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User's Manual

FilterMate™ Portable Exhausters

Models

3970000, 3970001, 3970002, 3970003, 3970004
3970020, 3970021, 3970022, 3970023, 3970024
3970010, 3970011, 3970012, 3970013

To receive important product updates,
complete your product registration card
online at register.labconco.com

Please read the User's Manual before operating the equipment.

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Labconco Corporation provides a warranty to the original buyer for the repair or replacement of parts and reasonable labor as a result of normal and proper use of the equipment with compatible chemicals. Broken glassware and maintenance items, such as filters, gaskets, light bulbs, finishes and lubrication are not warranted. Excluded from warranty are products with improper installation, erratic electrical or utility supply, unauthorized repair and products used with incompatible chemicals.

The warranty for FilterMate™ Portable Exhausters will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner. Warranty is non-transferable and only applies to the owner (organization) of record.

Buyer is exclusively responsible for the set-up, installation, verification, decontamination or calibration of equipment. This limited warranty covers parts and labor, but not transportation and insurance charges. If the failure is determined to be covered under this warranty, the dealer or Labconco Corporation will authorize repair or replacement of all defective parts to restore the unit to operation. Repairs may be completed by 3rd party service agents approved by Labconco Corporation. Labconco Corporation reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product.

Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This warranty is exclusive and in lieu of all other warranties whether oral, or implied.

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Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment 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.

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

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.

Contacting Labconco Corporation

If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:30 a.m. and 5:30 p.m., Central Standard Time.

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CHAPTER 1

INTRODUCTION

Congratulations on your purchase of a FilterMate™ Portable Exhauster, which exhausts filtered air. Labconco manufactures ten models of the FilterMate. These ten models consist of variations of HEPA filtration, carbon filtration, HEPA filtration to outside exhaust, combination HEPA/Carbon filtration and combination carbon/carbon filtration. All of these units are offered in 115V, 50/60 Hz operations or 230V, 50/60 Hz operations.

The Labconco FilterMate is an accessory for the Labconco Protector® XVS Ventilation Stations and XPert Balance Enclosures. When the FilterMate is connected to the Protector XVS or XPert, enclosure conforms to ANSI/AIHA Z9.5–1993, ETL and ETL-C, ASHRAE 110-95, and NFPA-45 (except carbon filters). In addition the 230V, 50/60 Hz models carry the CE mark. Carbon filters are sold separately and HEPA filters are included on HEPA-filtered models.

The FilterMate provides the necessary airflow (CFM) to an enclosure such as Protector XVS Ventilation Station or XPert Balance Enclosure. The XPert Balance Enclosure or Protector XVS Ventilation Station protects the operator from vapors and/or particulates released during chemical, powder or biological procedures performed within the enclosure. For biological and powder work, the FilterMate must be equipped with a HEPA filter, and is NOT to be used with biologically hazardous materials. For volatile material, the FilterMate must be equipped with a carbon filter or be exhausted outside the building. As the air moves through the enclosure, vapors or particulates emitted within the enclosure are drawn through a rear baffle, where they are mixed with and diluted by room air. This contaminated air is then drawn into the FilterMate where HEPA filters remove particulates. Vapors are adsorbed in activated or impregnated carbon filters. For applications requiring carbon filtration, it is recommended that the FilterMate be allowed to operate at lower speeds of 60 to 80 feet per minute to allow adsorption of volatiles and prevent material breakthrough back into the air. Additionally, the FilterMate's built-in speed control is capable of reducing the face

velocity to 60-80 fpm, so that analytical and microbalances may be used. Purified air is drawn from the filters, through the fan and returned to the room or exhausted outside through a thimble connection. For most applications, the FilterMate does not exhaust filtered air from the room unless required by your Safety Officer.

The HEPA filter must be installed before the carbon filters for applications with light duty chemical use. For only volatile chemical use, the Carbon FilterMate is used. For hazardous biological applications, Labconco recommends the purchase of a Class I or Class II biological safety cabinet. Contact Labconco for biological safety cabinet ordering information. See chart below:

<u>Application</u>	<u>Product</u>	<u>Filters</u>
Powders & Particulates	FilterMate	HEPA
Volatile Chemicals (Low level)	FilterMate	Carbon*
Powders & Particulates & Volatile Chemicals	FilterMate	HEPA & Carbon*
Non-Hazardous Bio	FilterMate	HEPA
Hazardous Bio	Class I & Class II	HEPA

*It is strongly recommended that a Labconco product specialist review the chemical application to determine if it is suitable.

About This Manual

This manual is designed to help you learn how to install, use, and maintain your FilterMate. Instructions for performing routine maintenance and making minor modifications to your FilterMate are also included.

Chapter 1: Introduction provides a brief overview of the FilterMate, 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 FilterMate.

Chapter 3: Getting Started contains the information you need to properly unpack, inspect, install, and test your FilterMate.

Chapter 4: Using Your FilterMate discusses the basic operation of your FilterMate.

Chapter 5: Maintaining Your FilterMate explains how to perform routine maintenance on your FilterMate and check the HEPA and carbon filters.

Chapter 6: Modifying Your FilterMate explains how to modify and change your FilterMate.

Chapter 7: Troubleshooting contains a table of problems you may encounter while using your FilterMate, including the probable causes of the problems, and suggested corrective actions.

Appendix A: FilterMate Components and Replacement Parts contains labeled diagrams of all of the replacement parts and components for the FilterMate.

Appendix B: FilterMate Specifications contains electrical specifications, environmental conditions, dimensions and wiring diagrams.

Appendix C: FilterMate Resources.

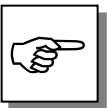
Typographical Conventions

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 your FilterMate.**



- 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.**



HEPA

- Contains information specific to the HEPA FilterMate for exhausting to the room.

CARBON

- Contains information specific to the Carbon FilterMate for exhausting to the room.

HEPA
SYSTEM

- Contains information specific to the HEPA System FilterMate for exhausting filtered air to the outside.

COMBO

- Contains information specific to combination HEPA/Carbon FilterMate for exhausting to the room.



CAUTION – See Manual. When this symbol is on the unit it indicates a caution that is detailed in this manual.

ATTENTION - Voir manuel. Lorsque ce symbole est allumé l'appareil, il indique une mise en garde qui est indiqué dans ce manuel.

CHAPTER 2

PREREQUISITES

Before you install your FilterMate and XPert or XVS Enclosure, you need to prepare your site for installation. Carefully examine the location where you intend to install your FilterMate and enclosure. You must be certain that the area is reasonably level and of solid construction. An electrical source must be located near the installation site.

Carefully read this chapter to learn:

- the electrical supply requirements.
- the exhaust requirements.
- the location and preparation requirement.

Refer to *Appendix B: FilterMate Specifications* for complete FilterMate electrical, dimensions, environmental conditions, specifications and requirements.



If the unit is not operated as specified in this manual it may impair the protection provided by the unit.

Si l'unité n'est pas utilisée comme spécifié dans ce manuel il peut diminuer la protection fournie par l'unité.

Electrical Requirements

Both the 115V and 230V FilterMate require 10 amp circuits. The motor/blower uses 2A and the switched auxiliary outlet has a maximum capacity of 8A. 230V model is shipped without a plug and the customer must install the appropriate plug used in their installation. If an airflow monitor is used with the enclosure, it is recommended that the airflow monitor be connected directly to the FilterMate's auxiliary outlet so the airflow monitor is powered at the same time. If this is not possible, the airflow monitor may be connected to the auxiliary outlet on the accessory fluorescent light.



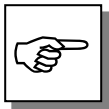
NOTICE: This equipment must be grounded (earthed).



Do not use any detachable power cord that is not adequately rated for the unit.

Ne pas utiliser un fil électrique amovible qui n'est pas du tension nominale de l'appareil.

Ground Fault Interrupter



WHEN CONNECTING THE FILTERMATE TO A GROUND FAULT INTERRUPTER CIRCUIT (GFIC), ENSURE THAT THE CIRCUIT IS RATED FOR 15-AMP LOAD AND IS FUNCTIONING CORRECTLY. CONNECTION OF THE FILTERING SYSTEM TO A LOWER CAPACITY OR DEFECTIVE GFIC MAY RESULT IN EXCESSIVE ACTIVATION OF THE GFIC, CUTTING POWER TO THE FILTERMATE WHILE IT IS OPERATING.

Exhaust Requirements for the FilterMate (Filtered Room Exhaust or Outside)

The FilterMate is capable of exhausting up to 280 cfm of HEPA filtered air or up to 220 cfm of combination HEPA/Carbon filtered air. These airflows are achieved when connected to the enclosure with an 8' length of 5" hose. For lower airflows adjust the speed control on the back of the FilterMate. Labconco offers HEPA and Carbon FilterMate models listed below.

FilterMate				
Catalog Number	Voltage	Filter	Exhaust Airflow (cfm) (max)	Exhaust Connection
3970000	115 Volt/60 Hz	HEPA	280	None
3970001	115 Volt/60 Hz	Carbon	280	None
3970002	115 Volt/60 Hz	HEPA	280	Canopy to outside
3970003	115 Volt/60 Hz	HEPA/Carbon	220	None
3970004	115 Volt/60 Hz	Carbon/Carbon	220	None
3970020	230 Volt/50 Hz	HEPA	280	None
3970021	230 Volt/50 Hz	Carbon	280	None
3970022	230 Volt/50 Hz	HEPA	280	Canopy to outside
3970023	230 Volt/50 Hz	HEPA/Carbon	220	None
3970024	230 Volt/50 Hz	Carbon/Carbon	220	None

If the FilterMate exhaust is to be connected to the house exhaust system, it is recommended that 3970002 (115 Volt) or 3970022 (230 Volt) be ordered with thimble connections. The 6" diameter thimble connection allows you to easily balance the exhaust airflow.

HEPA Filter

Part #3707900 is 99.99% efficient on particles 0.3 micron. Normal life expectancy is two to five years. See Chapter 5 for filter changing procedure.

HEPA Filter Bag-In/Bag-Out Bag

Part #3776002 ensures containment of particulate matter during filter changing operations. Cinching Strap #1968800 ordered separate.

Carbon Filters

Provides the listed amount of granular activated carbon or treated carbon. For estimated filter life, consult a Labconco Technical Specialist and Labconco's Chemical Guide.

Filter Classification	Catalog #	Carbon lbs.	Special Note
Organic Vapors	3923400	12# activated carbon	Activated Carbon adsorbs hydrochloric acid and nitric acid, but not sulfuric acid.
Formaldehyde	3923401	14# treated carbon	
Ammonia	3923402	16# treated carbon	



Room Air Exchanges – For carbon-filtered models, accumulation of vapor contaminants from the exhaust can be harmful when the Rate of Generation exceeds the Rate of Room Exhaust. For a saturated carbon filter the following mathematical equation can be used to determine the minimum room exhaust rate:

$$\text{Inlet Vapor Concentration (PPM)} \times \text{FilterMate Airflow in CFM} < \text{TWA (PPM)} \times \text{Room Exhaust (CFM)}$$

By equating both sides of the equation, the unknown will be the required air changes in order to not exceed the TWA (Time Weighted Average) for the chemical.

Location and Preparation Requirements

When the FilterMate is connected to an enclosure, the enclosure should be located away from drafts, traffic patterns, doors, fans, ventilation registers, fume hoods, and any other air handling device that could disrupt its airflow patterns. All windows in the room adjacent to the enclosure should be closed.

The FilterMate may be placed anywhere close to the enclosure. It may be bench mounted, placed on the floor or suspended on a shelf nearby.



Do not position the unit so that it is difficult to operate the main disconnect device.

Ne placez pas l'appareil de sorte qu'il est difficile de faire fonctionner le dispositif principal de déconnexion.

CHAPTER 3

GETTING STARTED

Now that the site for your FilterMate is properly prepared, you are ready to unpack, inspect, install, and test your FilterMate. Read this chapter to learn how to:

- unpack and move your FilterMate.
- set up your FilterMate.
- connect 5" hose and exhaust transition.
- install filters.
- connect the electrical supply source to your FilterMate.
- set the face velocity with the speed control adjustment.

Tools required are: flat bladed and Phillips screwdrivers, ratchet, deep socket set and power screwdriver. A small flat bladed screwdriver is required to adjust speed control. An anemometer is required to adjust the face velocity for the Protector XVS Ventilation Station or XPert Balance Enclosure.

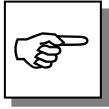


Depending upon the model, the FilterMate may weigh up to 90 lbs. (41 kg). Always use more than one person and follow safe-lifting guidelines when hand lifting the FilterMate.

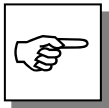
The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

Unpacking Your FilterMate

Carefully unpack your FilterMate and inspect it for damage that may have occurred in transit. If your FilterMate 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 FILTERMATE 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 carton or packing material for your FilterMate until you have checked all of the components, installed, and tested the FilterMate.

Setting Up Your FilterMate, Installing 5" Hose and Exhaust Transition

Move the FilterMate to the location where you want to install it. Then follow the steps listed below if connecting to a Protector XVS Ventilation Station or XPert Balance Enclosure.

- If a Protector XVS or XPert Enclosure has been purchased, place it on a suitable work surface. There should be no gaps between the work surface and the bottom of the enclosure.
- Locate the FilterMate within approximately 3-feet (1 meter) of the enclosure. The FilterMate can be located on the bench, floor or shelf above the enclosure. Insert the transition (2" x 10" x 5" diameter hose) exhaust adapter into the exhaust of the enclosure. An alternate location is on the bottom for concealed exhaust. See XPert Balance Enclosure and Protector XVS Ventilation Station Instruction Manual. See Figure 3-2.
- Fasten the transition exhaust adapter to the FilterMate with two screws provided. See Figure 3-1.
- Place hose over the transition exhaust adapter and clamp securely with one of the two hose clamps provided. Place the other end over the inlet port of the FilterMate and clamp securely.
- The FilterMate should be positioned where it provides easy access to the blower switch. Refer to Figure 3-2 for concealed exhaust or outside exhaust ducting.
- If needed, consult Chapter 6 to convert the FilterMate to accept a 6" hose and increase airflow 15-20%.

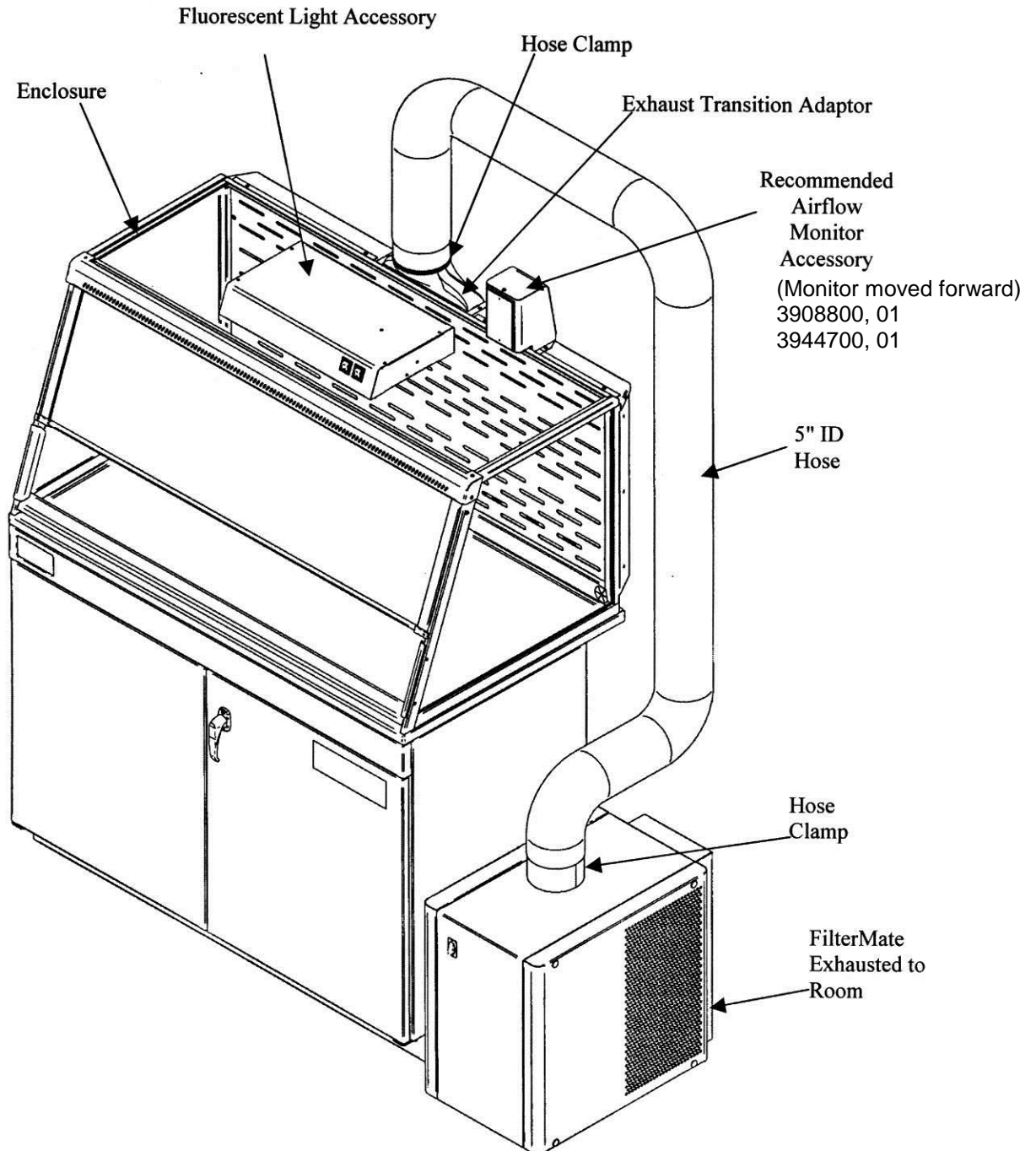


Figure 3-1
Enclosure & FilterMate Top Exhaust

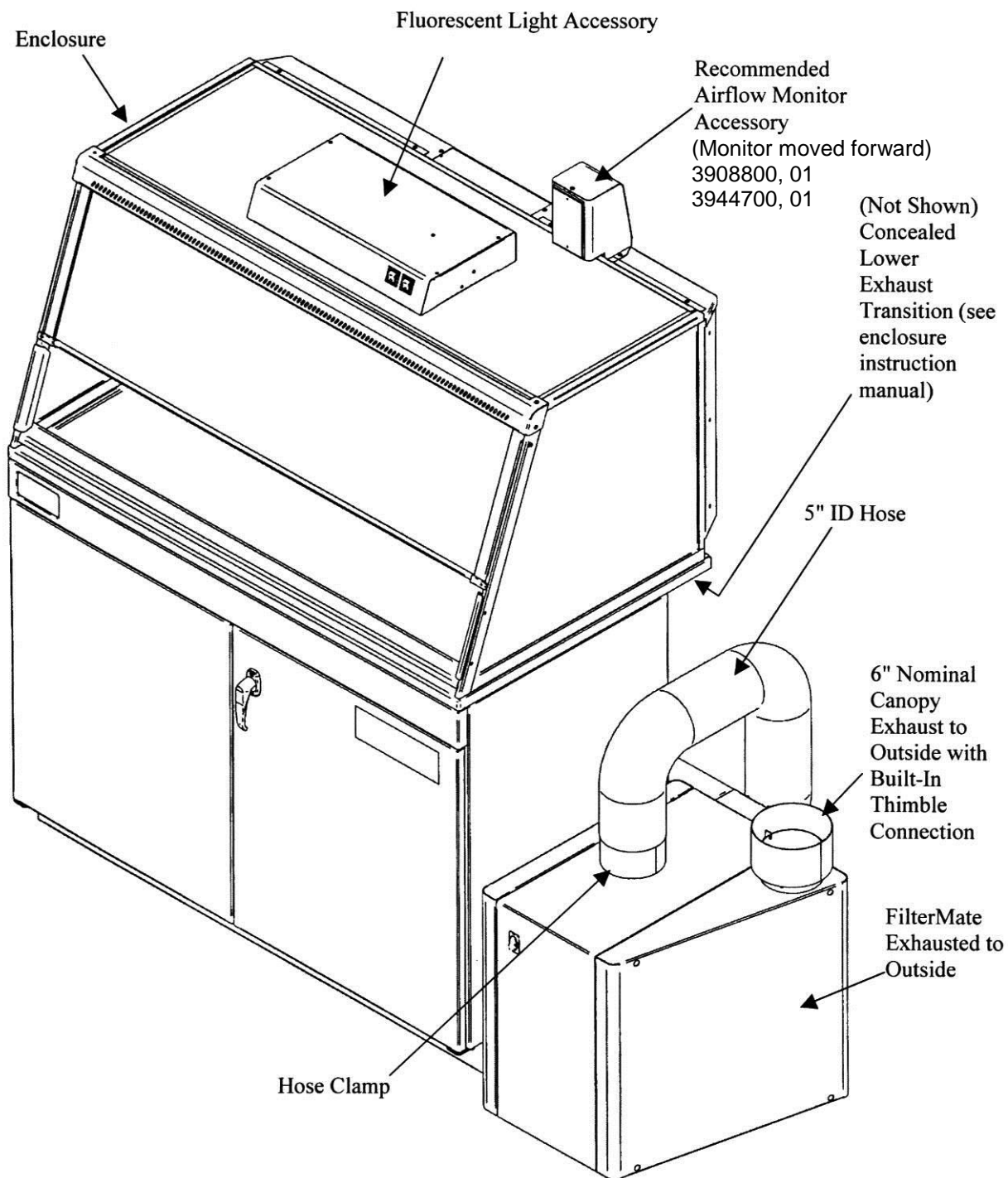


Figure 3-2
Enclosure & FilterMate Concealed
Exhaust Ducted to the Outside

Initial Installation of HEPA Filters and Carbon Filters

HEPA

HEPA Filters (For Models 3970000, 3970002, 3970020, 3970022)

HEPA filters are shipped installed with the gasket on the downstream side. The HEPA filters are leak checked at the Labconco factory. A second leak check is recommended before using the FilterMate and at least annually thereafter. Consult your Safety Officer and Chapter 5 for the HEPA Filter Leak Test and HEPA Filter Bag-In/Bag-Out Procedure. See Figures 3-3, 3-4 and 3-5 for HEPA filter location, HEPA filter gasket, filter clamp bolts, rear bag cover and bag-in/bag-out flange. All seams upstream of the HEPA filter are jacketed by negative pressure. This intrinsically safe design ensures containment over time.

CARBON

Carbon Filters (For Models 3970001, 3970021)

For carbon filter installation, first remove the rear filter cover, secured by four Phillips head screws, on the back of the FilterMate. See Figure 3-4 for location of the rear filter cover. See Chapters 2 and 3 for a list of available carbon filters. All carbon filters are installed with the gasket side downstream and opposite the clamp bolts. Install the correct carbon filter for the application and tighten the clamp bolts to compress the gasket 50%. See Figures 3-3, 3-4 and 3-5 for carbon filter installation, similar to HEPA filter installation.

COMBO

Combination HEPA/Carbon (For Models 3970003, 3970023)

For combination HEPA/Carbon, the HEPA is installed first with the gasket on the downstream side per Figure 3-5. The carbon filter is installed second in the perforated plenum exhaust cover.

- a. The perforated plenum exhaust cover is simply removed via four hole plugs and four captive Phillips head screws.
- b. Next loosen the two clamps that will support the carbon filter using a wrench.
- c. Insert the carbon filter with the gasket against the white painted FilterMate main housing.
- d. Tighten the clamps to compress the gasket 50%.
- e. Re-install the perforated plenum exhaust cover.

See Figures 3-5, 3-6 and 3-7 for combination HEPA/Carbon installation.

CARBON

Dual Carbon (For Models 3970003, 3970004, 3970023, 3970024)

For added carbon capacity or for adsorption of mixed vapors two carbon filters may be installed. Use two carbon filters on dual carbon FilterMate models 3970004 and 3970024. Replace the HEPA filter with a carbon filter on the combination FilterMate models 3970003 and 3970023. This procedure accommodates for Organic Vapor/Formaldehyde, Organic Vapor/Ammonia, or Formaldehyde/Ammonia combinations. **Important: Dual carbon filters do not provide any particulate protection.**

	Filter Type	Appropriate Use	
HEPA	HEPA 3707900	HEPA filters are high-efficiency particulate air filters having a particulate removable efficiency of 99.99% for particles with a diameter of 0.3 micron.	
CARBON	Organic Vapor Activated Carbon 3923400	Organic compounds designated by NIOSH guidelines as acceptable for use with chemical cartridge type respirators. Concentrations in the enclosure's work area must not exceed the IDLH for the chemical and the exhaust from the enclosure must not exceed the TWA.	<u>Note:</u> Activated carbon adsorbs hydrochloric acid and nitric acid, but not sulfuric acid
CARBON	Formaldehyde (Formalin) 3923401	Formaldehyde requires the use of an impregnated carbon for the treatment of formaldehyde. Concentrations in the enclosure's work area must not exceed the IDLH for the chemical and the exhaust from the enclosure must not exceed the TWA.	
CARBON	Ammonia and Amines 3923402	Ammonia, low molecular weight amines and other bases designated by NIOSH as acceptable for use with ammonia cartridge type respirators. Requires the use of an impregnated carbon. Concentrations in the enclosure's work area must not exceed the IDLH for the chemical and the exhaust from the enclosure must not exceed the TWA.	
ULPA	ULPA 3885700	ULPA filters are highest efficiency particulate air filters having a particulate removal efficiency of 99.999% for particles with a diameter of 0.12 micron.	
HEPA/ CARBON	PLEKX 3707904	PLEKX filters are 99.97% efficient particulate air filters for particles with a diameter of 0.3 micron and also contain 1.7 lbs. of carbon to remove organic vapors and/or trace odors.	

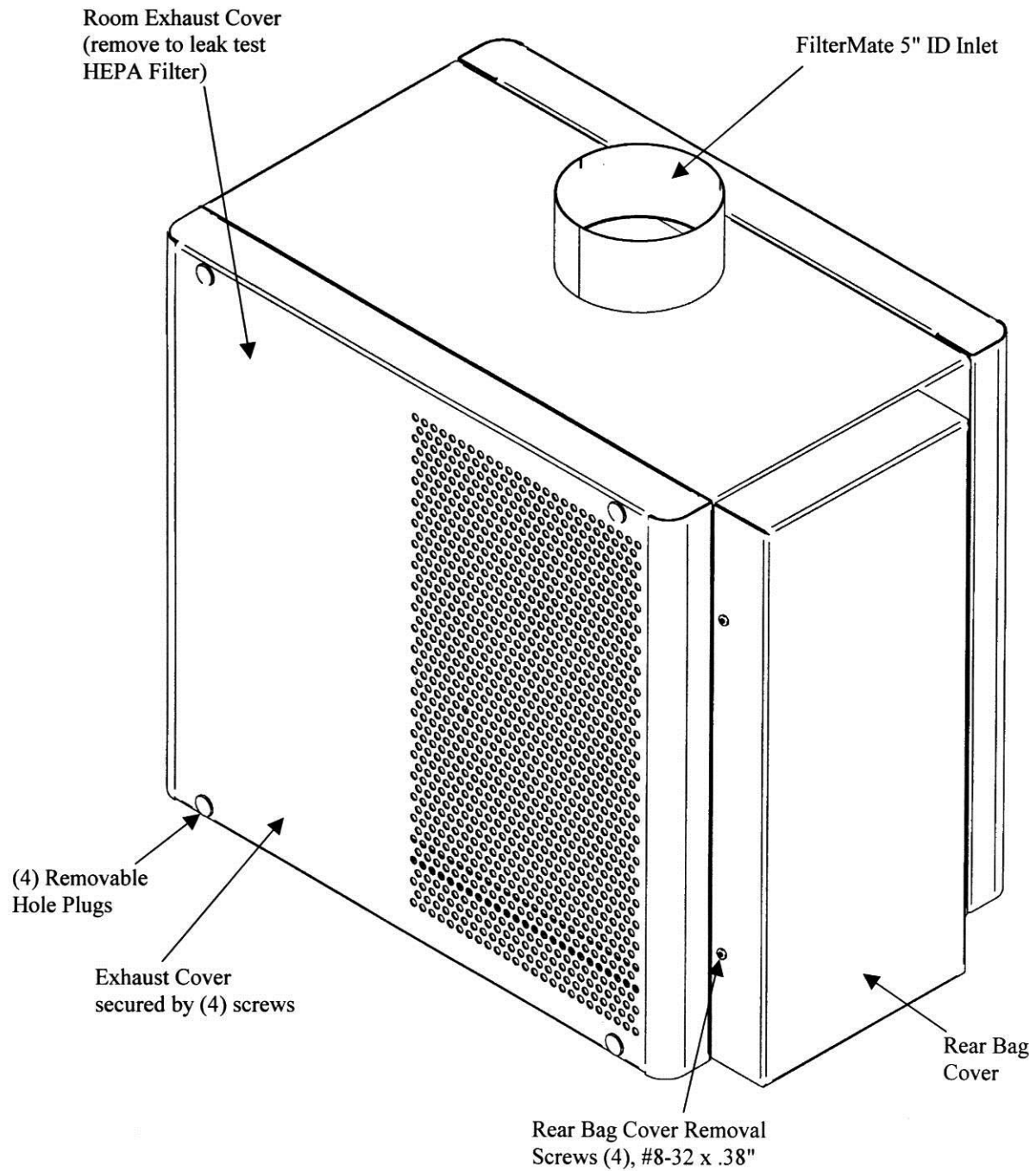


Figure 3-3
FilterMate Rear Isometric View

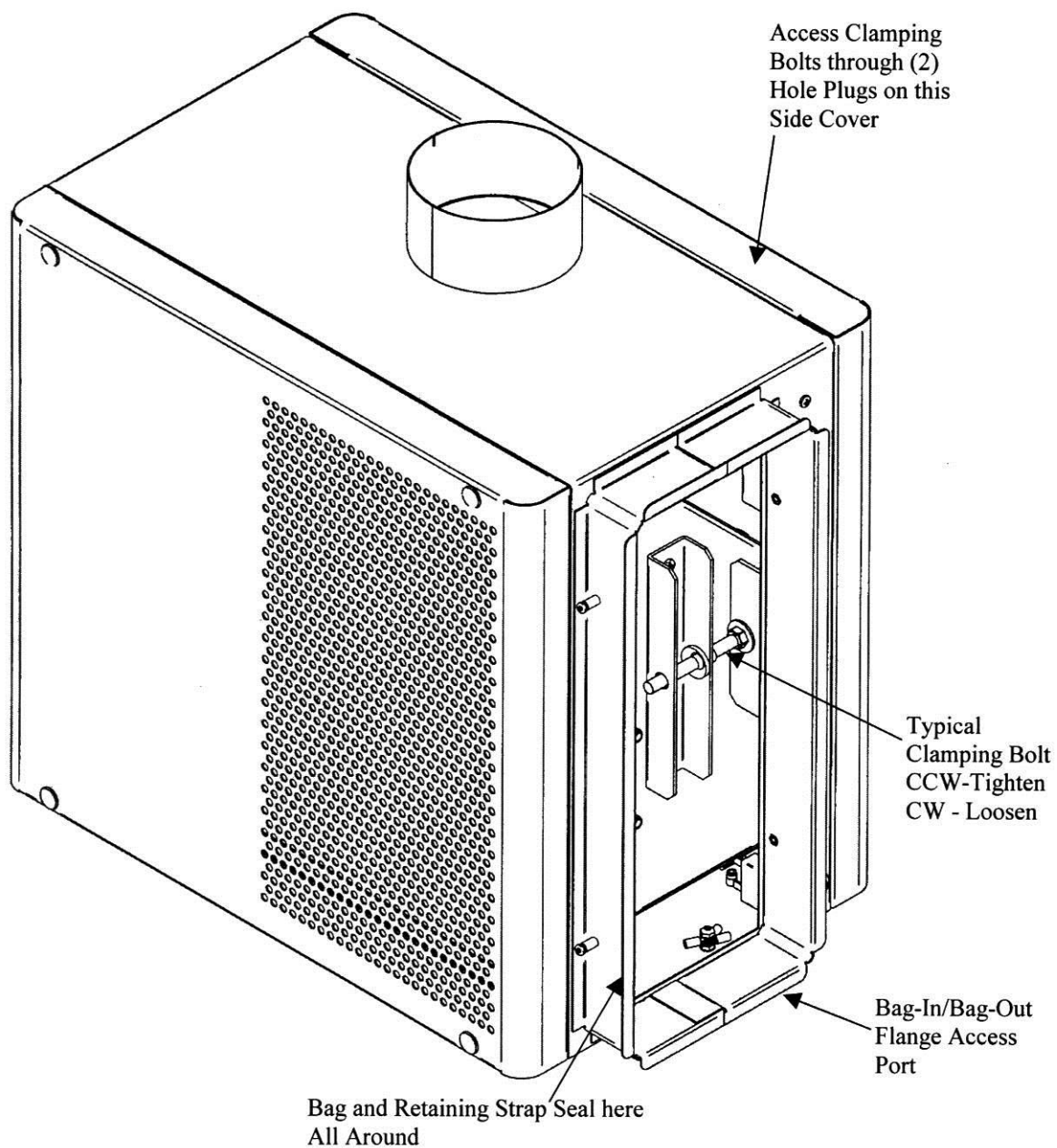


Figure 3-4
Rear Isometric View with Bag Cover Removed

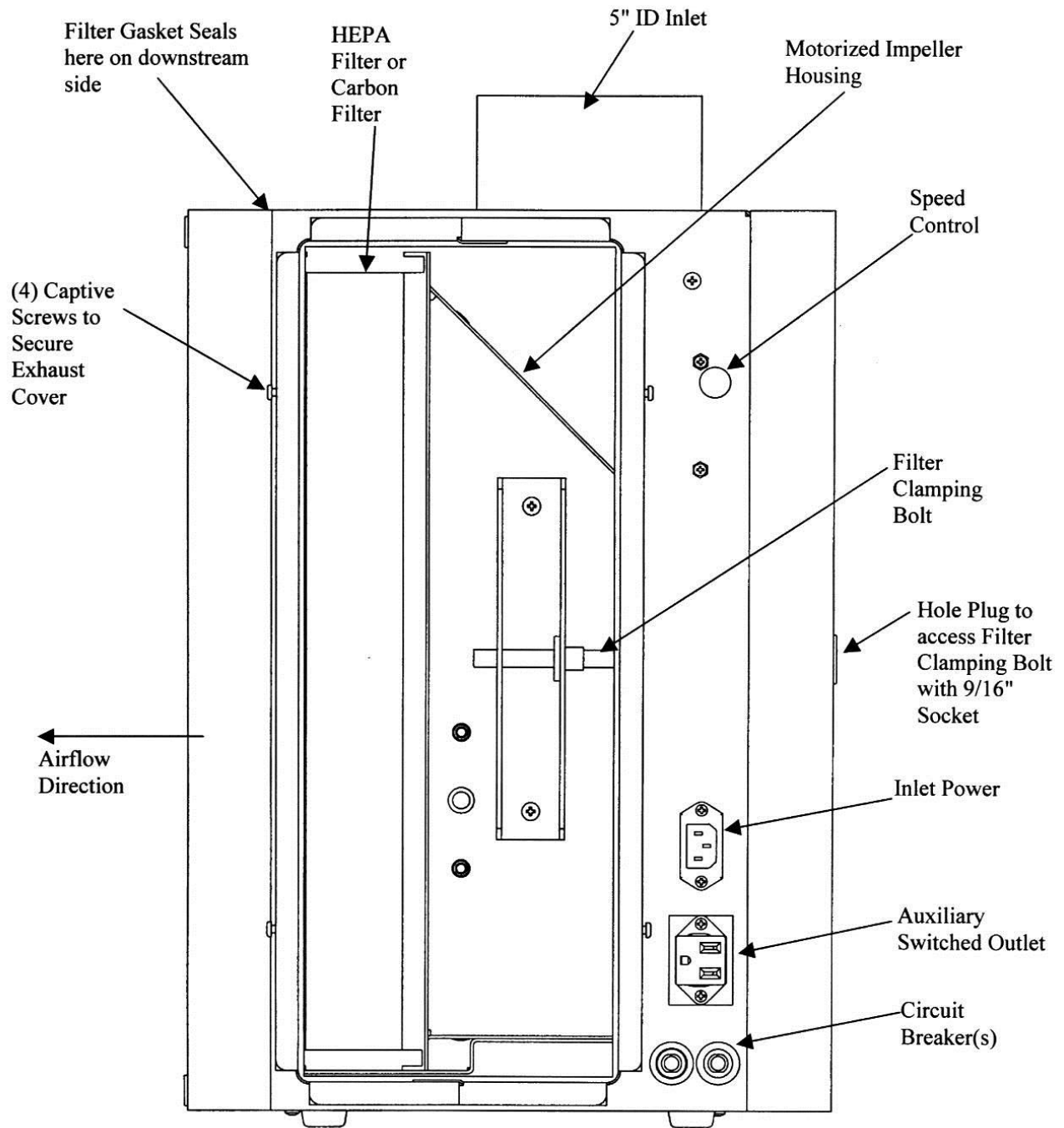


Figure 3-5
Rear View

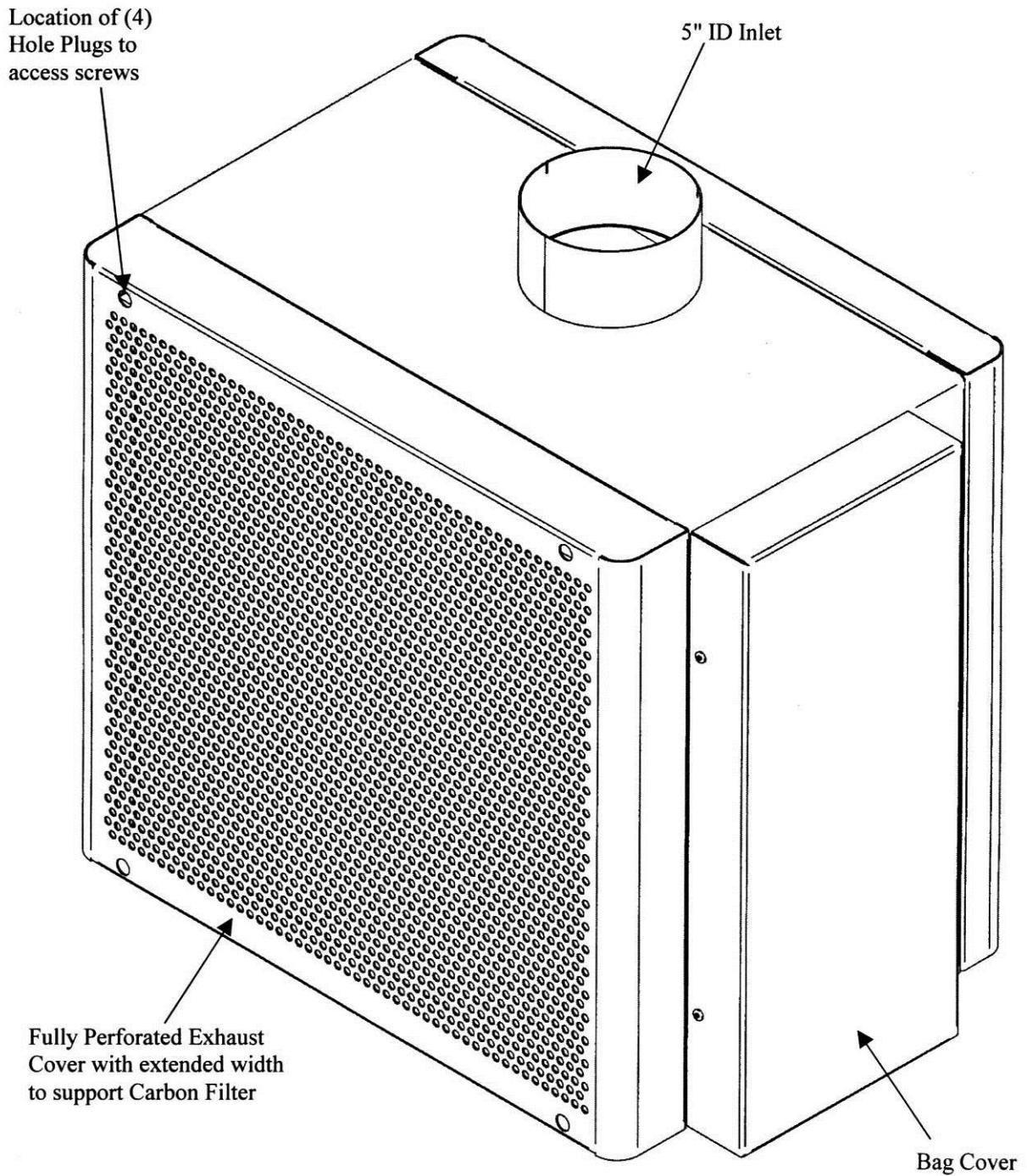


Figure 3-6
Combination HEPA/Carbon or Dual Carbon

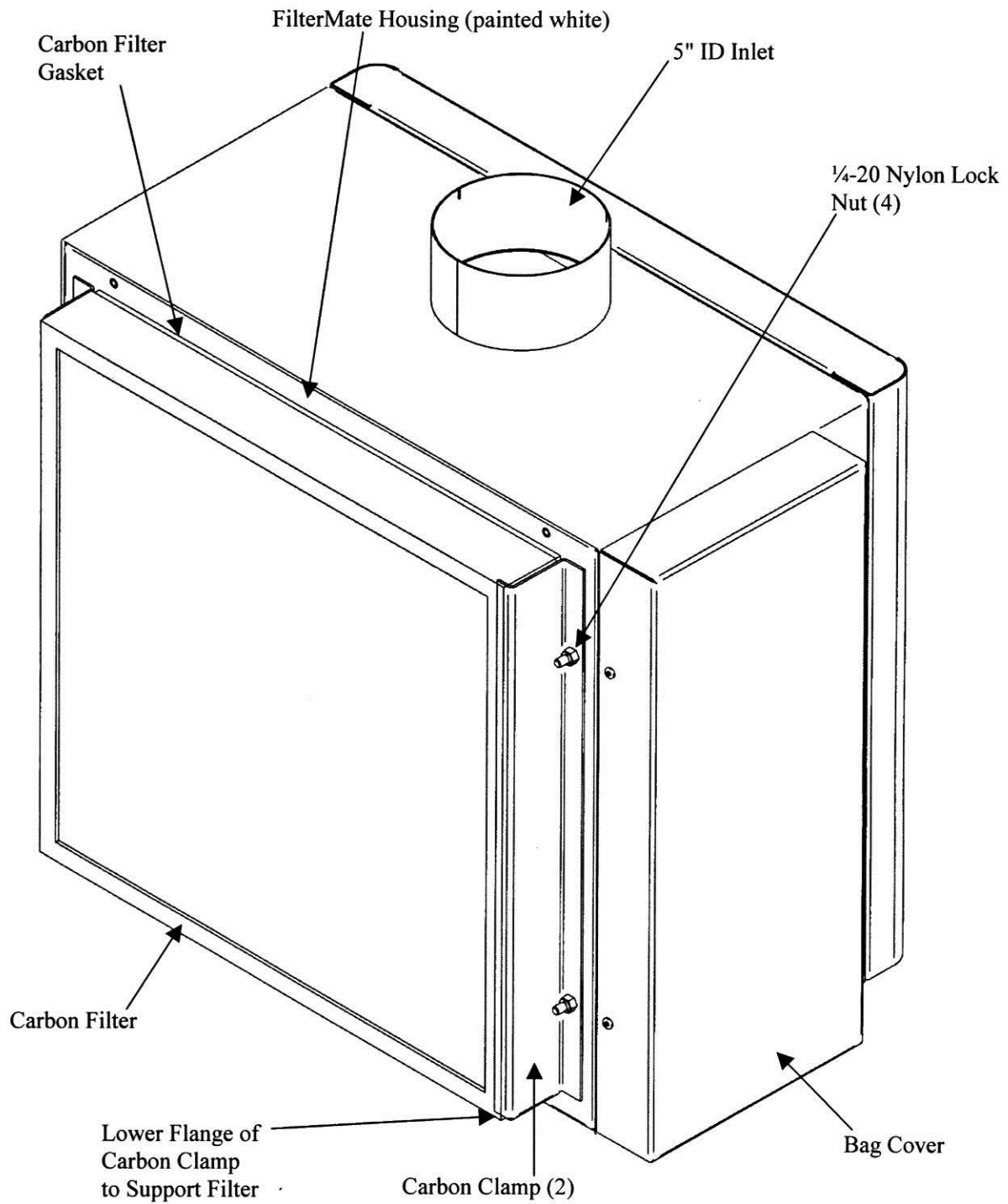


Figure 3-7
Combination HEPA/Carbon or Dual Carbon with Exhaust
Cover Removed

Connect the Electrical Supply Source to the FilterMate

115V

Simply connect the 115V power cord supplied to the IEC electrical supply plug on the back of the unit. If using 50 Hz operation, blower performance maximum airflow will be reduced by 17%. Refer to Chapter 2 for setting up the building electrical supply. Locate the switched auxiliary outlet on the back for plugging in the airflow monitor. This convenience allows the airflow monitor to be powered by the FilterMate at all times.

230V

The above procedure applies for the 230V except it is shipped without a plug. Install the appropriate plug for your electrical specifications per local codes.

Set the Face Velocity with the Speed Control Adjustment

Adjustment of the speed control gives the correct face velocity when the FilterMate is connected to a Protector XVS Ventilation Station or XPert Balance Enclosure. The face velocity should be adjusted from 60 to 100 fpm. (Consult your Safety Officer). Containment of contaminants is maximized at a setting within this range. Face velocity measurements are made using an anemometer. An inexpensive anemometer can be obtained from your laboratory supply dealer. Face velocity measurements should be taken in accordance with the Industrial Ventilation Manual. More details are provided in the Protector XVS Ventilation Station and XPert Balance Enclosure User's Manual. Locate the speed control adjustment on the back of the FilterMate and temporarily remove the hole plug. See Figure 3-5. Using a small Phillips screwdriver, adjust the speed control to give the required face velocity. The face velocity is increased by turning the speed control counter clockwise and clockwise to decrease face velocity. Weighing procedures usually require face velocities between 60-80 fpm. Working at the lowest face velocity appropriate for the application will give the quietest operation.

CHAPTER 4

USING YOUR FILTERMATE

Now that the installation of your FilterMate and enclosure is completed, you are ready to use your FilterMate. Read this chapter to learn about:

- Suitable Applications
- Definition of Terms
- Appropriate Chemicals
- Chemical Carcinogens
- Combination of Acids and Organics
- Safety Precautions
- HEPA Filtered Systems
- Misapplications
- Operation

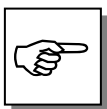
Suitable Applications

NIOSH (National Institute for Occupational Safety and Health, USA) has established guidelines for chemical cartridge and HEPA filtered respirators. Suitable applications for the FilterMate are based on these guidelines. As with respirators, contaminants are adsorbed or treated by carbon and/or particulates filtered by the HEPA filter before air is returned to the breathing area. Biological hazardous materials are not to be used with the system since there is no way to decontaminate the duct and filter housing. Capture and containment of non-biological hazardous materials is one of the primary functions of the FilterMate. Labconco recommends and manufacturers a Class I and Class II Safety Cabinet for bio-hazardous materials.

Applications for the FilterMate when attached to an Enclosure

- Release of low concentrations of vapors effectively adsorbed or treated in carbon-based filters, or release of particulates for HEPA filter only and release of vapors and particulates for combination HEPA and carbon filters.
- Weighing of powders using a HEPA filter.
- Treatment of specific chemicals that are carcinogens or suspected carcinogens. See section on carcinogens in Chapter 4.
- Procedures that may have traditionally been done on the open bench (low levels).
- Odoriferous chemicals that are an unpleasant nuisance.

Other applications, not fitting the above guidelines, would be better suited in a ducted fume hood, biological safety cabinet or enclosure that allows for exhausting to the outside. With all applications, the FilterMate should be used in areas where only knowledgeable users have access to the enclosure.



REFERENCES TO NIOSH OR OSHA GUIDELINES AND REGULATIONS APPLY TO ANY WORK PLACE UNDER THE JURISDICTION OF THE U.S. DEPARTMENT OF LABOR. OTHER COUNTRIES OUTSIDE THE U.S. HAVE ESTABLISHED STANDARDS, WHICH MAY DIFFER SLIGHTLY FROM THOSE USED AS GUIDELINES FOR THIS PRODUCT. IT IS THE USER'S RESPONSIBILITY TO BECOME AWARE OF LOCAL REGULATIONS GOVERNING THE SAFE USE AND DISPOSAL OF CHEMICALS, CARBON AND HEPA FILTERS. KNOWLEDGE OF ESTABLISHED SAFE EXPOSURE LEVELS IS IMPERATIVE TO THE PROPER USE OF FILTERED ENCLOSURES.

Definition of Terms

NIOSH - National Institute for Occupational Safety and Health/Mine Safety and Health Administration. (U.S.A.)

TWA - Recommended Exposure Limits expressed as a Time Weighted Average. The exposure limit for that chemical for up to a 10-hour workday, 40 hours a week.

Odor Threshold - The value in parts per million for which one might expect to smell a chemical's presence in the air. This value is very subjective and detection will vary with the sensitivity of one's nose. The period of time until the odor threshold is reached in the exhaust stream can be estimated from Labconco's exclusive computerized filter modeling program. Contact Labconco on carbon filter life for specific applications.

Saturation Level or Time - There is a limit to the amount of chemical that can be adsorbed by activated carbon, or neutralized by chemically treated carbon. Once the capacity of the carbon is reached, it is considered to be saturated and will adsorb (or neutralize) no further material; the outlet concentration of the chemical will equal the inlet concentration from that point until the filter is replaced. (Note that the capacity of activated carbon is not a constant, but varies with the inlet concentration). Labconco Technical specialists can determine with the computerized carbon-modeling program the estimated time to saturation for a particular chemical. When using a HEPA filter alone or in combination with a carbon filter the speed control will need to be increased to allow for HEPA filter loading. Measure enclosure face velocity with an anemometer.

IDLH (Immediately Dangerous to Life and Health). An atmosphere that poses an immediate hazard to life or produces immediate irreversible health effects. IDLH concentrations should not be approached in the enclosure.

Appropriate Chemicals

Below is a general set of rules to determine appropriateness of chemical usage.



Selected organic chemicals considered to be occupational carcinogens by NIOSH can be used in the FilterMate under rigid restrictions. See separate discussion on carcinogens for special instructions.

Organics must have time weighted exposure limits (TWA) of 1 PPM or greater.

Chemicals must have a detectable odor at concentrations below the TWA for the chemical.

Chemicals must be designated by NIOSH guidelines as acceptable for use with chemical cartridge type respirators (the exception is formaldehyde). Chemicals not listed by NIOSH in the Pocket Guide must be approved by Labconco's Product Specialist (or Engineering).

Inlet concentration must never exceed the IDLH (Immediately Dangerous to Life and Health) concentrations.

Chemicals having a recommendation by NIOSH of at least "Escape GMFOV" (Gas Mask Full-Face Respirator).

When evaporating a mixture of chemicals, the chemical having the lowest TWA will be used to determine if the mixture meets the guidelines.

Call a Labconco Product Specialist at 1-800-821-5525 for assistance in chemical appropriateness.

Use of Chemical Carcinogens in the FilterMate

Selected carcinogens may be used safely in the FilterMate under the following restrictions.



The use of a vented hood or vented enclosure is always the preferred method when working with carcinogens. The FilterMate should only be used as a last resort when venting is not an option.

The potential carcinogens are listed in the NIOSH Pocket Guide to Chemical Hazards as “Ca.” Each potential carcinogen must have a TWA of 1 or greater; have minimum respirator recommendation of Escape GMFOV, and an odor threshold significantly lower than the TWA for the chemical.

The inlet concentration or the evaporation rate of the chemical must never exceed the TWA for the chemical.

The FilterMate Chemical Guide chart provides estimated saturation times up to the TWA concentration for the Chemical.

In addition to the above, all other guidelines for chemical use in the FilterMate apply.

Acids Must Not Be Used

The FilterMate blower cannot be exposed to acids. Where applications require the use of acids, the enclosure must be vented to the outside by a remote blower without the use of the FilterMate.

Safety Precautions



NOTICE: The following safety precautions must be strictly followed. Refer to Application Section and Chemicals Appropriate for Use for additional safety information

- Ensure that the FilterMate is connected to an 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 FilterMate from electrical service.
- Use of an open flame must be avoided with the FilterMate. Open flames may disrupt the airflow patterns in the enclosure and cause a fire hazard with volatile solvents.

- Increase the face velocity or change the HEPA filter when the face velocity falls below acceptable limits established by your Safety Officer.
- Exhausted carbon filters and HEPA filters are to be disposed of as hazardous waste. The user is responsible for recording the chemicals adsorbed or removed by the filters and disposing properly. HEPA filters should be disposed of with the disposal bag connected to the rear of the FilterMate.
- Use in areas where only trained users have access to the enclosure. Any new users must be trained and should also read this Instruction Manual.
- Do not use the FilterMate in a poorly ventilated area. If the FilterMate is to be used in a confined space, make sure the space is well ventilated and the concentration of toxic contaminants cannot accumulate greater than the TWA.
- Proper operation of the enclosure depends largely upon the enclosure location and the operator's work habits. The enclosure should be located away from traffic patterns, doors, fans, ventilation registers, fume hoods, and any other air-handling device that could disrupt its airflow patterns. Consult *Chapter 2: Prerequisites* and *Chapter 3: Getting Started* sections of this manual for further details.
- The warning properties (i.e., odor, taste) of the volatile organic compounds or other material being used in the enclosure must be adequate to provide an early indication that the filter may be saturated.
- Highly toxic vapors, unknown reaction, hazardous particulate, biological hazards or processes generating high levels of contaminants are not intended for use in the enclosure and FilterMate. Consult your Safety Officer.
- Only chemicals, which can be safely adsorbed/treated with the specific carbon based filters installed or removed by HEPA filters are appropriate for use in this enclosure.
- Use the smallest possible quantity of chemical(s) within the enclosure and never exceed the amount, which can be effectively adsorbed by the filter before breakthrough.
- Adjust face velocity to fall between 60 and 100 FPM. For weighing procedures, adjust face velocity between 60 and 80 FPM.
- Leave the blower on for at least one minute after work in the enclosure has been completed.

- If a chemical is spilled on the work surface **DO NOT** switch off the blower until all traces of the chemical have been removed.
- Make sure carbon based filters or HEPA filters are installed prior to each use.
- If the blower fails during use, chemical processes should cease and the area should be vacated, and ventilated.
- Always refer to the NIOSH Pocket Guide to Chemical Hazards before proceeding. For additional help with filter and chemical selection contact Labconco at 1-800-821-5525 or 1-816-333-8811.

HEPA FilterMate Equipped with HEPA Filter



The enclosure, when attached to a FilterMate provides personal and environmental protection from particulate matter. Because room air is drawn through the enclosure during operation, this enclosure should not be used for operations requiring sample protection from environmental contamination and should not be used with biological hazards since the filter housing and ductwork cannot be decontaminated.



HEPA filters are only effective for entrapment of particulate matter. Manipulations, which generate gases or vapors, i.e., toxic chemicals or radionuclides, require the use of a HEPA and carbon filter in combination. The surface of the HEPA filter is fragile and should not be touched. Care must be taken to avoid puncturing the HEPA filter during installation. If you suspect that a HEPA filter has been damaged **DO NOT** use the enclosure. See Chapter 5 for Replacing the HEPA Filter with the Bag-In/Bag-Out Disposal Bag.

The HEPA filter in the FilterMate will gradually accumulate airborne particulate matter from the room and from work performed in the enclosure.

The rate of accumulation will depend upon the cleanliness of the room air, the amount of time the enclosure is operating, and the nature of work being done. With normal usage, the HEPA filters will last two to five years before requiring replacement.

Each HEPA FilterMate is provided with a disposal bag for proper disposal. Follow the HEPA Filter Bag-In/Bag-Out procedure in Chapter 5 for disposal instructions.



Misapplications That Could Result in a Hazardous Situation (Volatile Chemicals)

There is one scenario where the FilterMate misapplication would be a part of a hazardous condition. If the user continues to operate the system with any of the following conditions present a potentially hazardous condition will exist:

1. The inlet concentration of vapors is greater than the TWA.
2. The carbon filter becomes saturated.
3. The ventilation of the room is insufficient to dilute the exhaust of the FilterMate to below the TWA for the chemical.

When the inlet concentration is greater than the TWA, extra measures must be taken to monitor the filter and number of room air exchanges.

CHAPTER 5

MAINTAINING YOUR FILTERMATE

Monitoring and changing the filters is the primary maintenance required. The following maintenance schedule is recommended:

Monthly (or more often as required)

CARBON

Test filter condition on carbon filtered models using a gas detector tube at intervals of 20% of the total estimated time. The exception to the 20% recommendation is formaldehyde or any carcinogen or suspected carcinogen. These hazardous chemicals must be checked at least every 10% of the total estimated time. Gas detector tubes for the specific chemicals that are being used in the enclosure can be obtained from your laboratory supply dealer.

HEPA

Check face velocity on HEPA filtered models. Increase speed control or change HEPA filter when face velocity of the enclosure drops below the recommended speed for your facility or if the airflow alarm alerts you. Airflow alarms are recommended.

CARBON

Replace carbon filters when chemical breakthrough is indicated by odor, time, detector tube, or for some chemicals, analytical instrumentation. See “Replacing Filters” section of this manual in Chapter 5.

CARBON

Determination of When to Replace Carbon Filters

The carbon filters **MUST** be replaced when any one of the following two conditions are met:

1. The FilterMate outlet (exhaust) concentration approaches the inlet concentration, indicating filter saturation.
2. The odor in the work area becomes intolerable or the concentration of the chemical in the work area is greater than the TWA.

There are four means of determining when its time to change the carbon filters (not shown in the order of preference).

Odor - A person's sensitivity to odor, tolerance of odor and their comfort level under odoriferous conditions vary with the individual. While odor is an indicator that chemicals are passing through the carbon filter, several points need to be understood:

- Odor within the room is not necessarily an indication of saturation or hazardous exposure concentrations.
- Odor can be used as a prompt to sample the chemical concentration on the exit side of the carbon filter.
- Organic chemicals approved for use in the FilterMate have odors that are detectable before reaching the time weighted exposure limits.

Detection Tubes - Color change indicators can be used to measure the concentration of the chemical at the exit side of the carbon filter or in the outlet exhaust. A kit including syringe pump and tubing can be purchased as an accessory from Labconco (Catalog # 6924900). Labconco Customer Service Representatives are supplied with detector tube catalog numbers, as well as telephone numbers to direct you to where to purchase these items.

For Organic, Formaldehyde and Ammonia, chemical specific detector tubes should be purchased when installing fresh filters. Each kit contains instructions on how many strokes of the syringe are required to obtain the stated sensitivity. The sampling syringe is connected to the FilterMate exhaust by removing one of the plugs on the exhaust cover near the perforated holes. Connect the syringe to the detector tube while the system is running and pull the air through the tube with the syringe. Each stroke of the syringe represents a 100-ml sample and corresponds to the number of strokes necessary to give the indicated color changes. Due to the wide variety of organics and varying TWA's, it is recommended that specific detector tubes be purchased directly from Sensidyne, Draeger or your laboratory supply dealer. Alternate detector pumps can also be purchased from your laboratory supply dealers. The vast majority of detector tubes available start measuring at the TWA. When a user observes a color change in the tube, they should replace the filter immediately. If no detector tube for your specific chemical is available, other means of detection must be used.

Time - For applications that have very consistent inlet concentrations and operating time, “Time” can be used to anticipate saturation or TWA levels based on prior experience. However, this does not replace the need for sampling. Consult Labconco technical specialist for an estimate of carbon filter life based on chemical usage. Detector tubes, or analytical instrumentation should **always** be used to determine concentrations in the carbon filter. It is recommended that the carbon filters be checked with detector tubes or other means at intervals of 20% of the total estimated filter life. The exception to the 20% recommendation is formaldehyde and any carcinogen or suspected carcinogen. These more hazardous chemicals must be checked at least every 10% of the total estimated time.

Analytical Instrumentation - This is the most accurate means of measuring concentrations of any chemical. It is the method of choice when no detector tubes are available or the tubes are not sensitive enough to measure at the TWA concentration for the chemical. This method is also to be used to determine saturation when the chemical concentration is below the measurement range of detector tubes.

Carbon Filter Replacement Procedure – See Figures 3-3, 3-4, 3-5, 3-6 and 3-7 for Carbon Filter Replacement.

1. The carbon filters are replaced by removing the rear access cover.
2. Next loosen the two filter clamp bolts and remove the carbon filter.
3. Re-install the new carbon filter, tighten the clamping bolts to compress the gasket 50% and replace the rear access cover.

HEPA

Determination of When to Replace HEPA Filters

The HEPA filters in the FilterMate gradually accumulate airborne particulate matter and powders from the enclosure and room. The rate of accumulation will depend upon the cleanliness of the room air, the amount of time the enclosure is operating, and the nature of work being done in the enclosure. In typical installations and usage, the HEPA filters will last two to five years before requiring replacement. Replace HEPA filters when face velocity drops below the recommended 60-80 fpm velocity, and the speed control is adjusted to full speed.

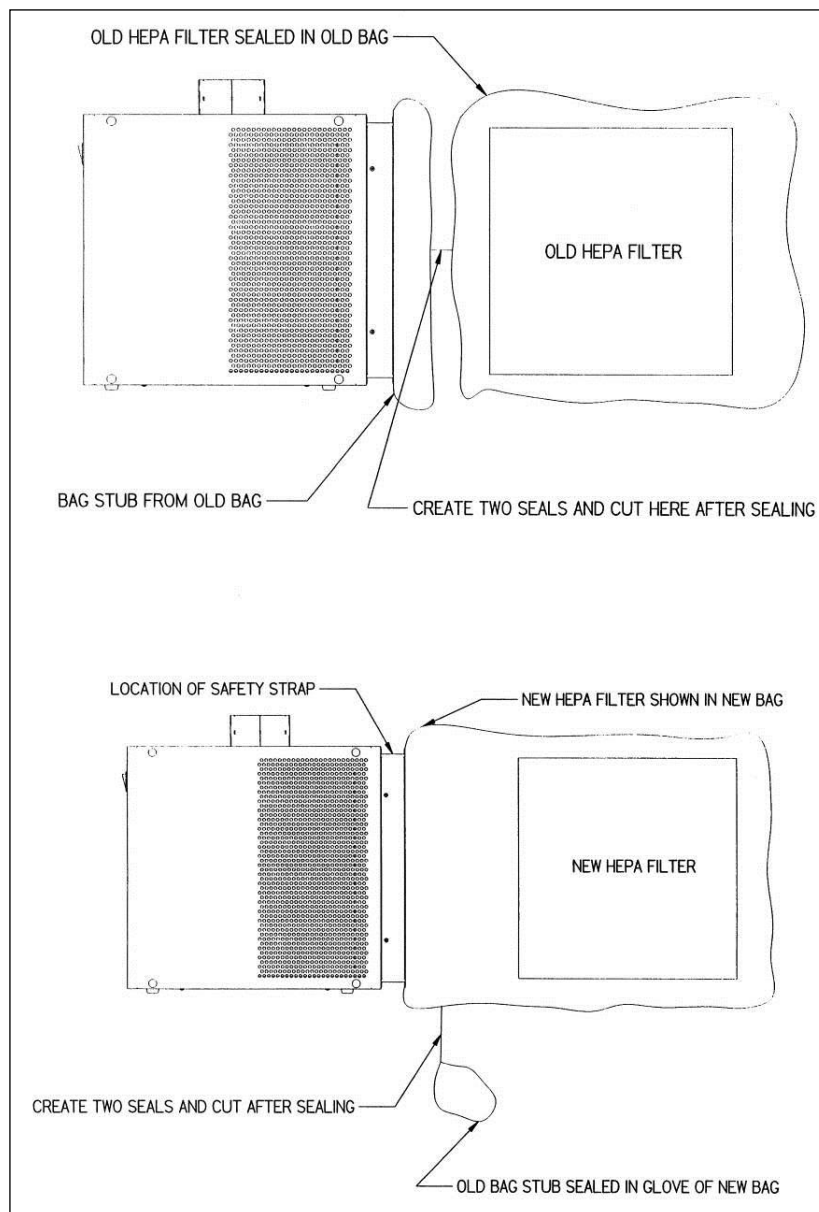
HEPA

Install a New HEPA Filter with the Bag-In/Bag-Out Procedure

See Figures 3-3, 3-4, 3-5 and 5-1 for the Bag-In/Bag-Out Procedure. For your safety, wear appropriate personal protective equipment during the change of HEPA filters. (Consult your Safety Officer before performing filter changes).

1. With the FilterMate OFF, remove the rear cover panel supported by four screws.
2. Remove the retaining strap on the bag and extend it out. The retaining strap provides an extra level of safety while running even though the FilterMate is under negative pressure.
3. Loosen the two filter clamp bolts securing the HEPA filter.
4. Place both arms in the rear gloves of the bag, and carefully draw the HEPA filter out of the FilterMate. Rest the HEPA filter on the floor, table or cart. Remove arms from bag gloves.
5. Create two seals between the FilterMate bag access port and the old HEPA filter. Seals can be heat sealed or sealed with tie wraps. Cut off the bag between the two seals and leave the bag stub on the access port to the FilterMate.
6. Place the new HEPA filter in the new bag. Then place the new bag and new HEPA filter over the old bag stub and onto the FilterMate access port.
7. Carefully remove the old bag stub using the single glove near the access port. Reattach the retaining strap on the perimeter of the new bag at the FilterMate access port. Draw the old bag stub into the single glove and turn the glove inside out. Double seal this glove and cut off the glove with the contaminated bag stub inside.
8. Carefully install the new HEPA filter and uniformly tighten the two filter clamp bolts until the HEPA filter gasket is compressed 50%.
9. Carefully fold and roll the new bag in four-inch pleats and push the bag into the access port. Turn the FilterMate ON to draw a vacuum on the bag. Reinstall the rear cover panel to protect the bag.

Use for
Steps 1-5



Use for
Steps 6-9

Figure 5-1
Bag-In/Bag-Out HEPA Filter changing procedure

HEPA

FilterMate HEPA Filter Leak Test

Purpose

After the Bag-In/Bag-Out procedure, the HEPA filter should be leak checked. This test is performed to determine the integrity of the HEPA filter, the filter housing, and the filter mounting frames. Leak test is to be done by qualified technician with calibrated equipment. Remove the exhaust cover by first removing the hole plug and then using a Phillips screw driver to unfasten the (4) captive screws. See Figure 3-3 and 3-5. The filter passes at .01% or better. Reference Leak Testing and Photometer scanning from the Institute of Environmental Services (IES-RP-CC001.3)

Apparatus

1. **An aerosol photometer ATI model 2D, 2E, 2G or equivalent.** Air Techniques Hamilton Associates inc. 11403 Cron Ridge Dr. Owings Mills, MD 21117
2. **One aerosol generator of the Laskin nozzle(s) type.** An aerosol of mineral oil shall be created by flowing air through it. The compressed air supplied to the generator should be adjusted to a pressure of 20 +/- 1 psig. during operation. Air Techniques Inc. Model TDA-4A or equal. One nozzle is (135 cfm x 100ug/l)/(Vol. of air), one nozzle @ 20 psig is 13,500/380 cfm = 36ug/l or 13,500/280 cfm = 48ug/l for the FilterMate connected to the enclosure.
3. **Mineral oil** (Catalog #1491400).
4. **Sampling Nozzle, Rectangular** 1/2" x 3-1/4", Air Techniques, Inc.

Procedure

For the ATI 2G Photometer

1. Turn on the photometer and allow it to operate for a minimum of 5 minutes. Leave the valve in the "CLEAR" setting.
2. Press the "ENTER" keypad. Press the "REF" keypad.
3. The display will display "P1" for approximately 1 second, and then display a numerical value.
4. Using the "^" or "v" keypads, respectively, increase or decrease the numerical value until it equals 48 for the FilterMate connected to the enclosure. (36 for the FilterMate by itself).
5. Press the "ENTER" Keypad. The photometer will scan for 15 seconds, and then the "0" keypad will flash. Press the "Enter" keypad. The unit will scan for 5 seconds, the display will read "0000", and the unit will sound a confirming tone.
6. Set the valve to "DOWNSTREAM". Place the palm of your hand over the sampling port of the pistol. There should be a strong vacuum at this port. If the vacuum is weak, contact Air Techniques Hamilton Associates.
7. Turn the FilterMate on and let it operate for a minimum of 5 minutes.
8. Adjust the speed control of the FilterMate to full speed.
9. Position the aerosol generator discharge in the intake.
10. Start the aerosol generator (Pressure to be 20 +/- 1 PSIG). Ensure that one Laskin nozzle is in the "open" position.

11. Allow the generator to operate for a minimum of 15 seconds. Scan the downstream side of the HEPA filter by passing the sampling nozzle of the gun in slightly overlapping strokes over the entire surface the filter, with the sampling port not more than 1 inch from the surface of the filter media. Scan the entire periphery of the filter and the gasket between the filter frame and the FilterMate frame. Scanning shall be done at a traverse rate of not more than 2 inches per second.

Acceptance

Aerosol penetration shall not exceed 0.01 percent measured by the photometer.

Motorized Impeller Replacement

The motorized impeller must be replaced as a complete unit. When the motorized impeller is replaced, the capacitor should also be replaced. See Appendix A for Replacement Parts Diagram.

1. Wear appropriate personal protective equipment to decontaminate the FilterMate and then unplug from the electrical outlet.
2. Remove filter housing and filters. HEPA filter (if so equipped) per Bag-In/Bag-Out procedure.
3. Consult the wiring diagram in Appendix B of the manual and disconnect all the wires of the motorized impeller. Be sure to connect wires on the new motor in the same way the old motor was wired.
4. Remove four screws in the motor bracket that hold the motorized impeller.



NOTICE: High-speed blower. Never operate impeller with housing off.



Do NOT contact blower wheel while still in motion.

NE PAS être en contact avec la roué du ventilateur tant qu'il est en marche.

5. Remove motorized impeller from the bracket by removing the screws and washers holding the motor to the bracket.
6. Replace the capacitor with a new one of equal voltage and capacity.
7. Reassemble the new motorized impeller by reversing the assembly steps.

Speed Control Replacement

1. Remove the filters as outlined in this chapter.
2. Remove the two screws holding the speed control using a Phillips screwdriver. Refer to Appendix A for Replacement Parts Diagram.
3. Disconnect all wires leading to the speed control. Connect wires on new speed control in the same position as the old speed control.
4. Reassemble to the system in the same position and with the same screws that were removed earlier.

CHAPTER 6

MODIFYING YOUR FILTERMATE

The following procedure may be necessary to modify the FilterMate.

Converting a Room Exhaust HEPA FilterMate to Outside Exhaust

Refer to Figures 3-2 and 3-3.

1. Remove the perforated exhaust cover and replace it with the FilterMate 6" canopy outside exhaust cover (Catalog #3913600).
2. Next connect the ductwork to the remote blower. Remote blowers available from Labconco are listed below:
3. Remote Blowers (Roof-Mounted) and Dampers. 1/4 hp direct drive. Corrosion-resistant epoxy-coated steel housing and wheel. Blower inlet is 6.00" ID. Outlet dimensions are 4.25" x 7.38" OD. See dimensional data in enclosure manual.

CFM @ Static Pressure – Inches of H ₂ O						
S.P.	0.0"	0.125"	0.25"	0.50"	0.75"	0.87"
CFM	595	560	515	420	300	167

Catalog #	Description	Shipping Wt. lbs./kg
4863500	Remote Blower, 115 volts, 60 Hz, 4.4 amps	35/16
4863501	Remote Blower, 115/230 volts, 50 Hz, 5.6/2.8 amps	35/16
7053501	Explosion-Proof Remote Blower, 115 volts, 60 Hz, 4.4 amps	40/18
3924000	6" Powder Coated Metal In-line adjustable damper	
4724200	6" PVC In-Line adjustable damper	

4. If the enclosure is connected directly to a house exhaust system, an adjustable damper (or valve) must be installed to control the airflow properly.

Converting a Combination HEPA/Carbon FilterMate to a Dual Carbon FilterMate

1. Simply remove the HEPA filter per the Bag-In/Bag-Out Procedure in Chapter 5.
2. Next place the carbon filter in the FilterMate in place of the HEPA filter. Consult your Safety Officer concerning exposure to hazardous powders and decontamination.
3. Tighten the filter clamp bolts to compress the gasket 50%.
4. Replace the rear access port cover with the four screws.

Converting a HEPA FilterMate to a Combination HEPA/Carbon FilterMate

Refer to Figures 3-6 and 3-7.

1. The perforated exhaust cover must be replaced with a wider perforated exhaust cover to house the new carbon filter. Remove the plugs and perforated exhaust cover.
2. Order combination HEPA/Carbon FilterMate conversion kit (Catalog #3927100). The kit consists of a perforated exhaust cover (P/N 3923500), two carbon filter clamping brackets (P/N 3923600 and P/N 3923601), four 1/4-20 nylon nuts (P/N 1906921), and combination HEPA/Carbon FilterMate conversion instruction sheet (P/N 3927200). Order the carbon filter separately from Chapter 2 and Chapter 3.
3. Install the carbon filter clamping brackets, carbon filter and nuts. Tighten the nuts to compress the gasket 50%.
4. Re-install the new wider perforated exhaust cover.

Converting to 6" Hose and 6" Exhaust Transition

It may become necessary to boost airflow by 15-20% by converting to a 6" Hose and 6" Exhaust Transition. Refer to Airflow Curves in Appendix C and Replacement Parts in Appendix A. Simply order 3927600 Hose Kit, 3927400 Adapter 5"-6", and 3912401 Exhaust Transition (6").

CHAPTER 7

TROUBLESHOOTING YOUR FILTERMATE

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

PROBLEM	CAUSE	CORRECTIVE ACTION
Blower won't turn on	Unit not plugged into outlet	Plug the FilterMate into appropriate electrical service
	Circuit breaker(s) or Ground Fault Interrupter	Reset circuit breaker
	Blower wiring is disconnected	Inspect blower wiring
	Blower switch is defective	Replace switch
	Motorized impeller is defective	Replace motorized impeller
Low face velocity or poor containment of contaminants	Enclosure sash not closed.	Close sash to the lowest position
	HEPA Filter clogged	Replace HEPA filter or increase speed
	Carbon filter loaded with chemicals	Replace carbon filter

APPENDIX A

FILTERMATE COMPONENTS AND REPLACEMENT PARTS

The components that are available for your FilterMate are listed. The parts shown are the most commonly requested. If other parts are required, please contact Product Service.

Item	Qty.	Part Number	Description
1A	1	3921200	Exhaust Cover, HEPA
1B	1	3923500	Exhaust Cover, COMBO
1C	1	3923300	Canopy Exhaust Cover, HEPA System to outside
1D	4	1924200	Phillips Captive Screw for Exhaust Cover
1E	4	1927200	Retainer for Captive Screw
2	4	1936801	Hole Plug 1/2"
3	2	1936802	Hole Plug 7/8"
4A	1	3776002	Bag – 54 x 54
4B	1	3922200	Cover, Rear Filter Bag
4C	1	1968800	Strap, Cinching
5A	1	1301500	Switch, Rocker
5B	1	3922000	Wiring Harness, 115V
5C	1	3922001	Wiring Harness, 230V
6A	1	3922100	Speed Control, 115V
6B	1	3922101	Speed Control, 230V
7	1-115V	1327201	Circuit Breaker, 10 Amp
	2 – 230V	1327201	Circuit Breaker, 10 Amp
8A	1	1306600	Capacitor, 115V 15 MFD
8B	1	1306800	Capacitor, 230V 4 MFD
9A	1	3921700	Motorized Impeller, 115V
9B	1	3921701	Motorized Impeller, 230V
10A	1	1334500	Power Cord, 115V
10B	1	1334100	Power Cord, 230V
11	1	1333800	IEC Inlet Power Receptacle
12A	1	7907802	115V Outlet Power Receptacle
12B	1	1333900	230V Outlet Power Receptacle

Appendix A: FilterMate Components & Replacement Parts

Item	Qty.	Part Number	Description
13A	4	1664900	Bumper, Recessed 1" O.D. x .50" H
13B	4	1911415	Washer, #10
13C	4	1887808	#10-24 x .50 Screw
14A	2	1881196	HEPA Clamping Bolt, 3/8-16 x 6.00"
14B	2	1906925	Nut, Hex 3/8 Nylon Lock
14C	4	1911018	Washer, Flat 3/8
15A	1	3923600	Clamp, Combo Carbon Filter Right
15B	1	3923601	Clamp, Combo Carbon Filter Left
15C	4	1906921	Nut, Nylon Lock 1/4-20
16A	1	4868600	Hose 5" I.D. x 8", Flexible Gray Polypropylene
16B	2	1921000	Hose Clamp 5"
16C	2	1921500	Hose Clamp 6"
16D	1	3927500	Hose 5" ID x 8', smooth bore clear urethane static dissipative. Includes two hose clamps.
16E	1	3927600	Hose 6" ID x 8' with 6.09" ID cuffs, black thermoplastic rubber. Includes two hose clamps. (used to exhaust to outside).
16F	1	3927400	Adapter, 5"-6" for connecting FilterMate to Enclosure via 6" Hose 3927600 to enhance airflow 15-20%.
16G	1	3912400	Upper Exhaust Transition 5" (std. on FilterMate)
16H	1	3912401	Upper Exhaust Transition 6" (used with 3927400 Adapter 5"-6")
16I	1	3912402	Lower Exhaust Transition 5" (used to conceal hose)
16J	1	3912403	Lower Exhaust Transition 6" (used to conceal hose)
17A	1	3707900	HEPA, Filter 18 x 18 x 3.31, 99.99% efficient
17B	1	3923400	Filter, Organic Vapor 18 x 18 x 2.12
17C	1	3923401	Filter, Formaldehyde 18 x 18 x 2.12
17D	1	3923402	Filter, Ammonia 18 x 18 x 2.12
17E	1	3885700	ULPA Filter, 18 x 18 x 3.31, 99.999% efficient
17F	1	3707904	PLEKX Filter, 18 x 18 x 3.31, 99.97% efficient with 1.7 lbs. carbon.
18A	1	6924900	Syringe Kit for Carbon Saturation Detection
18B	-	Ordered separately from dealer specific to chemical	Detector Tube, Organics
18C	-	6926000	(3) Detector Tubes, Formaldehyde
18D	-	6925700	(3) Detector Tubes, Ammonia

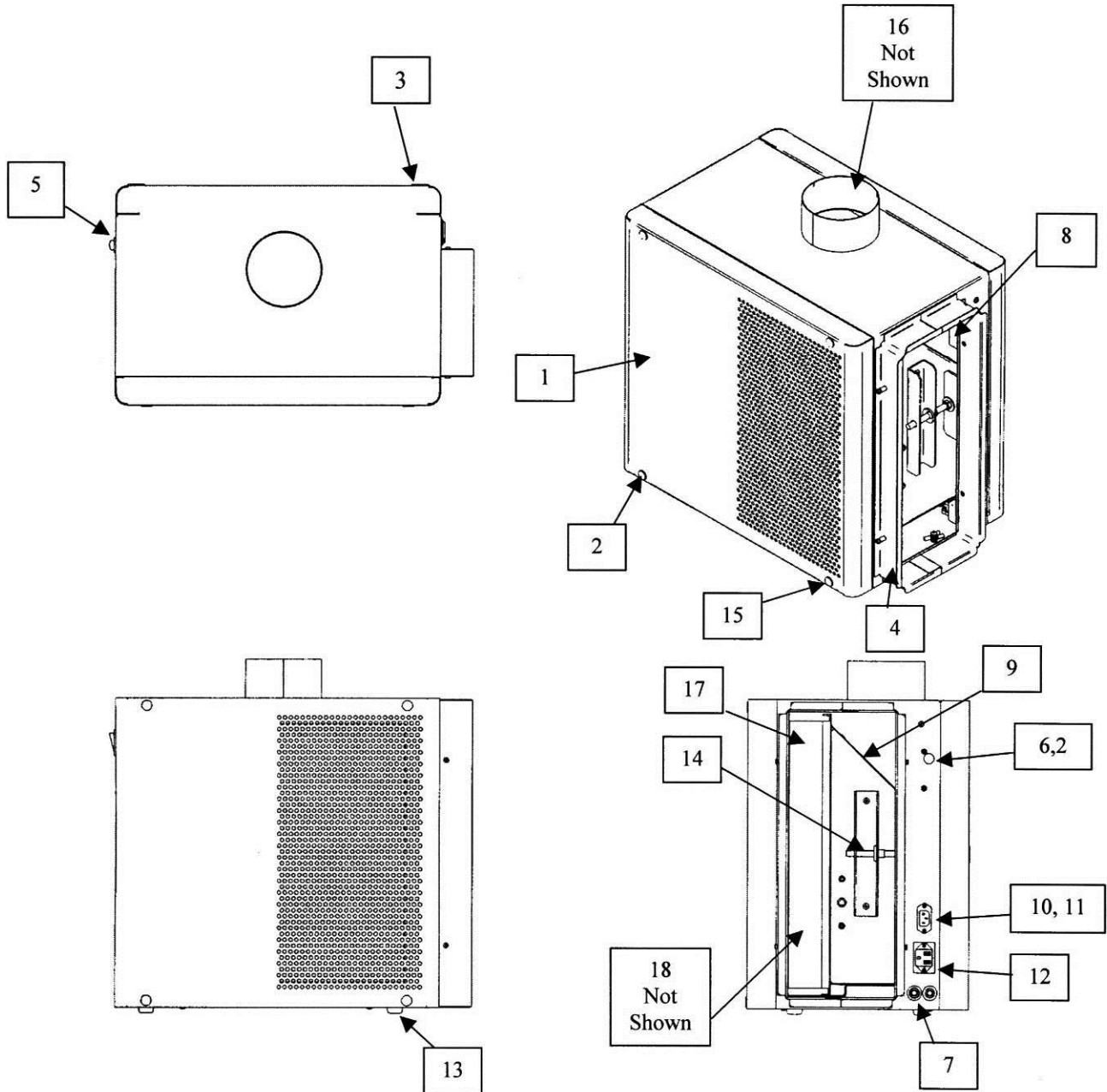


Figure A-1
Replacement Parts

APPENDIX B

FILTERMATE SPECIFICATIONS

This Appendix contains technical information about the FilterMate including specifications, environmental operating conditions, wiring diagrams, dimensions, and evaporation rates.

Electrical Specifications

- FilterMate 10 Amps, 115V, 50/60 Hz.
- FilterMate, 10 Amps, 230V, 50/60 Hz.

Environmental Conditions

- Indoor use only.
- Maximum altitude: 6562 feet (2000 meters).
- Ambient temperature range: 41° to 104° (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 overvoltages according to Installation Categories II (overvoltage 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.

HEPA or Carbon FilterMate Dimensions

Models: 3970000, 3970001 (115V)
3970020, 3970021 (230V)

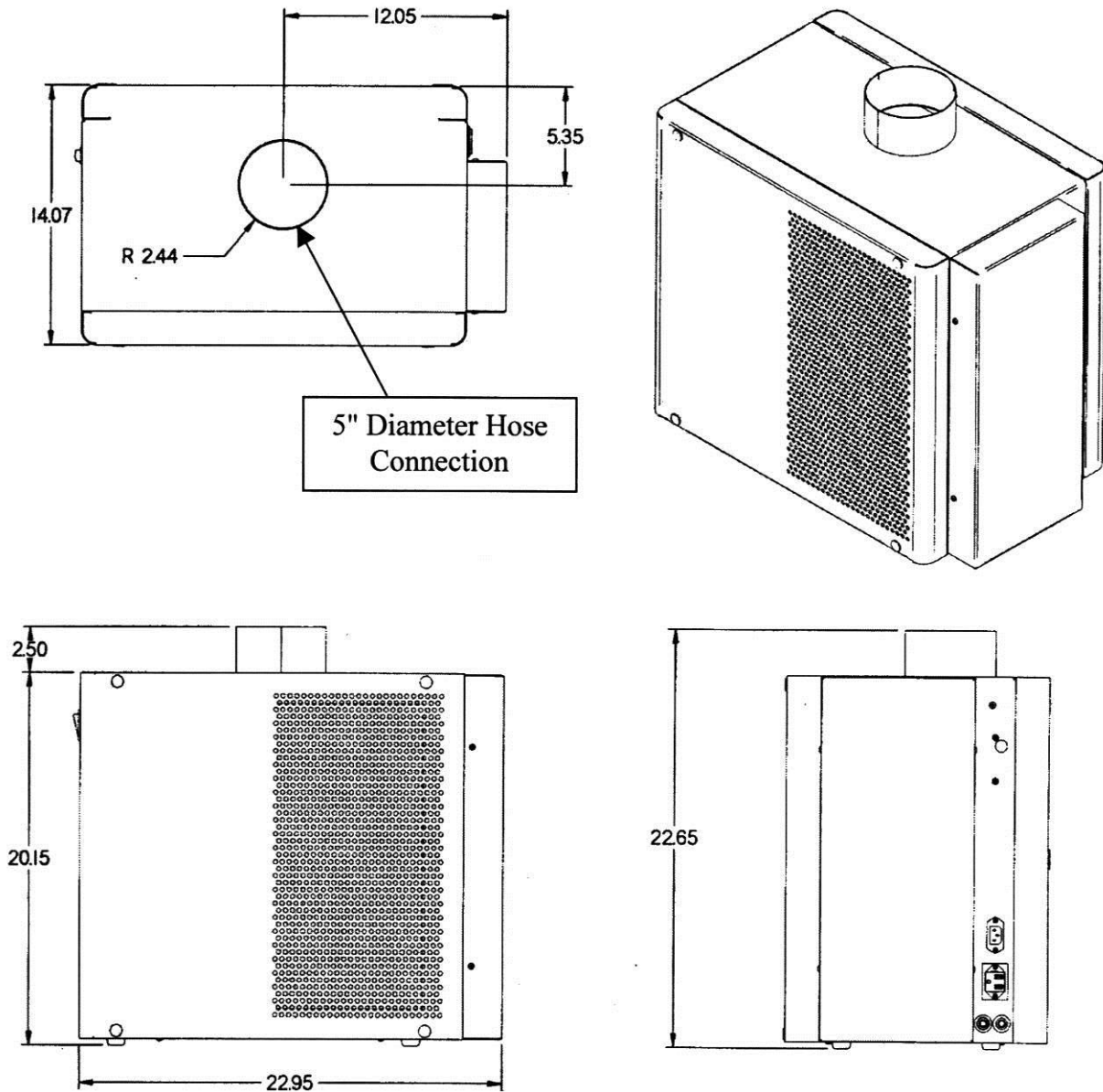


Figure B-1

**Combination HEPA/Carbon FilterMate
and Dual Carbon FilterMate Dimensions**

**Models: 3970003 (115V) HEPA/Carbon
3970023 (230V) HEPA/Carbon
3970004 (115V) Dual Carbon
3970024 (230V) Dual Carbon**

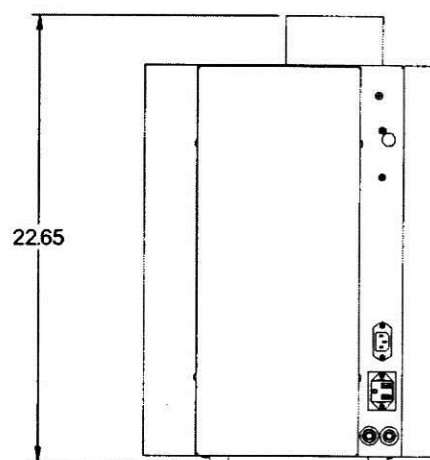
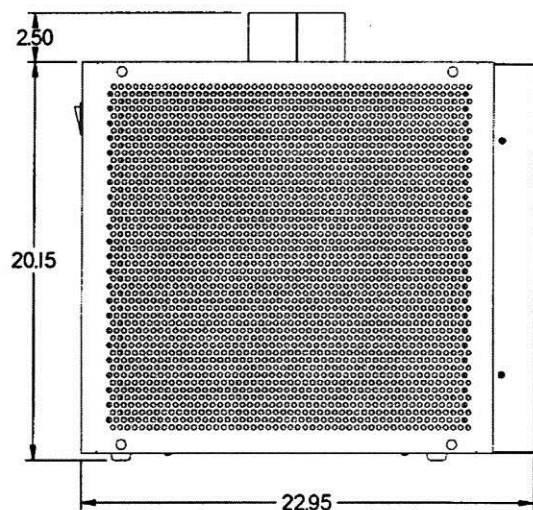
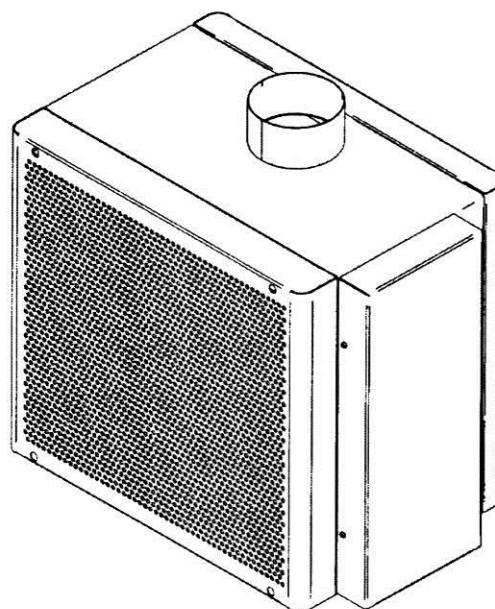
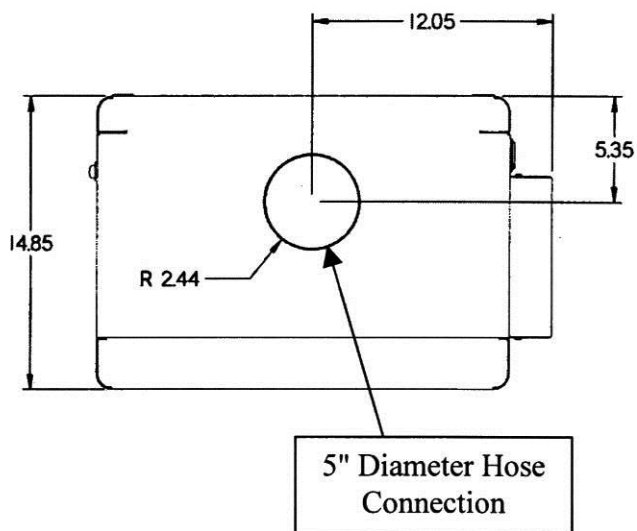


Figure B-2

HEPA System FilterMate Dimensions. Exhausts to Outside

**Models: 3970002 (115V)
3970022 (230V)**

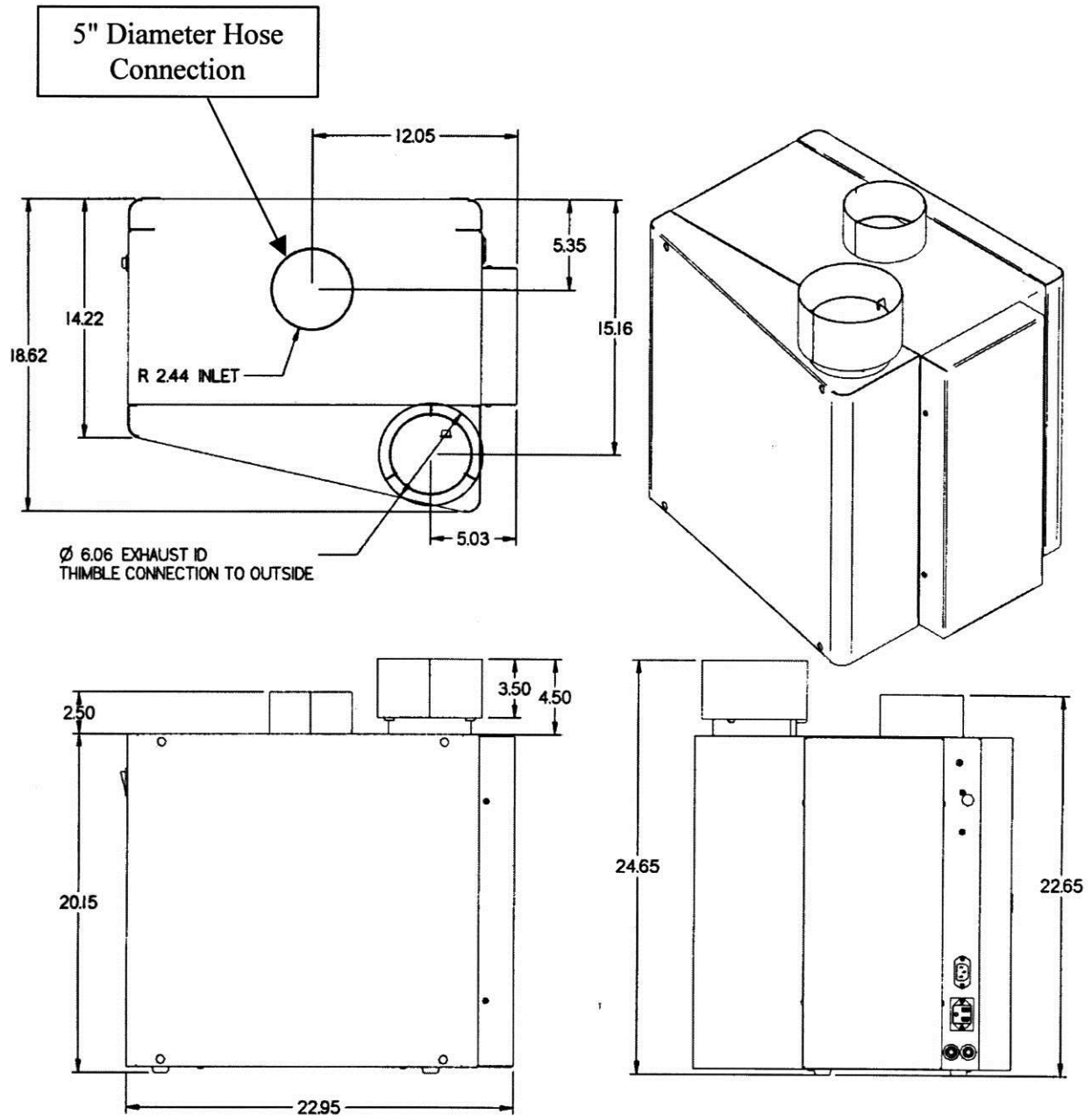
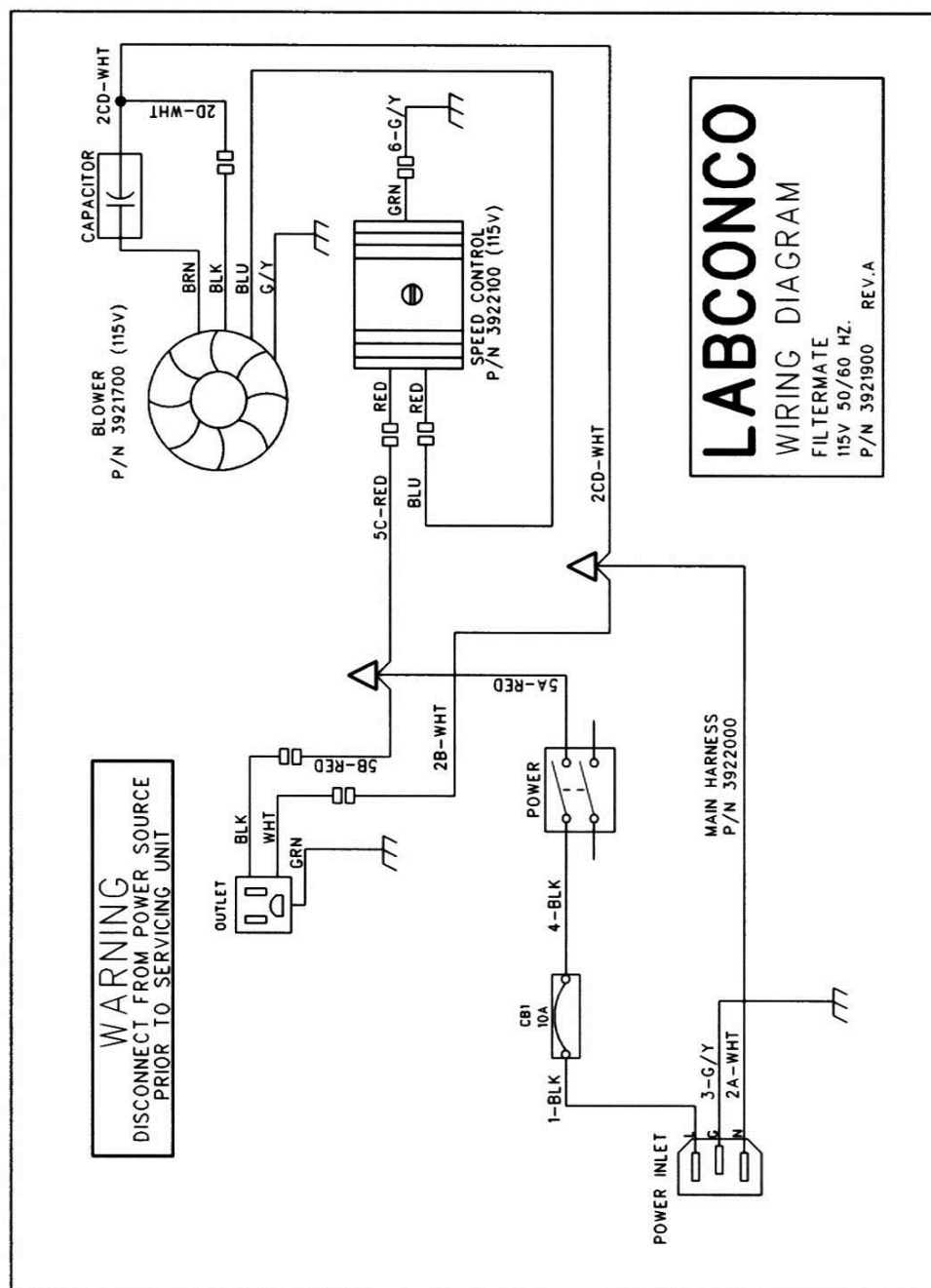
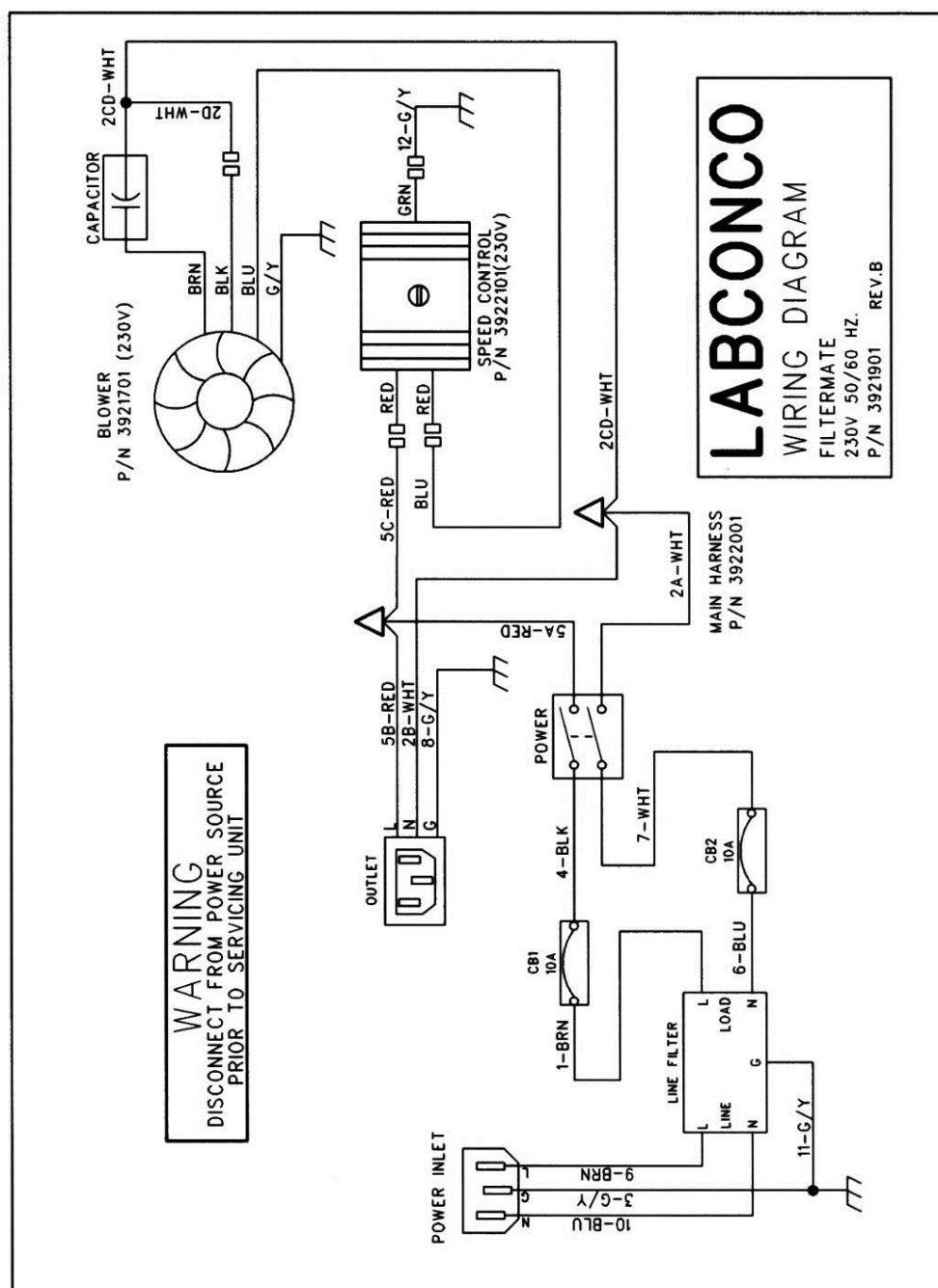


Figure B-3

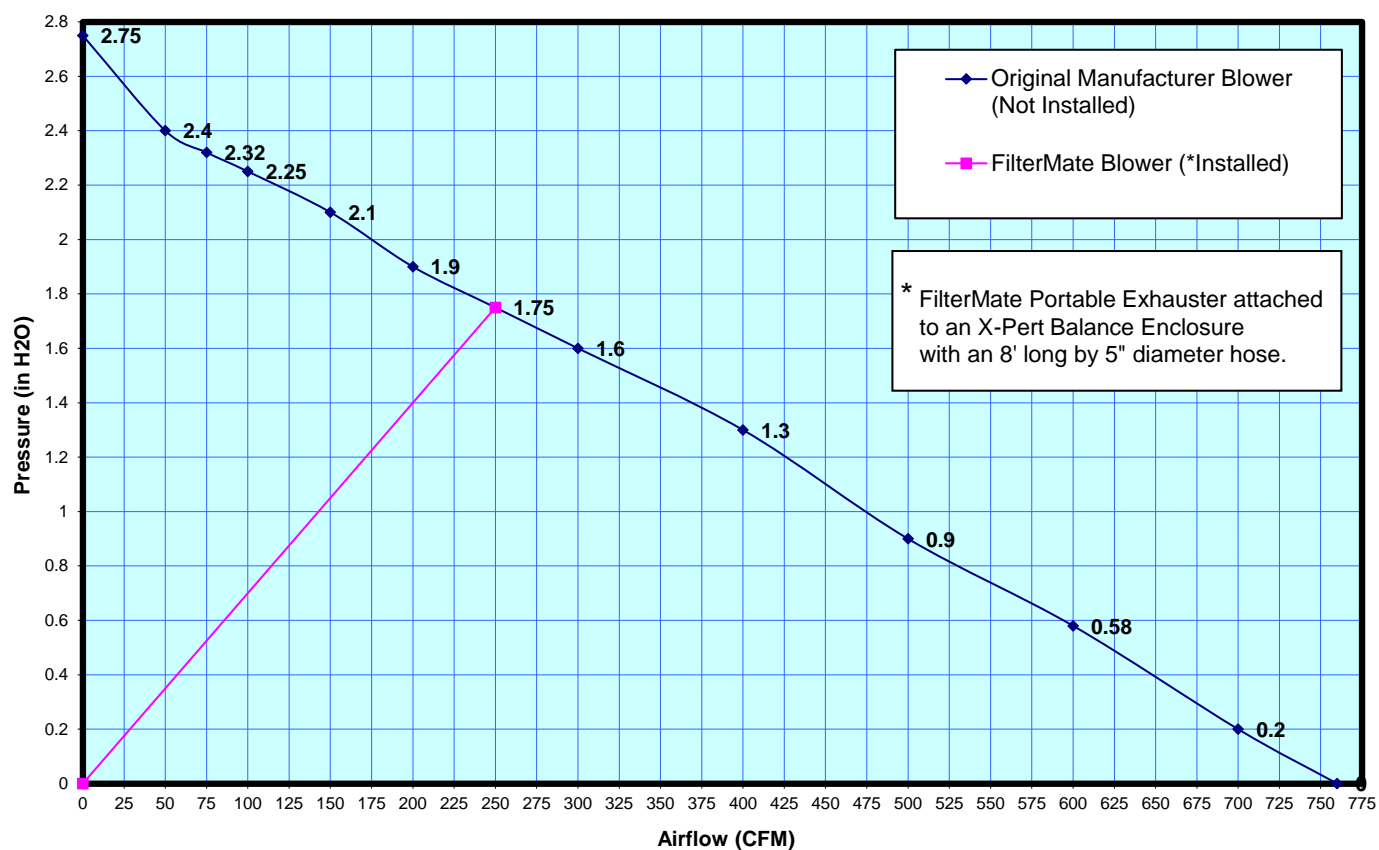




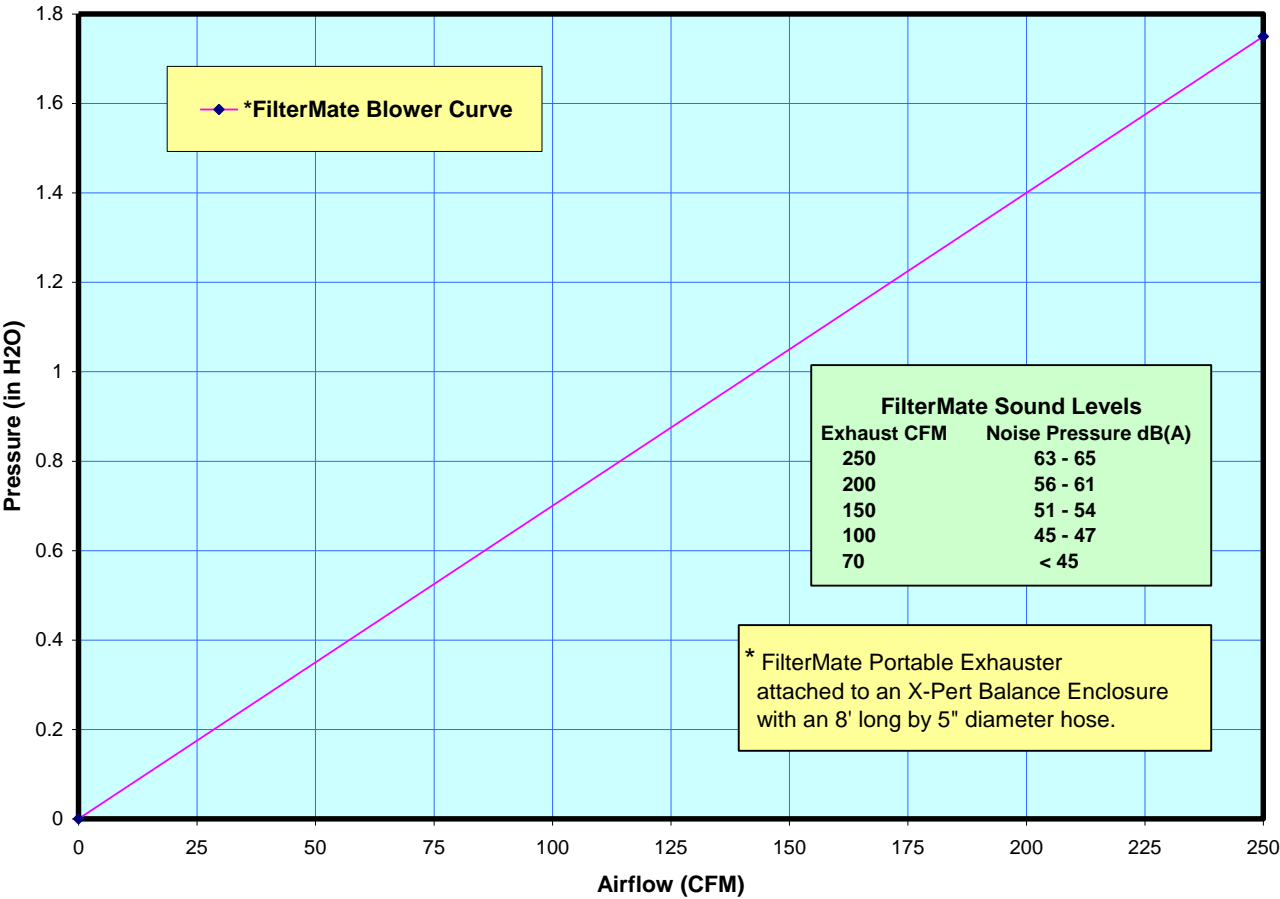
APPENDIX C

BLOWER CURVES

FilterMate Blower Curve



FilterMate Blower Curve



APPENDIX D

FILTERMATE RESOURCES

The following resources are for you to refer to for your FilterMate.

Pocket Guide to Chemical Hazards
National Institute for Occupational Safety and Health (NIOSH)
(202) 783-3238

National Draeger, Inc.
101 Technology Drive
P.O. Box 120
Pittsburgh, PA 15230
(414) 787-8383

Sensidyne
16333 Bay Vista Drive
Clearwater, FL 34620
(800) 451-9444