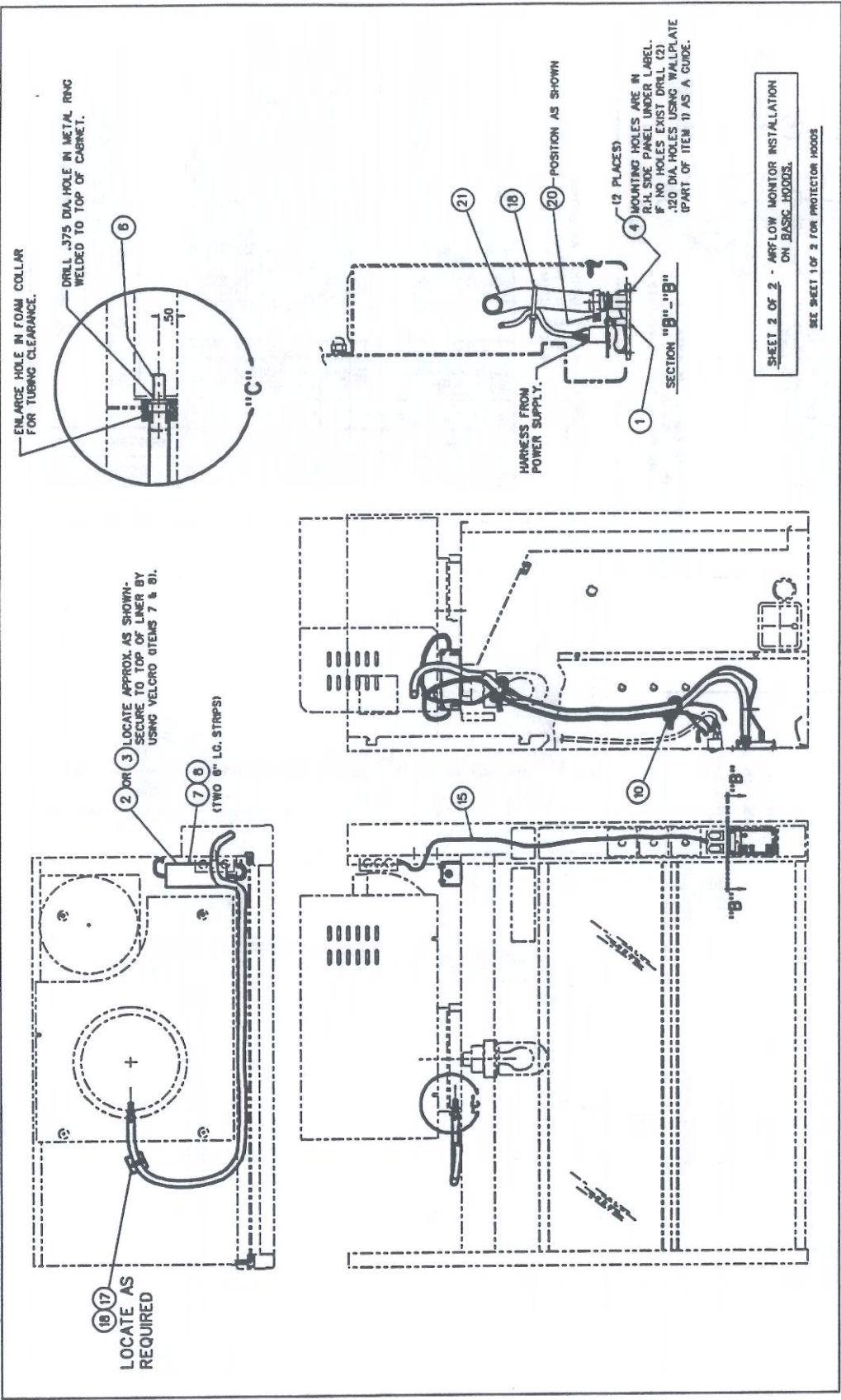




**SEE SHEET 2 OF 2 FOR BASIC HOODS**



# INSTALLATION DRAWING



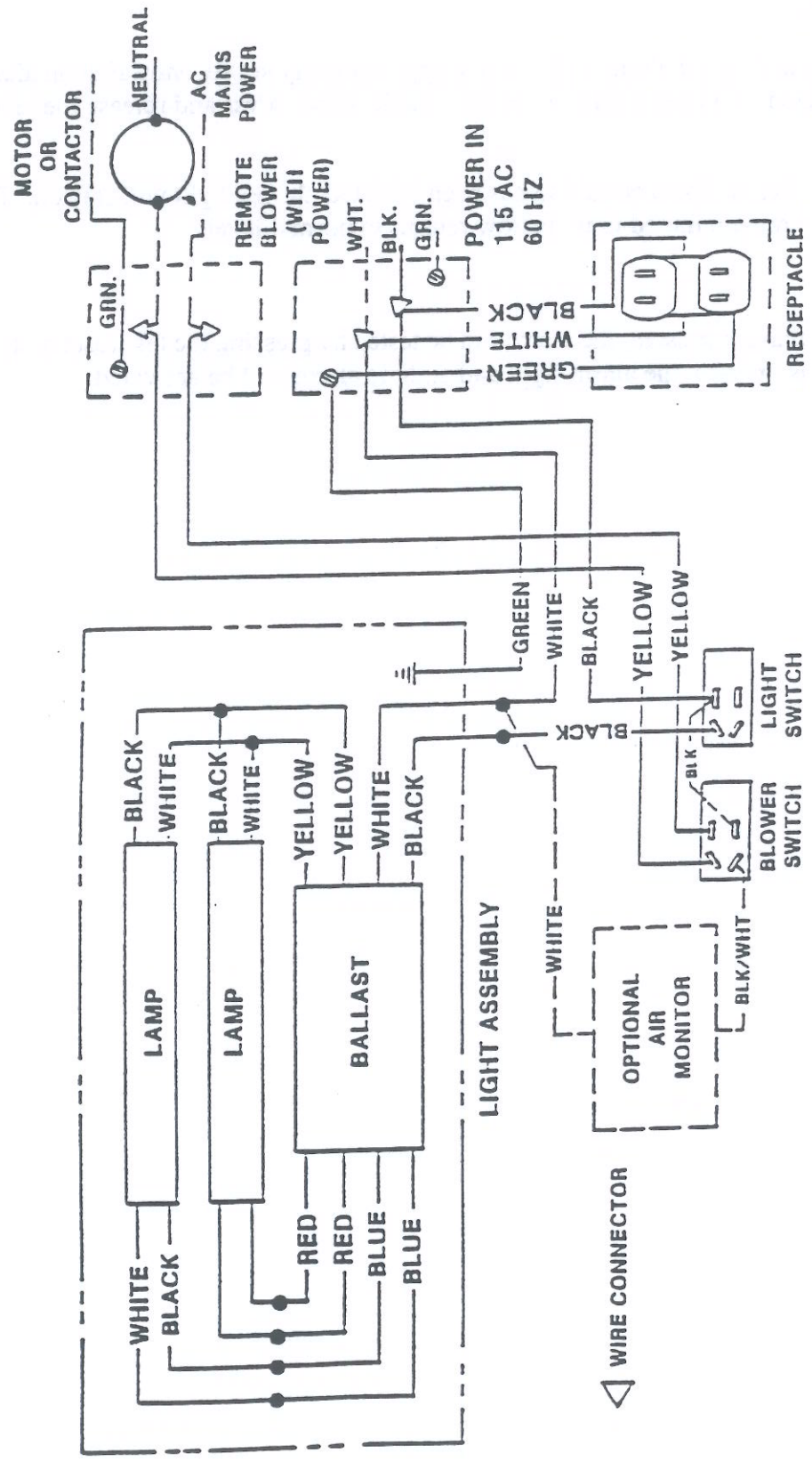
### **Alarm Activation**

The audio and visual alarm will activate approximately six seconds after an alarm condition is detected. To temporarily mute the audible alarm, press and release the test/reset button.

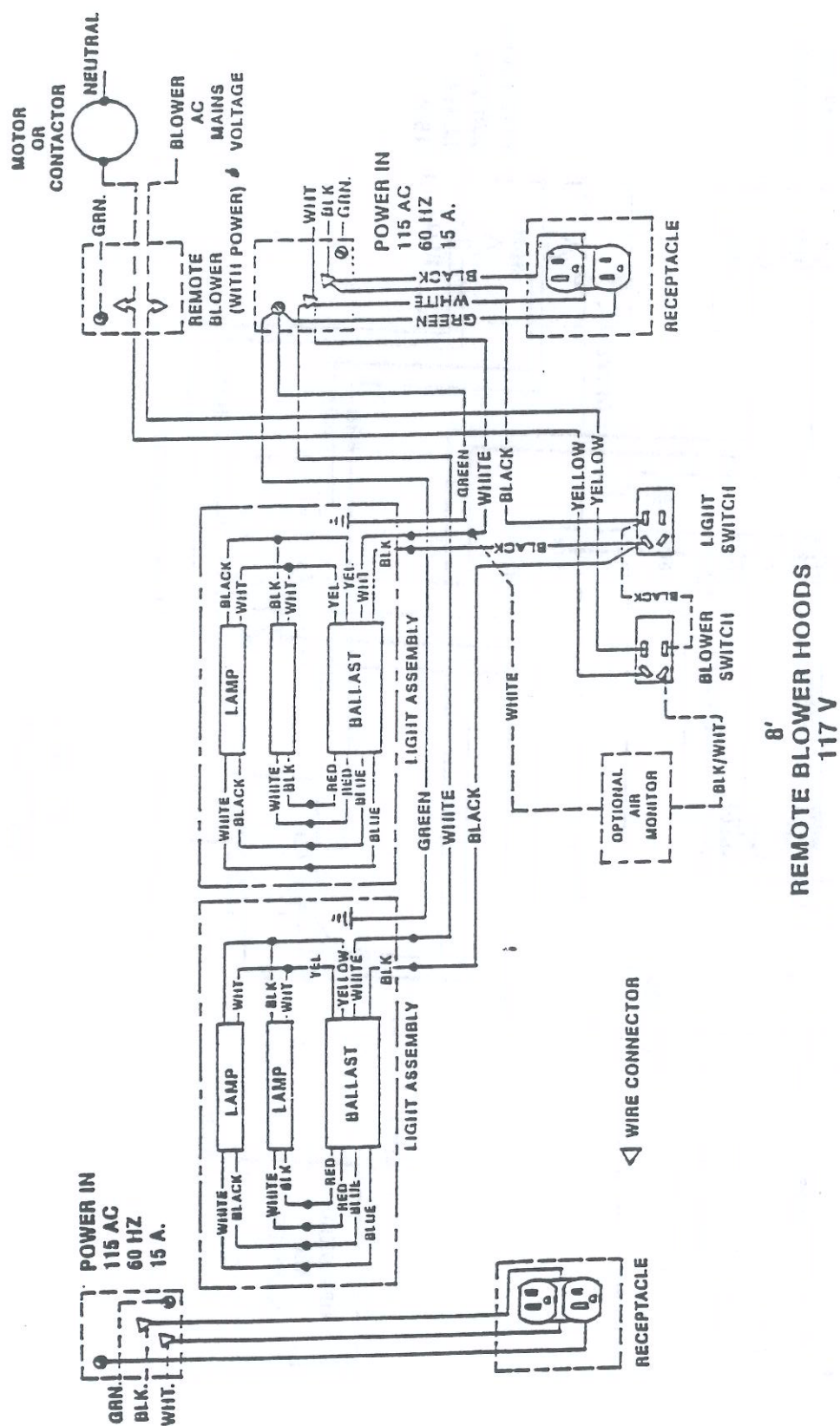
**NOTE:** After an alarm condition has been detected, the red light will stay on. The audible alarm will remain muted until airflow returns to normal levels.

### **Alarm Test**

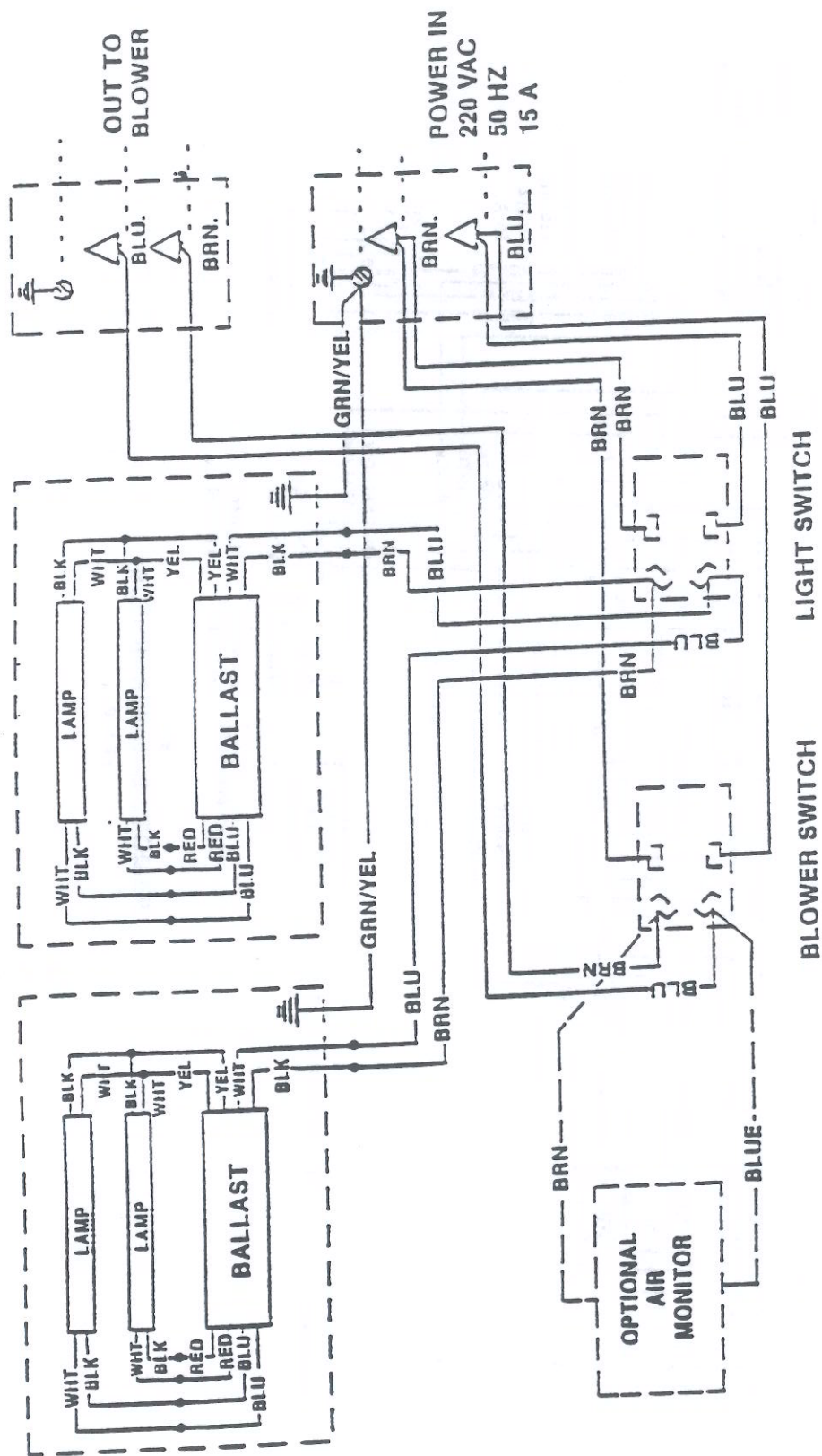
When no alarm is present, the alarm can be tested by pressing the test/reset button. While the button is pressed, the alarm light and audible alarm will be activated.



REMOTE BLOWER HOOD  
115 V

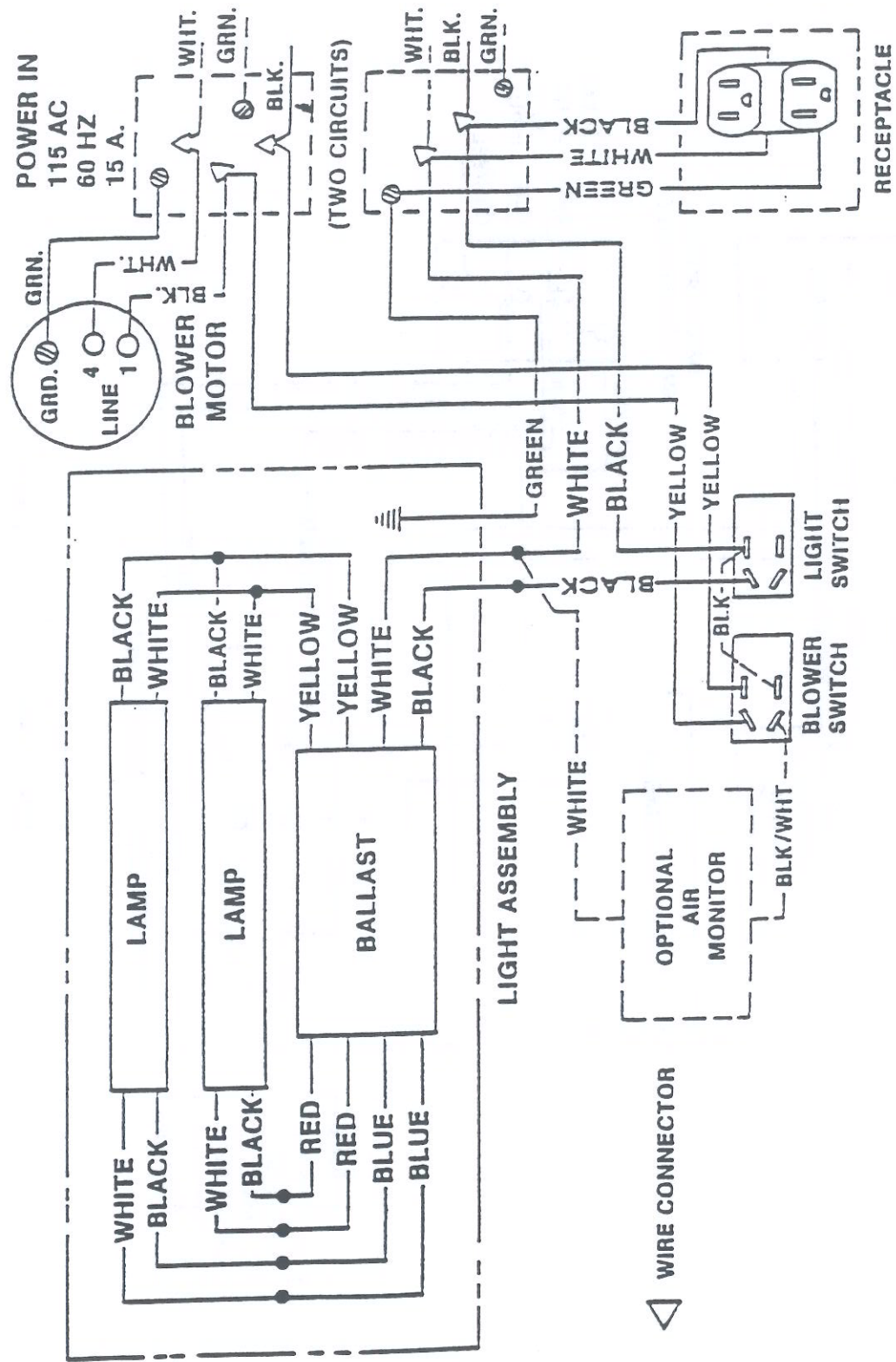




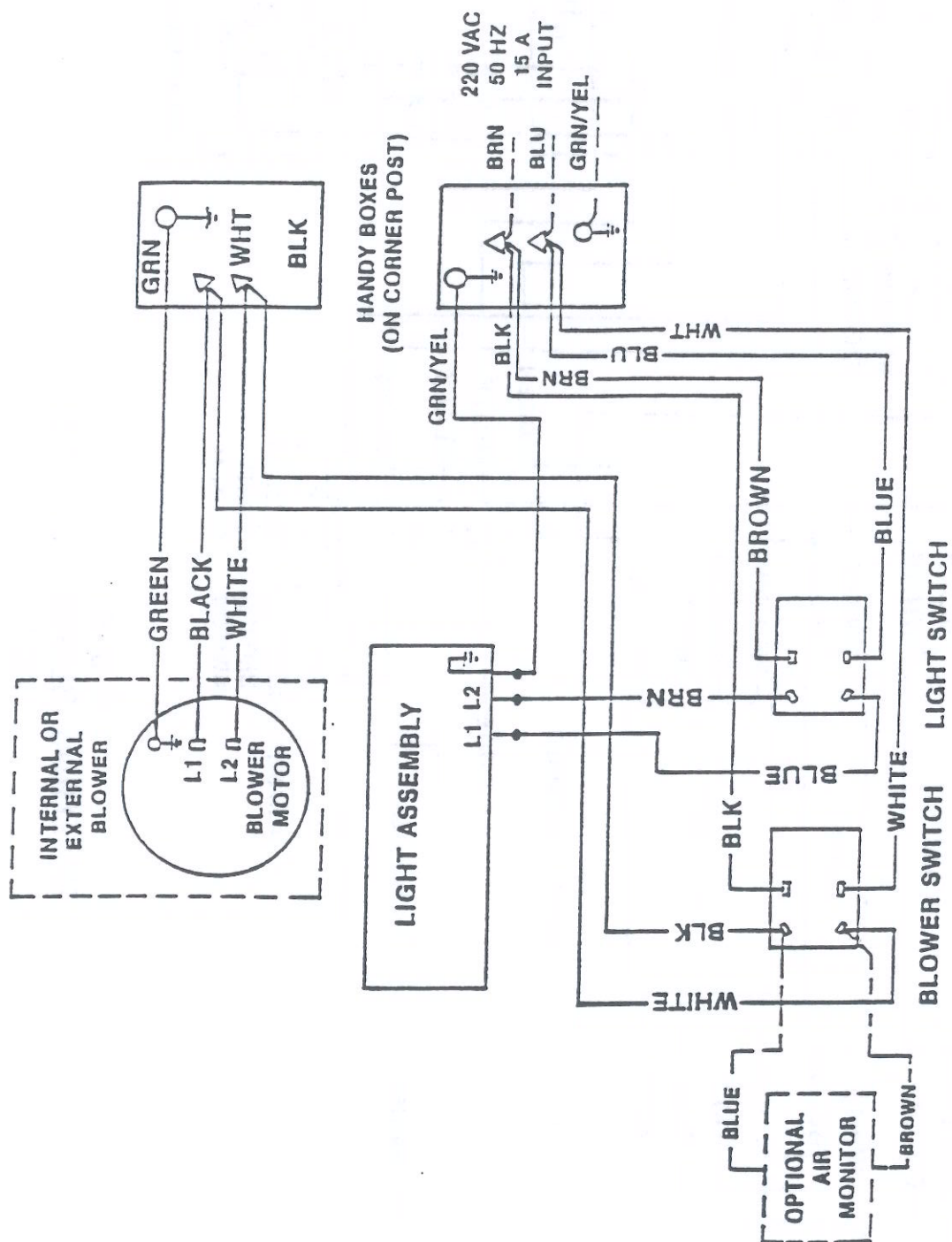


8' 230 V HOODS  
EXTERNAL BLOWER

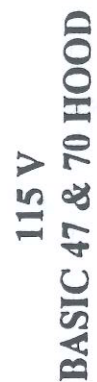




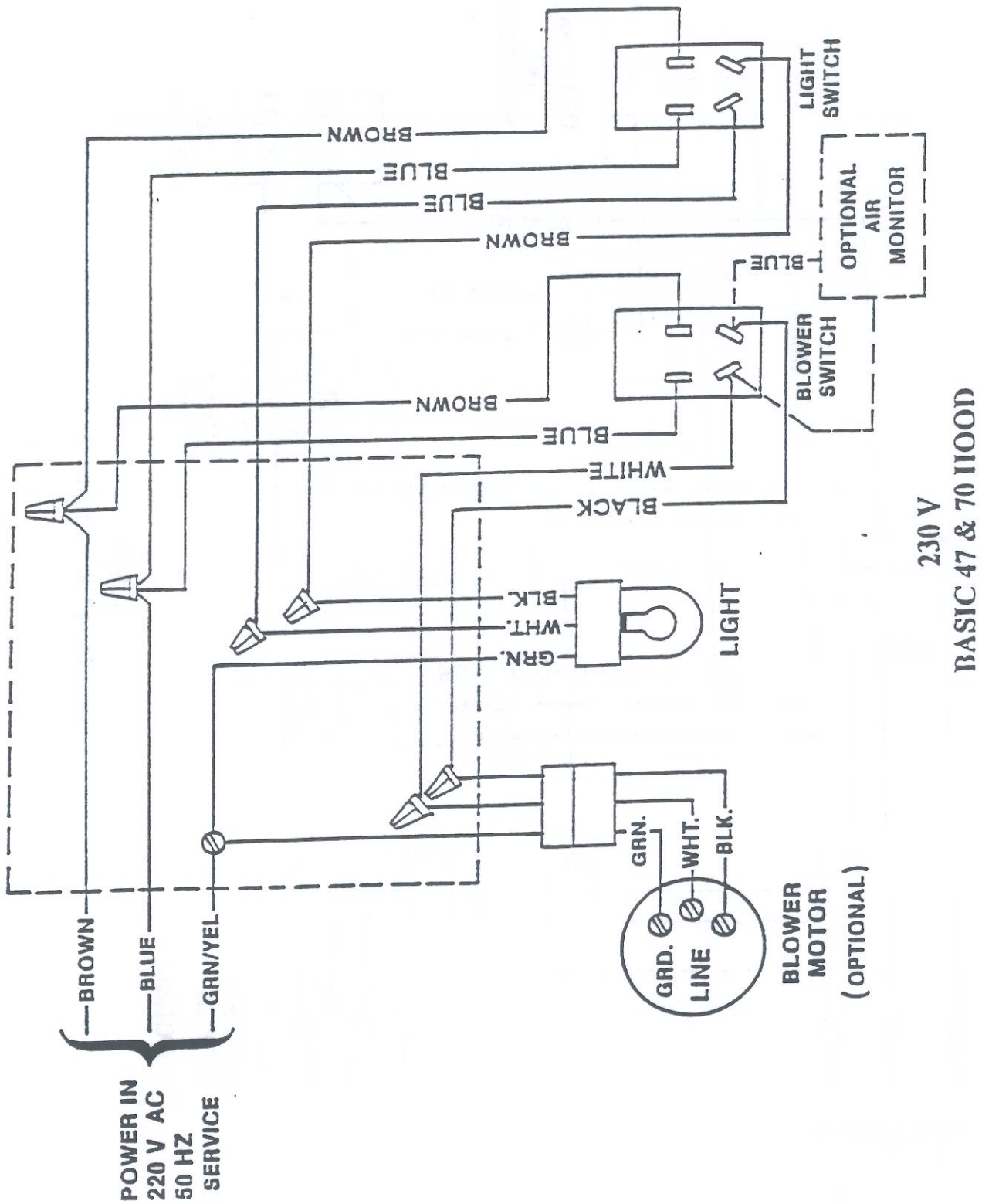
4'-5'-6'  
**INTEGRAL BLOWER HOODS**  
115 V



## 230 V-50 HZ INTEGRAL BLOWER HOODS

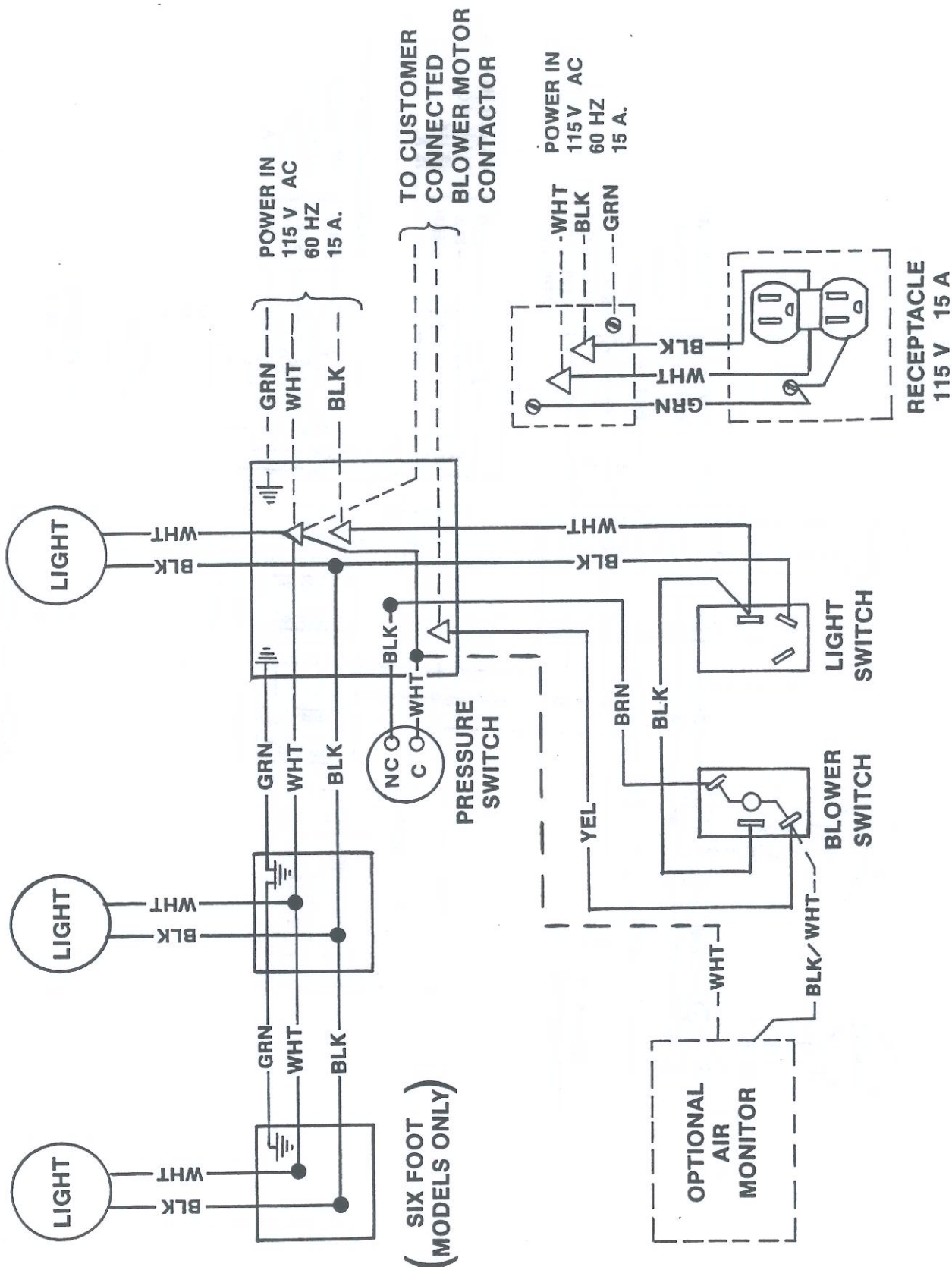


# ELECTRICAL WIRING DIAGRAM



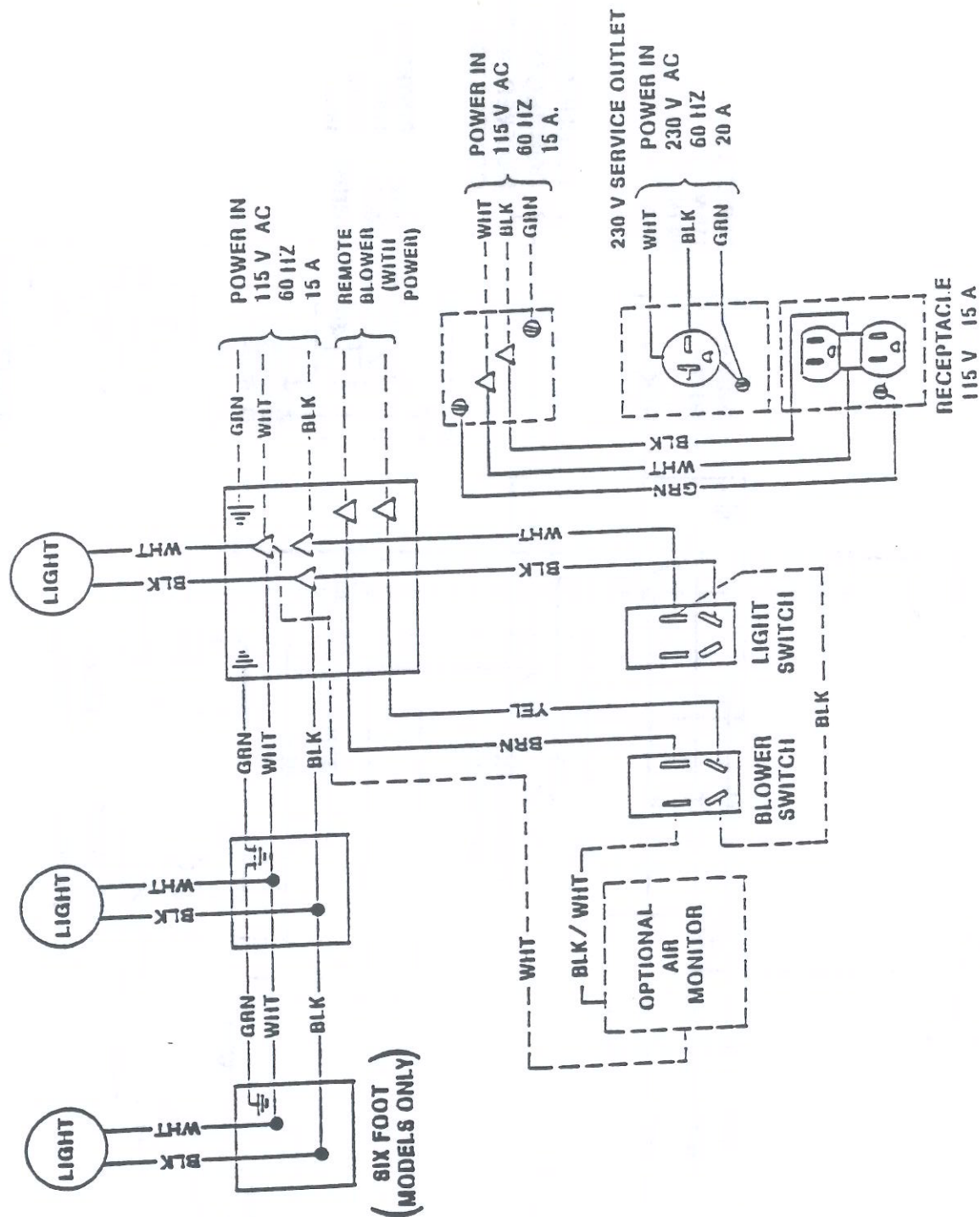


ELECTRICAL WIRING DIAGRAM



PERCHLORIC HOOD





## RADIOISOTOPE HOOD WIRING DIAGRAM

| <b>Symptom</b>                   | <b>Suggested Recommendations</b>   |
|----------------------------------|--|
| No Lights                        | Power supply not plugged into proper voltage, plug in power supply. Monitor rear connection is disconnected, verify that the connector is correctly installed.   |
| No Audible Alarm                 | Alarm has been silenced using test/reset button  |
| Wrong Alarm Set Point            | Potentiometer was not properly adjusted. Repeat calibration steps outlined in this manual.   |
| Continuous Alarm                 | Blower speed has changed. Performance traverse to verify that the calibration has not changed. Check blower speed, adjust if required. Check calibration using traverse technique, recalibrate monitor as instructed if required.  |
| Audible disable will not stay on | An alarm condition must be continuously present before the audible alarm can be silenced. If flow conditions fluctuate near the alarm setpoint, the alarm will automatically reset itself. Action should be taken to bring the fume hood airflow into proper operating parameters. |
| Constant Audible Alarm           | Check airflow and calibration.   |

If problems persist with the Guardian Jr. Airflow Monitor, contact Labconco Product Service Department directly at 1-800-821-5525, for assistance.

## **WARRANTY**

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We are committed to providing our customers with quality equipment and service after the sale. Part of this objective involves keeping you informed of changes and new product additions. We, therefore, request that you take a moment to fill out the product registration card so we may know your location as well as some of the reasons that prompted you to purchase our product.

**Labconco Corporation warrants products of its manufacture for one year, from receipt of the equipment by the purchaser, against defects in materials and workmanship. This limited warranty covers parts and labor but not transportation and insurance charges.** In the event of a warranty claim, contact the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. **Under no circumstance shall Labconco Corporation be liable for indirect, consequential or special damages of any kind.** This statement of warranty may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and expendable items such as filters are not covered by this warranty. Damage due to corrosion or accidental breakage is also not covered.

**WARNING:** The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state or local regulations. All users of this equipment are urged to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land or air and to comply with such regulations.

If a shipment is received in visibly damaged condition, be certain to make a notation on the delivering carrier's receipt and have their agent confirm the damage on your receipt. Otherwise, the damage claim may be refused.

If concealed damage or pilferage is discovered, notify the carrier immediately and retain the entire shipment intact for inspection. Interstate Commerce Commission rules require that the claim be filed with the carrier within 15 days after delivery.

**NOTE: Do not return goods.** Goods returned without prior authorization will not be accepted. Labconco Corporation and its dealers are not responsible for shipping damage. Claims must be filed directly with the freight carrier by the recipient. If authorization has been received to return this product, by accepting this approval, the user assumes all responsibility and liability for biological and chemical decontamination and cleansing. Labconco reserves the right to refuse delivery of any products which do not appear to have been properly cleaned and/or decontaminated prior to return.



## ***CONTACTING LABCONCO***

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If you have any questions that are not addressed in this manual, or if you need technical assistance, please contact Labconco's Sales Information Department at 800-821-5525 and Service Information at 800-522-7658 or (816) 333-8811 between the hours of 7:00 a.m. and 6:00 p.m. Central Standard Time.

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