



# User's Manual

## Protector® Laboratory Fume Hoods

### XL™ Floor-Mounted (Walk-In) Models

97008 Series

97009 Series

97010 Series

97160 Series

98604 Series

98605 Series

98606 Series



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Labby the LABster



*Protecting your  
laboratory environment*

**LABCONCO®**

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Protector® XL™ Floor-Mounted (Walk In) Hood #98553

## **Warranty**

Labconco provides a warranty on all parts and factory workmanship. The warranty includes areas of defective material and workmanship, provided such defect results from normal and proper use of the equipment.

The warranty for all Labconco products will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner, except the following:

- Purifier® Delta® Series Biological Safety Cabinets and PuriCare® Lab Animal Products carry a three-year warranty from date of installation or four years from date of shipment from Labconco, whichever is sooner.
- Carts carry a lifetime warranty.
- Glass is not warranted from breakage due to accident or mishandling.

This limited warranty covers parts and labor, but not transportation and insurance charges. In the event of a warranty claim, contact Labconco Corporation or 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 circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This statement 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 filters are not covered by this warranty. Damage due to corrosion or accidental breakage is also not covered.

## **Limitation of Liability**

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 required 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. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

**Part #9855300 Rev C, ECO C119**

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# CHAPTER 1

## INTRODUCTION

Congratulations on your purchase of a Labconco Protector® XL™ Floor-Mounted (Walk-In) Laboratory Fume Hood. Your Protector Floor-Mounted Laboratory Fume Hood is designed to protect you. It is the result of Labconco's more than 50 years experience in manufacturing fume hoods, and users like you suggested many of its features to us.

The Labconco Protector Floor-Mounted Fume Hood has been engineered to provide maximum visibility in a laboratory, and effectively contain toxic, noxious, or other harmful materials when properly installed. The Protector offers many unique features to enhance safety, performance, and visibility. To take full advantage of them, please acquaint yourself with this manual and keep it handy for future reference. If you are unfamiliar with how fume hoods operate, please review *Chapter 4: Performance Features and Safety Precautions* before you begin working in the fume hood. Even if you are an experienced fume hood user, please review *Chapter 5: Using Your Fume Hood*, which describes your Protector Floor-Mounted Hood's features so that you can use the hood efficiently.

## About This Manual

This manual is designed to help you learn how to install, use, and maintain your laboratory fume hood. Instructions for installing optional equipment on your hood are also included.

*Chapter 1: Introduction* provides a brief overview of the Floor-Mounted (Walk-In) Laboratory Fume Hood, explains the organization of the manual, and defines the typographical conventions used in the manual.

*Chapter 2: Prerequisites* explains what you need to do to prepare your site before you install your laboratory fume hood. Electrical and service requirements are discussed.

*Chapter 3: Getting Started* contains the information you need to properly unpack, inspect, install, and certify your laboratory fume hood.

*Chapter 4: Performance Features and Safety Precautions* explains how the Protector XL Floor-Mounted Hood operates and the appropriate precautions you should take when using the fume hood.

*Chapter 5: Using Your ProtectorXL Floor-Mounted Hood* discusses the basic operation of your fume hood. Information on how to prepare, use and shut down your Protector XL Floor-Mounted Hood are included.

*Chapter 6: Maintaining Your Protector XL floor-Mounted Hood* explains how to perform routine maintenance on your fume hood.

*Chapter 7: Modifying Your Protector XL Floor-Mounted Hood* explains how to modify the fume hood or add accessories.

*Chapter 8: Troubleshooting* contains a table of problems you may encounter while using your laboratory fume hood including the probable causes of the problems and suggested corrective actions.

*Appendix A: Protector XL Floor-Mounted Hood Components* contains labeled diagrams of all of the components of the fume hoods.

*Appendix B: Protector XL Floor-Mounted Hood Dimensions* contains comprehensive diagrams showing all of the dimensions for the laboratory fume hoods.

*Appendix C: Protector XL Floor-Mounted Hood Specifications* contains the electrical requirements for laboratory fume hood. Wiring diagrams are also included.

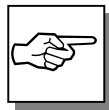
*Appendix D: References* lists the various resources available that deal with laboratory fume hoods.

## Typographical Conventions

Recognizing the following typographical conventions will help you understand and use this manual:

- Book, chapter, and section titles are shown in italic type (e.g., *Chapter 3: Getting Started*).
- Steps required to perform a task are presented in a numbered format.
- Comments located in the margins provide suggestions, reminders, and references.





- Critical information is presented in boldface type in paragraphs that are preceded by the exclamation icon. Failure to comply with the information following an exclamation icon may result in injury to the user or permanent damage to fume hood.
- Critical information is presented in boldface type in paragraphs that are preceded by the wrench icon. These operations should only be performed by a trained certifier or contractor. Failure to comply with the information following a wrench icon may result in injury to the user or permanent damage to your hood.
- Important information is presented in capitalized type in paragraphs that are preceded by the pointer icon. It is imperative that the information contained in these paragraphs be thoroughly read and understood by the user.
- A number icon precedes information that is specific to a particular model of laboratory fume hood. The 4' icon indicates the text is specific to the 4-foot wide model. The 5' icon indicates the text is specific to the 5' model, etc.
- The V icon indicates the text is specific to the vertical-sash model.
- The H icon indicates the text is specific to the horizontal sliding sash model.

## Your Next Step

If your Fume Hood needs to be installed, proceed to *Chapter 2: Prerequisites* to ensure your installation site meets all of the requirements. Then, go to *Chapter 3: Getting Started* for instructions on how to install your laboratory fume hood and make all of the necessary connections.

If you would like to review how laboratory fume hoods operate, go to *Chapter 4: Performance Features and Safety Precautions*.

For information on the operational characteristics of your laboratory fume hood, go to *Chapter 5: Using Your Protector XL Floor-Mounted Hood*.

If your laboratory fume hood is installed and you need to perform routine maintenance on the cabinet, proceed to *Chapter 6: Maintaining Your Protector XL Floor-Mounted Hood*.

For information on making modifications to the configuration of your fume hood, go to *Chapter 7: Modifying Your Protector XL Floor-Mounted Fume Hood*.

Refer to *Chapter 8: Troubleshooting* if you are experiencing problems with your fume hood.



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# CHAPTER 2

## PREREQUISITES

Before you install your Protector XL Floor-Mounted Hood, you need to prepare your site for installation. Carefully examine the location where you intend to install your floor-mounted hood. You must be certain that the area is level and of solid construction. In addition, a dedicated source of electrical power must be located near the installation site.

Carefully read this chapter to learn the requirements for your installation site:

- The location requirements.
- The support requirements.
- The exhaust requirements.
- The electrical power requirements.
- The service line requirements.
- The space requirements.

Refer to *Appendix B: Protector XL Floor-Mounted Hood Dimensions* for complete fume hood dimensions.

Refer to *Appendix C: Protector XL Floor-Mounted Hood Specifications* for complete electrical and environmental conditions, specifications and requirements.

## Location Requirements



The floor-mounted fume hood should be located away from traffic patterns, doors, windows, fans, ventilation registers, and any other air-handling device that could disrupt its airflow patterns. All windows in the room should be closed.

## Support Requirements



**DO NOT** install the floor-mounted fume hood on a cart, dolly, or mobile bench. **ALL Protector XL Floor-Mounted Hood installations must be permanent and stationary.** The hood is usually mounted directly on the room floor surfaces, or on an optional chemical resistant work surface.

## Exhaust Requirements

The exhaust duct connection has been designed for 12" nominal duct (12.75" OD) to allow for minimum static pressure loss while operating at 100 fpm face velocities. The 12" diameter exhaust duct also allows for proper transport velocities away from the hood in the 1000 fpm to 2500 fpm range. The proper exhaust volume and static pressure loss are listed next for each hood model:

Hood Size	Standard Model Description	W/ Rear Lower Vertical Sash Closed and Front Vertical Sash Open or Horizontal Doors Open			
		Face Velocity	Exhaust Volume	Static Pressure Loss	Sashes Open
4' Vertical	48" Protector XL Floor-Mounted (Walk-In) Hood	80 fpm	550 CFM	0.10" H <sub>2</sub> O	1
		100 fpm	680 CFM	0.16" H <sub>2</sub> O	
5' Vertical	60" Protector XL Floor-Mounted (Walk-In) Hood	80 fpm	720 CFM	0.16" H <sub>2</sub> O	1
		100 fpm	900 CFM	0.24" H <sub>2</sub> O	
6' Vertical	72" Protector XL Floor-Mounted (Walk-In) Hood	80 fpm	900 CFM	0.18" H <sub>2</sub> O	1
		100 fpm	1120 CFM	0.28" H <sub>2</sub> O	
8' Vertical	96" Protector XL Floor-Mounted (Walk-In) Hood with Vertical-Rising Sashes	80 fpm	1250 CFM	0.12" H <sub>2</sub> O	1
		100 fpm	1560 CFM	0.19" H <sub>2</sub> O	
8' Horizontal	96" Protector XL Floor-Mounted (Walk-In) Hood with horizontal-sliding sashes	80 fpm	1760 CFM	0.19" H <sub>2</sub> O	2
		100 fpm	2200 CFM	0.30" H <sub>2</sub> O	
10' Horizontal	120" Protector XL Floor-Mounted (Walk-In) Hood with horizontal-sliding sashes	80 fpm	1090 CFM	0.08" H <sub>2</sub> O	1
		100 fpm	1360 CFM	0.12" H <sub>2</sub> O	
12' Horizontal	144" Protector XL Floor-Mounted (Walk-In) Hood with horizontal-sliding sashes	80 fpm	1330 CFM	0.10" H <sub>2</sub> O	1
		100 fpm	1660 CFM	0.15" H <sub>2</sub> O	
16' Horizontal	192" Protector XL Floor-Mounted (Walk-In) Hood with horizontal-sliding sashes				1
		100 fpm	2260 CFM	0.10" H <sub>2</sub> O	

**NOTE:** 8' Floor-Mounted Hoods are offered with both vertical-rising and horizontal-sliding sashes, and have different CFM's and pressures.

Proper blower selection can be determined from these exhaust requirements and the total system static pressure loss. Contact Labconco Customer Service at 800-821-5525 for assistance in sizing a blower system.

## Electrical Requirements

The Protector XL Floor-Mounted Hood models feature internal wiring for the fluorescent light assembly and light switch. All internal wiring is terminated at the single point wiring junction box for hook-up by a qualified electrician. The blower switch and light switch wires are also terminated at the single point wiring junction box for hook-up by a qualified electrician. Refer to *Chapter 3: Getting Started* and *Appendix C: Protector XL Floor-Mounted Hood Specifications* for the wiring diagram for proper electrical installation.

## Service Line Requirements

All service lines to the laboratory fume hood should be  $\frac{1}{4}$  inch outside diameter, copper (brass for natural gas), and equipped with an easily accessible shut-off valve, should disconnection be required. If the service line pressure exceeds 40 PSI, it must be equipped with a pressure regulator to reduce the line pressure. Please check with local codes for other requirements.

## Space Requirements

The dimensions for the different models are shown in *Appendix B: Protector XL Floor-Mounted Hood Dimensions*.

## Your Next Step

After you have determined that the location you have selected accommodates the installation and operational requirements of your floor-mounted fume hood, you are ready to begin installation. Proceed to *Chapter 3: Getting Started*.

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# CHAPTER 3

## GETTING STARTED

Now that the site for your Protector XL Floor-Mounted (Walk-In) Hood is properly prepared, you are ready to unpack, inspect, install, and certify it. Read this chapter to learn how to:

- Unpack and move your Protector XL Floor-Mounted Hood.
- Set up the floor-mounted fume hood on the floor.
- Connect to an exhaust system.
- Connect the electrical supply source.
- Connect the service lines.
- Sealing the Protector Hood to the floor.
- Arrange certification of your Protector Hood.

Depending upon which model you are installing, you may need common plumbing and electrical installation tools in addition to 5/16", 3/8", 7/16", and 1/2" wrenches, ratchets, sockets, a nut driver set, a flat-blade screwdriver, a Phillips screwdriver, and a carpenter level to complete the instructions in the chapter.



**The Protector XL Floor-Mounted Hood models weigh between 700 to 3500 lbs. (318-1593 kg). The shipping skid allows for lifting with a mechanical lift truck or floor jack. If you must lift the fume hood manually, follow safe-lifting guidelines.**

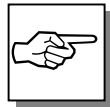


## Unpacking Your Protector XL Floor-Mounted Fume Hood

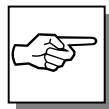
Your Protector XL Floor-Mounted (Walk-In) Hood has been shipped to you as ten main component assemblies located on three shipping skids. The ten main component assemblies consist of the lower base, upper cabinet, sashes, lower sash track, corner posts, service fixtures, electrical connections, baffles, header, and front panel.

*The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.*

Carefully remove the shrink-wrap on your three shipping skids, and inspect it for damage that may have occurred in transit. If your unit is damaged, notify the delivery carrier immediately and retain the entire shipment intact for inspection by the carrier.



**DO NOT RETURN GOODS WITHOUT THE PRIOR AUTHORIZATION OF LABCONCO. UNAUTHORIZED RETURNS WILL NOT BE ACCEPTED.**



**IF YOUR FLOOR-MOUNTED HOOD WAS DAMAGED IN TRANSIT, YOU MUST FILE A CLAIM DIRECTLY WITH THE FREIGHT CARRIER. LABCONCO CORPORATION AND ITS DEALERS ARE NOT RESPONSIBLE FOR SHIPPING DAMAGES.**

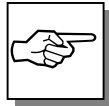
Do not discard the shipping skid or packing material for your fume hood until you have checked all of the components and installed and tested the unit.

Do not remove the fume hood from its shipping skid until it is ready to be placed into its final location. Move the unit by placing a flat, low dolly under the shipping skid, or by using a floor jack.



**Do not move the hood by tilting it onto a hand truck.**

## Removing the Shipping Skid



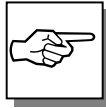
LEAVE THE FUME HOOD ATTACHED TO ITS SHIPPING SKID UNTIL IT IS AS CLOSE TO ITS FINAL LOCATION AS POSSIBLE. MOVE THE HOOD BY USING A SUITABLE FLOOR JACK, OR BY PLACING A FURNITURE DOLLY UNDERDNEATH THE SKID. DO NOT MOVE THE HOOD BY TILTING IT ONTO A HAND TRUCK.

After you verify the fume hood components, move your hood to the location where you want to install it. Then, follow the steps listed next to remove the separate shipping skids from the lower base and upper cabinet.

1. Remove the side panels by unscrewing the Phillips screws.
2. Find the hardware (bolts, washers, nuts) that attach the fume hood to the skid and remove the hardware. Some hardware is on the sides and some is on the back.

## Sash Weight Release

On Floor-Mounted Hood models with vertical-rising sashes, the sash weights have been secured to the shipping skid. Remove the weights from the skid and attach them to the respective sash cables using the hooks provided.



**NOTE:** THE SASH WEIGHT IS MATCHED FOR THIS MODEL OF HOOD AND SHOULD NOT BE EXCHANGED WITH ANY OTHER UNIT.

## Disassembly and Reassembly of the Protector XL Floor-Mounted Hood

There may be some disassembly and reassembly work, due to the large physical size of your laboratory hood and the ability to maneuver it into your laboratory. This is specific to each customer.

## Lower Base Installation of the Protector XL Floor-Mounted Hood



The lower base features a panelized liner surrounded by an epoxy-coated steel and galvanized steel framework. Both the left and right side panels should be removed to allow for the correct placement of the lower cabinet assembly. Temporarily remove both vertical-rising sashes shipped with the lower base (on vertical-rising sash models only). Position the lower base on a level floor surface. Place the vertical-rising sashes back in place (on vertical-rising sash models only).

**NOTE:** If an optional floor surface is purchased, it should be positioned on the existing floor prior to placement of the lower cabinet installation. See Figure 3-1.

## Upper Cabinet Installation of the Protector XL Floor- Mounted Hood

Remove the upper cabinet assembly side panels and front panels prior to cabinet placement. Then place the upper cabinet assembly on top of the lower base assembly, being careful to clear the lower base assembly during placement. To prevent spillage from seeping between the two liner assemblies, run a bead of white RTV sealant between the sections once they have been properly aligned. Mount the lower base to the upper cabinet using the ¼-20 hex head screws, lockwashers, and nuts included in your hood package. See Figure 3-2.

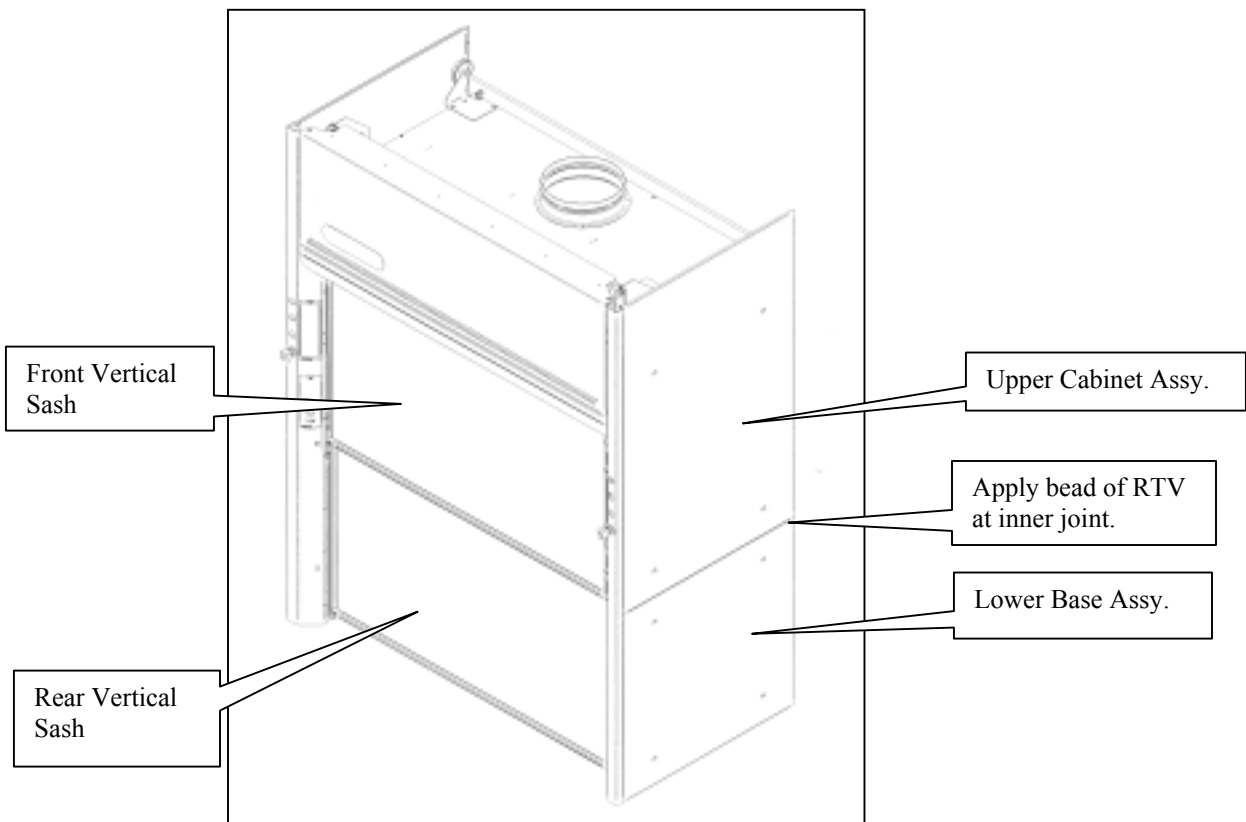


Figure 3-1

## Vertical-Rising Sash Installation for the 4', 5', 6', & 8' Floor-Mounted Hoods

### V

The Vertical-Rising Sash Floor-Mounted Hood has two vertical-rising sashes. The rear vertical-rising sash moves from the floor to full open and picks up the front vertical-rising sash, which travels from the midpoint to full open. The sash tracks should be adjusted left to right to assure the sash will work properly. The vertical-rising sashes are shipped installed in the tracks; however, the counterbalance weights must be installed. The large single sheet metal sash weight is installed in the middle and attached to the upper front sash. The two individual sash weights counterbalance the rear vertical-rising sash; these weights have rollers and ride in the rear sash tracks that straddle the middle sheet metal sash weight. Install the rear weight tracks for the individual sash weights with the #10-24 flathead screws and #10-24 KEPS nuts supplied. See Figure 3-2 and Figure 3-4. It is vitally important that the front upper and lower sash tracks are fully aligned and the strap plates are used to secure this alignment. See Figure 3-3 and Figure 3-4. Once the sashes are aligned and operating freely, secure the lower base to the floor with sealant or fasteners. (Hardware not supplied due to installation variables.) Securing the lower base will ensure the sashes will work freely.

As a last step, install the four rubber bumpers with #6 screws supplied. One set of rubber bumpers prevents the front upper sash from traveling too low. The second set of rubber bumpers prevent the rear lower sash from touching the floor and provides a good sweep of clean air across the floor. See Figure 3-3.

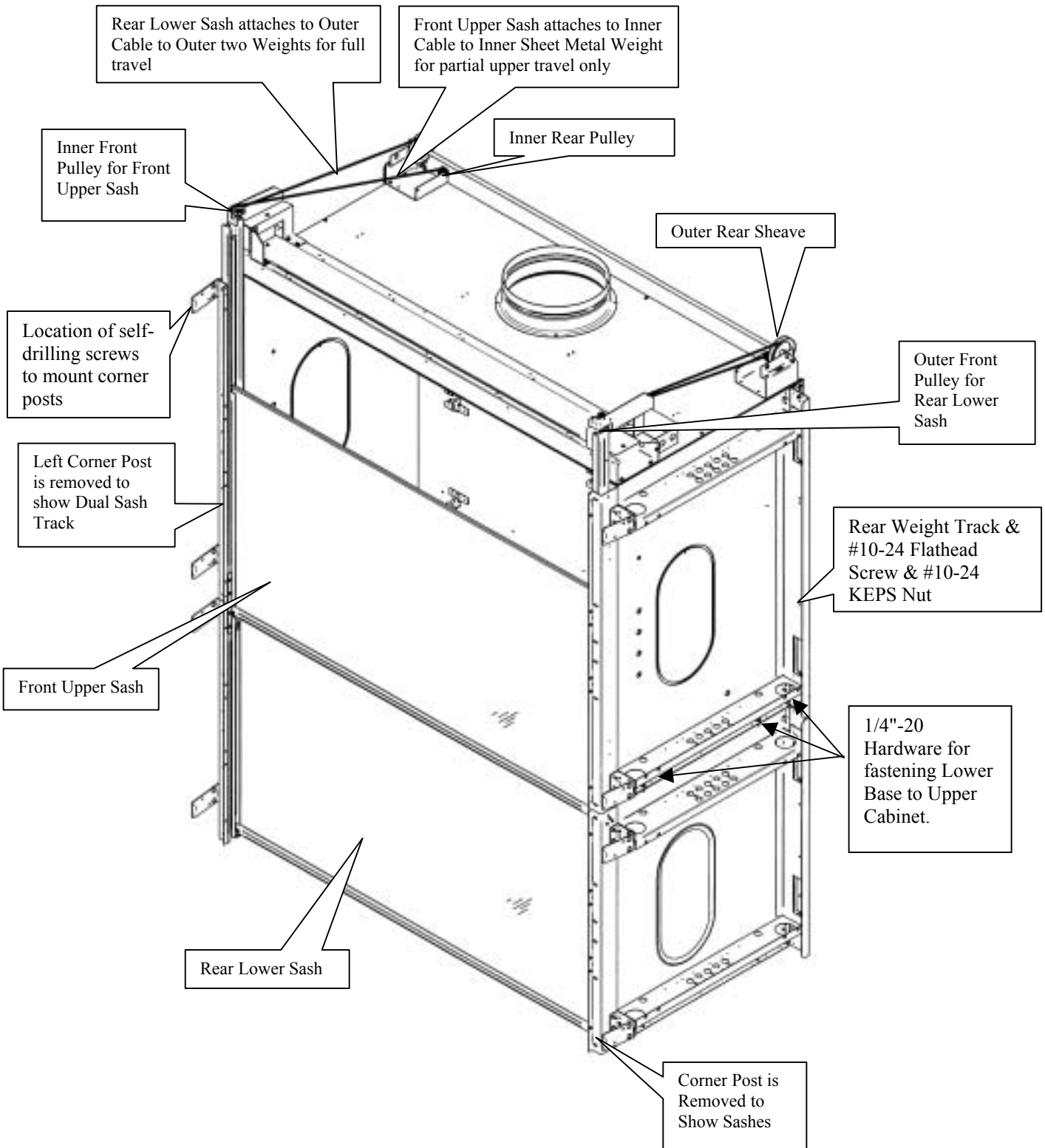
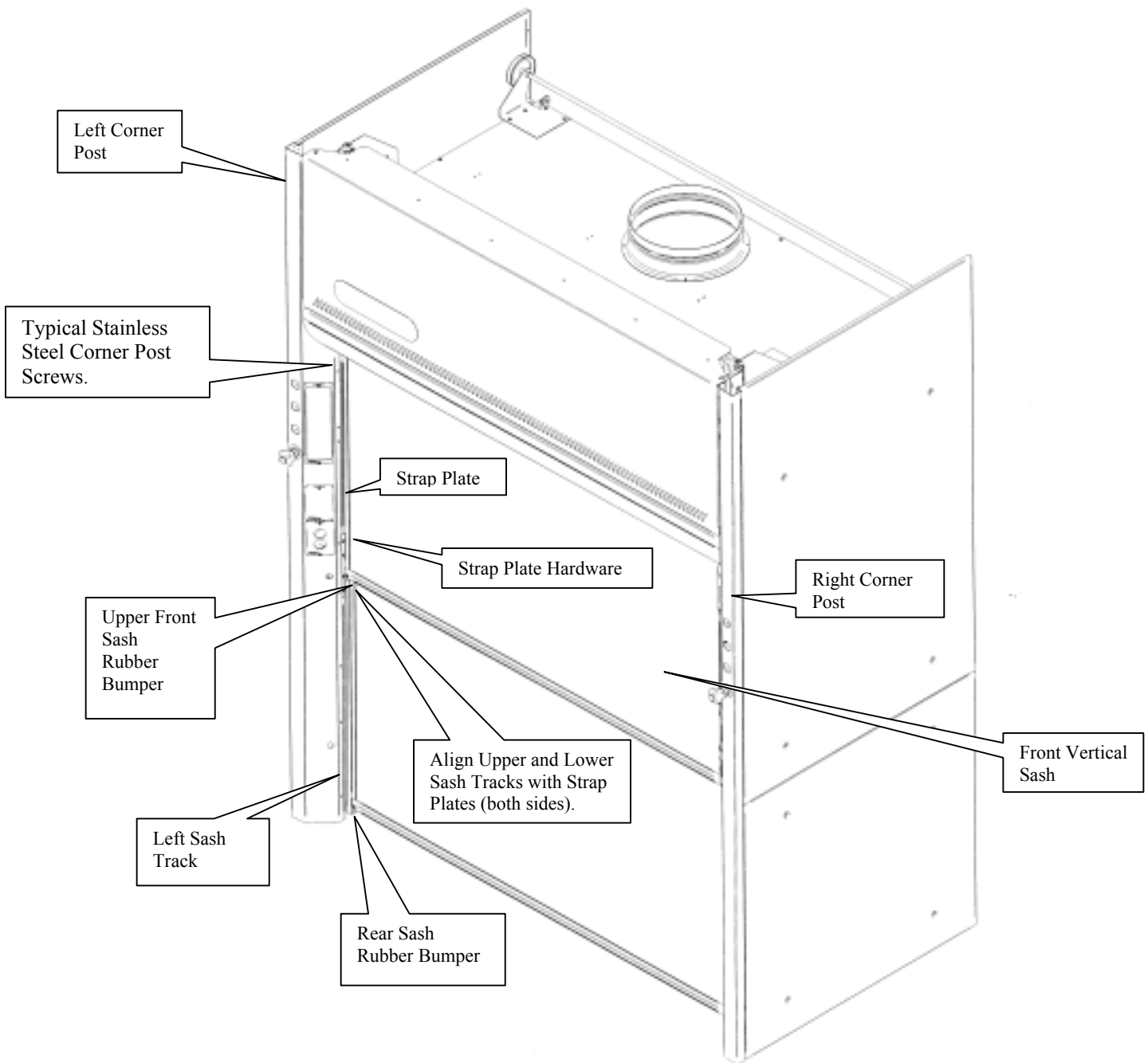
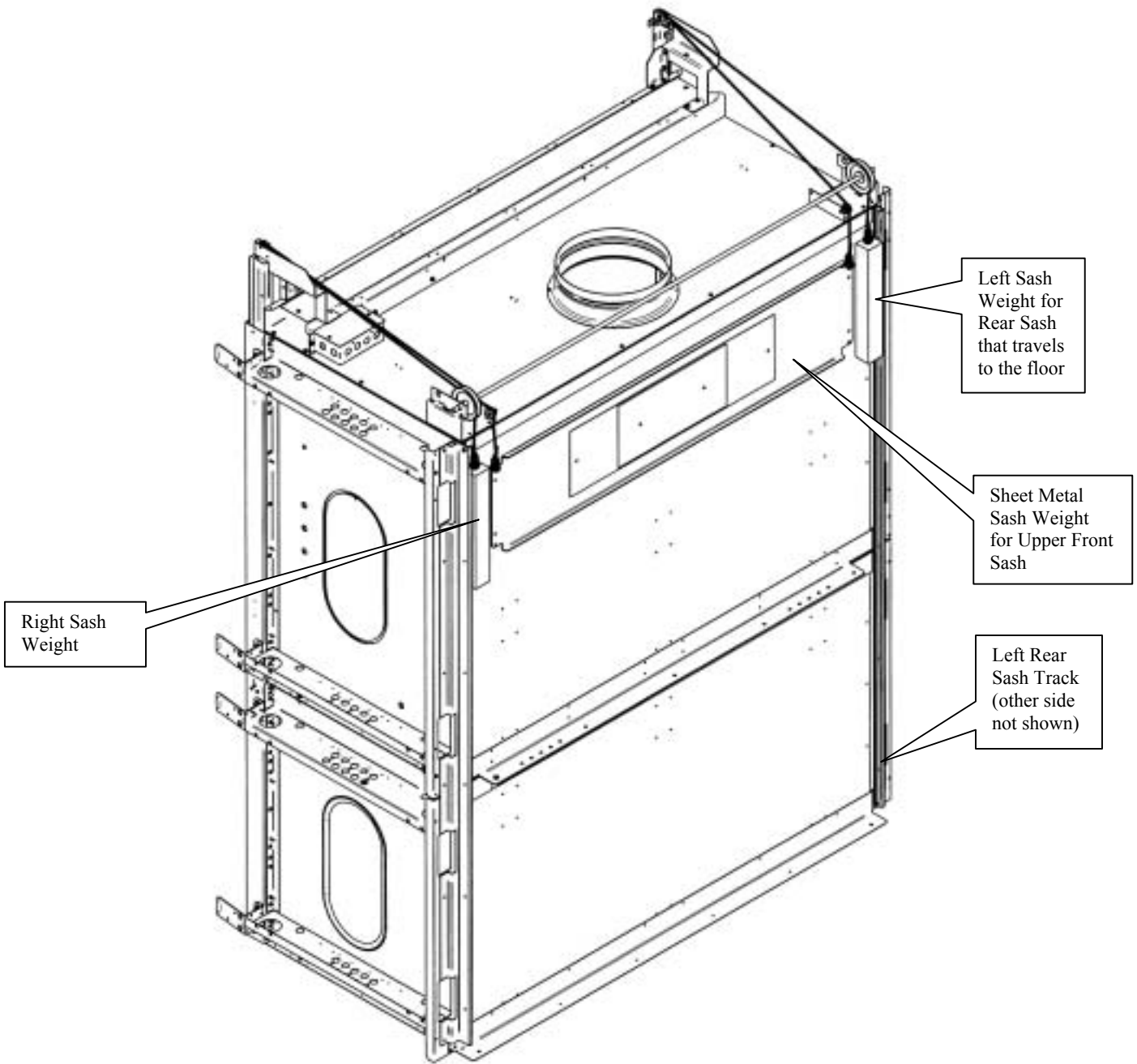


Figure 3-2





Rear View

Figure 3-4



## Lower Sash Track & Threshold Installation for Horizontal-Sliding Sashes on 8', 10', 12', & 16' Floor-Mounted Hoods

### H

The lower sash track assembly is comprised of a sash track threshold, front and rear ramps, and threshold support brackets. With the corner posts removed the sash track threshold should be placed on the floor between the left and right corner posts, with their corner posts removed at this time. Lay the threshold flat, perpendicular to the hood liner walls. The sash track threshold will extend to the hood sidetracks. Once the sash track threshold has been placed in its final position, check to be sure it is level. It must be level to ensure proper movement of each of the door assemblies. If the threshold is not level, place shim material under it until it becomes level. Attach the sash track threshold to the hood sidetracks with the threshold support brackets and #10-24 hardware. Both front and rear ramps are held in position without mechanical fasteners and can be removed for easy cleaning, should it be required. Simply place the flange of each ramp assembly in the position as shown in the diagram below for proper fit. The ramps are self-leveling to match your existing floor conditions. The hood corner posts should be installed prior to the placement of the front sash ramp. See Figure 3-5.

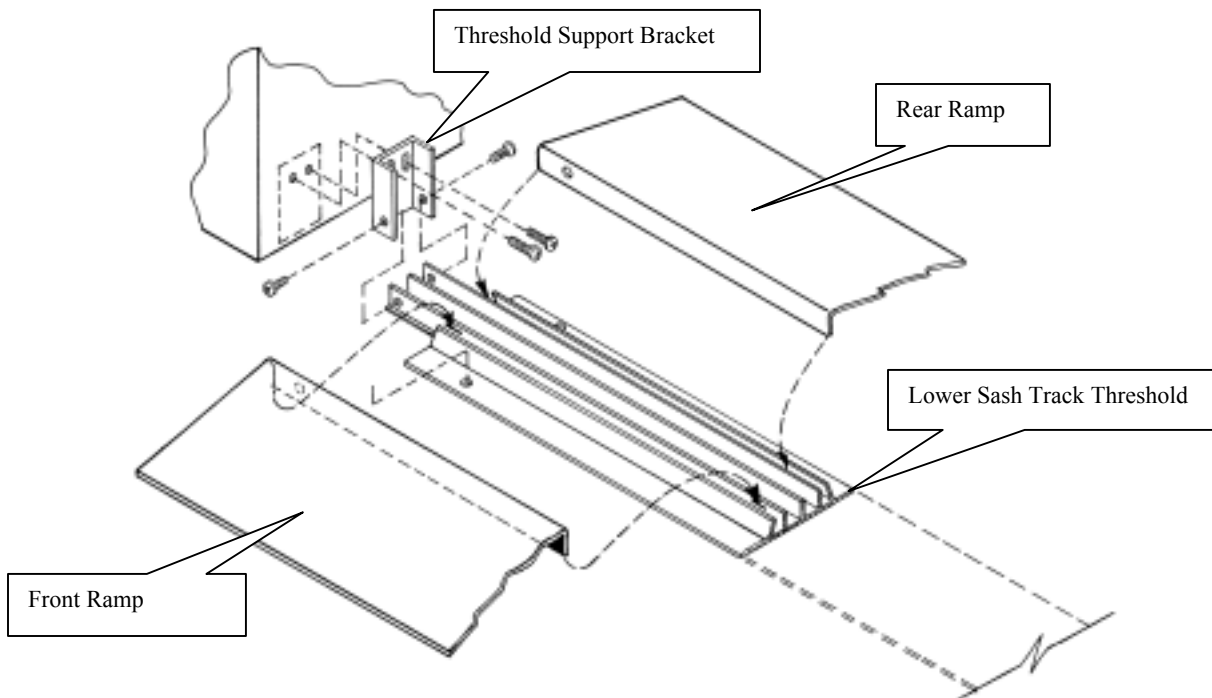


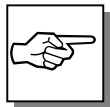
Figure 3-5

## Horizontal-Sliding Sash Installation for the 8', 10', 12', & 16' Floor-Mounted Hoods

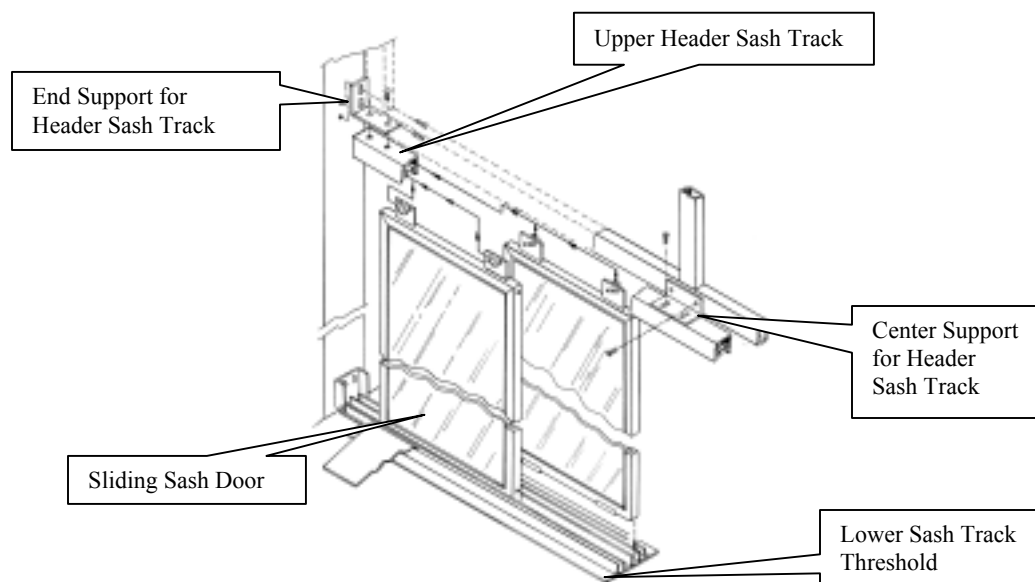
The Floor-Mounted Hood with horizontal-sliding sashes is supplied with four individual sash doors. These doors have been packaged separately during shipment and require installation in the field. The doors should not be installed until the lower sash track threshold has been properly installed. Each door assembly is provided with two mounting brackets with nylon roller bearings. The roller bearings have been positioned in the center location of each mounting bracket to provide for maximum door adjustment. The upper header sash track features two tracks that will support two of the door assemblies. Raise the door panel up and into the upper track section on your hood and place the nylon roller bearings directly in the track section. At the same time, position the bottom edge of

H

the door assembly into the corresponding lower track slot. As each door is placed into position, slide the door the full length of the track assembly to assure proper height adjustment. If the door drags in the lower track, adjust the nylon roller bearing on the mounting bracket to raise the height of the door. Reverse the movement of the bearing should the door assembly be too short and not fit in the lower track properly. An average space of 1/4" to 5/16" should be left between the bottom of each door and the bottom of the lower sash track for proper door travel. Repeat this procedure for the four door assemblies and place two of the doors on each of the front and rear track runners. Once proper door operation has been achieved, the sash track threshold should be permanently attached to the floor. Anchor bolts should be used in the holes provided in the lower sash track threshold mounting. The anchor bolts are not supplied. RTV sealant can also be used to hold the lower sash track threshold in position during normal operation. See Figure 3-6.



**TIP:** SHOULD YOU EXPERIENCE SLIGHT BINDING OF THE SASH DOORS OR DOOR IN THE TRACK, SPRAY THE TWO SASH GLIDES ON THE BOTTOM OF THE DOOR FRAME WITH SILICONE SPRAY.



**Figure 3-6**

## **Corner Post Installation for the Floor-Mounted Hoods**

Both left and right corner posts have been shipped uninstalled. The one-piece corner posts are to be installed once the upper and lower cabinet assemblies have been properly positioned.

The edges on the corner posts fit directly onto the side frames. The front inner edge of both corner posts are held in place by stainless steel machine screws. The outer back edge of both corner posts are held in place with steel self-drilling screws. The screws are included in the hood manual packet. See Figure 3-2 and 3-3.

## **Baffle Installation for the Floor-Mounted Hoods**

The baffles are critical to the proper airflow for the hood. The Floor-Mounted Hood includes adjustable baffles at three of the four slot locations. These are the bottom slot, second from the bottom slot, and the upper slot. Be sure the baffles are resting in the proper baffle mount supports. See Figure 3-7 for various sizes of baffles and their orientation.

Should you require more airflow at the bottom for heavier than air gases then you can open up the two lower adjustable baffles. Should you require more airflow at the top you can open up the upper adjustable baffle for lighter than air gases.

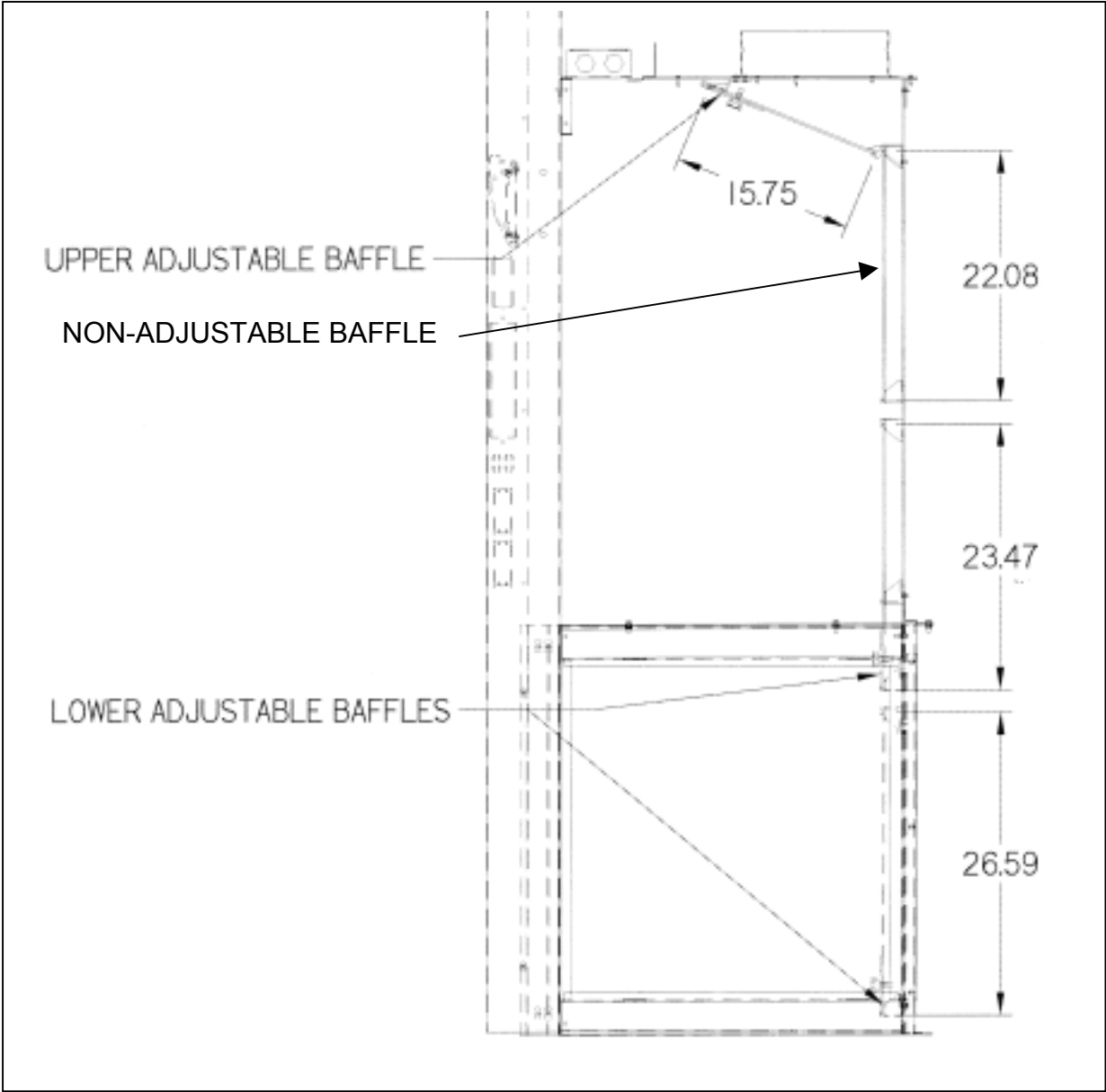


Figure 3-7

## Header Installation for the Floor-Mounted Hoods

The header is shipped separately in its protective packaging. To install, the header is fastened to the corner covers by four #12 screws. Reach behind the corner posts from the side and install the screws to support the header. See Figure 3-8.

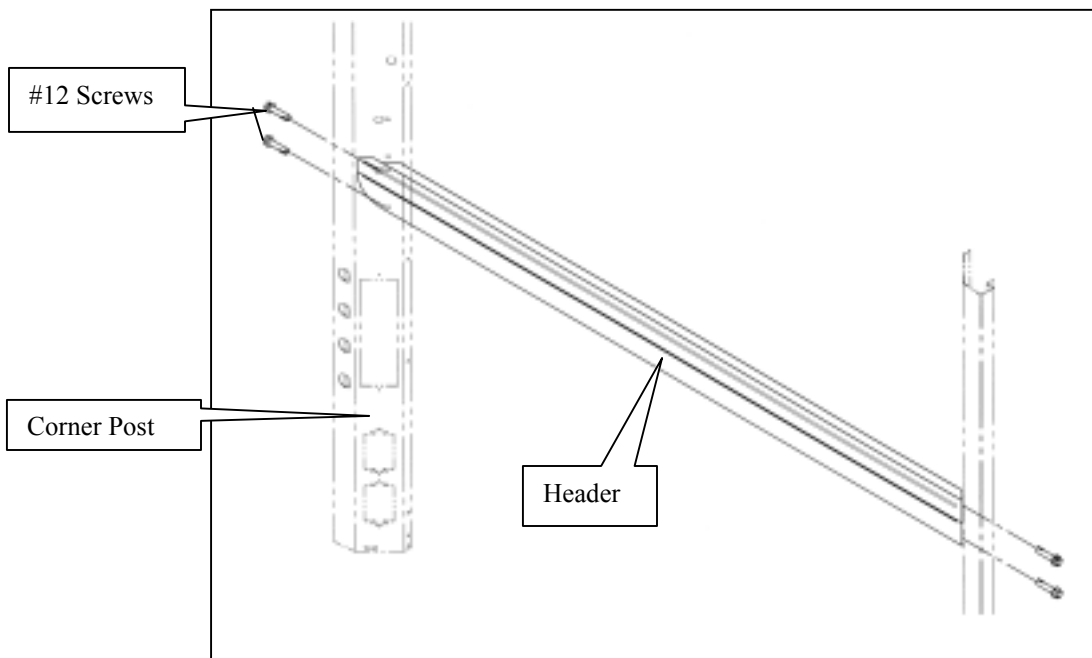


Figure 3-8

## Front Panel Installation for the Floor-Mounted Hoods

The hood front panel(s) is shipped separately and is protected. To install each panel, hang the two plastic cylinders on the backside of the front panel over the corner posts and center support (10', 12', 16' models). The bottom of the front panel will then slip behind the header once it has been properly secured at the top. See Figure 3-3.

## Connecting to the Protector Hood Exhaust System



**WARNING:** The weight of the exhaust ductwork system must be supported independently of the hood superstructure. Do not allow this weight to be supported by the hood structure as damage to the hood may occur.



The exhaust connection should be installed by a qualified HVAC contractor.

The exhaust connections on your hood has been designed for 12" nominal pipe (12.75" OD) to allow for minimum static pressure loss with proper transport velocities away from the hood. Consult Labconco Customer Service should you require help sizing your blower for the exhaust volume and total system static pressure loss.



The selected exhaust duct material should match the hood procedures and chemicals used to ensure compatibility.

## Connecting the Electrical Supply Source to the Protector Fume Hood

Prior to connecting any electrical wiring to the fume hood structure, refer to the hood identification plate for the proper electrical requirements of your specific model.

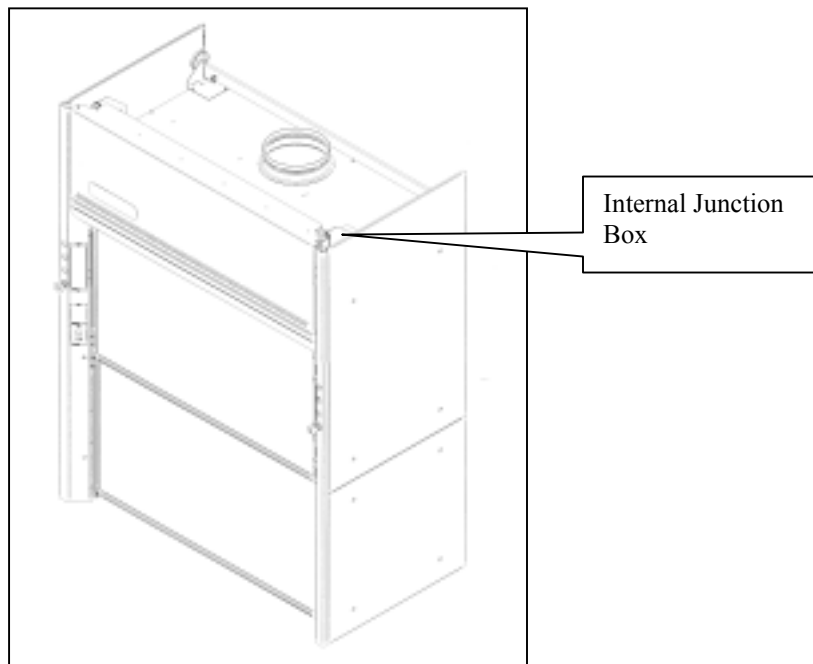


**WARNING:** The building electrical supply system for Protector Hoods should include overload protection. A switch or circuit breaker should be in close proximity to the equipment and within easy reach of the operator. The switch or circuit breaker is to be marked as the disconnecting device for the equipment. Consult the NEC-2002 for proper installation.

The identification plate, model number, serial number, and electrical connection boxes are accessible from the front of the fume hood by removing the front panel.

The Protector XL Floor-Mounted Hood is normally wired for 115 Volt, 60 Hz, 20 Amp or 230 Volt, 50 Hz, 10 Amp electrical service. Check the I.D. plate behind the front panel for voltage verification. The number of circuits varies depending on the model. All of the electrical connections are terminated at the single point internal junction box for hook-up by a qualified electrician. The single point internal junction box is used for the connection of the lights, blower, and duplex outlets.

Refer to the wiring diagram for your Protector Hood in *Appendix C: Protector Fume Hood Specifications*.



**Figure 3-9**



**All wiring for the fume hood SHOULD be performed by a licensed electrician, and conform to all local codes. In most cases, the hood will require the use of shielded conduit to protect the wiring into the hood. The**



**grounding connection shall not be made to the terminal box cover.**

The fluorescent light has been mounted outside the top liner panel and is sealed from vapors inside the hood structure. To change the fluorescent light bulbs in your hood, you must first remove the front panel from the hood. Next remove the screws holding down the light reflector(s). Remove the light reflector(s) and slide out of the way temporarily. The fluorescent lights are now fully exposed and ready for service. While the fixture is in this position, replace the defective bulbs, and reassemble.

## **Connecting the Service Lines to the Protector XL Floor-Mounted Fume Hood**

The hoods with service fixtures have been plumbed and factory checked from the valve to the hose connector or gooseneck. For shipping purposes, the plumbing is then disconnected and can be re-installed by the installer. The qualified installer shall then supply the inlet tubing. To make these inlet connections, tubing can enter the hood from above or through the back as long as it misses the vertical-rising sash weights.



**NOTE: Inspect all fittings for leakage. Tighten the fittings slightly if needed.**



**CAUTION: Do not use oxygen with any standard service fixture. Contact Labconco Customer Service for oxygen fixture information.**

Should access to the hood plumbing fixture bodies be required, remove the service access plate on the hood front corner posts by loosening their individual screws. (See item 11 Figure A-1, page 48 and 49) The valve body will now be fully exposed for any service work that may be necessary. The service fixtures supplied on your laboratory hood are designed for use with the following services:

- Air
- Cold Water
- Hot Water
- Natural Gas – See caution below
- Vacuum



**WARNING:** Contact Labconco Customer Service before using any service other than those listed above in these valves to assure full compatibility.



**CAUTION:** Natural gas should be used only in the service fixture that has been pre-plumbed with brass tubing. Sulfur content of the gas could cause deterioration of standard copper supply lines.

## Sealing the Protector XL Floor-Mounted Hood to the Floor

When the hood has been set in place, ducted, wired, and plumbed, it should be sealed to the floor to prevent spilled materials from collecting under the walls of the hood. Materials such as silicone sealants are recommended to seal the hood structure.

## Certifying the Protector XL Floor-Mounted Fume Hood

The combination of your laboratory hood, exhaust ductwork, and exhaust blower gives you the flexibility to change the airflow at the sash opening of your hood. To determine the actual face velocity at the sash opening, airflow velocity readings will need to be taken. This should be done across the sash opening of the hood in accordance with the *Industrial Ventilation Manual* section on laboratory hoods. (See Appendix D – Reference) Labconco recommends an average face velocity at the sash opening of 80 to 100 feet per minute. Consult Labconco Customer Service for proper airflows for your particular model.

Your Protector Fume Hood has been tested at the factory per ASHRAE 110-1995. All hoods achieve an “as manufactured rating” of less than 0.10 part per million (ppm) at 4 liters per minute (lpm); AM<0.10 (consult Labconco for individual fume hood ratings). For “field use” ASHRAE testing contact Labconco

Ventilation Ventures Team or Customer Service for a certified on-site contractor.



**NOTE: Face velocity profiles and smoke testing should be done periodically to ensure safe performance.**

## Your Next Step

After your fume hood has been installed and certified, you are ready to proceed to *Chapter 4: Performance Features and Safety Precautions*.

---

# CHAPTER 4

## PERFORMANCE

## FEATURES AND

## SAFETY

## PRECAUTIONS

### Performance Features:

The Protector XL Floor-Mounted Laboratory Hood is designed to meet the needs of the laboratory scientist who must transport equipment and products for experimentation, and testing under a laboratory fume hood. The Floor-Mounted Fume Hood has been designed to effectively contain toxic, noxious, or other harmful materials when properly installed. The hood features by-pass airflow design that allows the hood face velocity to remain relatively stable as the sash is closed. Airflow is diverted behind the front panel to help control fluctuations in face velocity, which occur as the sash is closed.

1. **Unique sash provides maximum visibility.**  
Vertical-rising sashes may be raised from a closed to 58.81" operating height; this feature is available on 4', 5', 6', and 8' floor mount models. Exhaust volume, and blower sizing is based on the rear sash being closed and the front sash opened. For horizontal sashes on 8', 10', 12', and 16' models, the opening is half the total opening and exhaust volume is based on half the total visible opening for the 8' model and exhaust volume is one quarter the total visible opening for 10', 12', and 16' models. The actual vertical opening is 68.15".
2. **By-pass airflow design** ensures relatively stable face velocities.
3. **Large usable interior work depth and interior height of 48"** at the front of the liner provides ample working space.(Not shown)
4. **Baffles** (not shown) direct airflow to the rear of the interior to provide efficient airflow. The baffles may be removed for cleaning purposes only. Three of the four baffles are adjustable. Should you require more airflow at the bottom for heavier than air gases, then open up the lower baffle. Should you require more airflow at the top, then open up the upper baffle for lighter than air gases.
5. **Exterior access cover plates** are removable for easy access to plumbing valves when access through the sides is not available.
6. **Lift-Away™ front panel** provides easy access to electrical wiring, sash weights, and lighting fixtures.
7. **Energy efficient fluorescent lighting** is located behind a laminated safety glass shield mounted to the top of the hood. The factory-wired instant start T8 lighting is serviceable from outside the hood cavity.
8. **Low mounted, factory-wired light and blower switches** are ADA compliant.

9. **Streamlined corner posts** provide maximum visibility and the flexibility to add services after installation.
10. **All hoods are factory-prepared for up to 8 service fixtures.**
11. **Duplex electrical receptacles** are mounted on the right and left corner posts as requested. Receptacles are factory-wired to hood single point junction box.
12. **Accessory Guardian™ Digital Airflow Monitor or Guardian Jr. Monitor** continuously monitors face velocity. An audio/visual alarm alerts the user to low airflow conditions. The right corner post is factory-prepared to accommodate the Guardian Monitor (sold separately).
13. **Frame of epoxy-coated steel and aluminum** is durable and corrosion-resistant.
14. **Exhaust connection.** The hood features 12" (12.75" OD pipe) exhaust connections sized to allow for a minimum static pressure loss through the hood structure while providing a good transport velocity through the exhaust system.
15. **Optional Ceiling Enclosure Kits (not shown)** are available for a decorative facade between the hood and the ceiling.

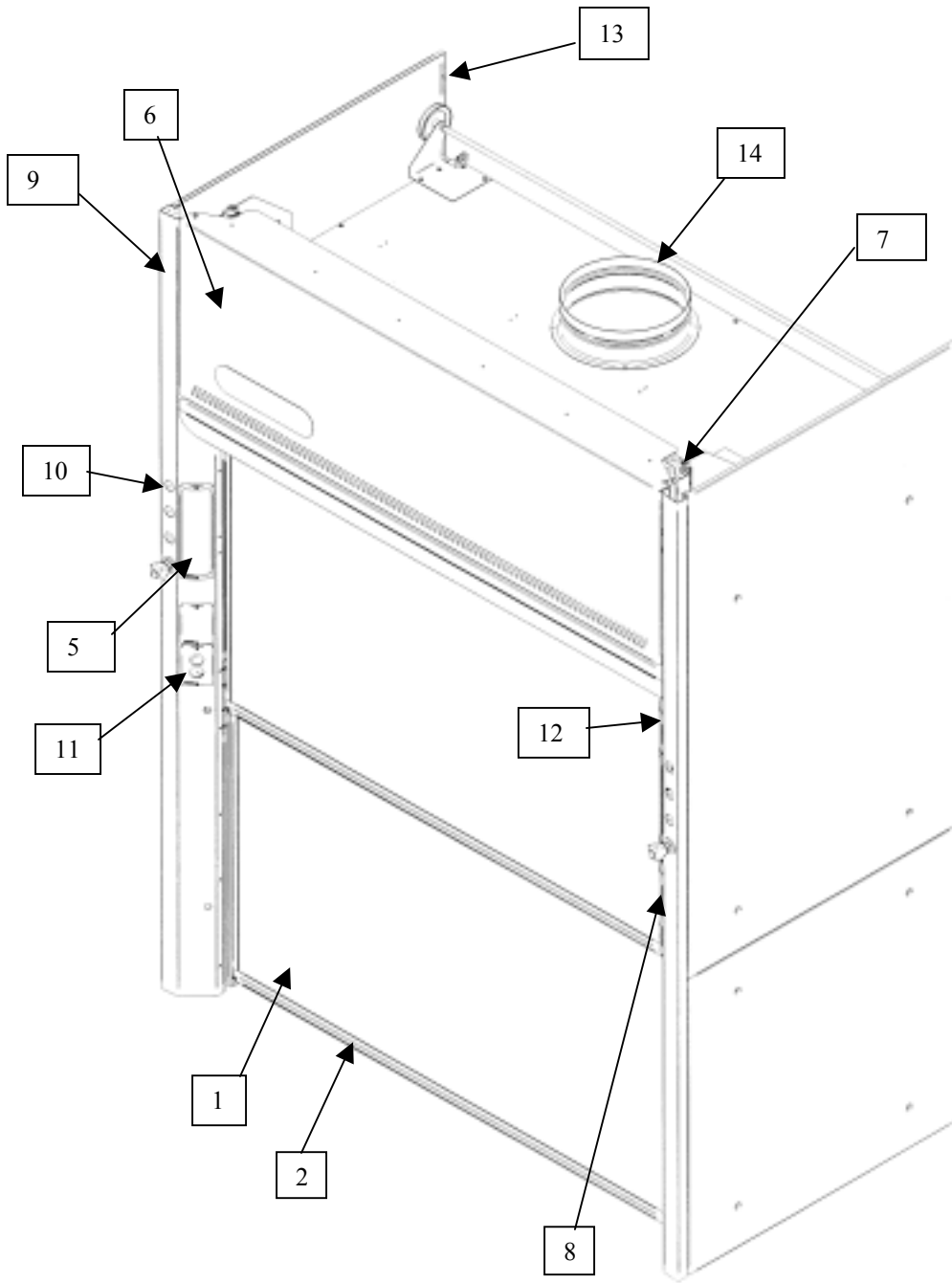
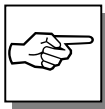


Figure 4-1

## Safety Precautions



Although the floor-mounted laboratory hood has been engineered to maintain optimum operator safety, caution should always be used while working in the hood. Prior to using the floor-mounted hood, check to make sure that the exhaust blower is operating and that air is entering the hood at its specified face velocity.



USE GOOD HOUSEKEEPING IN THE HOOD AT ALL TIMES. CLEAN UP SPILLS IMMEDIATELY WITH A MILD DETERGENT. PERIODICALLY CLEAN HOOD INTERIOR, INCLUDING FLUORESCENT LIGHT GLASS PANEL. REPLACE BURNED OUT LIGHT BULBS TO MAINTAIN MAXIMUM ILLUMINATION.

DO NOT OVERLOAD THE WORK AREA WITH APPARATUS OR WORK MATERIAL. THE SAFE OPERATION OF THE LABORATORY FLOOR-MOUNTED HOOD IS BASED UPON HAVING PROPER AIRFLOW THROUGH THE STRUCTURE. ELEVATE FLOOR MOUNTED OBJECTS UP 2 TO 3 INCHES TO ALLOW A FLOW OF AIR UNDER THE OBJECT AND INTO THE LOWER REAR BAFFLE EXHAUST SLOT.





**Blocking the bottom of the baffle at rear of hood will change the airflow pattern in the hood causing turbulence and possible leakage at the face of the hood. (Don't store containers or supplies against baffles, as this will affect airflow through the hood).**

**Avoid placing your head inside hood. Keep hands out of hood as much as possible.**

**Always work as far back in hood as possible. It is best to keep all chemicals and apparatus 6" inside the front of the hood.**

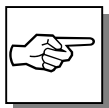
**On vertical-rising sash models, always close the rear sash for proper airflow; on horizontal-sliding sash models work in the minimum required opening for maximum safety.**

**This hood does not feature explosion-proof electrical components, unless ordered separately. Therefore, use of flammable or explosive materials in quantities above the explosive limit are not recommended.**

**Do not work with chemicals in this hood without the exhaust system running. Do not store chemicals in a fume hood.**

**Perchloric acid use in this hood is prohibited.**

**High-level radioisotope materials are prohibited for usage in this hood.**



**AVOID CROSS DRAFTS AND LIMIT TRAFFIC IN FRONT OF THE HOOD. AIR DISTURBANCES CREATED MAY DRAW FUMES OUT OF THE HOOD.**



**The use of heat generating equipment in this hood without the exhaust system operating properly can cause damage to the hood.**

**The Protector XL Floor-Mounted Hood should be certified by a qualified certification technician before it is initially used. The hood should be re-certified whenever it is relocated, serviced or at least annually thereafter.**

**Ensure that the unit is connected to electrical service in accordance with local and national electrical codes. Failure to do so may create a fire or electrical hazard. Do not remove or service any electrical components without first disconnecting the hood from electrical service.**

**Proper operation of the fume hood depends largely upon the hood's location and the operator's work habits. Consult the *Reference Manual in Appendix D*.**

## **Your Next Step**

After you understand the theory of operation and safety precautions, you are ready to proceed to *Chapter 5: Using Your Protector Fume Hood*.



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# CHAPTER 5

## USING YOUR

### PROTECTOR XL

#### FLOOR-MOUNTED

##### FUME HOOD

### Operating the Vertical-Rising Sashes

4'

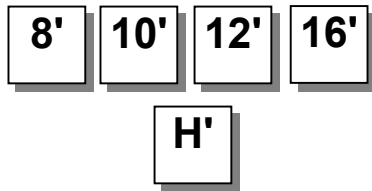
5'

6'

8'

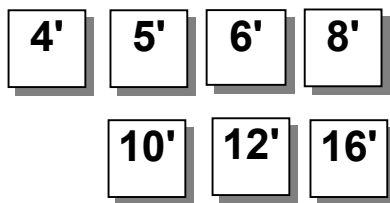
V'

Because of the Protector XL Floor-Mounted Hood counterbalanced sash mechanism, it will take only a few pounds of force to move the sashes up or down, and you can operate the sash smoothly with one or two hands positioned any where along the handle. The vertical-rising sash may be raised to a maximum 58.81" operating height from the floor. The airflow requirements should be sized with the rear sash closed to the floor. The rear sash has full travel from the floor to the 58.81" opening for loading apparatus. The 8' models have a greater opening of 59.00".



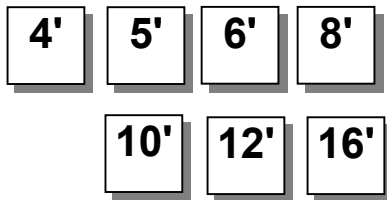
## Operating the Horizontal-Sliding Sashes

Horizontal-sliding sashes allow the operator the flexibility of arranging the sashes at a position suitable for various procedures. The glass sashes have a 68.15" sash opening providing a large viewing area. The airflow requirements are sized for the 50% open sash condition for the 8' model and 25% for the 10', 12', and 16' models.



## Operating the Blower

Your Protector Fume Hood utilizes a remote style blower, which can be activated by turning the blower switch to "ON." You can validate the hood performance by watching smoke drawn into the hood face opening.



## Operating the Lights

Your Protector Fume Hood utilizes a factory-wired fluorescent light to illuminate the hood interior. Simply turn the light switch to "ON" to operate.

## Working in your Protector Fume Hood

### Planning

- Thoroughly understand procedures and equipment required before beginning work.
- Arrange for minimal disruptions, such as room traffic or entry into the room while the hood is in use.

### Start-up

- Turn on fluorescent light and hood blower.
- Slowly raise the sash or slide open one sash panel.
- Check the baffle air slots for obstructions.
- Allow the hood to operate unobstructed for 5 minutes.

- Wear a long sleeved lab coat and rubber gloves. Use protective eyewear. Wear a protective mask if appropriate.

### **Loading Materials and Equipment**

- Only load the materials required for the procedure. Do not overload the hood.
- Do not obstruct the rear baffle slots.
- Large objects should not be placed close together. Objects should be spaced above the floor to permit airflow to sweep under the equipment.
- After loading the hood, wait one minute to purge airborne contaminants from the work area.

### **Work Techniques**

- Keep all materials at least 6 inches inside of the sash, and perform all contaminated operations as far to the rear of the work area as possible.
- Segregate all clean and contaminated materials in the work area.
- Avoid using techniques or procedures that disrupt the airflow patterns of the hood.

### **Final Purging**

- Upon completion of work, the hood should be allowed to operate for two to three minutes undisturbed, to purge airborne contaminants from the work area before shutting down blower.

### **Unloading Materials and Equipment**

- Objects in contact with contaminated material should be surface decontaminated before removal from the hood.
- All open trays or containers should be covered before being removed from the hood.

### **Shutdown**

- Turn off the fluorescent light and hood blower, then close the sash.

## Your Next Step

After you understand how to operate and work in the fume hood, you are ready to proceed to *Chapter 6: Maintaining Your Protector XL Floor-Mounted Fume Hood*.

---

# CHAPTER 6

## MAINTAINING YOUR PROTECTOR XL FLOOR-MOUNTED FUME HOOD

Now that you have an understanding of how to work in the fume hood, we will review the suggested maintenance schedule and the common service operations necessary to maintain your fume hood for peak performance.



**Only trained and experienced certification technicians should perform some of the service operations after the fume hood has been properly decontaminated. DO NOT attempt to perform these operations if you are not properly trained. The wrench icon precedes the service operations that require qualified technicians.**



## Routine Maintenance Schedule

### Weekly

- Using ordinary dish soap to clean the surface inside of the fume hood, and the work surface.
- Using an appropriate glass cleaner, clean the sash and all glass surfaces.
- Operate the fume hood blower, noting the airflow velocity through the hood using a source of visible smoke.

### Monthly (or more often as required)



- Determine the actual face velocity through the sash opening of the hood where the average reading should be at the specified velocity. (Use calibrated thermal anemometer or other approved apparatus).
- Using a damp cloth, clean the exterior surfaces of the hood, particularly the front of the hood, to remove any accumulated dust.
- Check all service valves, if so equipped, for proper operation.
- The hood baffles should be checked for blockages behind them to ensure that the hood is maintaining proper airflow.
- All weekly activities.

### Annually



- Replace the fluorescent lamps.
- Have the fume hood recertified by a qualified certification technician. See *Certifying the Protector XL Floor-Mounted Fume Hood in Chapter 3*.
- All monthly activities.

### Biannually

- The sash assembly should be checked to ensure proper operation and to make sure there are no signs of abnormal wear on the sash pulleys, cables and clamps.

## Routine Service Operations

### **Front Panel Removal:**

1. Lift the front panel up and then away from the hood to provide access to the top.

### **Changing the Fluorescent Lamp:**

1. Turn light switch to “OFF.”
2. Remove the front panel as noted earlier.
3. Reach over the front header of the hood and loosen screws to the light reflector and remove light reflector.
4. Remove the fluorescent lamp by pushing it out of the spring-loaded lamp socket and swinging it out of the other lamp socket.
5. Install the new lamp by reversing the removal procedure.

## Your Next Step

After you understand the maintenance procedures, you are ready to proceed to *Chapter 7: Modifying Your Protector XL Floor-Mounted Fume Hood*.



---

# **CHAPTER 7**

# **MODIFYING YOUR**

# **PROTECTOR XL**

# **FLOOR-MOUNTED**

# **FUME HOOD**

There are several ways to modify the fume hood for your individual requirements. These include the addition of service fixtures, air monitor, distillation grids, electrical duplex outlets, ceiling enclosures, and rear panels.



## Installing Ceiling Enclosures above the Fume Hood

Your Protector XL Floor-Mounted Fume Hood has mounting holes to accept a ceiling enclosure to close off the area between the top of the hood and the ceiling. Contact Labconco Customer Service for ordering information.

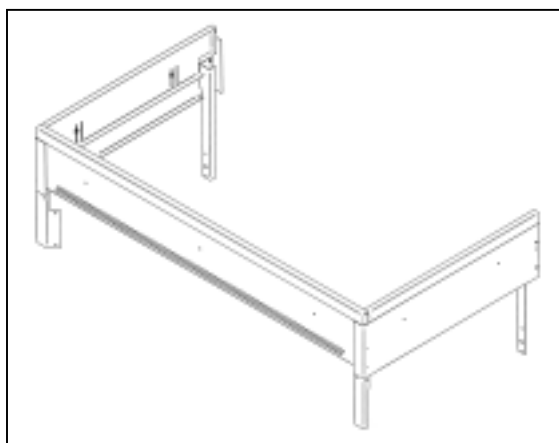


Figure 7-1

## Installing Additional Service Fixtures

Additional service fixtures can be installed in the available service fixture holes in both sidewalls and corner posts. The fume hood is factory set to accept up to four valves per side. Contact Labconco Customer Service for information.



Figure 7-2 Knob



Figure 7-3 Valve



Figure 7-4 Hose Connector

## Installing Guardian™ 335 Digital Airflow Monitor or Guardian™ Jr. Airflow Monitor



The Guardian Digital Airflow Monitor P/N 9743201 or Guardian Jr. Airflow Monitor P/N 9743202 allows you to continuously monitor face velocity through the fume hood opening. The fume hood right corner post is factory prepared to mount either monitor. Contact Labconco Customer Service to order.



Figure 7-5

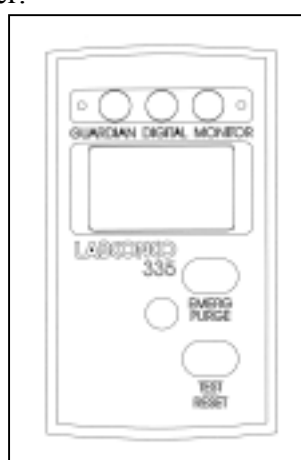


Figure 7-6

## Distillation Grids – Field Installation



The distillation grids have been strategically placed with the vertical rod centerlines in front of the lower baffle and middle baffle. The distillation grids allow the hood user to mount motors, stirrers, and other apparatus.

Contact Labconco Customer Service for ordering information. These are customized orders for Protector XL Floor-Mounted Hoods.

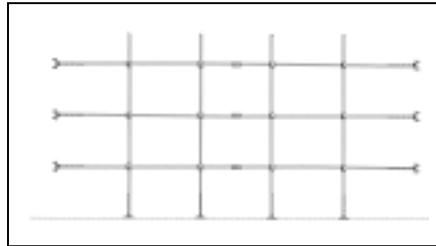


Figure 7-7



## Installing an Electrical Duplex Outlet

Your Protector XL Floor-Mounted Fume Hood can be ordered with duplex outlets, however, if you ordered a model without an electrical duplex outlet you can have one installed in the field by a qualified electrician. Contact Labconco Customer Service for ordering information. (Not acceptable on explosion-proof hoods).

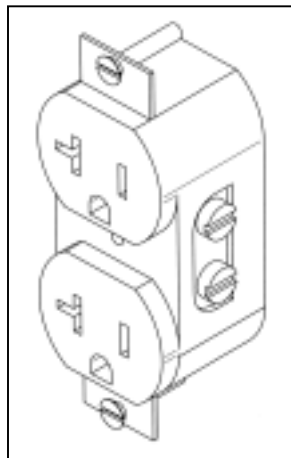


Figure 7-8

## Your Next Step

After you understand the modifying procedures, you are ready to proceed to *Chapter 8: Troubleshooting*.

---

# CHAPTER 8

## TROUBLESHOOTING

Refer to the following table if your fume hood fails to operate properly. If the suggested corrective actions do not solve your problem, contact Labconco for additional assistance.

PROBLEM	CAUSE	CORRECTIVE ACTION
<b>Remote blower and lights won't operate</b>	Wires not connected at junction boxes or switches.	Check connection of switches.  Check connection to control box on top of unit.
	Circuit breakers tripped in building electrical supply.	Reset circuit breakers.
<b>Remote blower won't operate, but lights work</b>	Blower wiring is disconnected.	Inspect blower wiring and switch.
	Belt broken.	Replace belt.
	Blower motor is defective.	Replace blower motor.
<b>Fume hood blower operates but lights will not operate</b>	Lamp not installed correctly.	Inspect lamp installation.
	Lamp is defective.	Replace lamp.
	Lamp circuit breaker in building is tripped.	Reset the lamp circuit breaker.



<b>PROBLEM</b>	<b>CAUSE</b>	<b>CORRECTIVE ACTION</b>
<b>Fume hood blower operates, but lights will not operate</b>	Lamp wiring is disconnected.	Inspect lamp wiring.
	Defective lamp ballasts.	Replace lamp ballasts.
<b>Contaminants outside of fume hood</b>	Improper user techniques for the fume hood.	See “Certifying the Hood” Chapter 3 and “Safety Precautions” Chapter 4 sections in the manual. (Ref. Appendix D)
	Restriction of the baffle air slots or blockage of the exhaust outlet.	Remove baffles to ensure that all air slots, and the exhaust outlet are unobstructed.
	External factors are disrupting the fume hood airflow patterns or acting as a source of contamination.	See “Location Requirements” Chapter 2, “Certifying the Hood” Chapter 3, and “Safety Precautions” Chapter 4 sections of this manual. (Ref. Appendix D)
	Fume hood has improper face velocity.	Have fume hood re-certified and check remote blower exhaust system. Hood should have average face velocity of 80-100 fpm.
<b>Vertical-rising sash no longer operates smoothly</b>	Cable is frayed or plastic protection is damaged.	Inspect cable and replace cable if worn or damaged immediately; otherwise injury could result.
	Pulley bearing is damaged.	Replace pulley, bearing or add grease.
	Cable has slipped off the pulleys.	Re-install, cable must be replaced immediately if damaged.
	Weight has broken pulleys.	Replace weight pulleys.
<b>Horizontal-sliding sash no longer operates smoothly</b>	Glass panels have come off the tracks.	Re-install glass panels on tracks.

<b>PROBLEM</b>	<b>CAUSE</b>	<b>CORRECTIVE ACTION</b>
<b>Electrical duplex outlets no longer have power</b>	Wires not connected or faulty duplex.	Check wire connection or replace duplex.
	Circuit breakers tripped in building electrical supply.	Reset circuit breakers.
<b>Service valves no longer operate</b>	Faulty building supply.	Inspect building supply shut off valves and appropriate pressures below 40 PSI.
	Valve no longer operates.	Replace valve and check for leaks.
	Supply line or outlet line has leaks.	Inspect line for leaks and fix any leaking plumbing connections.



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# APPENDIX A

## PROTECTOR HOOD

### COMPONENTS

Illustration A-1 indicate the location of the following service parts:

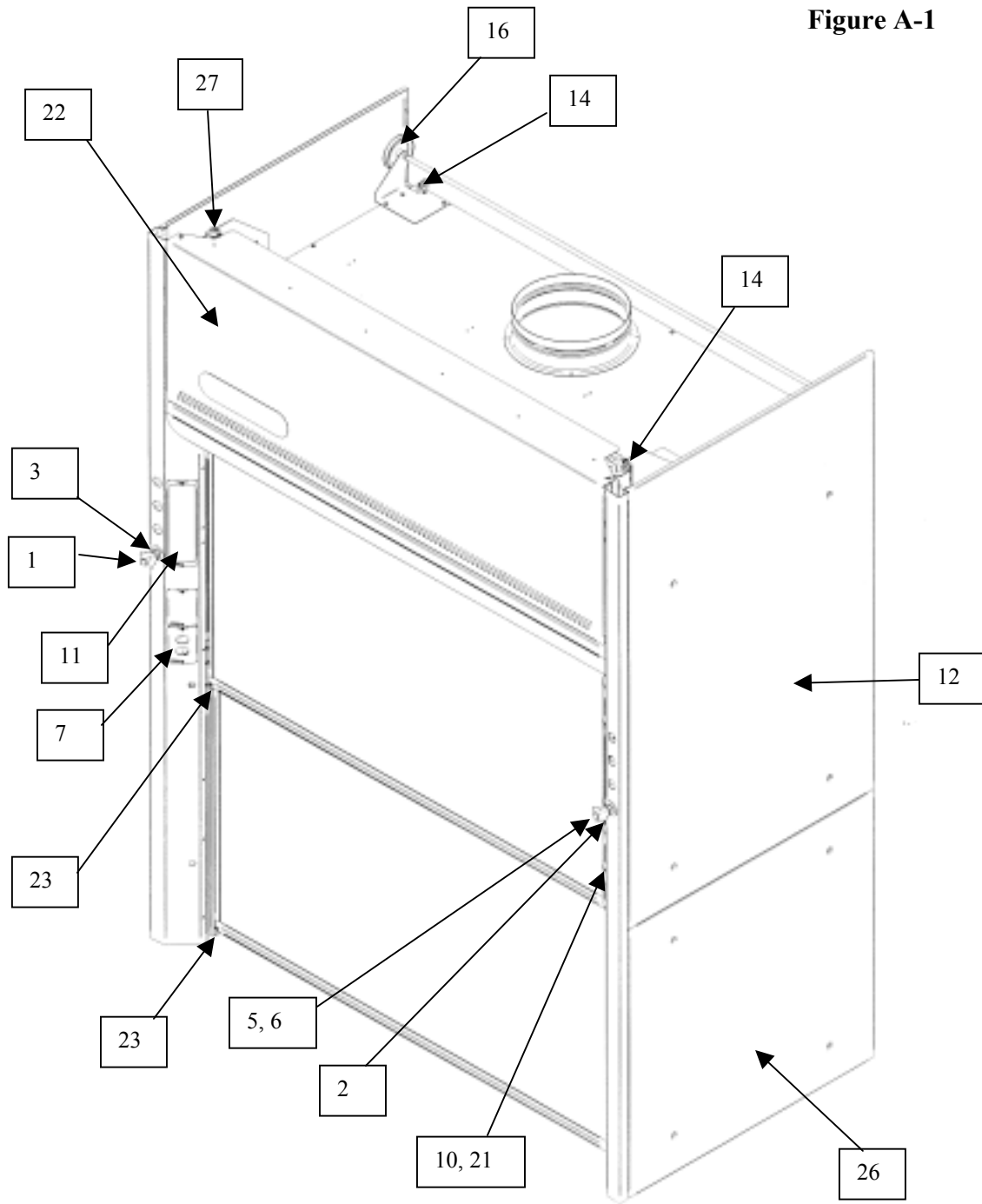
#### Protector Replacement Parts

Item	Quantity	Part No.	Description
1A	1	9817000	Valve, Labconco ¼" Compression Fitting
1B	1	9817001	Valve, Labconco 3/8" Compression Fitting
1C	1	9817002	Valve, Labconco Deionized ¼" Compression Fitting
1D	1	9817003	Valve, Labconco Deionized 3/8" Compression Fitting
1E	1	9818000	Nut, Valve Mounting. (Labconco)
2A	1	9826800	WaterSaver Valve/Gooseneck -GRN
2B	1	9826801	WaterSaver Valve/Connector (VAC) – YEL
2C	1	9826802	WaterSaver Valve/Connector (AIR) – ORG
2D	1	9826803	WaterSaver Valve/Connector (GAS) – BLU
2E	1	9826805	WaterSaver Valve/Connector (HOT WATER) – RED
2F	1	9826806	WaterSaver Valve/Connector (CW) – GRN
2G	1	9826807	WaterSaver Valve/Connector (STEAM) – BLK
2H	1	9826808	WaterSaver Valve/Connector (NITROGEN) – BRN
2I	1	9826809	WaterSaver Valve/Connector (OXYGEN) – LIGHT GREEN
2J	1	9826810	Swivel Gooseneck only – GRN
2K	1	9826812	Swivel Gooseneck only – WHITE
3	1	9818700 thru 08	Knobs (GRAY, GRN, BLU, ORG, YEL, RED, WHT, BLK, BRN)
4A	1	9818800	Hose Barb, GRAY – (NEUTRAL OR ARGON)-NOT SHOWN
4B	1	9818801	Hose Barb, GREEN - (COLD WATER)-NOT SHOWN
4C	1	9818802	Hose Barb, BLUE – (GAS)-NOT SHOWN
4D	1	9818803	Hose Barb, ORANGE – (AIR)-NOT SHOWN
4E	1	9818804	Hose Barb, YELLOW – (VACUUM)-NOT SHOWN
4F	1	9818805	Hose Barb, RED – (HOT WATER)-NOT SHOWN
4G	1	9818806	Hose Barb, WHITE – (DEIONIZED WATER) NOT SHOWN
4H	1	9818807	Hose Barb, BLACK–(NEUTRAL OR STEAM) NOT SHOWN
4I	1	9818808	Hose Barb, BROWN – (NITROGEN) NOT SHOWN

Appendix A: Protector Hood Components

Item	Quantity	Part No.	Description
4J	1	9819000	Nut, Hose Barb - NOT SHOWN
5	1	9825500	Label, Knob (contains all the labels)
6	1	9818900	Lens, Knob
7A	1	9826600, 01, 02	115V Duplex Receptacle (GRAY) Right, Left 4' - 6', Left 8' w/ wires
7B	1	9818200	Cover Plate, 115V Duplex
7C	1	9826603, 04, 05	115V GFCI Duplex Receptacle (GRAY) Right, 4' - 6', Left 8' w/ wires
7D	1	9818100	Cover Plate, 115V GFCI
7E	1	9818300	Cover Plate, Blank
8A	1	9721901	Lamp, Fluorescent (T8 x 3') – use on 4' & 8' Hoods-NOT SHOWN
8B	1	9721900	Lamp, Fluorescent (T8 x 4') – use on 5' & 6' Hoods-NOT SHOWN
9	1	9826900	Ballast Assy (used on T8 Slimline) – NOT SHOWN
10A	1	1302300	Switch, Rocker
10B	1	1327500	Switch, Plug (Fills cutout when switch is not used)
11A	1	9818400	Access Cover
11B	1	9825100	Label, Access Cover (includes all three corner labels)
12A	1	9810803	Side Panel, 48" internal deep hoods
12B	1	9810801	Side Panel, 30" internal deep hoods
12C	1	9810802	Side Panel, 36" internal deep hoods
12D	4	1916400	Nut, Retainer #10-24
12E	4	1885512	Screw, Machine #10-24 x .75 Truss Head Stainless
13A	1	9715500, 9715900	8' Horizontal Lower Threshold, Ramp NOT SHOWN
13B	1	9715501, 9715901	10' Horizontal Lower Threshold, Ramp NOT SHOWN
13C	1	9715502, 9715902	12' Horizontal Lower Threshold, Ramp NOT SHOWN
13D	1	9715503, 9715903	16' Horizontal Lower Threshold, Ramp NOT SHOWN
14	4	1861400	Pulley, Front or Rear, 1-3/16 Dia. (rear of 4', 5', 6' only)
15	2	4949904	Cable, Sash 190" – NOT SHOWN
16	2	9741900	Sheave, (Rear)
17	2	1663200	Bumper, Rubber – NOT SHOWN (upper sash bumper)
18	4	9742100	Bronze Bearing, Flanged Rear – NOT SHOWN
19	4	1920100	Clamp, Cable Replacement – NOT SHOWN
20	2	1972100	S-Hook – NOT SHOWN (to attach weight to cable)
21A	1	9826300	Wiring Harness, Main
21B	1	9826400	Wiring Harness, Ballast 115V, 4' - 6'
21C	1	9826700	Wiring Harness, Ballast 115V, 8'
22A	1	9807600, 01, 02, 03	Front Panel, 4', 5', 6', 8'
22B	1	9870700, 01, 02, 03, 04, 05	Panel Assembly Front 10' L, 10' R, 12' L, 12' R, 16' L, 16' R
23A	1	1663800	Vertical Sash Rubber Bumper
23B	1	1887012	Vertical Sash Bumper Screw, #6-32 x .75 Lg.
24A	1	1665400	Horizontal Sash Rubber Bumper – NOT SHOWN
24B	1	1885308	Screw, #10-24 x .50 Truss and Head – NOT SHOWN
25	1	9716600, 01, 02, 03	Door Assembly (Horizontal 8', 10', 12', 16') – NOT SHOWN
26	1	9854900, 01, 02	Base Side Panel, 30", 36", 48"
27A	1	1665000	Upper Sash Bumper (Vertical Sashes only)
27B	1	1889310	Screw, #10-24 x .62"
27C	1	1905617	Keps Nut, #10-24

Figure A-1





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# APPENDIX B

## PROTECTOR XL

### FLOOR-MOUNTED

### HOOD DIMENSIONS

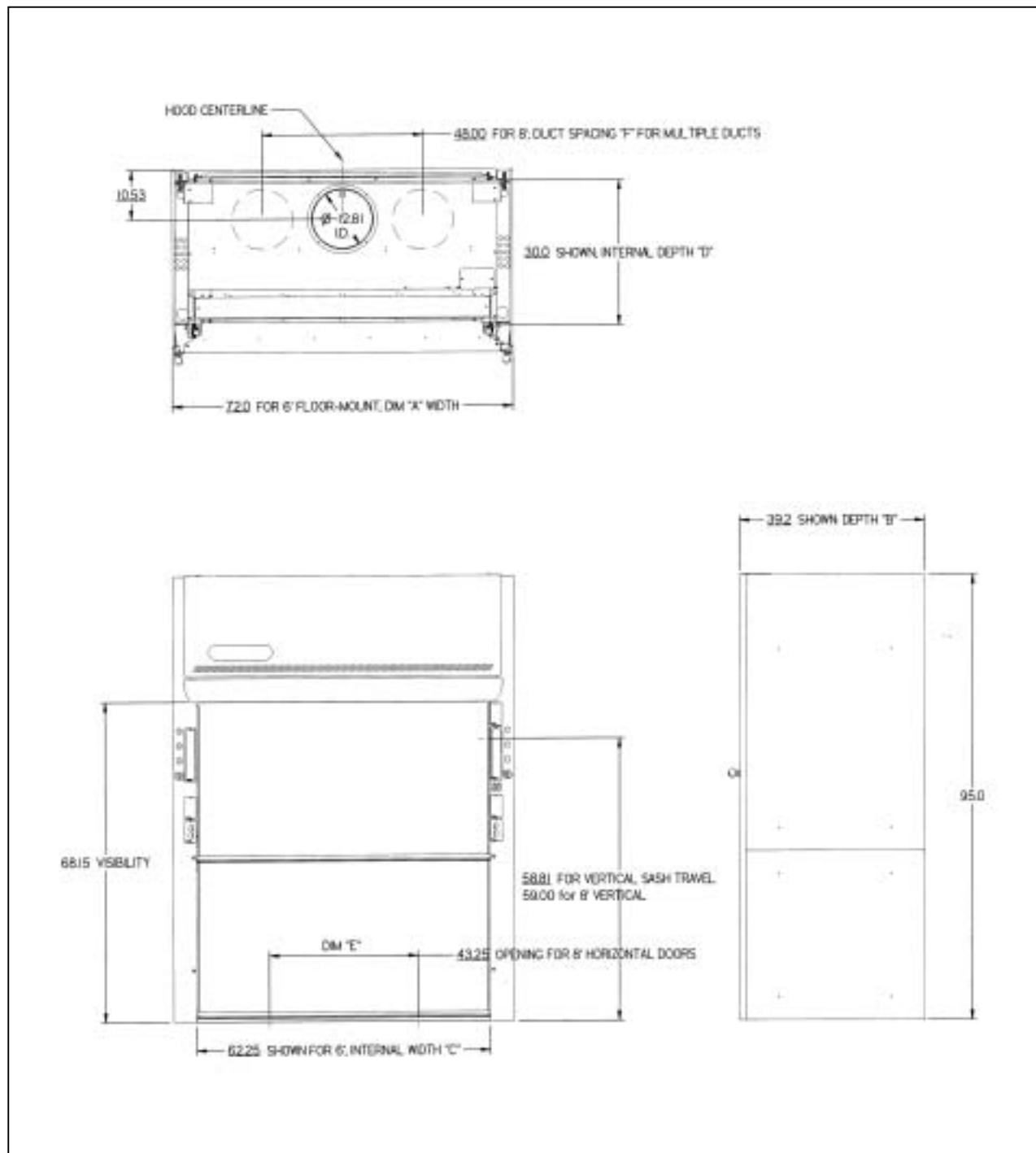
**XL Floor-Mounted Model**

	4'	5'	6'	8'	10'	12'	16'
A	48.00	60.00	72.00	96.00	120.00	144.00	192.00
B	39.20, 45.20, or 57.20						
C	38.25	50.25	62.25	86.25	110.25	134.25	182.24
D	30.00, 36.00, or 48.00						
E				43.25	55.25	67.25	91.25
Duct F Spacing	All use C/L One Duct			48.00 Two Ducts	50.00 Two Ducts	62.00 Two Ducts	48.00 Four Ducts
Sash Open	1	1	1	1 Vertical 2 Horizontal	1	1	1

See Figure B-1 for dimensional drawing.



Figure B-1



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# APPENDIX C

## PROTECTOR XL

### FLOOR-MOUNTED

### FUME HOOD

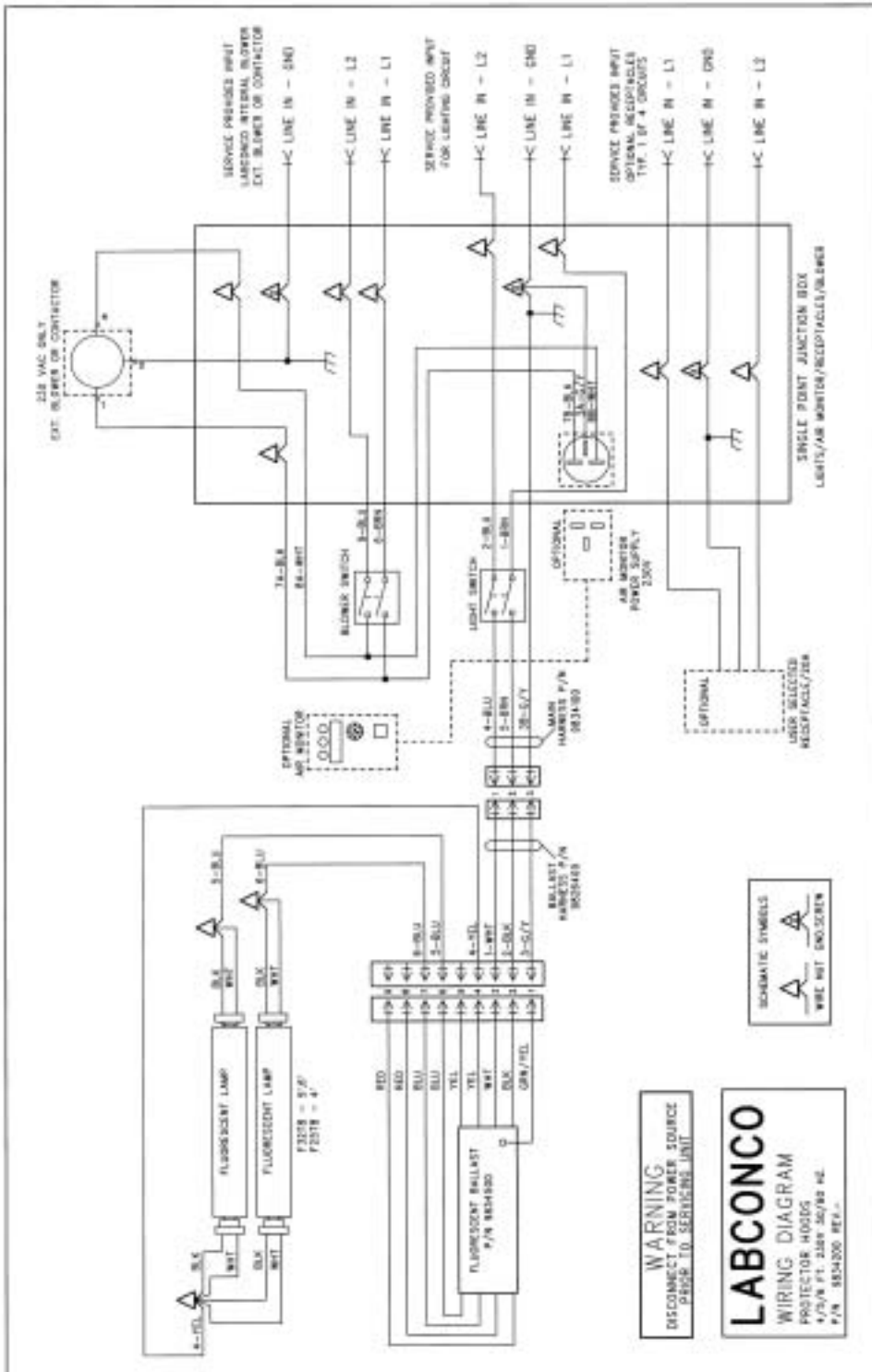
## SPECIFICATIONS

#### Environmental Conditions

- Indoor use only.
- Maximum altitude: 6562 feet (2000 meters).
- Ambient temperature range: 41° to 104°F (5° to 40°C).
- Maximum relative humidity: 80% for temperatures up to 88°F (31°C), decreasing linearly to 50% relative humidity at 104°F (40°C).
- Main supply voltage fluctuations not to exceed  $\pm 10\%$  of the nominal voltage.
- Transient over-voltages according to Installation Categories II (Over-voltage Categories per IEC 1010). Temporary voltage spikes on the AC input line that may be as high as 1500V for 115V models and 2500V for 230V models are allowed.
- Used in an environment of Pollution degrees 2 (i.e., where normally only non-conductive atmospheres are present). Occasionally, however, a temporary conductivity caused by condensation must be expected, in accordance with IEC 664.











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# APPENDIX D

# REFERENCES

Many excellent reference texts and booklets are currently available. The following is a brief listing:

## Laboratory Ventilation Standards

### Federal Register 29 CFR Part 1910

*Non-mandatory recommendations from "Prudent Practices."*

- Fume hoods should have a continuous monitoring device
- Face velocities should be between 60-100 linear feet per minute (lfpm)
- Average 2.5 linear feet of hood space per person

## Occupational Health and Safety

U.S. Department of Labor

200 Constitution Avenue N.W.

Washington, DC 20210

(202) 523-1452

## Industrial Ventilation-ACGIH

- Fume hood face velocities between 60-100 lfpm
- Maximum of 125 lfpm for radioisotope hoods
- Duct velocities of 1000-2000 fpm for vapors, gasses and smoke
- Stack discharge height 1.3-2.0 x building height
- Well designed fume hood containment loss, <0.10 ppm

*Industrial Ventilation, A Manual of Recommended Practice.*

24<sup>th</sup> Edition, 2001

American Conference of Governmental Industrial Hygienists

1330 Kemper Meadow drive

Cincinnati, OH 45240-1634

(513) 742-2020



**ASHRAE 110-1995 Method of Testing Performance of Fume Hoods**

*Evaluates fume hood's containment characteristics*

- Three part test: Smoke generation, Face velocity profile, Tracer gas release @ 4 liters per minute
- Rated As Manufactured (AM), As Installed (AI) and As Used (AU)

**American Society of Heating, Refrigerating, and Air Conditioning Engineers**

**1791 Tullie Circle N.E.**

**Atlanta, GA 30329**

**(404) 636-8400**

**ANSI Z9.5-1993 Laboratory Standard**

*Covers entire laboratory ventilation system.*

- Vertical stack discharge @ 2000-3000 fpm
- New and remodeled hoods shall have a monitoring device
- Ductless hoods should only be used with non-hazardous materials
- Fume hood face velocities between 80-120 fpm

**American Industrial Hygiene Association**

**2700 Prosperity Avenue, Suite 250**

**Fairfax, VA 22031**

**(703) 849-8888**

**SEFA 1-2002**

- Fume hood face velocities based on toxicity levels of chemicals
  - Class A – 125 to 150 fpm
  - Class B – 80 to 100 fpm
  - Class C – 75 to 80 fpm
- Test method – face velocity profile and smoke generation

**Scientific Equipment & Furniture Association**

**1028 Duchess Drive**

**McLean, VA 22102**

**(703) 538-6007**

**NFPA 45 – 2002 Fire Protection for Laboratories Using Chemicals**

- Laboratory hoods should not be relied on for explosion protection
- Exhaust air from fume hoods should not be recirculated
- Services should be external to the hood
- Canopy hoods only for non-hazardous applications

- Materials of construction should have flame spread of 25 or less
- 80 to 120 fpm to prevent escape

**NFPA 30 – 2000 Flammable and Combustible Liquids Code**

- Approved cabinets may be metal or wood
- Vent location on cabinets are required
- Venting of cabinets not a requirement

**National Fire Protection Association**

**1 Batterymarch Park**

**P.O. Box 9101**

**Quincy, MA 02269-9101**

**(800) 344-3555**

**General References**

American Conference of Governmental Industrial Hygienists. *Industrial Ventilation, A Manual of Recommended Practice*, Cincinnati, OH.

ASHRAE Standard Committee. *ASHRAE Standard* Atlanta: ASHRAE Publications Sales Department, 1995

British Standards Institution, *Laboratory Fume Cupboards*. Parts 1, 2 and 3, London: 1990

Department of Labor, Occupational Safety and Health Administration, *29 CFR Part 1910, Occupational Exposures to Hazardous Chemicals in Laboratories, Final Rule*. Vol. 55, No. 21. Washington D.C.:1990

DiBerardinis. L. et al. *Guides for Laboratory Design, Health and Safety Considerations*. Wiley & Sons, 1987

McDermott, Henry, *Handbook of Ventilation for Contaminant Control, 2<sup>nd</sup> Edition*. Butterworth Publishers, 1985.

Miller, Brinton M. et al. *Laboratory Safety: Principles and Practices*. American Society for Microbiology, Washington, D.C.: 1986

*NIH Guidelines for the Laboratory Use of Chemical Carcinogens*. NIH Publication No. 81-2385.

Rayburn, Stephen R. *The Foundation of Laboratory Safety, A Guide for the Biomedical Laboratory*. Springer-Verlag, New York: 1990

Sax, N. Irving and Lewis, JR., Richard J. *Rapid Guide to Hazardous Chemicals in the Workplace*. Van Nostrand Reinhold, 1987.

Schilt, Alfred A. *Perchloric Acid and Perchlorates*. The G. Frederick Smith Chemical Company, Columbus, OH: 1979.

Steere, Norman. *CRC Handbook of Laboratory Safety, 2<sup>nd</sup> Edition*. CRC Press, 1971.

## DECLARATION OF CONFORMITY

Application Council Directive(s): 73/23/EEC, 89/336/EEC

Standard(s) to which conformity is declared: EN61010, EN55022, EN50082-1

Manufacturer's Name: Labconco Corporation

Manufacturer's Address: 8811 Prospect Avenue  
Kansas City, MO 64132 USA

Importer's Name: See Shipping/Customs Documents\*

Importer's Address: See Shipping/Customs Documents for your equipment

Type of Equipment: Laboratory Equipment Protector Laboratory Hoods

Protector XL Floor-Mount Fume Hood:

Model No.: 98604 Series Protector XL Floor-Mounted Laboratory Hoods  
98605 Series Protector XL Floor-Mounted Laboratory Hoods  
98606 Series Protector XL Floor-Mounted Laboratory Hoods  
97008 Series Protector XL Floor-Mounted Laboratory Hoods  
97009 Series Protector XL Floor-Mounted Laboratory Hoods  
97010 Series Protector XL Floor-Mounted Laboratory Hoods  
97160 Series Protector XL Floor-Mounted Laboratory Hoods

Serial No.: Various – See Individual Declaration

Year of Manufacture: 2002 and subsequent

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

See individual Declaration of Conformity which  
will be signed by the importer for your country.

Place:

\_\_\_\_\_  
(Signature)

Date:

\_\_\_\_\_  
(Full Name)

\_\_\_\_\_  
(Position)

\*An individual version of this declaration is included with your shipping/customs documentation.

For more information, please contact us:

ExpotechUSA

10700 Rockley Road  
Houston, Texas 77099  
USA

281-496-0900 [voice]

281-496-0400 [fax]

E-mail: sales@expotechusa.com

Website: www.ExpotechUSA.com