This manual includes information for installation, operation, maintenance and spare parts. We recommend that it be kept near the cabinet for ready reference.
INTRODUCTION AND WELCOME

It is a pleasure to welcome you to the growing number of customers who own and operate Baker cabinets and glove boxes. 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 cabinet includes many unique features which are included to give you superior performance, simpler maintenance and lower life cycle cost. The SterilGARD® III is a Class II, Type A2 biosafety cabinet that provides personnel, product, and environmental protection. All exterior cabinet seals are under negative pressure. The SterilGARD® III is suitable for research and clinical diagnostic work involving tissue culturing of possibly infectious samples, IV drug preparations and other pharmaceuticals that could have adverse health effects on operators and other techniques requiring a contamination-free atmosphere.

In addition to the high quality you expect from all Baker equipment, this model has been ergonomically designed to provide the lab user with many exciting design features. The ergonomic design will help prevent repetitive motion injury, reduce fatigue and lab accidents and enhance productivity.

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.

We recommend that this manual, along with the 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 cabinet, please do not hesitate to contact our Customer Service Department at 800-992-2537 for assistance or e-mail us at bakerco@bakerco.com.

Sincerely,

Dennis Eagleson
President, CEO
The Baker Company, Inc.
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- 3 -
I – FUNCTION OF THE SterilGARD® III Advance®

SterilGARD® III Airflow and Base Features

Room air enters the front access opening of the cabinet at a minimum of 100 FPM [0.508m/sec] then enters the front work surface perforation. Most of the HEPA filtered down flow air passes through a diffuser but some of the air is dumped down the back of the viewscreen creating a high velocity air curtain at the front access opening. The HEPA filtered down flow air in the work area splits at the work surface. Some of the air enters the rear work area perforation while the remainder of the air enters the front work surface perforation. The air is pulled through the drain pan area, up the rear and side wall plenums, to the cabinet blower. The air is then pushed into the positive pressure plenum. At that point most of the air is pushed through the down flow HEPA filter while the remainder is exhausted out the exhaust HEPA filter and through a perforated filter protector at the top of the cabinet.

[Reference Fig.1]
Base Features

- Meets NSF 49 standard for Class II, Type A2 biosafety cabinet.
- HEPA filtration of air before it enters the work area.
- Front accessibility to electrical components, lamp, blower, and filters.
- Sliding viewscreen sloped 10 degrees for worker comfort.
- Removable work surface and supports for easy cleaning of the drain pan area.
- Adjustable heights stand with leg levelers.
- Down flow filter diffuser / protector.
- Membrane switch control pad.
- GFCI protected duplex (2).
- Fluorescent lamp.
- Petcock on right hand wall.
- Padded armrest.
Cabinet Pressure Plenums

The cabinets work area is surrounded by negative pressure and all external seals are under negative pressure. All internal positive pressure plenum seals are surrounded by negative pressure plenums.

Design Details

Motor / blower capacity

A motor / blower’s capacity is measured by its ability to provide a nearly constant volume of air as resistance increases because of filter loading. Verification by a simulated filter-loading test has established that your SterilGARD®III cabinet is capable of automatically handling 60% increase in pressure drop across the filter without reducing total air delivery more than 10%. With the use of the manual speed control, a 180% increase in the pressure drop across the filter can be handled.

Air balance adjustments

Air balancing can be done by either of the following methods. However, only a technician with proper training and equipment should do it.

- The cabinet speed controller adjusts for build voltage differences and filter loading. It controls the total air volume being moved inside the cabinet.
- The internal cabinet balancing damper compensates for down flow and exhaust imbalances due to pressure drop differences between the filters when they are replaced.

Tested HEPA filters

All filters in the cabinet are scan-tested HEPA filters. They are 99.99% effective on particles of 0.3 micron size. Each filter is leak checked after installation to assure that there are no leaks greater than 0.01% of the upstream concentration.

Easy filter access

For convenience and ease of service, all filters are front accessible. The down flow and exhaust filters can be removed through an access panel located behind the dress panels in the front of the cabinet. Qualified technicians should only replace filters.

One-piece interior wall construction

The interior side and rear work area walls are constructed from a single piece of 16-gauge stainless steel. It has 7/16" [11.1mm] radius (rounded) corners to help prevent buildup of contaminants and aid in cleanup.

Front access high velocity air slots

At the intersection of both sidewalls and front access opening there are high velocity air slots. The purpose of the slots is to capture any particulate traveling near the sidewalls and access opening.
Towel guard

The towel guards are located under the work surface at the bottom rear and sides of the return-air plenums. Acting as a protective screen, integral to the interior walls, they help prevent wipes and other paper materials from being drawn into the blower system. They need to be kept clean at all times.

All-metal plenums

The plenums are constructed entirely of carbon and stainless steel in order to provide strength, durability, air-tightness and resistance to deterioration.

Removable recessed stainless steel work surface

The work surface is constructed of corrosion resistant 16-gauge type 304 stainless steel, with a satin finish that diminishes light reflection. It is recessed to retain spills and can be removed along with its supports to gain access to the drain pan.

Drain pan

The drain pan is designed with 7/16” [11.1mm] radius in all four bottom corners to facilitate cleaning and disinfection. Drainage is provided by a 1/2” [12.7mm] diameter stainless steel ball valve located at the bottom of the drain pan.

Viewscreen

The cabinet’s 1/4” [6.35mm] safety plate glass sliding viewscreen may be opened to 19 3/8” [492.1mm] for placing of large items in the work area, and maybe fully closed for system shutdown or UV light operation.

Work area lighting

The work area is illuminated by two external fluorescent lamps which provide 100 foot-candles of light at the work surface.

Electronic ballast

The SterilGARD®III features solid-state electronic ballasts for the fluorescent and UV (optional) lights. These ballasts increase reliability, efficiency, and service life with lower heat output.

Adjustable cabinet height

The cabinet has adjustable legs and leg levelers. The legs provide 6” [152.4mm] of height adjustment and the leg leveler provides an additional 2.5” [63.5mm] of height adjustment.

Sponge armrest pad

The armrest pad is made out of EPDM sponge material and is resistant to most chemicals and UV exposure. It is held in place with a low tack adhesive so the pad can be easily removed for cleaning. It also can be autoclaved.

UniPressure plenum

A telescoping all steel positive pressure plenum provides a more even clamping force on the HEPA filter frames and helps deliver the down flow air more uniformly. The plenum can be easily telescoped for quick filter changing.
**Motor / Blower assembly**

The motor and blower are assembled on a slide plate. This allows the assembly to be easily removed from the positive pressure plenum for faster servicing or replacement.

**Cable ports (Optional)**

A cable port is located in the cabinet’s left and right side walls. It provides a way of introducing power and data cables, or siphoning tubes into the work area of the cabinet without having to go through the front viewscreen access opening. A plug is provided for each port, when the port is not being used or the cabinet is being decontaminated.
Specifications

Weight

The weight of the SterilGARD®III Model SG403A / SG603A cabinet is 564 / 775 pounds [2509 / 3447 N] with a shipping weight of 684 / 920 pounds [3042 / 4092 N]. With channel stand, the cabinet weight is 640 / 858 pounds [2847 / 3816 N] with a shipping weight of 760 / 1003 pounds [3380 / 4461 N].

Electrical Specifications

All electrical wiring should comply with the National Electrical Code and any applicable Local Electrical Codes at the site of installation.

A single 115V AC, 20A, 60 Hz, Single Phase dedicated circuit is required to power this unit. This circuit shall provide the protective earth ground for the cabinet.

The cabinet is internally protected with a 250V, 20A Circuit breaker.

Cabinet Ratings:

115V AC, 60Hz, Single Phase

Typical current less outlets for SG403A  8.0 Amps
Typical current less outlets for SG603A  12.0 Amps

The unit is furnished with one 14' power cord with 20-amp plug, type NEMA 5-20P.

The power cord is the Main Disconnect device for the unit. The unit should be positioned in a manner that allows easy access to the power cord connection to the electrical utility.

The cabinet is provided with Fluorescent lighting.

The cabinet is provided with two GFCI protected, 115V AC, Duplex outlets. The outlet(s) on this circuit are protected by a self-resetting circuit breaker. For the SG403A the breaker allows 5A total on all outlets. For the SG603A the breaker allows 3A total on all outlets.

The cabinet may be provided with an optional lift that requires 115V AC at 2 Amps intermittent duty. The lift duty cycle is 1 minute on, 9 minutes off.

The cabinet incorporates the Baker StediVOLT® blower motor speed control. This compensates for normal variations in incoming line voltage.

The cabinet may be provided with an optional UV lamp. The UV lamp and Fluorescent lamp are interlocked to prevent simultaneous operation.

The cabinet may be provided with an optional 24V DC power supply for low voltage options.
Environmental Conditions

The cabinet is designed for use in the following conditions:

- Indoor use
- Altitudes up to 2000 meters
- Temperature range from 5°C to 40°C
- Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% at 40°C
- Main Supply voltage 115V ±10%V AC
- Transient over voltage according to Installation Category (OVERVOLTAGE CATEGORIES) II per UL 61010-1, Annex J
- Pollution Degree 2

Symbols and Terminology

![Protective Earth: Any terminal intended for connection to external protective conductor for protection against electric shock in case of a fault.](image)

![General Caution: Refer to instruction manual for information regarding personnel and environment protection.](image)
II - PREPARING THE SterilGARD®III Advance® FOR USE

Checking the Cabinet Upon Arrival

Upon receipt of your new SterilGARD® III cabinet, first inspect the exterior of the crate, box and/or skid. If there is any visible damage, that fact should be noted on the receiving slip and immediately reported to the delivering carrier.

Next, remove the outer packing material and inspect the cabinet itself. If any concealed damage is found it should be reported to the delivery carrier. A claim for restitution should be filed within 15 days.

Due to the risk of mishandling by trucking companies, Baker has removed certain parts of the cabinet and has packed them separately. These items are listed on the packing slip, which accompanies the cabinet. Please check the packing slip carefully to be sure that all items have been located.

Location Within the Laboratory

Proper placement within the laboratory is essential. The ideal location for any biological safety cabinet is in a dead-end corner of the laboratory away from personnel traffic, vents, doors, windows, and any other sources of disruptive air currents. Published research from The Baker Company and unpublished tests performed at the National Cancer Institute show that if a draft or other disruptive air current were to exceed the intake velocity of the cabinet, contamination can enter the work area or escape from it (for more information, contact Baker).

If the cabinet exhausts air into the laboratory instead of venting to the outside, it is important that there is adequate space between the top of the cabinet and the ceiling. A solid ceiling located too close to the exhaust filter will restrict the air and limit the intake velocity. The exhaust filter guard, an inverted “V” shaped perforated steel plate included with your SterilGARD®III cabinet, will provide the necessary distance between exhaust opening and ceiling. If the filter guard is not installed, the cabinet exhaust opening should be no closer than 3” [76.2mm] from the ceiling, to enable proper airflow. Consult with our Customer Service Department for the implications of this, and for alternatives.

Installing the Cabinet

Installation of this cabinet should be carried out in accordance with appropriate OSHA regulations and those other regulatory agencies having jurisdiction.

To insure operator safety the cabinet must be installed and operated per the manufacturer’s instructions.

1. Remove the strapping that holds the cabinet to the pallet.
2. Remove the cabinet from the skid with a forklift or other available equipment.
3. Move the cabinet into the laboratory room. Remove all tape, plastic wrap and other packaging materials on the cabinet.
4. Change out shipping hardware with ¼-20 thumb screws provided. A drawing showing the location of the shipping hardware on the cabinet is provided.
5. The cabinet drain valve, stand adjustable leg levelers, and exhaust filter guard are shipped with the unit in a
small cardboard box.
6. Install the drain valve to the threaded pipe nipple. The nipple is located on the left underside of the cabinet drain pan.
7. Be sure to remove the protective material covering the cabinet exhaust opening.
8. If the cabinet exhausts its air directly into the laboratory room instead of ducting it outside, install the exhaust filter guard on top of the cabinet exhaust opening using the hardware provided.
9. Follow the base stand assembly and adjustment instructions provided in the appendix of this manual to set the cabinet to the worksurface height desired.
10. Position the cabinet in its desired location within the laboratory room.

Exhausting into the Room

1. Never use the top of the cabinet or the work area for storage purposes.
2. Never use flammable, explosive or toxic vapors/gases, or substances which generate them, unless a qualified safety professional has evaluated the risk. The filters only remove particulates and not gases.
3. Keep the exhaust filter guard on the cabinet. It will help protect the filter from objects being dropped on it and keep the cabinet spaced from the ceiling or other objects so it can exhaust properly.

<table>
<thead>
<tr>
<th>Cabinet Model</th>
<th>Sash Height (Inches)</th>
<th>Exhaust Flow Range (Approximate) (CFM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG403A 8&quot;</td>
<td>203.2mm</td>
<td>256 / 282 [121 / 133 L/sec]</td>
</tr>
<tr>
<td>10&quot; [254mm]</td>
<td>318 / 352 [150 / 166 L/sec]</td>
<td></td>
</tr>
<tr>
<td>SG603A 8&quot;</td>
<td>203.2mm</td>
<td>388 / 428 [183 / 202 L/sec]</td>
</tr>
<tr>
<td>10&quot; [254mm]</td>
<td>484 / 536 [228 / 253 L/sec]</td>
<td></td>
</tr>
</tbody>
</table>

Cabinet Exhausting into the Room

Connecting the Exhaust for Ducting Outdoors

Whenever possible, the cabinet exhaust should be canopy connected to its own separate exhaust system. If it must be ducted into a ganged exhaust system, make sure that the system is not a recirculating one. The building exhaust system should contain provisions to adjust the building system flow and pressure.

The recommended connection between the cabinet and the building exhaust duct is a 10" [254mm] diameter Canopy Exhaust Connection (CEC). It mounts directly over the exhaust filter and includes an access panel for leak checking the exhaust filter. We recommend having a decon box and decon seal plate for the CEC to seal the cabinet during decontamination.
<table>
<thead>
<tr>
<th>Cabinet Model</th>
<th>Sash Height (Inches)</th>
<th>Exhaust Flow Range (Approximate) (CFM)</th>
<th>*Suction Min/Max (Inches W.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG403A</td>
<td>8” [203.2mm]</td>
<td>322 / 520 [152 / 245 L/sec]</td>
<td>0.05 / 0.25 [12.4 / 62.3 Pa]</td>
</tr>
<tr>
<td></td>
<td>10” [254mm]</td>
<td>401 / 585 [189 / 276 L/sec]</td>
<td>0.08 / 0.30 [19.9 / 74.7 Pa]</td>
</tr>
<tr>
<td>SG603A</td>
<td>8” [203.2mm]</td>
<td>490 / 754 [231 / 356 L/sec]</td>
<td>0.15 / 0.40 [37.4 / 99.6 Pa]</td>
</tr>
<tr>
<td></td>
<td>10” [254mm]</td>
<td>613 / 914 [289 / 431 L/sec]</td>
<td>0.20 / 0.50 [49.8 / 124.5 Pa]</td>
</tr>
</tbody>
</table>

*NOTE: Water column suction is measured directly above the cabinet exhaust outlet before any dampers, elbows or other restrictions.

Exhaust Requirements for a CEC

**IMPORTANT**

NSF/ANSI 49 does not recommend using Hard Exhaust Connections (HEC) with Class II, Type A2, Biosafety cabinets.

A Hard Exhaust Connection (HEC) requires a 10” [254mm] diameter connection between the cabinet and the building exhaust duct with no air gaps. It mounts directly over the exhaust filter and includes an access panel for leak checking the exhaust filter. We recommend having an airtight damper (ATD) to seal the cabinet for decontamination.

<table>
<thead>
<tr>
<th>Cabinet Model</th>
<th>Sash Height (Inches)</th>
<th>Exhaust Flow Range (Approximate) (CFM)</th>
<th>*Suction (Inches W.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG403A</td>
<td>8” [203.2mm]</td>
<td>256 / 282 [121 / 133 L/sec]</td>
<td>0.06 [14.9 Pa]</td>
</tr>
<tr>
<td></td>
<td>10” [254mm]</td>
<td>318 / 352 [150 / 166 L/sec]</td>
<td>0.08 [19.9 Pa]</td>
</tr>
<tr>
<td>SG603A</td>
<td>8” [203.2mm]</td>
<td>388 / 428 [183 / 202 L/sec]</td>
<td>0.10 [24.9 Pa]</td>
</tr>
<tr>
<td></td>
<td>10” [254mm]</td>
<td>484 / 536 [228 / 253 L/sec]</td>
<td>0.15 [37.4 Pa]</td>
</tr>
</tbody>
</table>

*NOTE: Water column suction is measured directly above the cabinet exhaust outlet before any dampers, elbows or other restrictions.

Exhaust Requirements for a HEC
Final Connections and Tests

1. The plumbing connection to the service petcocks must be made with great care because the affluent from a
   safety cabinet may be biologically hazardous. When present, petcocks are piped within the cabinet. The
   external connection uses 3/8” compression fitting at the rear, top, or bottom of the cabinet outer sidewall seal
   panel. Qualified personnel with proper materials and technique should make connection to plant utilities per
   NFPA. Flammable gas should not be piped into any cabinet. However, if the risk is professionally evaluated
   and a decision is made to install a flammable gas petcock, then an emergency shut-off valve should be
   situated in an accessible location outside the cabinet.

2. A 20 amp power cord with a NEMA 5-20P plug is furnished with the cabinet. It should be plugged into a
   115V AC, 60 Hz, 20 amp dedicated utility outlet.

3. Thoroughly clean the interior of the cabinet. Locate the viewscreen at the correct opening height (8” or 10”
   [203.2 or 254mm]).

4. Turn on the Blower. The indicator light will illuminate and the running blower will make an audible sound.

5. Turn on the Fluorescent Light. The indicator light will illuminate along with the interior work area.
   (NOTE: The Fluorescent Light will not come on unless the blower switch is on. The Fluorescent Light
   and UV Light are interlocked so they cannot operate simultaneously.)

6. If your cabinet has been purchased with the optional Ultraviolet Light (UV), lower the viewscreen to its fully
   closed position and turn the UV light on to make sure it is operational. (NOTE: The UV light option
   features an interlock that prohibits its operation unless the viewscreen is fully closed. The Fluorescent
   Light and UV Light are interlocked so they cannot operate simultaneously.)

7. Although all units are carefully tested at the factory, it is advisable that certain other checks are made on-site
   by a qualified technician after installation. These include testing the filters for leaks and checking the air
   balance of the cabinet, especially if it is connected to an exhaust system. A description of these tests can be
   found in Section 4, “On-site Checks and Maintenance”.

8. It is recommended that all personnel who will be using the cabinet study this manual to learn how to use it
   effectively. For additional start up and use procedures, reference Section III, Proper Cabinet Use

FOR MORE INFORMATION
For a complete listing of articles, papers, and reports related to containment, clean air products and safety,
contact The Baker Company for our complete Bibliography or visit our website at www.bakerco.com
III - PROPER CABINET USE

A biological safety cabinet is a valuable supplement to good sterile technique, but is not a replacement for it.

If the cabinet is not understood and operated correctly it will not provide an adequate protective barrier. To insure operator safety the cabinet must be installed and operated per the manufacturer’s instructions.

All activities that are to be performed in your cabinet should first be approved by a competent professional, such as an industrial hygienist or safety officer, to make sure that the cabinet is appropriate for the work it will be required to do. This person should monitor the cabinet and its operating personnel at regular intervals to see that it is being used correctly.

In order to keep the interior work area clean and free of particulates, all Baker biosafety cabinets are designed for continuous operation. If the blower is turned off, the work area will become contaminated with room air. Therefore it is recommended that the blower be left on at all times.

Operator Controls

The operator controls with indicators are arranged on the front electrical panel of the cabinet. A number of switches are arranged in a single membrane switch assembly. [Reference Fig. 2]

Note: See Pg. 16 for Programmable Delay off Time Functions

Fig. 2, Operator Controls
• Ultraviolet (UV) Light On / Off [Optional] – A bulb, which produces light in the ultraviolet range, may be used to help disinfect the work area. This switch controls the UV Light inside the work area if the UV Light option is installed. **The viewscreen must be fully closed before the UV light will turn on.** The Fluorescent Light and the UV Light are interlocked. When the viewscreen is closed, turning the UV Light On will automatically turn the Fluorescent Light Off. Turning the Fluorescent Light On will automatically turn the UV Light Off. The UV light will automatically shut off if the viewscreen is opened. A yellow indicator light located below the switch will illuminate when the switch is on.

• Fluorescent Light On / Off – This switch controls operation of the Fluorescent Light. **The cabinet blower must be on for the Fluorescent Light to operate.** The Fluorescent Light and the UV Light are interlocked. When the viewscreen is closed, turning the UV Light On will automatically turn the Fluorescent Light Off. Turning the Fluorescent Light On will automatically turn the UV Light Off. A Blue indicator light located below the switch will illuminate when the switch is on.

• Duplex Outlets On / Off – This switch controls the duplex outlets in the work area. A Blue indicator light located below the switch will illuminate when the switch is on.

• Blower On / Off – This switch controls the power to the cabinet blower. A Green indicator light located below the switch will illuminate when the switch is on.

• Alarm reset / Sash level alarm – For normal operation, the viewscreen must be placed at the allowable opening of 8” or 10” [203.2mm or 254mm]. The sash alarm will be activated whenever the viewscreen is raised above or lowered below this level. To mute the audible alarm, press the alarm reset button. The indicator light located below the switch will continue to flash. After five minutes, if the conditions persist, the alarm will sound again to remind you to reposition the viewscreen to its proper level. You may press the alarm reset switch again to mute the audible alarm for an additional five minutes.

**Programmable Delay Off Time Function**

The following procedure can be used to program a Delay Off time for UV, outlets, or fluorescent lights:

**NOTE** - The device to be programmed should be in the OFF condition before you start programming.

**15 minute increment programming:**

1. Press and hold the pushbutton of the device you want to program.
2. In about 3 seconds you will hear a short ‘beep’. This indicates that you have turned the device ON, are in the programming mode for the device, and have programmed it to turn OFF in 15 minutes. Release the pushbutton.
3. Each subsequent press of the device pushbutton while in the programming mode will add 15 minutes to the Delay Off time. (e.g. pressing the pushbutton 3 additional times would set the delay to 60 minutes, 15 min. initially plus 3 x 15 minutes additional delay times).
4. The device control will remain in the programming mode for about 4 seconds if the pushbutton is not pressed.
5. Once the programming mode for the device has ended the device can be turned OFF normally, if desired, by pressing the device pushbutton.
6. The programmed device will turn OFF automatically at the end of the Delay Time.
7. Each time a programmed device is turned off manually or automatically the programming is cleared and must be reentered, if desired.
1 hour increment programming:

1. Press and hold the pushbutton of the device you want to program. 
2. In about 3 seconds you will hear a short ‘beep’. Continue to hold the pushbutton. In about an additional 3 seconds you will hear a longer ‘beep’. This indicates that you have turned the device ON, are in the programming mode for the device, and have programmed it to turn OFF in 1 hour. Release the pushbutton. 
3. Each subsequent press of the device pushbutton while in the programming mode will add 1 hour to the Delay Off time. (e.g. pressing the pushbutton 3 additional times would set the delay to 4 hours, 1 hour initially plus 3 x 1 hour additional delay times). 
4. The device control will remain in the programming mode for about 4 seconds if the pushbutton is not pressed. 
5. Once the programming mode for the device has ended the device can be turned OFF normally, if desired, by pressing the device pushbutton. 
6. The programmed device will turn OFF automatically at the end of the Delay Time. 
7. Each time a programmed device is turned off manually or automatically the programming is cleared and must be reentered, if desired.

Start-up Procedure

1. If the cabinet has not been left running continuously, turn on the blower. An indicator light located below the switch will illuminate when the switch is on. Listen for the sound of the cabinet blower running. Check the readings on the Magnehelic gauge, it should read a pressure consistent with the last time the cabinet was on. 
2. Turn on the fluorescent light. The fluorescent light will not operate unless the Cabinet Blower is On. 
3. Check to determine that the drain valve is in the closed position or the drain coupling is capped. 
4. Wipe down the interior area of the cabinet with surface disinfectant. NOTE: Some disinfectants, such as bleach or iodine, may corrode or stain the steel surfaces. Good practice is to thoroughly clean the surface afterward with a detergent and rinse with sterile water to prevent corrosion. 
5. Place all materials to be used for the next procedure inside the cabinet on the solid work surface. Disinfect the exterior of these materials prior to placing them on the work surface. Everything required (and nothing more) should be placed in the cabinet before beginning your work so that nothing passes in or out through the air barrier, until the procedure is completed. Implements should be arranged in the cabinet’s work area in logical order so that clean and dirty materials are segregated, preferably on opposite sides of the work area. Blocking the front and rear perforated grilles must be avoided. If wipes or absorbent towels are used on the work surface, be sure to keep them away from the grilles. 
6. After your equipment is in place inside the cabinet, adjust the sliding view screen so it is open to the correct opening height (8”or 10” [203.2 or 254mm]). An alarm will signal if you are not at the proper opening. This is important to maintain proper cabinet airflow. 
7. You can begin working in the cabinet after it has run for at least three minutes with the view screen in the proper position. 

Working in the Cabinet

1. Hands and arms should be washed thoroughly with germicidal soap both before and after work in the cabinet. Operators are encouraged to wear long-sleeved gowns or lab coats with tight-fitting cuffs and sterile gloves. This minimizes the shedding of skin flora into the work area and protects hands and arms from contamination. 
2. Perform all work on the depressed area of the solid work surface. Work with a limited number of slow
movements. Since all of the equipment you need is already in the cabinet, it will not be necessary to move your arms in and out through the air barrier.

3. Because opening and closing doors in the laboratory causes air disturbance which might interfere with cabinet airflow, this kind of activity should be kept to a minimum while the cabinet is in use. Personnel should also avoid walking by the front of the cabinet while it is in use.

4. Avoid using floor-type pipette discard canisters. It is important that your used pipettes be discarded into a tray or other suitable container inside the cabinet. This reduces the temptation to move in and out of the work area unnecessarily.

5. Because of the restricted access, pipetting within the cabinet will require the use of pipetting aids.

6. Use good aseptic technique. Procedures done with good technique and proper cabinet methods will not require the use of a flame. If, however, a safety officer approves the use of flame after evaluating the circumstances, then a burner with a pilot light such as the "Touch-O-Matic" should be used. Place it at the rear of the work area where the air turbulence caused by the flame will have the least possible effect. Flame disturbs the unidirectional airstream and also contributes to the heat load. If the cabinet blower is unintentionally turned off, the flame could also damage a filter.

7. Tubing for a burner within the cabinet should be resistant to cracking or puncture. Material such as Tygon tubing is not acceptable for this use.

8. **Never operate your cabinet while the viewscreen alarm indicator is on.** The operating position of the sash provides an 8" or 10" [203.2 or 254mm] access opening. This restricted opening permits optimum operating conditions for the cabinet. Because operators will not all be the same height, it is suggested that the operator use a chair that may be adjusted for height.

9. After a procedure has been completed, all equipment that has been in contact with the research agent should be enclosed, and the entire surface decontaminated. Trays of discarded pipettes and glassware should be covered. The cabinet should then be allowed to run for at least three minutes with no activity so that the airborne contaminants will be purged from the work area. Next, make sure that all equipment is removed from the cabinet.

10. After you have removed all materials, culture apparatus, etc., decontamination of the interior surfaces should be repeated. Check the work area carefully for spilled or splashed nutrient that might support bacterial growth. **Never use the cabinet to store supplies or laboratory equipment.**

11. We recommend that the cabinet be left running 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 sash alarm will be silenced when the window is in the fully closed position.

**Reacting to Spills**

Spills should be cleaned immediately to prevent cross contamination to the work and to avoid any damage to the stainless steel surfaces.

It is recommended that the researcher, in coordination with their consulting safety professional, have a written plan available in case of an accidental exposure or spill. The safety plan should include all of the emergency procedures to be followed in the event of an accident. All employees who use the cabinet should be familiar with the safety plan.
Ultraviolet Germicidal Lamp (Optional)

Ultraviolet lamps lose their effectiveness over time and should be replaced when intensity drops below 40 microwatts per cm\(^2\) at the work surface. Check regularly.

**WARNING**

- UV light is hazardous, Do not defeat interlock!
- 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 biological safety cabinet acts as a supplement to good aseptic practices, not as a replacement.

Cable Ports (Optional)

A cable port is located in the cabinet’s left and right side walls. It provides a way of introducing power and data cables, or siphoning tubes into the work area of the cabinet without having to go through the front viewscreen access opening. A plug is provided for each port, when the port is not being used or the cabinet is being deconed.

It is important not to overload the port with too many cables/tubing. Cables/tubing in the work area need to be suspended on cable hooks provided. The hooks are located along the interior rear wall. This keeps the cables/tubing from affecting the airflow in the work area and placing unwanted stress on the cable port gaskets. [Reference Cable Port Illustration in appendix]

Decontamination

Whenever maintenance, service or repairs are needed in a contaminated area of your cabinet, the cabinet must first be decontaminated with an appropriate agent. The National Institute of Health, National Cancer Institute and the Centers for Disease Control have all recommended the use of formaldehyde gas for most microbiological agents. Its application requires individuals who are experienced in the decontamination of cabinets, since the gas itself is toxic. A good reference for this procedure is NSF/ANSI Standard 49-2004 ANNEX G “Recommended Microbiological decontamination Procedure”, NSF International, 789 North Dixboro Road, P.O. Box 130140, Ann Arbor, Michigan 48113-0140.

Have the proper safety equipment (gas masks, protective clothing, etc.) within easy reach for whatever gas you choose. 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 volumes of the SG403A, SG503A & SG603A cabinets are 49, 64 and 78 cubic feet respectively. Provide the correct amount of decontaminating gas for this volume.

Carcinogens and other toxins 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.
Decontamination procedure

WARNING
Only qualified technicians should perform this 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 (49, or 78 ft³) by .3 gram/ft³ 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. Prior to sealing up the cabinet make sure all gas or flammable petcocks are closed and pressure tight. Use a soap bubble solution to make sure there is no leakage. **Note: You are creating a confined space.**

4. The inside cabinet work space should be at room temperature with 60% to 85% relative humidity. If relative humidity is low (10 to 30%) add a pan of boiling water on the work surface. If it is (40% to 55%) add a pan of hot tap water on the work surface. Relative humidity above 85% will require extra clean up which will be covered in step 15. **Note: Without the proper relative humidity the formaldehyde gas will not be effective. The mode of entry of formaldehyde into the living organisms is through the cell wall by the absorption of water.**

5. Place a heating mantle with paraformaldehyde in the work space. The heating mantle must be able to reach 450 degrees F and must have a grounded plug that should be plugged in to an outlet outside the cabinet.

6. **This step is optional.** 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 13 to neutralize the formaldehyde gas.

7. **This step is recommended.** Place spore strips inside the cabinet to confirm that the decontamination process has been successful.

8. If the cabinet is vented to the room, use a sheet of plastic and seal the front access and exhaust port openings. These openings should be sealed such that the exhaust airflow recirculates back to the front access opening. This will promote the even distribution of formaldehyde gas throughout the cabinet.

9. If the cabinet is vented to the outside, then the exhaust transition should have a means to recirculate the exhaust airflow back to the cabinet blower. This will promote the even distribution of formaldehyde gas through the exhaust filter. Seal the front access opening.

10. Turn on the heating mantle containing the paraformaldehyde flakes.

11. 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.

12. Allow the formaldehyde gas a minimum residence time of 12 hours, preferably over night.

13. Turn on the heating mantle containing NH4HCO3 and the cabinet blower and allow the two gases to circulate for at least one hour. Then vent the cabinet to the outside.

14. Aseptically remove spore strip and place in Trypticase-soy broth and incubate for 7 days. No growth will verify the decontamination process.

15. When cleaning up, you may find residual 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.
Cleaning and Disinfecting Stainless Steel

Simple Cleaning

**IMPORTANT**
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. Frequently, warm water, with or without detergent, is sufficient. 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.

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

Disinfection

The purpose of disinfection is to destroy particular organisms that could pose a potential hazard to humans or compromise the integrity of the experiment. It is important to 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.

**IMPORTANT**
Rinsing in sterile hot water and wiping the surface completely dry should always follow disinfection and cleaning.

Disinfect the work surface before and after every procedure.

1. Disinfect surfaces of all equipment used.
2. Remove all items from the inside of the cabinet.
3. Place all items that may have come in contact with the agent(s), such as used pipettes, in a plastic bag or other suitable container.
4. Disinfect the entire inside surface of the cabinet.


Using Ancillary Equipment

The rule to keep in mind is that the more equipment placed in the cabinet, the greater will be the air turbulence it causes. The turbulence resulting from equipment and materials can disrupt the designed airflow and reduce the effectiveness of the cabinet. When you use equipment which rotates, vibrates or heats, be sure to place it at the rear of the work area if possible. This will help minimize the turbulence at the access opening.
About the HEPA Filters

The High Efficiency Particulate Air (HEPA) filter is one of the essential components of a clean air cabinet. It is the shield, which stands between the product and the environment.

The HEPA filter consists of a continuous sheet of glass fibers pleated and mounted in a rigid frame. It is very delicate and the filter media should never be touched.

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. (Contact The Baker Company for more information).

It must be pointed out that the HEPA filter is not intended to filter gasses or vapors, nor are they 100% efficient on particulates.

The room and cabinet particulate levels along with the capacity of the building exhaust fan determines the life of a filter. Under most laboratory conditions, you should expect a long filter life. However, misuse or a heavy particulate load within the cabinet will shorten any filter's life.
IV - ONSITE CHECKS AND MAINTENANCE PROCEDURES

We recommend that the following checks be performed before initial use, after relocation, and after each filter change. They should also be carried out at regular intervals, usually six months or one year, as specified by an industrial hygienist, safety officer or other qualified person. The tests described below meet recommended minimum requirements and only experienced technicians using proper procedures and instruments must perform them. Our representatives can tell you about other tests, which you may consider desirable.

As reported earlier in this manual, each individual cabinet made by The Baker Company is carefully tested before it leaves the factory. Your copy of the test report, which you will find at the back of this manual, gives the factory test results for your own SterilGARD®III cabinet. Use it as your record of the original testing, and as your guide to testing in the future. To gain many years of satisfactory service, please be sure that your maintenance personnel come as close as possible to duplicating these original test figures.

Your test procedures should be identical to ours so that achieving similar test results and comparison of data will be possible. Please correspond directly with us to request detailed procedures for your particular cabinet model. Alternate testing procedures can be found in the NSF International Standard No. 49.

The Airflow Balance

WARNING
Only qualified technicians should perform this procedure.

The airflow balance, which is set at the factory, provides your cabinet with the proper air volume and velocity control to minimize leakage of airborne contamination either into or out of the work area.

In order to duplicate as closely as possible the airflow characteristics described in the original factory test report, please follow these steps:

1. Adjust the window to its designed opening height.

2. Perform inflow velocity test per NSF 49. Specific details are on the cabinet instruction label and in the factory test report.

3. Perform down flow velocity test per NSF 49. Specific details are on the cabinet instruction label and in the factory test report. **NOTE: The IV bar and UV light bulb need to be removed while performing down flow readings.**

4. Compare your results with those originally recorded at the factory.

5. Make adjustments to the cabinet blower speed controller and balancing damper as necessary. The blower speed controller is located inside the light canopy on the left side. The cabinet balancing damper control is located on the top left of the cabinet. To adjust the blower speed, turn the controller screw clockwise / counterclockwise to increase / decrease. To adjust the balancing damper, use a wrench or screwdriver to turn the control clockwise / counterclockwise to open / close. [Reference Chart# 1: “Type A2 Air Balancing Guidelines” on next page.]
As the HEPA filters load up with particulates, airflow air will be maintained automatically, at least until the down flow filter resistance increases 60%. When airflow air eventually diminishes, you will have to increase the blower speed in order to maintain the original volume of total airflow. If the airflow cannot be maintained, it will be necessary to replace the HEPA filters. (See "Procedure for HEPA Filter Replacement" later in this section).

Filter Leak & Smoke Testing

The filters in your cabinet were tested at our factory before shipment to ensure that the media, gasket, and frame were not exceeding NSF International Standard 49 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. The filters should also be leak tested at prescribed intervals as specified by an industrial hygienist, safety officer or other qualified person. NSF International details the steps for performing the filter leak test in their Standard 49.

Filter leak test procedure – Down flow filter

1. Turn on cabinet blower.
2. Raise the viewscreen to the full open position.
3. Remove diffuser under down flow filter to access filter media and frame by removing two cap nuts at the front, lowering the front and sliding the diffuser forward off rear wall mounting studs.
4. The port for measuring upstream concentration is located on the top rear left hand side of the cabinet.

   **WARNING**

   If the cabinet has been in use then it must be decontaminated before removing the plug.

5. Introduce the aerosol challenge to the cabinet blower at the front work surface perforation.
6. Perform filter leak test per NSF 49.
7. Repair any discovered leaks.
Filter leak test procedure – Exhaust filter

1. Turn on cabinet blower.

2. If the cabinet has a CEC or HEC, remove the access panel for leak scanning the exhaust filter. If the cabinet is exhausting to the room, remove the exhaust filter protector.

3. The port for measuring upstream concentration is located on the top rear left hand side of the cabinet.

   **WARNING**
   
   If the cabinet has been in use then it must be decontaminated before removing the plug.

4. Introduce the aerosol challenge to the cabinet blower at the front work surface perforation.

5. Perform filter leak test per NSF 49.

6. Repair any discovered leaks.

Airflow smoke pattern test

We recommend that qualified technicians verify the direction of airflow within your cabinet before the cabinet is used. The direction of airflow should also be verified at prescribed intervals as specified by an industrial hygienist, safety officer or other qualified person. NSF International details the steps for performing the airflow smoke pattern test in their Standard 49.

Maintenance Notes

Cleaning the Work Area

Spills that fall through the perforated grilles can be removed through the drain valve after proper decontamination. To wash the drain pan under the work surface, lift up, surface decontaminate and remove the solid work surface and work surface supports. This provides unobstructed access to the drain pan for easy cleaning. Remember that this area must be assumed to have contamination, so use caution in the way you approach the task. Make sure you close the drain valve when you are finished cleaning the drain pan.

Ultraviolet Germicidal Lamp (Optional)

As reported in other sections of this manual, 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 x 10^{-9} meters.

If your cabinet has a germicidal lamp, frequently measure its intensity at the geometric center of the work surface with an ultraviolet light meter. The visual appearance does not indicate UV effectiveness.

Checking the Magnehelic Gauge or Optional Air Flow Monitor (AFM)

Changes in areas surrounding the laboratory may produce unexpected dust or other conditions that affect the filters. To maintain filter integrity and good cabinet operation, check the Magnehelic Gauge and AFM periodically.
Replacing the HEPA Filters

When the certifier can no longer set the cabinet air flows to within ±5% FPM of the nominal set point by adjusting the speed control and/or balancing damper then it may mean the filters are loaded with particles and must be replaced. If the filters are damaged, they will also need to be replaced.

Before any seal panels are removed, the cabinet should be decontaminated. The filters are sure to have collected microorganisms and other potentially harmful particles generated in the work area during their lifetime, and maintenance personnel should not allow themselves to be exposed. It should also be remembered that a specific gaseous decontamination might work against microorganisms, but not against chemical agents. Where chemicals are present, consult an industrial hygienist or other qualified person.

A chemically contaminated filter must be handled with caution. Clothing and/or breathing apparatus should be used to protect personnel as necessary to reduce the hazard. It is advisable to seal the contaminated side of the filter by taping a plastic sheet or cardboard over the face before removal. This should minimize the number of particles shaken loose from the filter. Once removed, the filter should immediately be sealed in a chemical hazard bag and then disposed of safely in accordance with environmental regulations.

After filter replacement has been completed, the cabinet and the room should be cleaned and decontaminated in a manner consistent with the nature of the hazardous material. The cleaning materials, along with the protective gear and clothing should be properly disposed.

HEPA filters are very easily damaged, and you will want to use great care in handling so as to avoid injury to the filter media and gasket surfaces. When installing the new filters, it is a good idea to tape a piece of cardboard over the filter media to give protection against dropped wrenches or misdirected fingers. Of course, you’ll need to make sure that the cardboard is removed before the access panels are re-installed. Inspect the filters carefully before and after installation. A broken or damaged filter is worthless.

For detailed instructions on changing the filters, see the following two sections.
Accessing the down flow and exhaust filters

**WARNING**
Only qualified technicians should perform this procedure. Decontaminate the cabinet before changing the filters.

1. Decontaminate the cabinet and disconnect power.
2. Close the viewscreen.
3. Pull the bottom edge of the vertical dress panel out away from the cabinet. Hinge the dress panel standoff down and lower the vertical panel on it. Unplug tygon tube from the back of the magnehelic gauge. Firmly grip the bottom edge of the vertical dress panel with both hands, slide the panel to the right and lift the panel off the cabinet.
4. Remove the light canopy locking fasteners inside the sloped dress panel and lower the canopy. Make sure the canopy support cables on each end are secured.
5. Remove the two screws at the top and loosen the two lower lock nuts holding the sloped dress panel. Lift the panel off the cabinet.
6. Loosen the four lock nuts holding the electrical mounting board and carefully lift the board off. Lay it face down inside the light canopy. (No electrical connections should need to be disconnected)
7. Loosen each of eight (10) 3/8” hex head bolts holding the front access panel. Be careful not to damage or loose the seal washer on each bolt when removing them. Remove the access panel. Be careful not to damage the panel gasket.
8. You now have direct access to change the down flow and exhaust filters.
Changing the down flow filter

1. Loosen the two (2) ½” hex head down flow plenum clamping bolts located on either side of the down flow plenum, alternating two or three revolutions at a time until the plenum is raised about ¼” [6.4mm]. This will allow the down flow filter to slide out the front towards you. If the filter gasket sticks to the cabinet, use a putty knife to break it free.

2. Slide the filter out the front towards you. Be careful not to contact the filter media.

**WARNING**

Once removed, the filter should immediately be sealed in a chemical hazard bag appropriately marked for the type of hazard and then disposed of safely in accordance with environmental regulations.

If you also need to change the exhaust filter, go directly to “Changing the exhaust filter” steps now.

3. Slide the new down flow filter all the way in until it stops against the rear filter stop, gasket side facing down. Be careful not to contact the filter media with your fingers. Position the filter so its frame is aligned with the cabinet frame.

4. Tighten the two (2) ½” hex head down flow plenum clamping bolts, alternating two or three revolutions at a time until the filter gasket is compressed approximately 1/8” [3.2mm].

5. Reassemble the cabinet following the previous instructions in reverse order.

**IMPORTANT**

When reinstalling the front seal panel, first tighten each ¼-20 hex cap screw until the bolt seal washer is engaged with the panel. **Next turn each bolt 1 ¼ to 2 ½ revolutions until the panel gasket is evenly compressed approximately half way. Do not over tighten. Use caution if using a power driven tool.**

6. Reconnect power.

7. Check the filter and gasket for leaks.

Changing the exhaust filter

If only the exhaust filter is to be replaced, the down flow plenum clamping bolts (lower) should be loosened four or more revolutions before loosing the exhaust plenum clamp bolts (upper).

1. Loosen the two (2) ½” hex head exhaust plenum clamping bolts located on either side of the exhaust plenum, alternating two or three revolutions at a time. This will lower the plenum and allow the exhaust filter to drop down and slide out towards you. If the filter gasket sticks to the cabinet, use a putty knife to break it free.

2. Slide the filter out towards you, making sure not to contact the filter media.

**WARNING**

Once removed, the filter should immediately be sealed in a chemical hazard bag appropriately marked for the type of hazard and then disposed of safely in accordance with environmental regulations.
3. Slide the new exhaust filter in all the way in until it stops against the rear filter stop. Be careful not to contact the filter media with your fingers. Align the filter frame, left to right, so it is positioned directly over the exhaust plenum.

4. Tighten the two (2) ½” hex head exhaust plenum clamping bolts, alternating two or three revolutions at a time until the filter gasket is compressed approximately 1/8” [3.2mm].

5. Tighten the two (2) ½” hex head down flow plenum clamping bolts, alternating two or three revolutions at a time until the filter gasket is compressed approximately 1/8” [3.2mm].

6. Reassemble the cabinet following the previous instructions in reverse order.

**IMPORTANT**

When reinstalling the front seal panel, first tighten each ¼-20 hex cap screw until the bolt seal washer is engaged with the panel. **Next turn each bolt ¼ to 2 ½ revolutions until the panel gasket is evenly compressed approximately half way. Do not over tighten. Use caution if using a power driven tool.**

7. Reconnect power.

8. Check the filter and gasket for leaks.
Troubleshooting

Here are some suggestions based on our experience with the use and misuse of biological safety cabinets.

When a smoke test indicates that there is air flowing from the interior of your cabinet into the surrounding room-
1. Make sure that the building exhaust connection is operating at the proper static pressure and exhaust flow.
2. Verify that cabinet down flow is within specification.
3. Check to see if anything is blocking part of the intake or rear wall perforated.
4. Check for room cross drafts caused by vents, open windows, and high traffic through doorways. Eliminate the source of the cross draft.
5. The exhaust filter maybe loaded with particulate if the cabinet has been in service for some time. Decontaminate the cabinet and replace the filter.

When there is low down flow 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. You may be able to compensate by adjusting the blower speed control clockwise until proper velocity is reached. The control is located inside the light canopy on the left side.
2. The filters maybe loaded with particulate if the cabinet has been in service for some time. If the blower speed control is turned up to maximum voltage and the airflow is still low, decontaminate the cabinet and replace the filters.

If there is no down flow within the work area-
1. Make sure the cabinet is plugged in and the blower switch is turned on. The Green indicator below the button should be lighted.
2. Check the wiring connections between the electrical panel and the cabinet to see if they are connected properly.
3. See if the light is working. If it is, then turn the blower switch off and let the cabinet set for ten minutes. This allows the motor time to reset itself, if it had overheated. NOTE: If the motor restarts and there is a whining sound, the motor bearing maybe causing the motor to overheat.
4. If these solutions do not correct the problem, or if the blower failed to start after the rest period, then the speed control, blower motor, or capacitor is defective. A qualified electrician, using the wiring diagram in the Appendix of this manual, can by-pass the speed control to determine if it is defective.

If one (or both) of the electrical outlets does not function-
1. Make sure the outlet switch is in the on position. The Blue indicator below the button should be lighted.
2. Check the reset button on the Ground Fault Circuit Interrupter outlet. If the GFCI has tripped out, press the reset button. The outlets are also protected by a self-resetting thermal circuit breaker. A qualified electrician, using the wiring diagram in the Appendix of this manual, can check this breaker.
If the Ultraviolet (UV) Light doesn’t work-
1. Make sure the window is completely closed.
2. The Yellow indicator below the switch should be On and the Fluorescent Light should turn Off automatically.
3. Check for proper installation of the bulb in the lamp sockets.
4. Inspect the UV bulb; replace if necessary.
5. Have a qualified electrician check the power supply to the UV Lamp ballast.
6. If none of the above corrects the problem, the ballast may need replacing.

When there is uneven fan operation, or noise from the motor/blower assembly-
1. Open the electrical panel and check the multi-pin connectors to be sure they are securely engaged.
2. Check the speed controller for proper input power and output voltage consistent with the Test Report.
3. Remove the blower access panel and inspect the blower wheel for contact with the blower housing. CAUTION: It maybe necessary to decontaminate the cabinet before removing the panel.
4. Check the blower for loose objects.

When the Viewscreen Sash Alarm is sounding-
NOTE: The indicator below the alarm-reset button will flash.
1. Make sure the window is at the correct position. The alarm should be silent when the window is at the proper design opening or fully closed. You can silence the audible alarm for five (5) minutes by pressing the Alarm-Mute button. The indicator will continue to flash until the window is set in the correct position. After five (5) minutes, the alarm will sound again. You may press the Alarm-Mute button again.
2. Open the electrical panel and check to see if the proximity sensor cables are connected.

If the Fluorescent Light doesn’t work-
1. The blower switch should be turned on, and the Blue indicator below the Fluorescent Light switch should be lit.
2. Open the electrical panel and check that the bulb is properly installed in the lamp sockets. If the lamp flickers and can be corrected by vigorous rubbing of the bulb, there is probably an improper ground.
3. Have a qualified electrician check the wiring and ballast for continuity. The wiring can be traced to the source of a break. If none of the above corrects the problem, the ballast may need replacing.

If the magnehelic gauge has high or low readings-
NOTE: Always check for correct airflow balance first.
A higher reading than what was originally recorded on the cabinets test report could be an indication of the following:
1. Blocked or partially obstructed work surface perforation (front and/or rear).
2. Towels or wipes are blocked the towel guards in the drain pan area.
3. The viewscreen is in the closed position and the in-house exhaust fan is still pulling air through the cabinet.
4. Incorrect airflow balancing.
A lower reading than what was originally recorded on the cabinets test report could be an indication of the following:

1. Blocked or partially obstructed filters.
2. Work surface has been removed.
3. Incorrect airflow balancing.
V – DISASSEMBLY INSTRUCTIONS

**Tools Required:** 3/8” Spin wrench | 1/4” Spin wrench | 3/4” Wrench | Cordless drill with 3/8” Socket

1. Unplug cabinet from power source. Lower viewscreen.
2. Removal of the vertical dress panel:
   A. Pull the bottom edge of the vertical dress panel out away from the cabinet. Hinge the dress panel standoff down and lower the vertical panel on it.
   B. Unplug tygon tubing from the magnehelic gauge.
   C. Firmly grip the bottom edge of the vertical dress panel with both hands, slide the panel to the right and lift the panel off the cabinet.
3. Removal of the light canopy:
   A. Remove the light canopy fasteners inside the sloped dress panel and lower the canopy.
   B. Unplug the wires going from the light canopy to the electrical mounting board.
   C. Disconnect the canopy support cables from the electrical mounting board.
   D. Lift the canopy off the cabinet.
4. Removal of the sloped dress panel:
   A. Remove the two screws at the top and loosen the lower lock nuts holding the sloped dress panel.
   B. Lift the panel off the cabinet.
5. Removal of the electrical mounting board:
   A. Loosen the four lock nuts holding the electrical mounting board.
   B. Disconnect the power cord assembly at the top of the cabinet that goes up from the electrical mounting board.
   C. Disconnect plug on the left side.
   D. Carefully lift the electrical mounting board with the power cord assembly attached off the cabinet. Store in a safe place.
6. Removal of sliding viewscreen:
   A. Lift the viewscreen up to its maximum height.
   B. Place #8-32x 3/4” long truss head screw in tapped hole at top of sash brackets under each viewscreen cable tab. Leave the screws out approximately 3/8” to 1/2”. This will support the viewscreen while the cables are being disconnected.
   C. Remove the #8-32 hex head screw that holds the cable to the viewscreen cable tab. Repeat the process for other side of the viewscreen.
   D. Carefully lift the viewscreen up and out of the lower viewscreen tracks. This should be done with two people.
7. Remove lower left and right hand viewscreen tracks.
8. Remove armrest, work surface, and work surface supports.
9. Removal of the front access panel:
   A. Remove the ten (10) hex head screws with seal washers holding the panel to the cabinet. Remove the center top bolt last.
   B. Lift the panel off the cabinet, being careful not to damage the panel gasket.
10. Removal of the side panels:
    A. Remove the ¾” brass nuts from each plumbing connection.
    B. Remove the hex head screws with seal washers [7 per side]. Disconnect any wiring in the left side panel. Remove panels, being careful not to damage the panel gaskets.
11. See “Replacing the HEPA Filters” for instructions on how to remove the filters.
12. Removal of the blower assembly:
    A. Remove (1) ¼” hex head screw that holds the assembly to the positive pressure plenum.
    B. Disconnect the motor wiring and slide the blower assembly out toward you.
13. Remove the positive pressure plenum assembly by loosening the bolts on the inside of the exhaust plenum enough to allow the clamping hardware to angle out away from the slotted retaining brackets.

Use these instructions in reverse order to reassemble the cabinet.
Appendix
**Replacement Parts List:**

<table>
<thead>
<tr>
<th>Electrical Items</th>
<th>SG403A</th>
<th>SG603A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorescent lamp</td>
<td>17927</td>
<td>17927</td>
</tr>
<tr>
<td>Ultraviolet lamp</td>
<td>18024</td>
<td>18025</td>
</tr>
<tr>
<td>Fluorescent lamp holders</td>
<td>34465</td>
<td>34465</td>
</tr>
<tr>
<td>Ultraviolet lamp holders – plunger end / fixed end</td>
<td>20281 / 20283</td>
<td>20281 / 20283</td>
</tr>
<tr>
<td>Fluorescent ballast</td>
<td>34160</td>
<td>40457</td>
</tr>
<tr>
<td>Ultraviolet ballast</td>
<td>40899</td>
<td>40899</td>
</tr>
<tr>
<td>Stedivolt speed control</td>
<td>39658</td>
<td>39658</td>
</tr>
<tr>
<td>Transformer</td>
<td>34327</td>
<td>34327</td>
</tr>
<tr>
<td>Relay, solid state</td>
<td>1855167</td>
<td>1855167</td>
</tr>
<tr>
<td>Terminal block</td>
<td>40450</td>
<td>40450</td>
</tr>
<tr>
<td>Proximity switch – Fixed wire / Quick disconnect</td>
<td>40647 / 40671</td>
<td>40647 / 40671</td>
</tr>
<tr>
<td>Right Angle Micro Cable</td>
<td>40672</td>
<td>40672</td>
</tr>
<tr>
<td>Membrane Switch Controller (MSC) board</td>
<td>40702</td>
<td>40702</td>
</tr>
<tr>
<td>Membrane switch / Overlay</td>
<td>42301</td>
<td>42301</td>
</tr>
<tr>
<td>Plug / Power cord, NEMA 5-20P</td>
<td>32897</td>
<td>32897</td>
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<tr>
<td>Circuit breaker [Main]</td>
<td>40449</td>
<td>40449</td>
</tr>
<tr>
<td>Self-resetting breaker [Outlets]</td>
<td>34331</td>
<td>34340</td>
</tr>
<tr>
<td>Ground fault interrupter outlet with indicator light</td>
<td>34921</td>
<td>34921</td>
</tr>
<tr>
<td>Receptacle, duplex</td>
<td>18231</td>
<td>18231</td>
</tr>
<tr>
<td>Motor, Baldor</td>
<td>40931</td>
<td>40814</td>
</tr>
<tr>
<td>Capacitor</td>
<td>11558</td>
<td>40816</td>
</tr>
<tr>
<td>Mag Gauge</td>
<td>20773</td>
<td>20773</td>
</tr>
<tr>
<td>Mechanical Items</td>
<td>SG403A</td>
<td>SG603A</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Down flow HEPA filter</td>
<td>40141</td>
<td>40142</td>
</tr>
<tr>
<td>Exhaust HEPA filter</td>
<td>40661</td>
<td>40662</td>
</tr>
<tr>
<td>Blower</td>
<td>11429</td>
<td>11418</td>
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<tr>
<td>Armrest pad</td>
<td>40481</td>
<td>40482</td>
</tr>
<tr>
<td>Work surface</td>
<td>333X104</td>
<td>336X106</td>
</tr>
<tr>
<td>Work surface support</td>
<td>333P706</td>
<td>333P706</td>
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<tr>
<td>Down flow diffuser</td>
<td>333P709</td>
<td>336P709</td>
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<tr>
<td>Viewscreen assembly</td>
<td>333A310</td>
<td>336A310</td>
</tr>
<tr>
<td>Viewscreen frame assembly</td>
<td>333A311</td>
<td>336A311</td>
</tr>
<tr>
<td>Viewscreen track, right hand</td>
<td>333A303</td>
<td>333A303</td>
</tr>
<tr>
<td>Viewscreen track, left hand</td>
<td>333A304</td>
<td>333A304</td>
</tr>
<tr>
<td>Front Panel</td>
<td>333X604</td>
<td>336X604</td>
</tr>
<tr>
<td>Sash Balance</td>
<td>38014</td>
<td>38172/38173</td>
</tr>
<tr>
<td>Side Panel, LH (POBM)</td>
<td>333X650</td>
<td>333X650</td>
</tr>
<tr>
<td>Side Panel, RH (POBM)</td>
<td>333X651</td>
<td>333X651</td>
</tr>
</tbody>
</table>
Cable Port Illustration

- Cable Port Gasket
  - Part#: 41126

- Cable Port Ring
  - Part#: 190P728

- 4x #8-32 x 5/16" Weld Stud with Hex Nut / Lock Washer / Flat Washer
  - Part#: 10758 / 10553 / 11307 / 11279

- Work Surface

- Removable Cable Hook
  - Part#: 191P706
  - NCB-D4 / QTY-6
  - NCB-D6 / QTY-8

- Removable Inner Wall Panel
  - Part#: 191P629

- Interior Wall

- Cable Port Gasket
  - Part#: 41126

- Cable Port Plug Assembly
  - Part#: 191P705

- Cable Port Ring
  - Part#: 190P726

- 4x #8-32 x 5/16" Weld Stud with Hex Nut / Lock Washer / Flat Washer
  - Part#: 10758 / 10553 / 11307 / 11279

- Exterior Seal Panel

- Removable Inner Wall Panel
  - NCB-D4 / Part#: 191P629
  - NCB-D6 / Part#: 191P629

- Non Flammable
  - 4 Ph. ACF
Interior View              Exterior View

[Cable port plug not shown]
Stand Assembly Leg Extension Procedure

The unit is shipped with the legs bolted in the shipping position. The unit has two work surface height settings per option:

- 30 1/8” [765mm] and 38 5/8” [981mm] - Adjustable Leg Leveler Option
- 30” [762mm] and 36” [914mm] - Caster Option

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

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjustable Leg Leveler or Caster Option</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>3/8”-16 x 1” Hex head bolt</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>3/8” Lock washer</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>3/8” Flat washer</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>7/16” Plug button</td>
<td>8</td>
</tr>
</tbody>
</table>
Getting the unit off the pallet

1) 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.

Installing the Adjustable Leg Leveler or Caster Option

3) Lift one end of the unit / stand assembly up a minimum of 7” [178mm] and block in position. See illustration below.

4) Screw in two of the Adjustable Leg Leveler or Castors (Item# 1). Screw in by hand as tight as you can then remove the blocking.
Only the Adjustable Leg Leveler is shown for clarity

5) If your unit was purchased with the **Caster Option** be sure to **chock the previously installed casters** *(to prevent cabinet movement)* then repeat steps 3 and 4 for the other end of the unit.

Raising the Unit to 30 1/8” [765mm] Work Surface Height - Adjustable Leg Leveler Option  
Raising the Unit to 30” [762mm] Work Surface Height - Caster Option

6) Lift one end of the unit up a minimum of 5” [127mm] 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.
9) Bolt the leg in position with items 2, 3, and 4. (Two bolts per leg)  
10) Repeat steps 7 through 9 for the other leg then remove the blocking.  
11) Repeat steps 6 through 10 for the other end of the unit.  
12) Plug open holes using item 5. (One per leg)  

Raising the Unit to the 38 5/8\" [981mm] Work Surface Height - Adjustable Leg Leveler Option  
Raising the Unit to the 36\" [914mm] Work Surface Height - Caster Option  

13) Lift one end of the unit up a minimum of 7\" [178mm] and block in position.  
14) Unscrew the bolts (Two per leg) that hold the legs in the current work surface height position.  
15) Slide the leg out of the stand until the holes line up at the next position.  
16) Bolt the leg in position with items 2, 3, and 4. (Two bolts per leg)  
17) Repeat steps 14 through 16 for the other leg then remove the blocking.  
18) Repeat steps 13 through 17 for the other end of the unit.  
19) Plug open holes using item 5.  
   (Two per leg Adjustable Leg Leveler Option - One per leg Caster Option)  

Turn in opposing directions for fine adjustment to aid in leveling of cabinet.
Channel Stand Installation or Removal Procedure

To install a stand, follow steps (1-7). To remove a stand, reverse steps (1-7)

1) First gather all stand components and attaching hardware. The stand parts consist of two sides and one back support. Hardware consist of (4) 1/4”x 1-1/4” bolts w/ 1/4" flat/lock washers and 1/4" hex nuts, (4) 3/8" x 1 bolts w/ 3/8" flat/lock washers, (8) chrome dots, (4) Adjustable leg levelers. Tools required are a 7/16” wrench or deep socket, 9/16” wrench or socket.

2) Place stand sides on the floor so that the stainless steel legs are setting on the floor. Next place the stand back support between the sides so that the open part of the channel is towards the floor. This can also be done by rotating the stand parts (360 degrees), to make attaching the hardware easier.

3) Using the 3/8 hardware, attach the sides and back support by inserting the bolts thru the (4) holes located in the support into the already installed rivnuts in the two sides. (2) bolts each side. Do not tighten any of these bolts until you have all (4) of them threaded in slightly. Tighten bolts after this is done.

4) With stand assembly complete, rotate stand so that the back of the sides are setting flat on the floor. Attach the leg levelers by screwing them into the bottom of the stainless steel legs in the sides of stand assembly. Position the stand assembly in the upright position so that the leg levelers are now resting on the floor. The stainless steel legs can be adjusted to your desired height requirement. This is done by removing and replacing the (2) 3/8"bolts in each leg. Unused rivnuts in the legs will be plugged with the (8) chrome dots. If the cabinet is not in its permanent location you may want to perform the leg adjustment after step 7.

5) Lift the cabinet high enough to allow clearance for the stand assembly to be positioned under it. Lifting is typically done from the front of the cabinet. The stand assembly is slid in from the back of the cabinet. If space constraints are an issue, the stand may have to be assembled under the cabinet after it has been lifted.

6) Once the stand is positioned under the cabinet, install (4) 1/4"x 1-1/4" bolts into the key way slots located under the cabinet in each of the (4) corners. The cabinet is now ready to be lowered onto the stand. There are (4) holes on the top of the stand which the 1/4"x1-1/4" bolts must be guided thru. Be careful not to let the bolts drag thru the holes while lowering as burrs may occur and cause cross threading. With the cabinet resting on top of the stand assembly, place (1) 1/4" flat / lock washer / hex nut onto each of the 1/4x1-1/4" bolts. Tighten after all (4) are threaded on.

7) Lift device should be removed if not being used to move cabinet into position. If lift device is mobile it may be used to maneuver cabinet into desired location. A blanket could also be placed under the leg levelers while sliding the unit to avoid scuffing the flooring.
Replacing Fluorescent and Ultraviolet Lamps

Fluorescent Lamp Replacement

1) Turn the fluorescent lamps off by depressing the light on/off switch locating on the right side of the light canopy.

2) Pull the vertical panel out enough at the bottom so that the thumbscrews can be accessed. (Fig. 1) Hinge the dress panel standoff (located on the left side of the sloped dress panel) down and lower the vertical panel on it. While removing the thumbscrews, support the light canopy with the other hand. Lower the canopy until the restraint cables hold it in place.

3) Disconnect the restraint cables from the face of the electrical mounting board at both ends of the light canopy. (Fig. 2) Gently hinge the canopy down until it rests on the front of the unit.
4) Remove *FLUOR-A-LOCK* tabs (2) from the lamp sockets located on the left side of the fluorescent lamps. (Fig. 3) Using both hands, grasp the lamp carefully near each end and rotate it approx ¼ turn until the lamp is no longer seated in the lamp sockets. Slide each end out of the sockets. Repeat the process for removing the second lamp and dispose of them properly.

5) Install new lamps by following step 4 in reverse order. Make sure that the locking disks are installed on one end of each lamp and that the *FLUOR-A-LOCK* tabs are inserted properly. (Fig. 3)

6) Hinge light canopy up temporarily and press the light on/off switch to verify that both lamps are working.

7) Lower canopy halfway and re-insert restraint cables on either end of electrical mounting board. Close the canopy and install the thumbscrews finger tight.

8) While lifting the vertical dress panel up slightly, hinge the dress panel standoff up against the sloped dress panel. Gently lower the vertical dress panel down until it rests against the cabinet.

**Ultraviolet Lamp Replacement**

As reported in other sections of this manual, UV germicidal lamps lose their effectiveness over time and should be replaced when the intensity at the work surface drops below 40 microwatts per square centimeter at a wavelength of 253.5 x 10^-9 meters.
IMPORTANT
Before replacing a UV germicidal lamp it might be necessary to check with an industrial hygienist, safety officer or other qualified person in the lab to make sure that there is nothing stored in the cabinet that could potentially be a hazard to you or could be contaminated by room air.

1) Raise the viewscreen to its maximum position. The audible alarm should activate and the indicator on the light canopy will flash. To mute this audible alarm while the UV lamp is being replaced, press the alarm reset button located on the light canopy. After five minutes the alarm will sound again and you may press the reset button if more time is needed for lamp replacement.

2) Using both hands, grasp the UV lamp carefully near each end and move it approximately ½” [13mm] to the right side of the cabinet until the UV lamp is released from the lamp socket on the left side. Carefully remove lamp from cabinet and dispose of it properly.

3) Install new lamp by following step 2 in reverse order. Making sure that the lamp is held securely in place.

4) Lower the viewscreen to full closed and turn on the UV light momentarily to verify that it comes on. Immediately turn the UV off again.

5) Raise the viewscreen to the proper sash opening height. This will cancel the audible alarm and flashing indicator light.
Installation of Exhaust Transition Systems for SterilGARD® III Cabinets

Tools required:
- 5/16 - Hex wrench and nut driver
- 11/32 - Hex wrench and nut driver
- 3/8 - Hex wrench and nut driver
- 7/16 - Hex wrench and nut driver
- 11/32 - Combination wrench

Unpacking the Transition:

1) Remove contents from the shipping packaging and examine for damage. *(Be careful not to damage the gasket on the bottom flange of the exhaust transition)*

2) Check the quantity of the components to the following packing lists and illustrations:

<table>
<thead>
<tr>
<th>Item #</th>
<th>Description</th>
<th>Qty SG403A</th>
<th>Qty SG 603A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exhaust transition</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Exhaust filter access cover (closed face)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>¼”-20 x ¾” Washer head bolt</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>¼” Seal washer</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>5*</td>
<td>¼”-20 x 1” Hex head bolt</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6*</td>
<td>¼” Flat washer</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7*</td>
<td>¼” Lock washer</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>8*</td>
<td>¼”-20 Double ended transition mounting bolt</td>
<td>2</td>
<td>2</td>
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<tr>
<td>9*</td>
<td>¼”-20 Hex nut</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10*</td>
<td>Exhaust transition mounting clip</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11*</td>
<td>Air tight damper assembly (ATD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12*</td>
<td>Short exhaust collar (Optional)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13*</td>
<td>#8-32 Cap nut</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>14*</td>
<td>#8 Flat washer</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>15*</td>
<td>#8 Lock washer</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>16</td>
<td>Exhaust transition gasket, ¼” x ½”</td>
<td>8.3 ft</td>
<td>10.3 ft</td>
</tr>
<tr>
<td>17</td>
<td>Access cover gasket, ¼” x ½”</td>
<td>6.2 ft</td>
<td>8.2 ft</td>
</tr>
<tr>
<td>18</td>
<td>Exhaust collar gasket, 1/8”</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Packing List for Hard Exhaust Connection (HEC)

* = Items shipped loose in the packaging.
<table>
<thead>
<tr>
<th>Item #</th>
<th>Description</th>
<th>Qty SG403A</th>
<th>Qty SG603A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exhaust transition</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Exhaust filter access cover (open face)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>¼”-20 x ¾” Washer head bolt</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>¼” Seal washer</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>5*</td>
<td>¼”-20 x 1” Hex head bolt</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6*</td>
<td>¼” Flat washer</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7*</td>
<td>¼” Lock washer</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>8*</td>
<td>¼” 20 Double ended transition mounting bolt</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>9*</td>
<td>¼”-20 Hex nut</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10*</td>
<td>Exhaust transition mounting clip</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11*</td>
<td>Air tight damper assembly (ATD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12*</td>
<td>Short exhaust collar (Optional)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13*</td>
<td>#8-32 Hex nut</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>14*</td>
<td>#8 Flat washer</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>15*</td>
<td>#8 Lock washer</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>Exhaust transition gasket, ¼” x ½”</td>
<td>8.3 ft</td>
<td>10.3 ft</td>
</tr>
<tr>
<td>17</td>
<td>Access cover gasket, ¼” x ½”</td>
<td>6.2 ft</td>
<td>8.3 ft</td>
</tr>
<tr>
<td>18</td>
<td>Decon Seal Box Assembly (Optional)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>#8-32 Hex Head Screw</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

**Packing List for Canopy Exhaust Connection (CEC)**

* = Items shipped loose in the packaging.
## EXHAUSTING REQUIREMENTS FOR HEC AND CEC

<table>
<thead>
<tr>
<th>Cabinet Model</th>
<th>Transition Model</th>
<th>Sash Height (Inches)</th>
<th>*Exhaust Flow Rate (cfm)</th>
<th>Pressure Loss (&quot; w.c.)</th>
<th>Added Height to Type A Cabinet with ET ATD / SHORT COLLAR (Inchs)</th>
<th>Exhaust Duct Diameter (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG403A</td>
<td>HEC403A</td>
<td>8 [203.2mm]</td>
<td>269 [127 L/sec]</td>
<td>0.06 [14.9 Pa]</td>
<td>11-1/2 / 5-5/16 [292 / 135mm]</td>
<td>10 [254mm]</td>
</tr>
<tr>
<td>SG403A</td>
<td>HEC403A</td>
<td>10 [254mm]</td>
<td>335 [158 L/sec]</td>
<td>0.08 [19.9 Pa]</td>
<td>11-1/2 / 5-5/16 [292 / 135mm]</td>
<td>10 [254mm]</td>
</tr>
<tr>
<td>SG603A</td>
<td>HEC603A</td>
<td>8 [203.2mm]</td>
<td>408 [193 L/sec]</td>
<td>0.10 [24.9 Pa]</td>
<td>11-1/2 / 5-5/16 [292 / 135mm]</td>
<td>10 [254mm]</td>
</tr>
<tr>
<td>SG603A</td>
<td>HEC603A</td>
<td>10 [254mm]</td>
<td>510 [241 L/sec]</td>
<td>0.15 [37.4 Pa]</td>
<td>11-1/2 / 5-5/16 [292 / 135mm]</td>
<td>10 [254mm]</td>
</tr>
</tbody>
</table>

**Exhaust requirements for Hard Exhaust Connection (HEC)**

* = All exhaust flow rates are based on a nominal 105 fpm [0.533 m/sec] intake velocity.
<table>
<thead>
<tr>
<th>Cabinet Model</th>
<th>Transition Model</th>
<th>Sash Height (Inches)</th>
<th>*Exhaust Flow Rate Min/Max (cfm)</th>
<th>Pressure Loss Min/Max (&quot; w.c.)</th>
<th>Pressure Loss with BSC Sealed for Decon. (&quot; w.c.)</th>
<th>**Intake Velocity (fpm)</th>
<th>Additional Heights (Inches)</th>
<th>Exhaust Duct Dia. (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG403A</td>
<td>CEC403A</td>
<td>8 [203.2mm]</td>
<td>322 / 520 [152 / 245 L/sec]</td>
<td>0.05 / 0.25 [12.4 / 62.3 Pa]</td>
<td>0.20 [49.8 Pa]</td>
<td>89 [0.452 m/sec]</td>
<td>10 [254mm]</td>
<td></td>
</tr>
<tr>
<td>SG403A</td>
<td>CEC403A</td>
<td>10 [254mm]</td>
<td>401 / 585 [189 / 276 L/sec]</td>
<td>0.08 / 0.30 [19.9 / 74.7 Pa]</td>
<td>0.30 [74.7 Pa]</td>
<td>82 [0.416 m/sec]</td>
<td>SAME AS ABOVE</td>
<td></td>
</tr>
<tr>
<td>S603A</td>
<td>CEC603A</td>
<td>8 [203.2mm]</td>
<td>490 / 754 [231 / 356 L/sec]</td>
<td>0.15 / 0.40 [37.4 / 99.6 Pa]</td>
<td>0.34 [84.7 Pa]</td>
<td>85 [0.432 m/sec]</td>
<td>SAME AS ABOVE</td>
<td></td>
</tr>
<tr>
<td>SG603A</td>
<td>CEC603A</td>
<td>10 [254mm]</td>
<td>613 / 914 [289 / 431 L/sec]</td>
<td>0.20 / 0.50 [49.8 / 124 Pa]</td>
<td>0.60 [149 Pa]</td>
<td>84 [0.427 m/sec]</td>
<td>SAME AS ABOVE</td>
<td></td>
</tr>
</tbody>
</table>

**Exhaust requirements for Canopy Exhaust Connection (CEC)**

* = All exhaust flow rates are based on a nominal 105 fpm [0.533 m/sec] intake velocity.

** = When building exhaust is off, cabinet running.

If the cabinet intake varies from the nominal 105 fpm [0.533 m/sec], adjust the building exhaust flow rate to a minimum of 20% over the intake airflow.

**INSTALLATION INSTRUCTIONS FOR HEC**

(Reference Figures 1 & 2)

**NOTE:** Cabinets shipped with exhaust transition assemblies already installed, proceed to step 7 to complete the installation.

1) Remove the exhaust filter protector assembly located over the exhaust filter opening by removing two (2) #8-32 locking nuts and washers. This assembly will no longer be required.

2) Remove the exhaust filter access panel [Item 2] from the front of the transition by removing four (4) bolts with seal washers. [Items 3 & 4 (Detail A)]

3) Remove two (2) top panel-mounting bolts located in front of the exhaust filter opening. Install two (2) ¼” double ended transition mounting bolts with seal washers. [Items 4 & 8] The longer end threads into the cabinet.
4) Place the exhaust transition over the exhaust filter opening. Align the two holes at each end of the transition with the ¼” female fasteners that are located at each side of the exhaust filter opening.

5) Install the transition mounting hardware [Items 5, 6&7 (Detail C)] along with transition mounting clip and hardware on the double ended mounting bolt. [Items 6, 7, 9 & 10 (Detail D)] Tighten all hardware until the transition gasket is compressed between 25 to 50 percent.

6) Reinstall the exhaust filter access cover. [Item 2 (Detail A)]

7) Attach the airtight damper assembly (ATD) [Item 11] or optional short collar [Item 12] along with gasket to the eight (8) studs located at the top of the transition using #8 hardware. [Items 13, 14 & 15 (Detail B)]

With the HEC installed and connected to the building exhaust system the cabinet should be certified by a qualified technician to assure proper cabinet performance.

INSTALLATION INSTRUCTIONS FOR CEC

(Reference Figures 1 and 3)

NOTE: Cabinets shipped with exhaust transition assemblies already installed, proceed to step 7 to complete the installation.

1) Remove the exhaust filter protector assembly located over the exhaust filter opening by removing two (2) #8-32 locking nuts and washers. This assembly will no longer be required.

2) Remove the exhaust filter access panel [Item 2] from the front of the transition by removing four (4) bolts with seal washers. [Items 3 & 4 (Detail A)]

3) Remove the two (2) top panel-mounting bolts located in front of the exhaust filter opening. Install two (2) ¼” double ended transition mounting bolts with seal washers. [Items 4 & 8] The longer end threads into the cabinet.

4) Place the exhaust transition over the exhaust filter opening. Align the two holes at each end of the transition with the ¼” female fasteners that are located at each side of the exhaust filter opening.

5) Install the transition mounting hardware [Items 5, 6&7 (Detail B)] along with transition mounting clip and hardware on the double ended mounting bolt. [Items 6, 7, 9 & 10 (Detail C)] Tighten all hardware until the transition gasket is compressed 25 to 50 percent.

6) Reinstall the exhaust filter access cover. [Item 2 (Detail A)]

7) If the Decon Seal Box (optional) was ordered for your cabinet, first remove the side panels by loosening the (4) hex head screws as shown in figure 3. Place the decon seal box on top of the exhaust transition so that all four weld studs are located properly. Install (1) one flat washer, (1) one
lock washer, and (1) one #8-32 nut provided, onto each weld stud and tighten accordingly. Re-install side covers onto seal box and tighten. Mount optional short collar [Item 12] and gasket to the eight (8) studs located at the top of the transition using #8 hardware. [Items 13, 14 & 15 (Detail B)]

With the CEC installed and connected to the building exhaust system the cabinet should be certified by a qualified technician to assure proper cabinet performance.

Figure 1: Type A2 cabinet – Exhausted to the room
Figure 2: Hard Exhaust Connection (HEC)
Figure 3: Canopy Exhaust Connection (CEC)
Airflow Monitor (AFM) Installation and Calibration: SterilGARD® III Exhausting to Room, HEC or CEC

Exhaust to Room

1) Remove all items from shipping container and identify the following: Contents should include Airgate with 1” [25.4mm] probe installed, Airflow Monitor (AFM) and Velcro Strip (If AFM was not factory installed).

2) Insert the 1” [25.4mm] long AFM probe into the shaft collar located on top of the airgate if not already complete. The probe has a long scratch mark on its side. Rotate the probe so the mark is positioned to the left side of the shaft collar as shown in Detail A. This will orientate the thermisters (glass beads) on the probe tip in a horizontal plane so it can properly sense the airflow. Fully insert the probe so the tip passes through the hole in the airgate approximately 3/32” [2.38mm]. Tighten the retaining collar set screw carefully. Do not over tighten. (Make sure not to rotate the probe while tightening).

3) Remove the #8-32 hardware already fastened to the two weldstuds on top of the cabinet.

4) Next grasp the Airgate and carefully lower it onto the top seal panel locating the keyhole contour onto the far left weld stud as shown in Figure 1. Once in place slide the Airgate to the far left until it stops. Route probe wiring behind front access panel and plug into AFM. Be sure to tie up extra probe cord length in order to prevent interference with viewscreen.

5) Next place the Exhaust Filter Protector on top of the unit locating the holes onto the two front weldstuds and replace #8-32 hardware and tighten.

Figure 1: AFM installed in cabinet venting to room
HEC and CEC Exhaust

1) Remove all items from shipping container and identify the following: Contents should include Airgate, Airflow Monitor (AFM) with 1” [25.4mm] probe, #8-32 locknut, Cardboard protector sheet, and Velcro Strip. (See Figure 2)

2) Insert the 1” [25.4mm] long AFM probe into the shaft collar located on top of the airgate. The probe has a long scratch mark on its side. Rotate the probe so the mark is positioned to the left side of the shaft collar as shown in Detail A. This will orientate the thermisters (glass beads) on the probe tip in a horizontal plane so it can sense the airflow passing through it properly. Fully insert the probe so the tip passes through the hole in the airgate approximately 3/32” [2.38mm]. Tighten the retaining collar set screw carefully. Do not over tighten. (Make sure not to rotate the probe while tightening).

3) Remove the exhaust transition access panel and place to one side. (See Figure 1). Carefully place the cardboard sheet provided on the filter face center. Grasp the airgate with your index finger inserted into the front opening as shown in Figure 3. Carefully insert the airgate through the front access opening. Once the airgate is completely inside exhaust transition turn the airgate to the left side of the transition and slowly lower it onto the top seal panel locating the keyhole contour onto the far left weld stud. Insert the #8-32 locknut provided leaving a 1/16 gap between the airgate flange and the lower portion of the nut. Once the Airgate has been installed carefully slide cardboard protector sheet to the right side of the exhaust filter and remove.

4) Run the probe wiring thru the slot located on the left side of the front access opening (Figure 3). Reinstall the access panel to exhaust transition.

5) If the AFM is not factory installed, attach the AFM box to the cabinet with Velcro material provided and plug its power supply in a wall outlet.

6) When scanning the exhaust filter for leaks during future certification, scan the right side of the exhaust filter first, then carefully slide airgate to the right and lift up over weld stud/locknut. There is no need to remove the locknut as long as it is loosened properly. Continue sliding to the right side of the unit in order to scan the remaining left side of the filter. Reverse directions after filter scanning is complete.

AFM Calibration Steps (Low Flow Alarm Condition)

1) Confirm that the cabinet and exhaust system airflow are at the proper set point.

2) For Hard Exhaust Connections (HEC), use the exhaust system damper to lower the exhaust flow until the intake velocity is 80 fpm [0.406 m/sec].

3) For Canopy Exhaust Connections (CEC) and Exhaust To Room, open the light canopy, locate the cabinet blower motor speed controller and record the voltage across terminals M1 & M2. Reduce voltage to lower the intake velocity to 80 fpm [0.406 m/sec].
Sash Opening (Inches) | Model | Intake airflow at 80 fpm [0.406 m/sec] (cfm)
---|---|---
8 [203.2mm] | SG403A | 205 [96.8 L/sec]
 | SG603A | 311 [147 L/sec]
10 [254mm] | SG403A | 256 [121 L/sec]
 | SG603A | 389 [184 L/sec]
12 [304.8mm] | SG403A | 306 [144 L/sec]
 | SG603A | 467 [220 L/sec]

Cabinet intake airflow values at 80 fpm [0.406 m/sec]

1) **Low Flow Alarm Set Point:** The ADJUST screw on the AFM box wants to be set so the yellow light will come on, then 6 seconds later the red light will turn on activating the audible alarm. (Make sure the slide switch for the audible alarm is in the ON position). Turning the alarm ADJUST screw clockwise will move the CFM alarm point up and counter clockwise will move the CFM alarm point down.

2) Return the exhaust system to its proper flow rate and recheck cabinet intake velocity for **HEC operation.**

3) Return the cabinet blower motor speed controller to its original voltage and recheck cabinet intake velocity for **CEC operation.**

**NOTE:** If an exhaust transition or cabinet damper adjustment is performed during a routine cabinet certification, the AFM alarm should be recalibrated using the steps above. *(For either the Exhaust to Room, CEC or HEC connection).*
Figure 2: Parts Included

- AirGate
- AFM w/Probe
- #8-32 Locknut
- Cardboard Protector
- Velcro Strip

- Slot for Probe Wiring
- #8-32 Locknut
- Exhaust Transition
- Detail B
- AirGate
- Remove Access Panel
NOTICE – O.S.H.A. Federal Regulation

The following in an excerpt from the O.S.H.A. Federal Register Page 22240 and Figure J-9.

*Biological hazard signs. The biological hazard warning shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals or combinations thereof, which contains, or are contaminated with, viable hazardous agents. For the purpose of this subparagraph the term “biological hazard”, or “biohazard,” shall include only those infectious agents presenting a risk or potential risk to the well-being of man. The biohazard symbol shall be designed and proportioned as illustrated in figure J-9.”

We have enclosed a sign featuring the Biohazard Symbol.

We recommend that you attach this sign to the unit in a prominent location if you plan to perform any work in the hood with agents that present a risk or potential risk to the well-being of man.
Warranty

The Baker Company, Inc. expressly represents and warrants all goods (a) to be as specified (and described) in The Baker Company catalogues and literature, and (b) to be free under normal use, service and testing (all as described in The Baker Company, Inc. catalogues and literature) from defects in material and workmanship from 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 parts or equipment which proved defective in material or workmanship. No claim may be made for any incidental or consequential damages.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED 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 GOODS

THE BAKER COMPANY

The Baker Company, Inc.
P.O. Drawer E
Sanford, Maine 04073
Tel: (207) 324-8773 / (800) 992-2537
Fax: (207) 324-3869
Email: bakerco@bakerco.com
www.bakerco.com

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