

Purifier™
Biological Safety Cabinet

Models 36208, 36209

INSTRUCTION MANUAL

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Notes

Thank you for displaying confidence in us by selecting a Labconco Purifier™ Biological Safety Cabinet. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that your new Purifier™ meets our high standards of quality and performance.

Important Notice

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

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

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

General Description - 36208 Models

The Labconco Purifiers™ are Class II Biological Safety Cabinets, as defined by the National Sanitation Foundation International (NSF International) Standard Number 49, *Class II (Laminar Flow) Biohazard Cabinetry*. All Purifier™ models are designed to meet or exceed the requirements of NSF International Standard 49.

This manual covers all of the 36208 and 36209 models. The 36208 models are classified as Type A Biological Safety Cabinets because they:

- Maintain a minimum average inflow velocity of 75 feet per minute (FPM) through the work access opening.
- Have High Efficiency Particulate Air (HEPA) filtered downflow air that is a portion of the mixed downflow and inflow air from a common plenum.
- May exhaust HEPA filtered air back into the laboratory.

NSF International also allows some manufacturers of Type A Biological Safety Cabinets to have contaminated positive pressure ducts or plenums exposed to the laboratory. Labconco, however, has designed all of its Purifiers™ to surround any contaminated positive pressure area with negative pressure zones. If a leak should occur, contaminated air is recaptured by the negative pressure. This captured air is forced through a HEPA filter, removing biohazardous aerosols and preventing them from entering the laboratory environment.

Models with numbers 36208-00 through 19 are designed to operate on 115 VAC, 60 Hz power, while models with numbers 36208-20 through 29 are designed to operate on 230 VAC, 50 Hz power.

Performance - 36208 Models

The Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) have established risk classifications for microbial agents, laboratory practices and techniques, safety equipment and laboratory facilities. These are known as Biosafety Levels 1, 2, 3 and 4 and replace the obsolete classifications of Low-, Medium- and High-Risk agents. The Biosafety Levels are defined in the National Institutes of Health (NIH) / Centers for Disease Control and Prevention (CDC) book *Biosafety in Microbiological and Biomedical Laboratories*, 3rd Edition. This publication is available from the CDC and is listed in the "References" section of this manual. All of the 36208 models of Purifiers™ may be used with agents assigned to Biosafety Levels 1, 2 or 3 in the absence of volatile toxic chemicals and radionuclides.

INTRODUCTION

The 36208 models are designed to maintain a nominal average inflow of 80 FPM through the work access opening in the front of the unit. During operation, room air is drawn through the grille located in the front of the cabinet work area as shown in Figure 1 below. The unfiltered room air and the filtered air flowing down through the work area are combined under the work surface. This contaminated air is drawn back to the cabinet blower through the rear duct. After being pressurized by the blower, approximately 70% of the air is forced through the supply HEPA filter. The filtered sterile air then flows down over the work area. At the approximate center of the work surface (from front to back), the downflow air stream splits, with some air flowing through the front grille and the remainder going through the rear grille. The plane where the air streams split is known as the "smoke split," and will be discussed in the "Use of the Cabinet" section. The remaining 30% of the air is forced through the exhaust HEPA filter, and the sterile air is exhausted to the room or to an exhaust duct system.

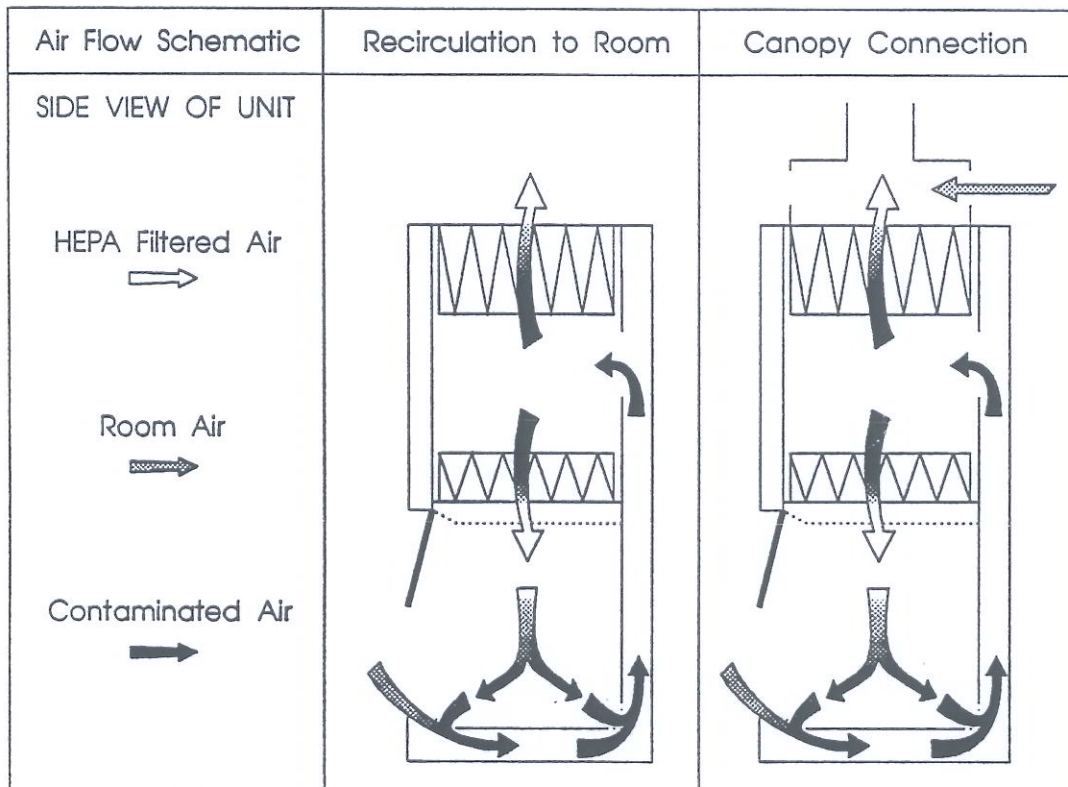


Figure 1

General Description - 36209 Models

The 36209 models are usually shipped from the factory in the Type A mode. They may be converted in the field to a Type B3. This conversion is accomplished by installing the following:

- A Type B3 Conversion Kit, Labconco part number 36936 or 36936-01, that includes an exhaust airflow alarm system.
- A dedicated gas tight exhaust duct system.
- And a dedicated remote exhaust blower and back-draft preventer, available as Labconco part number 36680.

In the Type B3 mode, the unit:

- Maintains a minimum average inflow velocity of 100 feet per minute (FPM) through the work access opening.
- Has HEPA filtered downflow air that is a portion of the mixed downflow and inflow air from a common plenum.
- Exhausts all HEPA filtered air out of the laboratory and to the outside environment.
- Has all biologically contaminated ducts under negative pressure, or surrounded by negative pressure areas.

Labconco has designed all of its Purifiers™ to surround any contaminated positive pressure area with negative pressure zones. If a leak should occur, contaminated air is recaptured by the negative pressure. This captured air is forced through a HEPA filter, removing biohazardous aerosols, and preventing them from entering the laboratory environment.

Models with numbers 36209-00 through 19 are designed to operate on 115 VAC, 60 Hz power, while models with numbers 36209-20 through 29 are designed to operate on 230 VAC, 50 Hz power.

Performance - 36209 Models

The Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) have established risk classifications for microbial agents, laboratory practices and techniques, safety equipment and laboratory facilities. These are known as Biosafety Levels 1, 2, 3 and 4 and replace the obsolete classifications of Low-, Medium- and High-Risk agents. The Biosafety Levels are defined in the National Institutes of Health (NIH) / Centers for Disease Control and Prevention (CDC) book *Biosafety in Microbiological and Biomedical Laboratories*, 3rd Edition. This publication is available from the CDC and is listed in the "References" section of this manual.

All of the 36209 models of Purifiers™ may be used with agents assigned to Biosafety Levels 1, 2 or 3 in the absence of volatile toxic chemicals and radionuclides. When a model 36209 is converted to a Type B3 configuration, it may be used with agents assigned to Biosafety Levels 1, 2 or 3 treated with minute quantities of volatile toxic

INTRODUCTION

chemicals or radionuclides required as an adjunct to microbiological research, provided they will not interfere with the work when the air is recirculated back into the work area.

The 36209 models are designed to maintain a nominal average inflow of 105 FPM through the work access opening in the front of the unit. During operation, room air is drawn through the grille located in the front of the cabinet work area as shown in Figure 2 below. The unfiltered room air and the filtered air flowing down through the work area are combined under the work surface. This contaminated air is drawn back to the cabinet blower through the rear duct. After being pressurized by the blower, approximately 70% of the air is forced through the supply HEPA filter. The filtered sterile air then flows down over the work area. At the approximate center of the work surface (from front to back), the downflow air stream splits, with some of the air flowing through the front grille, and the remainder going through the rear grille. The plane where the air streams split is known as the "smoke split," and will be discussed in the "Use of the Cabinet" section. The remaining 30% of the air is forced through the exhaust HEPA filter, and the sterile air is exhausted to the room or to an exhaust duct system.

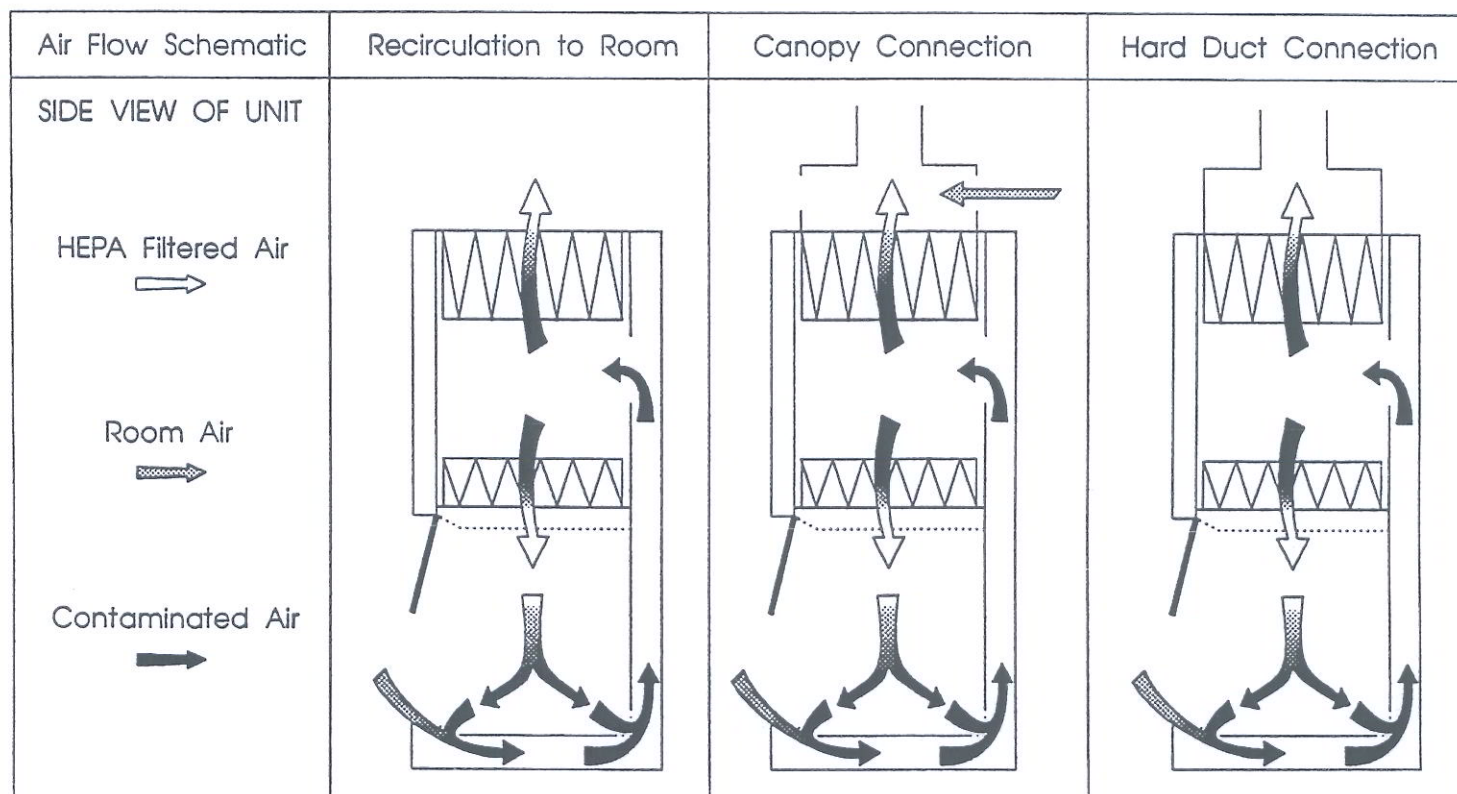


Figure 2

Components Shipped

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

As shipped, the carton should contain the following:

Catalog No.	Description
--------------------	--------------------

36208-xx	Purifier™
----------	-----------

or

36209-xx	Purifier™
----------	-----------

36877	This Instruction Manual
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INTRODUCTION

Component Identification (Figure 3)

- (1) **Motor/Blower.*** The cabinet is equipped with a variable speed blower.
- (2) **Rear Duct.*** The rear duct is sealed permanently to the cabinet frame.
- (3) **Exhaust HEPA Filter.*** Located above the supply HEPA filter, the exhaust HEPA filter is rated to remove greater than 99.99% of all particles 0.3 microns.
- (4) **Exhaust Cover.** The exhaust cover protects the surface of the exhaust HEPA filter. **The exhaust cover must always remain in place during operation.**
- (5) **Supply HEPA Filter.*** Located above the work area, the supply HEPA filter is rated to remove greater than 99.99% of all particles 0.3 microns.
- (6) **Exhaust Filter Panel.*** This panel covers and seals the exhaust filter area.
- (7) **Supply Filter Panel.*** This panel covers and seals the supply filter area.
- (8) **Blower Chamber Cover.*** This panel covers and seals the front of the cabinet, providing an area of negative pressure surrounding the contaminated positive pressure ducts.
- (9) **Access Bolt.*** Allows the certifier to adjust the exhaust damper.

***Do not service this component without decontaminating the cabinet.**

Component Identification

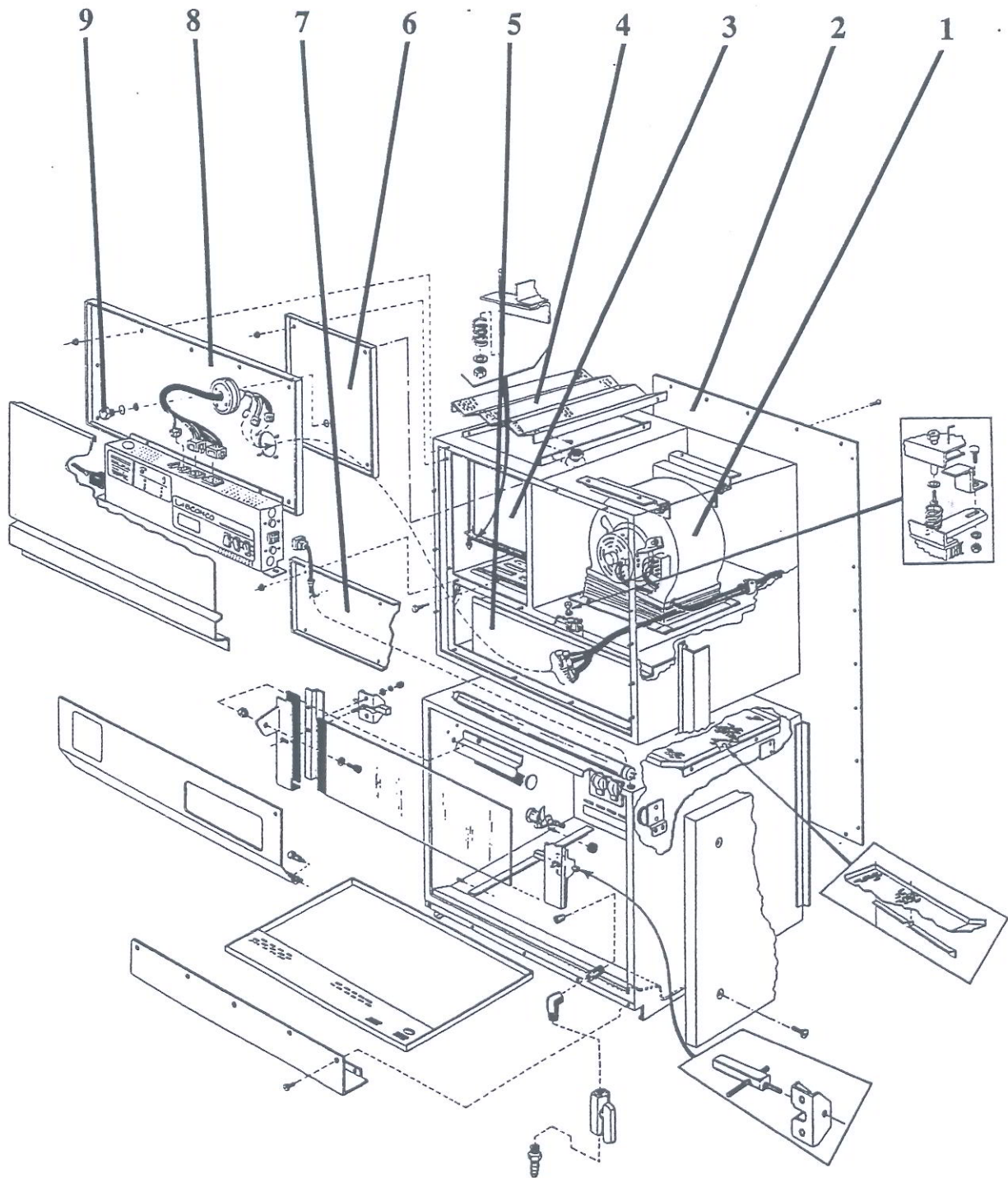


Figure 3

INTRODUCTION

Component Identification (Figure 4)

- (10) **Diffuser.** Located directly below the supply HEPA filter, the diffuser creates an even distribution of air through the work area.
- (11) **Sash or Window.** The sash is a fixed height design which swivels for easier loading and cleaning of the work area.
- (12) **Diocetyl Phthalate (DOP) Access Port.*** The access port allows a certifier to measure a DOP aerosol inside the cabinet.
- (13) **Work Surface.** The work surface rests on the bottom of the work area, and is removable for cleaning.
- (14) **Control Panel.** Located above the sash it allows access to the pressure gauge and the control switches.
- (15) **Electronic Module.** This module contains the blower speed control, the lamp ballasts, starters, the circuit breakers, the switches and the pressure gauge.
- (16) **Pressure Gauge.** Measures pressure differential across the HEPA filters.
- (17) **Front Panel.** Provides a smooth surface which minimizes the collection of dust, and is easy to clean.

***Do not service this component without decontaminating the cabinet.**

Component Identification

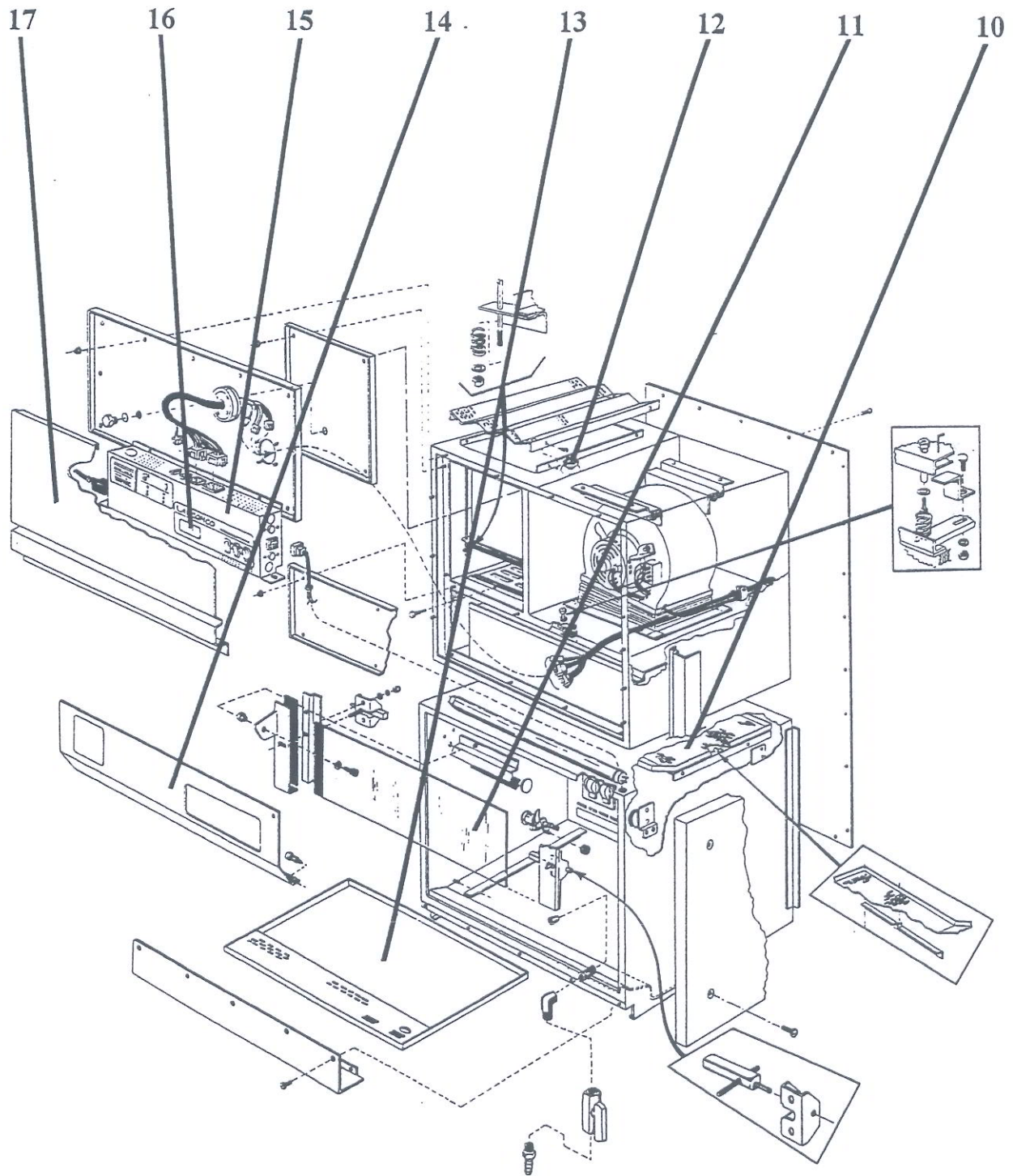


Figure 4

INSTALLATION

Preparation

DO NOT remove the Purifier from its shipping skid until it is ready to be placed in its final location. Move the cabinet by placing a flat, low dolly under the skid. DO NOT move the cabinet by tilting it onto a hand truck.

Location

The Purifier 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. All windows in the room should be closed. Figure 5 shows the optimum location for the Purifier.

There should be a minimum clearance of 12 inches between the exhaust outlet on the top of the cabinet and any overhead obstructions. Whenever possible, a minimum 12 inch clearance should be provided for on the back, and on both sides of the cabinet. The floor should be level, and of solid construction.

DO NOT locate the cabinet on a cart, dolly, or mobile bench. **ALL** Purifier installations must be permanent and stationary.

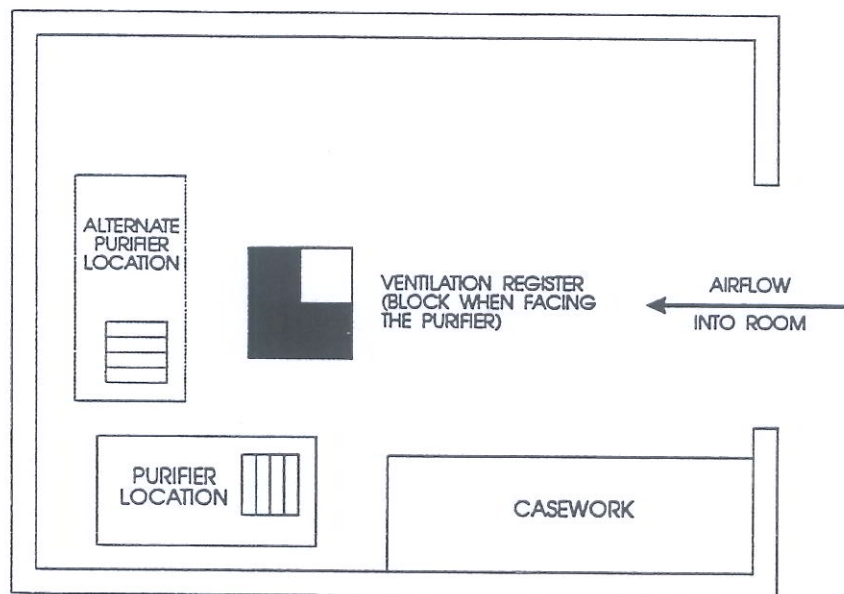


Figure 5

Installing the Purifier™ on an Existing Work Surface

When installing the Purifier™ onto an existing work surface or benchtop, ensure that the structure can safely support the combined weight of the unit and any related equipment. The work surface should be at least 52 inches wide by 25 inches deep to properly support the unit.

The work surface should be smooth and durable. The surface should be nonporous and resistant to the disinfectants and chemicals used in conjunction with the Purifier™. These criteria will allow a proper seal to form between the bottom of the Purifier™ and the work surface.

A hole or notch may need to be cut in some work surfaces in the right front corner to accommodate the drain valve. Drain valve installation instructions are covered on pages 17-18.

Installing the Purifier™ on the Labconco Universal Base Stand

Labconco offers Universal Base Stands to support the Purifier™ as an option to be purchased separately. Base Stand number 80870-00 supports the Purifier™ at a height of approximately 29 inches for using the cabinet in a sitting position. Stand 80870-01 supports the unit at a height of approximately 35 inches for using the cabinet in a standing position. For further information regarding Purifier™ Base Stands or other accessories, please contact Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811 weekdays, between the hours of 7:30 a.m. and 5:00 p.m. CST.

To install the Purifier™ onto the base stand:

1. Loosen the screws located on the top and bottom of both side panels, as shown in Figure 6. Remove both panels by swinging the fronts out and pulling them forward. Note from which side each panel was removed as they are not interchangeable.

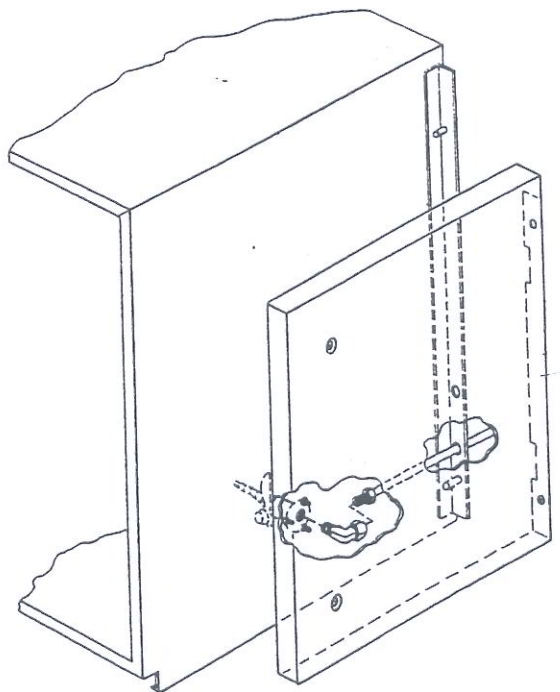
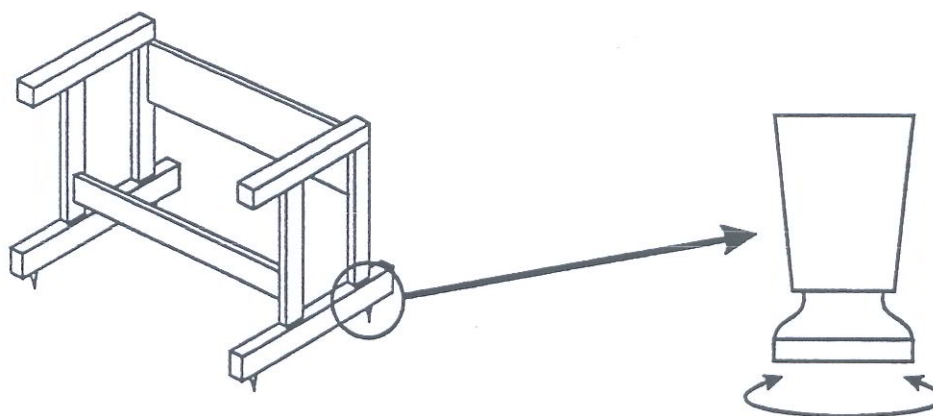


Figure 6

INSTALLATION

2. Adjust the feet in the lower leg assemblies by turning them into or out of the leg assembly as shown in Figure 7, until the base stand is stable and level. Use a carpenter's level or similar device to ensure that the base stand is level on both top rails, as well as from side to side.
3. Center the Purifier™ on the stand. Align the holes in the Purifier's mounting flanges with the threaded inserts in the top rail on both sides. **CAUTION: THE PURIFIER IS VERY HEAVY! THE PURIFIER IS TOP HEAVY. USE EXTREME CAUTION WHEN LIFTING THE UNIT OR PLACING IT ON THE BASE STAND.** If you have any questions about lifting or moving the Purifier™, please contact Labconco's Product Service Department at 8-800-821-5525 or 1-816-333-8811 from 7:30 a.m. to 5:00 p.m. CST.
4. Secure the Purifier to the base stand using four (4) 1/4 - 20 x 5/8 inch screws, four 1/4 inch lockwashers, and 4 1/4 inch flat washers provided with the stand. Securely tighten the screws in an alternating sequence.
5. Replace the side panels of the Purifier, noting to locate the holes in the back of the panels into the posts located on the rear of the liner, as shown in Figure 6 on page 11.
6. If the Purifier is moved after it is installed on the base stand, check the level of the Purifier and adjust the base stand leveling feet if required.



TURN FOOT TO RAISE OR LOWER
AS REQUIRED TO LEVEL THE BASE STAND

Figure 7

Exhaust Connections

Model 36208 Purifiers™ were designed to recirculate sterile, HEPA-filtered exhaust air back into the lab or outside via an optional canopy exhaust connection kit. Model 36209 Purifiers™ may also return their filtered exhaust back into the lab or outside using the optional canopy exhaust connection kit, or by an optional hard-ducted exhaust system, using the B3 Conversion Kit.

Canopy Exhaust Connection Kit Catalog #36711

When the cabinet is connected to a common exhaust system or an exhaust system with an air gap, a canopy (thimble) connection is preferred. This optional user-installed kit includes a collar, damper connector, and damper designed to connect the top of the Purifier™ to a 6 inch PVC duct.

Type B3 Conversion Kit Catalog #36936

For hard ducting the exhaust, 36209 models require the B3 Conversion Kit, a dedicated ducting system and external (roof mounted) blower. This optional user-installed kit includes a collar, damper connector, and damper designed to connect the top of the Purifier™ to a 6 inch PVC duct. A Pitot tube alarm system sounds an audible alarm and shuts off the cabinet blower if there is insufficient airflow.

230 Volt Type B3 Conversion Kit Catalog #3693601

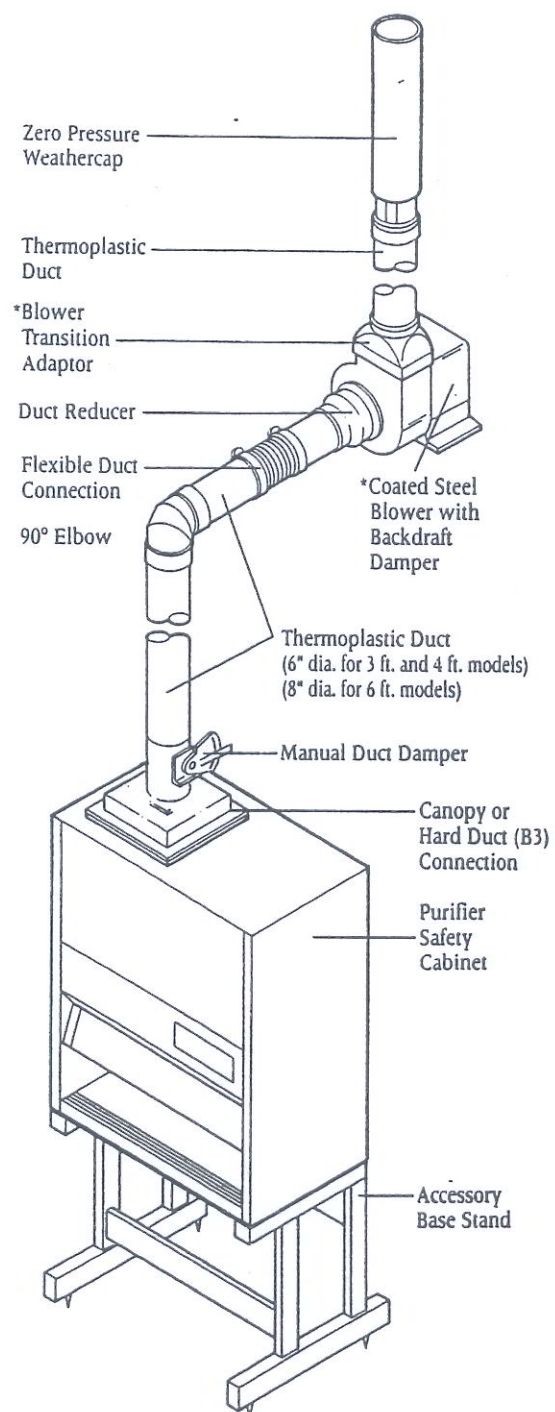
For converting 230 volt 36209 models to Type B3 configuration.

For further information and assistance regarding the exhaust connection options for your Purifier™, contact Labconco Corporation at 800-821-5525 or 816-333-8811.

Remote Blower Kit Catalog #36680

A coated steel blower equipped with an integral backdraft damper is available for exhausting either single canopy connected or Type B3 Purifiers. The blower motor is rated for 115 volt operation and the unit delivers between 650 cubic feet per minute (CFM) at 0.38 inches of water and 550 CFM at 0.5 inches of water. The blower is catalog #36680.

TYPICAL EXHAUST SYSTEM



*Supplied with the remote blower, #36680

Figure 8

Electrical Connections

All Purifiers with model numbers ending in -00 to -19 are designed for operation at 115 +/- 10 volts alternating current, with a current rating of 12 amps. To connect the Purifier™ to electrical service, plug the power cord into the power cord socket located on the left rear side of the Purifier, as shown in Figure 9. Plug the other end of the cord into an appropriate electrical wall socket.

Purifiers with model numbers ending in -20 to -29 are designed for operation at 230 +/- 20 volts alternating current, with a current rating of 5 amps. To connect the Purifier to electrical service, attach the appropriate type of plug to the end of the power cord. Plug the power cord into the power cord socket located on the left rear side of the Purifier as shown in Figure 9.

NOTE: Always follow the plug manufacturer's instructions for the proper assembly and testing of the plug and power cord.

Ground Fault Interrupter

NOTE: When connecting the Purifier to a Ground Fault Interrupter Circuit (GFIC), ensure that the circuit is rated for 15 amperes load and is functioning correctly. Connection of the Purifier to a lower capacity or defective GFIC may result in excessive activation of the GFIC, that will cut power to the Purifier while it is operating.

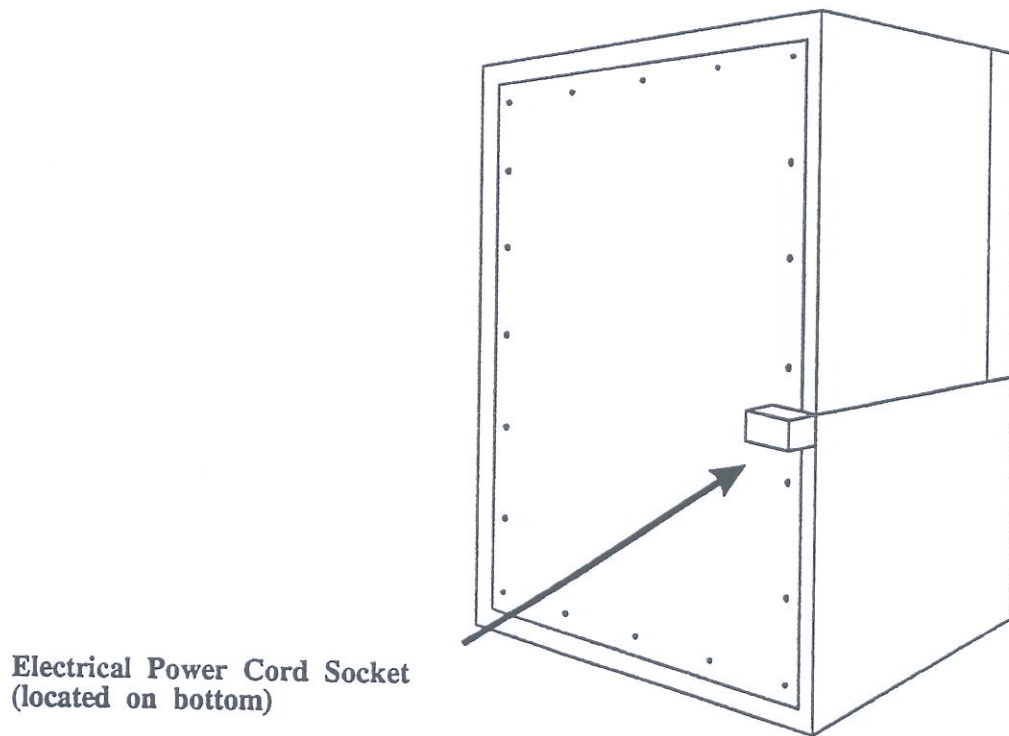


Figure 9

INSTALLATION

Service Valve Connection

Two types of service valve fixtures have been designed as optional accessories for the cabinet. Fixture assemblies may be ordered already installed on the Purifier™, or purchased separately as catalog # 36933 or 36934, for field installation.

The use of flammable gases or solvents should be avoided in the Purifier™. Open flames in the cabinet will disrupt the laminar airflow in the cabinet and may damage the HEPA filters. Flammable gases or solvents may reach explosive concentrations in the cabinet or ductwork. If you feel that your procedure requires the use of an open flame or flammable materials, contact the appropriate safety official.

The use of air or gases under high pressure should be avoided as they may seriously disrupt the airflow patterns in the cabinet.

All service lines to the Purifier™ should be equipped with an easily accessible shut-off valve, should disconnection be required. The standard 1/4 turn valve is rated for gas or vacuum operation at a pressure not to exceed 40 pounds per square inch (PSI). If the service line pressure exceeds 40 PSI, it will need to be equipped with a pressure regulator to reduce the line pressure.

An optional needle valve kit, part # 36934, is available for field installation. The needle valve offers a higher degree of control than the standard valve.

If neither of these valves meet the requirements of your service, please contact Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811 from 7:30 a.m. to 5:00 p.m. CST for further assistance.

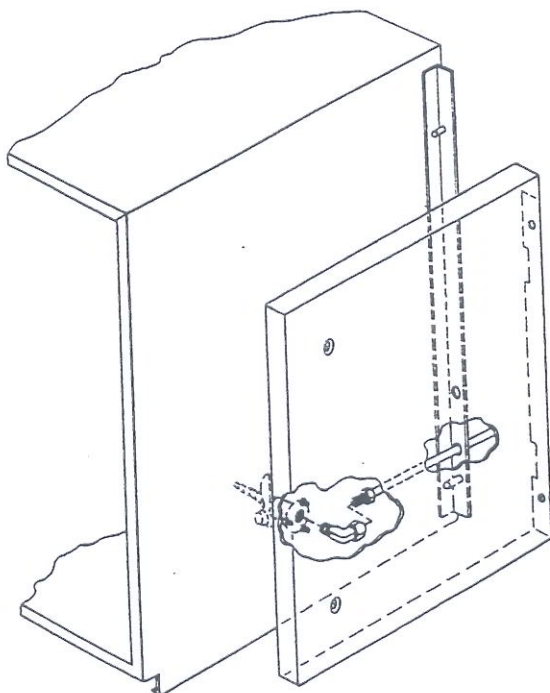


Figure 10

Drain Valve Installation

In order to prevent damage during shipping, the drain valve assembly has not been installed in the unit. If desired, the valve should be assembled after the unit has been placed in its final location. To install the valve assembly, follow these steps:

1. The brass outlet elbow is located in the lower right front of the unit, behind the lower trim panel, as shown in Figure 11A.
2. The Purifier is shipped with the drain outlet elbow in a horizontal position, as shown in Figure 11A. Turn the drain outlet elbow clockwise until it is pointing straight down as shown in Figure 11B. There is no need to remove the lower front trim panel, as there is an access hole in this panel, just beneath the outlet.
3. Assemble the valve and drain barb as shown in Figure 11B. Orient the drain valve so that the handle is facing the front of the unit.
4. Lift up the work surface, and remove the rubber stopper that is located in the drain outlet.
5. Before use, note the position of the drain valve handle. If it is perpendicular to the valve body, it is closed. If the handle is parallel to the valve body, the valve is open.
6. Ensure that the drain valve is closed before using the cabinet.

INSTALLATION

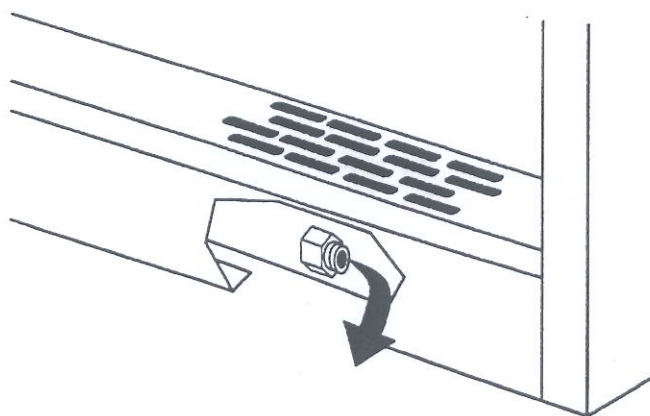


Figure 11A

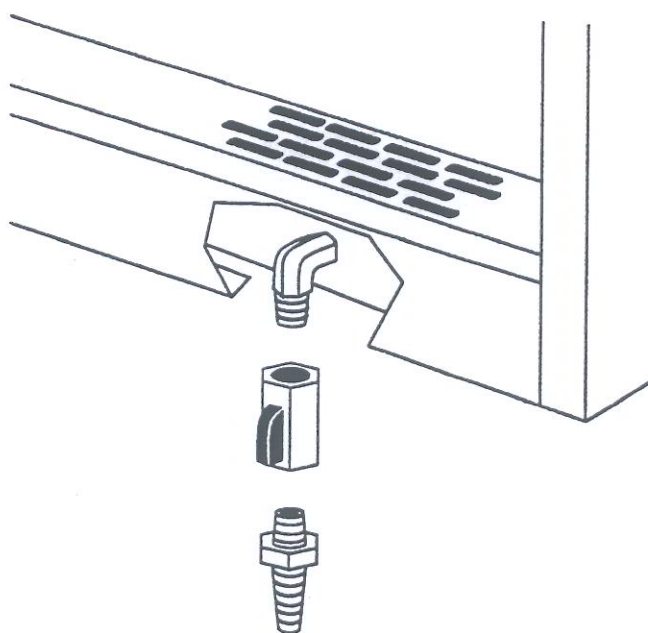


Figure 11B

SAFETY PRECAUTIONS

The Purifier™ should be certified by a qualified certifier before its initial use. The cabinet should be recertified whenever it is relocated, serviced or at least annually thereafter.

The cabinet should be recertified when the pressure drop across the HEPA filters increases 50% over the initial condition. Labconco recommends noting the original pressure on a copy of the log sheet in this manual.

Some components of the Purifier™ should be serviced only by a qualified certifier. Internal components of the unit may become contaminated during use. Only personnel competent in the decontamination procedure should decontaminate the cabinet before servicing it.

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

Avoid the use of flammable gases or solvents in the Purifier™. **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 Purifier™. Open flames may disrupt the airflow patterns in the cabinet, burn the HEPA filter and/or damage the filter's adhesive. Gases under high pressure should not be used in the Purifier cabinet, as they may disrupt the airflow patterns of the cabinet.

HEPA filters are only effective for entrapment of particulate matter. Manipulations which generate gases or vapors i.e., toxic chemicals or radionuclides, must be evaluated carefully from the standpoint of buildup to dangerous levels, the decontamination of the cabinet, and compliance with applicable regulations.

The surface of the HEPA filters are fragile and should not be touched. Care must be taken to avoid puncturing either HEPA filter during installation or normal operation. If you suspect that a HEPA filter has been damaged **DO NOT** use the cabinet; contact a local certification agency or Labconco.

The HEPA filters in the Purifier cabinet will gradually accumulate airborne particulate matter from the room and from work performed in the cabinet. The rate of accumulation will depend upon the cleanliness of the room air, the amount of time the cabinet is operating, and the nature of work being done in the cabinet. With normal usage, the HEPA filters will last two to five years before requiring replacement.

Proper operation of the cabinet depends largely upon the cabinet's location, and the operator's work habits. Consult the 'Installation' and 'Normal Operation' sections of this manual for further details.

SAFETY PRECAUTIONS

Avoid direct exposure to Ultraviolet (UV) radiation. NEVER work in or near the Purifier™ when the UV light is on.

When surface disinfecting the Purifier™:

- . Avoid splashing the disinfecting solution on skin or clothing.
- . Ensure adequate ventilation.
- . Carefully follow the manufacturer's safety instructions when handling disinfectants and always dispose of disinfecting solutions in accordance with local and national laws.

Disinfectants with high concentrations of free chlorine will corrode stainless steel components of the Purifier™ after extended contact.

INITIAL CERTIFICATION

Prior to use, all Purifier cabinets should be certified by a qualified certifier. Under normal operating conditions, the Purifier cabinet should be recertified at least annually, if moved, or if serviced. The certifier should perform the following tests, as recommended in NSF International Standard Number 49:

- . Downflow Velocity Profile Test
- . Inflow Velocity Test
- . Airflow Smoke Patterns
- . HEPA Filter Leak Test
- . Electrical Leakage and Ground Circuit Resistance Test
- . Vibration Test
- . Noise Level Test
- . Lighting Intensity Test

If you have any questions regarding certification agencies, or need assistance in locating one, contact Labconco's Product Service Department at 1-800-821-5525 or 816-333-8811.

NORMAL OPERATION

Starting the Purifier™

To start the standard Purifier™, turn the Blower switch to “On”, as shown in Figure 12.

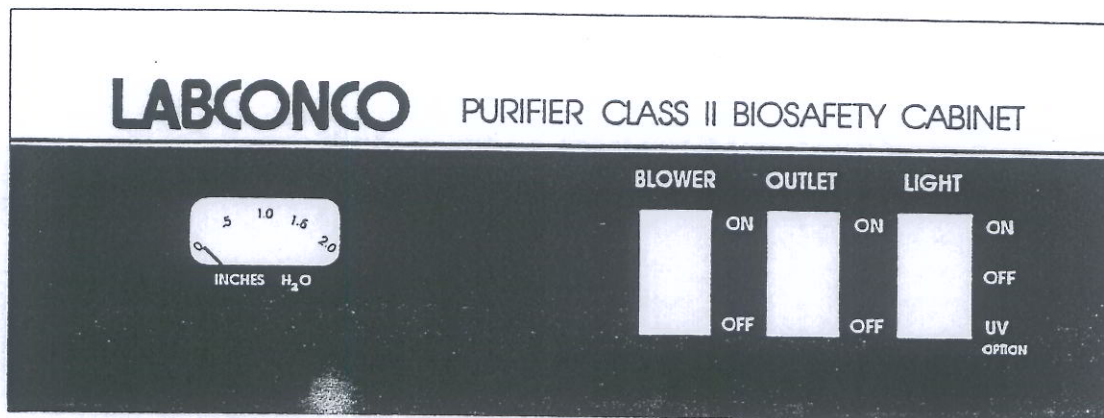


Figure 12

Starting the Type B3 Purifier™ Equipped with an Alarm System

- (1) To start the Type B3 Purifier that is equipped with an alarm, turn the blower switch to “On”, as shown in Figure 13. **The alarm will sound. This is normal.**
- (2) Hold the Alarm Switch to the ‘Reset’ position for approximately 5 seconds. When the Alarm switch is released, the cabinet blower should continue to operate, and the alarm should be silent.

IMPORTANT: If holding the alarm button down for more than 15 seconds does not reset the cabinet into normal operation or the alarm activates frequently, **DO NOT** continue to use the Purifier™. **NEVER OVERRIDE THE ALARM RESET SWITCH TO CONTINUE WORKING IN THE CABINET.** You **MUST** correct the problem before resuming operations.

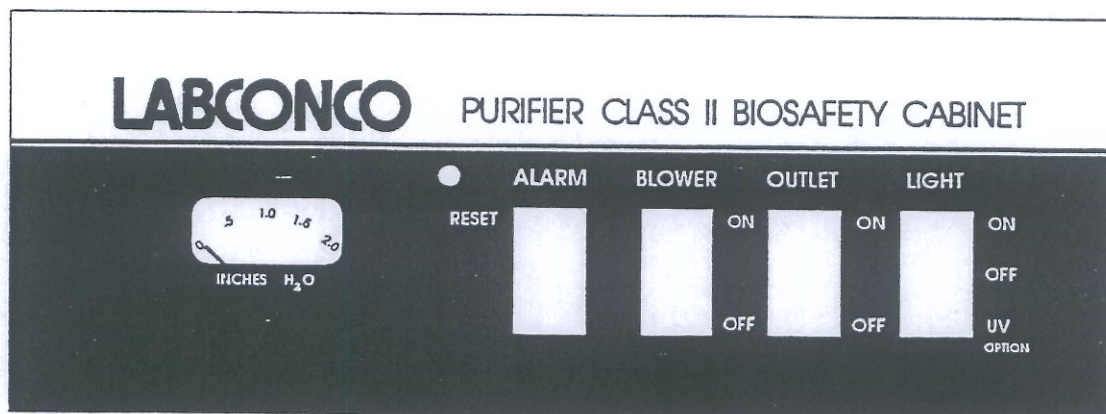


Figure 13

Use of the Cabinet

Planning

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

Start-up

- Turn off UV light if included.
- Ensure that the sash is locked in the down (lowest) position.
- Turn on fluorescent light and cabinet blower.
- Check the air grilles for obstructions.
- Note the pressure gauge reading.
- Allow the cabinet to operate unobstructed for 15 minutes.
- Wash hands and arms thoroughly with germicidal soap.
- Wear a long sleeved lab coat with knit cuffs and over-the-cuff rubber gloves. Use protective eyewear. Wear a protective mask if appropriate.

Wipe-Down

- Wipe down the interior surfaces of the cabinet with 70% ethanol, or suitable disinfectant, and allow to dry.

Loading Materials and Equipment

- Only load the materials required for the procedure. Do not overload the cabinet.
- Do not obstruct the front, side or rear return air grilles
- Large objects should not be placed close together.
- After loading the cabinet, wait 2-3 minutes to purge airborne contaminants from the work area.

NORMAL OPERATION

Work Techniques

- Keep all materials at least 4 inches inside of the sash, and perform all contaminated operations as far to the rear of the work area as possible, preferably behind the smoke split.
- Segregate all clean and contaminated materials in the work area.
- Arrange materials to minimize the movement of contaminated materials into clean areas.
- Keep all discarded contaminated material to the rear of the cabinet, behind the smoke split.
- Avoid passing materials or the operator's hands and arms in or out of the front access opening.
- Avoid the use of an open flame.
- Use proper aseptic technique.
- Avoid using techniques or procedures that disrupt the airflow patterns of the cabinet.
- If there is a spill or splatter during use, all objects in the cabinet should be surface decontaminated before removal. Thoroughly disinfect the working area of the cabinet.

Final Purging

- Upon completion of work, the cabinet should be allowed to operate for 2 to 3 minutes undisturbed, to purge airborne contaminants from the work area.

Unloading Materials and Equipment

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

NORMAL OPERATION

Wipe-Down

- Wipe down the interior surface of the cabinet with 70% ethanol, or suitable disinfectant, and allow to dry.
- Periodically remove the work surface and wipe down the area beneath it.
- Dispose of rubber gloves appropriately, and have lab coat laundered properly.
- Wash hands and arms thoroughly with germicidal soap.

Shutdown

- Turn off the fluorescent light and cabinet blower if desired, and turn on the UV light if appropriate.

ROUTINE MAINTENANCE SCHEDULE

Under normal operation, your Purifier™ will require little routine maintenance. The following maintenance schedule is recommended:

Weekly

- With 70% ethanol or a suitable disinfectant, wipe down the inside of the cabinet and the work surface.
- Using an appropriate glass cleaner, clean the sash and the surface of the UV lamp, if so equipped.
- Operate the cabinet blower, noting the pressure reading in the operational log.

Monthly (or more often as required)

- Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front and top of the cabinet, to remove dust.
- Disinfect the work surface with 70% ethanol or a suitable disinfectant.
- Remove the work surface.
- Disinfect the lower plenum with a solution of 70% ethanol or a suitable disinfectant.
- Check all service valves for proper operation.
- All weekly activities.

Annually

- Have the cabinet recertified by a qualified certifier.
- Replace the UV lamp, if so equipped.
- All monthly activities.

Biannually

- Replace the fluorescent lamp.
- All annual activities.

HEPA FILTERS

The HEPA filters in the Purifier™ will gradually accumulate airborne particulate matter from the room and from work performed in the cabinet. The rate of accumulation will depend upon the cleanliness of the room air, the amount of time the cabinet is used and the type of work being done. In typical installations with normal usage, the HEPA filters will last two to five years.

NOTE: The surface of the HEPA filter is very fragile. Do not attempt to clean or disinfect the filter media using chemical or mechanical methods.

The cabinet should be recertified when the pressure drop across the supply HEPA filter increases 50% over the initial condition. Labconco recommends noting the original pressure on a copy of the log sheet found in this manual.

The Supply HEPA filter is Labconco part #3629502, and measures 48 x 18 x 5-7/8 inches.

The Exhaust HEPA filter is Labconco part #3629401, and measures 18 x 18 x 11-1/2 inches.

DECONTAMINATION

Biohazard cabinets should be decontaminated with formaldehyde gas before:

- maintenance work in contaminated areas
- HEPA filter changes
- performing tests requiring entry into contaminated areas
- moving the cabinet
- changing research programs, and
- after a gross spill of biohazardous material.

The procedures for performing a gaseous decontamination are thoroughly outlined in the U.S. Department of Health, Education, and Welfare booklet entitled "Formaldehyde Decontamination of Laminar Flow Biological Safety Cabinets," available from the NIH, Division of Safety, Bethesda, MD 20892, or from Labconco Corporation.

Sash Adjustment

Unlatch the sash from its locked position by pulling the latch levers on the outside of the sash towards the center. Move the sash in the desired direction and reset the latch levers in one of the three sockets in the side of the cabinet liner.

Dress Panel Removal

Front Panel

- (1) Locate the control panel on the front of the cabinet, which has a large opening for the pressure gauge and switches. Loosen the screws located on each end of the panel and let it swing down completely.
- (2) Lift the front dress panel straight up and away from the cabinet.

Side Panels

- (1) Loosen the two screws on the front of each side panel.
- (2) Gently work the side panel loose by pulling it toward the front of the cabinet.

Changing a Lamp Starter

Note: Both the fluorescent and UV lighting systems utilize a starter (pre-heat) style lighting system. The starters for either system are interchangeable. If one lighting system works, and the other does not work, or operates erratically, try switching the starters. If the situation is eliminated or reversed, replace the defective starter.

Note: Two replacement starters have been included in the manual package.

- (1) Unplug the cabinet.
- (2) Locate the control panel on the front of the cabinet which has a large opening for the pressure gauge and switches. Loosen the screws located on each end of the panel and let it swing down completely.
- (3) The starters are located on the right side of the electronics module. Remove them from the module by depressing and twisting them counterclockwise approximately 1/8 turn. Pull the starter straight out of the module and replace with an FS-4 type starter only.
- (4) Reassemble the cabinet and plug it in.

CUSTOMER SERVICE OPERATIONS

Changing The Fluorescent Lamp

- (1) Unplug the cabinet.
- (2) Locate the control panel on the front of the cabinet which has a large opening for the pressure gauge and switches. Loosen the screws located on each end of the panel and let it swing down completely.
- (3) Remove the fluorescent lamp by rotating and pulling it straight out of its sockets.
- (4) Install the new lamp by reversing the removal procedure.

Changing The UV Lamp

NOTE: For optimum performance, the UV lamp should be changed on an annual basis. The UV lamp and the work area of the cabinet must be thoroughly disinfected before removing the lamp.

- (1) Unplug the cabinet.
- (2) Unlatch the sash from its locked position by pulling the latch levers on the ends of the sash toward the center.
- (3) Lift the sash up until it is horizontal, and lock it in position by pushing the latch levers out.
- (4) Remove the UV lamp by rotating and pulling it straight out of its sockets.
- (5) Install the new lamp by reversing the removal procedure.

CERTIFIER SERVICE OPERATIONS

Electronic Module Removal

NOTE: The electronic module assembly should be serviced by a qualified certifier.

- (1) Unplug the cabinet.
- (2) Remove the front dress panel as described on page 29.
- (3) Disconnect the electrical connectors on the top and on each side of the panel.
- (4) Disconnect the pressure gauge line from the hose nipple on the blower plenum cover. Plug the line and the nipple until the line is to be reconnected.
- (5) Remove the four nuts which hold the panel assembly to the cabinet and pull the panel straight out and up.

Measuring Line and Motor Voltage

NOTE: Line and motor voltage contact points are high voltage connections. Use caution when measuring either voltage.

- (1) Remove the front dress panel as described on page 29.
- (2) Locate the voltage test points identified by Figure 14 on the top of the electronics module.
- (3) Using a voltmeter and probes, measure the desired voltage by connecting the voltmeter probes to the appropriate points.
- (4) Replace the front dress panel.

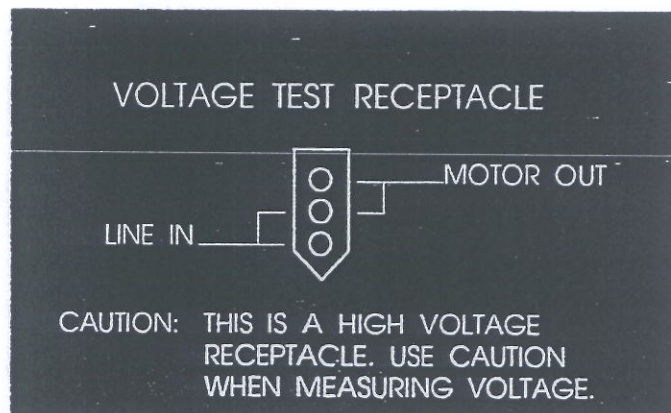


Figure 14

CERTIFIER SERVICE OPERATIONS

Exhaust Damper Adjustment

NOTE: The cabinet must be decontaminated before attempting to adjust the exhaust damper. Adjusting the exhaust damper will have an effect on the air velocities and the efficiency of the cabinet. The exhaust damper should only be adjusted by a qualified certifier as part of the recertification procedure.

- (1) Remove the front dress panel as described on page 29.
- (2) Locate the access nut on the blower chamber cover. The access nut is identified in Figure 15.
- (3) Remove the access nut.
- (4) Using a 7/16 inch socket wrench or nut driver, adjust the damper as required.
- (5) After completing the damper adjustment, replace the access nut, ensuring that it is sealed properly.
- (6) Replace the front dress panel.

EXHAUST DAMPER INFORMATION
CAUTION
DECONTAMINATE THIS UNIT BEFORE REMOVING THE EXTERNAL
ACCESS NUT. ADJUSTMENT OF THE INTERNAL DAMPER ADJUSTMENT
BOLT MUST BE DONE BY A QUALIFIED CERTIFIER.

THE DAMPER ADJUSTMENT BOLT HAS BEEN SET
AT THE FACTORY TO _____ TURNS OPEN FROM
THE FULLY CLOSED POSITION.

FULLY OPEN TO FULLY CLOSED IS APPROXIMATELY 20 TURNS.



P/N 36879

Figure 15

Use Of The DOP Access Port

NOTE: The cabinet must be decontaminated before attempting to use the access port. DOP scanning of the HEPA filters should only be performed by a qualified certifier as part of the recertification procedure.

- (1) Locate the access port on the top of the cabinet.
- (2) Remove the PVC nut, and then remove the brass plug, using a 5/16" hex wrench.

CERTIFIER SERVICE OPERATIONS

- (3) Using an appropriate photometer, insert the sensor into the access port.
- (4) After completing the DOP test of the filters, replace the access port plug and nut, ensuring that they are sealed properly.

Supply HEPA Filter Replacement

NOTE: The cabinet must be properly decontaminated before servicing the supply HEPA filter. The HEPA filters should be serviced only by a qualified certifier. After the supply HEPA filter is replaced, the cabinet **MUST** be recertified.

- (1) Unplug the cabinet.
- (2) Remove the front dress panel as described on page 29.
- (3) Remove the electronics module as described on page 31.
- (4) Remove the front corner dress panels located on both sides of the cabinet by loosening the two nuts on the inside of the panels.
- (5) Loosen and remove all of the nuts on the blower chamber cover. Gently rock the cover and pull it straight off.
- (6) Loosen and then remove all of the bolts on the front of the supply filter cover, located directly behind the control panel. Gently rock the cover, and pull it straight off. Remove the cover from the blower chamber by bowing it slightly and pulling it straight out.
- (7) Using a 3/4-inch wrench or socket, loosen the supply filter clamp bolts located in the front and back of the blower plenum. Refer to Figure 16, on page 35 for further details.
- (8) With the clamp bolts loosened, the supply filter clamping frame should be clear of the filter. Carefully pull the supply filter straight out of the unit and discard properly.
- (9) With the supply filter removed, inspect the clamping frame and the frame of the cabinet for damage.
- (10) Cover the surface of the new HEPA filter gasket with silicone grease.
- (11) Install the new supply HEPA filter by pushing it straight into the cabinet, ensuring that is correctly oriented and the filter fits properly in the cabinet.

CERTIFIER SERVICE OPERATIONS

CAUTION: The supply filter clamp bolts should only be tightened enough to ensure a proper seal. At maximum tightness, the top of the clamp adjustment probe should touch the bottom of the filter clamp bolt's head. NEVER tighten the clamp bolts beyond this setting. See Figure 16 on page 35.

- (12) Tighten the clamp bolts uniformly until the filter gasket is properly compressed against the cabinet frame. Inspect the seal thoroughly before proceeding.
- (13) Install the supply filter panel, and uniformly tighten the bolts until it is sealed.
- (14) Install the blower chamber cover, uniformly tightening the nuts on the cover until the gasket has formed a proper seal.
- (15) Install the electronics module.
- (16) Install the front dress panel.
- (17) Reinstall the control panel.
- (18) Tighten the two screws on the ends of the control panel.
- (19) Plug the cabinet in and have it recertified before use.

CERTIFIER SERVICE OPERATIONS

CLAMP BOLTS ARE TO BE TIGHTENED ONLY AS REQUIRED TO SEAL FILTER IN CABINET. MAXIMUM TIGHTENING OF BOLT IS INDICATED WHEN HEAD OF BOLT MAKES CONTACT WITH TOP OF CLAMP ADJUSTMENT PROBE AS SHOWN IN VIEW BELOW. CAUTION: CABINET DAMAGE MAY RESULT IF BOLT IS TIGHTENED BEYOND THIS POINT.

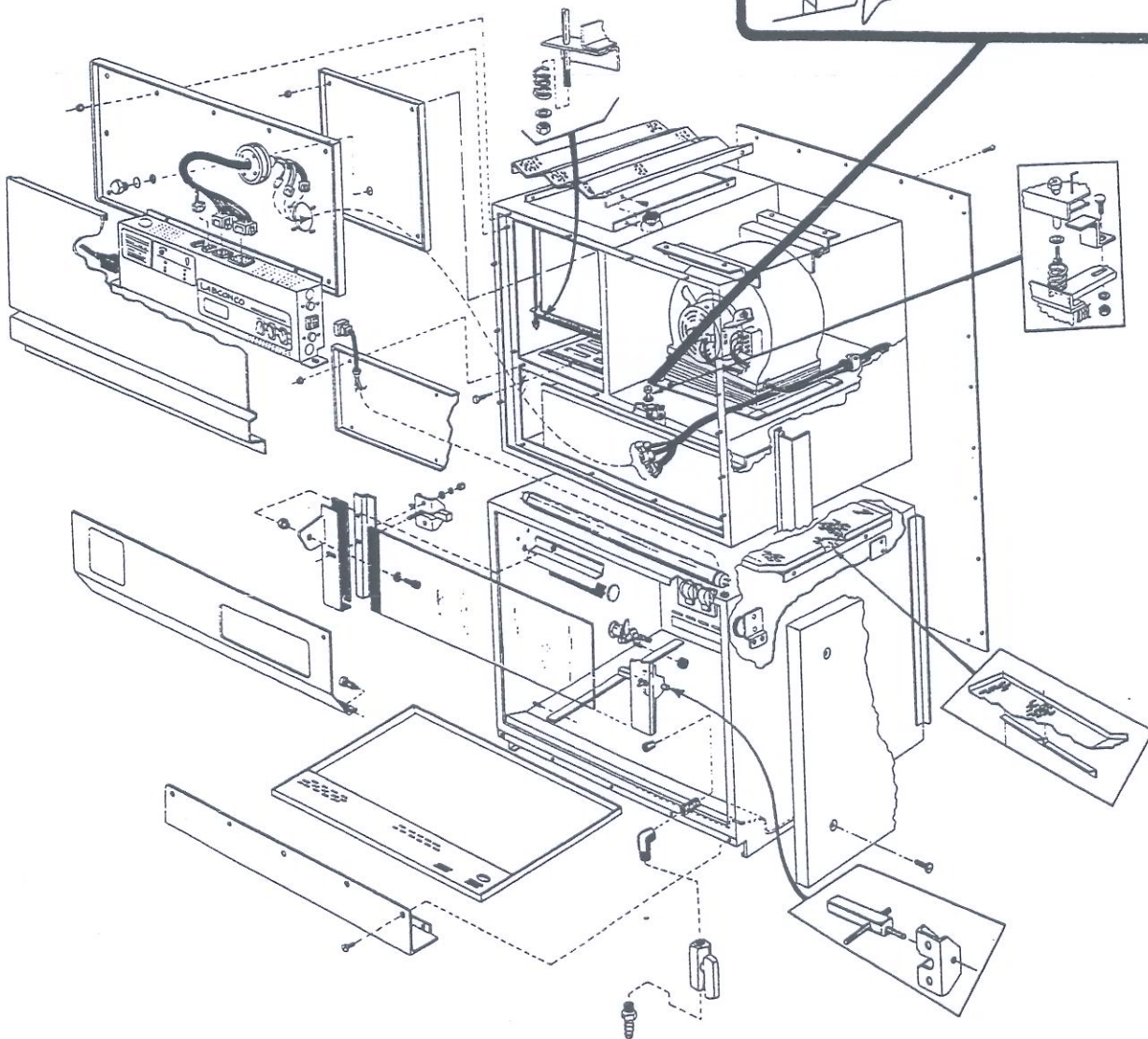
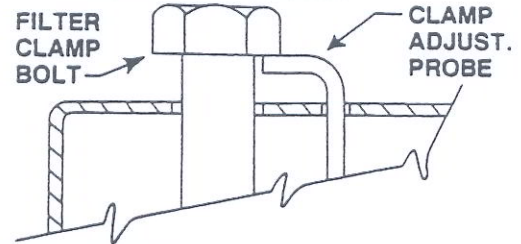


Figure 16

CERTIFIER SERVICE OPERATIONS

Exhaust HEPA Filter Replacement

NOTE: The cabinet must be properly decontaminated before servicing the exhaust HEPA filter. The HEPA filters should be serviced by a qualified certifier. After the exhaust HEPA filter is replaced, the cabinet **MUST** be certified by a qualified certifier.

- (1) Unplug the cabinet.
- (2) Remove the front dress panel as described on page 29.
- (3) Remove the electronics module as described on page 31.
- (4) Remove the front corner dress panels located on both sides of the cabinet by loosening the two nuts on the inside of the panels.
- (5) Loosen and remove all of the nuts on the blower chamber cover. Gently rock the cover and pull it straight off.
- (6) Loosen and then remove all of the bolts on the front of the exhaust filter cover.
- (7) Gently rock the cover, and pull it straight off.
- (8) Using a 9/16 inch wrench or socket, loosen the exhaust filter clamp nuts located in the front and back corners of the exhaust filter. See Figure 17, on page 38.
- (9) With the clamp nuts loosened, the exhaust filter should be clear of the cabinet frame. Carefully pull the exhaust filter straight out of the unit and discard properly.
- (10) With the exhaust filter removed, inspect the clamping frame and the frame of the cabinet for damage.
- (11) Cover the surface of the new HEPA filter gasket with silicone grease.
- (12) Install the new exhaust HEPA filter by pushing it straight into the cabinet, ensuring that it is correctly oriented and the filter fits properly in the cabinet.

CAUTION: The exhaust filter clamp nuts should only be tightened enough to ensure a proper seal. At proper adjustment, the distance between the filter frame and the bottom of the filter clamp nut should be 1 inch. **NEVER** tighten the clamp nut beyond this setting. See Figure 17, page 38.

- (13) Tighten the clamp nuts uniformly until the filter gasket is properly compressed against the cabinet frame. Inspect the seal thoroughly before proceeding.

CERTIFIER SERVICE OPERATIONS

- (14) Install the exhaust filter panel, and uniformly tighten the bolts until it is sealed.
- (15) Install the blower chamber cover, tightening the nuts until it is properly sealed.
- (16) Install the electronics module.
- (17) Install the front dress panel.
- (17) Reinstall the control panel.
- (19) Tighten the two screws on the ends of the control panel.
- (20) Plug the cabinet in and have it recertified before use.

CERTIFIER SERVICE OPERATIONS

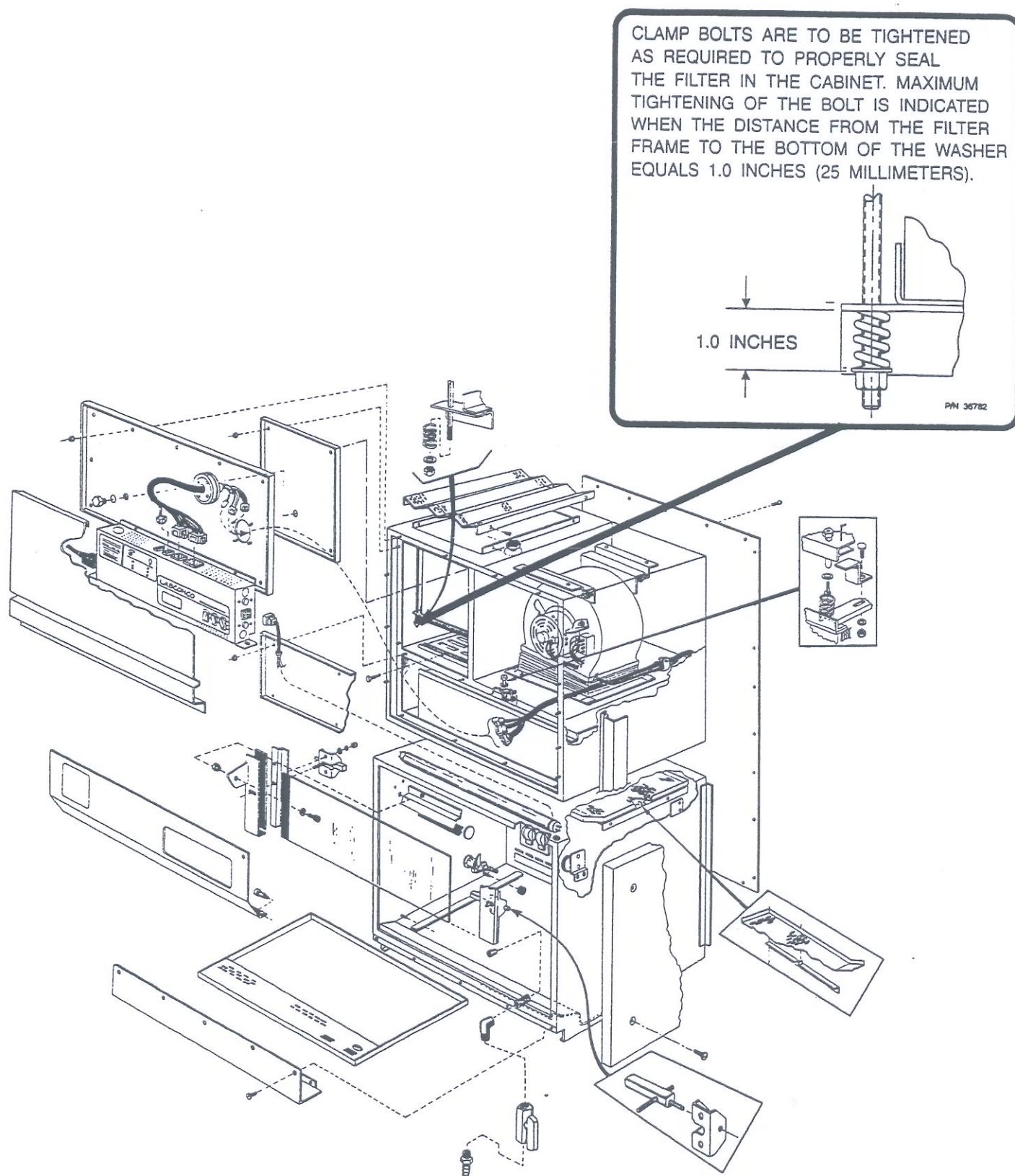


Figure 17

CERTIFIER SERVICE OPERATIONS

Motor/Blower Replacement

NOTE: The cabinet must be properly decontaminated before servicing the motor/blower. The motor/blower should be serviced by a qualified certifier. Following replacement of a motor/blower, the cabinet **MUST** be recertified by a qualified certifier.

- (1) Unplug the cabinet.
- (2) Remove the front dress panel as described on page 29.
- (3) Remove the electronics module as described on page 31.
- (4) Remove the front corner dress panels located on both sides of the cabinet by loosening the two nuts on the inside of the panels.
- (5) Loosen and remove all of the nuts on the blower chamber cover. Remove the cover by gently rocking it and pulling the cover straight off.
- (6) Using the appropriate wrenches, disconnect the motor ground wire from the frame, and the flexible blower duct from the cabinet frame.
- (7) Using a small screwdriver, disconnect the cabinet wiring harness from the terminal strip attached to the blower housing.

NOTE: The motor/blower assembly is heavy. Handle with care.

- (8) While supporting the blower assembly, remove the three nuts which secure the front blower brace to the cabinet frame.
- (9) Lower the blower assembly slightly, tilt the top of the blower toward the front of the cabinet, and pull the assembly straight out of the plenum.

Work Surface Removal

NOTE: The work surface should be thoroughly disinfected before it is removed. The work surface is heavy; use caution.

- (1) Turn the cabinet blower off.
- (2) Lift up the front of the work surface and pull it straight out until clear of the cabinet.
- (3) Install the work surface by placing its rear corners on the support rails inside the cabinet.

CERTIFIER SERVICE OPERATIONS

- (4) Slide the work surface straight into the cabinet until it stops. The rear edge of the work surface should sit ON TOP OF the ledge in the rear of the work area.
- (5) Lower the work surface into position.

Diffuser Removal

NOTE: The work area of the cabinet must be thoroughly disinfected before removing the diffuser. Before removing the diffuser, note its orientation. It can only be installed one way. Bending or distorting the diffuser may affect the airflow in the cabinet. Use care when handling it. When properly installed, the slot on each side of the diffuser should engage the retaining tab on each diffuser support rail, as shown in Figure 3 on page 7.

- (1) Remove the diffuser support rails located in the top of the work area on both sides of the cabinet.
- (2) Carefully lower the diffuser, aligning the notches in either side with the studs at the top of the work area.
- (3) Lower the diffuser until it clears the studs, and then remove it, by tilting the front down.
- (4) Install the diffuser by reversing the above steps.

Storage

If the Purifier™ is to be left unused for more than 1 month, the unit should be prepared for storage.

- (1) Surface disinfect or decontaminate the cabinet as required.
- (2) Cover and seal the work area access opening and the exhaust outlet with plastic sheeting.
- (3) Unplug the unit.
- (4) Ensure that the cabinet will not be moved or disturbed while in storage.

NOTE: The cabinet should not be stored in areas of excess humidity or temperature extremes. If the cabinet is moved during storage, it must be recertified before use.

Sealing the Purifier™

One of the unique service features of the Purifier™ is its ability to be easily sealed for decontamination, pressure testing, etc. To seal the Purifier™, perform the following:

- (1) Remove the side panels as described on page 29.
- (2) Remove the lower trim cover, located on the front of the cabinet by removing the 6 screws on the front of the lower trim panel. The panel is also secured by two nuts located on the inside rear surface of the trim cover.
- (3) Loosen the two screws that secure the control panel and let it swing down.
- (4) If desired, the control panel can be removed by loosening the two hex screws that secure the panel to the liner of the cabinet.
- (5) Remove the electronics module and plug the pressure gauge tube as described on page 31.
- (6) Lift off the front dress panel, and remove the front corner dress panels located on either side of the unit by loosening the two nuts located on the inside of each panel.
- (7) The face of the cabinet may now be sealed. The dimensions of the face flange are 49 3/4 x 26 inches.
- (8) Labconco recommends the use of a heavy plasticene sheeting material cut to the dimensions of the flange. Duct tape can then be used on the perimeter of the plastic sheet. It is critical that the duct tape be folded over the flange and adhere properly to the rear surface of the flange.
- (9) To seal the exhaust duct opening, remove the exhaust filter screen and then seal the four screw holes with duct tape. The exhaust duct has an opening of approximately 16 3/8 x 16 3/8 inches. It can be sealed by cutting a piece of plasticene the same dimensions as the opening, and sealing it to the exhaust stack with duct tape.
- (10) The unit may be pressurized via either the drain valve, or the pressure gauge port located on the blower plenum cover.

CERTIFIER SERVICE OPERATIONS

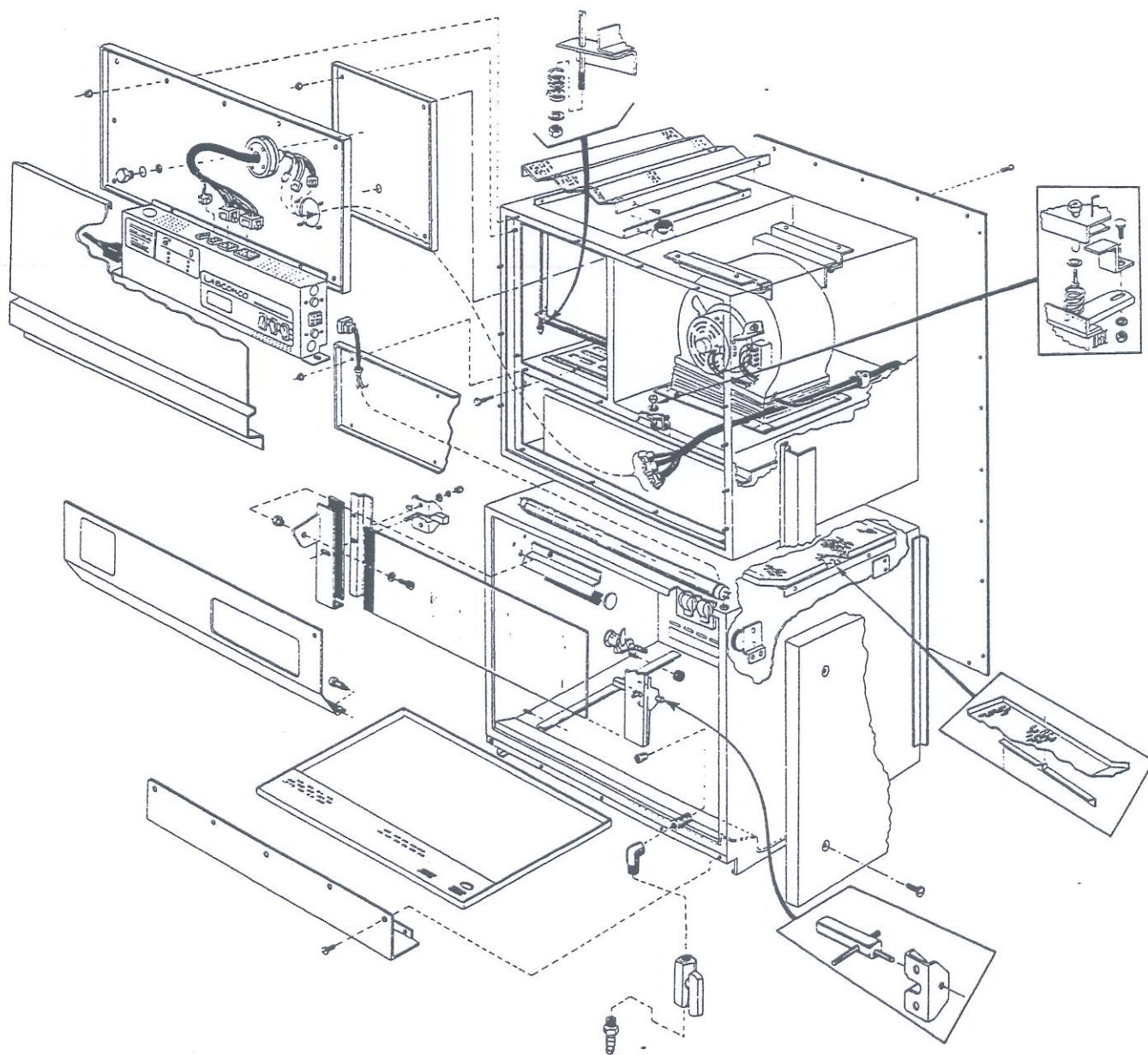


Figure 18

REPLACEMENT PARTS

Ref. No.	Quantity	Catalog No.	Description
1	1	1327201	Circuit Breaker, 10 Amp.
2	1	1327200	Circuit Breaker, 3 Amp.
3	1	1327204	Circuit Breaker, 5 Amp.
4	2	1337400	Circuit Breaker, 5 Amp, 230 VAC
5	1	1952400	Pressure Gauge
6	1	3686300	Electronics Module, 115 VAC
6A	1	3686200	Electronics Module, 115 VAC with alarm
6B	1	3688900	Electronics Module, 230 VAC
6C	1	3688800	Electronics Module, 230 VAC with alarm
7	3	1302300	Switch - 2 Position
7A	1	1302400	Switch - For UV Systems
8	2	1271100	Starter - # FS4
9	1	1278700	Lamp, Fluorescent (F40SXL/SP35)
10	1	3629402	Exhaust HEPA Filter
11	1	3629502	Supply HEPA Filter
12	1	1211200	Motor, 115 VAC
12A	1	1210500	Motor, 230 VAC
13	1	3664600	Motor/Blower Assembly, 115 VAC
13A	1	3665600	Motor/Blower Assembly, 230 VAC

*The 10 inch sash is used on all model numbers 36208.

The 8 inch sash is used on all model numbers 36209.

door screen 3641101

REPLACEMENT PARTS

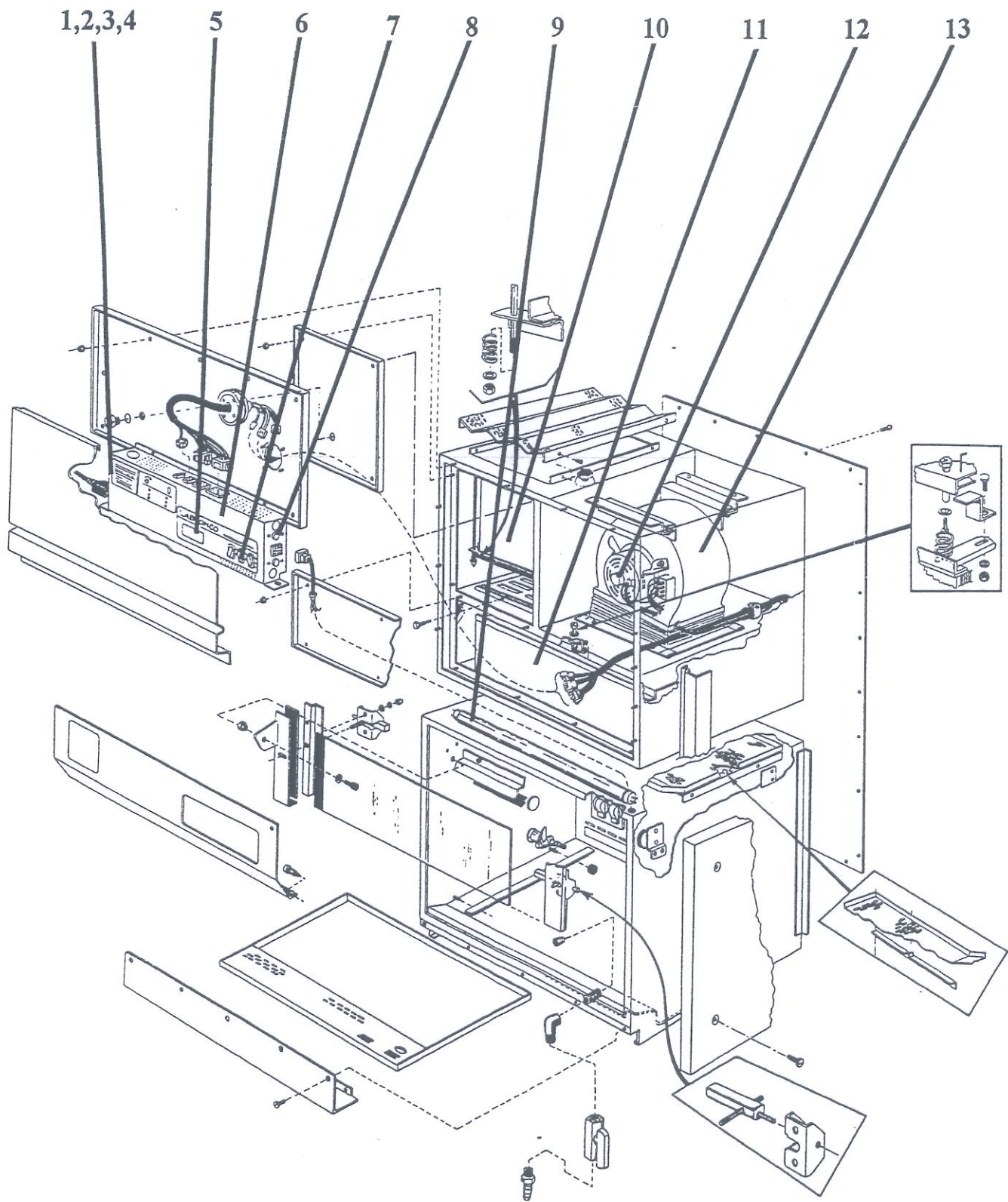


Figure 19

REPLACEMENT PARTS

U.V. Lamp Replacement Parts

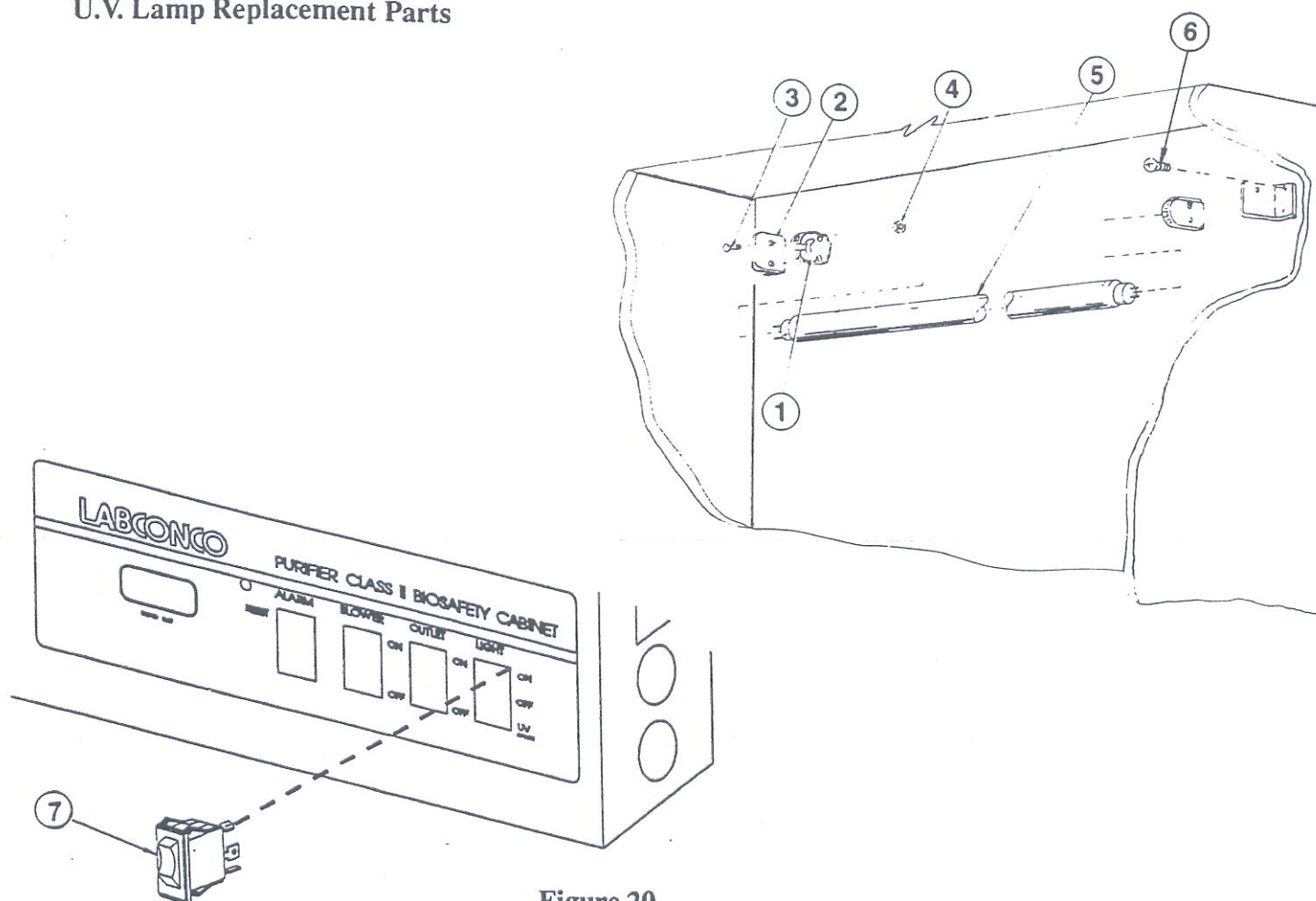


Figure 20

Ref. No.	Quantity	Catalog No.	Description
1	2	1278800	Lampholder
2	2	3632300	Lampholder bracket
3	4	1886107	Screw #4-40 x 7/16"
4	4	1906509	Nut #4-40
5	1	1271300	Lamp - germicidal (G30T8)
6	4	1903508	Screw - #8-32 x 1/2
7	1	1302400	Switch - 3 position
8	1	3694600	Installation instructions (not shown)

I.V. Bar Replacement Parts

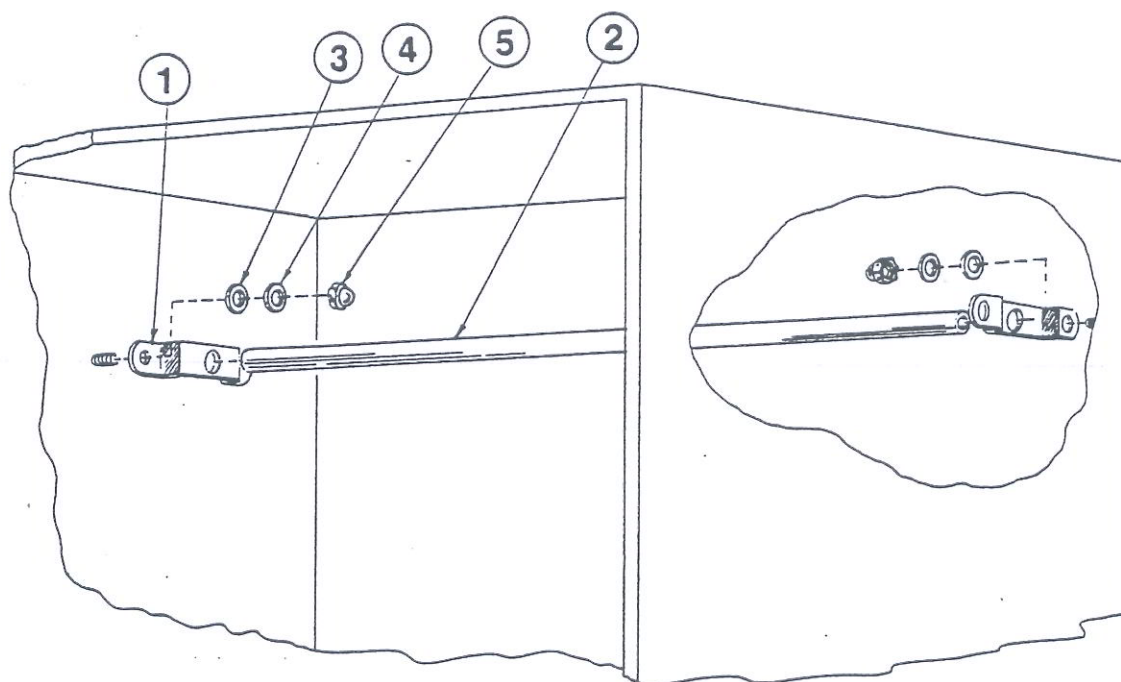


Figure 21

Ref. No.	Quantity	Catalog No.	Description
1	2	3627700	I.V. Tube Bracket
2	1	3627901	I.V. Tube
3	4	1911415	Washer - Flat #10
4	4	1910010	Lockwasher - #10
5	4	1905017	Nut, Acorn #10-24
6	1	3629300	Installation instructions (not shown)

REPLACEMENT PARTS

Service Valve Replacement Parts

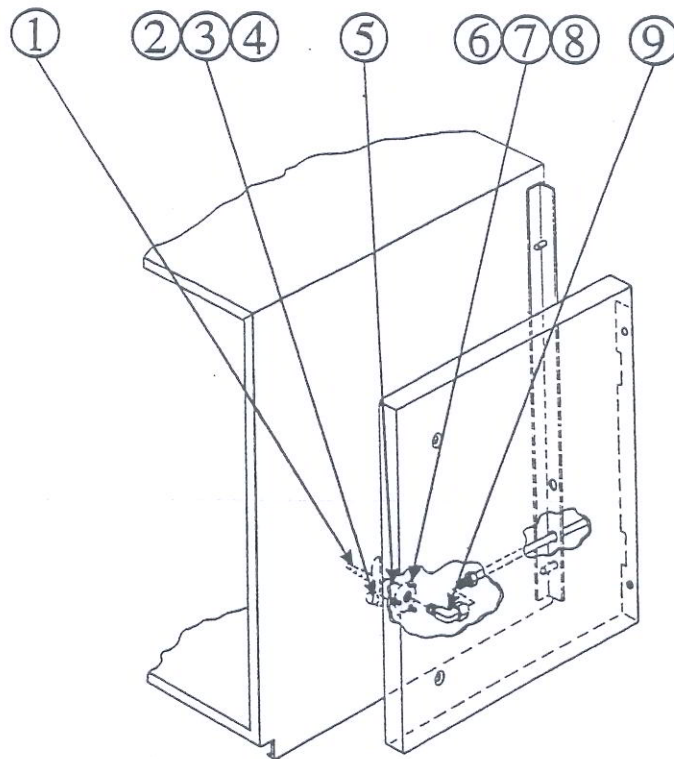


Figure 22

Ref. No.	Quantity	Catalog No.	Description
1	1	1363800	Valve
2	1	1364100	Insert - White
3	1	1364101	Insert - Orange
4	1	1364102	Insert - Yellow
5	1	3684100	Flange
6	3	1885608	Screw 6/32 x 1/2
7	3	1910106	Lockwasher
8	3	1906513	Nut, Hex #6-32
9	1	3674500	Elbow
10	1	3694400	Installation instructions (not shown)

PURIFIER™ DIMENSIONS

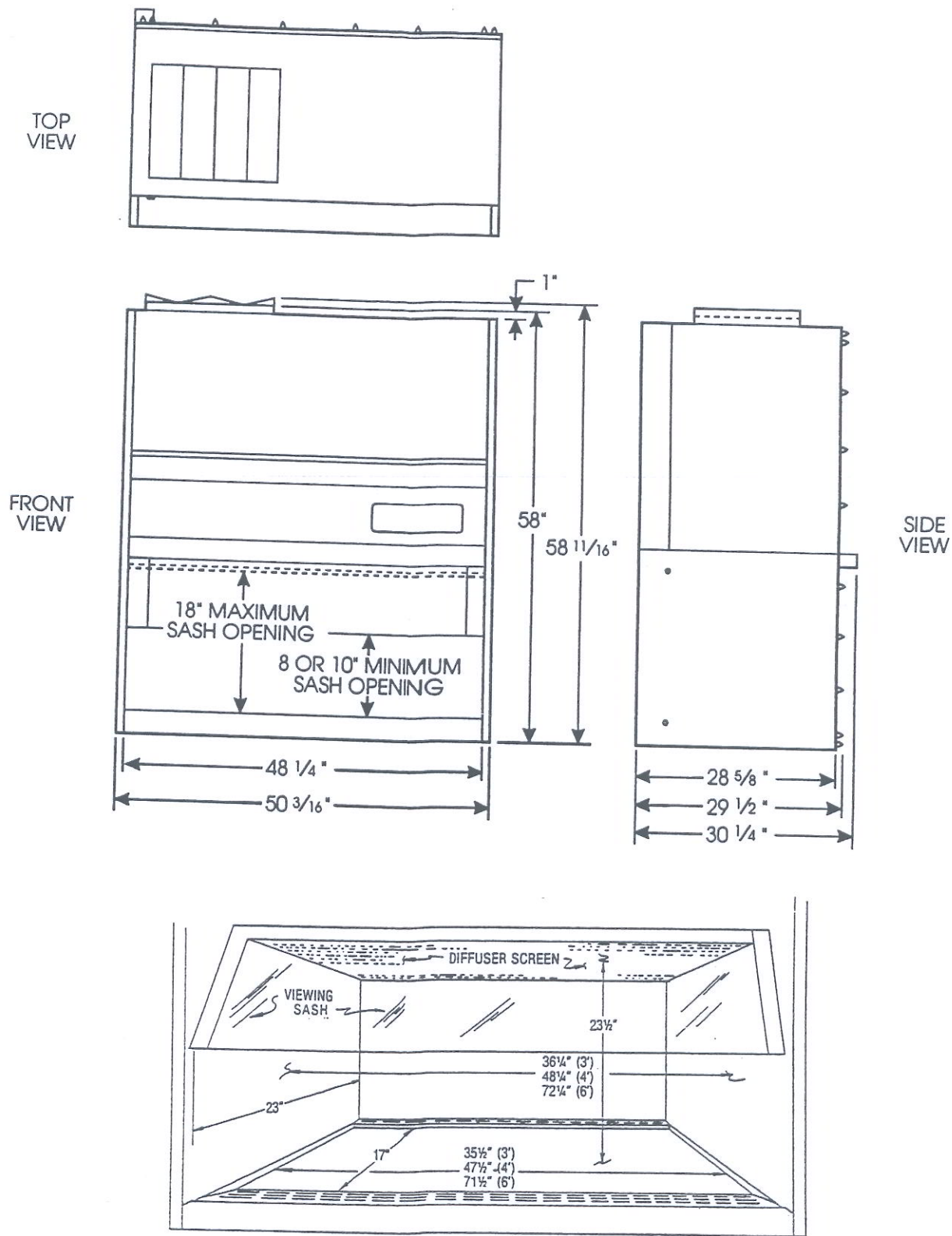


Figure 23

ELECTRICAL DATA TABLE

CABINET MODEL	ELECTRICAL REQUIREMENTS
36208-00-19, 36209-00-19	115 VAC - 60 Hz, 1 Phase - 12 Amp
36208-20-29, 36209-20-29	230 VAC - 50 Hz, 1 Phase - 7 Amp

MOTOR SPECIFICATIONS

MODELS 36208 & 36209, 00-19	MODEL 36208 & 36209, 20-29
115 VAC 60 Hz	230 VAC 50/60 Hz
3.8 Full Load Amps	2.8 Full Load Amps
1/3 Horsepower	1/2 Horsepower
1625 RPM	1625 RPM
Automatic Thermal Protection	Automatic Thermal Protection

ENVIRONMENTAL CONDITIONS

The Purifier is designed to operate under the following conditions:

- indoor use;
- altitude up to 2000 m;
- temperature 5° C to 40° C;
- maximum relative humidity 80% for temperatures up to 31° C decreasing linearly to 50% relative humidity at 40° C;
- mains supply voltage fluctuations not to exceed +/- 10% of the nominal voltage;
- transient overvoltages according to Installation Category II (overvoltage categories per IEC 1010);
- Pollution Degree 2 in accordance with IEC 464.

AIRFLOW DATA TABLE

Calculating the inflow velocity using a direct reading instrument

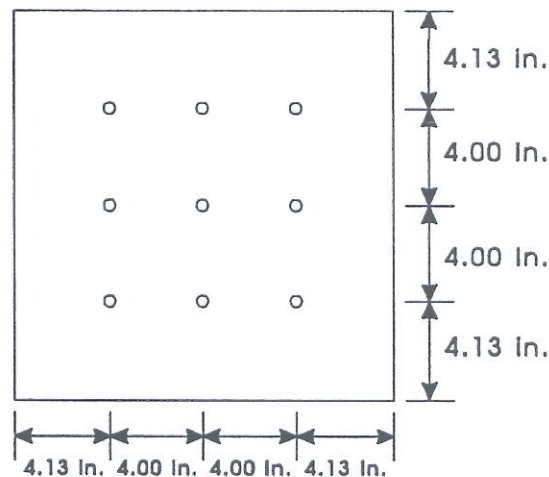
When using a device that measures air volumes directly, the data are as follows:

Cabinet Model	Nominal Downflow (FPM)	Nominal Inflow (FPM)	Sash Opening (Ft ²)
36208	80	80	3.35
36209	80	105	2.68

Exhaust Volume (CFM) / Sash Opening Area (Ft²) = Average Face Velocity (FPM)

Calculating the inflow velocity using a thermoanemometer

As an alternate method, the inflow velocity of these units can be calculated indirectly, using a thermoanemometer above the exhaust filter. The instrument should be on a plane 4 inches above the filter media, and exhaust velocities should be measured at the following points:



The data for these model Purifiers, using a thermoanemometer are as follows:

Cabinet Model	Nominal Downflow (FPM)	Nominal Inflow (FPM)	Sash Opening (Ft ²)	Exhaust Area (Ft ²)
36208	80	100	3.35	1.8
36209	80	117	2.68	1.8

Average Exhaust Velocity (FPM) x Exhaust Area (Ft²) = Exhaust Volume (CFM)

Exhaust Volume (CFM) / Sash Opening Area (Ft²) = Average Face Velocity (FPM)

Calculating the downflow velocity profile

Use the downflow velocity grid supplied with the cabinet when checking the downflow air velocity. The individual downflow velocity readings may vary no more than +/- 20 % from the downflow average.

TROUBLESHOOTING

PROBLEM	CAUSES	CORRECTIVE ACTION
Cabinet blower and lights won't turn on	Unit not plugged into outlet	Plug the Purifier™ into appropriate electrical service
	Circuit breakers tripped	Reset circuit breakers
Blower won't turn on but lights work	Blower circuit breaker tripped	Reset blower circuit breaker
	Blower wiring is disconnected	Inspect blower wiring
	Blower switch is defective	Replace blower switch
	Blower motor is defective	Replace blower motor
Cabinet blower turns on but lights don't work	Lamp circuit breaker tripped	Reset the lamp circuit breaker
	Lamp not installed correctly	Inspect lamp installation
	Lamp is defective	Replace lamp
	Defective lamp starters	Replace lamp starters
	Defective lamp ballasts	Replace lamp ballasts
	Lamp wiring is disconnected	Inspect lamp wiring
	Lamp switch is defective	Replace lamp switch

TROUBLESHOOTING

PROBLEM	CAUSES	CORRECTIVE ACTION
Slight increase in pressure reading	HEPA filter loading	The pressure reading will steadily increase as the unit is used
	Blockage of the return air slots or grille	Check all return air slots and grilles to ensure that they are not blocked or restricted
	Blockage of the exhaust outlet	Ensure that the exhaust outlet is not blocked or restricted
	Blockage or restriction under the work surface	Ensure that the plenum beneath the work surface is unobstructed
Contamination of work in the cabinet	Improper technique or procedure for the biohazard cabinet.	See 'Use of the Cabinet' section in this manual
	Restriction of the return air slots or grille - blockage of the exhaust outlet	Ensure that all return air slots, grilles, and the exhaust outlet are unobstructed
	External factors are disrupting the cabinet airflow patterns or acting as a source of contamination	See 'Installation' section of this manual
	Cabinet is out of adjustment/HEPA filter(s) are defective	Have cabinet recertified

If you are having problems with the operation of your Purifier™, call Labconco at 1-800-821-5525 or 816-333-8811.

QUESTIONS & ANSWERS

Here are some commonly asked questions regarding the design and operation of Biological Safety Cabinets. If you have additional questions, or need assistance, please contact Labconco's Product Service Department at 1-800-821-5525 from 7:30 a.m. to 5:00 p.m.

"Can I use a Bunsen burner in my Biohazard Cabinet?"

You shouldn't. Using a Bunsen burner in a Biohazard Cabinet compromises the performance of the unit, and may be dangerous. During operation, the flame of a burner is very disruptive to the airflow patterns of the cabinet, and may actually increase the dispersion of aerosols throughout the work area.

In addition, if the flame of the burner is too large, the excessive heat may melt the adhesive holding the HEPA filter together or literally burn holes in the filter media.

Because of these problems, and the potential for explosive gases to accumulate in the cabinet, Labconco recommends using alternative methods whenever possible, such as electric incinerators, or disposable inoculating loops, for instance. The practice of flaming bottle mouths is unnecessary, as the work area of a Biohazard Cabinet should be a sterile environment, if used properly.

"Can I use a biological safety cabinet as if it were a fume hood?"

Biohazard Cabinets and fume hoods are two distinctly different pieces of equipment and must be used differently. The fume hood is designed to remove noxious or toxic fumes and aerosols away from the operator. It should be constructed of materials that are inert to a wide variety of chemical agents. The Biohazard Cabinet's primary purpose is to protect the operator, environment, and often the product from biohazardous contaminants. The Biohazard Cabinet and its HEPA filters are constructed of materials that are inert to the chemicals used in connection with biological research, but may be damaged by some of the more corrosive chemicals commonly used in fume hoods.

"If I work in a Biohazard Cabinet, do I have to be careful with my technique?"

Yes you do. The Biohazard Cabinet will provide Personnel and Product protection only if used properly. Aseptic technique must be practiced at all times while working in a Biohazard Cabinet.

"If I use the cabinet's UV light, do I need to decontaminate the work area?"

The UV light is only good as an adjunct, to minimize contamination of the work area when the cabinet is not in use. Ultraviolet light has virtually no penetrating power, and as such, will not kill microbes protected by dust, dirt, or organic material. The best method to prevent contamination in the cabinet is regular decontamination of the work area surfaces, before and after the cabinet is used.

"Can I connect a vacuum source to one of the service valves?"

The service valves can be connected to a vacuum source, however, you should protect the source from possible contamination, by having an appropriate disinfectant-filled trap and air filter in the vacuum line inside the cabinet's work area.

QUESTIONS & ANSWERS

"Can I put a centrifuge in the Biohazard Cabinet?"

You shouldn't. Large objects placed in the Biohazard Cabinet will impede the air-flow in the work area, reducing the efficiency of the cabinet. Electrical appliances like centrifuges, blenders, etc., will often disrupt the airflow around them when they operate, due to cooling fans. It is better to use a primary barrier on the appliance, such as a sealed safety cup in the centrifuge, rather than to use a Biohazard Cabinet to provide containment.

"Will a Total Exhaust Biohazard Cabinet give better protection than a Type A or A/B3 Cabinet?"

If you're talking about protection from volatile toxic chemicals or radionuclides, your right. If you're referring to protection from biohazardous aerosols, you may not be...

Assuming that the units in question are both NSF listed, they both were subjected to the same biological challenge tests. Any claims for superior biological containment should be documented by additional biological challenge test data.

"Should the Biohazard Cabinet operate continuously, 24 hours a day?"

Some applications of the Biohazard Cabinet require that the unit operate continuously. When used to prepare cytotoxic drugs, for example, the unit should operate continuously, to prevent toxic residue from migrating out of the cabinet ductwork and into the laboratory. If the cabinet is not used in such an application, there is no need to leave it operating continuously. This will only reduce the life of the cabinet blower and HEPA filters.

"If I leave my Biohazard Cabinet running continuously, will it clean all the air in the room to Class 100 (cleanroom) conditions?"

Assuming you had an airtight room, with no ventilation system, an airtight door seal, and no activity in it, then a recirculating biohazard cabinet might clean the room to Class 100 levels. This would also unfortunately shorten the operating life of the motor and HEPA filters, and heat up the room considerably. Regardless, as soon as the operator opens the room door to enter, particulate-laden air will contaminate the room, raising it far above Class 100 conditions.

"Can I use a fume hood blower and duct system with a Type B cabinet?"

Probably not. Biological Safety Cabinets have different pressure and volume requirements than fume hoods, and an exhaust system for one may not be suitable for the other. In addition, hard ducted Biological Safety Cabinet exhaust systems should have a backdraft damper, to prevent reverse airflow, a feature not found in many fume hood exhaust systems.

"Should the HEPA filters be replaced annually?"

HEPA filters should be replaced when the pressure differential becomes excessive (the filter is plugged), or the filter media is extensively damaged. It should be remembered, however, that HEPA filters are not immortal. After an extended time period, the

QUESTIONS & ANSWERS

gasket material will begin to stiffen and crack, and the adhesive used in the filter may begin to deteriorate.

Arbitrarily replacing filters annually, or biannually, without regard to filter loading, may be unnecessarily expensive and wasteful. However, if a HEPA filter is over 5 years old, and the pressure drop across it during operation is beginning to increase, it may be prudent to replace the filter.

“How much overhead room should I allow for the exhaust grille?”

Ideally, there should be at least 12 inches between the exhaust HEPA filter located on the top of the unit and the ceiling, to allow the certifier enough room to measure the exhaust air flow during certification. It is very important that the exhaust grill is never blocked or obstructed, as this may have a serious impact on the cabinet's performance.

“Do I have to vent the Purifier's Exhaust out of the lab?”

This will depend on the type of cabinet you are using. If the cabinet is a Type A or an A/B3, then the unit can operate properly by recirculating its HEPA-filtered exhaust air back into the laboratory. If your research involves the use of odorous material, then exhausting should be considered. If your work involves the use of volatile toxic chemicals or radionuclides, then you should exhaust the air out of the laboratory.

If you have a Type B1 or B2 cabinet, it must be exhausted out of the laboratory in order to function properly.

“Can I change a Type A Cabinet into a Type B2 (Total Exhaust) Cabinet?”

Once a cabinet has been designated a certain Type, it cannot be changed (except for the A/B3). There are often serious structural and performance differences between the different types that prevents conversion. In addition, NSF listed cabinets are designated to be a certain type, with specific sash openings and velocities. NSF will not allow the alteration of a cabinet once it has been manufactured to a specified type.

“Do I have to get a new cabinet certified?”

Every new Biohazard Cabinet should be certified by a qualified certifier before it is used. A complete initial certification is the only way to ensure that the unit is operating as it was at the factory.

REFERENCES

Following is a few of the excellent reference texts and booklets currently available.

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WARRANTY

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

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

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

SHIPPING CLAIMS

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

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

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

PURIFIER™ ACCESSORIES

Accessory Part #	Description
36711	Canopy Kit Allows for the installation of a Canopy (Thimble) exhaust connection.
36936	Type B3 Conversion Kit Allows for the conversion of a model 36209 to a Type B3 cabinet (exhaust ductwork and a remote blower with backdraft damper, #36680 also required).
3693601	Type B3 Conversion Kit Converts 230 volt models 36209 to Type B3 configuration.
36680	Remote Blower with integral backdraft damper delivers 650 CFM @ 0.38 inches static pressure. Wired for 115 VAC, 60 Hz, 1 phase @ 4.4 Amps.
8087000	Universal Base Stand 28-3/4 inches high. Allows the Purifier™ to be used while sitting.
8087001	Universal Base Stand. 34-3/4 inches high Allows the Purifier™ to be used while standing.
36933	Service Fixture Kit Allows for the installation of one service valve in the Purifier™.
3621802	I.V. Bar Kit Allows for the installation of an I.V. Bar in the work area of the Purifier™.
36934	Needle Valve Kit Allows for the installation of one needle valve in the Purifier™.

CONTACTING LABCONCO

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

Labconco's mailing address is:

Labconco Corporation
8811 Prospect Avenue
Kansas City, Missouri 64132

Visit Labconco through the Internet at:

<http://www.labconco.com>

or

email:labconco@labconco.com