

OPERATOR'S MANUAL
Baker SterilGARD®III Advance^o
Biological Safety Cabinet

MODELS
SG403EN, SG603EN,

THE BAKER COMPANY

This manual includes information for installation, operation, maintenance and spare parts. Keep it near the cabinet for ready reference.

April 2002

THE BAKER COMPANY

LETTER FROM THE PRESIDENT

It is a pleasure to welcome you to the growing number of customers who own and operate Baker biological safety cabinets. As the inventors of the laminar flow biological safety cabinet and the leaders in the field, Baker people take special pride in providing a cabinet that is designed for maximum performance.

Your new SterilGARD®III Advance° has a number of remarkable features. Among them, the contaminated positive pressure areas, which include the work area, are surrounded by a negative pressure plenum. This arrangement provides an extra measure of protection because any particle in the contaminated zone will invariably be drawn through the blower and trapped on a filter.

Built to exceed all microbiological aerosol tests specified by applicable NSF standards, your SterilGARD®III Advance° unit includes many unusual Baker features which are included for superior performance, simpler maintenance and lower life cycle cost. Your SterilGARD®III Advance° unit is designed for both safety and value.

Please note that all open-front containment cabinets, including this one, are for use with low to moderate risk agents only. Open-front cabinets do not provide absolute protection for the user. The adequacy of a cabinet for user safety should be determined on-site by an industrial hygienist, safety officer or other qualified person. Remember that you, the owner and user, are ultimately responsible and that you use your cabinet at your own risk.

You will find your SterilGARD®III Advance° cabinet suitable for use not only for research and clinical diagnostic work involving tissue culturing of possibly infectious samples, but also with I.V. drug preparations and other pharmaceuticals that could have adverse health effects on operators and other techniques requiring a contamination-free atmosphere.

We recommend that this manual, along with factory test report, be kept near the cabinet for convenient reference by operators and qualified maintenance personnel. If you have any questions about the use or care of your new SterilGARD®III Advance° cabinet, please do not hesitate to contact our Customer Service Department at 001-207-324-8773 for assistance or e-mail us at bakerco@bakerco.com.

Sincerely,



Dennis Eagleson
President, CEO
The Baker Company,
Inc.

WARRANTY

The Baker Company, Inc. expressly represents and warrants all goods (a) to be as specified in the Baker Company catalogs and literature, and (b) to be free under normal use, service and testing (all as described in The Baker Company catalogs and literature) from defects in material and workmanship for a period of thirty-six months from the invoice date.

The exclusive remedy for any breach or violation of this warranty is as follows: The Baker Company, Inc. will, F.O.B. Sanford, Maine furnish without charge repairs to or replacement of the parts or equipment which proved defective in material or workmanship. No claim may be made for any incidental or consequential damages.

This warranty is expressly in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose, unless otherwise agreed in writing signed by The Baker Company. (The Baker Company shall not be responsible for any improper use, installation, service, or testing of the goods).

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Chapter I

THE SterilGARD®III Advance^o

Guide To the Cabinet

The SterilGARD®III Advance^o is a Class II Type A/B3 biological safety cabinet. The cabinet is designed to protect, the people using the cabinet, the people using the cabinet, and the product inside the cabinet from airborne contaminants and the environment.

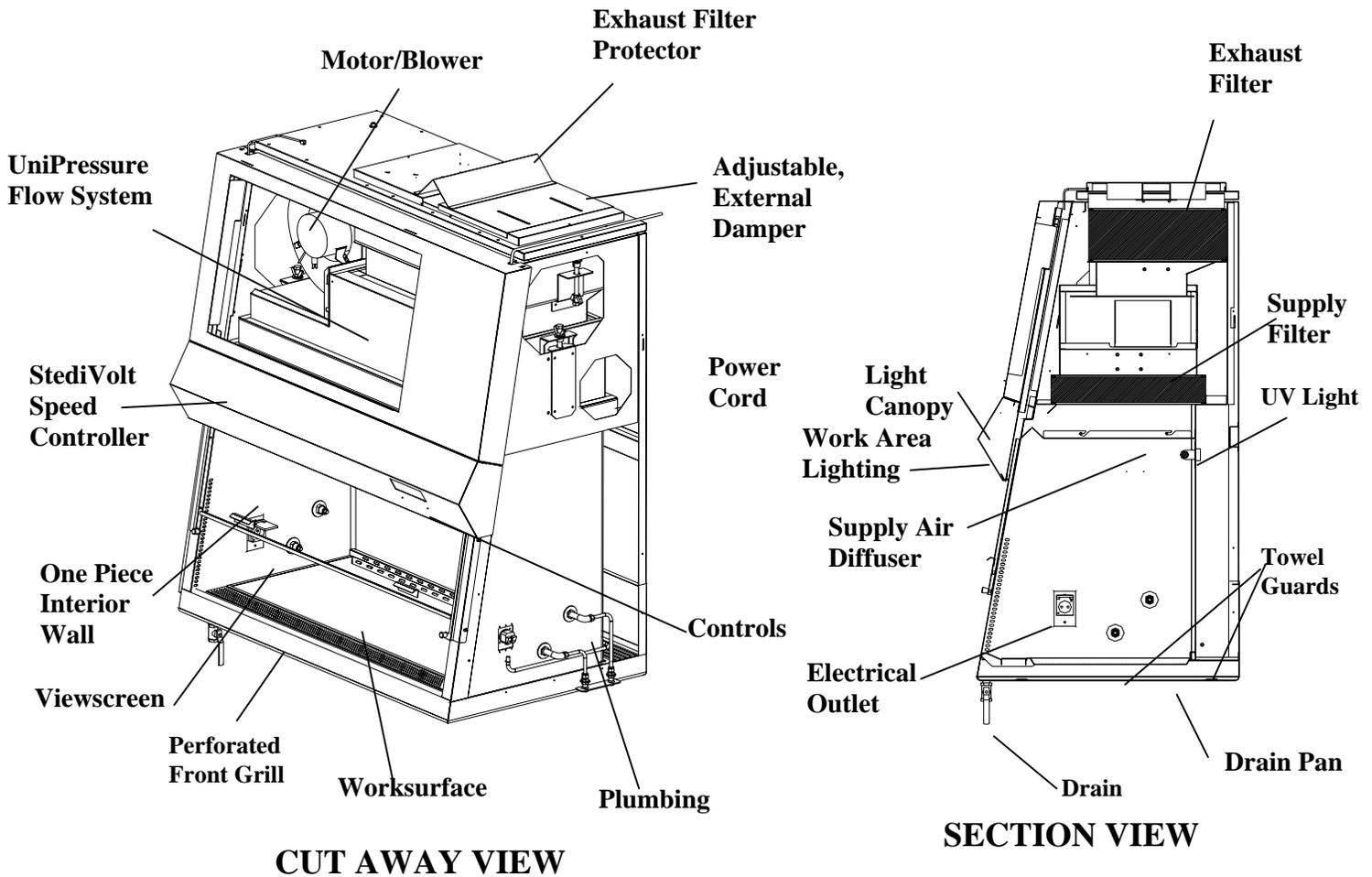


Fig. 1: The Cabinet

Towel Guards

Towel guards are screens located at the bottom rear and sides of the drain pan to prevent wipes and other materials from being sucked into the blower.

One Piece Interior Wall

The interior side and rear walls of the SterilGARD work area are constructed from a single piece of 16 gauge stainless steel. The large-radius inside corners prevent buildup of contaminants and are easy to clean.

Drain Pan

The SterilGARD III drain pan has large radius corners all around for easy cleaning. Removable work surface supports give unobstructed access.

Recessed Worksurface

The stainless steel work surface has a satin finish to reduce glare, is recessed to retain spills, and has radius corners for easy cleaning.

UniPressure Plenum

The two piece plenum design functions as a positive pressure plenum and a filter clamping system, eliminating filter frame damage.

Filters

Scan-tested HEPA supply and exhaust filters can be accessed through the front seal panel for ease of filter changing.

Work area lighting

The cabinet's fluorescent lights produce 100-ft· c/1076 lx of illumination at the work surface. The lights are mounted outside the work area to minimize heat buildup.

StediVolt Speed Controller

The StediVolt speed controller compensates for fluctuations in line voltage. This helps ensure that the blower always gets the same voltage and is able to maintain correct airflow in the cabinet.

UV Light

An ultraviolet (germicidal) lamp is permanently installed in the work area for ease of disinfecting.

Viewscreen

The 6mm (¼") safety plate glass viewscreen can be opened to 464mm (18 ¼"), for loading large items into the work area, and closes fully for system shutdown and UV light use.

Adjustable External Damper

The SterilGARD III damper is external for easy airflow balancing and exhaust filter leak checking.

Hour Meter

Records the cabinets total running hours.

Controls

Controls and alarms are located on the front panel of the unit.

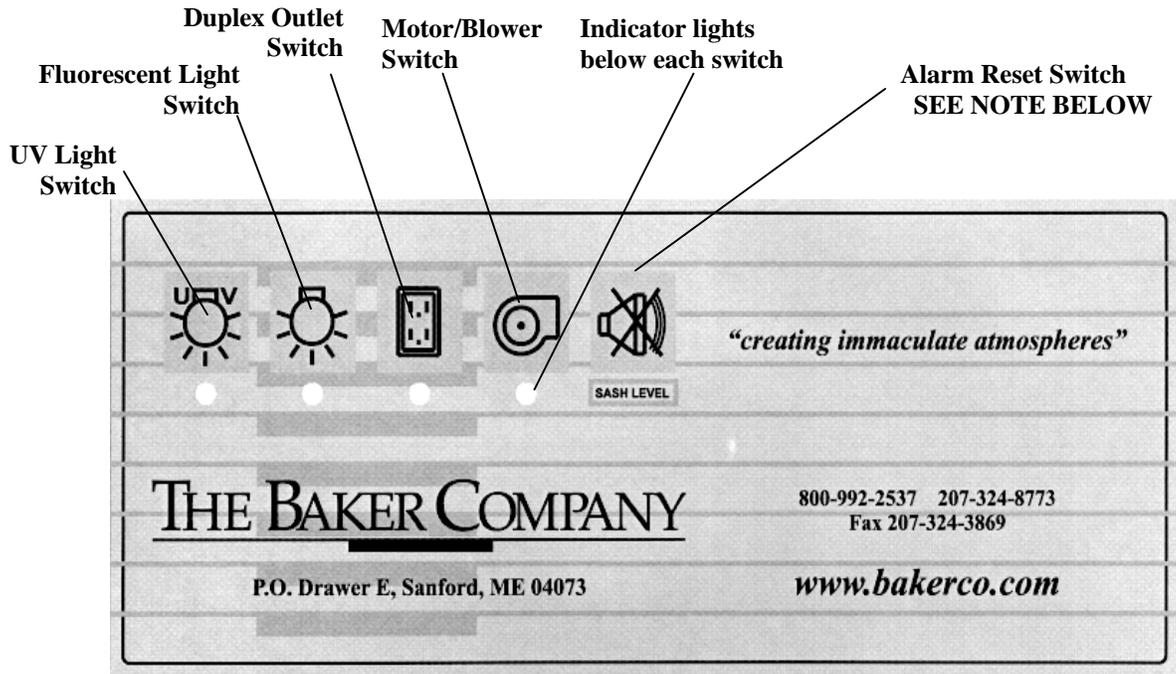


Fig. 2: Control Switches

Alarm Reset Switch

For normal operation, the bottom edge of the view screen, also called the “sash”, is set to restrict the front opening to 200 mm (8”). The sash alarm will sound whenever the sash is above this position. Pressing the alarm-reset button will mute the alarm for five minutes. The light will continue to flash.

NOTE: Per EN Standard 12469:2000 this function is not operational. The sash alarm will sound continually until it is returned to its proper level.

Motor/Blower Switch

This switch turns the blower on and off. The fluorescent light will not work unless the blower is running.

Duplex Outlet Switch

This switch turns the outlets on each side of the work area on and off.

Fluorescent Light Switch

This switch turns the fluorescent light on and off. The fluorescent light will not work unless the blower is running.

UV Light Switch

Turns the UV light on and off. The UV light will not work unless the view screen is fully closed and the fluorescent light is off.

Airflow Alarms

MODUS MPM-2 Monitor

The MODUS mpm-2 monitors, monitor differential air pressure with respect to ambient and is used to indicate unbalanced airflow conditions. High and low alarm indicator are located on the left side of the pressure monitor and will be in constant **ON** state as long as there is a flow problem. Their audible alarm sound will also pulse at a slightly higher rate than the sash alarm to distinguish between the two different faults.

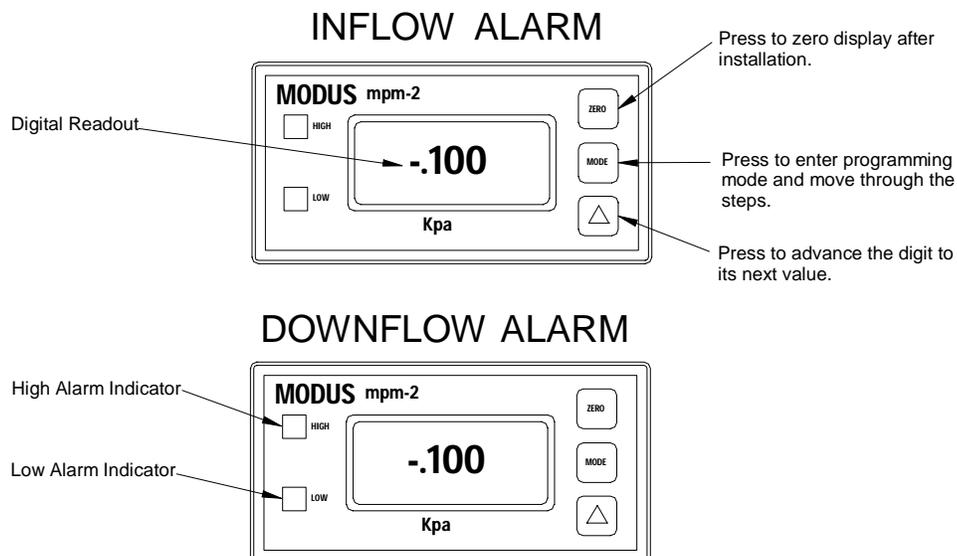
Inflow Air Monitor

The inflow air monitor has a sensor beneath the exhaust damper and is calibrated to alarm in both a low-pressure state and a high pressure state, both of which can indicate low inflow.

Note: The exhaust damper must be in a fixed state after calibration. If the damper is moved or adjusted, the MODUS mpm-2 high and low alarms **MUST** be recalibrated for proper alarming.

Downflow Air Monitor

The downflow air monitor samples negative pressure before the motor/blower in the plenum and is calibrated to alarm in both high and low downflow conditions.



AIRFLOW DIAGRAM

The flow of air inside the SterilGARD III is “zoned”. This means that the air flows faster at the front of the work area than at the back. The diffuser directs the air to create a high speed air curtain just behind the viewscreen glass. This air curtain is an extremely effective barrier to room air.

Contamination most easily enters and exits the work area around the perimeter. There are rows of slots, called “high velocity return air slots”, along the front, vertical edge of the inside walls of the cabinet and behind the top of the view screen. Each of these slots acts like a tiny vacuum cleaner, sucking dirty room air away from the clean work area.

Following the airflow path, illustrated by the arrows in Fig. 3, a portion of the air in the positive pressure plenum is pushed out of the cabinet through the exhaust filter. The remaining air is pushed through the supply filter into the work area. Room air enters the cabinet through a grille in front of the work surface called the “front perforated”, and through the high velocity return air slots. This room air is combined with the used air from the work area in the space under the work surface, the “drain pan”. This combined, contaminated air is pulled up the rear of the cabinet into the motor-blower, which pushes the air into the positive pressure plenum. This completes the airflow cycle.

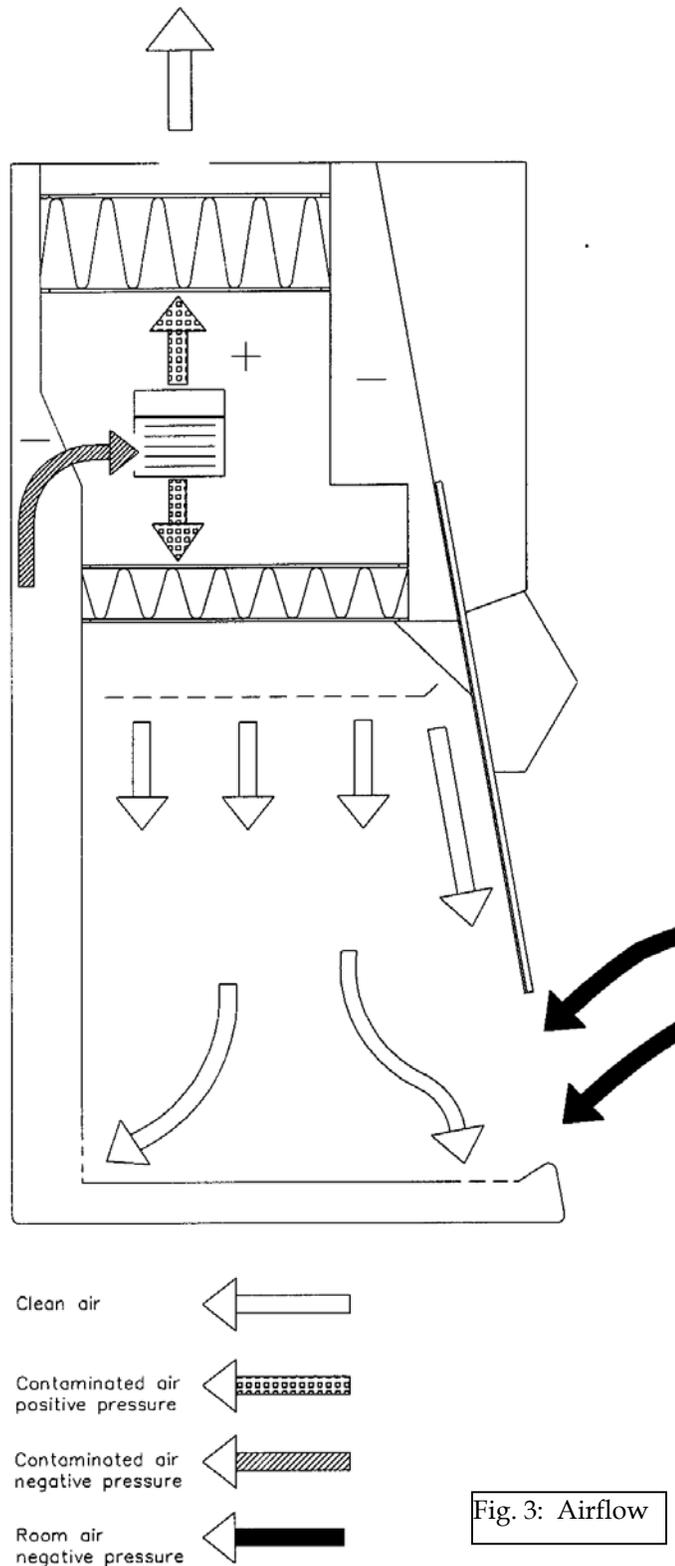


Fig. 3: Airflow

Positive and Negative Pressure Areas

All positive pressure plenums in the cabinet, the work area and the unipressure flow system, are surrounded by negative pressure. If a leak should occur in the positive pressure plenum, the suction from the blower will capture the air from the leak and recirculate it. Also, if a leak should occur in a contaminated negative pressure plenum, such as the sidewall or rear wall, the suction will pull air in through the leak. Thus contaminated air in a negative pressure plenum will not leak out into the room.

Chapter II INSTALLING THE CABINET

Checking the Cabinet Upon Arrival

Upon receipt of your new SterilGARD®III Advance° cabinet, inspect the outside of the crate and skid for broken glass, holes in the cardboard box, or any other damage. Record any visible damage on the receiving slip and report it to the delivering carrier immediately. Open the box and inspect the cabinet. Remove the cabinet from the skid with a forklift. Parts of the cabinet are packaged separately. Check the packing slip carefully to be sure that all items have been located. If any damage or loss is found it should be reported to the delivering carrier. A claim for restitution should be filed within 15 days.

Cabinet Location

Proper placement within the laboratory is essential! The ideal location for any BSC is in a dead-end corner of the laboratory. A dead end corner is an inside corner of the room **not** next to a window or door. The cabinet must be located away from personnel traffic, HVAC vents, doors, windows and anything else that will cause disruptive air currents.

It is important that there be free space of 2" between the top of the cabinet and the ceiling. If the ceiling is too low it will restrict the air exiting the cabinet. This affects the amount of air entering the cabinet. If your ceiling is less than 2" above the top of the cabinet, call Customer Service.

Installation

Installation of this cabinet should be carried out in accordance with appropriate regulations.

- 1 Remove the protective container from around the cabinet.
- 2 Remove the strapping that holds the cabinet to the pallet.
- 3 Referring to drawing # 333464 attached to the viewscreen remove the packing material that secures the view screen and install thumb screw hardware where noted to facilitate servicing and cleaning.
- 4 Remove the small cardboard box taped to the work surface and take out the drain valve, piping adapter, and exhaust filter protector.
- 5 Install the exhaust filter protective screen on top of the exhaust damper using the two cap nuts installed on the damper.
- 6 Refer to chapter VI for tubular base stand set up and adjustment.

- 7 For cabinets being installed on existing counter tops Place the unit on the counter top with the drain valve hanging over the front edge of the counter.
- 8 Seal all around the base of the cabinet with silicone or other suitable sealer.

Connections

- 1 Effluent from a safety cabinet may be biologically hazardous. Use great care in making plumbing connections. Qualified personnel with proper materials and technique should make connection to plant utilities. The cabinet is shipped ready to connect to 3/8" tube via a compression fitting. To connect to 3/8" pipe, use the piping adapter. ***Baker does not recommend connecting this cabinet to flammable gas.*** If a connection to flammable gas is made, then an emergency shut-off valve should be installed ***outside*** the cabinet.
- 2 Connect the unit to electrical power.

Seal the cabinet to the top of the countertop.

The drainpipe hangs in front of the counter

Allow a minimum of 2" between the top of the cabinet and the ceiling.

Leave room behind the cabinet for piping and wires.

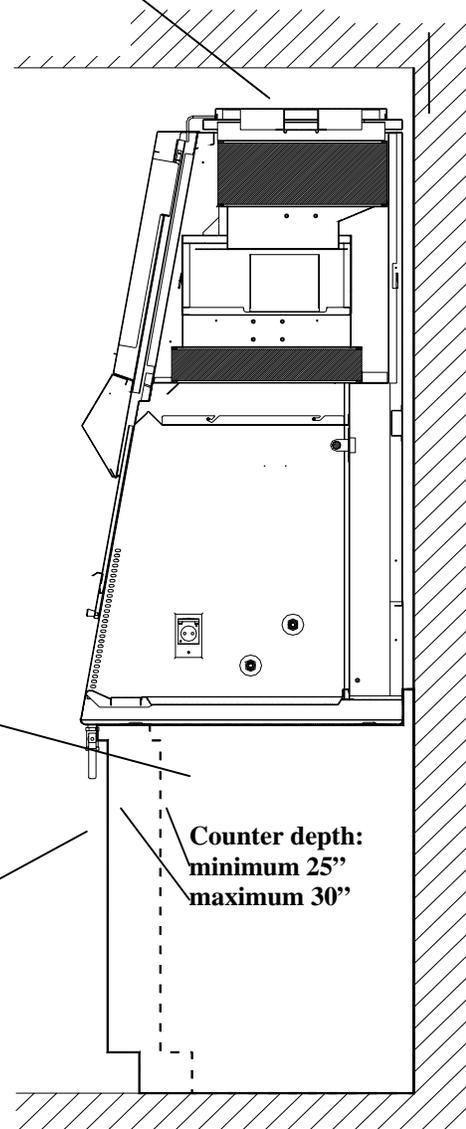


Fig. 4: Installation

Chapter III

TESTING THE CABINET PRIOR TO FIRST USE

Power Tests

- 1 Press the blower switch. The green indicator below the switch should light.
- 2 Turn on the fluorescent light and make sure the bulb is lighted. These bulbs are locked into place with stop-lock fittings. The lights will not go on unless the blower switch is on.
- 3 Close the viewscreen all the way and turn the UV light on. (The UV light is interlocked which prohibits its operation unless the viewscreen is completely closed and the fluorescent light is turned off. Check the battery powered, power failure alarm.
- 4 Check Inflow and Downflow Alarms.

Testing

Perform the following tests before initial use, after a major move of the cabinet, after every filter change, and as periodic maintenance every six months or one year. The following is a summary of the tests that should be performed before using this cabinet.

Performance Assurance

This individual cabinet has passed more than 14 separate performance tests prior to shipment. A complete factory test report on the performance of your cabinet is in the back of this manual. Follow this guide closely. Your test procedures should be identical to ours. Compare your test results with the test report in the back of this manual. Try to duplicate our test results.

Warning!
Qualified technicians should perform these tests only.

Air balance adjustments

Air balancing can be done by either of the following methods:

- Adjust speed controller.
- Adjust the damper. A change in exhaust damper setting will require recalibration of the Inflow Alarm. (See Chapter V)

The airflow balance provides your cabinet with the proper air volume and velocity. In order to duplicate as closely as possible the airflow characteristics described in the original factory test report, please follow these steps:

- 1 Set the window at 203 mm (8”).
- 2 Perform intake velocity test. Instructions for this test are on the cabinet instruction label and in the factory test report.
- 3 Perform downflow velocity test. Instructions for this test are on the cabinet instruction label and in the factory test report.
- 4 Compare your results with those in the test report.
- 5 Make adjustments to the blower speed controller and the damper as necessary. The speed controller is located inside the light canopy. Turn the speed-controller-adjustment-screw

clockwise/ counterclockwise to increase/decrease flow. The following chart may aid with making the correct adjustment:

Condition		Adjustment	
Downflow	Inflow	Damper	Speed Controller
High	High		Decrease
Low	Low		Increase
Low	High	Close	
High	Low	Open	
OK	Low	Open	Increase
OK	High	Close	Decrease
Low	OK	Close	Increase
High	OK	Open	Decrease

NOTE: As the HEPA filters load up, increase the blower speed. The speed control is located in the light canopy. Turn it clockwise until you have the desired airflow. If turning the speed control up all the way does not give you the required airflow, replace the HEPA filters. (See "Procedure for HEPA Filter Replacement" later in this section.)

Filter Leak Test

The filters in your cabinet were tested at our factory before shipment to ensure that the media, gasket, and frame were not exceeding allowable leak rates. Since filters may become damaged in transport, we recommend that the filters be re-tested by qualified technicians before the cabinet is used. Perform testing pre NSF International Standard 49, 789 Dixboro Road, Ann Arbor, MI. 48105-9723. Annex F (Field Certification)

Warning!
Decontaminate the unit before measuring the upstream concentration of aerosol in a contaminated plenum.

Remove the diffuser and damper to access filter media and frame.

- 1 Perform calculations/measurements for upstream concentration of aerosol challenge.
- 2 Repair leaks as required.

Cabinet Integrity Test

Since the welds, gasketed seams, and hardware may have been damaged in transport, we recommend that they be tested by qualified technicians before the cabinet is used.

Procedure:

- 1 Decontaminate the cabinet if it has been used.
- 2 Disconnect cabinet from electrical source.
- 3 Shut off all gas, air, and/or vacuum ports.(Use soap bubble solution to check work area petcocks for leaks.)

- 4 Seal off the exhaust opening by taping around the external damper and the slot, or by taping a piece of cardboard or plastic over the opening. If the cabinet is connected to an external exhaust, close the gas tight damper or remove ductwork to allow sealing.
- 5 Remove the light canopy, the electrical panel, and the window tracks.
- 6 Seal the front window opening by taping a piece of heavy gauge plastic around the perimeter of the opening.

Warning!
Decontaminate the unit before pressurizing, if it has contaminated plenums.

- 7 Perform cabinet integrity test (per NSF 49).
- 8 Repair leaks, as necessary.
- 9 Restore the cabinet to operating status. Be sure to remove the sealing material, clean the cabinet, and reassemble all components.

Electrical Safety Tests

Since electrical components may become damaged in transport, we recommend qualified technicians retest them, before the cabinet is used.

Note: Gasketed panels may not provide a good electrical ground.

The electrical leakage, ground circuit resistance, and polarity were tested at our factory before shipment to ensure that there is no risk of electrical shock present in your cabinet. Since electrical components may become damaged in transport, we recommend qualified technicians retest them, before the cabinet is used. The electrical safety tests should also be performed at prescribed intervals as specified by an industrial hygienist, safety officer or other qualified person. EN61010-1 Standard recommends a dielectric strength test of 1350VAC, 1910VDC, and a total current leakage of 3.5ma from primary circuits to ground.

Note: While performing the electrical safety tests, ensure that the connections with the test leads are solid, as poor connections will increase the resistance reading. Also, ensure that the exposed metal being touched is solidly connected to the cabinet frame. Gasketed panels may not provide a reliable measurement.

Calibration procedure for Modus Inflow and Downflow alarms

Note: This procedure **MUST** be followed every time the damper width has been changed.

Nominal Set Point Settings

- 1 Balance the cabinet air flows to nominal operating set point per manufacturer instruction.(See instruction label on front of cabinet).
- 2 Record voltage to motor/blower (M1, M2 on speed control) and measure and record damper/ slot width
- 3 Calibrate the downflow alarm as directed.

Low Pressure, Low Flow Alarm Setting

- 4 Place a DIM airflow hood on the front of the cabinet or use the 3 inch method for measuring inflow.
- 5 Adjust cabinet to a 20% reduction in airflow by decreasing the voltage to motor. DO NOT adjust the damper
- 6 Record the exhaust/ damper pressure on Modus (indication of exhaust plenum pressure at 20% reduction) and voltage to motor/ blower (across M1, M2 on speed control)
- 7 Set the Modus Low Alarm set point to the 20% reduction in pressure recorded in step 14 (per MODUS programming instructions on pg.15)
- 8 Set the Modus dead band to .002 (per MODUS programming instructions on pg.15).
- 9 Return cabinet to Nominal Set Point voltage, recorded in step 2

High Pressure, Low Flow Alarm Setting

- 10 Check that cabinet is back to Nominal Operating Set Point, as in step 1 and 2, with NO alarming at this point
- 11 Measure and record the EXACT damper/ slot width, for reference
- 12 Place a DIM airflow hood on the front of the cabinet or use the 3 inch method for measuring flow.
- 13 Increase the pressure by closing the damper slowly while reading the airflow on the DIM until a 20% reduction in airflow is displayed. (Note: Do not change the voltage to motor). Record the Modus pressure displayed (this is the high pressure alarm set point).
- 14 Set the Modus High Alarm set point to the high pressure recorded in step 22 (per MODUS programming instructions on pg.15).
- 15 RETURN THE DAMPER TO THE NOMINAL SET POINT LOCATION MEASURED IN STEP 2 AND 19.
- 16 The cabinet should now be back at Nominal Operating Set Point, as in step 1 and 2, with no alarming.
- 17 Calibration is now complete.

Check the Calibration

Low Alarm Set Point Check

18. While measuring the intake airflow with a DIM, reduce the airflow by decreasing the voltage to motor/ blower until a 20% reduction in flow is measured. Check that the low set point alarms at this value. If not, reset Modus low alarm set point to alarm as desired, per instructions. **Return cabinet to Set Point Voltage.**

High Alarm Set Point Check

19. While measuring the intake airflow with a DIM, reduce the airflow by slowly closing the damper until a 20% reduction in airflow is measured. Check that the high set point alarms at this value. If not, reset the Modus high alarm set point to alarm as desired, per instructions. **Return the cabinet damper to original Set Point width.** Calibration check is complete.

Downflow Alarm Setting Procedure

20. With cabinet at nominal set point, place the hot wire anemometer at one of the downflow reading location whose reading represents the average downflow velocity.
21. \Record the Downflow Alarm Modus pressure reading and the voltage to motor / blower (across M1 & M2 on the speed control).

22. Decrease the motor / blower voltage until that downflow velocity reading is 20% lower than the set point average. This will be the low Downflow Alarm Point.
23. Set the Modus low alarm to this 20% reduction in downflow point pressure (per MODUS programming instructions on pg.15).
24. With the hot wire anemometer still located as note in step 1, increase motor / blower voltage until the average downflow velocity reading is 20 % above the average.
25. Set the Modus high alarm set point to this higher pressure (per MODUS programming instructions on pg. 15).
26. Return the motor / blower voltage to set point voltage rechecking the hot wire anemometer to ensure you are back at set point.

Check the Calibration

Repeat steps 20 thru 26

MODUS Programming Instructions

1.) Programming the Alarm Setpoints

After the first press of **MODE**, the **HI** LED flashes, indicating the **HI** set point is being entered. Press the **ARROW** key repeatedly to display the desired digit. Next, press the **MODE** to move towards the most significant digit, and repeatedly press the **ARROW** key to advance the digit's value. Continue for the remaining digits. The sign of the set point (+ or -) is selected last.

After the **HI** set point has been programmed, press the **MODE** to enter the **LO** set point. The **LO** alarm LED flashes, and you can repeat the above process to program the **LO** set point.

2.) Programming the Relay Deadband

The deadband selection is provided to keep the relays from chattering when the pressure varies near the set point. To display the deadband, press **MODE** once after setting the **LO** set point polarity in the previous step. Both alarm LEDs flash. The three digits displayed are the deadband width, in the same units used for data display. Press the **ARROW** and **MODE** keys as described earlier to step the deadband to a value of .002.

3.) Returning to Normal Operation

Press **MODE** once after the setting the deadband parameters. The digit "1" on the left indicates the unit is in analog setting mode. Since there are no analog outputs, the mode key can be pressed a final time to end programming and return to the normal pressure display.

Chapter IV

MAINTENANCE

Cleaning and Disinfecting

The purpose of disinfecting is to destroy organisms that pose a hazard to humans or compromise the integrity of the experiment. Use a suitable disinfectant in the concentration appropriate to the organism being killed. Standard disinfectants include: Hypochloride (chlorine bleach), Iodophor-Detergent, Ethanol, Phenol and Alcohol.

Caution

Do not use steel wool or steel pads when cleaning stainless steel.

Dirt deposits on stainless steel (dust, dirt and finger marks) can easily be removed with warm water, with or without detergent. If this does not remove the deposits, mild, non-abrasive household cleaners can be used with warm water and bristle brushes, sponges or clean cloths.

Rubbing the surface with a solution of 15% to 20% by volume of Nitric Acid can treat iron rust discoloration and water and letting it stand for one to two minutes to loosen the rust.

Important

Disinfection and cleaning should always be followed by rinsing in clean hot water and wiping the surface completely dry.

For additional information on cleaning and disinfecting stainless steel, please refer to: "Decontamination, Sterilization, Disinfection, and Antisepsis", Vesley, Donald and Lauer, James L., *Laboratory Safety Principles and Practices, Second Edition*, 1995, Fleming, D.O., Richardson, J.H., Tulis, J.J. and Vesley, D., editors, ASM Press, Washington, D.C., pp. 219-237; and *Biosafety Reference Manual, Second Edition*, 1995, Heinsohn, P.A., Jacobs, R.R. and Concoby, B.A., editors, AIHA Publications, pp.101-110.

Decontamination

Warning!

Qualified technicians should perform this procedure only.

- 1 Whenever maintenance, service or repairs are needed in a contaminated area of your cabinet, the cabinet must be decontaminated. The National Institute of Health, National Cancer Institute and the Centers for Disease Control recommended the use of formaldehyde gas for most microbiological agents.
- 2 References for this procedure are *Formaldehyde Decontamination of Laminar Flow Biological Safety Cabinets*" (pamphlet and/or slide cassette program), National Cancer Institute, U.S. Department of Health, Education and Welfare: National Institutes of Health. Available through Chief of Sales Branch, National Audiovisual Center, Washington, DC

20409. and NSF Standard 49 1992 Class II (Laminar Flow) Biohazard Cabinetry, Annex G (Recommended Microbiological Decontamination Procedure). Available through NSF International 789 N. Dixboro Road, Ann Arbor, MI. 48105-9723.

- 3 An ethylene oxide/nitrogen gas mixture is an alternative. Using this gas is more complicated than formaldehyde.
- 4 Whatever gas you choose, have the proper safety equipment (gas masks, protective clothing, etc.) within easy reach. In addition, you will want to be sure that the gas you are using will be effective against all of the biological agents within the cabinet. When you have decided which gas to use, post the antidote to it in a visible and nearby location. The volume of the cabinets is listed in "Specifications". Provide the correct amount of decontaminating gas for the cabinet volume.
- 5 Carcinogens present a unique chemical deactivation problem and the standard biological decontamination will not, of course, be effective against chemicals or other non-biological materials. With materials of this kind, consult a qualified safety professional.

Procedure

- 1 Surface-disinfect the inside of the window and all other surfaces on the view screen assembly.
- 2 Multiply the total volume of the cabinet (look in "Specifications") by 10.59 g/m^3 (0.3 g/ft^3) of space to determine the amount of paraformaldehyde required to decontaminate the cabinet. If the cabinet is vented to the outside you must consider the volume of the duct work in the paraformaldehyde calculation.
- 3 Close all gas or flammable petcocks tight. Use a soap bubble solution to check for leaks.
- 4 Place a pan of water in the work space. If the relative humidity is 10% to 30% use boiling water. If 40% to 55% use hot tap water. If above 85% skip this step (extra humid air will require extra cleanup.) The purpose of the water is to adjust the relative humidity in the cabinet. Without the proper relative humidity the formaldehyde gas will not be effective. Formaldehyde gas enters living organisms through cell walls by the absorption of water.
- 5 Place a heating mantle with paraformaldehyde in the workspace. The heating mantle must be able to reach 232°C /450 degrees F and must have a grounded plug plugged in outside the cabinet.
- 6 Place a second heating mantle in the cabinet with 10% more by weight of ammonium bicarbonate than paraformaldehyde. This will be used later in step 14 to neutralize the formaldehyde gas.
- 7 This step is optional. A Place spore strip inside the cabinet to confirm the decontamination process has been successful.
- 8 Seal the front viewscreen opening and top exhaust opening with a large piece of plastic. Start at the top rear and extending the plastic over the top front down to the bottom of the access opening. taping all edges This will allow exhaust to circulate back to the cabinet blower distributing formaldehyde gas through the exhaust filter.
- 9 Turn on the heating mantle.
- 10 After 25% of the paraformaldehyde has depolymerized, turn on the cabinet blower for 10 to 15 seconds. Repeat after 50%, 75% and 100% of the paraformaldehyde has depolymerized.
- 11 Wait at least 4 to 6 hours, preferably overnight.

- 12 Turn on the heating mantle containing NH_4HCO_3 (ammonium bicarbonate) and the cabinet blower and allow the two gases to circulate for at least one hour. Then vent the cabinet to the outside.
- 13 If used, aseptically remove spore strip and place in Trypticase-soy broth and incubate for 7 days. No growth will verify the decontamination process.
- 14 When cleaning up, you may find paraformaldehyde (white powder) on the metal or glass surfaces. To remove this, use ammonia in warm water, wear gloves and wipe down the affected surfaces. The paraformaldehyde will dissolve in water and be neutralized by the ammonia.

Ultraviolet Germicidal Lamp

UV germicidal lamps lose their effectiveness over time and should be replaced when their intensity at the work surface drops below 40 microwatts per square centimeter at a wavelength of 253.5×10^{-9} meters. Measure intensity at the geometric center of the work surface with an ultraviolet light meter.

Warning!

- ***Eyes and skin should not be exposed to direct ultraviolet light.***
- ***Ultraviolet light should not be relied upon as the sole decontaminating agent. Additional surface disinfection should be performed both before and after every cabinet use.***
- ***A UV-light acts as a supplement to good aseptic practices, not as a replacement.***

Towel Guards

Protective screens are installed at the bottom rear and sides of the drain pan to prevent wipes and other paper materials from being drawn into the blower system. These screens should be kept clean at all times.

HEPA Filters

HEPA Filter Cautions

- 1 The HEPA filter consists of a continuous sheet of glass fibers pleated over rigid corrugated separators and mounted in a rigid frame. It is very delicate and the filter media should never be touched.*
- 2 HEPA filters are not intended to filter gasses or vapors. Since this cabinet is partially recirculating, there will be gaseous buildup to the point of equilibrium if gasses or vapors are used.*
- 3 Misuse of chemicals, Bunsen burners, or a heavy dust load will shorten the filter's life.*

The High Efficiency Particulate Air (HEPA) filter is one of the essential components of a biological safety cabinet. It is the shield, which stands between the operator and environment and the experimental agent.

Proven efficiency in all HEPA filters used in Baker cabinets are 99.99% for particles 0.3 microns in diameter. The 0.3 micron particle is used as the basis for filter definition because theoretical studies have shown that filtration efficiency should be at a minimum for particles of this diameter, with efficiency increasing for particles either larger or smaller. Experiments with various viruses and microbial agents have proven the effectiveness of HEPA filters.

Under normal laboratory conditions, you can expect your HEPA filters to last at least five years.

Check the HEPA Filters Regularly (Recommended on an Annual Basis)

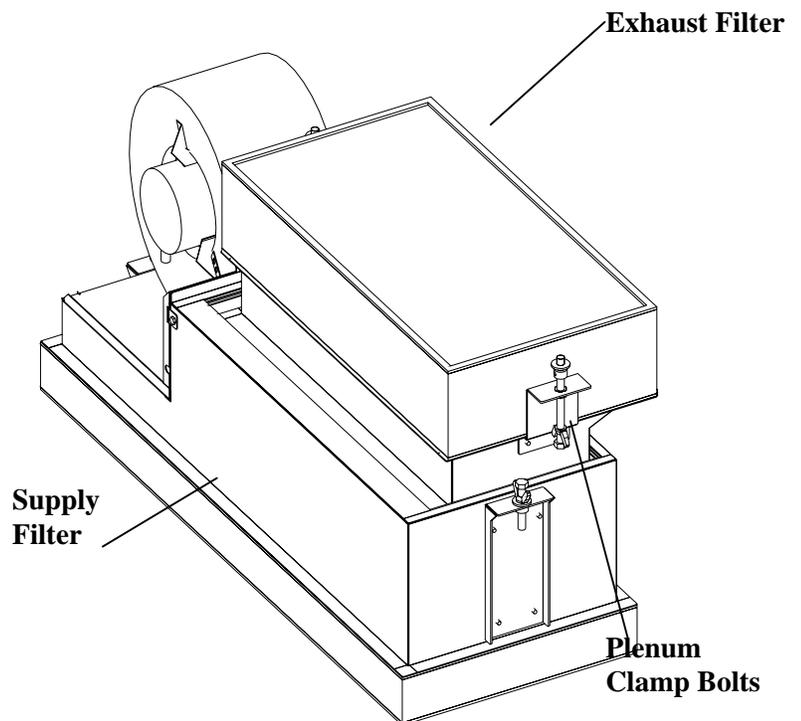
Check the airflow monitor periodically. If the unit consistently operates near either end of the normal range, check the filters.

Replacing the HEPA Filters

If the cabinet alarm sounds, or if your periodic checks of total airflow show a drop of ten percent or more from the original settings, the filters may be loading. The blower speed can be manually increased to compensate for filter loading. When the airflow can no longer be maintained or when the filters are damaged, they need to be replaced.

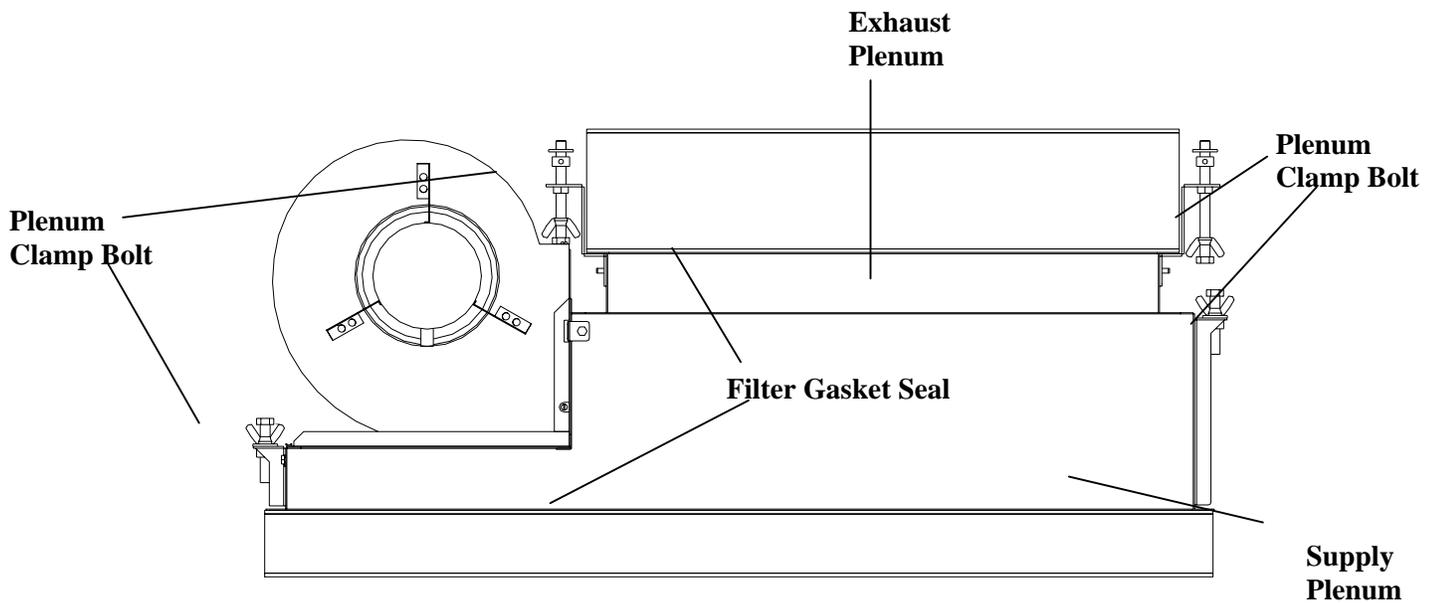
Warning!
Decontaminate the unit before changing filters.

- 1 Close the view screen.
- 2 Protect your new filters by covering the face of the filter with plastic or cardboard. HEPA filters are very easily damaged.
- 3 Pull out the outer front wedge panel to disconnect the wires and tubing from the back of the Air Pressure Monitor and lift the panel off.
- 4 Disconnect the wiring from the viewscreen alarm limit switch.
- 5 Remove the two thumbscrews inside the inner closure panel and lower the light canopy.
- 6 Remove the inner dress panel by removing the two bolts at the top and loosening the two bolts at the bottom that hold the electrical component mounting board in place.
- 7 Close the view screen completely.
- 8 Loosen each of the ten 3/8" hex head bolts on the front seal panel. Be sure not to damage or lose the seal washers on each bolt.
- 9 Remove the front seal panel. Be careful not to damage the rubber gasket on the back of the panel.
- 10 Loosen the two plenum clamp bolts, located on each side of the supply plenum, approximately 3 1/2 revolutions or until the supply plenum is raised about 1/4 inch above the filter. See Figure 5.
- 11 Seal the filter by taping a sheet of plastic or cardboard over the contaminated side of the filter.
- 12 Loosen the filter gasket seal with a putty knife.
- 13 Remove the filter by sliding it towards you. **NOTE: Once removed, the filters should *immediately be sealed in a chemical hazard bag and then disposed of safely in accordance with environmental regulations. If you are not removing the exhaust filter, proceed to step number 17.***



- 14 Alternately loosen the $\frac{1}{2}$ -13 plenum clamp bolt, located on each side of the exhaust plenum, approximately $3\frac{1}{2}$ revolutions or until the exhaust plenum is lowered about $\frac{1}{4}$ inch below the top front flange.
- 15 Loosen the filter gasket seal from the metal plenum. Remove the filter by sliding it towards you.
- 16 Align the new filter with the notches in the frame and slide it back against the stops. Be careful that the gasket remains attached to both sides of the filter.
- 17 Tighten the clamps two or three revolutions or until the gasket is compressed to approximately $\frac{1}{8}$ inch. When tightening clamps, tighten a little at a time, alternating sides. Do not completely tighten one side before starting on the other side.

Fig. 5 – Filters and Plenums



- 18 Replace the front seal panel. Tighten each $\frac{1}{4}$ - 20 bolt until the seal washer is touching the panel. Then turn each bolt $1\frac{1}{4}$ to $2\frac{1}{2}$ revolutions, or until the panel gasket is evenly compressed to $\frac{1}{8}$ -inch thickness. Do not over-tighten. *Do not use a power drive socket to tighten these bolts. You will damage the panel.*
- 19 Clean and decontaminate the cabinet and laboratory in a manner consistent with the nature of the hazardous material. Dispose of cleaning materials in accordance with environmental regulations.

Chapter V

Troubleshooting

Always check for proper airflow balance first

When a Modus Alarm Sounds

When the downflow alarm signals:

1. Verify that the cabinet is at the nominal set point with respect to intake and downflow velocity.
2. That there is no blockage of the towel guards which are located under the work surface at the sidewall and back wall, restricting airflow.
3. Make sure that the exhaust damper is adjusted to its factory-marked position and that no objects are blocking the exhaust opening.
4. No items placed over the front and rear perforated sections.
5. Check the tubing running from the top of the cabinet to the back of the Modus alarms for kinks and tight connections
6. Replacement filters may have slightly different performance characteristics. For this reasons, the set-point for the low exhaust alarms should be checked after the unit has been installed, and after the filters have been changed
7. Check the Modus dead band is set to .002
8. Check the exhaust opening at the top of the cabinet for items placed on top to block exhaust airflow.

When a smoke test indicates that there is air flowing from the interior of your cabinet into the surrounding room.

1. Verify that the cabinet is at the nominal set point with respect to intake and downflow velocities.
2. Make sure that the supply diffuser is installed under the supply HEPA filter.
3. If your cabinet is connected to an in-house exhaust, make sure that there is adequate exhaust suction and the system is not producing backpressure. Make sure the exhaust system dampers are open. You may have to re-balance the exhaust system to handle an adequate volume of air and static pressure (suction).
9. Check the exhaust filter. It may be loaded with dirt if the unit has been in service for some time. You may have to replace your filters.
10. Check the airflow balance.
11. Check for cross-drafts. High cross-drafts may be causing the outflow of smoke. You may have to relocate the cabinet away from the cross drafts or install baffles to deflect the cross drafts.

When there is low airflow within the work area and through the exhaust filter -

- 1 Check the incoming line voltage. Low voltage may cause the blower to operate at a slower-than-designed speed. Although this should be corrected in the building's electrical system, you may be able to compensate by turning the blower speed control clockwise until proper velocities are reached. The control is located inside the light canopy on the left side.
- 2 Check the filters for proper seating and for damage.

If there is no air flow within the work area

1. Make sure the unit is plugged in
2. Make sure the blower switch is turned on. The green indicator below the button should be lighted **Note: (The blower on switch has to be held depressed ten seconds before the blower will turn on or off).**
3. Make sure the wiring connections inside the left end of the light canopy are pushed together properly.
4. If the lights are working, turn the blower switch off and let the cabinet sit for ten minutes. If the motor has been overheated this will allow it to reset itself. If the motor restarts, check for a whining sound. This could be a sign of worn motor bearings, which would cause the motor to overheat.
5. If the above steps do not correct the problem, have a qualified electrician check the speed control, blower motor, and capacitor.

If one (or both) of the electrical outlets does not function -

- 1 Check to make sure the outlet switch is on. The blue indicator below the switch should be lit.
- 2 If the above steps do not work, have a qualified electrician check the internal circuit breaker and work area outlet fuses.

If the ultraviolet light does not work -

- 1 Check that the window is completely closed, the UV light switch is on, and the fluorescent light is off.
- 2 Check that the ultraviolet bulb is not loose or burned out.
- 3 If the above steps do not correct the problem, have a qualified electrician check the UV wiring.
- 4 Check the sash alarm limit switch.

When there is uneven fan noise, or unusual noise from the motor/blower assembly -

- 1 Lower the light canopy and check the electrical connector on the left side to be sure it is securely engaged.
- 2 Check the blower wheel for contact with the blower housing. NOTE: Decontaminate the cabinet before removing the front panel!
- 3 Check the blower for loose objects.

When the window open alarm is sounding -

Check the window position.

View screen open condition

For normal operation, the view screen must be placed to allow an opening of exactly 203 mm (8"). This setting is important to allow the correct airflow into the front access opening. The view screen may also be closed completely. If the view screen is left in any position above the recommended operating height, the sash alarm will sound. Move the view screen to an acceptable positions (8" opening or completely closed).

If the fluorescent light does not work -

- 1 Check that the blower switch is on. The green indicator below the switch should be lit.
- 2 Lower the light canopy and check the multi-pin electrical connector on the left side to be sure it's fully engaged.
- 3 Check that the bulbs are not loose or burned out.
- 4 If the above steps do not correct the problem, have a qualified electrician check the wiring.

If the air pressure monitor has abnormally high or low readings –

A higher than normal reading:

- 1 Blocked or partially obstructed perforated grilles (front and/or rear).
- 2 Towels or wipes have blocked the towel guard on either the back or sides of the unit.
- 3 The viewscreen is in the closed position and the in-house exhaust fan is still pulling air through the cabinet.
- 4 Cabinet not correctly balanced.

A lower than normal reading:

- 1 Partially or totally blocked filters.
- 2 Cabinet not correctly balanced.
- 3 Perforated grills or work surface has been removed.

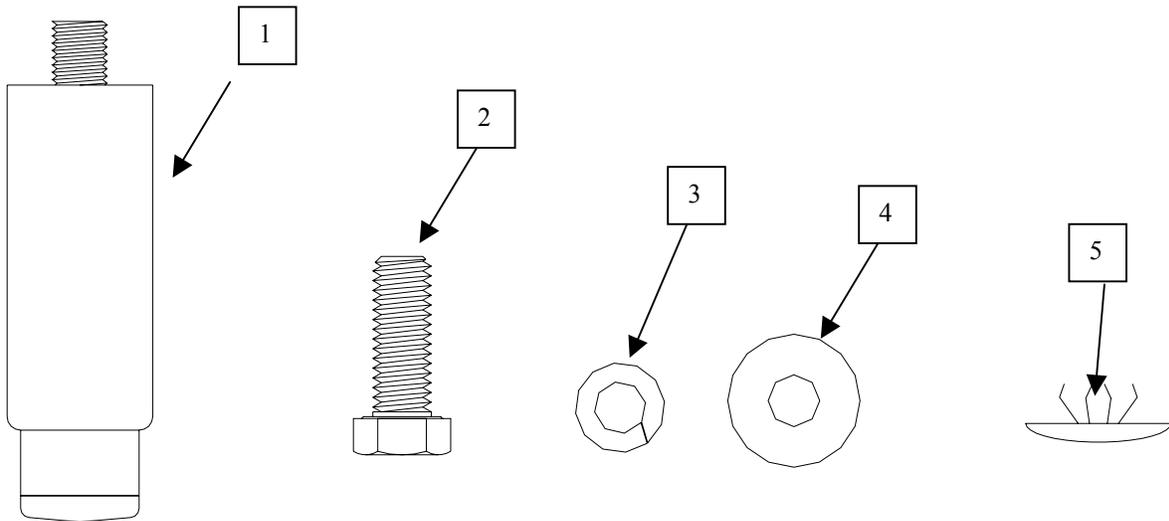
Chapter VI

Stand Assembly/Leg Extension

The unit is shipped with the legs bolted in the shipping position. The unit has two work-surface height settings: 30" and 36". The feet can be adjusted 2.5" for additional heights.

- Remove the following parts from the hardware box shipped with the unit. Check the quantities with the list below.

Item No.	Description	Qty.
1	<i>Adjustable Foot</i>	4
2	3/8"-16 x 1" Hex head bolt	4
3	3/8" Lock washer	4
4	3/8" Flat washer	4
5	7/16" Plug button	8



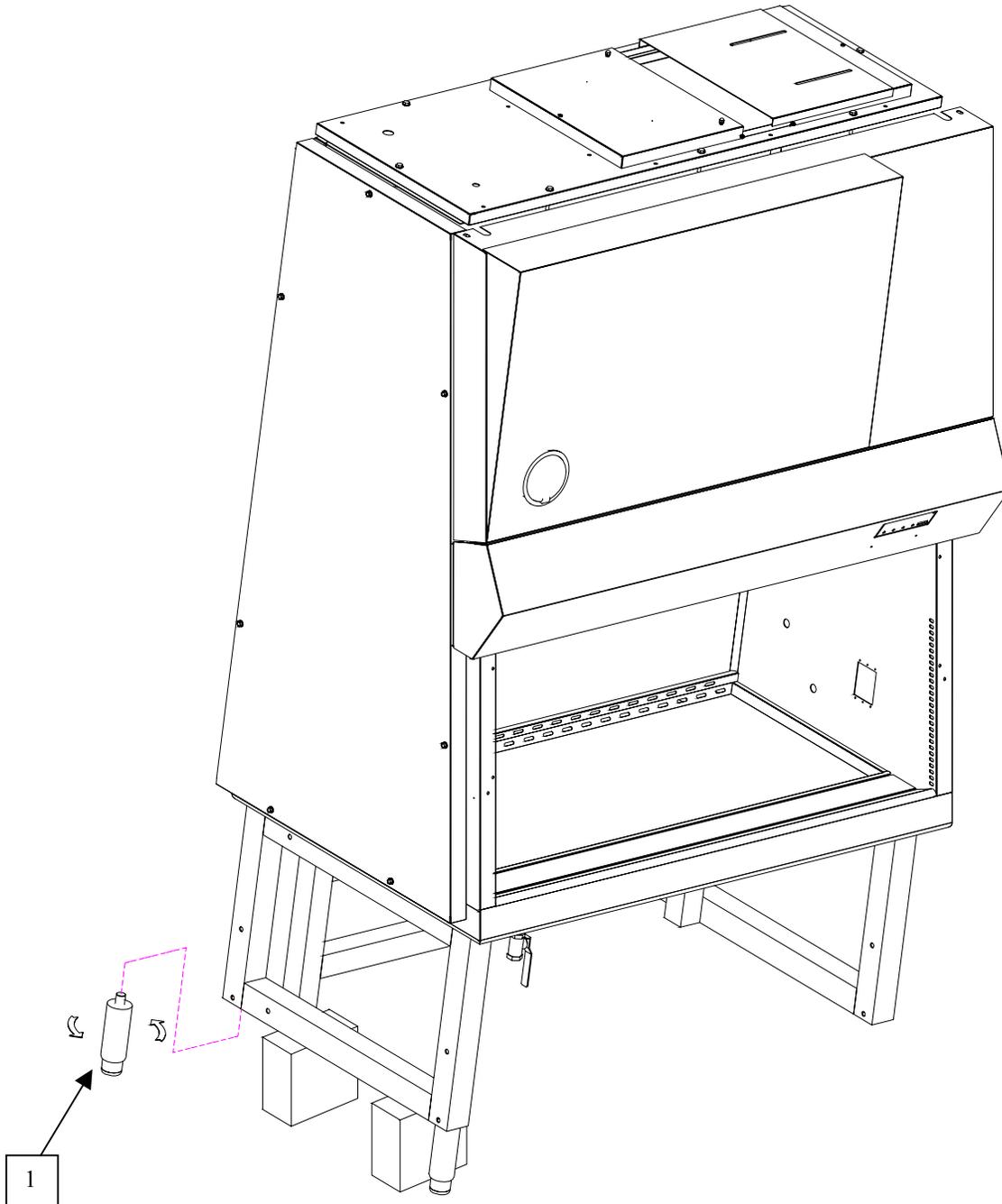
Slide the unit off the Pallet

- To protect the floor finish use a moving blanket. Carefully slide the unit off the pallet onto the moving blanket.

2. Slide the unit into its destination room before going further with the assembly/installation.

Install the Adjustable Legs

3. Raise the Unit to 30" Lift one end of the unit and stand up a minimum of 7" and block in position.
4. Screw in two of the adjustable legs (item # 1). Screw the legs in by hand as tight as you can and remove the blocks.

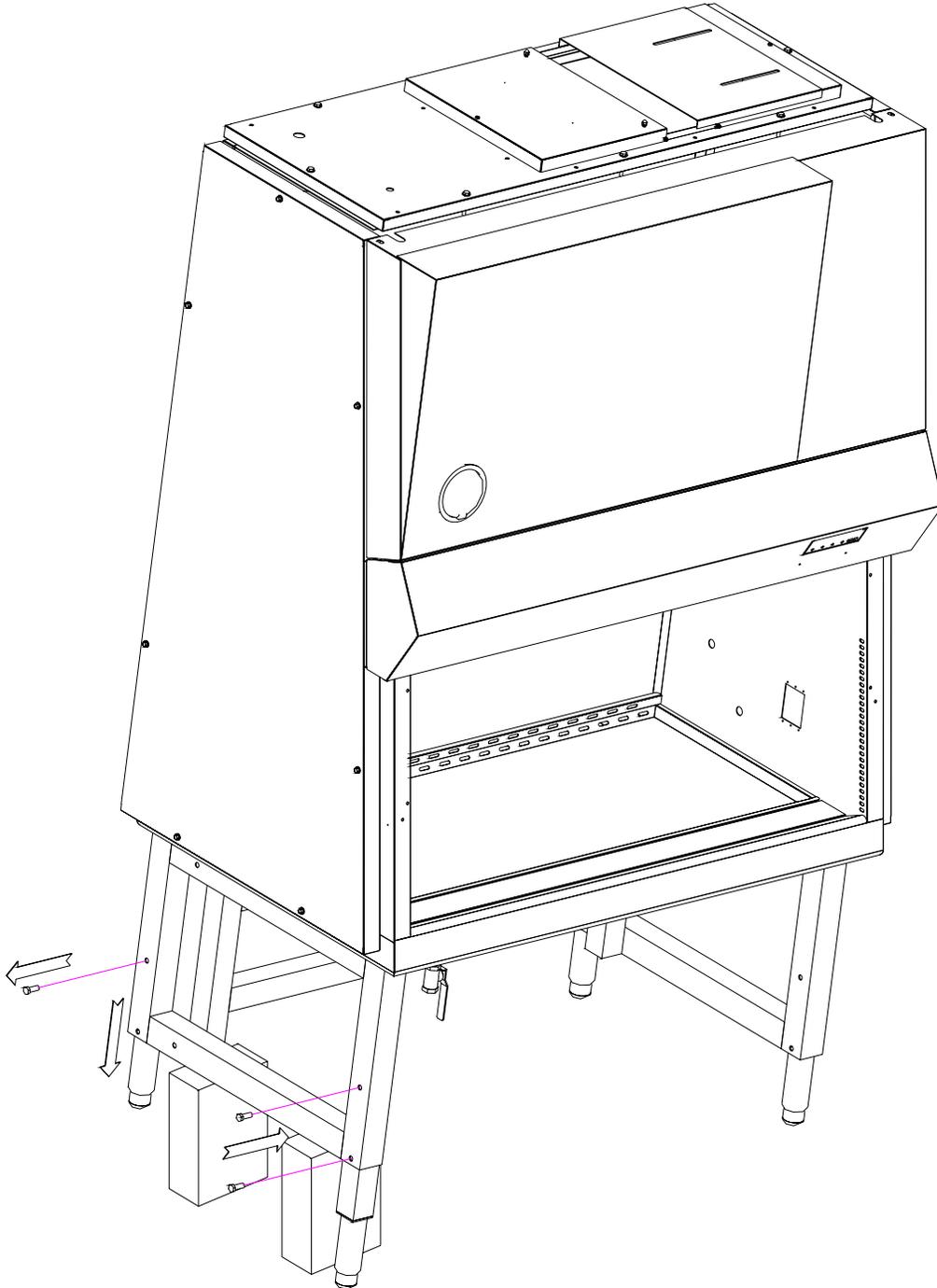


5. Repeat steps 3 and 4 for the other end of the unit.

Work-Surface Height

6. Lift one end of the unit up a minimum of 5" and block in position

7. Unscrew the bolts (one per leg) that hold the legs in the shipping position.
8. Slide the leg out of the stand until the holes line up at the next position. (30" WS height)
9. Bolt the leg in position with items 2, 3, and 4. (two bolts per leg)



10. Repeat steps 8 and 9 for the other leg and remove blocks.
11. Repeat steps 6 through 10 for the other end of the unit.

12. Plug open holes using item 5. (One per leg)

Raise the Unit to 36" Work-Surface Height

13. Lift one end of the unit up a minimum of 7" and block in position

14. Unscrew the bolts (two per leg) that hold the legs in the 30 " work-surface-height position.

15. Slide the leg out of the stand until the holes line up at the next position. (36" work-surface-height)

16. Bolt the leg in position with items 2, 3, and 4. (two bolts per leg)

17. Repeat steps 15 and 16 for the other leg and remove blocks.

18. Repeat steps 13 through 17 for the other end of the unit.

19. Plug open holes using item 5. (Two per leg)

Chapter VII

Specifications

Weight

SG403 EN.....	238.14 kg (525 lb.)
SG603 EN.....	318.88 kg (703 lb.)
4' or 6' Stand.....	45.36 kg (100 lb.)
Crating 56.69 kg (125 lb.)	

Volume

SG403 EN.....	1.3875 m ² (49 ft ²)
SG603 EN.....	2.21 m ² (78 ft ²)

Electrical specifications

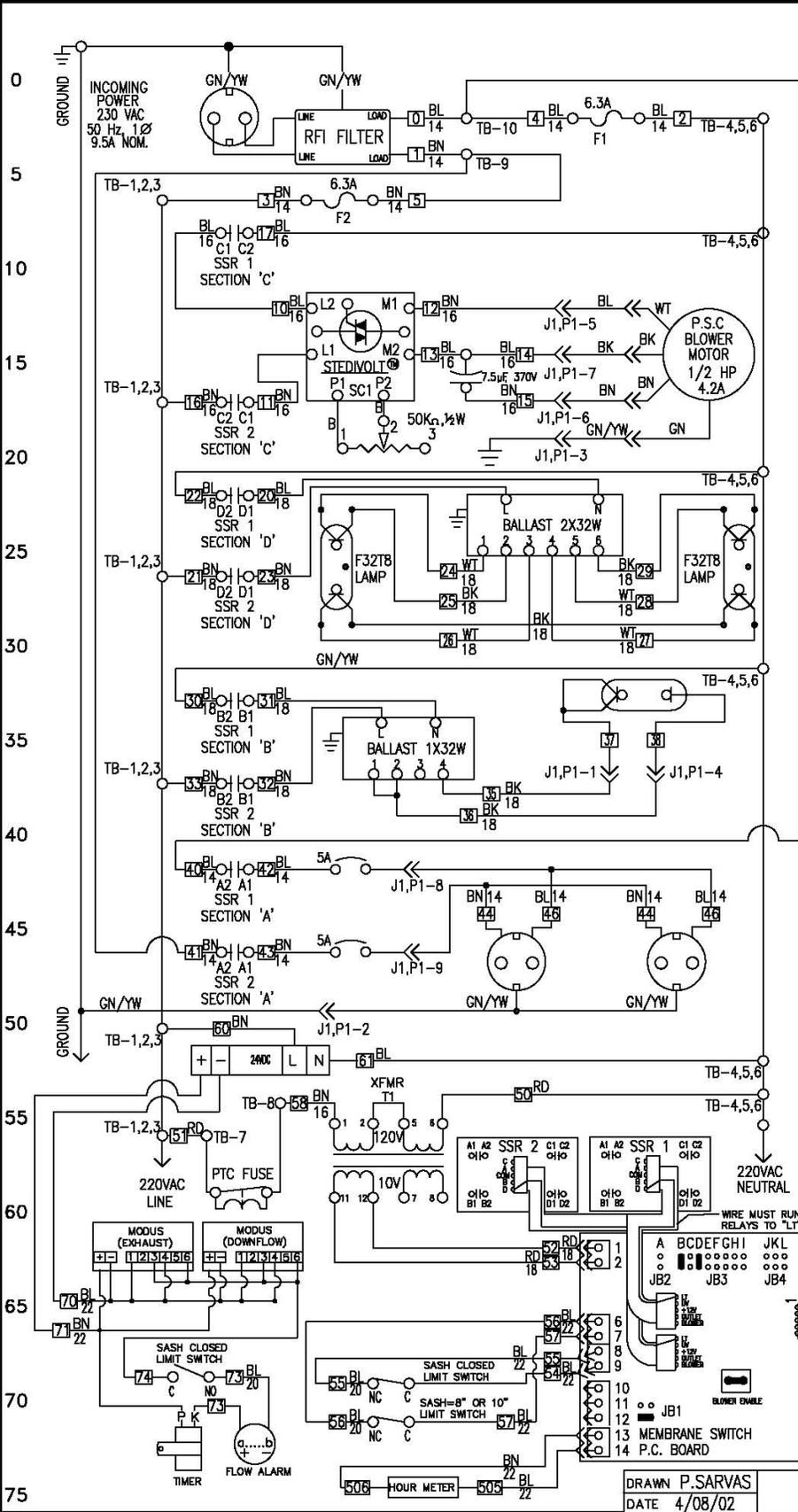
- 230V AC, 1 Phase, 50 Hz
- The SterilGARD®III Advance° incorporates Baker's StediVOLT® motor speed controller for the blower motor. This compensates for variations in incoming line voltages.
- The SterilGARD®III Advance° features two fused, duplex receptacles at a total of 5.0 amps. The unit is furnished with one 10' power cord. The power cord is the unit disconnect device.
- The unit is protected with two, 6.3 amp, 250 Volt AC time delay fuses.

SG403/603 EN Blower motor (1,625 RPM)	4.2 amps
SG403/SG603 EN Fluorescent Light (ballast)	0.32 amps
SG403/SG603 EN Duplex outlets.....	5.0 amps
SG403/SG603 EN Total running load.....	9.5 amps

A power cord is furnished with the SterilGARD®III Advance°. It should be connected to a 230 Volt AC, 50 Hz, 15 amp dedicated utility outlet.

Insert Certificate of Compliance as page 29

REVISION			
REV	DESCRIPTION	BY	DATE
A	INITIAL RELEASE	PS	01
B	CHANGE UV BALLAST PER ECR 00325	TFM	5/15/03
C	CORRECTED JUMPERS ON MSC BOARD	DMB	6/3/04



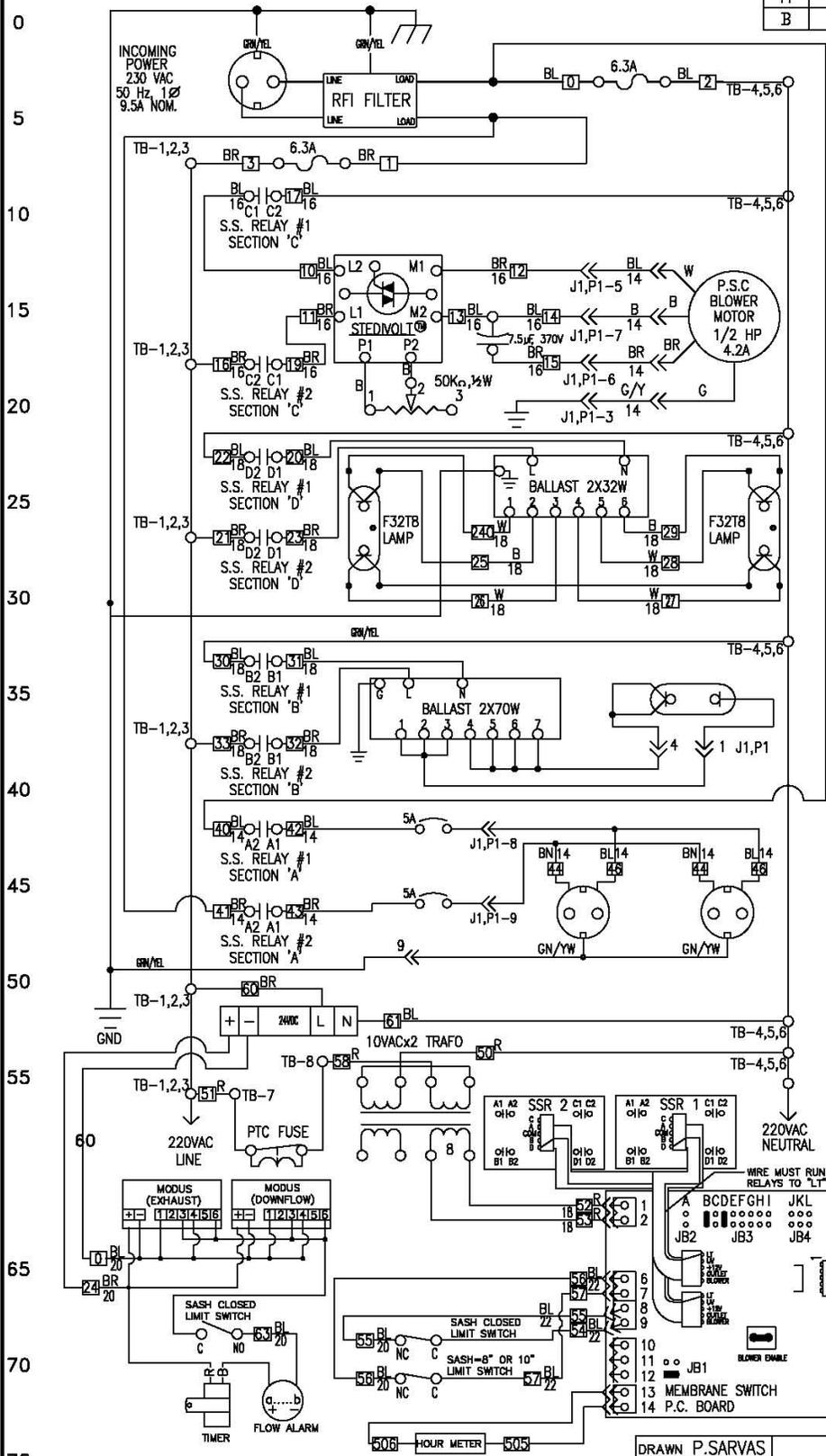
SCHUKO PLUG	30316
FUSE, 6.3 A	37591
QUAD S.S. RELAY	1855167
STEDIVOLT [®] SPEED CONTROLLER	304302
MOTOR	11629
CAPACITOR	35617
RFI FILTER	39630
FLUORESCENT BALLAST	34524
LAMPS- F32T8	17927
SOCKETS	34465
U.V. BALLAST	40237
U.V. LAMP- G30T8	18024
U.V. SOCKETS	20281
	20283
SCHUKO OUTLET	39740
CIRCUIT BREAKER	34331
DC POWER SUPPLY	39324
TRANSFORMER	34327
P.T.C. FUSE	38037
QUAD S.S.RELAY	1855167
TIMER	39820
PRESSURE MONITOR	38997
ALARM	34440
MEMBRANE SWITCH	34699
CIRCUIT BOARD	
CABLE HARNESS	38385
MEMBRANE SWITCH	37919
LIMIT SWITCH,DPDT	39252
LIMIT SWITCH, SPDT	16651
HOUR METER	36268
DESCRIPTION	BAKER NO.

LEGEND
 -54/22 BL DENOTES WIRE NO. 54, BLUE, 22 A.W.G.
 ALL WIRE 16 A.W.G. UNLESS OTHERWISE NOTED
 TB-3,4 DENOTES CANOPY TERMINAL BLOCK, TERMINALS 3 OR 4

Caution(Refer to accompanying documents) Protective conductor terminal

DRAWN P.SARVAS	the BAKER COMPANY, inc.	
DATE 4/08/02	SANFORD, MAINE 04073	
CHK T.MARTIN	TITLE LADDER SCHEMATIC	
DATE 4/08/02	FOR SterilGARD III SG403 EN	
USED ON	THIS DRAWING IS CONSIDERED PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR ALLOWED TO BE SEEN BY ANY MANUFACTURER OF SIMILAR AND COMPETITIVE PRODUCTS EXCEPT BY WRITTEN PERMISSION OF THE BAKER CO. INC. SANFORD, MAINE	DWG NO 333E500
		REV C
		SHEET 1 OF 1

REVISION			
REV.	DESCRIPTION	APP'D.	DATE
A	ORIGINAL RELEASE	PS	4/8/02
B	CORRECTED JUMPERS ON MSC BOARD PER ECR00379	DMB	6/3/04



SCHUKO PLUG	30316
FUSE, 6.3 A	37591
QUAD S.S. RELAY	1855167
STEDIVOLT [®] SPEED CONTROLLER	304302
MOTOR	11629
CAPACITOR	35617
RFI FILTER	39630
FLUORESCENT BALLAST LAMPS- F32TB	34524
SOCKETS	17927
	34465
U.V. BALLAST	38241
G64T6	18025
U.V SOCKETS	20281
	20283
SCHUKO OUTLET	39740
CIRCUIT BREAKER	34331
DC POWER SUPPLY	39324
TRANSFORMER	34327
P.T.C. FUSE	38037
QUAD S.S.RELAY	1855167
TIMER	39820
PRESSURE MONITOR	38997
ALARM	34440
MEMBRANE SWITCH	34699
CIRCUIT BOARD	38385
CABLE HARNESS	39768
OPTION JUMPER	37919
MEMBRANE SWITCH	39252
LIMIT SWITCH,DPDT	16651
LIMIT SWITCH, SPDT	36268
DESCRIPTION	BAKER NO.

LEGEND
 54/22 DENOTES WIRE NO. 54, BLUE, 22 A.W.G.
 ALL WIRE 16 A.W.G. UNLESS OTHERWISE NOTED
 TB-3,4 DENOTES CANOPY TERMINAL BLOCK, TERMINALS 3 OR 4

Caution(Refer to accompanying documents)

Protective conductor terminal

DRAWN P.SARVAS	the BAKER COMPANY, inc.	
DATE 4/08/02	SANFORD, MAINE 04073	
CHK T.MARTIN	TITLE LADDER SCHEMATIC	
DATE 4/08/02	FOR SteriGARD III SG603 EN	
USED ON	THIS DRAWING IS CONSIDERED PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR ALLOWED TO BE SEEN BY ANY MANUFACTURER OF SIMILAR AND COMPETITIVE PRODUCTS EXCEPT BY WRITTEN PERMISSION OF THE BAKER CO. INC. SANFORD, MAINE	
	DWG NO 336E500	REV B
	SHEET 1	OF 1

Replacement Parts

<i>MODEL</i>	<i>SG403EN</i>	<i>SG603EN</i>
<i>Part Name</i>	<i>Part No. SG403EN</i>	<i>Part No. SG603EN</i>
Capacitor	35617	36517
Circuit Breaker - 5A	34331	34331
Exhaust HEPA Filter	37868	38585
Fluorescent Ballast	34524	34524
Fluorescent Lamp	17927	17927
Front Panel, Dress Panel 10 Degree	333165	336165
Schuko Outlets	39740	39740
Lamp Holder, "Butt-On" Type	34465	34465
Limit Switch, SPDT	16651	16651
Modus, Pressure Monitor	38997	38997
Membrane Switch Controller	34699B	34699B
Motor/Blower Controller	304227	304227
Relay, Solid State	1855167	1855167
Sash Balance	38014	
Sash Balance R.H.		38172
Sash Balance L.H.		38173
Side Panel, LH	333063	333063
Side Panel, RH	333064	333064
Hour Meter	36268	36268
Supply Blower DD10-4AT	11416	
Supply Blower DD10-8AT		11438
Supply Diffuser	333446	336097
Supply HEPA Filter	37865	37866
Supply Motor 1/2 HP 1625RPM	11629	11629
RFI Filter	39630	39630
Switch, Touch-Type	37919	37919
Label, Touchpad, overlay	37998	37998
Transformer	34327	34327
Ultraviolet Lamp	18024	18025
Ultraviolet Lamp Ballast	35421	38241
Ultraviolet Lamp Socket (plunger type)	20281	20281
Ultraviolet Lamp Socket (fixed type)	20283	20283
Viewscreen Assembly	333A300	336A300
Viewscreen Frame Assembly	333081	336081
DC Power Supply	39670	39670
Timer	39820	39820
Limit Switch, DPDT	39252	39252

Chapter VIII

Operating procedures

Proper Start-up Procedure

- 1 If the unit has not been left running continuously, press the blower on/off switch. The yellow indicator light below the switch will light.
- 2 Listen for the sound of the blower. You should hear it.
- 3 Check the reading on the Modus Alarm Monitors, it should be consistent with the last time the unit was on.
- 4 Turn on the fluorescent light.
- 5 Check the drain valve. It should be closed or capped.
- 6 Wipe down the interior area of the cabinet with a surface disinfectant.
- 7 Disinfect the exterior of materials to be used for the next procedure.
- 8 Place materials to be used for the next procedure on the solid work surface, as defined by the dished reassessed area.
- 9 Arrange materials in the cabinet's work area in logical order. Segregate clean and dirty materials on opposite sides of the work area.
- 10 Set the view screen at 8".
- 11 Let the cabinet run for at least three minutes before starting to work.

Additional Suggestions

- 1 Disinfect the work surface before and after every procedure.
- 2 Minimize the amount of equipment placed in the cabinet and place equipment, which rotates, vibrates or heats, at the rear of the work area. Turbulent air flowing around equipment and materials reduces the effectiveness of the cabinet.
- 3 Wash hands and arms thoroughly with germicidal soap both before and after work in the cabinet. Wear long-sleeved gowns or lab coats with tight-fitting cuffs and sterile gloves to minimize the shedding of skin flora into the work area and to protect hands and arms from contamination.
- 4 Work with a limited number of slow movements. Do not move your arms in and out of the cabinet unnecessarily.
- 5 Avoid opening and closing doors in the laboratory while the cabinet is in use. Opening and closing doors causes air disturbance, which interferes with cabinet airflow. Limit walking back and forth by the front of the cabinet while it is in use.
- 6 Discard used pipettes inside the cabinet into a tray or other suitable container. Avoid discarding used pipettes into a canister on the floor. This reduces movement in and out of the work area.
- 7 Use good aseptic technique. Procedures done with good technique and proper cabinet methods will not require the use of a flame.
- 8 If a safety officer approves the use of flame then a burner with a pilot light such as the "Touch-O-Matic" should be used. Note that Tygon tubing is not acceptable for use with burners.

- 9 Decontaminate all equipment, which has been in contact with the research agent after a procedure has been completed. Trays of discarded pipettes and glassware should be covered.
- 10 Let the cabinet run for at least three minutes with no activity after you finish a procedure. This will purge the airborne contaminants from the work area.
- 11 After you have removed all materials from the cabinet, decontamination of the interior surfaces should be repeated. Check the work area carefully for spilled or splashed nutrient, which might support bacterial growth.
- 12 Run the cabinet continuously to ensure containment and cleanliness. If the user elects to turn the cabinet off at the end of a work session, the window should be closed completely.

The Do's and Don'ts of Good Operating Procedure

- ***Store equipment and supplies outside of the cabinet.***
- ***Always leave the blower turned on.***
- ***Set the view screen at the proper height.***
- ***Use aids when pipetting.***
- ***Don't use an open flame within the cabinet unless the use has been specifically approved by a safety professional.***
- ***Do keep the air intake grilles clear and unobstructed.***
- ***Don't use toxic, explosive or flammable substances unless a safety professional has approved them for work in your cabinet.***
- ***Don't change the cabinet or blower speed unless the change is required by a decrease in measured air velocity. The control system will adjust automatically for small changes in the load on the blower. A qualified technician should only make adjustments for larger changes.***
- ***Work only with agents assigned to biosafety levels 1, 2, or 3 in this cabinet.***
- ***Always close the drain valve after each use.***
- ***Don't operate the unit while an alarm is sounding or flashing.***
- ***Never use this cabinet to store laboratory supplies or equipment.***