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User's Manual

TXE – Tall XPert[®] Enclosure

Models

3892000
3892001
3892002
3892020
3892021
3892022

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 TXE's – Tall XPert® Enclosures 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.

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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 Labconco TXE. Your enclosure provides personnel protection through superior containment. It is the result of Labconco's more than 50 years of experience in manufacturing fume hoods and more than 30 years of experience in manufacturing filtered enclosures.

These enclosures will effectively contain toxic or noxious particulates when properly installed and operated. Each enclosure uses a single HEPA filter, which is rated at least 99.99% efficient for 0.3-micron particles. The TXE offers many unique features to enhance safety, performance, and energy savings. 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 high performance HEPA filtered enclosures operate, please review Chapter 4: High Performance Features and Safety Precautions before you begin working in the enclosure. Even if you are an experienced user, please review Chapter 5: Using Your HEPA Filtered Enclosure, which describes the TXE features so that you can use the filtered enclosure efficiently.



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.

Typographical Conventions

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

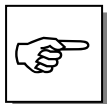
- Steps required to perform a task are presented in a numbered format.
- Comments located in the margins provide suggestions, reminders, and references.



- 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 the enclosure.



- Critical information is presented in boldface type in paragraphs that are preceded by the wrench icon. A trained certifier or contractor should only perform these operations. 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.



- **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 sur l'unité, il indique une mise en garde qui est indiqué dans ce manuel.

Chapter 2:

Prerequisites

Before you install the TXE, you need to prepare your site for installation. You must be certain that the area is level and of solid construction. In addition, a dedicated source of electrical power should be located near the installation site to power the TXE, balance and other apparatus. Additionally, the enclosure should be strategically placed in the lab to provide efficient workflow.

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

- The location and air current requirements.
- The exhaust and blower requirements.
- The electrical power requirements.
- The space requirements.

Refer to Appendix B: Dimensions for complete enclosure dimensions.

Refer to Appendix C: Specifications for complete TXE electrical and environmental conditions, specifications and requirements.

Location and Air Current Requirements

The TXE has been designed to contain hazards by negating typical cross drafts and turbulence within the opening. As a precautionary safety measure and a higher level of quality management, it is recommended that the enclosure be placed in an area to avoid:

- High traffic areas where walking might cause an air disturbance or be a nuisance to balance readings.
- Overhead or wall HVAC diffusers, fans, radiators or other lab equipment producing air currents.
- Next to doorways or windows that may be opened.



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.

Exhaust and Blower Requirements

The TXE uses an integral motorized impeller to draw room air past the operator and through the enclosure. This contaminated air is then pushed through the HEPA filter. The HEPA-filtered exhaust air is then forced out the top of the enclosure.

The HEPA-filtered exhaust air can be recirculated into the laboratory or exhausted outside with the addition of the Canopy Exhaust Connection and remote blower listed in Chapter 7. Electrical connections are covered in Chapter 2 for this configuration.

Data for the exhaust volume, noise pressure and enclosure static pressure loss are listed for the TXE at face velocities of 80 and 100 fpm.

Enclosure Width	Model Description	Face Velocity (fpm)	Exhaust Volume (CFM)	TXE Pressure Loss with HEPA filter (in w.g.)	TXE Noise Pressure db (A)	TXE Max. Equivalent Resistance (Ft)	TXE Max. External Static Pressure
2 FT	2' TXE	80	115	.48" - .57"	50-56	200	.18"
		100	145	.62" - .72"	53-58	80	.13"

Proper blower selection can be determined from these exhaust requirements and the total system static pressure loss. For outside exhaust, the enclosure must be connected to either a dedicated blower or a house exhaust system. Labconco offers accessory remote blowers listed in Chapter 7. Contact Labconco for blower sizing assistance.



If the enclosure is connected directly to a house exhaust system, an adjustable damper (or valve) must be installed to control the airflow properly. This is equally important when a house exhaust system is controlling multiple filtered enclosures. See Chapter 7 for accessory adjustable damper ordering information.

Electrical Requirements

Standard duplex electrical receptacles should be nearby for connecting the TXE or other equipment. The enclosure includes pass-thrus to allow electrical cords through the back of the enclosure without leaving a large hole for contaminants to escape.

TXE Connected to Building Exhaust

There is no provision for controlling a remote blower for exhausting air from the TXE. One way to do this, however, is to have a certified electrician connect a wall mounted switch receptacle nearby so that the switch controls both the remote blower and the receptacle. The power cord for the TXE is then plugged into this receptacle.

Space Requirements

The dimensions for the different models are shown in Appendix B: Dimensions.

Chapter 3:

Getting Started

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

- Unpack and move the enclosure.
- Set up the enclosure with the proper supporting structure.
- Installation of HEPA filters.
- Connect the electrical supply.
- Set the face velocity with the speed control adjustment.
- Arrange validation for the enclosure.

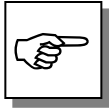


Each TXE model weighs approximately 213 lbs (79 kg). If you must lift the enclosure manually, follow safe lifting guidelines. The TXE may be “top-heavy,” keep the enclosure vertical. NEVER attempt to put any lifting force on the front doors! Secure the glass doors with tape whenever moving or lifting the enclosure.

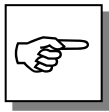
Unpacking the Enclosure

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 or carton on the enclosure and inspect it for damage that may have occurred in transit. If 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 ENCLOSURE 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 packing material until you have checked all of the components and tested the enclosure. We recommend that you do not remove the enclosure from its shipping container 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 enclosure by tilting it onto a hand truck.

Installing the TXE on a Supporting Structure

When installing the enclosure onto a supporting structure benchtop, ensure that the structure can safely support the combined weight of the enclosure and any related equipment.

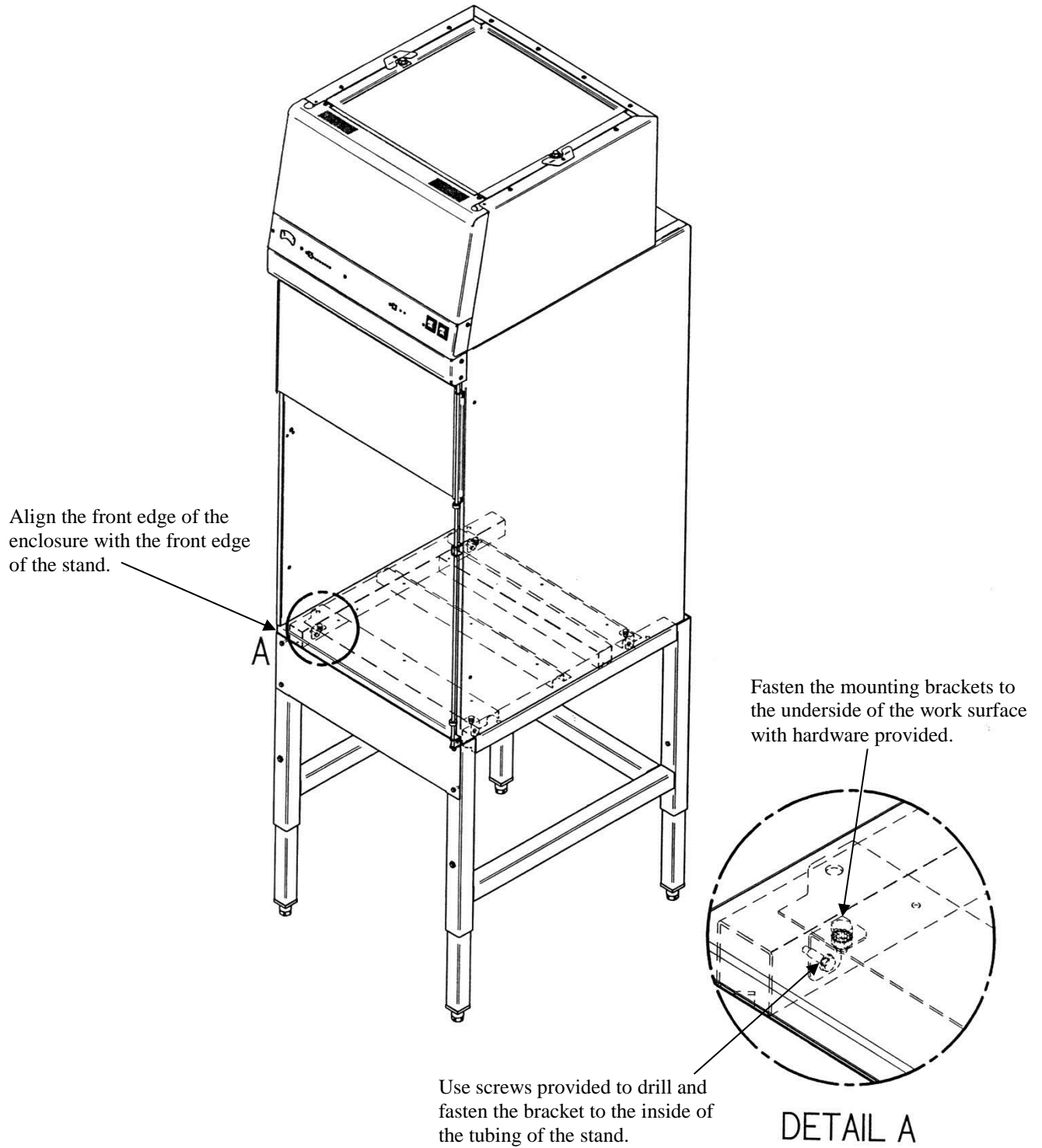


Figure 3-1
TXE Installation

Connecting to the Exhaust System (Optional)



ATTENTION: The weight of the exhaust ductwork system must be supported independently of the enclosure superstructure or damage may occur.



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

The exhaust connection on the TXE has been designed to accept 6" diameter ductwork as shown in Figure 3-2. The exhaust connection ships uninstalled and needs to be fastened with the screws provided. See Chapter 7 for ordering Canopy Exhaust Connection for the TXE. Canopy Exhaust Connection aids in the removal of chemicals or odors not captured by HEPA filters. Review Chapter 2 for exhaust prerequisites and review Chapter 7 for ordering blower exhaust equipment.

Consult Labconco Customer Service should you require help sizing your blower for the exhaust volume and system static pressure loss.



To ensure compatibility, the selected exhaust duct material should match the enclosure, procedures and chemical applications.

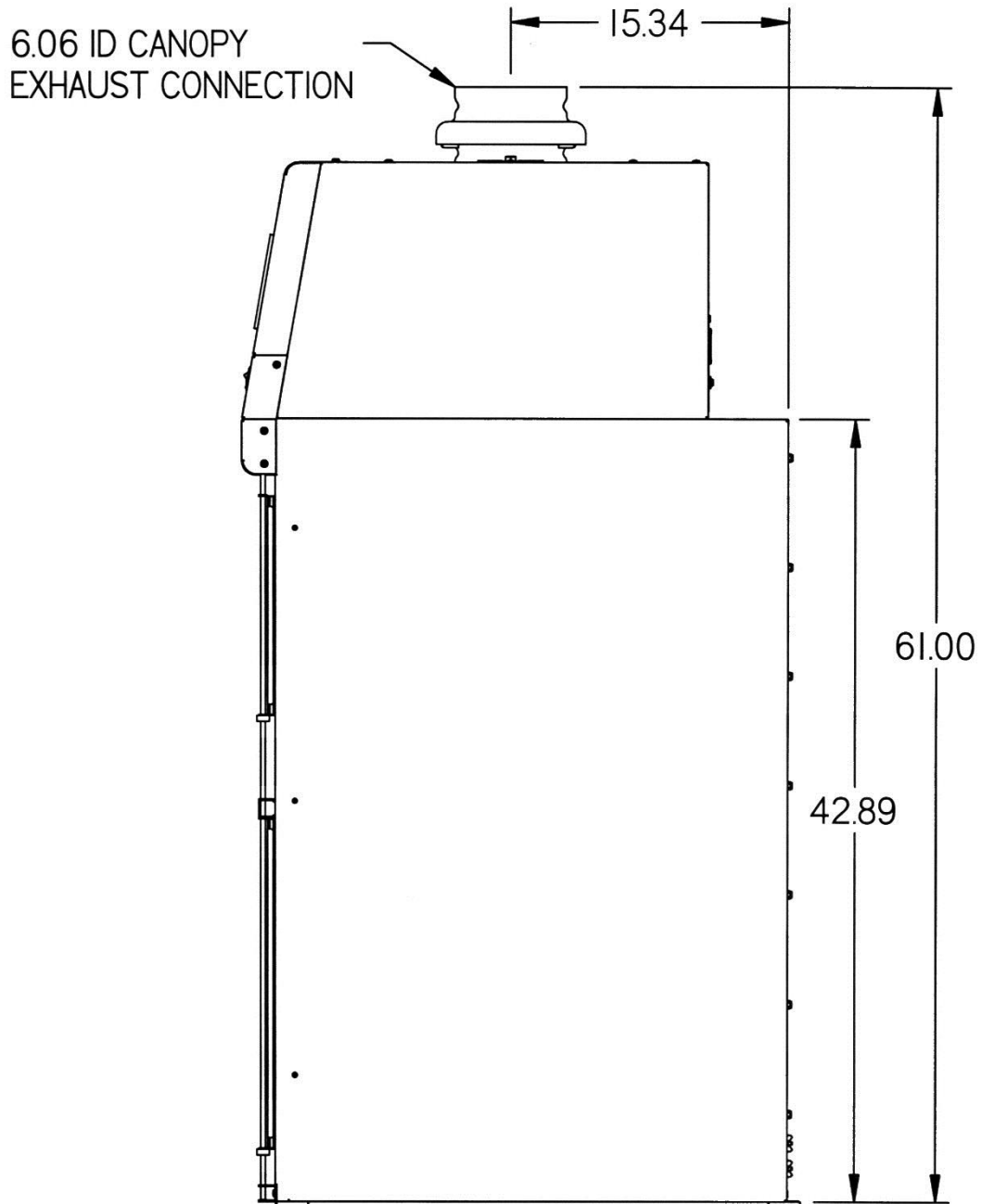


Figure 3-2
TXE Exhaust Connection

Installation of HEPA Filters

HEPA filters are shipped installed with the gasket on the downstream side. The HEPA filters are leak checked at Labconco. A second leak check is recommended before using the enclosure and at least annually thereafter. Consult your Safety Officer and Chapter 6 for the HEPA Filter Leak Test and HEPA Filter Bag-In/Bag-Out Procedure. See Figure 4-2 for HEPA filter location, HEPA filter gasket, filter clamp bolts, and bag-in/bag-out flange. The TXE has a true bag-in/bag-out HEPA filter to safely dispose of the filter. All seams upstream of the HEPA filter are jacketed by negative pressure. This intrinsically safe design ensures containment.

Connecting the Electrical Supply Source to the TXE 115V Models

Simply connect the 115V power cord supplied to the IEC electrical supply plug on the back of the enclosure.

For the remote blower used for the TXE, follow the wiring diagram on the enclosure and wire the blower wires in the electrical junction box located behind the front panel. These wires are switched by the electrical relay via the blower switch.

The maximum circuit load for the electrical relay is 6 amps. Only the remote blower wiring is connected inside the electrical junction box. The lights and airflow monitor are powered from a standard duplex electrical receptacle located nearby for connecting the power cord. All wiring for the TXE should be performed by a licensed electrician and conform to local codes. In most cases, the TXE will require the use of shielded conduit to protect the wiring.

See Figure 3-3. The grounding connection shall not be made to the terminal box cover. The building electrical supply system for the remote blower should include overload protection such as a switch or circuit breaker in close proximity and within easy reach of the operator. The switch or circuit breaker shall be marked as the disconnecting device. Consult NEC-2002 for proper installation.

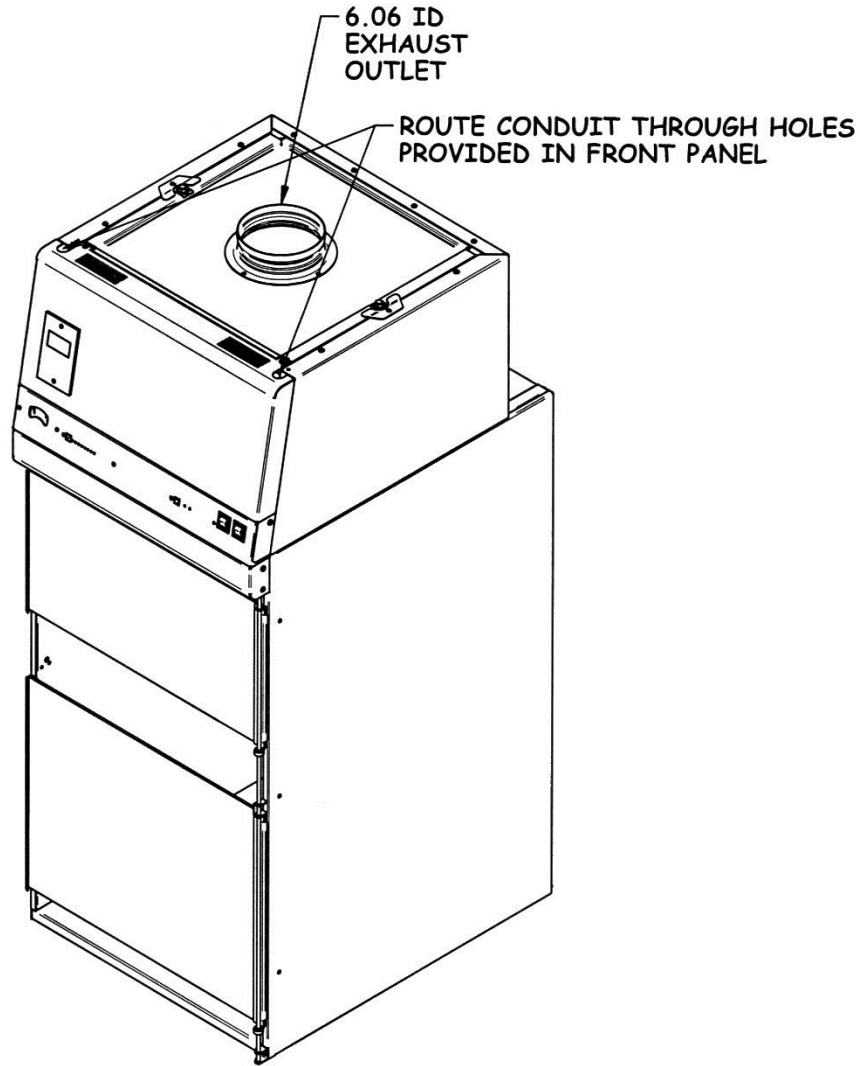


Figure 3-3
TXE Conduit Location for Wiring External Remote Blower

230V Models

The same procedure applies for the 230V except it is shipped without a plug. Install the appropriate plug for your electrical specifications per local codes. If using at 50 Hz operations, blower performance maximum airflow will be reduced by 17%.



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.

Set the Face Velocity with the Speed Control Adjustment

The adjustment of the speed control gives the correct face velocity and is located behind the front panel. The face velocity should be adjusted between 80 and 100 fpm. (Consult your Safety Officer for airflow recommendations for your application). Containment is maximized at a setting within this range. Working at the lowest face velocity appropriate for the application will give the quietest operation. Face velocity measurements are made using an anemometer. An electric anemometer can be obtained from your laboratory supply dealer. Face velocity measurement should be taken as an average of several readings in the largest of openings with the glass doors closed. Using a small Phillips screwdriver, adjust the speed control to give the required face velocity. See Figures 6-1 and 6-2 in Chapter 6 to locate the speed control. The face velocity is increased by turning the speed control counter clockwise and clockwise to decrease face velocity.



NOTE: Face velocity profiles and smoke testing should be performed frequently per your organization's quality system to ensure safe performance.

Chapter 4:

High Performance Features and Safety Precautions

High Performance Features

The TXE is designed to meet the needs of the laboratory scientist to contain powders produced while using processing or analysis equipment. The TXE's have been tested to effectively contain toxic particulate when properly installed and operated. The rear perforated baffles work to produce horizontal airflow patterns that significantly reduce particulate concentrations through the work area.

These concentrations of materials are predominantly removed on the "first pass" of airflow resulting in high performance containment. The plenum and the HEPA filter are jacketed by negative pressure. Should a leak occur in the filter gasket or the plenum, the contaminated air is recaptured and refiltered.

The TXE includes a true bag-in/bag-out HEPA filter disposal system to protect the worker from contact with hazardous powders and particulates. Users of both products are encouraged to routinely check airflow with an airflow monitor.

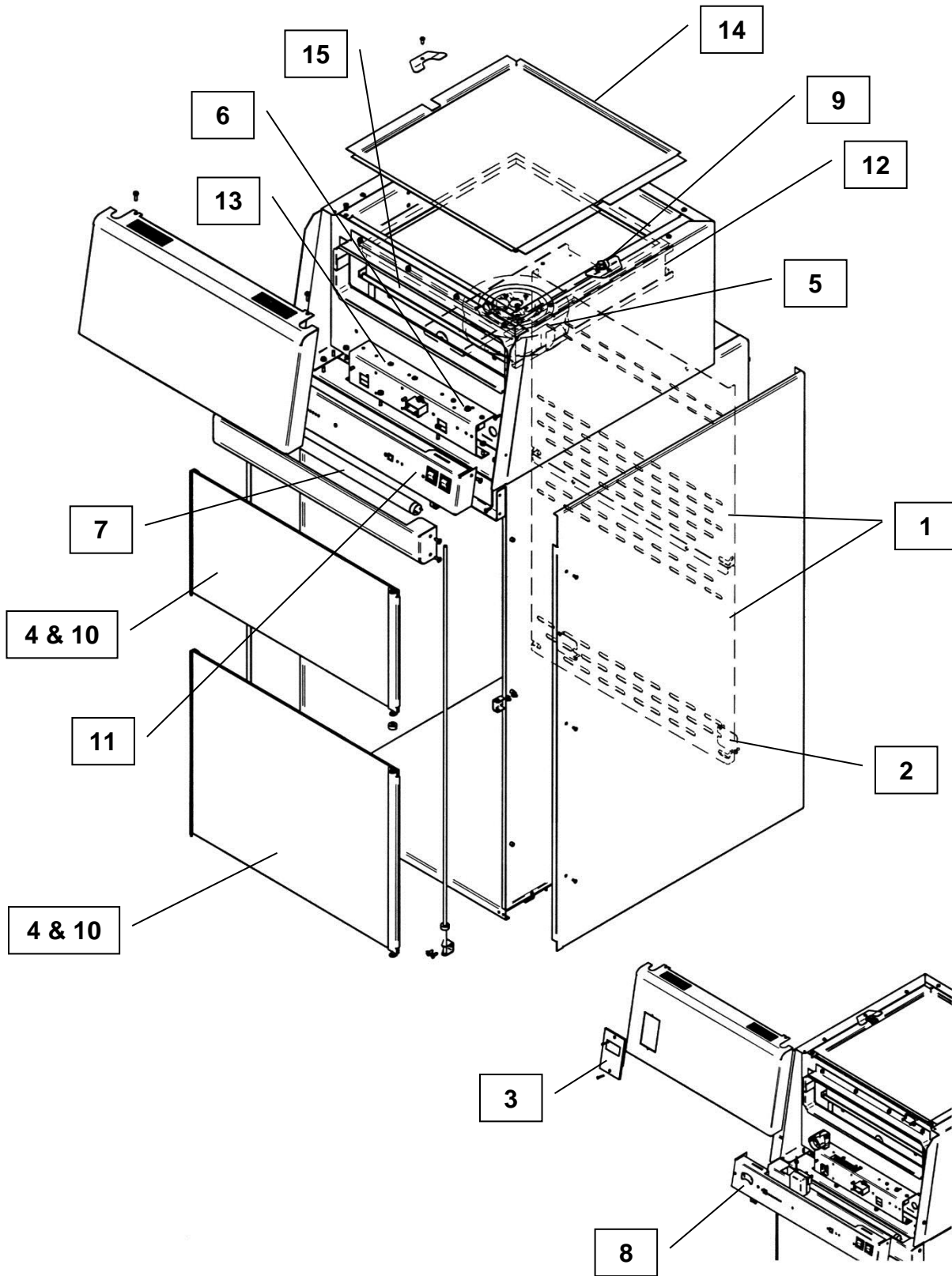


Figure 4-1

1. **Zoned Rear Perforated Baffle** directs horizontal laminar air streams to the three-zoned sections of the perforated baffle. The three-zoned sections have increasingly more open area at the bottom that help form laminar airflow. This minimizes the potential for air to roll forward preventing contaminants from moving toward the front opening. The majority of contaminants are captured and removed on the first pass through the enclosure. Rear perforated baffles may be tilted or removed for ease in cleaning.
2. **Utility Ports** allows electrical cords and data cords to pass through the back of enclosure without leaving a large hole for contaminants to escape.
3. **Accessory Guardian Airflow Monitor or Guardian™ 1000 Digital Airflow Monitor** continuously monitors airflow. An audio/visual alarm alerts the user to low airflow conditions. The Guardian 1000 Digital Airflow Monitor also displays a face velocity value, provides an RS232 output, a night setback mode and several auxiliary relay ports. Both airflow monitors are available options on all TXE models.
4. **Adjustable Doors** provide full access to the enclosure's interior. The support collars under each door allow some minor adjustments vertically to facilitate applications with equipment.
5. **Vibration-Isolated Motorized Impeller** has vibration isolation supports, which eliminate transfer of vibration to the work surface.
6. **Speed Control** regulates the speed of the motorized impeller and is used by the certifier to validate and adjust the inflow velocity. Located behind the front panel.
7. **Fluorescent Lamp** is located above the work area, out of contact with contaminated air.
8. **Filter System Pressure Gauge** indicates the total system pressure across the HEPA filter and pressurized plenum to help predict HEPA filter loading.
9. **Filter Clamping Bolt** evenly seals the HEPA filter to the frame of the enclosure.
10. **Access Doors.** The doors are constructed of tempered safety glass. Doors pivot out for loading and cleaning.
11. **Control Panel.** The control panel, which is located above the sash, contains the filter system pressure gauge and control switches.
12. **HEPA (High Efficiency Particulate Air) Filter** is rated to remove 99.99% of all particles 0.3 micron in size. See Figure 4-2. HEPA filters listed in Chapter 3 and 7.
13. **Lamp Ballast (Not Shown)** for the fluorescent lamp is located behind the control panel.

14. **Accessory Caonopy Exhaust Connection** is available to duct integral blower models including the TXE to the outside. The Canopy Exhaust Connection allows the operator protection from hazardous, fumes or vapors not captured by particulate filters.
15. **HEPA Filter Access Port** to access HEPA filter during filter changing procedures. For harmful powders and particulates, the true bag-in/bag-out procedure is used to properly dispose of the contaminated HEPA filter.

Safety Precautions

1. Although the enclosure has been engineered to maintain optimum operator safety, caution should always be used while working. Prior to using the enclosure, check to make sure that the exhaust blower is operating and that air is entering the enclosure at its specified face velocity. The use of an airflow monitor is recommended to alert the user to a problem with airflow.
2. Use good housekeeping in the enclosure at all times. Clean up spills immediately. Periodically clean enclosure interior.
3. Do not overload the work surface with apparatus or work material. The safe operation of the enclosure is based upon having proper airflow through the structure.
4. Blocking large portions of the rear baffle will change the airflow pattern in the enclosure causing turbulence. (Do not install equipment against the rear baffle, as this will affect airflow).
5. Do not work in this enclosure without the exhaust system running.
6. Applications involving acid use in this enclosure is prohibited.
7. Radioisotope materials are prohibited in this enclosure. Consult your Safety Officer.
8. Avoid cross drafts and limit traffic in front of the enclosure. Air disturbances created may draw contaminants out of the enclosure.
9. A qualified certification technician should test the enclosure before it is initially used. The enclosure should be validated whenever it is relocated.
10. The use of safety goggles, protective clothing, gloves and any other personal protective equipment recommended by your safety officer should be used.
11. The doors should remain closed during particulate generating processes.
12. The enclosure should be recertified whenever it is serviced or at least annually thereafter.
13. The HEPA filter provides personnel and environmental protection from particulate matter. Because room air is drawn into the work area during operation, this enclosure should not be used for operations requiring product protection from environmental contamination.

14. Avoid the use of flammable gases or solvents in the enclosure if possible. Care must be taken to ensure against the concentration of flammable or explosive gases or vapors. Use of an open flame should be avoided in the enclosure. Open flames may disrupt the airflow patterns in the cabinet, burn the HEPA filter and damage the filter's adhesive. Gases under high pressure should not be used in the enclosure as they may disrupt the airflow patterns of the cabinet.
15. HEPA filters are only effective for entrapment of particulate matter. Manipulations that generate gases or vapors from toxic chemicals or radionuclides, must be evaluated carefully from the standpoint of buildup to dangerous levels, the decontamination of the enclosure and compliance with applicable regulations.
16. 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 or normal operation. If you suspect that a HEPA filter has been damaged DO NOT use the enclosure; contact a local certification agency or Labconco.
17. The HEPA filter in the enclosure 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 in the enclosure.
18. Ensure that the TXE 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 filtered enclosure from electrical service.
19. Increase the face velocity by adjusting the speed control of the motorized impeller on the TXE or change the HEPA filter when the face velocity falls below acceptable limits established by your Safety Officer.
20. HEPA filters are disposed as hazardous waste. The user is responsible for recording the chemicals adsorbed or treated by the filters and disposing properly. HEPA filters should be disposed using the disposal bag on the TXE.
21. Ensure only trained operators use the enclosure. New users should review the User's Manual and become familiar with the operation of the enclosure.
22. 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.
23. Leave the blower on for at least one minute after work in the enclosure has been completed.

24. If a chemical, powder or particulates are spilled on the work surface, **DO NOT** switch off the blower until all traces have been removed.
25. Tag enclosures with appropriate warning, if filters have been removed for service.
26. If the blower fails during use, processes should cease and the area should be vacated and ventilated.

Chapter 5:

Using Your TXE

Now that the installation is completed, you are ready to use your TXE.

Read this chapter to learn about:

- Routine Daily Work Procedures.
- Appropriate HEPA Filter Applications, Suitability and Guidelines.
- Definition of Terms.
- Prohibited Acid Use.

Routine Daily Work Procedures

Planning

- Thoroughly understand procedures and equipment required before beginning work.

Start-up

- Turn on exhaust system and light.
- Check the baffle air slots for obstructions.
- Allow the enclosure to operate unobstructed for 1 minute.
- Wear a long sleeved lab coat and rubber gloves. Use protective eyewear. Wear a protective mask if appropriate. Consult your Safety Officer for additional personal protective equipment recommendations.

Work Techniques

- Doors should be closed for powder generating processes.
- Avoid using techniques or procedures that disrupt the airflow patterns of the enclosure.

Final Purging

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

Unloading Materials and Equipment

- Objects in contact with contaminated material should be surface decontaminated before removal from the enclosure.

HEPA Filter Applications, Suitability and Guidelines

- The HEPA TXE provides personal and environmental protection from particulate matter, hazardous powders and biohazardous materials. Because room air is drawn through the enclosure during operation, this enclosure should not be used for operations requiring sample protection from environmental contamination.
- HEPA filters are only effective for entrapment of particulate matter, hazardous powders and biohazardous materials. Manipulations that generate gases or vapors, i.e., toxic chemicals or radionuclides, require the use of a HEPA and carbon filter. 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 6 for replacing the HEPA Filter or using a Bag-In/Bag-Out Disposal Bag.
- The HEPA filter 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.
- The TXE is provided with a HEPA filter. For powders and particulates follow the HEPA Filter Bag-In/Bag-Out procedure in Chapter 6 for disposal instructions. For biohazardous materials, follow the Decontamination Procedure in Chapter 6 for disposal instructions.

Prohibited Acid Use

The TXE motorized impeller cannot be exposed to acids. Where applications require the use of acids, a separate ventilated enclosure or vented fume hood should be used with a remote blower ducted to the outside. No exceptions are permitted, as the impeller life span will be limited with acid use.

Chapter 6:

Maintaining Your TXE

Monitoring airflow and changing the filters is the primary maintenance required. Decontamination may be required and is reviewed in Chapter 6.

Review this chapter on maintenance for the following:

- Routine Maintenance.
- Determination of when to replace the HEPA filters.
- How to install a new HEPA filter with the bag-in/bag-out procedure.
- HEPA filter leak test.
- Speed control adjustment and setting the inflow face velocity.
- Operating and calibrating the airflow monitors.
- Initial certification.
- Re-certification.
- Fluorescent light replacement.
- Motorized impeller replacement.
- Speed control replacement.

Routine Maintenance Schedule

Daily or Weekly

- Wipe down the interior surfaces of the enclosure with a disinfectant or neutralizing cleaner, depending upon the usage of the unit and allow to dry.
- Using a damp cloth, clean the exterior surfaces of the enclosure, particularly the front and top to remove any accumulated dust.
- Operate the exhaust system, noting the airflow velocity through the enclosure using a source of visible smoke. Airflow monitors are recommended for constant monitoring.

Monthly (or more often as required)

- Determine the actual face velocity through the sash openings of the enclosure where the average reading should be at the specified velocity. (Use calibrated thermal anemometer or other approved apparatus). Airflow alarms are recommended for constant monitoring.



Annually

- Replace the fluorescent lamps.
- Have the enclosure validated by a qualified certification technician. See Certification and Recertification in Chapter 6.

Determination of When to Replace HEPA Filters

The HEPA filters in the TXE 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 in the largest opening between doors drops below the recommended 80-100 fpm velocity, and the speed control is adjusted to full speed. Replace HEPA filters if it fails the HEPA Filter Leak Test in Chapter 6.

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

The TXE includes a true bag-in/bag-out filter disposal system for safely removing the HEPA filter and protect the worker from toxic powders and particulates. See Figures 6-1 for the Bag-In/Bag-Out Procedure. For your safety, wear appropriate personal protective equipment during the change of HEPA filters.



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.

1. With the enclosure OFF, remove the front panel secured by two screws on top of the enclosure.
2. Remove the bungee cords and retaining strap on the bag and extend it out. The retaining strap provides an extra level of safety even though the enclosure is under negative pressure when the blower is on. Do not remove the black trim seal on leading edge of access port flange.
3. Loosen the two filter clamp bolts with a 9/16" socket securing the HEPA filter. See Figures 4-1 and 4-2.
4. Place both arms in the rear gloves of the bag, and carefully draw the HEPA filter out of the enclosure. Rest the HEPA filter on the floor, table or cart. Remove arms from bag gloves.
5. Create two seals between the enclosure 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 enclosure.
6. Place the new HEPA filter in the new bag. Slide the shock cord of the old bag forward against the back edge of the black trim seal. Place the new bag and new HEPA filter over the old bag stub and onto the enclosure access port. The new bag shock cord should be located past the old bag

shock cord, and against the access port mounting flange. The new bag should be oriented on the access port with one glove down and two gloves centered on the upper part of the bag.

7. Carefully remove the black trim seal and old bag stub using the single glove near the access port. Reattach the retaining strap on the perimeter of the new bag at the enclosure access port. Draw the black trim seal and 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. Install the new black trim seal with the inside barb located to inside of the access port. Install the bungee cords. Turn the enclosure ON to draw a vacuum on the bag. Reinstall the front panel.

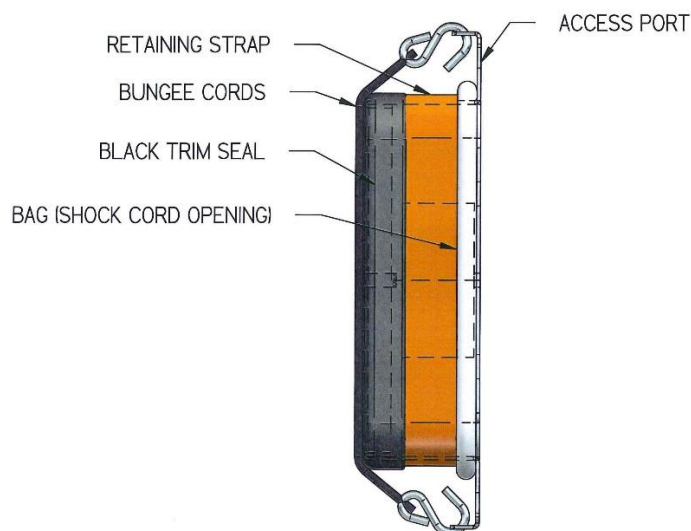


Figure 6-0

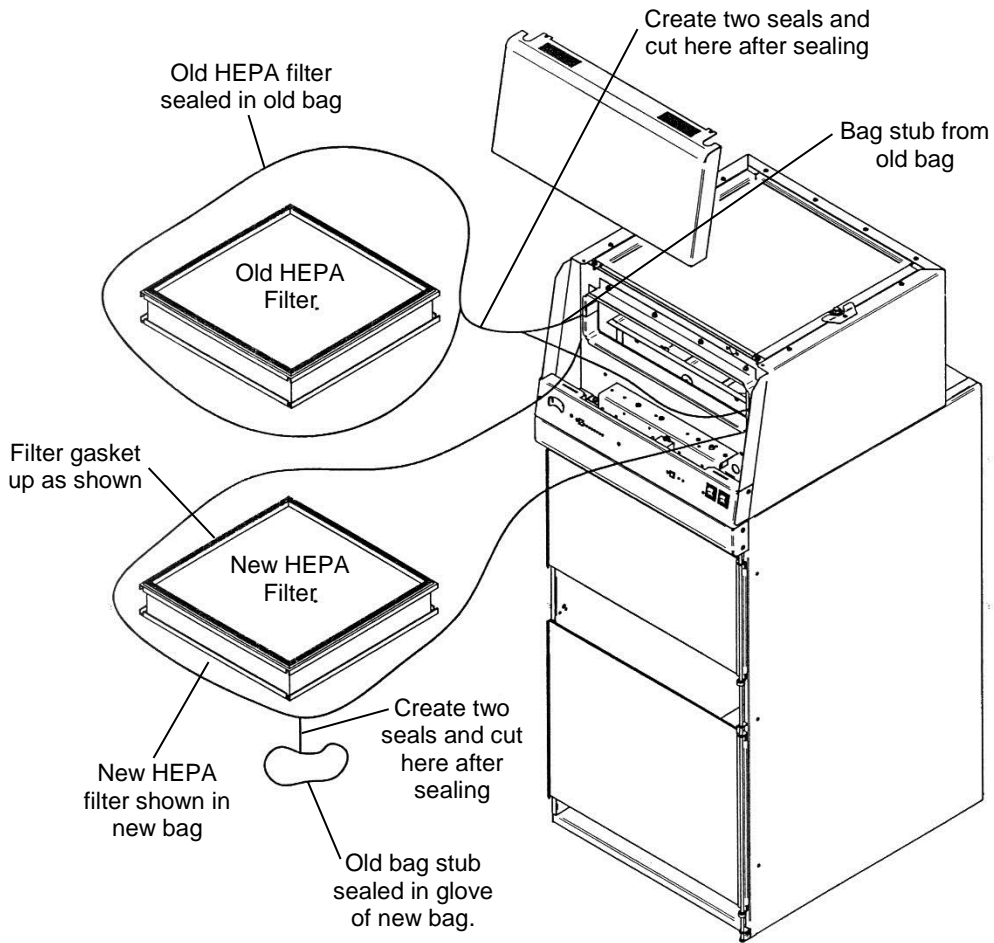


Figure 6-1
Bag-In/Bag-Out HEPA Filter Changing Procedure Diagram & Filter Leak Test Diagram

HEPA Filter Leak Test

Purpose

After installing the new HEPA filter, 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 testing is to be done by a qualified technician with calibrated equipment. Remove the top perforated exhaust cover by using a Phillips screwdriver to unfasten the (2) screws used to secure (2) clips. See Figure 6-1. The filter passes the leak test 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 or suitable liquid shall be created by flowing air through it. The compressed air supplied to the generator should be adjusted to a pressure of 10 ± 1 psig. during operation. Air Techniques Inc. Model TDA-4A or equal. One nozzle at 10 psig is (67.5 cfm x 100ug/l)/(Vol. of air), For the 2' at 90 fpm or 130 cfm, one nozzle @ 10 psig is 6,750/130 cfm = 52 ug/l. For the 3' at 90 fpm or 200 cfm, one nozzle @ 10 psig is 34 ug/l. For the 4' at 90 fpm or 265 cfm, one nozzle at 10 psig is 26 ug/l. For the 5' at 90 fpm or 215 cfm, one nozzle at 10 psig is 31 ug/l. For the 6' at 90 fpm or 260 cfm, one nozzle at 10 psig is 26 ug/l. Note 5' and 6' use two filters.
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 52 (2'), 34 (3'), 26 (4'), 31 (5'), 26 (6') for the enclosure at 90 fpm inflow velocity.
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 enclosure on and let it operate for a minimum of 5 minutes.
8. If necessary, adjust the speed control of the enclosure to maintain the following airflows at 90 fpm; 2' (130cfm), 3' (200 cfm, 4' (265 cfm.), 5' (215 cfm), 6' (260 cfm). The 5' and 6' uses two filters.
9. Position the aerosol generator discharge in the intake of the baffle inside the enclosure.
10. Start the aerosol generator (Pressure to be +/- 1 psig). (10 psig). Ensure that one Laskin nozzle is in the “open” position.
11. Allow the generator to operate for a minimum of 15 seconds. For all integral motorized impeller models, scan the downstream exhaust 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 enclosure 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.

Setting the Inflow Face Velocity with the Speed Control Adjustment

1. Remove the front panel by loosening the (2) Phillips screws on top that secure the front panel.
2. The speed control is located on the electrical subassembly located behind the switched control panel and below the front panel. See Figure 6-1.
3. Adjust the speed control with a small Phillips screwdriver by turning the screw counterclockwise to increase blower speed or clockwise to decrease the blower speed. The speed control is very sensitive, so proceed with caution.
4. Measure the inflow velocity by averaging measurements taken in the largest opening between doors and adjust the speed control slowly for the desired speed. Allow the speed to stabilize and re-measure the inflow velocity to confirm. (Recommended inflow is 80-100 ft/min.)
5. Replace the front panel and tighten the screws.

Calibrate and Operate the Airflow Monitors

Option

Guardian Airflow Monitor (LED Monitor)

Refer to Figure 6-2 for operation and calibration.

Labconco Airflow Monitor / Airflow Switch Operation

The Guardian Airflow Monitor (LED) consists of a circuit board and an airflow switch. This switch indicates airflow as safe or low. It does not provide an actual face velocity, but a small setscrew in the back of the sensor can adjust the airflow level that it classifies as “good/safe” or “low/alert.”

The circuit board provides power to the sensor and also contains a “safe (green)” and “alert (red)” airflow LED indicators, as well as a “SILENCE ALARM” button to quiet the audio alarm. When first powered up, the PCB will light both red and green LED indicators and sound the alarm to indicate it is working. After 5 seconds, the air monitor will indicate either good or bad airflow based on what the connected airflow switch detects. For low airflow, the unit will wait for 10 seconds of bad indications before it sounds both the audio alarm and the red “alert” LED indicator. If the “SILENCE ALARM” button is pressed, the audio alarm will be silenced, but the red “alert” LED will remain on. The alarm is silenced indefinitely unless an airflow change is detected. If safe airflow is later detected for 10 seconds, the green “safe” LED will be lit and the “alert” (red) LED will be shut off. At any time the airflow is safe/good, one can press the SILENCE ALARM test button and the audio alarm and the red LED will turn on as long as this button is held down. The PCB has also a two-pin connector for use as an external output with isolated relay contacts that close when the red/alert LED is lit (low airflow). These relay contacts are not affected by the “SILENCE ALARM” button.

The PCB is mounted behind the front panel using standoffs and an appropriate label is used to highlight the “SILENCE ALARM” button with clear areas for the red and green LED’s. No holes to allow sound to be broadcast louder are necessary.

The PCB can be prepared as a factory special with an additional connector for the following external inputs, and having the following possible functions:

- External Alarm allows an external signal to sound the alarm, such as a sash open switch, or a “fail” signal from the building airflow system.
- Alarm Disable allows an external signal to prevent a “low” airflow alarm from occurring.
- Night Setback allows an external signal to prevent a “low” airflow alarm from occurring (not any different from Alarm Disable above other than the terminology.)

Contact Labconco for ordering information on this special PCB.

Calibration

1. Ensure the flow switch and alarm circuit board are installed and operational.
2. Allow the enclosure to operate for at least two minutes.
3. If factory installed, the monitor will alarm at 60 ± 10 fpm with the inflow velocity set at 90 ± 10 fpm.
4. To change the factory setting, set the inflow velocity required by your Safety Officer to the desired alarm condition using the speed control adjustment procedure outlined in Chapter 6.
5. Once the alarm condition is set, use a small screwdriver to turn the adjustment screw on the airflow switch counterclockwise (facing the screw) until the “low” airflow red LED lights and the audible flow alarm sounds.
6. Adjust the inflow velocity to the nominal operating point required by your Safety Officer.
7. Over time the HEPA filter will load and eventually slow the inflow velocity. Once the alarm condition is met, simply increase the speed control outlined in Chapter 6 or replace the HEPA filter if the speed control is maximized.
8. The table below lists typical alarm conditions based on normal operating conditions. Typical alarm conditions are set at face velocities of 10 to 30 feet per minute below the normal operating conditions due to supply air and exhaust air fluctuations, as well as room air cross drafts. Consult your Safety Officer for proper operating speeds.

Enclosure Operating In-Flow Speed	Alarm Condition Set Point Speed
100 ± 10 fpm	70-90 fpm
90 ± 10 fpm	60-80 fpm
80 ± 10 fpm	50-70 fpm

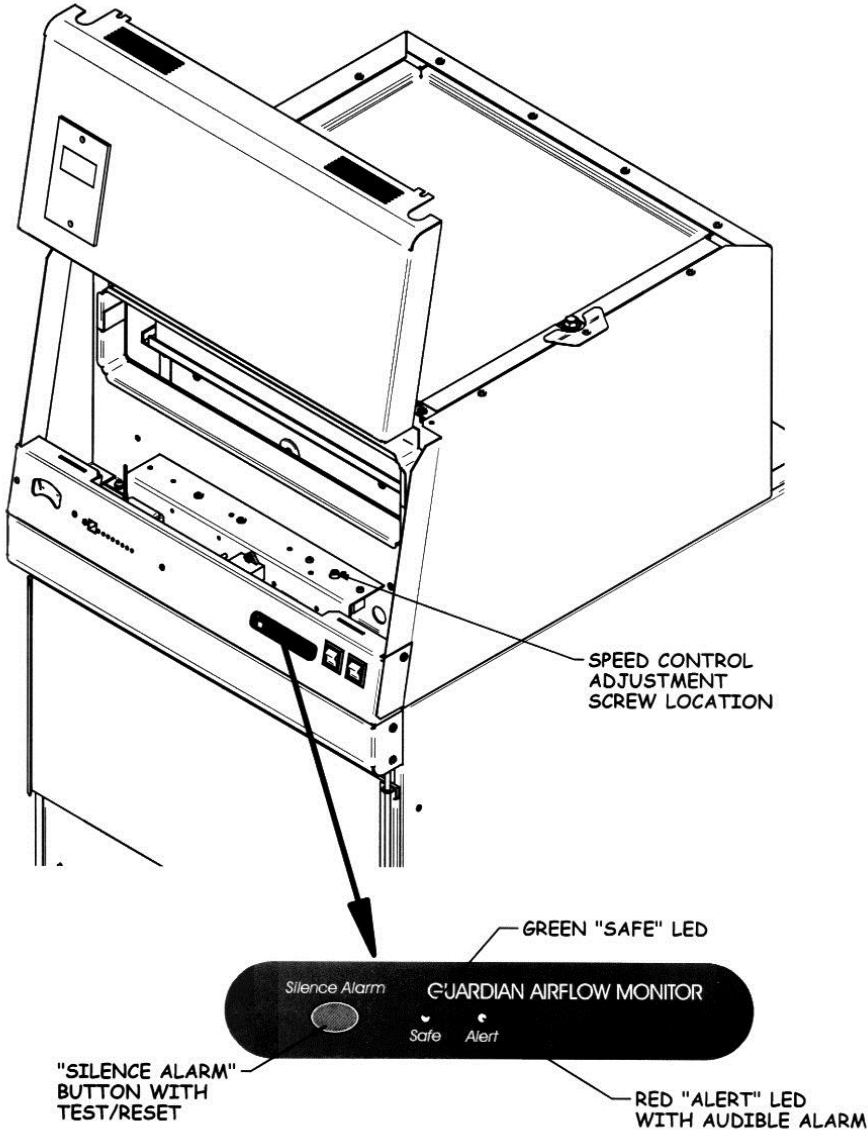


Figure 6-2
Guardian Airflow Monitor (LED) with Airflow Switch

Guardian Digital 1000 Airflow Monitor

Option

Refer to Figure 6-3 for operation and calibration. Refer to the separate Labconco 1000 Alarm Manual for detailed information.

Operation

The Guardian Digital Airflow Monitor consists of the airflow sensor, the Alarm Unit, and the 15 VDC power supply. For 115V operation the alarm unit is powered by plugging the power supply into the factory-prepared digital airflow monitor socket. For 230V operation, the Alarm Unit is powered by plugging the power supply into a building outlet. The alarm has “Enter,” “+,” and “-” buttons to program the monitor. There is also a green LED “SAFE,” yellow LED “CAUTION,” and red LED “LOW” with audible alarm for airflow conditions. The audible alarm can be permanently muted if desired. The Guardian Digital 1000 Airflow Monitor displays a face velocity value, provides an RS232 communications port to a PC or building computer system, can be configured for external input connections such as night setback or external alarm and provides up to three output relays that can be configured. For complete detailed information, please refer to the separate Labconco 1000 Alarm User’s Manual provided with the enclosure.

Calibration

The TXE comes factory calibrated with the monitor alarm at 60 ± 10 fpm with the inflow velocity set at 90 ± 10 fpm.

Programming the Guardian 1000 Digital Alarm

Set the desired face velocity of the enclosure with the doors closed using an average face velocity of readings from a thermal anemometer.

Configure Alarm

To successfully calibrate the airflow monitor, it will be necessary to change the face velocity by adjusting the airflow exhaust volume. The exhaust volume can be adjusted using the speed control located behind the front panel on the TXE.

The following inflow face velocity speeds are recommended to successfully calibrate. To begin, determine what the low airflow, low warning airflow, normal airflow, and high airflow shall be.

Low Air Alarm Set Point (user defined)	Enclosure Operating Inflow Speed	Low Calibration Set Point (user defined)	High Calibration Set Point (user defined)
60 – 70 fpm	80 fpm	50 – 90 fpm	100 – 150 fpm
80 - 90 fpm	100 fpm	50 – 110 fpm	100 – 170 fpm

NOTE: ENTER button stores information
+/- Buttons allow for scrolling.

1. Push the ENTER button on the face of the alarm until the Set up Menu is displayed.
2. Scroll to SET UP and hit ENTER.
3. The PASSWORD MENU displays (The Password is 0000). Press the ENTER button repeatedly until the CAL CONFIG MENU is displayed.
4. In the CAL CONFIG MENU set for the following:

CALIBRATION CONFIG MENU	SETTINGS
DISPLAY UNITS	FPM
LOW AIR ALARM	SEE CHART ABOVE – LOW AIR ALARM
LOW AIR CUTOFF	OFF
LOW AIR CUTOFF	SEE CHART ABOVE – LOW AIR ALARM
WARNING AIR ALARM	SEE CHART ABOVE – LOW CALIBRATION SET POINT (Set 3-5 FPM above low air alarm)
WARNING AIR RESET	3 FPM
HIGH AIR ALARM	OFF
HIGH AIR ALARM	OFF
LOWER AIR SAMPLE FLUCTUATIONS	3%
HIGHER AIR SAMPLE FLUCTUATIONS	3%
LOWER/HIGHER AIR SAMPLE DIFFERENCE	10 FPM
WARN TO ALARM AIR TIME	10 SECONDS
ALARM TO WARN AIR TIME	3 SECONDS
SHOW AIR FLOW	ON
SHOW TIME LINE OFF = DISPLAYS BAR GRAPH	OFF
AUDIBLE ALARM	ENABLED
SENSOR DIFFERENCE	2%

5. To complete the CAL CONFIG, be sure to enter “DONE”. You are returned to the Main Menu.

Calibrate Alarm

1. Scroll to set up and hit ENTER, then CALIBRATE and hit ENTER.
2. The PASSWORD MENU displays (The Password is 0000). Press the ENTER button repeatedly until the next menu is displayed.
3. Adjust the speed of the fan until the low airflow velocity is reached. Use your thermal anemometer readings to determine the low air velocity.
4. Enter the value of your low airflow velocity using your +/- scroll keys. Be sure the front panel is installed. Step out of the way, wait approximately 30 seconds for air currents to settle and hit ENTER. The airflow alarm will sample the airflow.

5. Adjust the speed of the fan until the high airflow velocity is reached using the readings from the thermal anemometer. Then re-install the front panel, if so equipped.
6. Enter the value of your high airflow velocities. Be sure the front panel is installed. Step out of the way, wait approximately 30 seconds for air currents to settle and hit ENTER. The airflow alarm will sample the airflow.
7. The set up menu is displayed. Select DONE and hit ENTER.
8. The main menu will be displayed. Select RUN and hit ENTER.

You have successfully configured and calibrated your Guardian 1000 Digital Airflow Monitor.

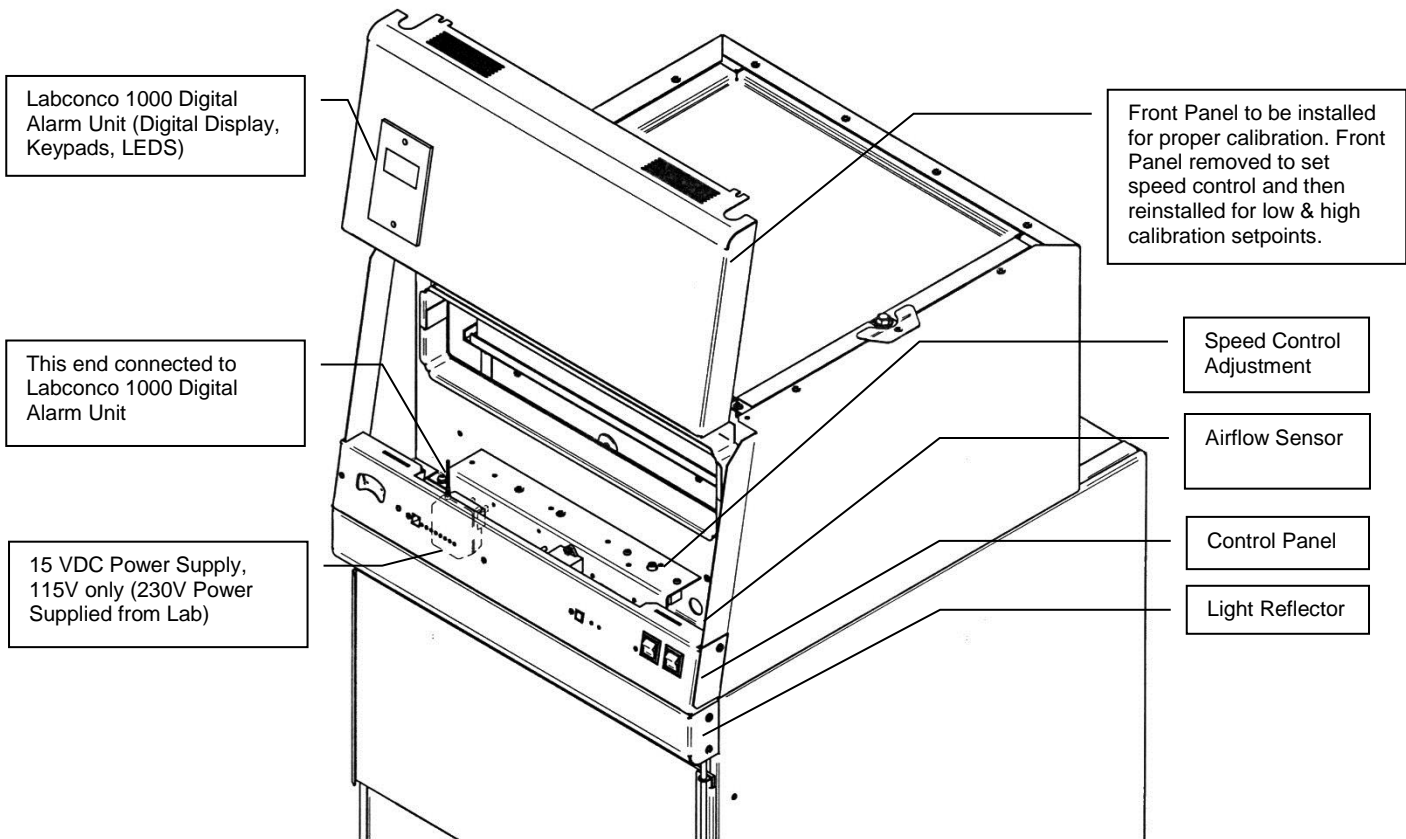


Figure 6-3
Guardian Digital 1000 Airflow Monitor

Initial Certification

The TXE has been certified at the factory for an inflow velocity of 90 ± 10 fpm along with the HEPA Filter Leak Test. The TXE enclosure should be certified for the proper inflow velocity required by your Safety Officer. It is also a conservative recommendation to perform the HEPA Filter Leak Test again should there be any damage caused during transport.

Re-Certification

Under normal operating conditions, the enclosure should be recertified at least annually if serviced. The certifier should perform the following tests.

- Inflow Velocity Test
- HEPA Filter Leak Test

In addition, the following tests should also be performed at the user's discretion:

- Measure of Line Voltage and Current
- Smoke Test to determine proper airflow patterns
- Lighting Intensity Test (when appropriate)
- Noise Level Test (when appropriate)
- Vibration Test (when appropriate)

Fluorescent Light Replacement

1. Disconnect the power.
2. Locate the light reflector located under the control panel shown in Figure 6-2 and Figure 6-3.
3. Remove the light reflector support by removing four Phillips screws on the side of the light reflector.
4. Rotate and remove the old fluorescent lamp.
5. Reinstall the new fluorescent lamp and light reflector in reverse order.
6. Power the unit up and try the new fluorescent lamp.



THE LAMP(S) IN THIS PRODUCT CONTAIN MERCURY

Manage in accordance with local disposal laws. DO NOT place lamps in trash. Dispose as a hazardous waste. For information regarding safe handling, recycling and disposal, consult www.lamprecycle.org

CETTE LAMPE DANS CE PRODUIT CONTIENT DU MERCURE

Éliminez ou recyclez conformément aux lois applicables. Pour de l'information concernant des pratiques de manipulation sécuritaires et l'élimination sécuritaire et le recyclage, veuillez consulter www.lamprecycle.org

Motorized Impeller Replacement

The motorized impeller must be replaced as a complete unit. When the motorized impeller is replaced, the capacitor may also be replaced. See Appendix A for Replacement Parts Diagram. See Figure 6-5 for an isometric view of the motorized impeller plenum assembly. The HEPA filter rests on top of the motorized impeller assembly.



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.

1. Wear appropriate personal protective equipment to decontaminate the filtered enclosure and then unplug from the electrical outlet.
2. Remove HEPA filter per the HEPA filter removal procedure outlined in this chapter.
3. Consult the wiring diagram in Appendix C 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 motor bracket to the supports with the vibration isolation mounts. Remove the motor and bracket.



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

5. Replace the capacitor with a new one of equal voltage and capacity.
6. Reassemble the new motorized impeller by reversing the assembly steps.

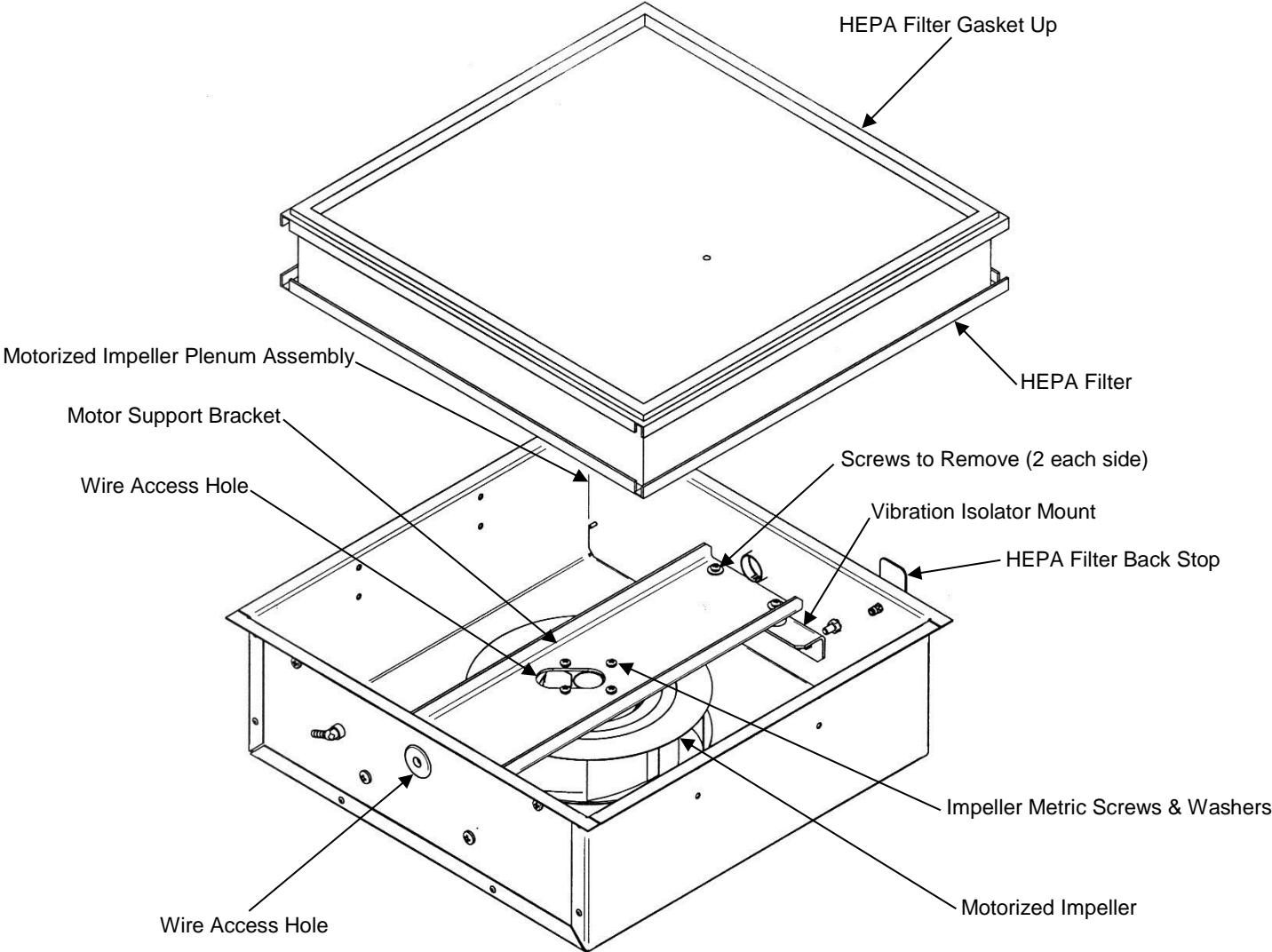


Figure 6-4
Motorized Impeller Replacement

Speed Control Replacement



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.

1. Remove the bracket that the speed control is attached to. See Figures 6-1, 6-2 and 6-3.
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 7:

Accessories

1. Canopy Exhaust Connection for Ducting to Outside

Canopy Exhaust connects to the TXE with integral motorized impellers from the top so the duct can be routed up and outside the building. The Canopy Exhaust is available for 6" nominal duct. The Canopy Exhaust Connection should be sealed to the top of the enclosure with silicone sealant to prevent leaks. See Figure 3-2.

Order the following:

Part	Description
3924400	2' Canopy Exhaust Connection (6")
3924410	2' Canopy Exhaust Connection Double HEPA (6")

2. Remote Blowers

Has a 1/4 hp direct drive motor and corrosion-resistant epoxy-coated steel housing and wheel with blower inlet of 6.00" ID. Outlet dimensions are 4.25" x 7.38" OD.

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 V, 60 Hz, 4.4 amps	35/16
4863501	Remote Blower, 115/230 V, 50 Hz, 5.6/2.8 amps	35/16
7053501	Explosion-Proof Remote Blower, 115 V, 60 Hz, 4.4 amps	40/18

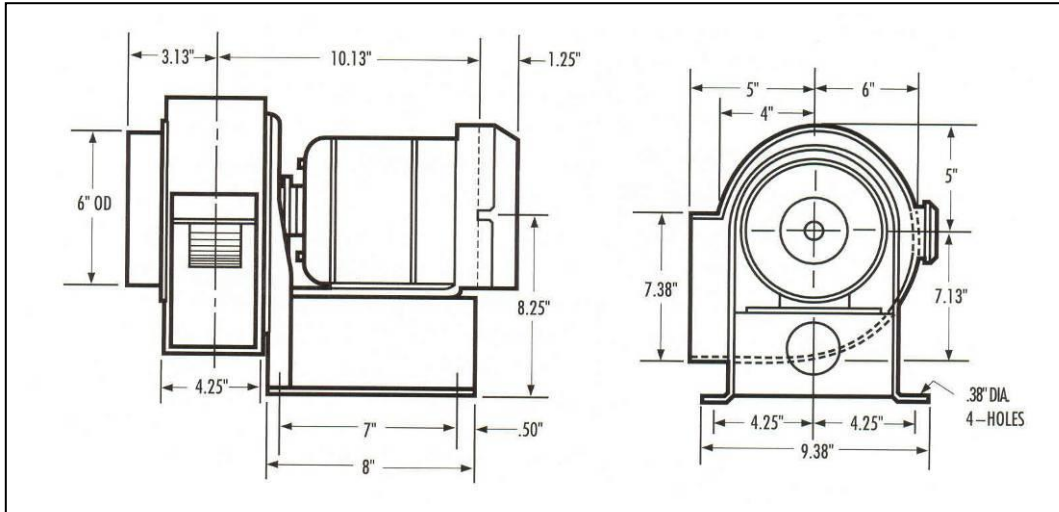


Figure 7-1

3. Exhaust Dampers

Exhaust dampers allow adjustments required to maintain proper airflow for roof-mounted blowers or house exhaust systems.

Catalog #	Description
3924000	6" Epoxy Coated Steel In-Line adjustable damper
4724200	6" PVC In-line adjustable damper

4. Accessory Filters

HEPA Filters

HEPA Filter is 99.99% efficient on particles 0.3 micron. PLEKX filter is 99.97% efficient on particles 0.3 micron with a small amount of carbon for trace odors. ULPA filter is 99.999% efficient on particles 0.12 micron.

Width	Catalog #	Description
2'	3707900	18" x 18" x 3.31" HEPA
2'	3707904	18" x 18" x 3.31" PLEKX with 1.7 lbs. carbon
2'	3885700	18" x 18" x 3.31" ULPA

Bag Kit, HEPA Filter Bag-In/Bag-Out

The bag helps contain hazardous particulate matter during filter changing operations.

Width	Catalog #	Size
2'	3776023	48" Circum. x 54" lg.

Odor Control Carbon Filters

Provides granular activated carbon or impregnated carbon used for Odor Control applications on integral motorized impeller models exhausted back into the room.

Filter Classification and Size	Catalog #	X Pounds
2' Organic 18 x 18 x 1	3937200	5.5 lbs. activated
2' Formaldehyde 18 x 18 x 1	3937201	7.0 lbs. impregnated
2' Ammonia & Amines 18 x 18 x 1	3937202	8.0 lbs. impregnated
2' Acid Sulfur	3937203	7.0 lbs. impregnated

5. Double HEPA Filtration Kit

For field installation atop XPert Balance Filtered Systems and XPert Bulk Powder Filtered Systems. Provides a second level of HEPA Filtration for added safety to meet USP <800> standards for redundant HEPA Filter in series. Contact Labconco for information on factory-installed second HEPA Filter. Kit includes one HEPA Filter, set of bag and straps for bag-in/bag-out system, and entire metal support system along with instructions for a certifier to follow. Adds 12.9" to height of existing system.

Catalog #	For use with:	Shipping Wt. lbs./kg
3966102	2-ft TXE	6/3

Chapter 8: Troubleshooting

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

PROBLEM	CAUSE	CORRECTIVE ACTION
Contaminants outside of enclosure.	Improper user techniques for the enclosure.	See “Certifying the Enclosure” 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 obstruction to ensure that all air slots and the exhaust outlet are unobstructed.
	External factors are disrupting the enclosure airflow patterns or acting as a source of contamination.	See “Location Requirements” Chapter 2, “Certifying the Enclosure” Chapter 3, and “Safety Precautions” Chapter 4 sections of this manual. (Ref. Appendix D).
	Enclosure has improper face velocity.	Have enclosure certified and check exhaust system. Check HEPA filters for loading. Adjust enclosure speed control. Enclosure should have an average face velocity of 60-100 fpm for weighing procedures and 75-105 fpm for biohazardous procedures.
Blower won’t operate.	Unit not plugged into outlet.	Plug the enclosure 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 or blower is defective.	Replace motorized impeller or blower. See Chapter 6.
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.
Blower and lights won’t operate.	Unit not plugged into outlet.	Plug enclosure into appropriate electrical service.
	Circuit breaker(s) tripped.	Reset or replace circuit breaker.

PROBLEM	CAUSE	CORRECTIVE ACTION
Lights do not work.	Lamp not installed properly.	Inspect lamp installation.
	Lamp wiring disconnected.	Inspect lamp wiring.
	Defective lamp.	Replace lamp.
	Light switch is defective.	Replace light switch.
	Defective electronic ballast.	Replace ballast.
Airflow monitor malfunction.	No power. No lights. No display.	Power cable to circuit board is disconnected and needs to be connected. Sensor cable needs to be connected. Power supply is not plugged into proper voltage; plug in power supply. Verify that all airflow monitor interface cables are connected. Check fuses on enclosure.
	No audible alarm.	Alarm has been temporarily silenced using “SILENCE ALARM” or “enter” buttons.
	Wrong alarm set point.	Airflow monitor was not properly adjusted. Repeat calibration steps outlined in this manual in Chapter 6 or in the supplied Digital 1000 Monitor Manual.
	Constant audible alarm.	Check airflow and calibration of airflow monitor. See Chapter 6.
	Continuous alarm.	Check the face velocity of the enclosure as the airflow of the system may have changed. If incorrect, adjust the speed control to increase face velocity. The HEPA filter may have become loaded. If face velocity is correct, calibrate the airflow monitor outlined in this manual in Chapter 6.
	Monitor alarms; air way to airflow monitor sensor is blocked by insects, dust or debris.	Lightly clean the airway with clean air. Be careful not to touch sensitive electrical components.
	Audible disable will not stay operational.	An alarm condition must be continuously present before the audible alarm can be silenced. If flow conditions fluctuate near the alarm set point, the airflow monitor will automatically reset it. Action should be taken to bring the enclosure airflow into proper operating parameters or adjust the alarm set point lower.

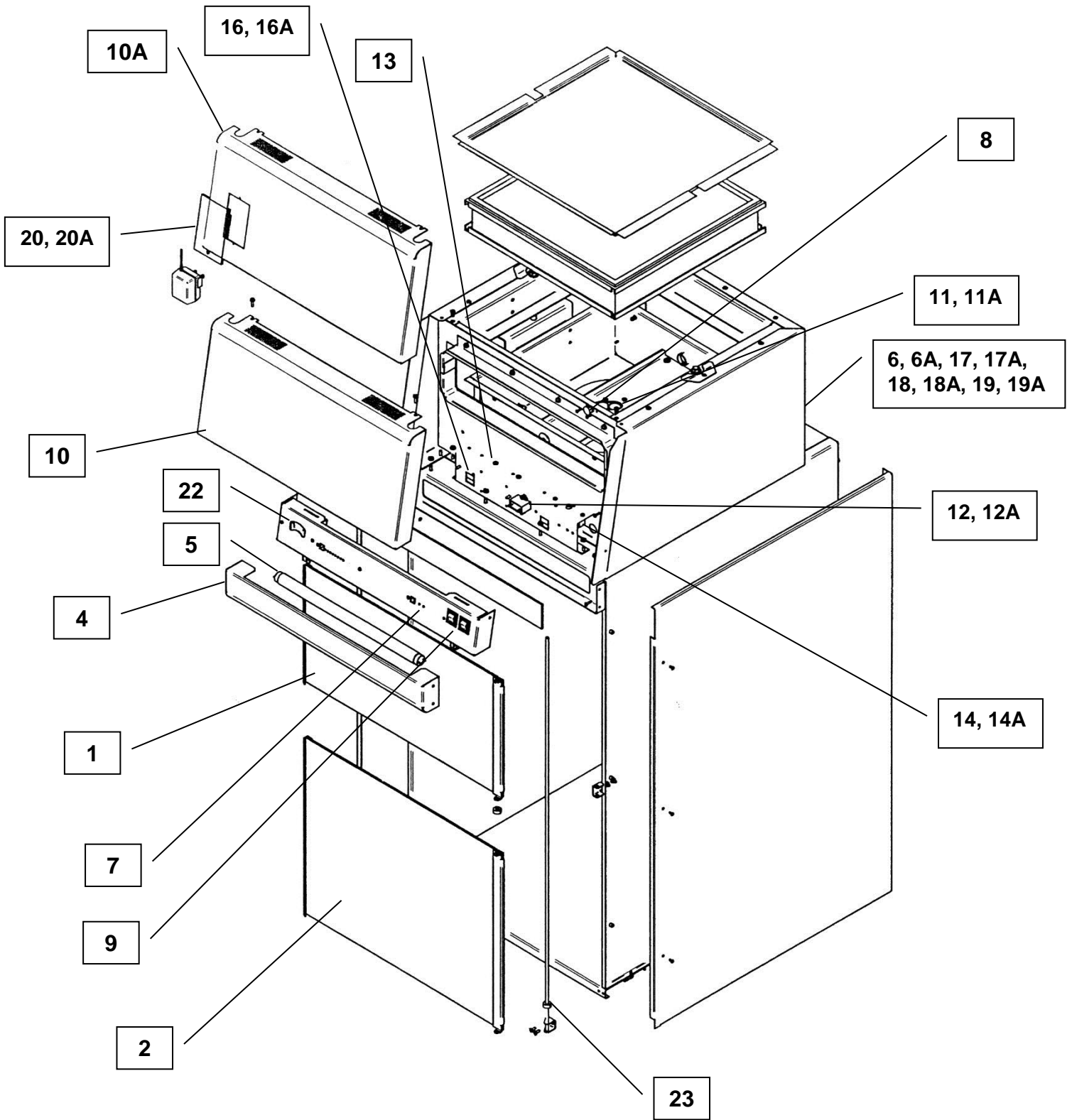
Appendix A:

Replacement Parts

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

Item	Qty.	Part Number	Description
1	1	3890600	Sash Assembly - Upper
2	1	3890500	Sash Assembly - Lower
3A	1	3776023	Bag Kit, 2' – for Bag-In/Bag-Out
4	1	3890700	Reflector, Light
5	1	3708300	Lamp, Fluorescent (F15T8-SP35)
6	1	3918500	Wiring Harness Main, 115V
6A	1	3918600	Wiring Harness Main, 230V
7	1	3811500	Guardian Airflow Monitor Printed Circuit Board
8	1	3910700	Airflow Switch
9	2	1307000	Switch, Rocker (2 position)
10		3904800	Front Panel
10A	1	3904803	Front Panel with Digital Monitor Cutout
11	1	3916500	Impeller, Motorized 115V
11A	1	3916501	Impeller, Motorized 230V
12	1	1306900	Capacitor 115V 10 MFD
12A	2	1306800	Capacitor 230V 4 MFD (effective 2MFD)
13	1	1295510	Ballast, Fluorescent
14	1	1325500	Speed Control, 115V
14A	1	1325501	Speed Control, 230V
15	1	3707900	HEPA Filter 18 x 18 x 3.32 w/ Gasket
16	1	7907802	Digital Monitor Outlet, 115V
16A	1	3915100	Digital Monitor Outlet, 230V
17	1	1333800	IEC Power Inlet 115V
17A	1	1339200	Receptacle RFI Filter 230V
18	1	1305800	Power Cord, 115V, Right Angle
18A	1	1334200	Power Cord, 230V, Right Angle
19	1	1327200	Circuit Breaker, 3 AMP – 115V
19A	2	1327205	Circuit Breaker, 2 AMP – 230V
20	1	3908500	Digital Airflow Monitor, 115V – 15 VDC Adapter
20A	1	3908501	Digital Airflow Monitor, 230V – 15 VDC Adapter
21	1	3919800	Exhaust Duct, 6" (NOT SHOWN)
22	1	1952500	Gauge, Pressure Mini Helic II
23	1	3925600	Harness, Relay (for Remote Blower on XPert Filtered Station)

Appendix A: Replacement Parts



Appendix B: Dimensions

See the following dimensions and exhaust options for the TXE.

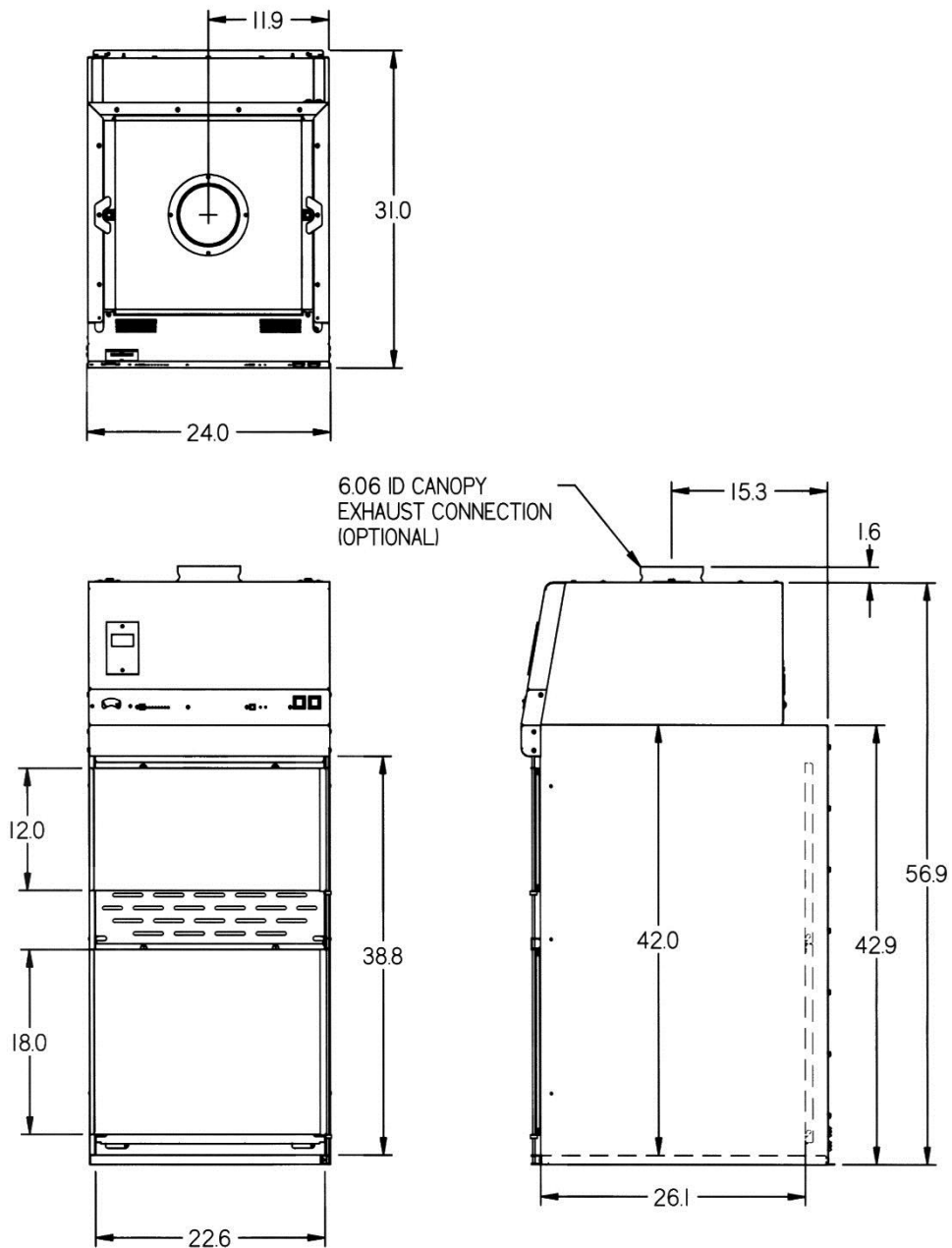


Figure B-1

Appendix C:

Specifications

This Appendix contains technical information about the XPerT TXE including electrical specifications and environmental operating conditions.

Electrical Specifications

- 3 Amps, 115V, 60 Hz
- 2 Amps, 230V, 50Hz

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.