

THE BAKER COMPANY

"Creating immaculate atmospheres"

OPERATOR'S MANUAL

SterilGARD[®] e³

Class II, Biosafety Cabinet

MODELS

SG403A-HE, SG503A-HE, SG603A-HE

SG403A-HE-INT, SG503A-HE-INT SG603A-HE-INT



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

THE BAKER COMPANY

INTRODUCTION AND WELCOME

It is a pleasure to welcome you to the growing number of customers who own and operate Baker cabinets and gloveboxes. 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.

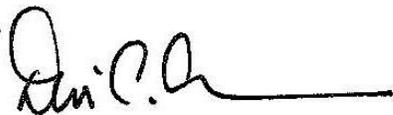
Your new SterilGARD[®] cabinet includes many unique features which are included to give you superior performance, simpler maintenance and lower life cycle cost. The SterilGARD[®] is a Class II, Type A2 biosafety cabinet that provides personnel, product, and environmental protection. All exterior cabinet seals are under negative pressure. The SterilGARD[®] 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[®] 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,



David Eagleson
President
The Baker Company, Inc.



Dennis Eagleson
CEO
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TABLE OF CONTENTS

I – FUNCTION & DESCRIPTION OF THE SterilGARD® e3	1
Airflow and Base Features	1
Figure 1, Airflow Inside Cabinet	1
Base Features	2
Cabinet Pressure Plenums	3
Design Details	3
Motor/blower capacity	3
Air balance adjustments	3
ReadySafe Mode	3
Tested HEPA filters	3
Easy filter access	3
One-piece interior wall construction	3
Front access high velocity air slots	4
Towel guard	4
All-metal plenums	4
Removable recessed stainless steel work surface	4
Drain pan	4
Viewscreen	4
Work area lighting	4
Electronic ballast	4
Sponge armrest pad	4
UniPressure plenum	4
Motor/Blower assembly	5
Cable ports	5
UV light (optional)	5
Adjustable cabinet height (optional)	5
Specifications	6
Weights	6
Electrical Specifications	7
Environmental Conditions	8
Symbols and Terminology	8
II - PREPARING THE SterilGARD® e³ FOR USE	9
Checking the Cabinet Upon Arrival	9
The Uses of a Biological Safety Cabinet	9
Installing the Cabinet	9
Location Within the Laboratory	10
Venting into the Room	10
Connecting the Exhaust for Ducting Outdoors	11
Final Connections and Tests	14
Auxiliary Wiring Options	15
Auxiliary Blower Switch Status Wiring Option	16
Auxiliary Cabinet Monitoring Wiring Option	17
III - PROPER CABINET USE	18
Operator Controls	18
Figure 2 Operator Controls	18
Programmable Delay Off Time Function	19
Alarm Conditions	20
Start-up Procedure	22
Working in the Cabinet	22
Reacting to Spills	23
Cable Ports	24
Ultraviolet Germicidal Lamp (Optional)	24

Recommended Decontamination Procedure (Formaldehyde)	25
Cleaning and Disinfecting Stainless Steel	31
Simple Cleaning	31
Disinfection	31
Using Ancillary Equipment	32
About the HEPA Filters	32
Check the HEPA Filters Regularly (Recommended on an annual basis)	32
IV - ONSITE CHECKS AND MAINTENANCE PROCEDURES	32
The Airflow Balance	33
Filter Leak & Smoke Testing	34
Filter leak test procedure – Downflow filter	34
Filter leak test procedure – Exhaust filter.....	35
Airflow smoke pattern test	35
Electrical safety tests	35
Maintenance Notes	36
Cleaning the Work Area.....	36
Ultraviolet Germicidal Lamp (Optional).....	36
Checking the magnehelic gauge or optional air flow monitor (AFM)	36
Replacing the Cabinet Filters	36
Accessing the down flow and exhaust filters	37
Changing the downflow filter.....	38
Changing the exhaust filter.....	39
Troubleshooting	41
V – DISASSEMBLY INSTRUCTIONS	44
Appendix	46
Replacement Parts List:	47
General Arrangement Drawings:	49
SG403A-HE (Base Unit):.....	49
SG403A-HE (With Channel Stand):	50
SG403A-HE (With Channel Stand & Casters):	51
SG403A-HE (With Hydraulic Lift):.....	52
SG403A-HE W/Canopy Exhaust Connection (With Channel Stand):.....	53
SG503A-HE (Base Unit):.....	54
SG503A-HE (With Channel Stand):	55
SG503A-HE (With Channel Stand & Casters):	56
SG503A-HE (With Hydraulic Lift):.....	57
SG503A-HE W/Canopy Exhaust Connection (With Channel Stand):.....	58
SG603A-HE (Base Unit):.....	59
SG603A-HE (With Channel Stand):	60
SG603A-HE (With Channel Stand & Casters):	61
SG603A-HE (With Hydraulic Lift):.....	62
SG603A-HE W/Canopy Exhaust Connection (With Channel Stand):.....	63
SG403A-HE-INT (With Channel Stand):	64
SG403A-HE-INT (With Channel Stand & Casters):	65
SG403A-HE-INT (With Hydraulic Lift):.....	66
SG603A-HE-INT (With Channel Stand):	67
SG603A-HE-INT (With Channel Stand & Casters):	68
SG603A-HE-INT (With Hydraulic Lift):.....	69
Cable Port Illustration	70
Cable Port Plug Installation Instructions (Right Side)	71
Ladder Schematic: SGX03A-HE: (KB MOTOR DRIVE)	73
Ladder Schematic: SGX03A-HE: (CONTROL RESOURCES MOTOR DRIVE)	75
Ladder Schematic: SGX03A-HE-INT	77
Standard Electrical Board Troubleshooting Guide	79

FlexAIR Wiring	80
Channel Stand Installation or Removal Procedure.....	81
Stand Assembly Leg Extension Procedure.....	84
Replacing Fluorescent Lamps	88
Ultraviolet Lamp Replacement	89
Installation of Exhaust Transition System for SterilGARD® e³ Cabinets	90
Exhausting Requirements for CEC:	91
Installation Instructions for CEC:.....	91
Installation Instructions for *FlexAIR Canopy Exhaust Connection (CEC).....	95
Operating Instructions for *FlexAIR Canopy Exhaust Connection (CEC).....	99
(This page intentionally left blank)	102
Airflow Monitor (AFM) Installation and Calibration: SterilGARD® Free Standing Vented to Room.....	103
Vented to Room.....	103
Installation & Calibration of Airflow Monitor (AFM) in Canopy Exhaust Connection	105
Motor Control Adjustment Detail.....	108
NOTICE – O.S.H.A. Federal Regulation.....	110
Warranty	111

I – FUNCTION & DESCRIPTION OF THE SterilGARD® e3

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 Figure1]

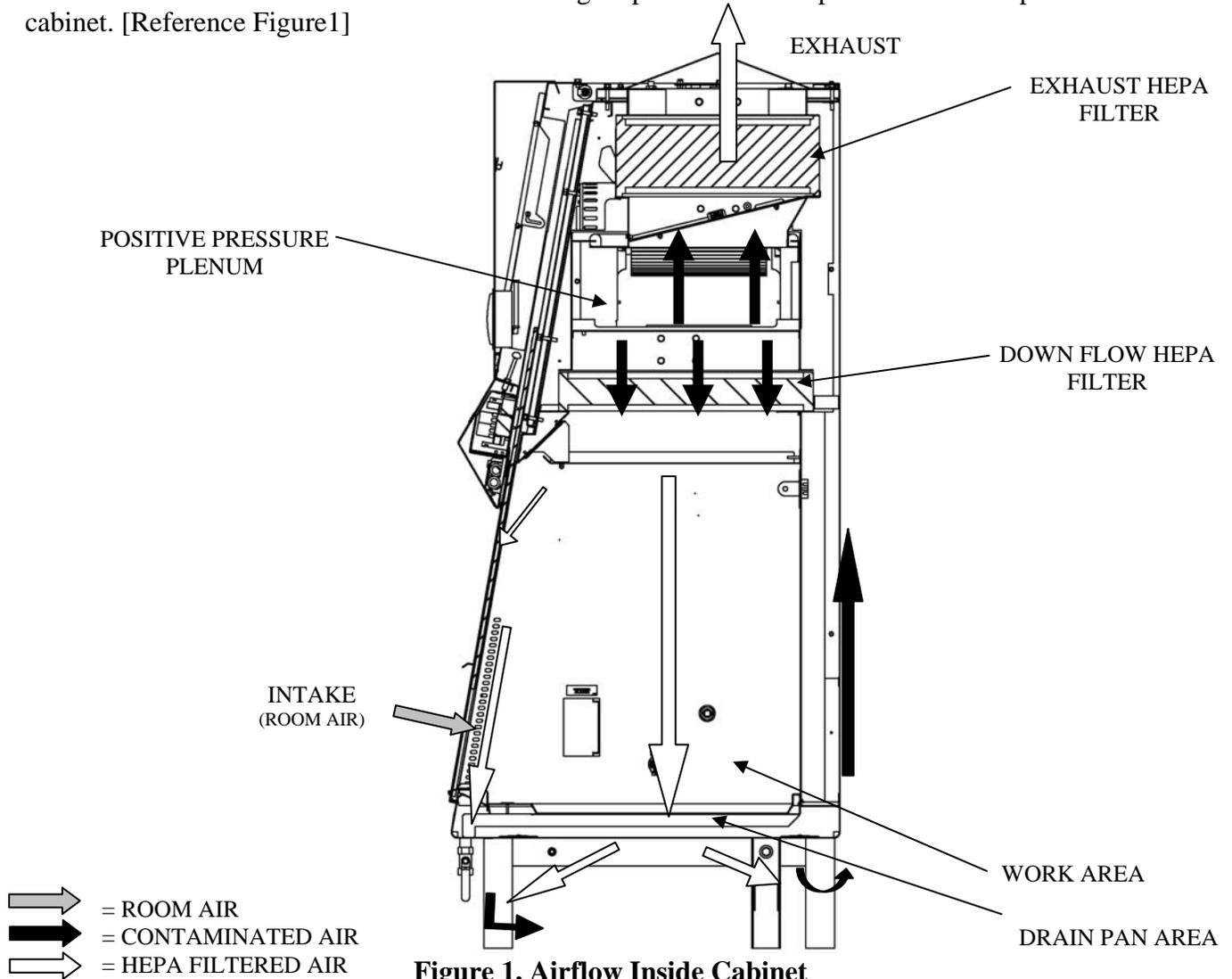
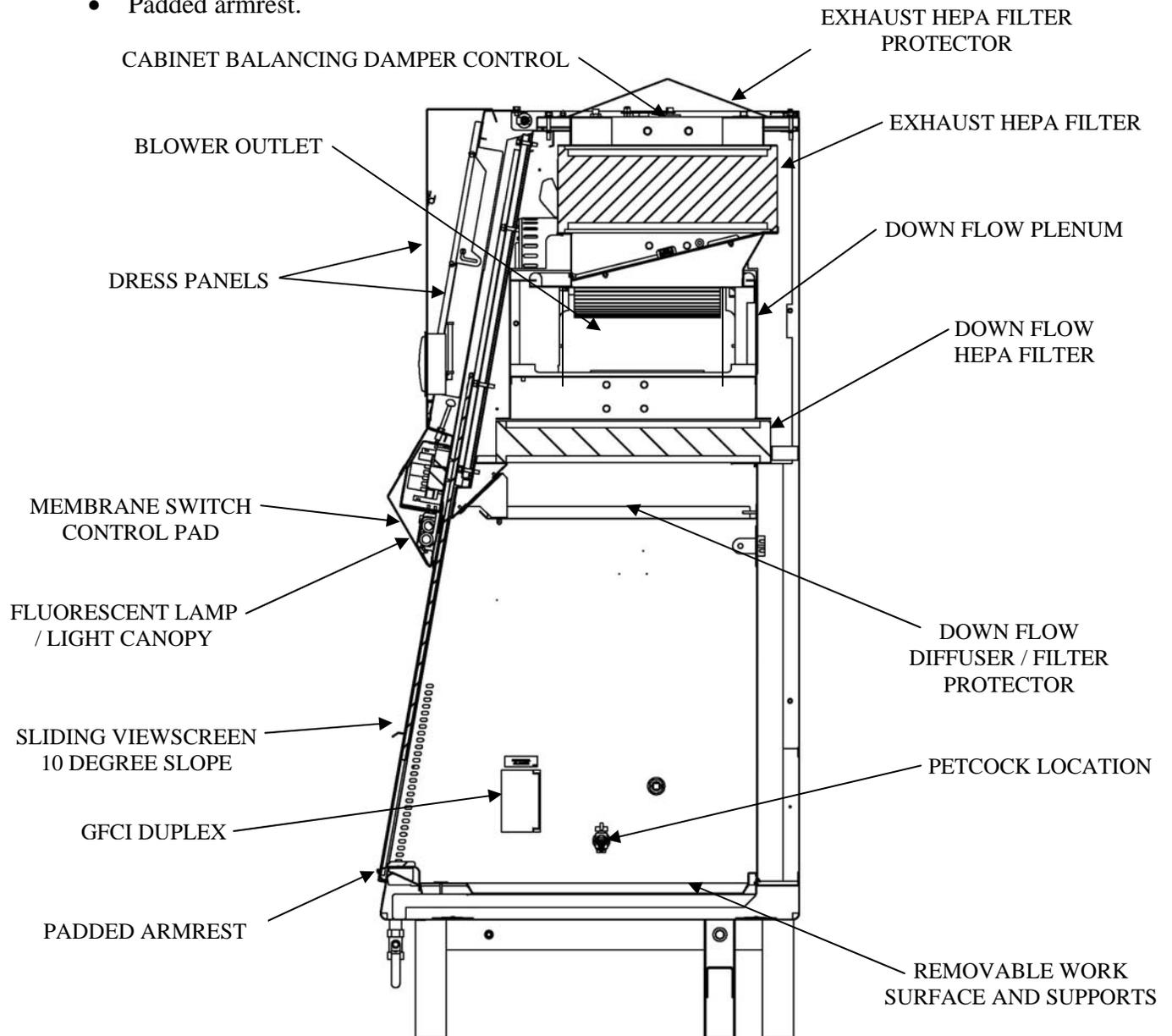


Figure 1, Airflow Inside Cabinet

Base Features

- Meets NSF 49 standard for Class II, 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.
- Down flow filter diffuser/protector.
- Membrane switch control pad.
- Auxiliary outlets (2).
- Fluorescent lamp.
- Petcock on left 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® cabinet is capable of automatically handling more than a 200% increase in pressure drop across the filter without reducing total air delivery more than 10%.

Air balance adjustments

Your new Baker cabinet has been built with a new motor controller that should not need adjustment in the field. If any motor/blower adjustments are thought to be needed please call 1-800-992-2537 and ask for technical support.

These cabinets have been built with an internal balancing damper that compensates for down flow and exhaust/intake imbalances. This damper may be adjusted only by a qualified technician who has had proper training and has the proper equipment.

ReadySafe Mode

The "ReadySafe Mode" is a feature that reduces the total airflow and energy consumption of the cabinet when it is not being used. Operation of the cabinet in "ReadySafe Mode" maintains personnel, product and environmental protection. The "ReadySafe Mode" is activated when the sash reaches its fully closed position and is indicated by reduced blower speed and the fluorescent lights automatically turning off. When the sash is returned to safe operating height the cabinet airflow will return to its original set point. The fluorescent light can then be turned on. In order for the ReadySafe feature to be enabled there must be a jumper installed on J23 of the control board. Further reference to connections on the control board can be found in the Auxiliary Wiring Options section of this manual (*Dwg 333E548 & 333E549*).

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. Only qualified technicians should 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 either carbon steel or 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 20" [508.0 mm] (without armrest) for placing of large items in the work area, and maybe fully closed for system shutdown or UV light operation. **Note: the armrest must be properly re-installed prior to working in the cabinet.**

Work area lighting

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

Electronic ballast

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

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

One cable port comes as a standard item on the right side wall, and one can also be added into the cabinet's left side wall as an option. 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 for use when the port is not being used or for when the cabinet is being decontaminated.

UV light (optional)

The SterilGARD® can be equipped with an ultraviolet (UV) light. The light is controlled by an on/off switch on the front panel. [See Figure 2 Operator Controls].

WARNING

- **Do not defeat interlock, UV light is hazardous!**
- **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.**

UV lamps lose their effectiveness over time and should be replaced when the intensity at the work surface drops below 40 microwatts per cm² at a wavelength of 253.5 x 10⁻⁹ meters. Be sure to check regularly.

Adjustable cabinet height (optional)

The channel stand 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.

Specifications

Weights:

Unit	Stand Options	Unit Weight W/ Stand	Weight W/Packaging
SterilGARD [®] e ³ SG403A-HE & SG403A-HE-INT	Channel Stand	668 Lbs. [303 kg]	798 Lbs. [362 kg]
	Channel Stand with Casters	675 Lbs. [306 kg]	805 Lbs. [365 kg]
	Hydraulic lift	816 Lbs. [370 kg]	946 Lbs. [429 kg]
SterilGARD [®] e ³ SG503A-HE	Channel Stand	756 Lbs. [343 kg]	906 Lbs. [411 kg]
	Channel Stand with Casters	763 Lbs. [364 kg]	913 Lbs. [414 kg]
	Hydraulic lift	909 Lbs. [412 kg]	1059 Lbs. [480 kg]
SterilGARD [®] e ³ SG603A-HE & SG603A-HE-INT	Channel Stand	830 Lbs. [376 kg]	1000 Lbs. [454 kg]
	Channel Stand with Casters	837 Lbs. [380 kg]	1007 Lbs. [457 kg]
	Hydraulic lift	988 Lbs. [448 kg]	1158 Lbs. [525 kg]

Electrical Specifications

All electrical wiring to the cabinet should comply with the national electrical code and any applicable local electrical codes at the site of installation.

A single dedicated circuit is required to power this cabinet. This circuit shall provide the protective earth ground for the cabinet.

The unit is furnished with one 14' power cord with an appropriate Listed/approved plug for the destination country.

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 two outlets. The outlet(s) on this circuit are protected by a self-resetting circuit breaker. The breaker allows 5A total on all outlets.

Cabinet Ratings: SGxxxA-HE

115V AC, 16A, 60Hz, single phase, dedicated circuit.

Typical current (less outlets) for SG403A-HE 4.0 – 6.0 Amps

Typical current (less outlets) for SG503A-HE 5.0 – 7.0 Amps

Typical current (less outlets) for SG603A-HE 5.0 – 8.0 Amps

(Note: Actual current values will vary depending on cabinet configuration.)

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

Cabinet Ratings: SGxxxA-HE-INT

220V AC, 13A, 50/60Hz, single phase, dedicated circuit.

Typical current (less outlets) for SG403A-HE-INT 2.0 – 3.0 Amps

Typical current (less outlets) for SG603A-HE-INT 4.0 – 5.0 Amps

(Note: Actual current values will vary depending on cabinet configuration.)

The motor/control circuit (less outlets) is protected by 6.3A, time delay fuses.

The cabinet may be provided with an optional lift that requires 2 Amps intermittent duty.

The lift duty cycle is 1 minute on, 9 minutes off.

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 41° F (5°C) to 104° F (40°C)
- Maximum relative humidity 80% for temperatures up to 88° F (31°C) decreasing linearly to 50% at 104° F (40°C)
- Main supply voltage: Rated voltage stated in cabinet ratings $\pm 10\%$ V AC
- Transient over voltage according to installation category (OVERVOLTAGE CATEGORIES) II per UL/IEC61010-1, 2nd Edition
- 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.



General Caution: Refer to instruction manual for information regarding personnel and environment protection.

II - PREPARING THE SterilGARD®e³ FOR USE

Checking the Cabinet Upon Arrival

Upon receipt of your new SterilGARD® 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.**

The Uses of a Biological Safety Cabinet

The SterilGARD® has been designed to provide a work area which protects the experiment from the environment, and the environment and operator from the experiment. The laminar flow biological safety cabinet is designed for work with Biosafety Levels 1, 2 and 3 (low to moderate risk) agents as listed in The Center for Disease Control's "Biosafety in Microbiological and Biomedical Laboratories" (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and National Institutes of Health, U.S. Government Printing Office, Washington, D.C. 20402. HHS publication number CDC 93-8395).

Biosafety level 4 or extremely high risk agents should never be used in this cabinet, except in conjunction with a one-piece positive pressure personnel suit ventilated by a life support system within a high containment facility. Please consult your safety professional for a proper risk assessment.

CAUTIONS

- * **The use of any hazardous material in the cabinet requires that it be monitored by an industrial hygienist, safety officer, or other qualified individual.**
- * **Explosive or flammable substances should never be used in the cabinet unless a qualified safety professional has evaluated the risk.**
- * **If hazardous biological work is to be performed, apply the enclosed biohazard decal. This is in accordance with OSHA regulations (volume 39, number 125, Part II).**
- * **If chemical, radiological or other non-microbiological hazards are present, be sure to employ appropriate protective measures. Call upon a suitably trained individual to monitor the operation.**

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 ensure 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. Remove the ¼-20 hex head screws that attach the weight box closure panel located on the right side of the cabinet. The counterweight is located inside the right side panel of the cabinet. Remove all tape, plastic wrap, and other packaging materials inside the panel. Remove two ¼-20 hex head shipping screws that hold the viewscreen counterweight from moving. The counterweight is located inside the right side panel of the cabinet. Verify that the view screen moves freely, and re-install the right side end panel.
5. Change out shipping hardware with ¼-20 thumb screws provided. A drawing showing the location of the shipping hardware on the cabinet is provided.
6. The cabinet drain valve, stand adjustable leg levelers and exhaust filter guard are shipped with the unit in a small cardboard box.
7. Install the drain valve to the threaded pipe nipple. The nipple is located on the left underside of the cabinet drain pan.
8. Be sure to remove the protective material covering the cabinet exhaust opening.
9. If the cabinet vents 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.
10. Follow the base stand assembly and adjustment instructions provided in the appendix of this manual to set the cabinet to the work surface height desired.
11. Position the cabinet in its desired location within the laboratory room.

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® 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.

Venting 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.

Cabinet Model	NSF Class II Type	Sash Height (Inches)	NSF Listed	*Air Vented into Room (Approximate) (CFM)
SG403A-HE & INT	A2	8" [203.2mm]	YES	285 [135 L/sec]
	A2	10" [254mm]	YES	355 [168 L/sec]
	A1	12" [304.8mm]	N/A	390 [184 L/sec]
SG503A-HE	A2	8" [203.2mm]	YES	355 [168 L/sec]
	N/A	N/A	N/A	N/A
	A2	12" [304.8mm]	YES	550 [260 L/sec]
SG603A-HE & INT	A2	8" [203.2mm]	YES	455 [215 L/sec]
	A2	10" [254mm]	YES	545 [257 L/sec]
	A1	12" [304.8mm]	N/A	604 [285 L/sec]

** - Includes air entering around perimeter of viewscreen, and air entering the front access opening*

Cabinet Venting 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 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.

Cabinet Model	Sash Height (Inches)	Exhaust Flow Range (Approximate) (CFM)	*Suction Min/Max (Inches WC)
SG403A-HE & INT	8" [203.2mm]	322 / 520 [152 / 245 L/sec]	0.05 / 0.25 [12.4 / 62.3 Pa]
	10" [254mm]	401 / 585 [189 / 276 L/sec]	0.08 / 0.30 [19.9 / 74.7 Pa]
	12" [304.8mm]	438 / 614 [207 / 290 L/sec]	0.09 / 0.40 [22.4 / 99.6 Pa]
SG503A-HE	8" [203.2mm]	412 / 680 [194 / 321 L/sec]	0.10 / 0.35 [24.9 / 87.2 Pa]
	N/A	N/A	N/A
SG603A-HE & INT	12" [304.8mm]	618 / 770 [292 / 363 L/sec]	0.20 / 0.40 [49.8 / 99.6 Pa]
	8" [203.2mm]	490 / 754 [231 / 356 L/sec]	0.15 / 0.40 [37.4 / 99.6 Pa]
	10" [254mm]	613 / 914 [289 / 431 L/sec]	0.20 / 0.50 [49.8 / 124.5 Pa]
	12" [304.8mm]	665 / 1015 [314 / 479 L/sec]	0.20 / 0.50 [49.8 / 124.5 Pa]

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

Exhaust Requirements for a CEC

The *FlexAIR is another type of CEC that has a 12" [304.8mm] diameter connection with a 10" [254mm] diameter spun inner baffle. It mounts directly over the exhaust filter and has flaps to reduce the amount of room air being exhausted through the CEC. The front flap has a sensor that detects when the flap opens during low duct exhaust conditions and triggers an alarm in the cabinet.

	Vent To Room CFM [L/SEC]	FlexAir Exhaust CFM [L/SEC]		FlexAir Static Pressure Required ("W.C.[PA])					
				8"[203mm] Dia. Duct		10"[254mm] Dia. Duct		12"[305mm] Dia. Duct	
		Min	Max	Min	Max	Min	Max	Min	Max
SG403A-HE									
8"[203mm] Access Opening	285[135]	290 [137]	663 [313]	-0.10 [-25]	-0.32 [-80]	-0.04 [-10.0]	-0.17 [-43]	-0.03 [-8]	-0.08 [-20]
10"[254mm] Access Opening	355[168]	360 [170]	701 [331]	-0.15 [-38]	-0.62 [-155]	-0.05 [-13]	-0.18 [-45]	-0.04 [-10]	-0.10 [-25]
12"[305mm] A1 Access Opening	390[184]	400 [189]	820 [387]	-0.16 [-40]	-0.74 [-185]	-0.07 [-18]	-0.19 [-48]	-0.04 [-10]	-0.17 [-43]
12"[305mm] A2 Access Opening	404[191]	415 [196]	871 [411]	-0.17 [-42]	-0.75 [-182]	-0.07 [-15]	-0.30 [-75]	-0.05 [-12]	-0.25 [-62]
SG503A-HE									
8"[203mm] Access Opening	355[168]	360 [170]	700 [331]	-0.15 [-37]	-0.62 [-155]	-0.05 [-13]	-0.16 [-40]	-0.04 [-10]	-0.12 [-30]
12"[305mm]	550[260]	560	850	-0.22	-0.74	-0.09	-0.24	-0.07	-0.17

Access Opening		[265]	[402]	[-55]	[-185]	[-23]	[-60]	[-18]	[-43]
SG603A-HE									
8"[203mm] Access Opening	455[215]	460 [217]	845 [399]	-0.15 [-38]	-0.74 [-185]	-0.07 [-18]	-0.18 [-45]	-0.06 [-15]	-0.13 [-33]
10"[254mm] Access Opening	545[257]	550 [260]	945 [446]	-0.20 [-50]	-0.78 [-195]	-0.11 [-28]	-0.24 [-60]	-0.09 [-23]	-0.16 [-40]
12"[305mm] A1 Access Opening	604[285]	614 [290]	990 [468]	-0.28 [-70]	-0.78 [-195]	-0.13 [-33]	-0.35 [-88]	-0.10 [-25]	-0.25 [-63]
12"[305mm] A2 Access Opening	611[288]	644 [304]	1114 [526]	-0.30 [-75]	-0.79 [-197]	-0.14 [-35]	-0.36 [-90]	-0.11 [-27]	-0.30 [-75]

* The FlexAIR CEC is Patent Pending.

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

Exhaust Requirements for a *FlexAIR CEC

Final Connections and Tests

1. The plumbing connection to the service petcocks must be made with great care because the effluent 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. Connect to dedicated power supply circuit as described in the "Electrical Specifications" section of this manual.
3. Thoroughly clean the interior of the cabinet. Locate the viewscreen at the correct opening height (8", 10" or 12" [203.2mm, 254mm or 304.8mm]).

NOTE: See Section III - PROPER CABINET USE "Operator Controls" for information regarding steps 4, 5, & 6 below.

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.
6. Lower the viewscreen to its fully closed position and turn on the UV light (if equipped) to make sure it is operational.
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 found in Section IV, On-site Checks and Maintenance Procedures.
8. It is recommended that all personnel who will be using the cabinet study this manual to learn how to use the cabinet effectively. For additional start up and use procedures, reference Section III, Proper Cabinet Use

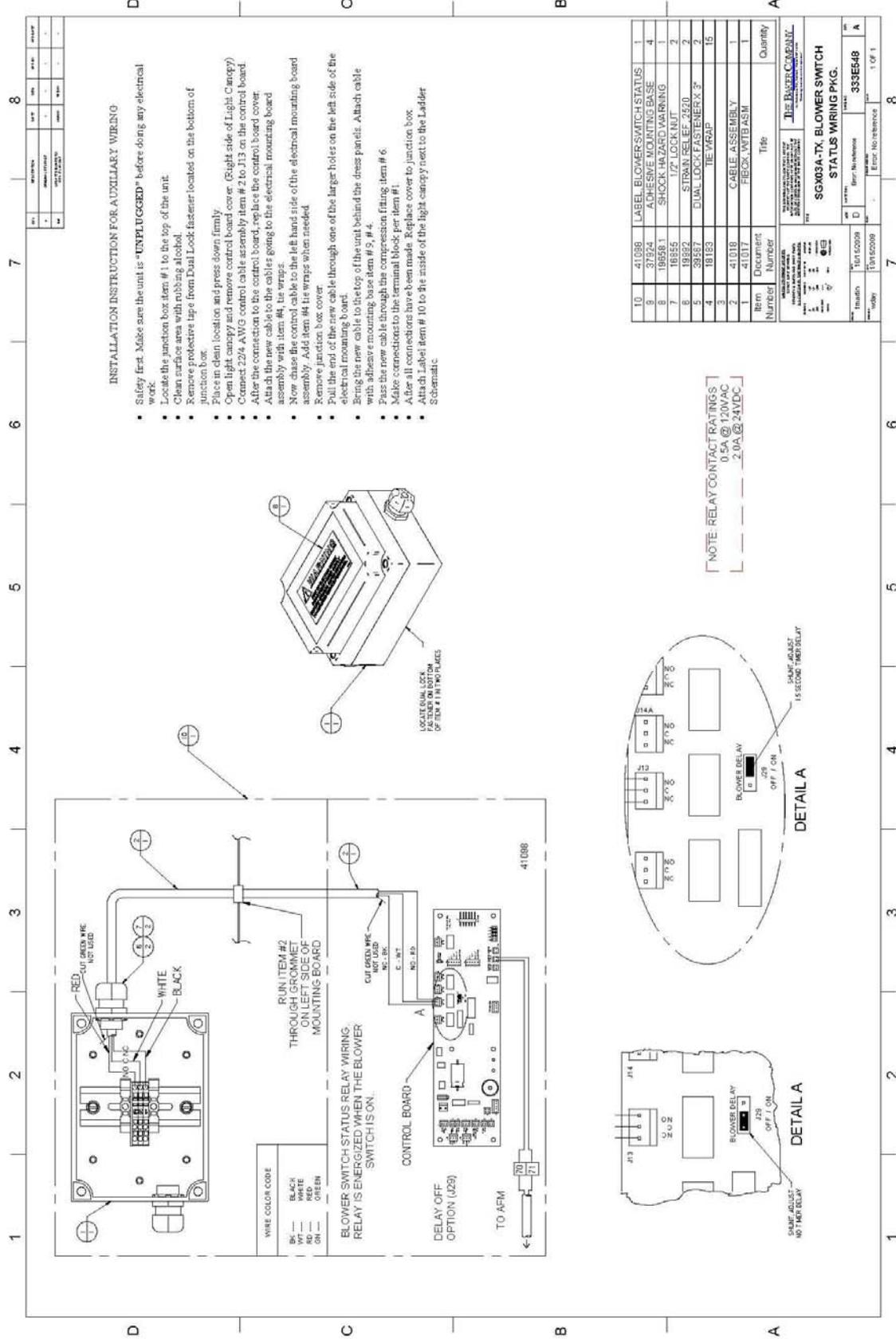
FOR MORE INFORMATION

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

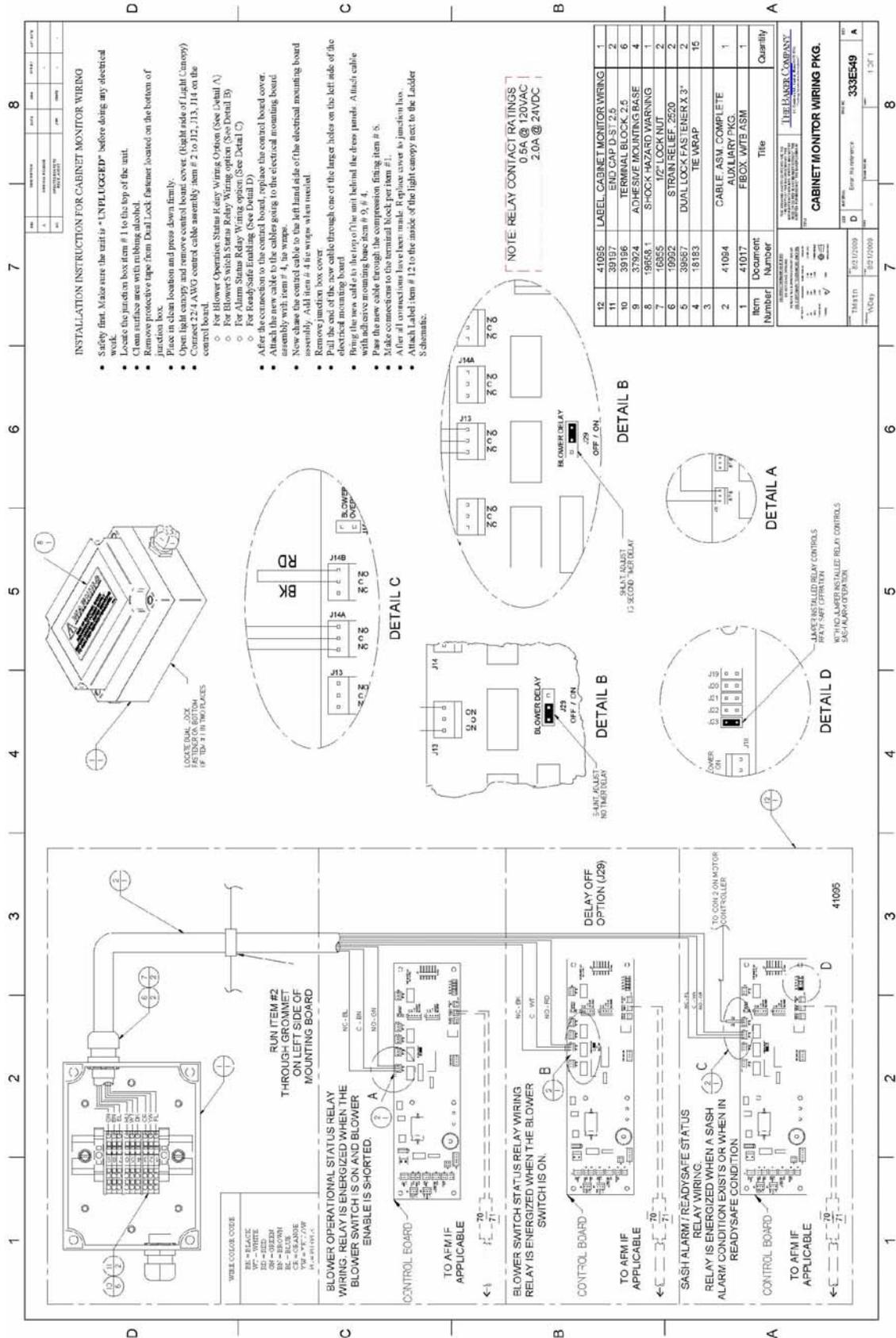
Auxiliary Wiring Options

To monitor additional conditions in the unit, the optional Cabinet Monitor Wiring Package (333E549) can be ordered. This option will include the wiring and hardware for the Blower Switch Status Wiring Package (333E548) plus wiring for connection to the Blower Operational Status relay and the Sash Alarm Status Relay. You can choose to connect to one or more of these relays for monitoring or control of external systems.

Auxiliary Blower Switch Status Wiring Option



Auxiliary Cabinet Monitoring Wiring Option



III - PROPER CABINET USE

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

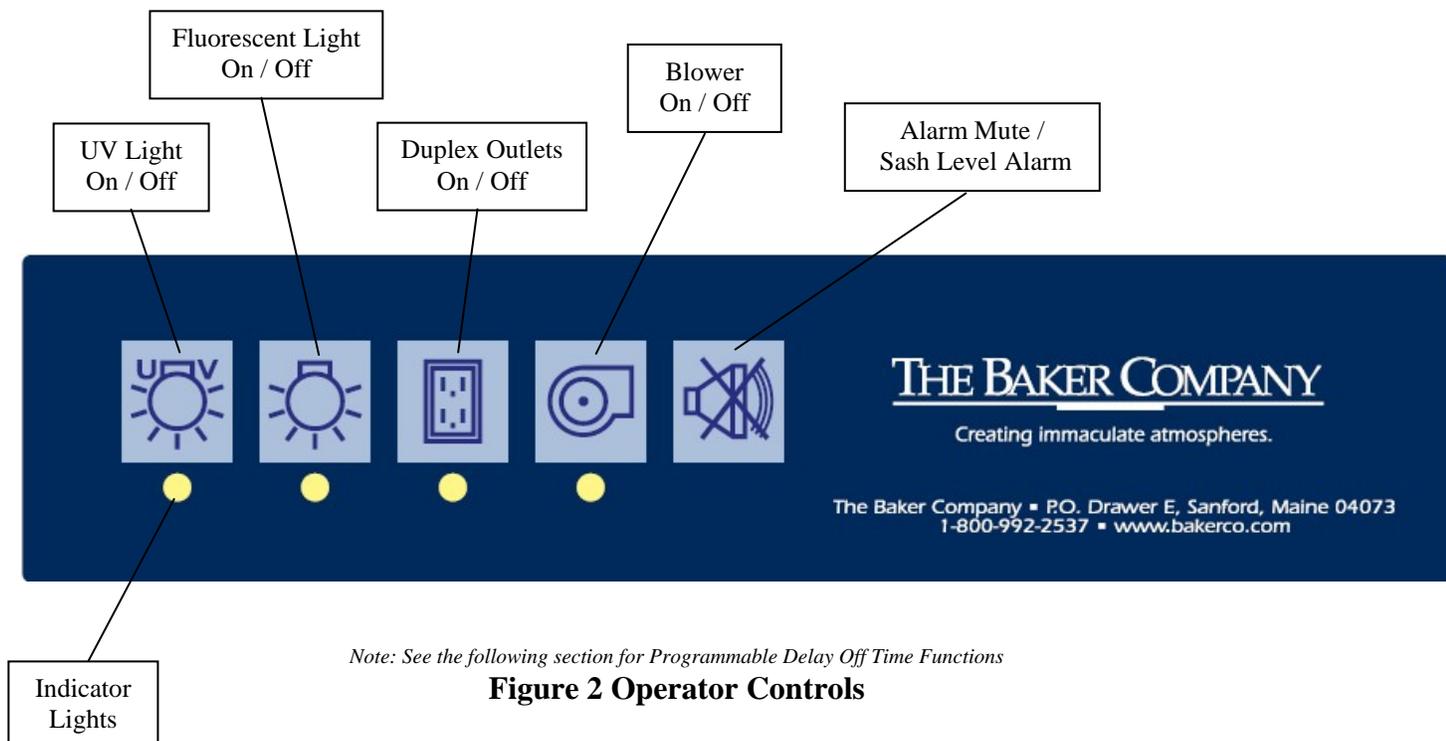
If the cabinet is not understood and operated correctly it will not provide an adequate protective barrier. To ensure operator safety the cabinet must be installed and operated per the manufacturer's instructions.

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 Figure 2]



- Ultraviolet (UV) Light On/Off [Optional] – 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 mute/Sash level alarm – For normal operation, the viewscreen must be placed at the allowable opening of 8", 10" or 12" [203.2mm, 254mm or 304.8mm]. The sash alarm will be activated whenever the viewscreen is at a potentially unsafe position. To mute the audible alarm, press the alarm mute 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 function 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. (ie., 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. (ie., 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.

Alarm Conditions

Standard cabinets utilize the sash alarm; however three more alarms are also indicated. Below are brief descriptions of each of the alarm conditions that may be present on your cabinet. Additional information can be found by referencing the Standard Electrical Board Troubleshooting Guide (*Dwg-503E500*) in the appendix of this manual.

The sash alarm occurs when the viewscreen is not at a safe operating position, and alerts the user with a visual and audible alarm once per second. There is a 3 second delay before the alarm activates, to allow the end user time to move between safe operating positions. Pressing the mute button on the keypad will stop the audible alarm, however the visual alarm will continue until the viewscreen is placed at an appropriate level. If the sash position is not corrected, the audible alarm will return.

The FlexAIR alarm, (optional components required) occurs when the front flap on the CEC opens due to low exhaust air flow. A visual and audible alarm, twice per second, will alert users of this undesirable operating condition. The FlexAIR alarm can be muted, however a visual alarm will remain until the problem is resolved. If the FlexAIR exhaust system has not been corrected, the audible alarm will return. Placing a jumper on J21 on the control board causes the FlexAIR alarm to latch until it is acknowledged by an operator pressing the mute button. If no jumper is placed on J21, the alarm will clear once proper exhaust flow resumes.

The Power/Processor Fault occurs when the system experiences a power outage or the processor has a fault. This alarm is enabled by placing a jumper on J22 of the control board. An indication of this fault is a visual and audible alarm of three 1-second alarms followed by a two second delay. This cycle is

repeated until the alarm condition is cleared by pressing the mute key. Relay K4 will be inactive with LED 14 OFF when in alarm, and energized with LED 14 ON when no alarm is present.

The Double Proximity Fault alarm occurs when both proximity sensors are activated. A visual and audible alarm four times per second indicates this fault condition. Below is a table which will help you to determine which proximity switch is at fault:

Condition	Faulty Proximity Switch
Viewscreen closed	
LED 2 On (<i>Normal</i>)	Upper Limit Prox Switch
LED 1 On	
Viewscreen open at safe operating position	
LED 1 On (<i>Normal</i>)	Lower Limit Prox Switch
LED 2 On	
Viewscreen open (not in safe operating position)	
LED 1 On	Both Prox Switches
LED 2 On	

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 and the running blower will make an audible sound. 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 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.)**
3. Check to determine that the drain valve is in the closed position or the drain coupling is capped.
4. If your cabinet has been purchased with the optional UV light, 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 also interlocked so they cannot operate simultaneously.)**
5. 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.**
6. 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.
7. After your equipment is in place inside the cabinet, adjust the sliding viewscreen so it is open to the correct opening height (8", 10" or 12" [203.2 mm, 254mm, or 304.8mm]). An alarm will signal if you are not at the proper opening. This is important to maintain proper cabinet airflow.
8. Ensure that the padded armrest assembly is properly installed. You can begin working in the cabinet after it has run for at least three minutes with the viewscreen 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", 10" or 12" [203.2mm, 254mm or 304.8mm] access opening (depending on unit configuration). 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. When the cabinet is not in use, the "ReadySafe Mode" can be engaged to reduce energy consumption by fully closing the sash. The blower speed is reduced and the fluorescent lights automatically turn off. The sash alarm will be silenced when the sash is in the fully closed position. When the sash is returned to safe operating height, the cabinet returns to normal operation and the lights can be turned on again.

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.

Cable Ports

One cable port comes as a standard item on the right side wall, and one can also be added into the cabinet's left side wall as an option. They provide 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 for when the cabinet is being decontaminated.

It is important not to overload the port with too many cables/tubing (approximately a bundle 1-1/8" in diameter maximum). 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]

Ultraviolet Germicidal Lamp (Optional)

The SterilGARD® can be provided with an optional UV light. The light is controlled by an on/off switch on the front panel. [See Figure 2]. **The UV light will not operate unless the viewscreen is completely down and the fluorescent light is off.**

(NOTE: Germicidal lamps are designed to emit UVC radiation because of its ability to kill bacteria. In humans, UVC is absorbed in the outer dead layers of the epidermis. Accidental overexposure to UVC can cause corneal burns, commonly termed welders' flash, and snow blindness, and severe sunburn. While UVC injury usually clears up in a day or two, it can be extremely painful.)

WARNING

- **UV light is hazardous, Do not defeat interlock!**
- **Eyes and skin should not be exposed to direct UV light.**
- **UV 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.**

UV lamps lose their effectiveness over time and should be replaced when the intensity at the work surface drops below 40 microwatts per cm² at a wavelength of 253.5 x 10⁻⁹ meters. Be sure to check regularly.

Recommended Decontamination Procedure (Formaldehyde)

WARNING

Only qualified technicians shall perform this procedure.

Whenever maintenance, service or repairs are needed in a contaminated area of your cabinet, the cabinet must first be decontaminated by 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 49-2007 ANNEX G "Recommended Microbiological decontamination Procedure", NSF International, 789 North Dixboro Road, P.O. Box 130140, Ann Arbor, Michigan 48113-0140.

Whichever gas you choose, make sure that you have the proper safety equipment (gas masks, protective clothing, etc.) within easy reach. In addition, you will want to be sure that the gas you are using will be effective against all of the biological agents within the cabinet. When you have decided which gas to use, post the antidote to it in a visible and nearby location. The volume of the SG403A HE, SG503A HE, & SG603A HE cabinets are 49 ft³, 62 ft³, & 78 ft³ [1.39 m³, 1.75 m³, & 2.21 m³] respectively. Provide the correct amount of decontaminating gas for this volume.

WARNING

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.

1. Surface-disinfect the inside of the window and all other surfaces on the viewscreen assembly.
2. Multiply the total volume of the cabinet (SG403A HE 49 ft³/ SG503A HE 62 ft³/ SG603A HE 78 ft³ [1.39 m³, 1.75 m³, & 2.21 m³]) by .3 g/ft³ [10.59 gram/m³] 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 16. **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°F [232°C] and must have a grounded plug that should be plugged into a

receptacle outside the cabinet. **CAUTION – The auto-ignition temperature of paraformaldehyde is 572°F [300°C].**

6. **This step is optional.** Place a second heating mantle in the cabinet with 60% 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.

Method to seal an SG cabinet for decontamination

Important: After reviewing this procedure, clean areas being taped to assure a good seal.

1. Loosen and remove cap nuts holding down the exhaust filter protective screen located on top of the cabinet and then remove the screen. (See Figure 3)

CAUTION: Use care when removing screen to avoid damaging the exhaust filter.



Figure 3

2. Clean cabinet surfaces where tape is going to be applied with alcohol and water solution for better tape adhesion. Tape 5" to 6" (127mm to 152.4mm) thick spacers to the center front of the light canopy and above the sash handles to provide an air passage from the top exhaust filter opening to the front access opening.

Leave the sash at its normal operating height. (See Figure 4)

Install decontamination equipment in the cabinet work area.

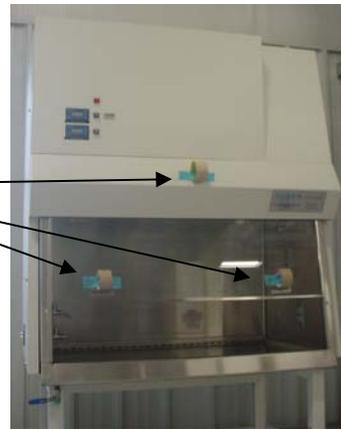


Figure 4

3. With sheet plastic 4-mil thick or thicker, cut a piece large enough to tape over the top extending down the front to the bottom of the drain pan and around to the side panels. (See Figure 5)



Figure 5

4. Center the plastic sheeting over the cabinet from right to left.
Using 3" (76.2mm) wide, good quality plastic tape, start taping the sheeting at the top rear of the cabinet over all cable brackets. This area provides a flat surface the length of the top panel for taping. Avoid wrinkling the sheeting. (See Figures 6 and 7)



Figure 6



Figure 7

5. Continue to tape the sheeting around the back corner down the sides. If present, tape over cable ports or plug with cable port plug provided.
Fold and overlap plastic as required to get a tight fit on the sides. Tape folds in place. (See Figures 8-11)



Figure 8



Figure 9

Cable Port Plug

Cable Port



Figure 10

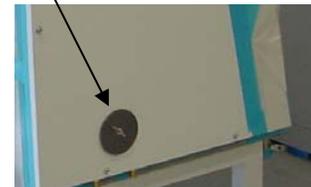


Figure 11

6. Tape sheeting to lower front corners. Trim sheeting as required to achieve a good fit. Make sure tape covers seams so there are no leaks. (See Figures 12 and 13)



Figure 12



Figure 13

7. Tape the plastic sheeting across the front of cabinet drain pan. Avoid wrinkling the sheeting. (See Figure 14)



Figure 14

8. Make sure all plastic sheeting seams are firmly taped to the cabinet so that there are no leaks. (See Figures 15 and 16)



Figure 15



Figure 16

10. After the cabinet is sealed for decontamination, turn on the formaldehyde generator/neutralizer containing the paraformaldehyde, water and ammonium by pressing the receptacle button on the cabinet touch pad.
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 6 hours, preferably overnight (12 hours).
13. Turn on the cabinet blower after the *ammonium bicarbonate* or *ammonium carbonate* cycle has finished and allow the two gases to circulate for at least one hour.
14. After the cabinet has recirculated for at least an hour, turn off the blower and verify that the

formaldehyde has been neutralized by using a Drager tube inside the cabinet.

15. Aseptically remove spore strip and place in trypticase-soy broth and incubate for 7 days. No growth will verify the decontamination process.
16. 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.

For additional information on cleaning and disinfecting stainless steel, please refer to:

“Decontamination, Sterilization, Disinfection, and Antisepsis”, Vesley, Donald and Lauer, James L., *Laboratory Safety Principles and Practices, Second Edition*, 1995, Fleming, D.O., Richardson, J.H., Tulis, J.J. and Vesley, D., editors, ASM Press, Washington, D.C., pp. 219-237; and Biosafety

Reference Manual, Second Edition, 1995, Heinsohn, P.A., Jacobs, R.R. and Concoby, B.A., editors, AIHA Publications, pp.101-110.

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

CAUTION

- **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.**
- **HEPA filters are not intended to filter gasses or vapors. Since this cabinet is partially recirculating, there will be gaseous buildup to the point of equilibrium if gasses or vapors are used.**
- **Misuse of chemicals, Bunsen burners, or a heavy dust load will shorten the filter's life.**

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

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 gases 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.

Check the HEPA Filters Regularly (Recommended on an annual basis)

Over time as the cabinet operates, the filters will collect particulate. When the cabinet can no longer maintain proper airflow balance due to the loading of the filters, they will need to be replaced. Only qualified technicians should check the cabinet filters to verify that they have not loaded with particulate to the extent that airflow balance is compromised.

If any filter has visible signs of damage or leaks it should be fixed or replaced immediately.

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[®] 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 downflow 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, if installed, need to be removed while performing down flow readings.**
4. Compare your results with those originally recorded at the factory.
5. Your new Baker cabinet has been built with a new motor controller that should not need adjustment in the field. If any motor blower adjustments are thought to be needed please call 1-800-992-2537 and ask for technical support. These cabinets have been built with an internal balancing damper that compensates for downflow and exhaust/intake imbalances. This damper may be adjusted only by a qualified technician who has had proper training and has the proper equipment. [See Figure 17 and Chart 1: "Type A2 Air Balancing Guidelines"]

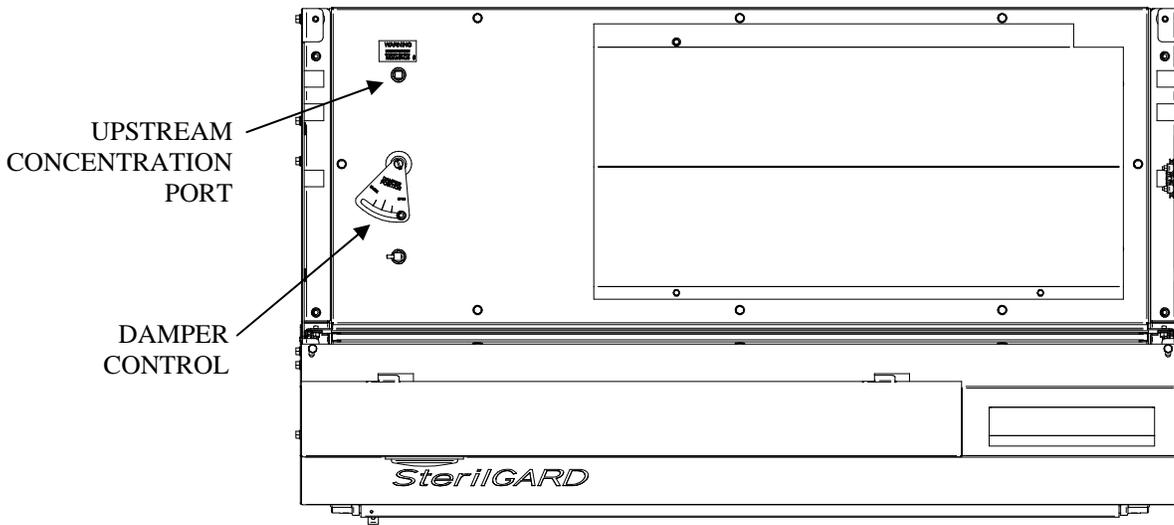


Figure 17: Top view of cabinet

Condition		Adjustment
Down flow	Inflow	Balancing Damper
Low	High	Close more
High	Low	Open more

Chart# 1: Type A2 Air Balancing Guidelines

6. Adjusting Motor Speed: See Appendix “Motor Control Adjustment Detail” for further details.

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 – Downflow filter

1. Turn on cabinet blower.
2. Raise the viewscreen to the full open position.

Use caution to avoid damaging the filter when removing the diffuser.

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, 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 International 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.

Electrical safety tests

Since electrical components may become damaged in transport, we recommend qualified technicians re-test them before the cabinet is used. **Note: Gasket panels may not provide a good electrical ground.**

The electrical leakage, ground circuit resistance and polarity were tested at our factory before shipment to minimize the risk of electrical shock present in your cabinet. Since electrical components may become damaged in transport, we recommend qualified technicians retest them, before the cabinet is used. The electrical safety tests should also be performed at prescribed intervals as specified by an industrial hygienist, safety officer or other qualified person. See cabinet test report for tests performed.

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

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 253.5×10^{-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.

NOTE: Germicidal lamps are designed to emit UVC radiation because of its ability to kill bacteria. In humans, UVC is absorbed in the outer dead layers of the epidermis. Accidental overexposure to UVC can cause corneal burns, commonly termed welders' flash, and snow blindness, a severe sunburn to the face. While UVC injury usually clears up in a day or two, it can be extremely painful.

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. (Note: See **Troubleshooting** section describing magnehelic gauge high and low readings.)

Replacing the Cabinet Filters

When the cabinet can no longer automatically maintain airflow balance due to filter loading, and adjusting the cabinet internal balancing damper does not correct the problem, then the filters will need to be replaced. If the filters are damaged, they will also need to be replaced. Both exhaust and downflow filters need to be replaced together as a set.

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 disposed of properly.

HEPA filters are very fragile, and you will want to use great care in handling so as to avoid damage 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. (Note: some models may have hardware fastening the panel to the front plate, remove as required.) Hinge the dress panel standoff down and lower the vertical panel on to 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. 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)
6. Disconnect the cable to the sash level sensor then remove the two screws at the top of the sloped dress panel. Lift the panel off the cabinet.
7. Loosen each of the ten (10) 3/8" hex head bolts holding the front access panel. Be careful not to

damage or lose 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 downflow and exhaust filters. (See Figure 18)

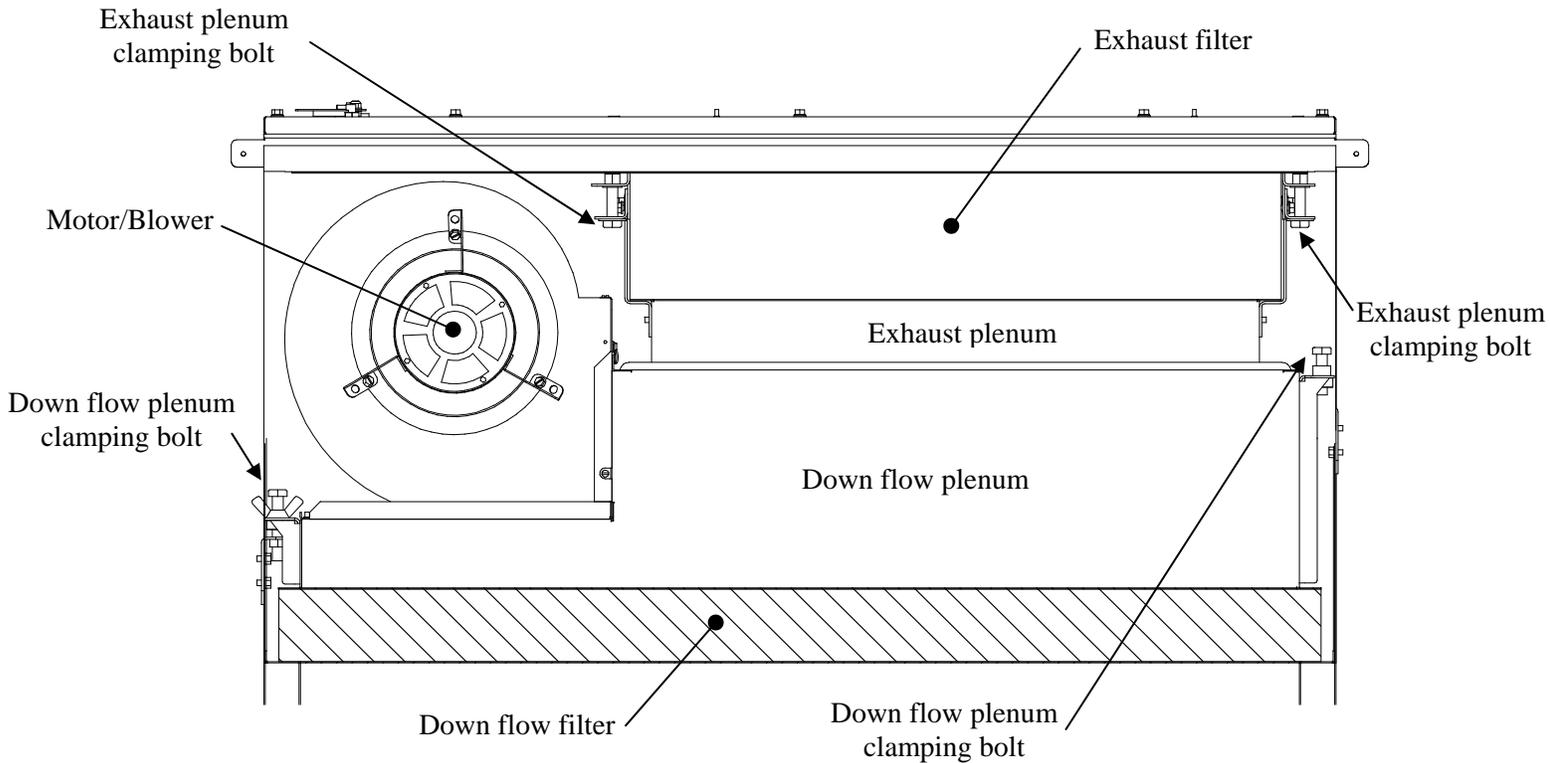


Figure 18: Interior view of positive pressure plenum with blower and filters

Changing the downflow filter

1. Loosen the two (2) 1/2" hex head downflow plenum clamping bolts located on either side of the downflow plenum, alternating two or three revolutions at a time until the plenum is raised about 1/4" [6.4mm]. This will allow the downflow 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 downflow 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.

Note: Make sure that the arrow on the filter is correctly oriented (pointed down) with the air flow of the cabinet.

4. Tighten the two (2) 1/2" hex head downflow 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 1/4-20 hex cap screw until the bolt seal washer is engaged with the panel. Next turn each bolt 1 1/4 to 2 1/2 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.
8. Check the cabinet air flow velocities.

Changing the exhaust filter

1. Loosen the two (2) 1/2" 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. You should not have to remove the bolts to get the filter to slide out. 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 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.

Note: Make sure that the arrow on the filter is correctly oriented (pointed up) with the air flow of the cabinet.

4. Tighten the two (2) 1/2" hex head exhaust plenum clamping bolts until the clamp's lower pivoting bracket contacts the upper fixed bracket.
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.
8. Check the cabinet air flow velocities.

Troubleshooting

IMPORTANT

Always check for proper airflow balance first.

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 downflow 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 may be loaded with particulate if the cabinet has been in service for some time. Decontaminate the cabinet and replace the filter.

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

Contact The Baker Company, for instructions on how to proceed.

If there is no air flow within the work area -

1. Check to make sure the unit is plugged into a dedicated electrical outlet.
2. Check to make sure the blower switch is turned on. The green indicator below the button should be lighted.
3. Check to make sure the wiring connections inside the left end of the light canopy are pushed together properly.
4. Check to see if the lights are working. If they are, contact The Baker Company for instructions on how to proceed.

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 (GFCI) 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 -

Contact The Baker Company for instructions on how to proceed.

When the viewscreen sash alarm is sounding -

NOTE: The indicator below the alarm 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. The alarm will sound and the indicator will continue to flash until the window is set to a correct position.
2. Open the electrical panel and check to see if the viewscreen position limit switch cables are connected. Verify that the proximity switches are active at the proper sash positions.

If the fluorescent light doesn't work -

1. The blower switch should be turned on, and the green 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 significantly higher reading than what was originally recorded on the cabinet's test report could be an indication of the following:

1. Something blocking or partially obstructing the work surface perforation (front and/or rear).
2. Something blocking 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 cabinet's 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.

Main circuit board L.E.D. troubleshooting

A troubleshooting guide for the control board is provided at the end of the appendix section.

V – DISASSEMBLY INSTRUCTIONS

IMPORTANT

Only qualified technicians should perform this procedure. If the cabinet has been in use it will need to be decontaminated.

Tools Required: 11/32" spin wrench, 3/8" spin wrench, 1/4" spin wrench, 5/16" spin wrench, 3/4" ratchet 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. (Note: some models may have hardware fastening the dress panel to the front plate, remove as required.)
 - 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. Loosen the four lock nuts holding the electrical mounting board. Remove the two screws at the top and loosen the lower lock nuts holding the sloped dress panel.
 - B. Disconnect the sash level sensor.
 - C. Lift the panel off the cabinet.
5. Removal of the electrical mounting board:
 - A. Disconnect the power cord assembly at the top of the cabinet that goes up from the electrical mounting board.
 - B. Disconnect the plug on the left side (and one on the right side if the cabinet is equipped with the ATS lift).
 - C. 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 work surface, armrest and work surface supports.
9. Removal of the front access panel:

- A. Remove the ten (10) hex head bolts 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 left side panel:
- A. Remove the ¾" brass nuts from each plumbing connection.
 - B. Remove sash cables from the pulley assembly.
 - C. Remove the hex head bolts and seal washers [7 with seal washers]. Disconnect any wiring in the left side panel. Remove panels, being careful not to damage the panel gaskets.
11. Removal of right side panel:
- A. Remove outer right side panel cover (11 bolts).
 - B. Disconnect viewscreen counter weight cables from viewscreen counter weight. Reinstall cable attachment bolt to prevent the weight box from opening during removal.
 - C. Remove the counter weight box by sliding it up and out the top of its tracks.
 - D. If optional side wall plumbing is installed, disconnect the tubing at both ends and remove. Unthread the upper elbows and remove.
 - E. Remove the sash cables from the pulley assemblies.
 - F. Remove the hex head bolts (7 with seal washers) and remove the panel using caution not to damage the gasket. Notice the arrangement of the rubber washer on the side wall plumbing for reassembly. Clean and apply new teflon tape during the reassembly of the plumbing elbow. These fittings have to seal to the side panel.
12. See "Replacing the Cabinet Filters" for instructions on how to remove the filters.
13. Removal of the blower assembly:
- A. Remove (2) ¼" hex head bolts that hold the assembly to the positive pressure plenum.
 - B. Disconnect the motor wiring and slide the blower assembly out toward you.
14. Removal of the positive pressure plenum assembly:
- A. Remove ¼-20 carriage bolt with hex lock nut and flat washer that holds the exhaust plenum mounting bracket to the exhaust filter clamp's lower pivoting bracket. [Located on left and right side of plenum] **IMPORTANT:** When reassembling, make sure to insert the carriage bolts through the rear holes of the lower pivoting brackets.
 - B. Unscrew the ½-13 positive pressure plenum clamping bolts.

Use these instructions in reverse order to reassemble the cabinet.

Appendix

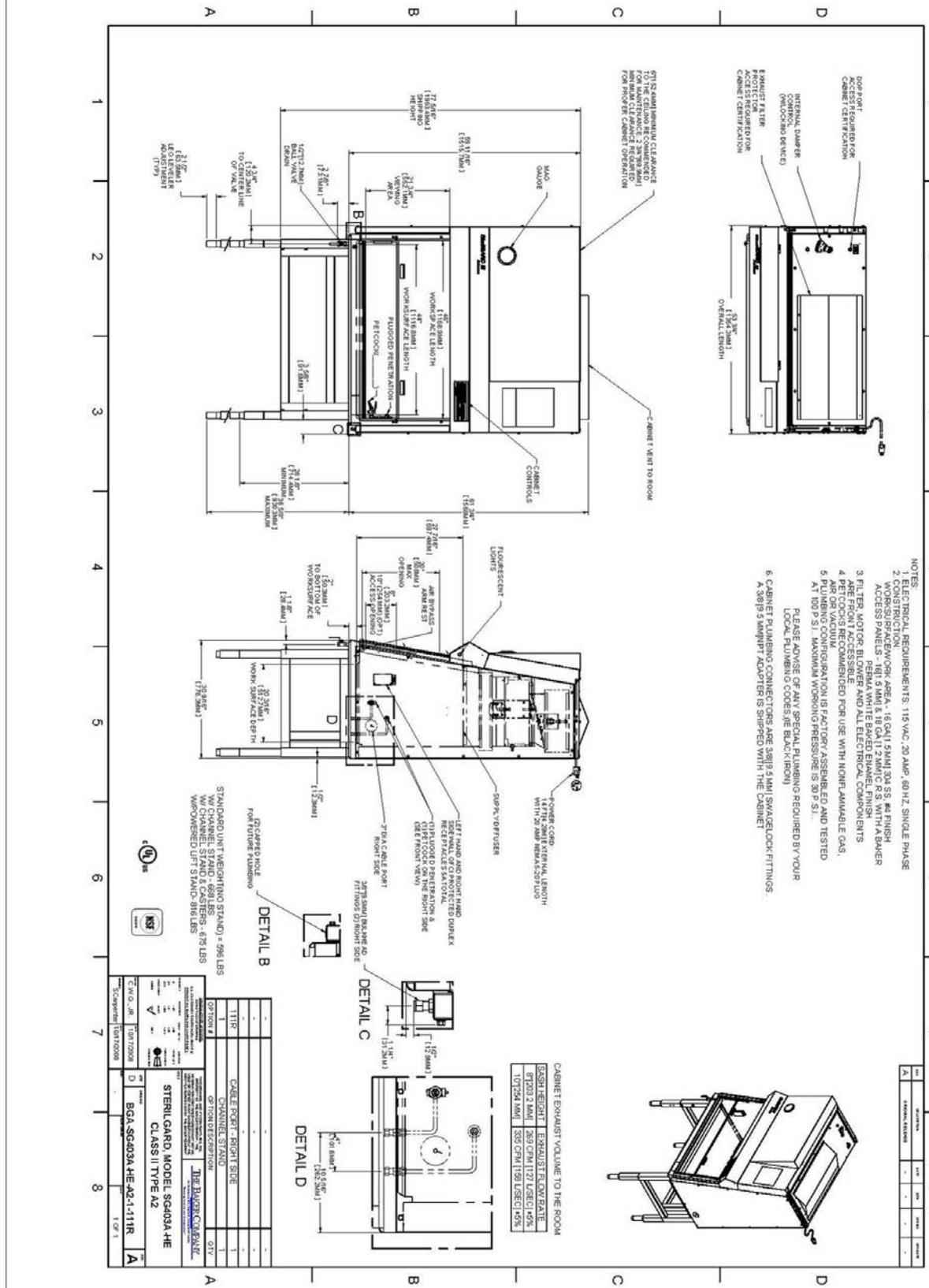
Replacement Parts List:

Electrical Items	Baker Part Number		
	SG403A-HE	SG503A-HE	SG603A-HE
Fluorescent lamp	41387	41387	41386
Ultraviolet lamp	18024	18024	18025
Fluorescent lamp holders – plunger end / fixed end	41438 / 41439	41438 / 41439	41438 / 41439
Ultraviolet lamp holders – plunger end / fixed end	20281 / 20283	20281 / 20283	20281 / 20283
Fluorescent ballast	41385	41385	39391
Ultraviolet ballast	40899	40899	40899
Motor drive	41466	41466	41466
Transformer	34327	34327	34327
Relay, solid state	1855167	1855167	1855167
Terminal block	40450	40450	40450
Proximity switch – Fixed wire / Quick disconnect	40647 / 40671	40647 / 40671	40647 / 40671
Right Angle Micro Cable	40672	40672	40672
Membrane Switch Controller (MSC) board	40702	40702	40702
Membrane switch / Overlay	41588	41588	41588
Plug / Power cord, NEMA 5-20P	32897	32897	32897
Circuit breaker [Main]	40449	40449	40449
Self-resetting breaker [Outlets]	34331	34331	34331
Ground fault interrupter outlet with indicator light	34921	34921	34921
Receptacle, duplex	18231	18231	18231
Mag Gauge	20775	20775	20775
	SG403A-HE-INT		SG603A-HE-INT
Terminal block assembly	39835		39835
Fuse, 6.3A	37591		37591
RFI filter, 15VTI, 15Amp	41698		41698

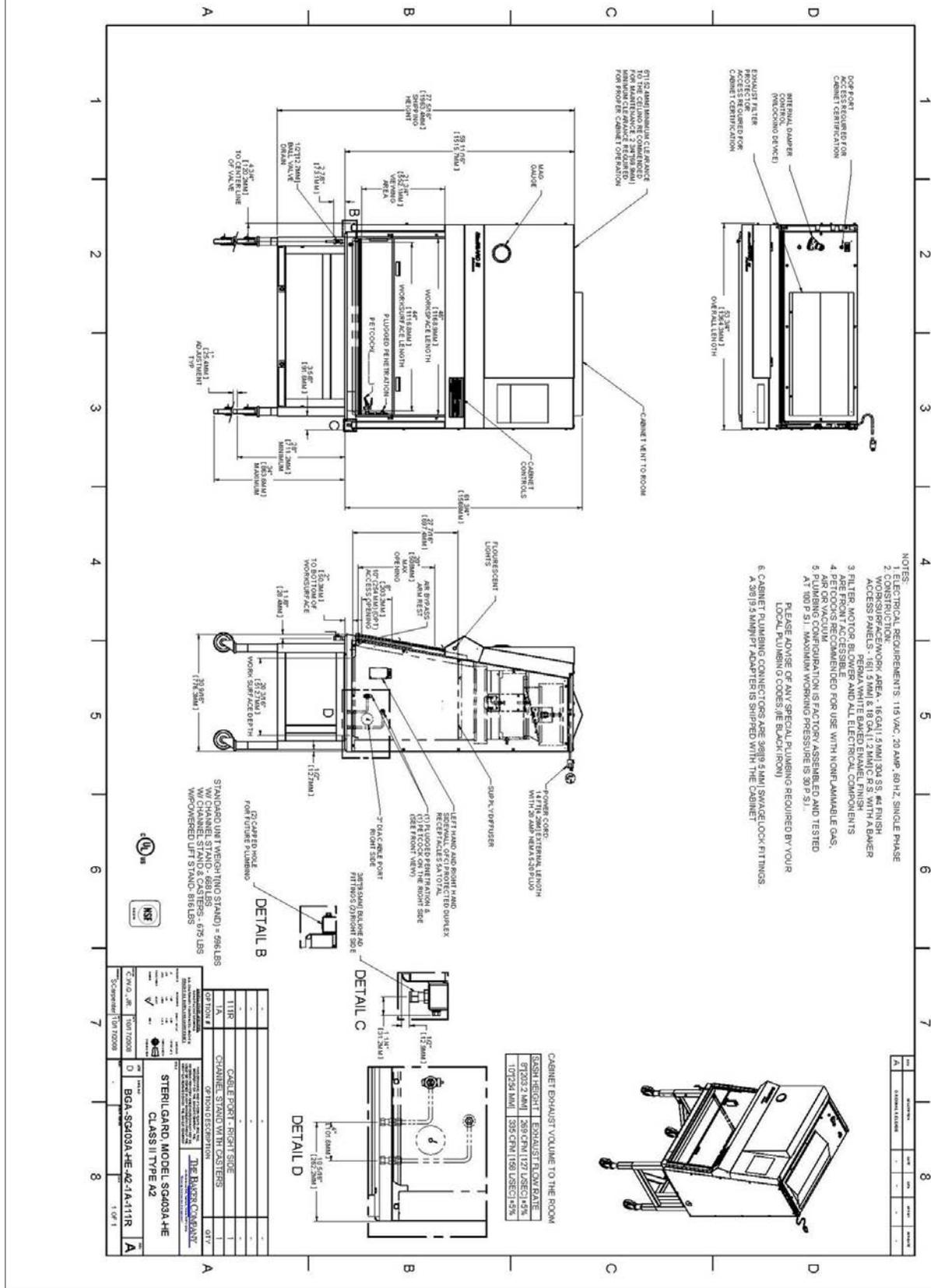
Baker Part Number

Mechanical Items	SG403A-HE	SG503A-HE	SG603A-HE
Down flow HEPA filter	40141 (20x48x3.06)	40525 (20x60x3)	40142 (20x72x3.06)
Exhaust HEPA filter	41703(16x30x5.87)	41704 (16x42x5.87)	41704 (16x42x5.87)
Motor/Blower Assy.	335A203	335A203	335A203
Armrest pad	41547	41548	41549
Work surface (8" sash / 12" sash)	333X104	335X106 / 335X100	336X106
Work surface support	333P706	333P706	333P706
Down flow diffuser	333P709	335P709	336P709
Viewscreen	355A306	335A300	356A301
Viewscreen track, right hand	355A305	355A305	355A305
Viewscreen track, left hand	355A304	355A304	355A304
Cable, right side, viewscreen	41455	41455	41455
Cable, left side, viewscreen	41461	41456	41462
Pulley, 1.062" OD	41454	41454	41454
Cable Port Gasket	41126	41126	41126
Cable Port Plug Assembly – Left side	335A700	335A700	335A700
Cable Port Plug Assembly – Right side	335A704	335A704	335A704

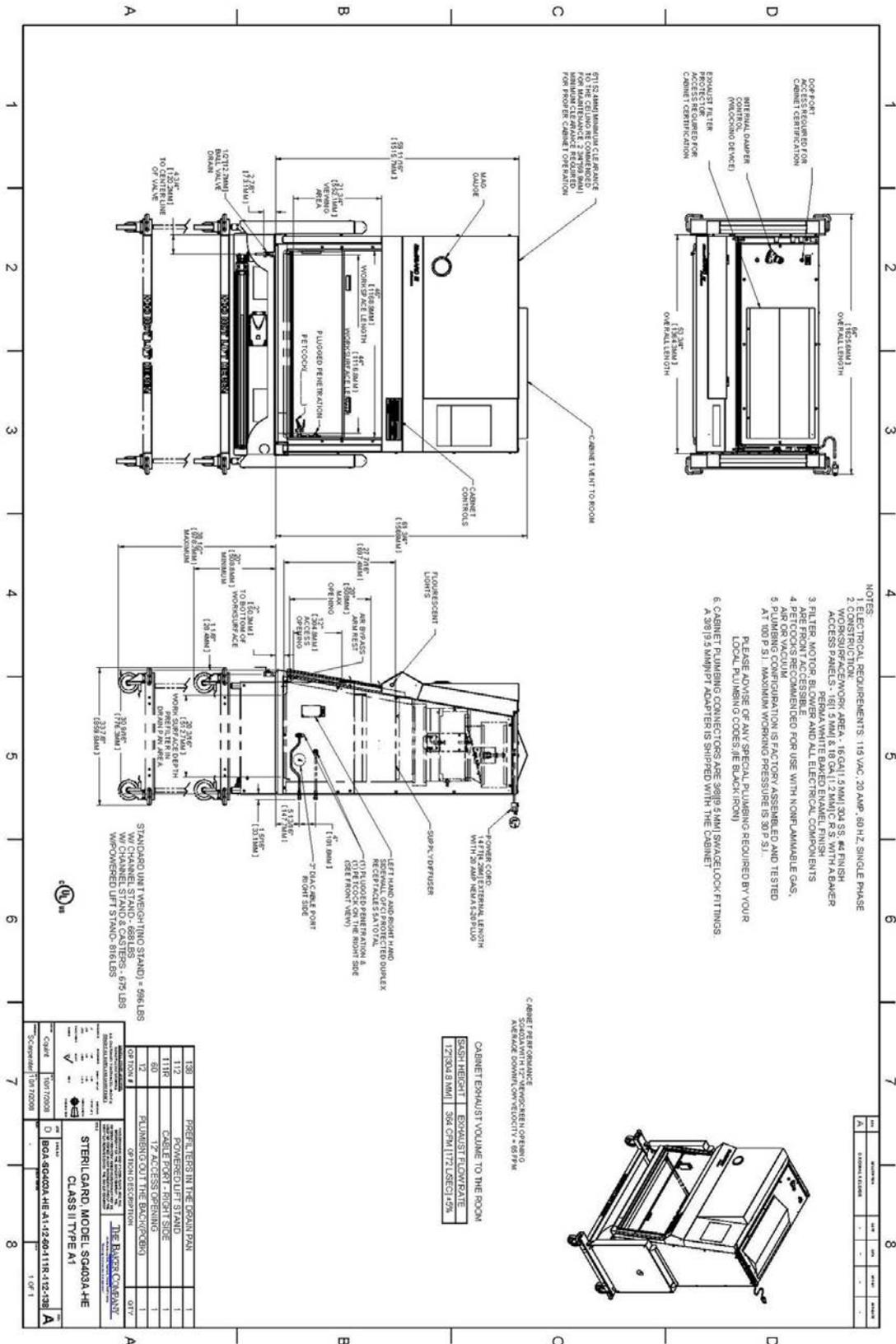
SG403A-HE (With Channel Stand):



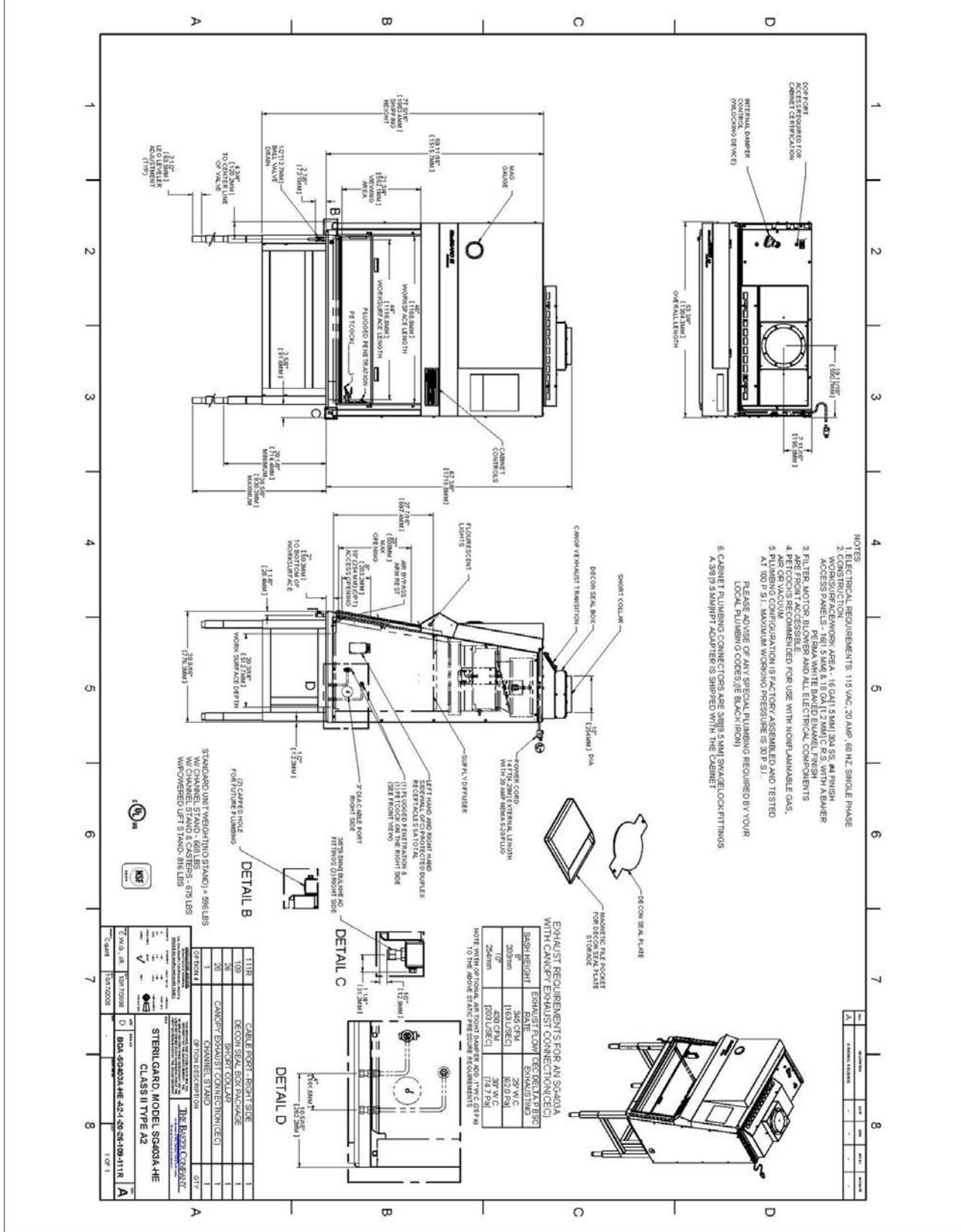
SG403A-HE (With Channel Stand & Casters):



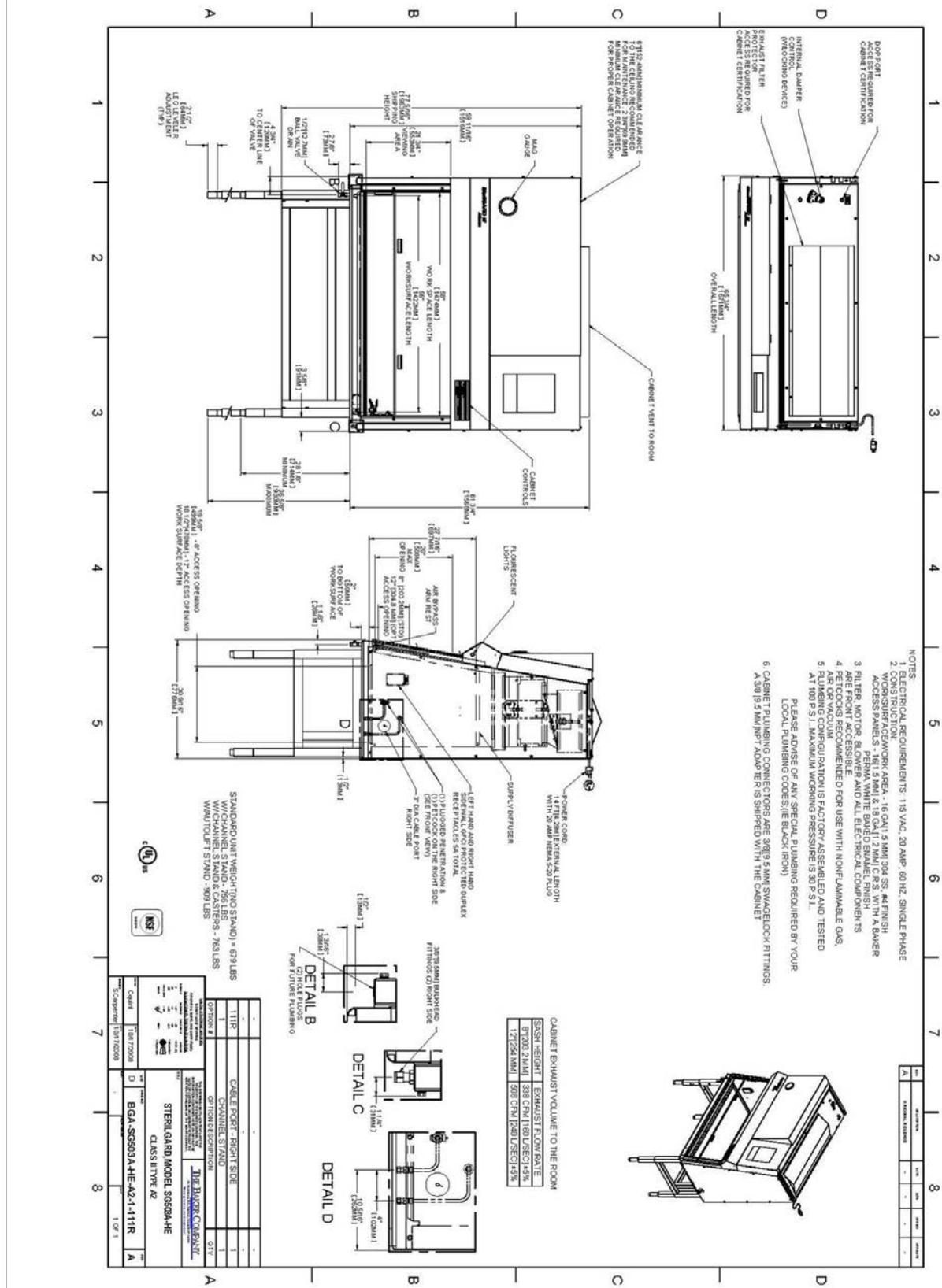
SG403A-HE (With Hydraulic Lift):



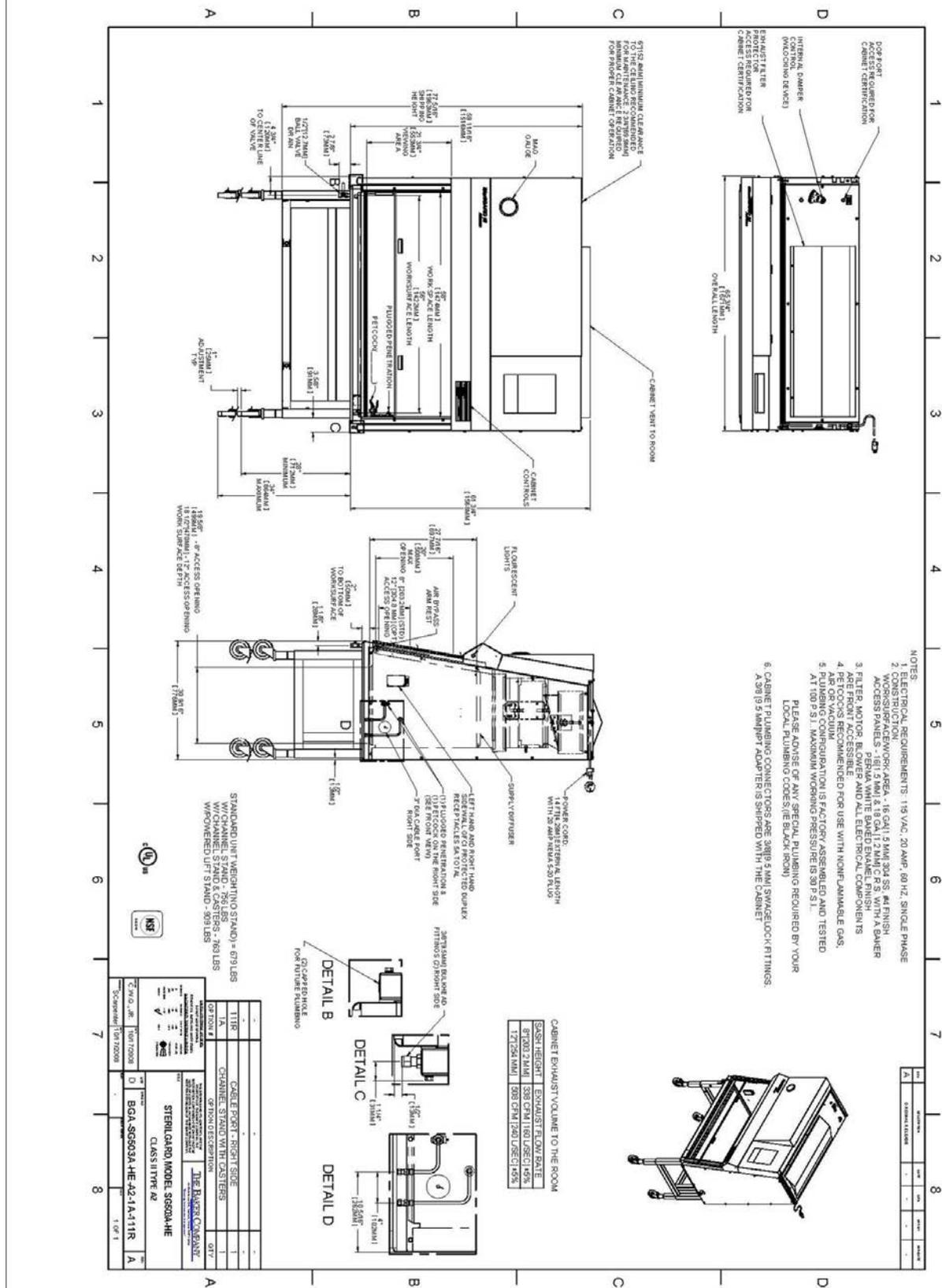
SG403A-HE W/Canopy Exhaust Connection (With Channel Stand):



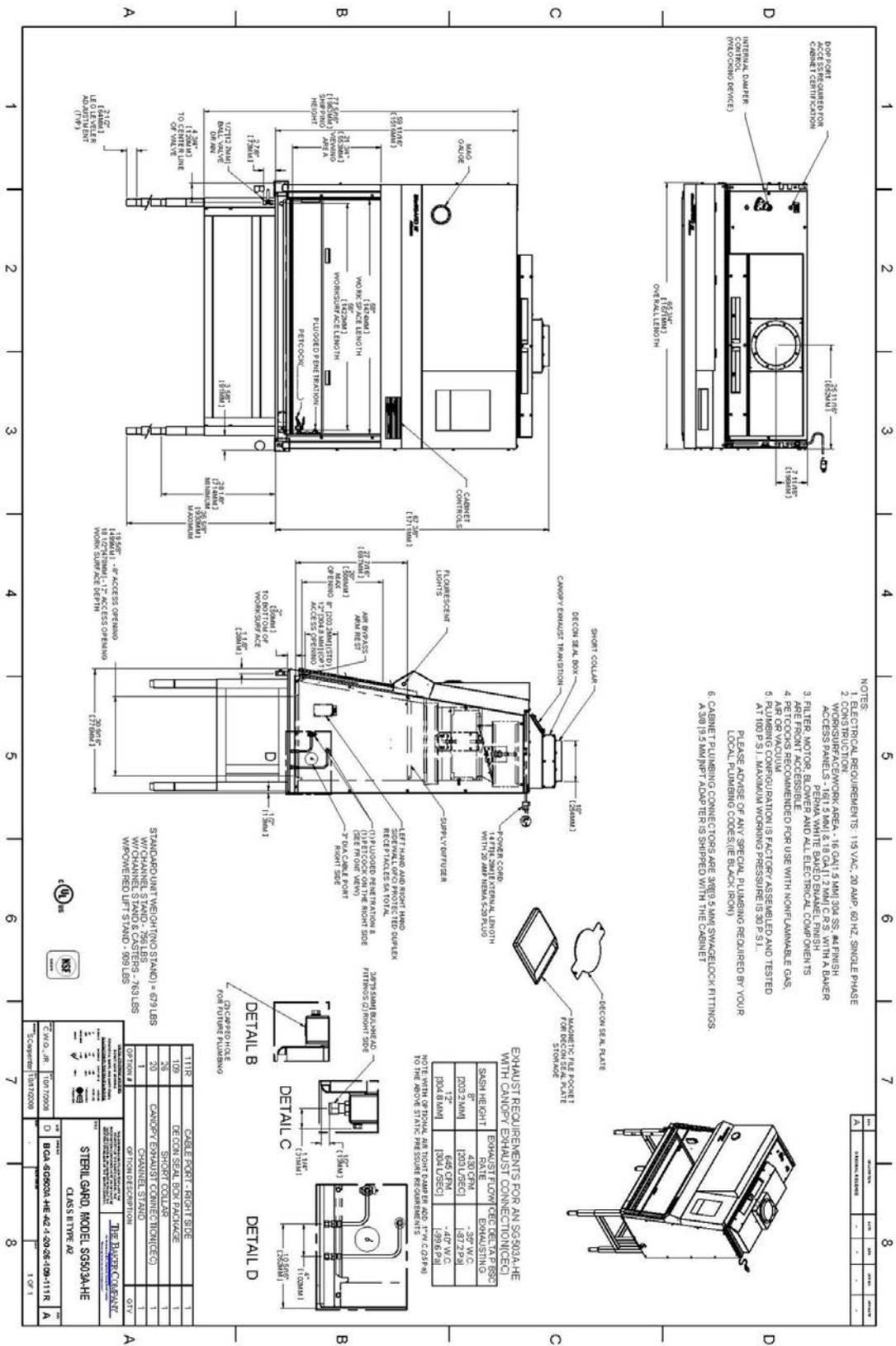
SG503A-HE (With Channel Stand):



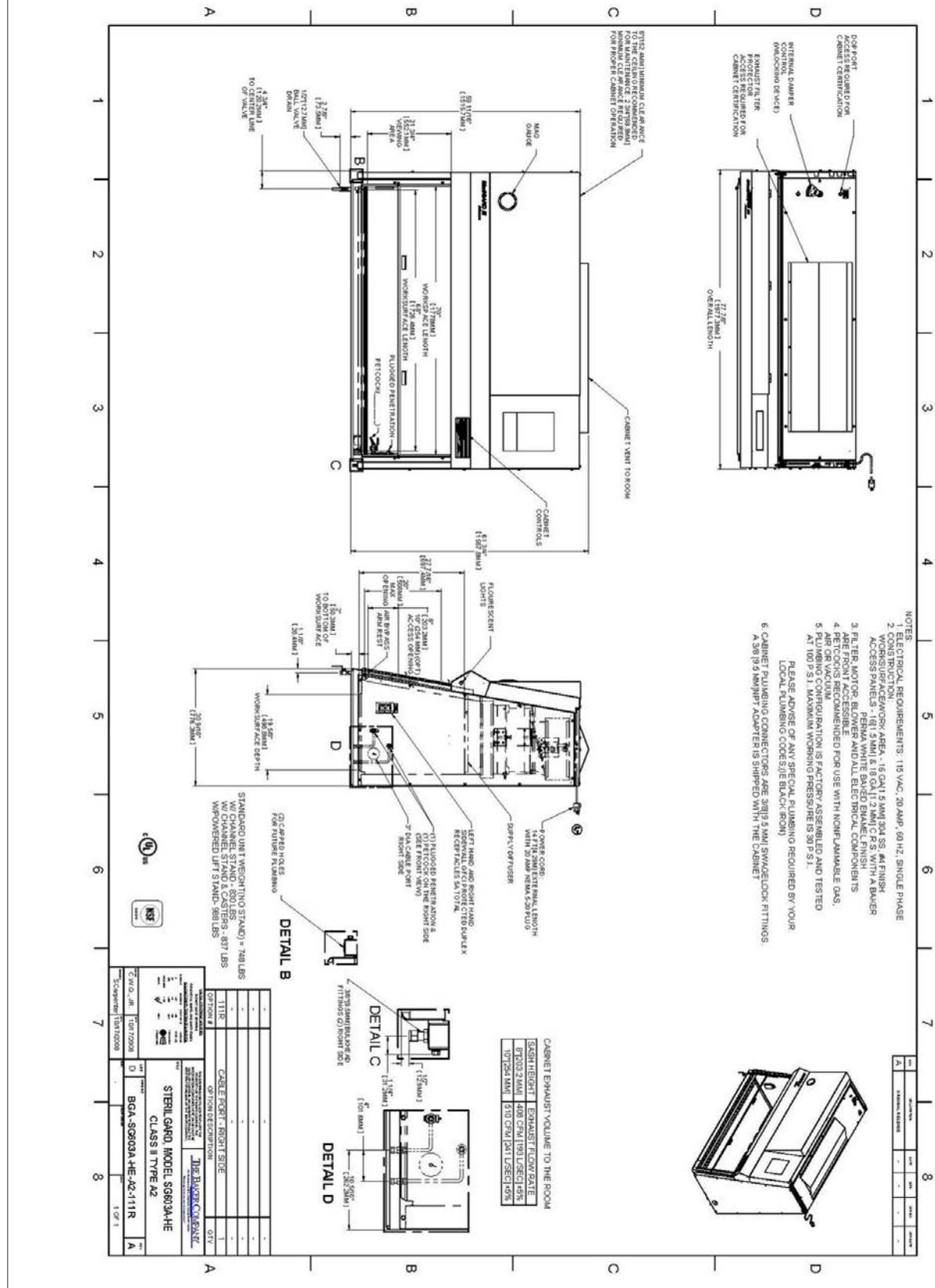
SG503A-HE (With Channel Stand & Casters):



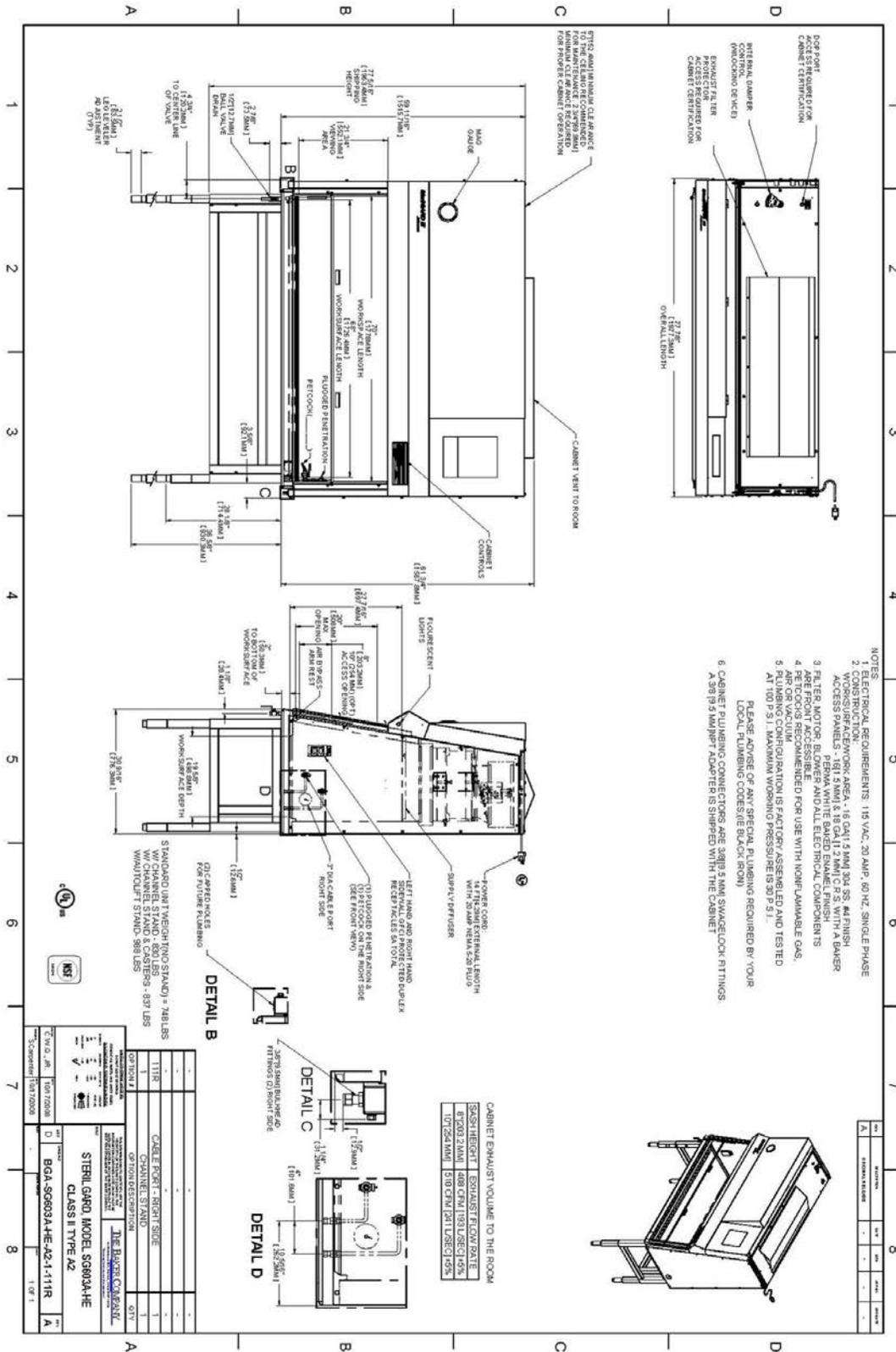
SG503A-HE W/Canopy Exhaust Connection (With Channel Stand):



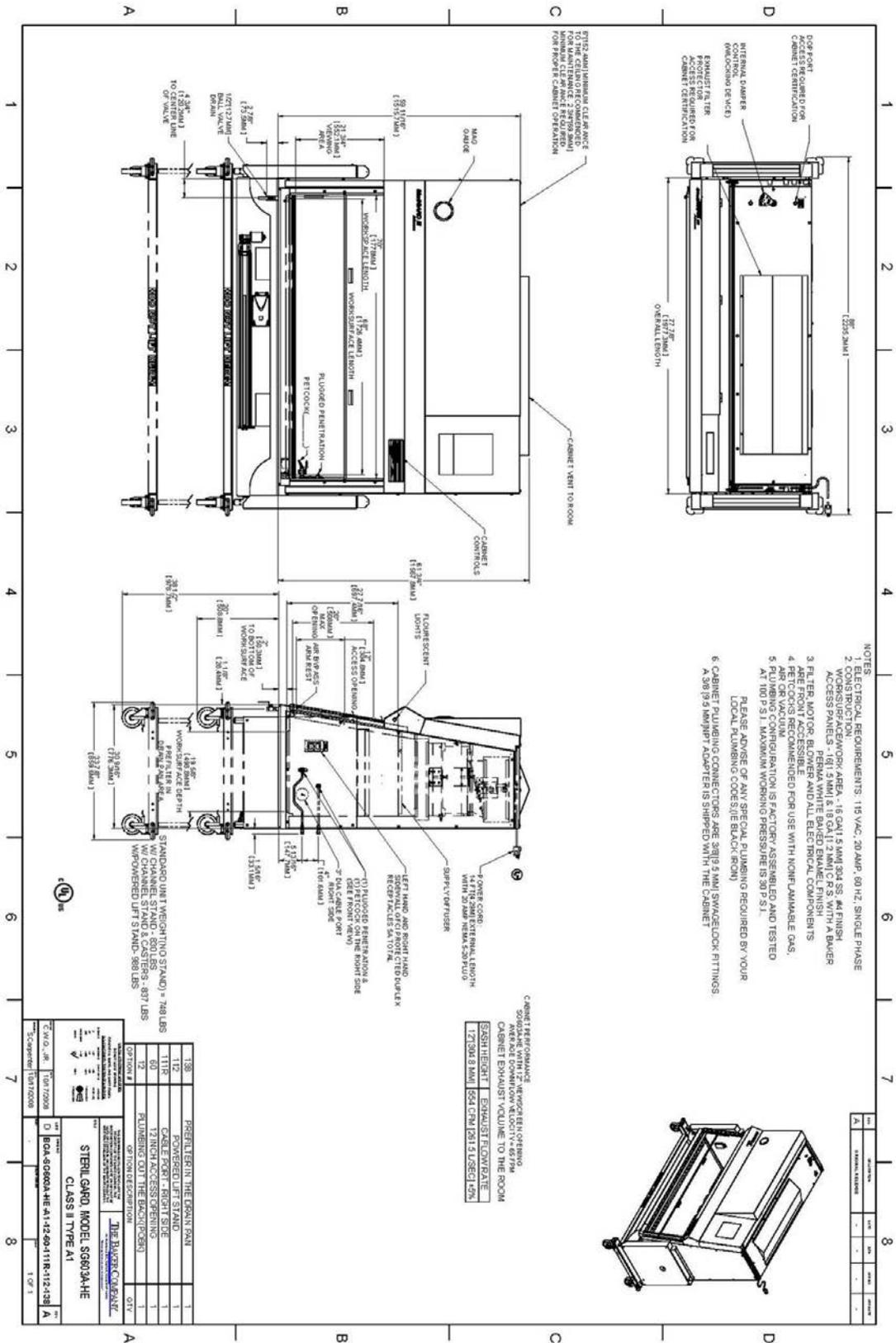
SG603A-HE (Base Unit):



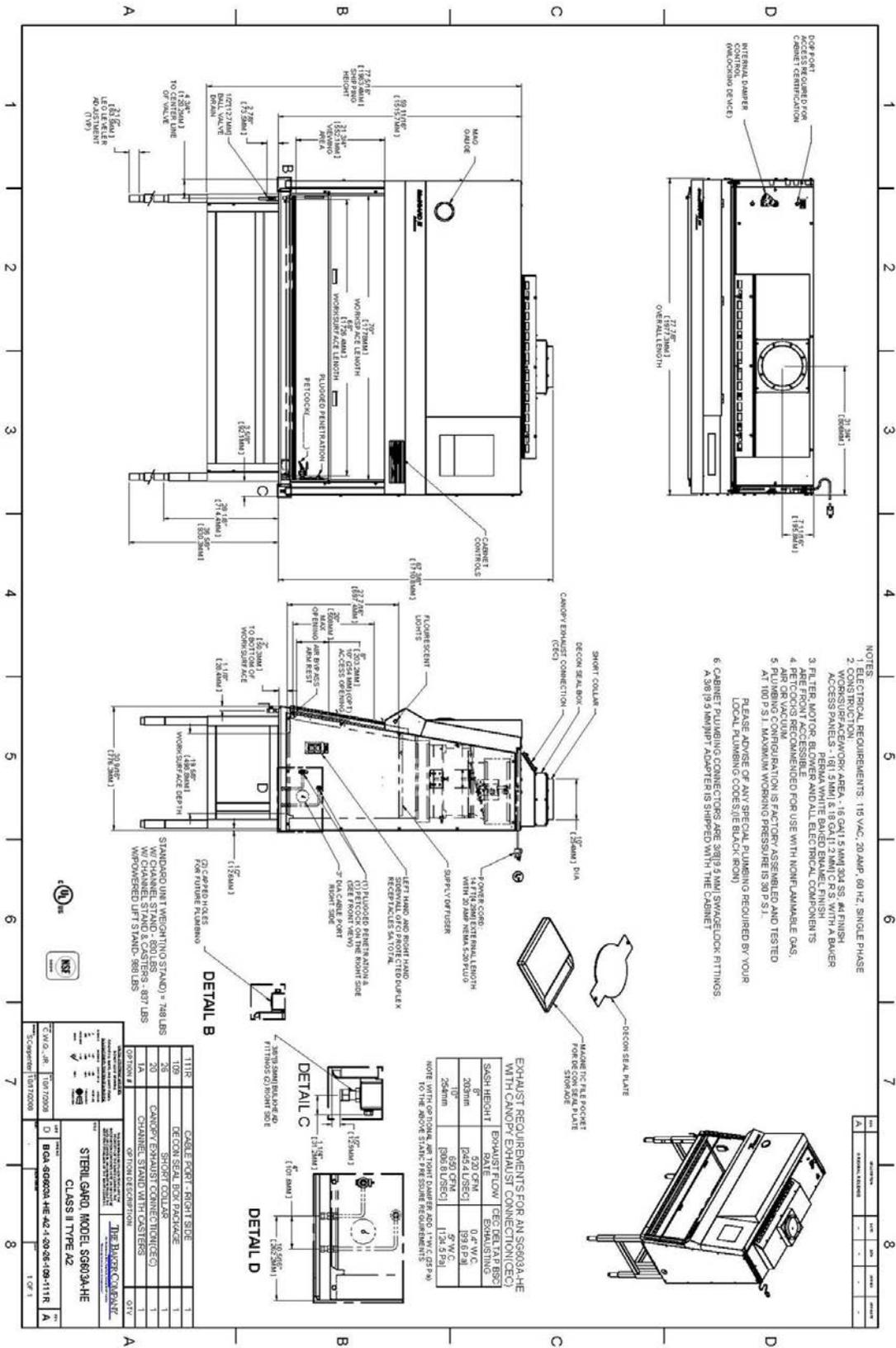
SG603A-HE (With Channel Stand):



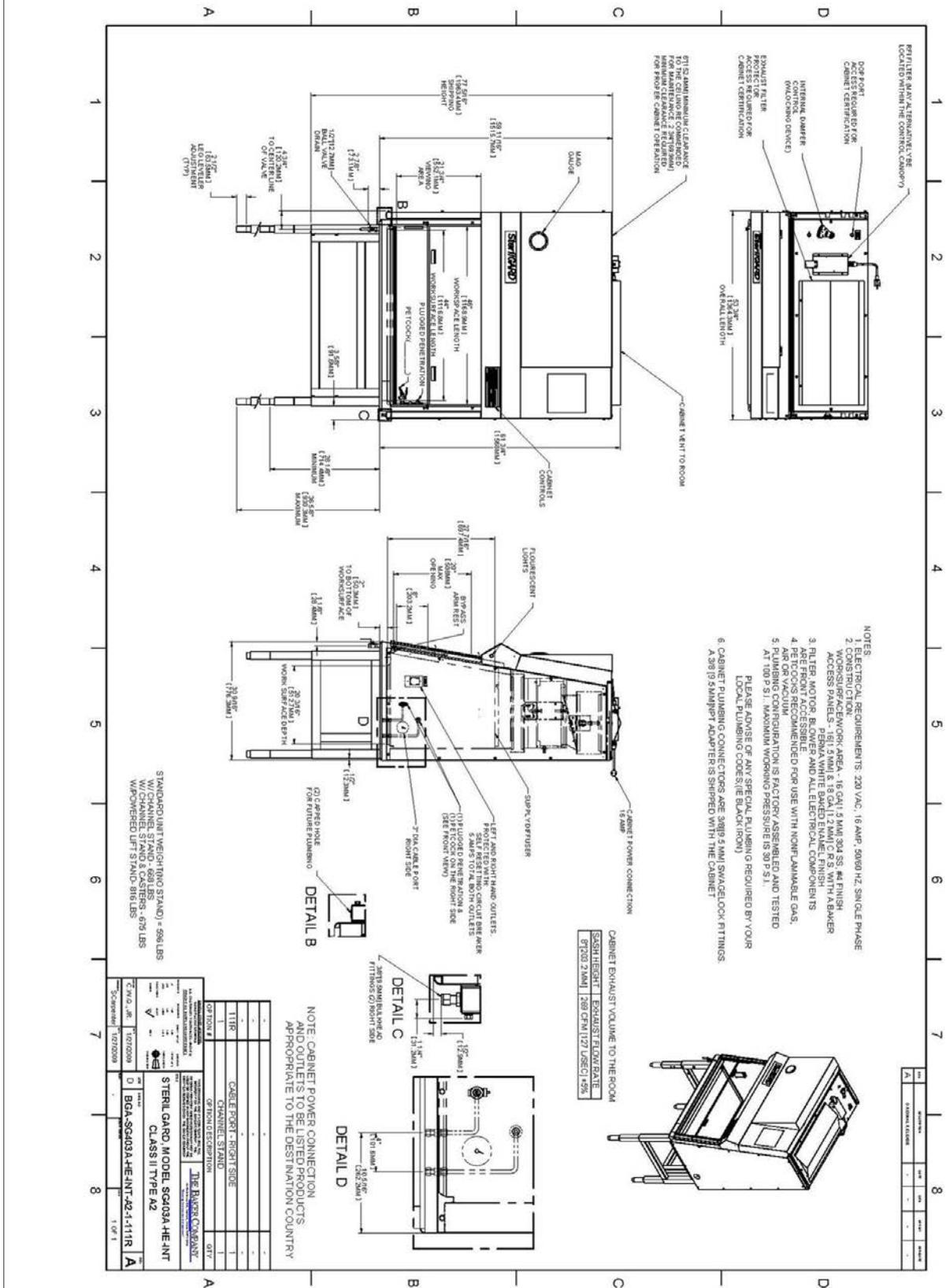
SG603A-HE (With Hydraulic Lift):



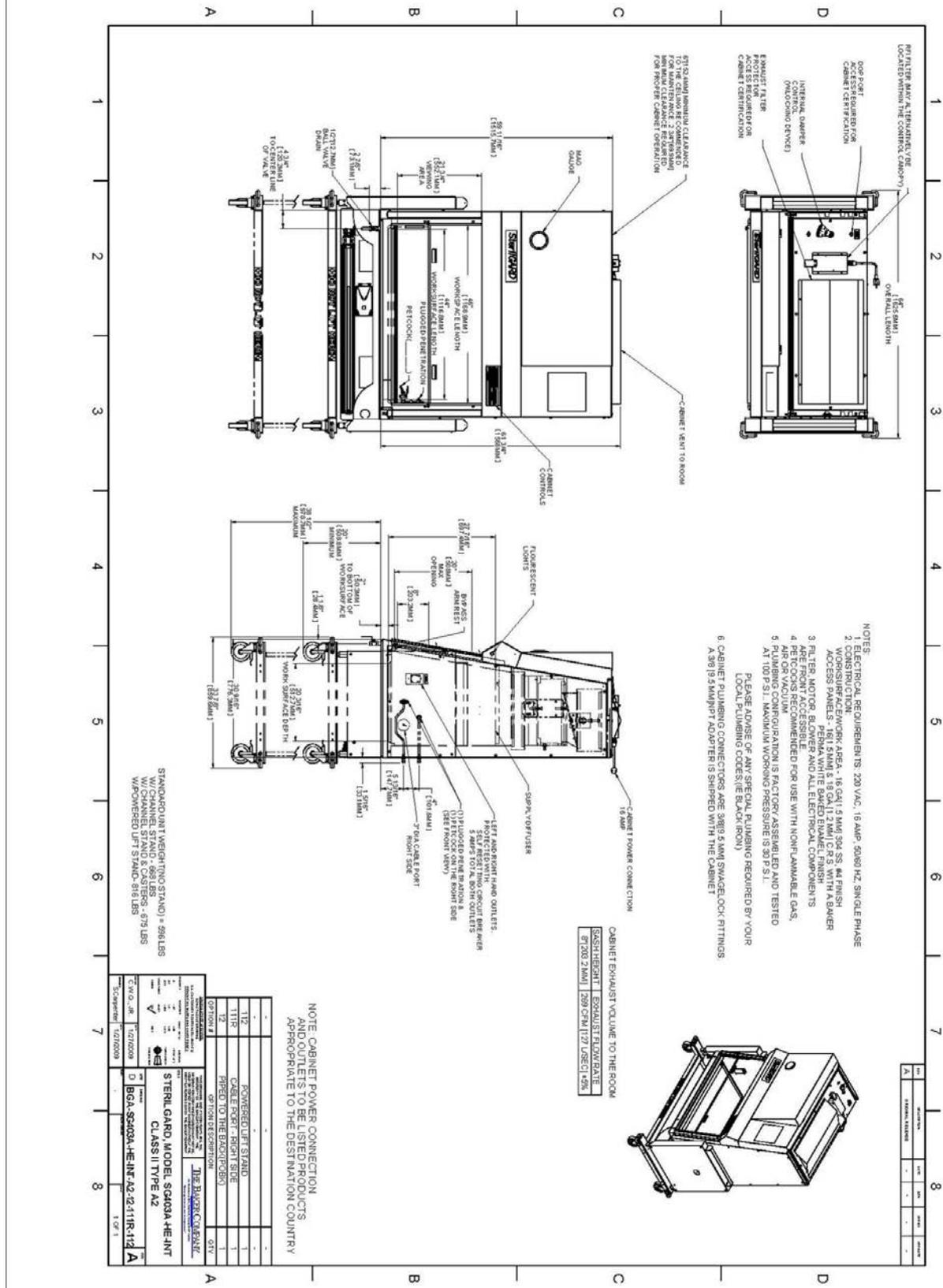
SG603A-HE W/Canopy Exhaust Connection (With Channel Stand):



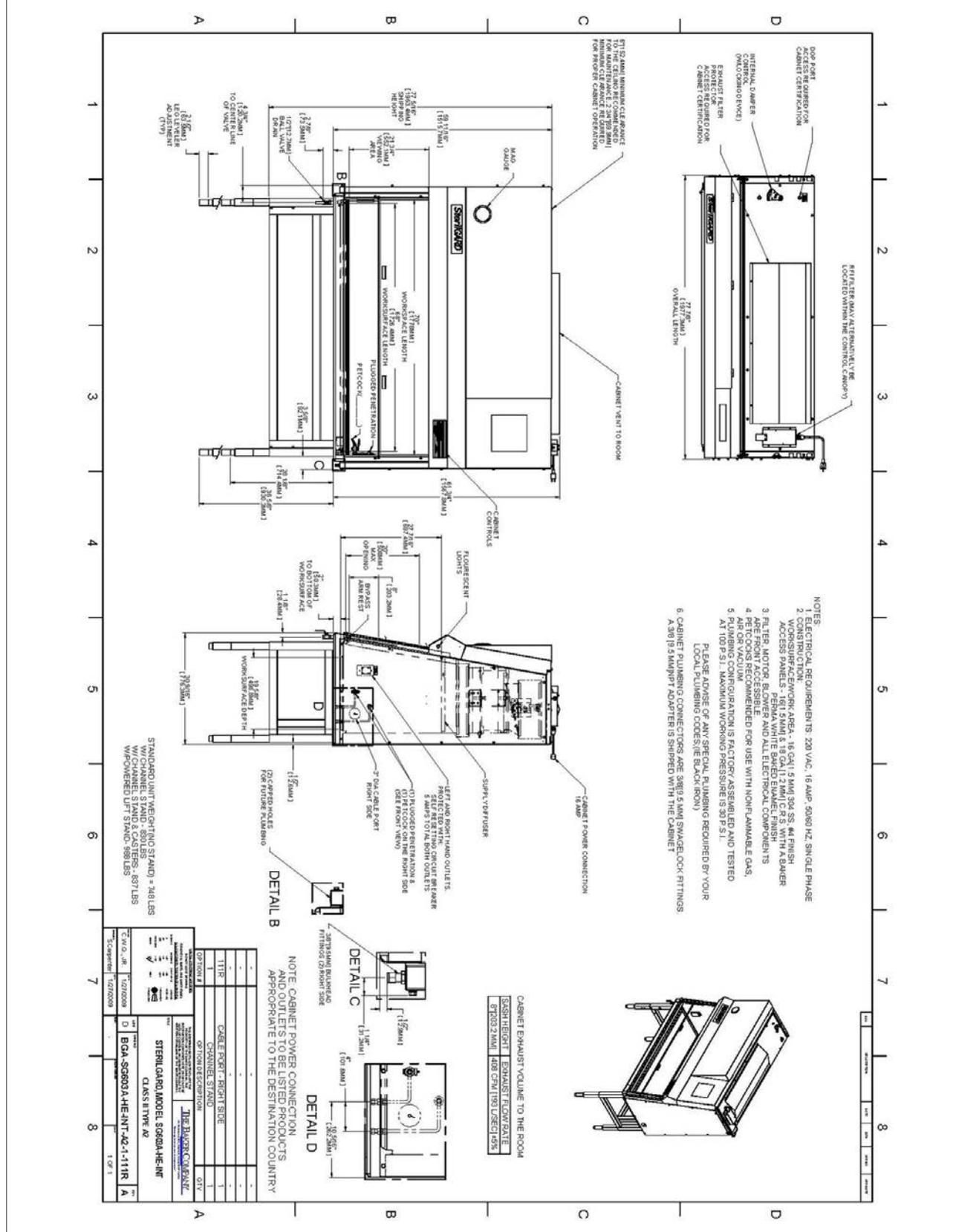
SG403A-HE-INT (With Channel Stand):



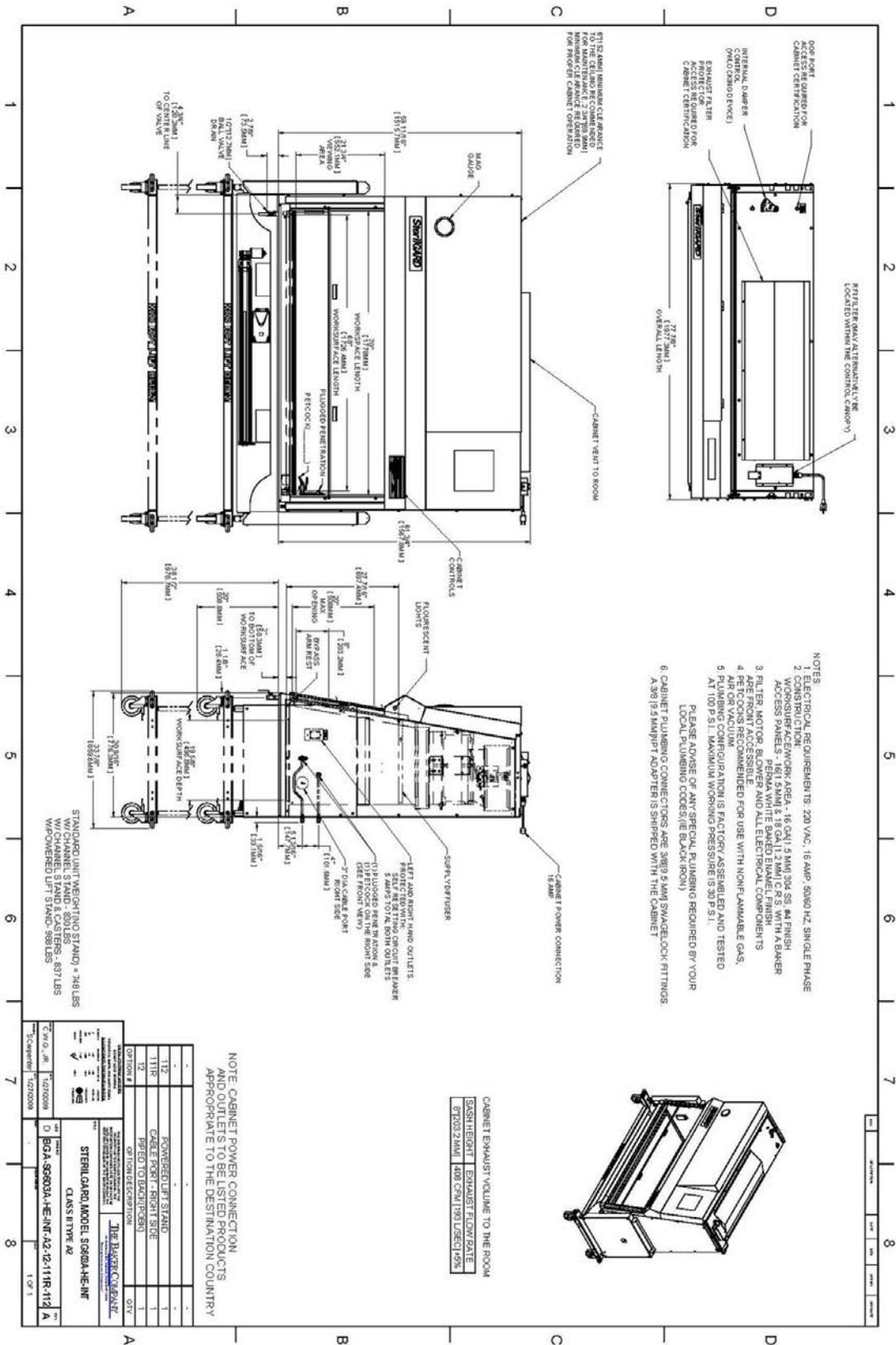
SG403A-HE-INT (With Hydraulic Lift):



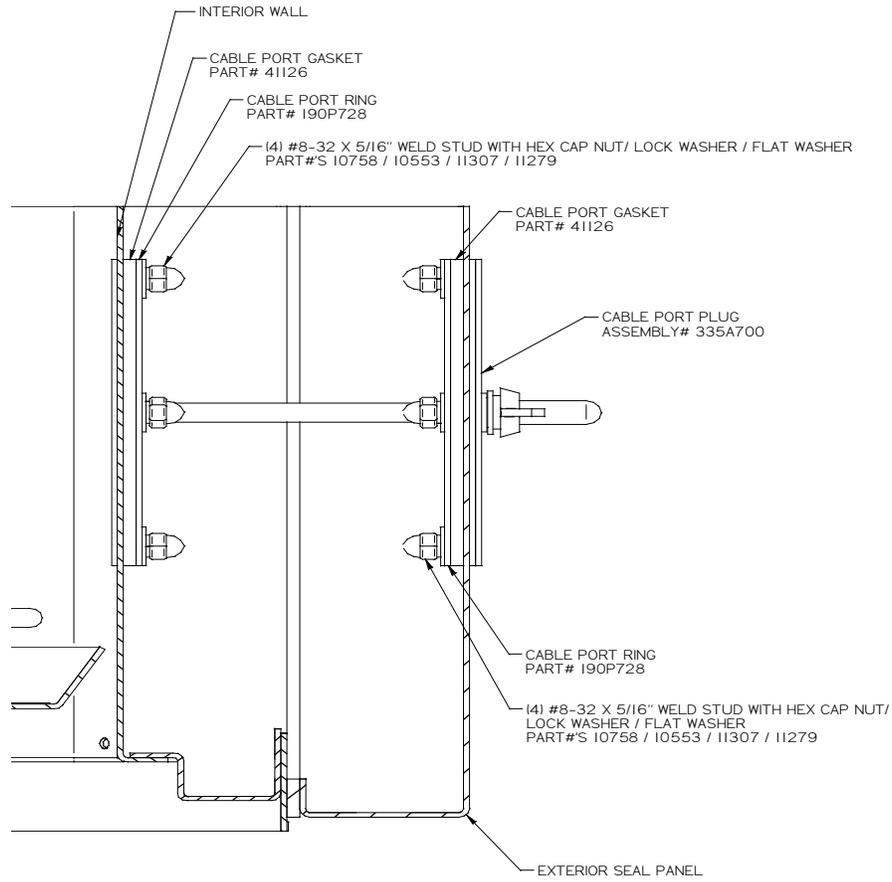
SG603A-HE-INT (With Channel Stand):



SG603A-HE-INT (With Hydraulic Lift):



Cable Port Illustration



Interior View



Exterior View

[Cable port plug not shown]

Cable Port Plug Installation Instructions (Right Side)

1. Start by removing the ¼" hardware from the outer right side panel.

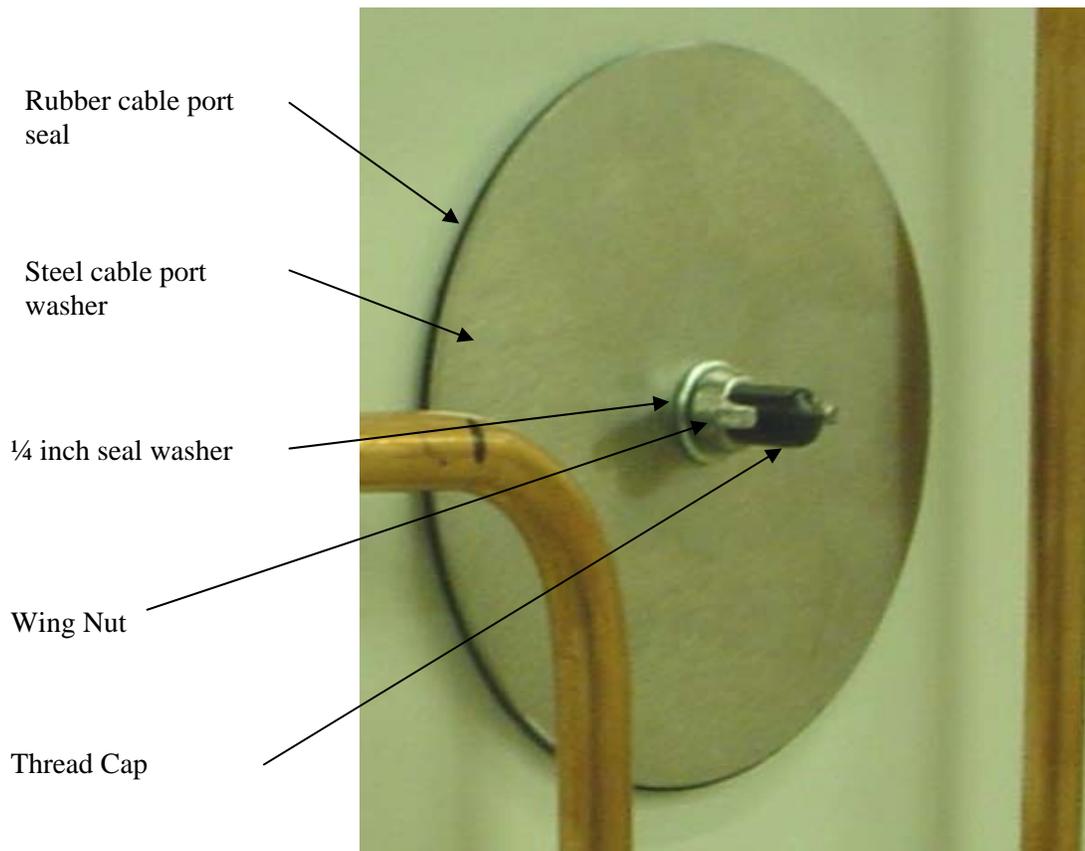
Note: Before removing all of the hardware, support the panel so that it does not fall.



2. Once the outer dress panel is removed, install cable port plug from the inside work area of the cabinet as shown.

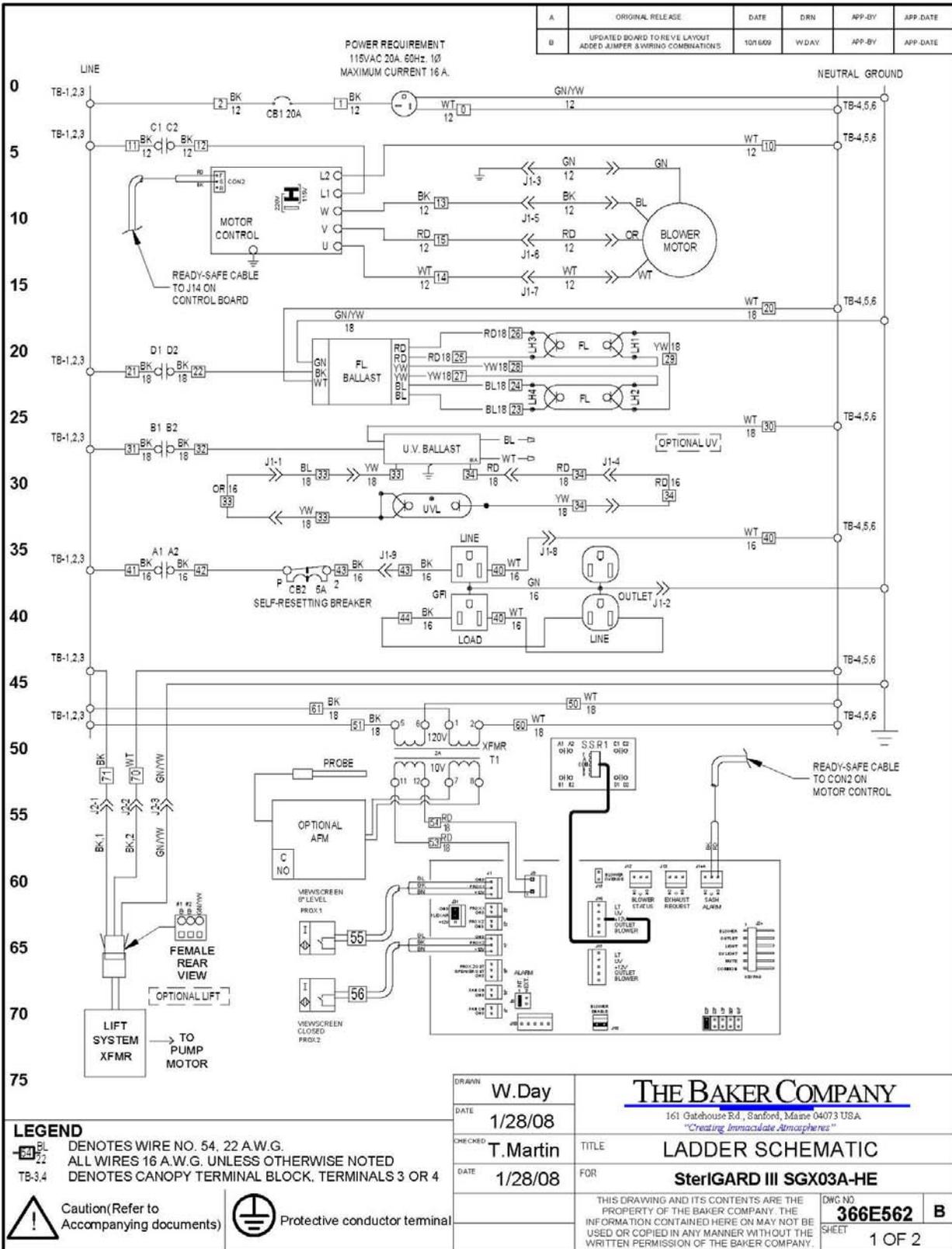


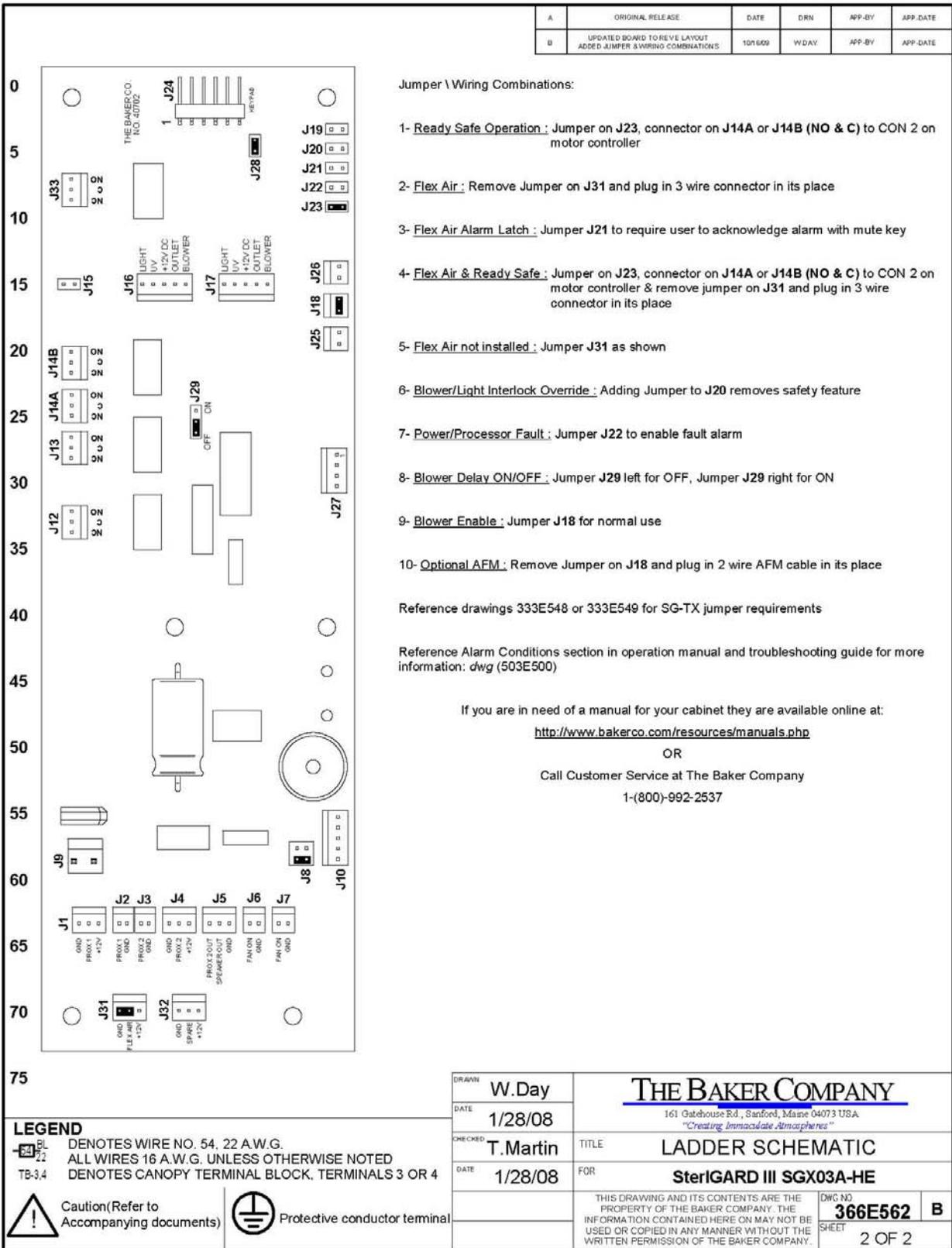
3. Next install rubber cable port, then the steel cover followed by the 1/4 inch seal washer and finally the 1/4 inch wing nut. Tighten accordingly. After wing nut is secure, place black thread cap over end.

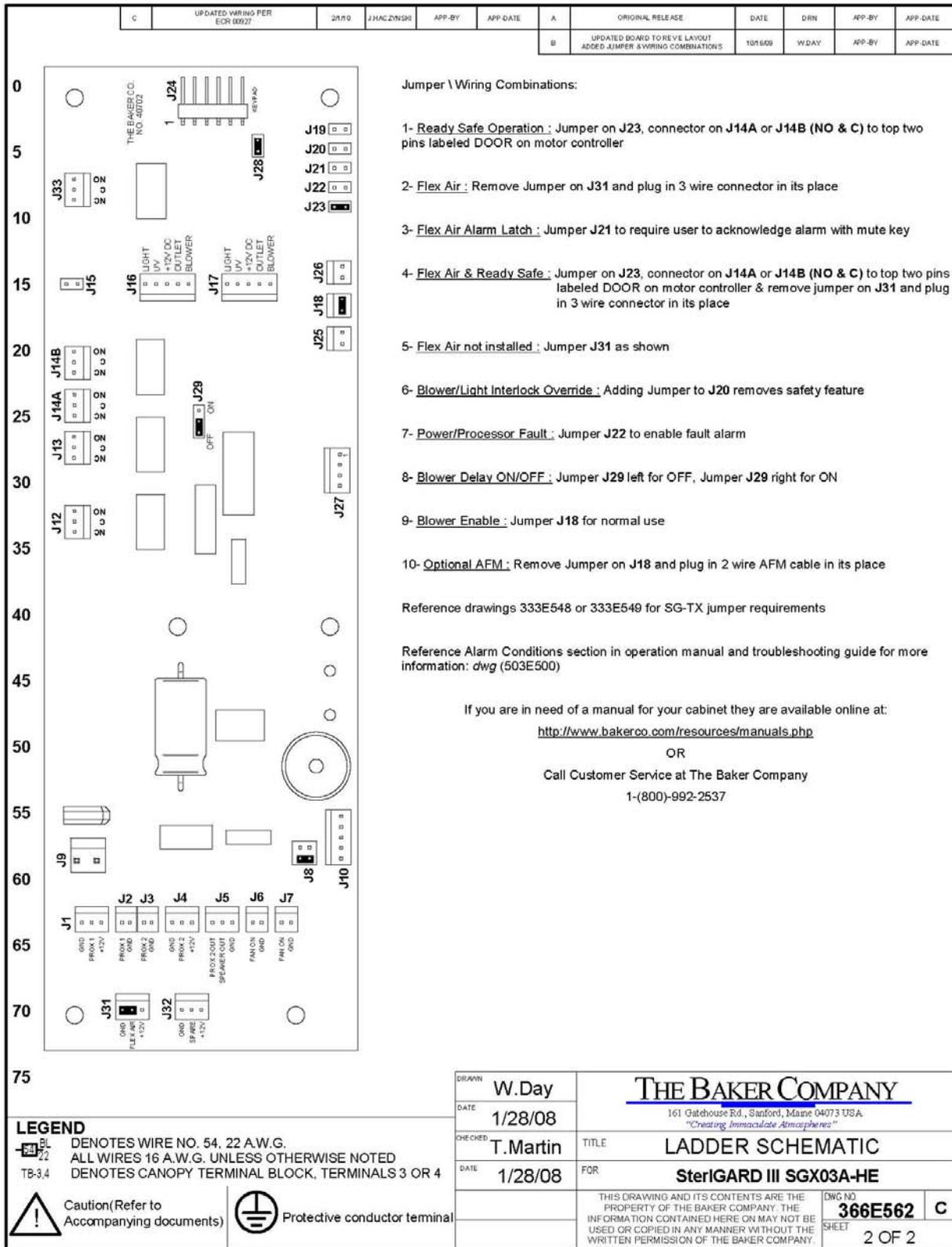


4. After cable port installation, replace outer right side panel and fasten all previously removed hardware.
5. Installation is complete.

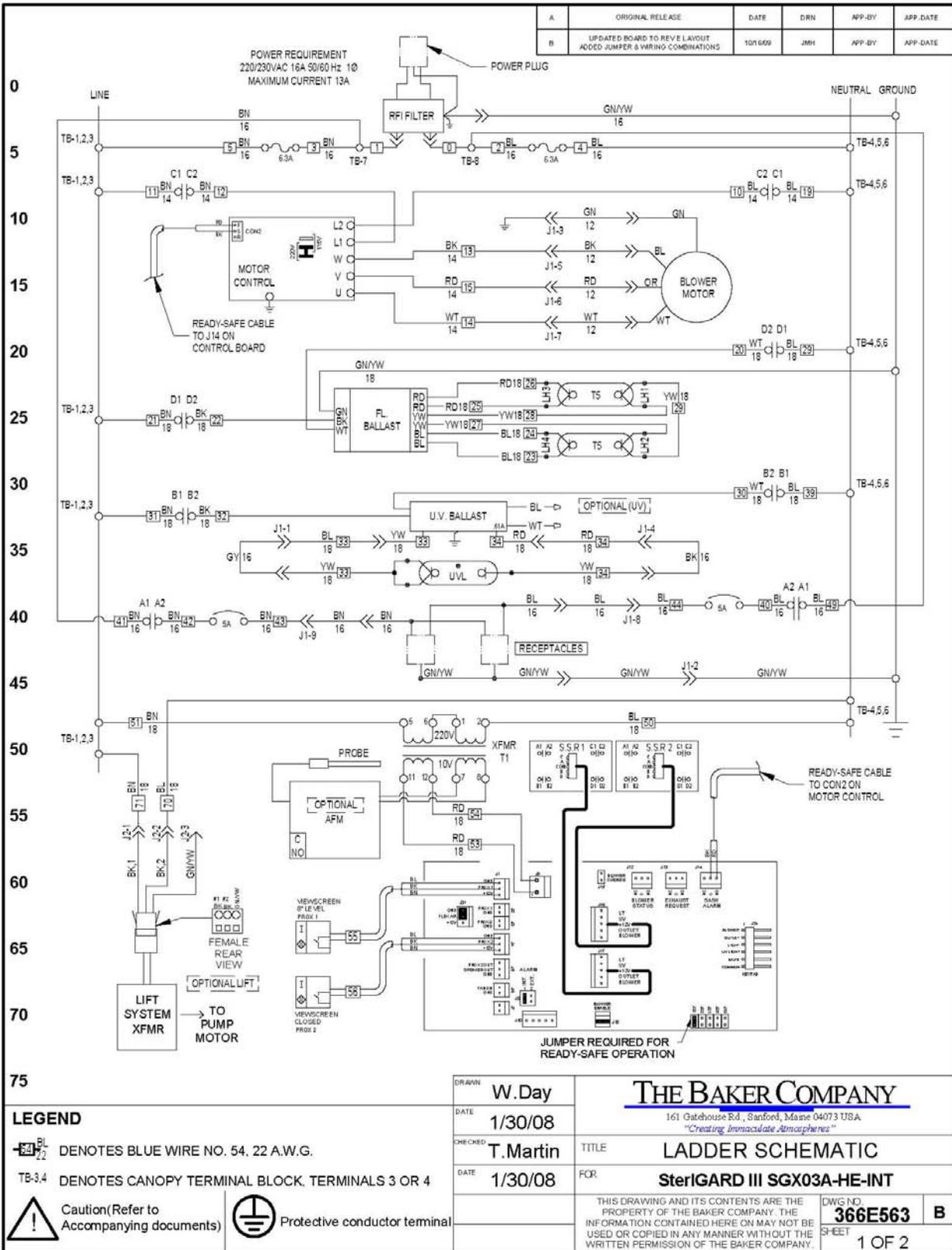
Ladder Schematic: SGX03A-HE: (KB MOTOR DRIVE)



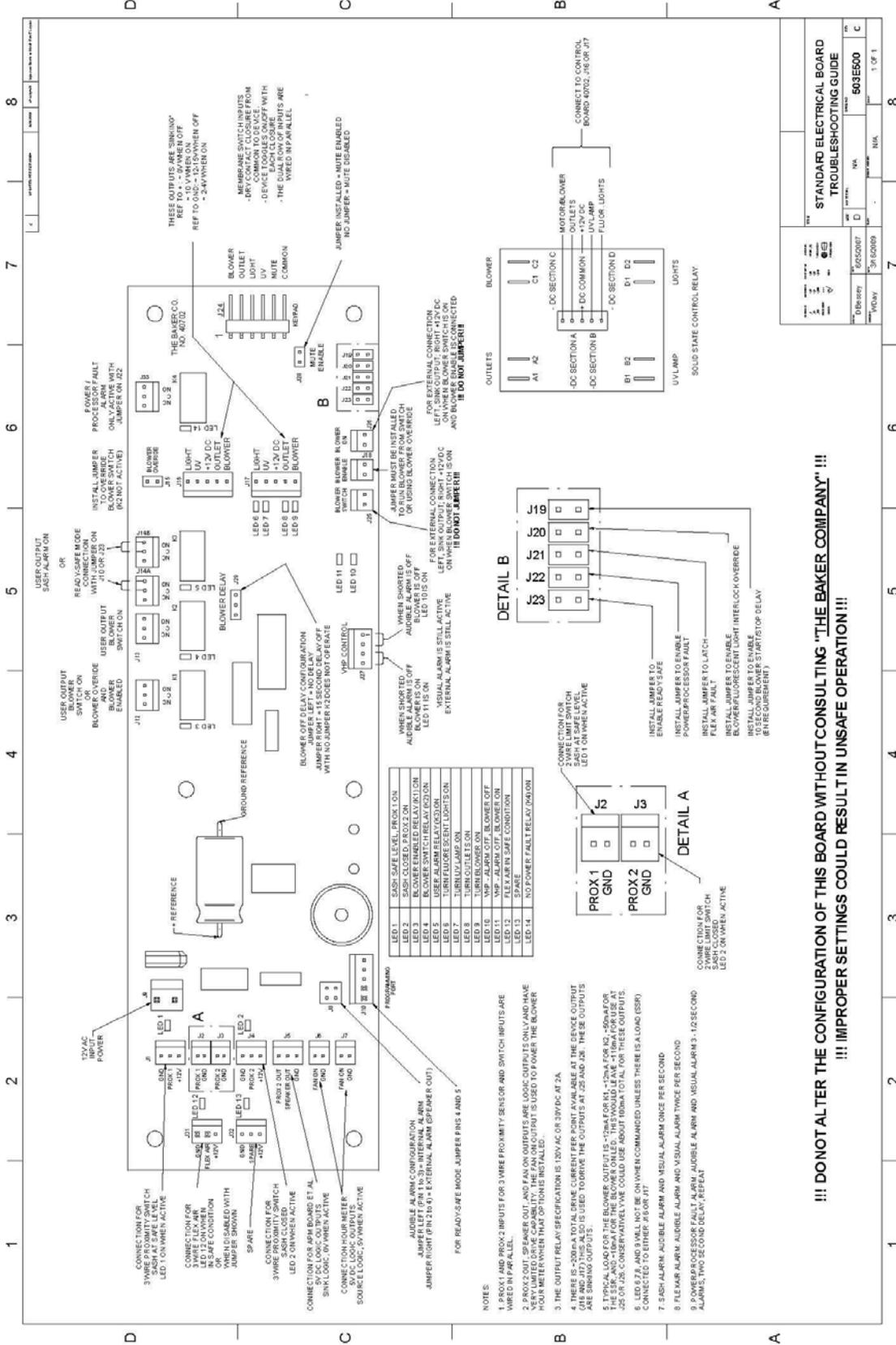




Ladder Schematic: SGX03A-HE-INT



Standard Electrical Board Troubleshooting Guide



Channel Stand Installation or Removal Procedure

Tools required: $\frac{7}{16}$ " deep socket, $\frac{9}{16}$ " wrench or socket

Parts List:

Item Number	Description	Qty
1	Channel stand, back	1
2	Channel stand, side	2
3	Bolt, carriage, $\frac{1}{4}$ "-20 x 2" long	4
4	Bolt, hex head, $\frac{3}{8}$ "-16 x 1" long	8
5	Flat washer, $\frac{1}{4}$ "	4
6	Lock washer, $\frac{1}{4}$ "	4
7	Flat washer, $\frac{3}{8}$ "	8
8	Lock washer, $\frac{3}{8}$ "	8
9	Hex nut, $\frac{1}{4}$ "	4
10	Adjustable leg leveler (or optional castor)	4

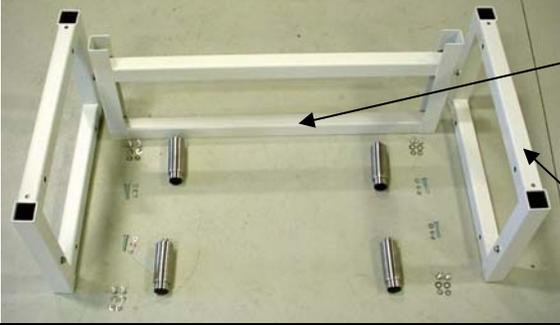
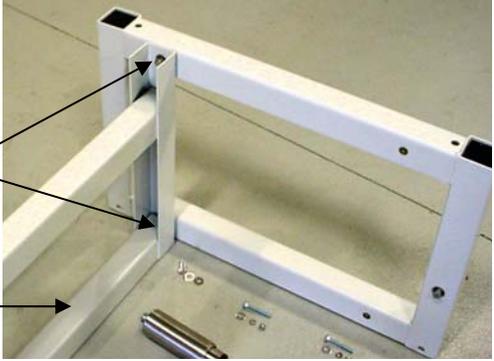
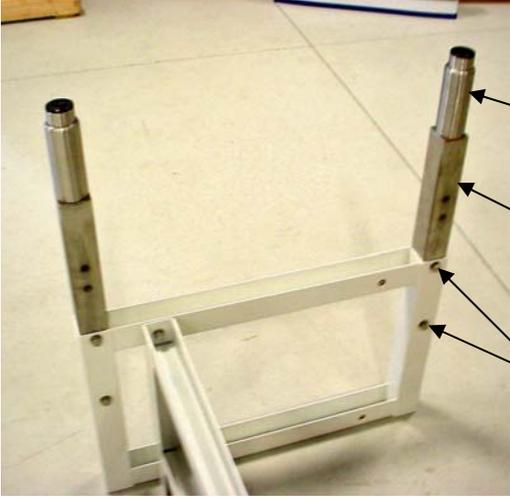
NOTE: Caster stand option requires four modified leg assemblies and two 45° stand supports (Not shown).

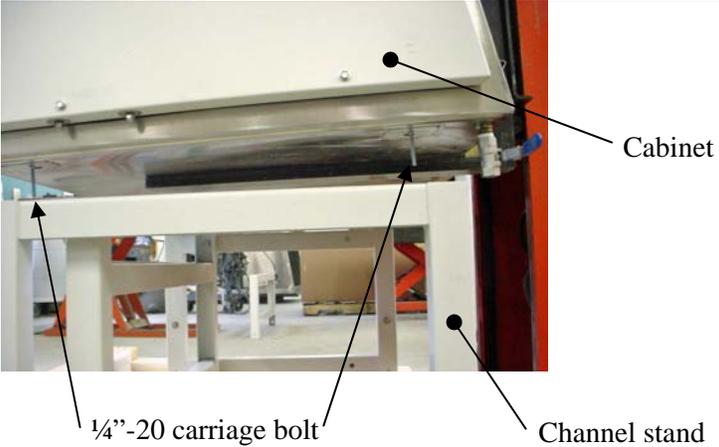
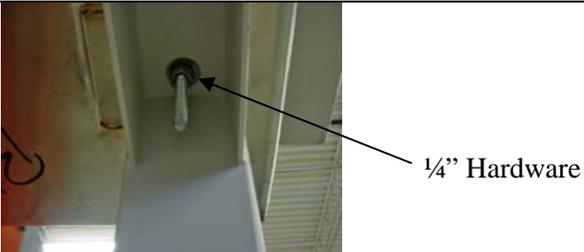
Procedure:

Step 1: Remove stand components from rear of cabinet skid.



Step 2: Gather all stand components, hardware, and tools.

<p>Step 3: Place stand sides on a flat floor so that the stainless steel legs are setting on the floor. Next place the stand back between the sides so that the open part of the channel is facing towards the floor.</p>	 <p>Channel stand, back</p> <p>Channel stand, side</p>
<p>Step 4: Using the $\frac{3}{8}$" x 1" hex head bolt with lock and flat washers [Items 4, 7 & 8], attach the sides and back by inserting the bolts through the (4) holes located in the channel stand back into the already installed rivnuts in the two sides. (2) bolts per side. Do not tighten any of these bolts until you have all (4) threaded in slightly. Tighten bolts after this is done.</p>	<p><u>$\frac{3}{8}$" Hardware</u> Flip the stand 90° to access lower hole</p>  <p>Channel stand, back</p>
<p>Step 5: With stand assembly complete, rotate stand upside down. Attach the leg levelers by screwing them into the bottom of the telescoping legs.</p> <p>The telescoping legs can now be adjusted to the desired height requirement. This is done by removing the $\frac{3}{8}$" bolts in each leg, extending the leg and reinstalling the bolts at the new hole location (2 bolts per leg).</p> <p>NOTE: If the cabinet is not in its final room location you may want to perform the leg adjustment after assembling the cabinet to the stand and moving it to the room.</p>	 <p>Leg leveler</p> <p>Telescoping leg</p> <p>$\frac{3}{8}$" Hardware [Items 4, 7 & 8]</p>

<p>Step 6: Rotate the stand assembly to the upright position so that the leg levelers are now resting on the floor.</p>	
<p>Step 7: Lift the cabinet high enough to allow clearance for the stand assembly to be positioned under it.</p> <p>Once the stand is positioned under the cabinet, install (4) 1/4" x 2" carriage 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 bolts must be guided through. Be careful not to let the bolts drag on the edge of the holes while lowering as burrs may occur on the bolts and cause threading problems.</p>	
<p>Step 8: With the cabinet resting on top of the stand assembly, place (1) 1/4" flat washer, lock washer, and hex nut onto each of the bolts. Tighten after all (4) nuts are threaded on.</p>	
<p>Step 9: The lift device should be removed if not being used to move cabinet into position within the room. If the lift device is mobile it may be used to maneuver cabinet into the desired location. A blanket could also be placed under the leg levelers while sliding the cabinet to avoid scuffing the flooring.</p>	

Stand Assembly Leg Extension Procedure

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

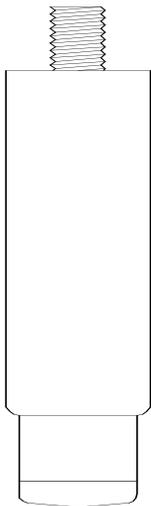
Stand Option	Work surface Elevation
Adjustable leg leveler	30 ¹ / ₈ " [765mm] and 38 ⁵ / ₈ " [981mm]
* Caster	30" [762mm] and 36" [914mm]

*Caster option not available for EN listed cabinets

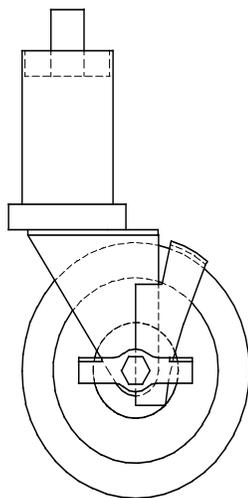
NOTE: Caster stand option has four modified leg assemblies and two 45° stand supports (Not shown)

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

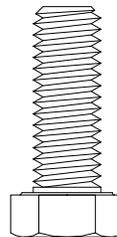
Item Number	Part Description	Quantity
1	Adjustable leg leveler (or Caster, if applicable)	4
2	Hex head bolt, ³ / ₈ "-16 x 1" long	8
3	Lock Washer, ³ / ₈ "	8
4	Flat Washer, ³ / ₈ "	8



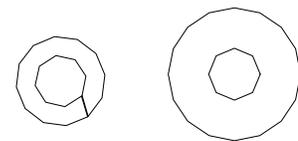
Adjustable leg leveler



Caster



Hex head bolt



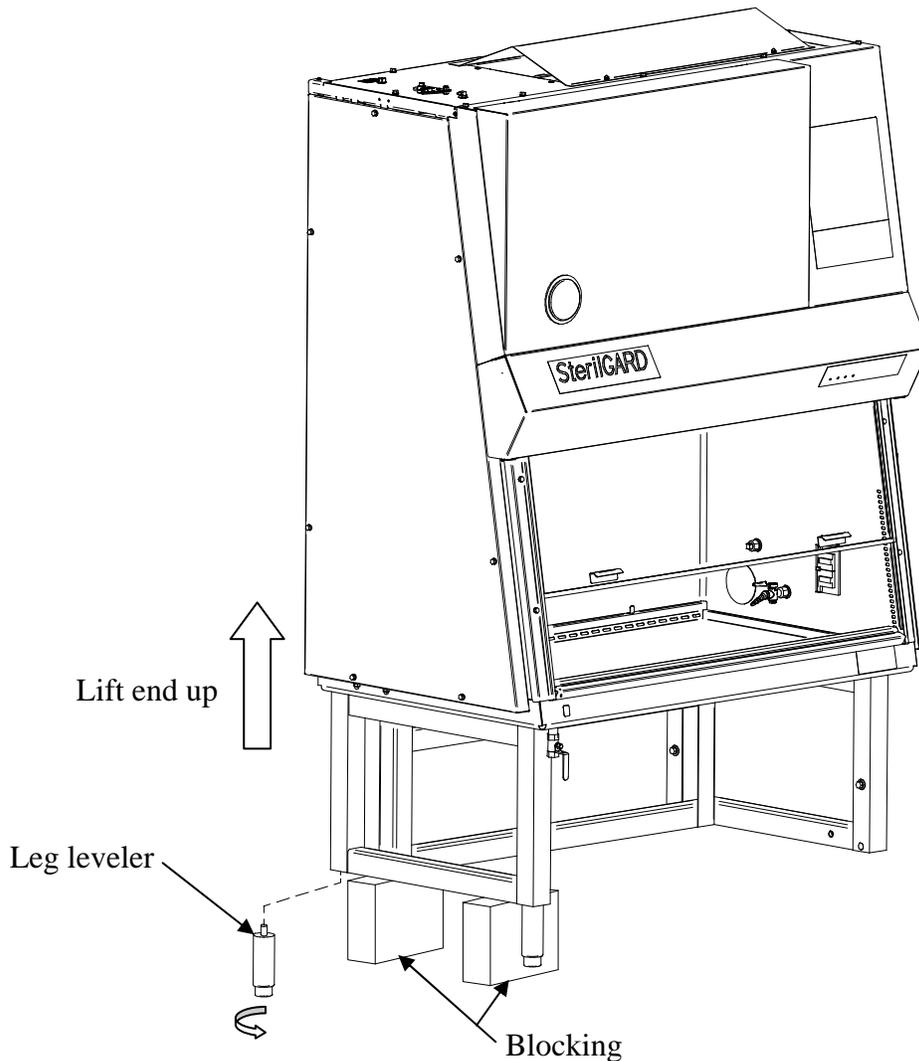
Lock & flat washer

Getting the cabinet off the pallet

1. To protect the floor finish, use a moving blanket. Carefully slide the cabinet off the pallet onto the moving blanket.
2. Slide the cabinet 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 cabinet / stand assembly up a minimum of 7" [178mm] and block in position. *See illustration below.*
4. Screw in two of the adjustable leg levelers or casters (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. Repeat steps 3 & 4 on the other end of the cabinet.

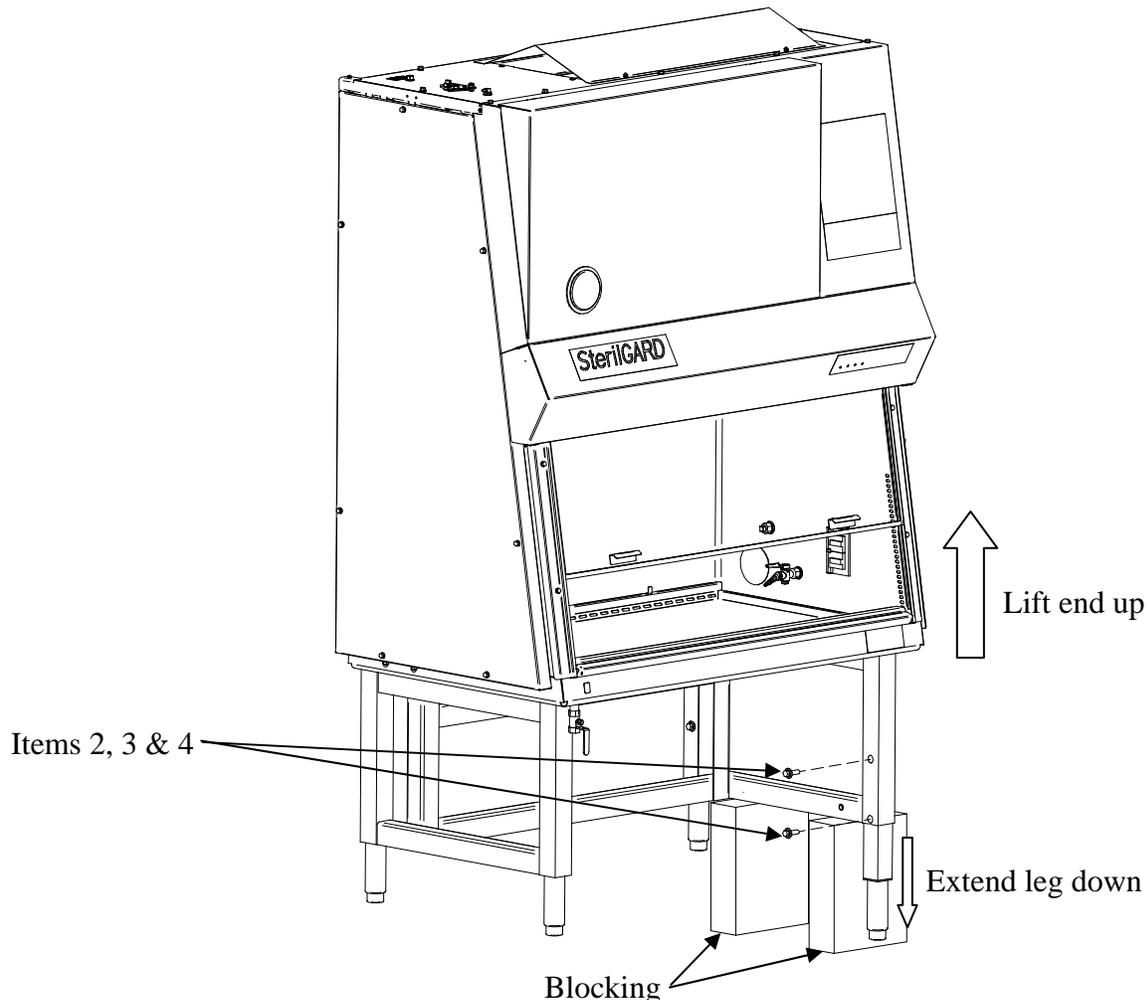
IMPORTANT

If the caster option is provided be sure to chock the previously installed casters [to prevent cabinet movement] before repeating steps 3 & 4.

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 cabinet 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.

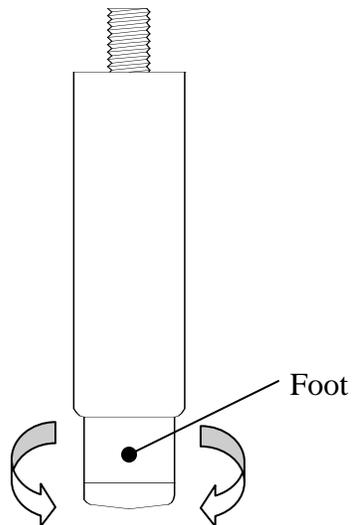


9. Bolt the leg in position with items 2, 3, and 4. (Two bolts per leg)
10. Repeat steps 7 through 9 for the other leg then remove the blocking.
11. Repeat steps 6 through 10 for the other end of the cabinet.

Raising the Unit to the 38 5/8" [981mm] Work Surface Height: Adjustable Leg Leveler Option

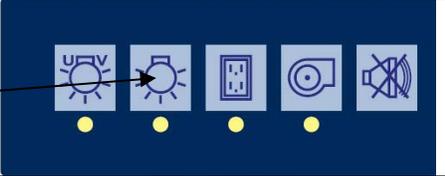
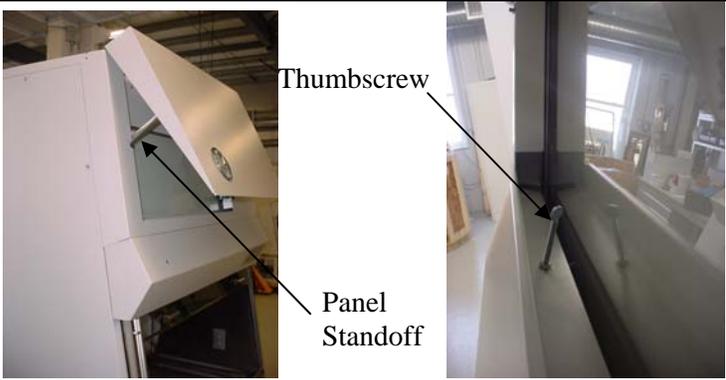
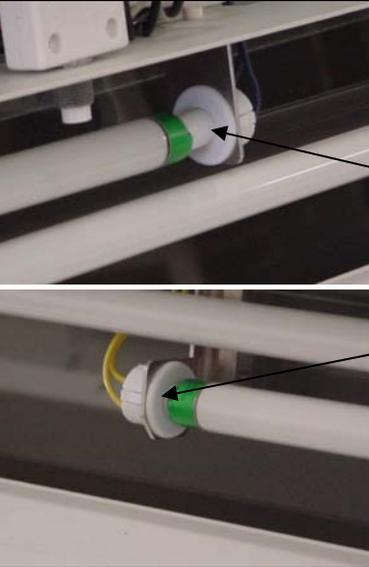
Raising the Unit to the 36" [914mm] Work Surface Height: Caster Option

12. Lift one end of the cabinet up a minimum of 7" [178mm] and block in position.
13. Unscrew the bolts (Two per leg) that hold the legs in the current work surface height position.
14. Slide the leg out of the stand until the holes line up at the next position.
15. Bolt the leg in position with items 2, 3, and 4. (Two bolts per leg)
16. Repeat steps 14 through 16 for the other leg then remove the blocking.
17. Repeat steps 13 through 17 for the other end of the cabinet.



Rotate foot for fine adjustment to aid in leveling of cabinet

Replacing Fluorescent Lamps

<p>1. Turn off the fluorescent lamps by depressing the light on/off switch located on the right side of the light canopy.</p>	 <p>Fluorescent Light on/off</p>
<p>2. Pull the vertical panel out enough at the bottom so that the thumbscrews can be accessed. 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.</p>	 <p>Thumbscrew</p> <p>Panel Standoff</p>
<p>3. Disconnect the restraint cables from the face of the electrical mounting board at both ends of the light canopy. Gently hinge the canopy down until it rests on the front of the unit.</p>	
<p>4. Using both hands, grasp one lamp carefully near each end. Slide the lamp sideways into the plunger socket until the other end of the lamp comes out of the fixed socket. Swing the lamp toward you and remove. Repeat the process for removing the second lamp and dispose of them properly.</p>	 <p>Plunger socket</p> <p>Fixed socket</p>
<p>5. Install new lamps by doing step# 4 in reverse order.</p>	

6. Hinge light canopy up temporarily and press the light on/off switch to verify that both lamps are working. The cabinet blower must be on in order for the light to function.

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

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 253.5×10^{-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. Turn off the UV lamp.
2. Raise the viewscreen to its maximum open position. The audible alarm should activate and the indicator on the light canopy will flash.
3. Using both hands, grasp the UV lamp carefully near each end and move it approximately 13mm [$\frac{1}{2}$ "] 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.
4. Install new lamp by following step 2 in reverse order. Making sure that the lamp is held securely in place.
5. 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.
6. Raise the viewscreen to the proper sash opening height. This will cancel the audible alarm and flashing indicator light.

Installation of Exhaust Transition System for SterilGARD® e³ 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:

Item #	Description	Qty SG 403A- HE	Qty SG 503A- HE	Qty SG 603A- HE
1	Exhaust transition	1	1	1
2	Exhaust filter access cover (open face)	1	1	1
3	1/4"-20 x 3/4" Washer head bolt	4	6	6
4	1/4" Seal washer	6	8	8
5*	1/4"-20 x 1" Hex head bolt	4	4	4
6*	1/4" Flat washer	6	6	6
7*	1/4" Lock washer	6	6	6
8*	1/4" 20 Double ended transition mounting bolt	2	2	2
9*	1/4"-20 Hex nut	2	2	2
10*	Exhaust transition mounting clip	2	2	2
11*	Air tight damper assembly (ATD) (Optional)	1	1	1
12*	Short exhaust collar (Optional)	1	1	1
13*	#8-32 Hex nut	4	4	4
14*	#8 Flat washer	4	4	4
15*	#8 Lock washer	4	4	4
16	Exhaust transition gasket, 1/4" x 1/2"	8.3 ft	10.3 ft	10.3 ft
17	Access cover gasket, 1/4" x 1/2"	6.2 ft	8.3 ft	8.3 ft
18	Decon Seal Box Assembly (Optional)	1	1	1
19	#8-32 Hex Head Screw	8	8	8

Packing List for Canopy Exhaust Connection (CEC)

* Items shipped loose in the packaging.

Exhausting Requirements for CEC:

Cabinet Model	Transition Model	Sash Height (Inchs)	*Exhaust Flow Rate Min/Max (cfm)	Pressure Loss Min/Max (" w.c.)	Pressure Loss with BSC Sealed for Decon. (" w.c.)	**Intake Velocity (fpm)	Additional Heights (Inchs)	Exhaust Duct Dia. (Inchs)
SG 403A-HE	CEC403A-HE	8" [203.2mm]	322 / 520 [152 / 245 L/sec]	0.05 / 0.25 [12.4 / 62.3 Pa]	0.20 [49.8 Pa]	89 [0.452 m/sec]	ET 3.80" Decon Box 3.00" Short Collar 1.50" ATD 7.75"	10 [254mm]
SG 403A-HE	CEC403A-HE	10" [254mm]	401 / 585 [189 / 276 L/sec]	0.08 / 0.30 [19.9 / 74.7 Pa]	0.30 [74.7 Pa]	82 [0.416 m/sec]	SAME AS ABOVE	10 [254mm]
SG 403A-HE	CEC403A-HE	12" [304.8mm]	438 / 614 [207 / 290 L/sec]	0.09 / .40 [22.4 / 99.6 Pa]	0.40 [99.6 Pa]	77 [0.391 m/sec]	SAME AS ABOVE	10 [254mm]
SG 503A-HE	CEC503A-HE	8" [203.2mm]	412 / 680 [194 / 321 L/sec]	0.10 / 0.35 [24.9 / 87.2 Pa]	0.20 [49.8 Pa]	93 [0.472 m/sec]	SAME AS ABOVE	10 [254mm]
SG 503A-HE	CEC503A-HE	10" [254mm]	N/A	N/A	N/A	N/A	SAME AS ABOVE	10 [254mm]
SG 503A-HE	CEC503A-HE	12" [304.8mm]	618 / 770 [292 / 363 L/sec]	0.20 / .40 [49.8 / 99.6 Pa]	0.25 [62.3 Pa]	94 [0.477 m/sec]	SAME AS ABOVE	10 [254mm]
SG 603A-HE	CEC603A-HE	8" [203.2mm]	490 / 754 [231 / 356 L/sec]	0.15 / 0.40 [37.4 / 99.6 Pa]	0.34 [84.7 Pa]	85 [0.432 m/sec]	SAME AS ABOVE	10 [254mm]
SG 603A-HE	CEC603A-HE	10" [254mm]	613 / 914 [289 / 431 L/sec]	0.20 / 0.50 [49.8 / 124 Pa]	0.60 [149 Pa]	84 [0.427 m/sec]	SAME AS ABOVE	10 [254mm]
SG 603A-HE	CEC603A-HE	12" [304.8mm]	665 / 1015 [314 / 479 L/sec]	0.20 / 0.50 [49.8 / 124 Pa]	0.75 [186.3 Pa]	82 [0.416 m/sec]	SAME AS ABOVE	10 [254mm]

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.

Installation Instructions for CEC:

(Reference Figures 1 and 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 cover [Item 2] from the front of the transition by removing four (4) or six (6) bolts with seal washers. [Items 3 & 4] (See Figure 2 - 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] (See Figure 2 - Detail B) along with transition mounting clip and hardware on the double ended mounting bolt. [Items 6, 7, 9 & 10] (See Figure 2 - Detail C) Tighten all hardware until the transition gasket is compressed 25 to 50%.
6. Reinstall the exhaust filter access cover. [Item 2] (See Figure 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 exhaust collar [Item 12] and gasket to the eight (8) studs located at the top of the transition using #8 hardware. [Items 13, 14 & 15] (See Figure 2)

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.

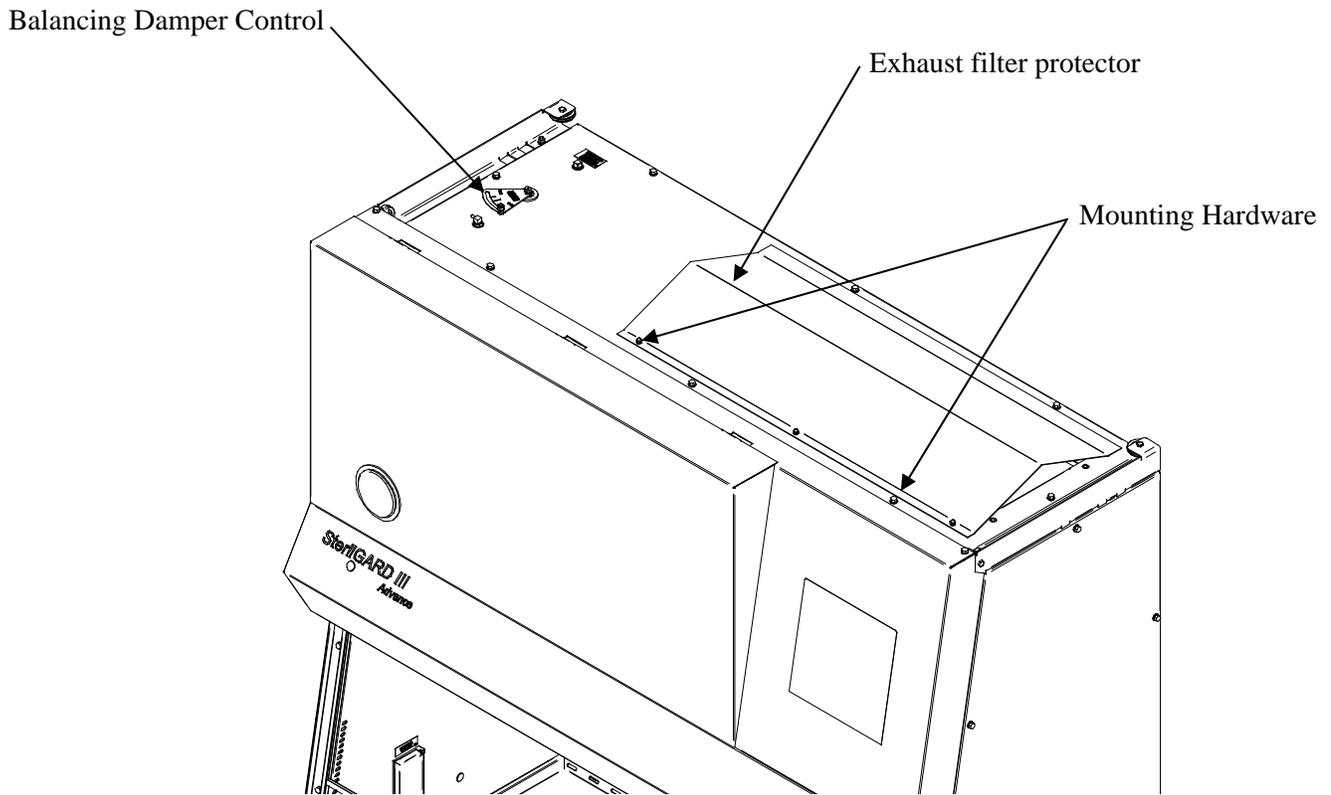


Figure 1: Type A2 cabinet – Exhausted to the room

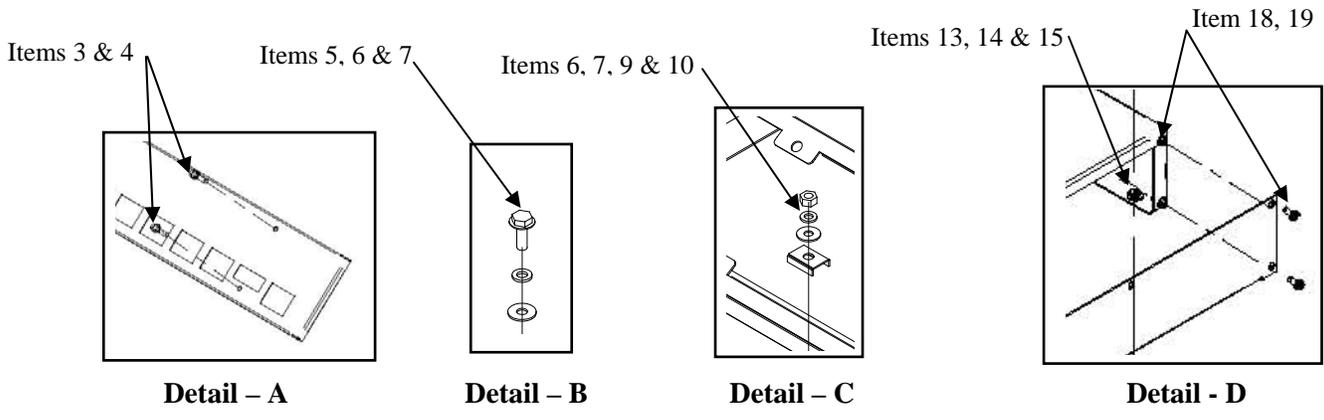
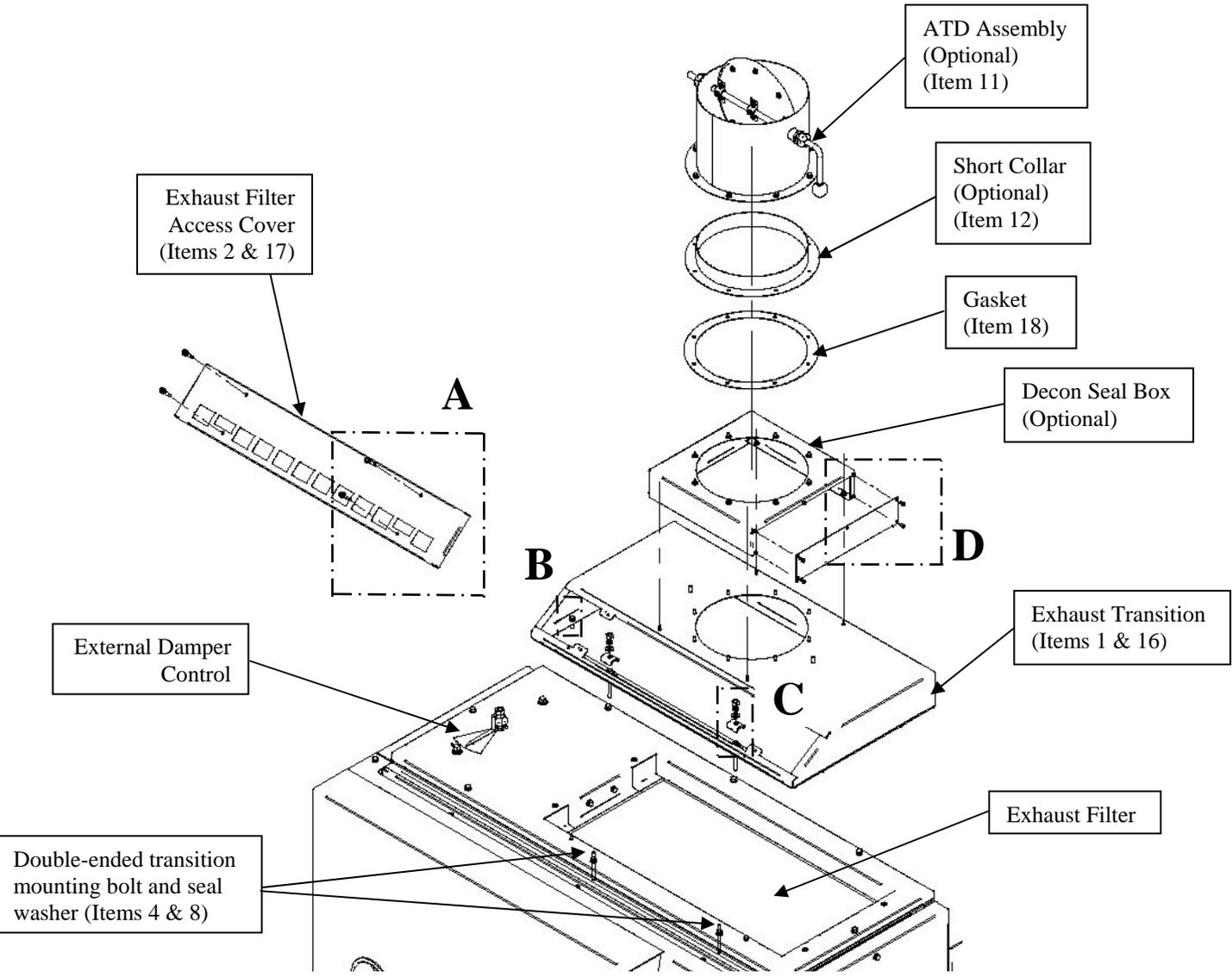


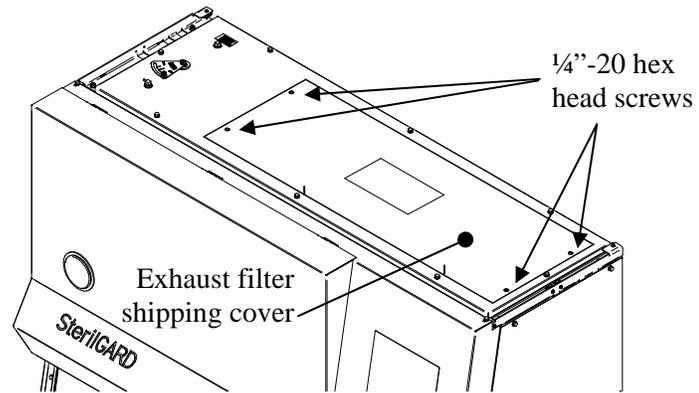
Figure 2: Canopy Exhaust Connection (CEC)

Installation Instructions for *FlexAIR Canopy Exhaust Connection (CEC)

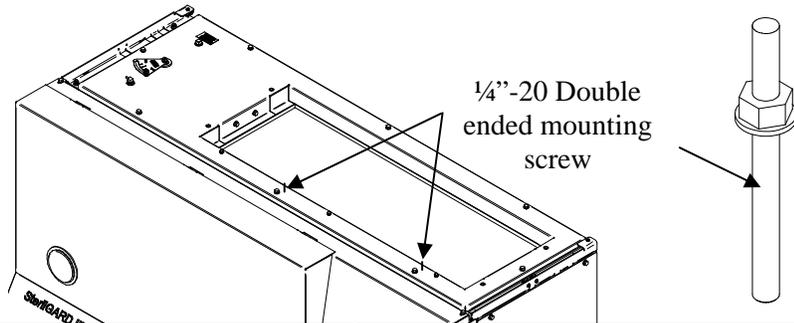
IMPORTANT

***FlexAIR must be hard mounted to building exhaust ducting.**

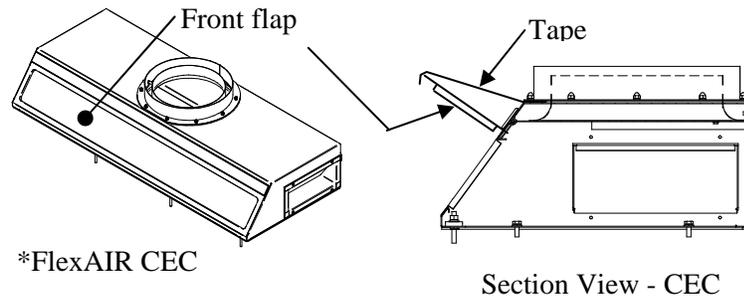
Step# 1: Remove the exhaust filter shipping cover located over the exhaust filter opening by removing the ¼”-20 hex head screws. This cover can be discarded.



Step# 2: Two (2) ¼”-20 double ended mounting screws with seal washers are installed for mounting the front edge of the *FlexAIR to the top of the cabinet.

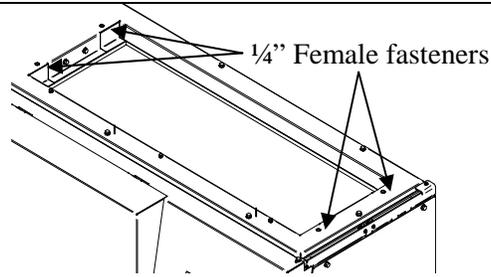


Step# 3: Remove all blue packaging tape from CEC flaps. Carefully hinge open the front flap and use a strip of tape in the center of the flap to help hold it open.



Step# 4: Make an exhaust filter protector out of thin flat cardboard or plastic that is 13 ¾” x 24”. Carefully place it on top of the filter. This will help protect the filter media during installation of the CEC mounting hardware.

Step# 5: Place the CEC over the exhaust filter opening. Align the two (2) holes at each end of the CEC with the 1/4" female fasteners that are located at each side of the exhaust filter opening. Align front CEC holes over 1/4"-20 double ended mounting screws.



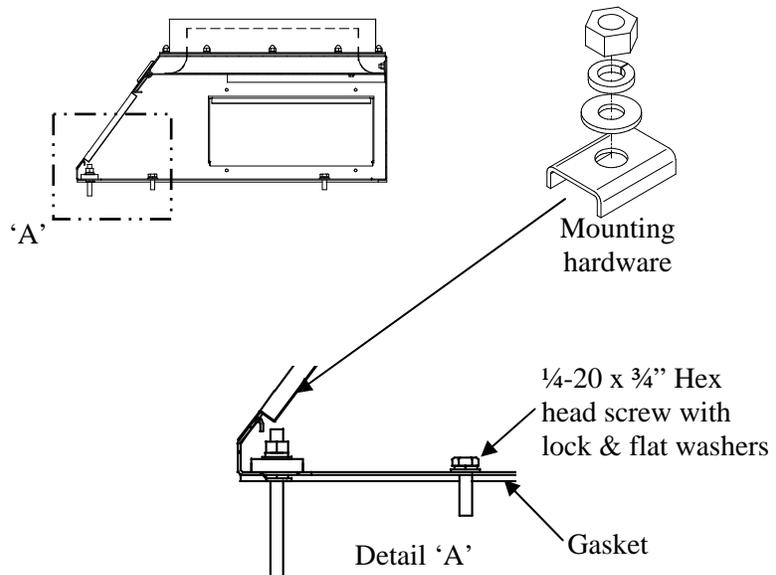
Step# 6: Install the CEC mounting hardware. Make sure to position the filter protector made in step# 4 so it will stop any falling hardware or tools from contacting the filter media.

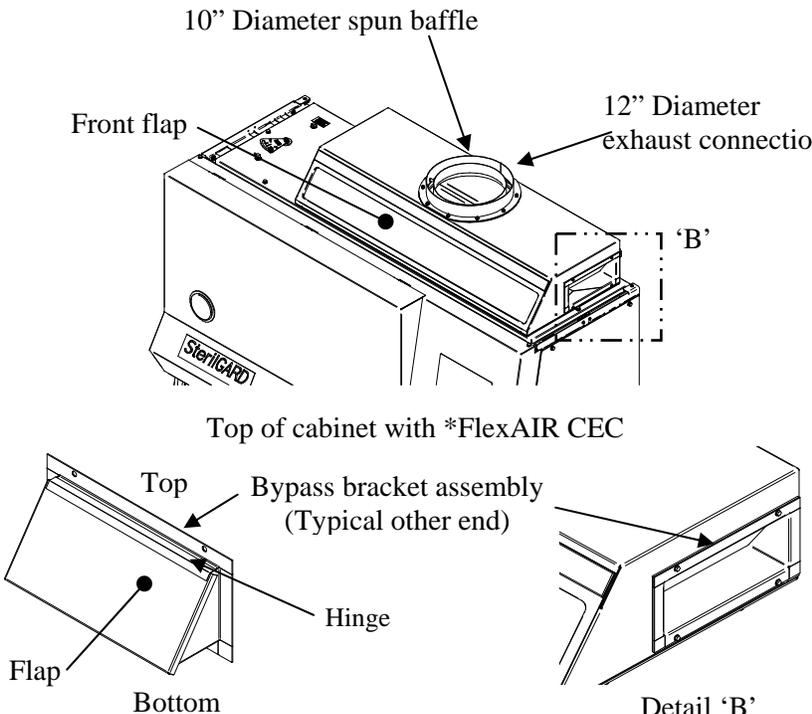
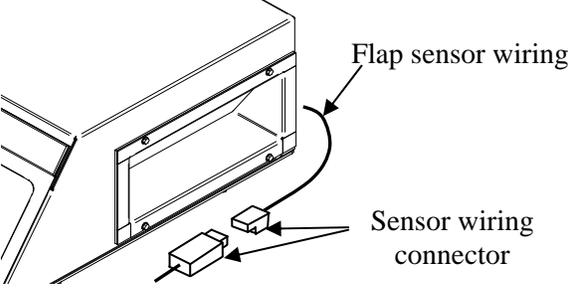
Tighten mounting hardware until the CEC gasket is compressed approximately 25 to 50%.

IMPORTANT:

If necessary, carefully remove the bypass bracket assembly [Detail B] on each end of the CEC for better access to the rear mounting hardware but make sure to reinstall the assemblies so that the flap's hinge is on top and that the flap moves freely. Also make sure to evenly tighten the bracket's #8 hex mounting screws so that the bracket doesn't twist and cause the flap to not lay flat.

Remove the filter protector.

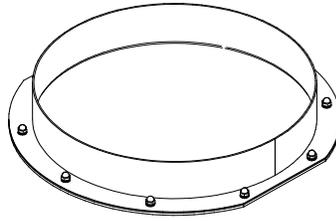


<p>Step# 7: Remove the tape holding the front flap open. The flap should move freely and lay flat on the *FlexAIR metal frame.</p>	 <p>10" Diameter spun baffle</p> <p>Front flap</p> <p>12" Diameter exhaust connection</p> <p>'B'</p> <p>Top of cabinet with *FlexAIR CEC</p> <p>Top</p> <p>Bypass bracket assembly (Typical other end)</p> <p>Hinge</p> <p>Flap</p> <p>Bottom</p> <p>Detail 'B'</p>
<p>Step# 8: Connect flap sensor wiring coming out the back right side of the CEC to the connector coming out the top right side of the cabinet dress panel.</p>	 <p>Flap sensor wiring</p> <p>Sensor wiring connector</p>
<p>Step# 9: Before attaching the cabinet to the building exhaust system verify that the required airflow and static pressure are available at the connection point.</p>	

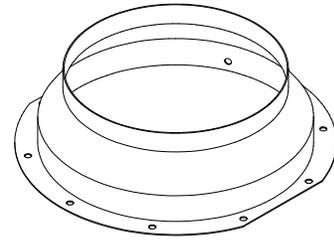
Step# 10: Position the cabinet in the room and connect the cabinet to the building exhaust ducting. **The *FlexAIR CEC must be hard mounted to the building exhaust duct.**

The CEC comes with a 12" diameter flanged connection and inner 10" diameter spun baffle. The connection has studs equally spaced for attaching to a flanged exhaust duct. **You should never connect to the spun baffle.**

Baker offers optional flanged exhaust collar connections & air tight dampers.



Optional 12" short collar



Optional 12" to 10" transition collar

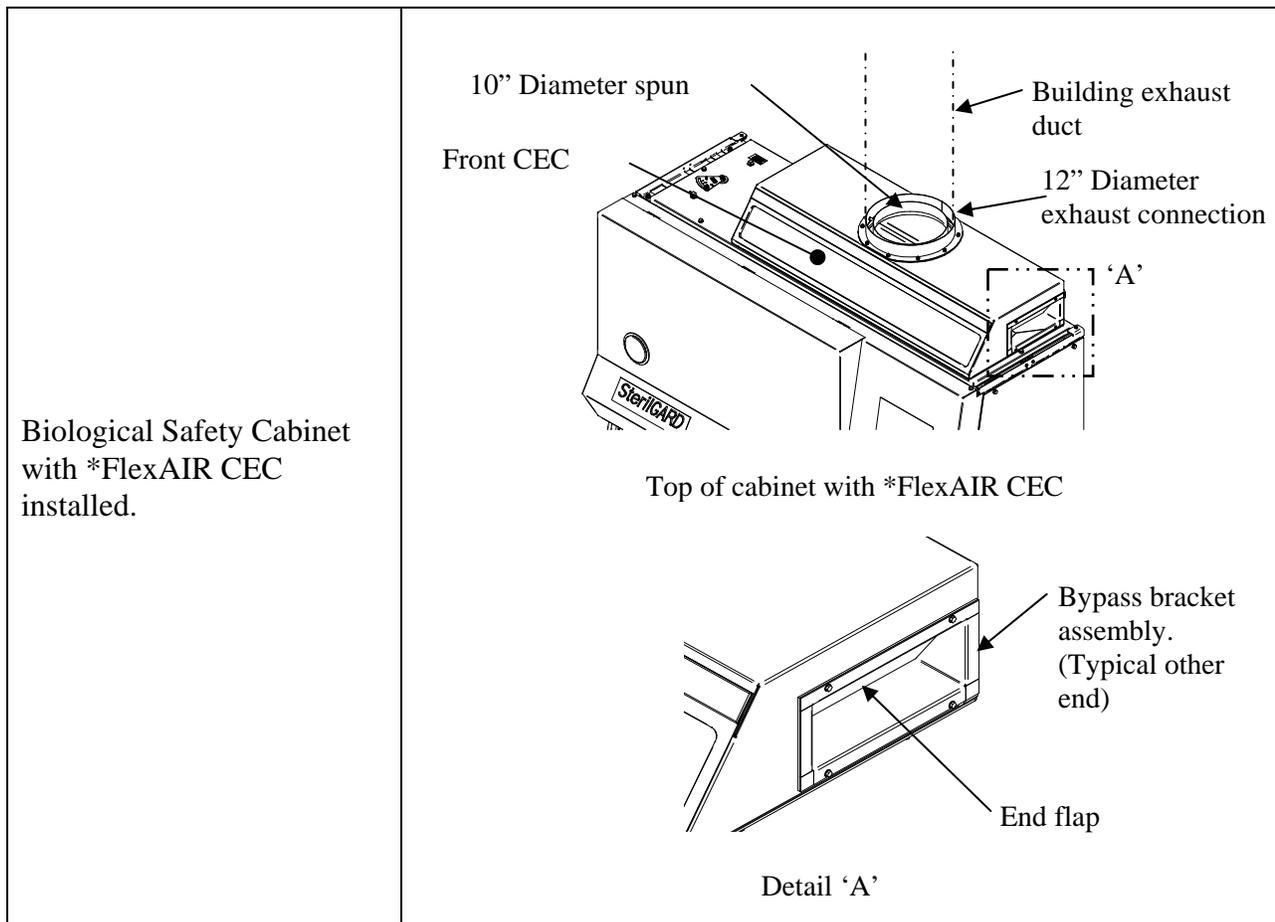
With the CEC installed and connected to the building exhaust system the cabinet should be certified by a qualified technician to assure proper cabinet performance. [See Operating Instructions for *FlexAIR CEC]

***FlexAIR CEC is Patent Pending**

Operating Instructions for *FlexAIR Canopy Exhaust Connection (CEC)

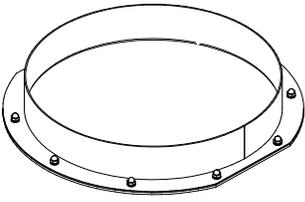
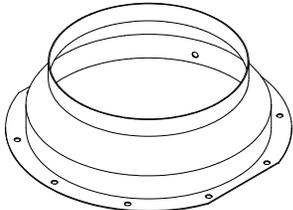
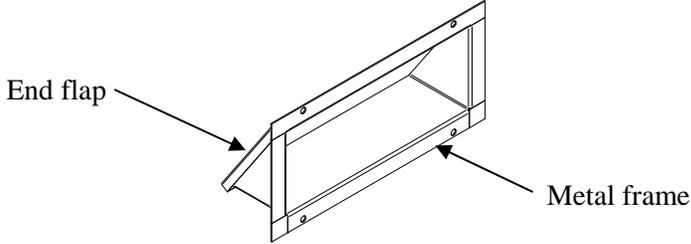
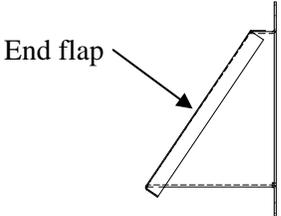
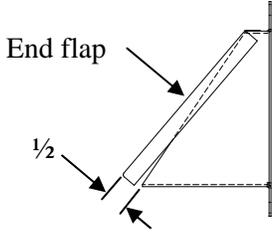
IMPORTANT

- Only qualified technicians should perform this procedure.
- *FlexAIR must be hard mounted to building exhaust ducting.
- Carcinogens and other toxins present a unique chemical deactivation problem and the standard biological decontamination will not be effective against chemicals or other non-biological materials. With materials of this kind, consult a qualified safety professional.



*FlexAIR CEC Operation

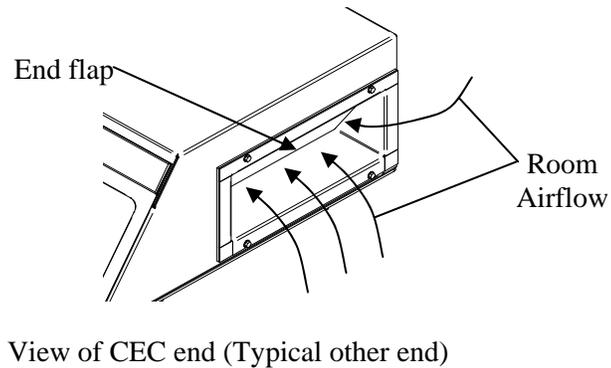
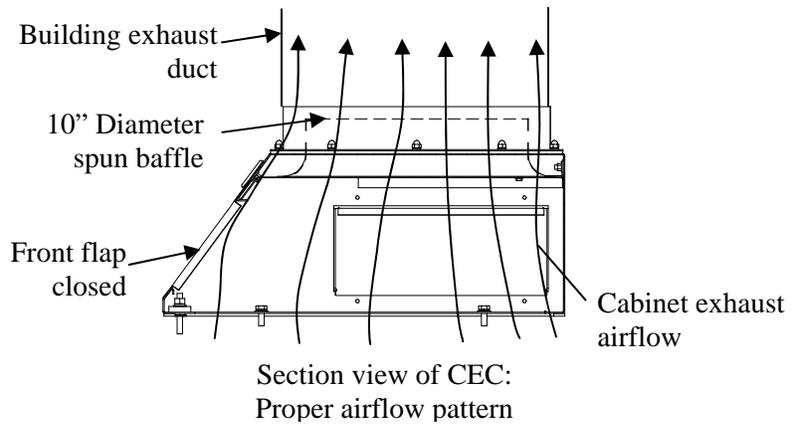
Step# 1: Before attaching the cabinet to the building exhaust system verify that the required airflow and static pressure are available at the connection point. Follow the installation instructions for connecting the *FlexAIR CEC to the cabinet.

<p>Step# 2: Position the cabinet in the room and connect the cabinet to the building exhaust ducting. The *FlexAIR CEC must be hard mounted to the building exhaust duct.</p> <p>The CEC comes with a 12" diameter flanged connection and inner 10" diameter spun baffle. The connection has studs equally spaced for attaching to a flanged exhaust duct. You should never connect to the spun baffle.</p> <p>Baker offers optional flanged exhaust collar connections & air tight dampers.</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Optional 12" short collar</p> </div> <div style="text-align: center;">  <p>Optional 12" to 10" transition collar</p> </div> </div>
<p>Step# 3: Turn on the cabinet motor/blower and building exhaust system. Adjust the building exhaust flow by means of a damper or valve in the duct until the *FlexAIR end flaps open slightly (approximately 1/2"). The front flap should be closed.</p> <p>This prior adjustment of the exhaust airflow and verification of the flaps will help simplify the cabinet airflow testing in the following step.</p>	<div style="text-align: center;">  <p>Bypass bracket assembly</p> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p>End flap closed</p> </div> <div style="text-align: center;">  <p>End flap open</p> </div> </div> <p style="text-align: center;">Side view: Bypass bracket assembly</p>

Step# 4: Verify that the cabinet is operating at the proper intake and downflow conditions specified on the data label or test report. If needed, adjustments to the cabinet's internal damper should be made first prior to any speed control changes.

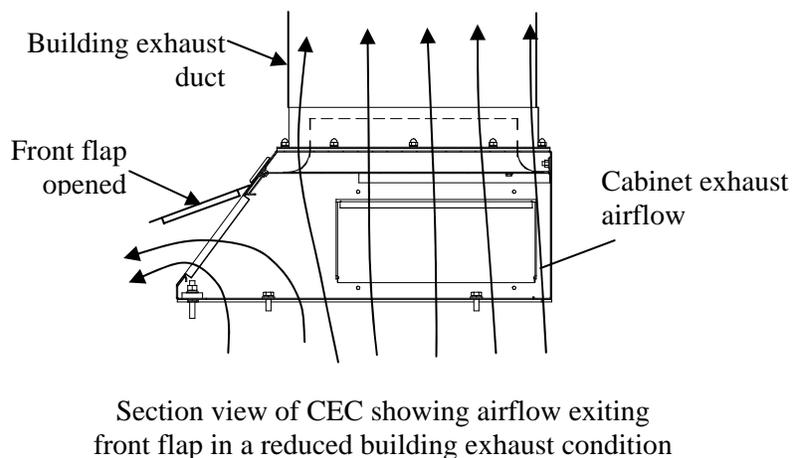
Step# 5a: Once the cabinet intake and downflow have been verified, minor adjustments can be made to the building exhaust system to increase or decrease the additional air being evacuated from the room via the *FlexAIR end flaps.

Verification with a smoke source shall be conducted at the end flap locations to determine inward airflow direction.



Step# 5b: When the building exhaust is reduced or fails the *FlexAIR's front flap shall open indicating an alarm condition.

The alarm can be checked by lifting the front flap open at the bottom approximately 1/16" simulating an exhaust reduction.



Step# 6: Now the remaining cabinet testing can be performed per NSF/ANSI Standard 49.

*- FlexAIR CEC is Patent Pending

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Airflow Monitor (AFM) Installation and Calibration: SterilGARD® Free Standing Vented to Room.

(Note: This option will indicate a low intake velocity condition by monitoring the air volume through the exhaust filter.)

Vented 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 scribe 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 weld studs on top of the cabinet.
4. 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. Place the exhaust filter protector on top of the unit locating the holes onto the two front weld studs, replace #8-32 hardware and tighten.
6. Confirm that the cabinet and exhaust system airflow are at the proper set point.
7. Check to make sure that the Air Flow Monitor probe is installed correctly.
8. Reduce the cabinet blower speed to achieve 80fpm [0.406 m/sec.] through the cabinet access opening.
9. At this reduced intake, the yellow light to the Air Flow Monitor should come on, followed by the flashing red light and audible alarm (if the slide switch for the audible alarm is in the ON position) and the supply blower will shut off.
10. If the red light is off, turn the ADJUST screw *very, very* slowly in a counterclockwise direction until the yellow light appears, followed in six (6) seconds by the red light.
11. Next, turn the ADJUST screw *very* slowly clockwise until the red light goes off. Wait 30 seconds and turn the screw counterclockwise again until the yellow light appears, followed by the red light. This sets the low alarm point for the Air Flow Monitor.
12. Adjust the total airflow volume back to the operating level.

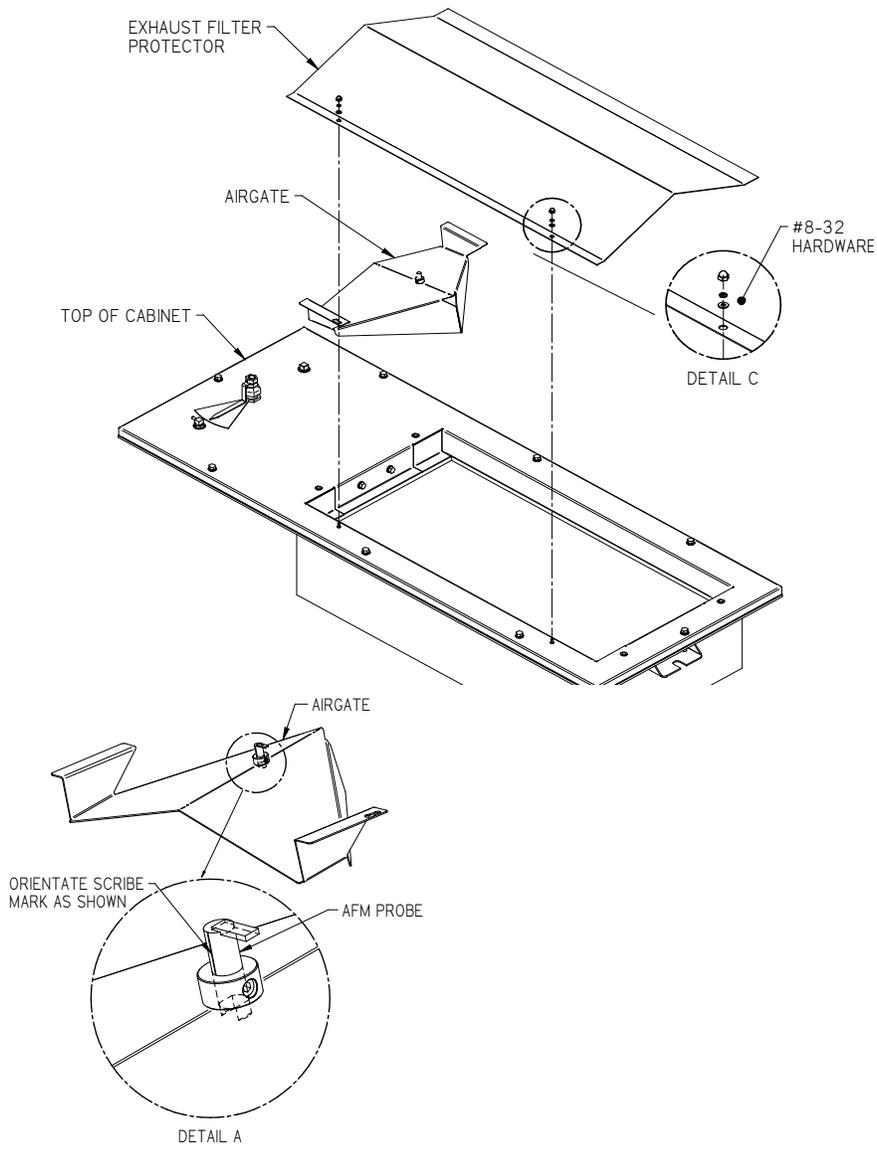


Figure 1: AFM installed in cabinet venting to room

Sash Opening (Inches)	Model	Intake airflow at 80 fpm [0.406 m/sec] (cfm)	NSF Listed
8" [203.2mm]	SG 403A-HE	205 [96.8 L/sec]	Yes
	SG 503A-HE	258 [122 L/sec]	Yes
	SG 603A-HE	311 [147 L/sec]	Yes
10" [254mm]	SG 403A-HE	256 [121 L/sec]	Yes
	SG 503A-HE	N/A	N/A
	SG 603A-HE	389 [184 L/sec]	Yes
12" [304.8mm]	SG 403A-HE	306 [144 L/sec]	N/A
	SG 503A-HE	387 [183 L/sec]	Yes
	SG 603A-HE	467 [220 L/sec]	N/A

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

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.

Installation & Calibration of Airflow Monitor (AFM) in Canopy Exhaust Connection

Note: This option will indicate a low exhaust flow condition by monitoring the air through the building exhaust duct.

1. Remove all items from shipping container and identify the following: Airflow Monitor (AFM) with probe and Velcro strip for mounting AFM to cabinet. (See Figure 2)
2. If the Canopy Exhaust Connection (CEC) has not been installed, see INSTALLATION OF EXHAUST TRANSITION SYSTEM FOR STERILGARD CABINETS in this manual.
3. Locate a section of building exhaust ductwork downstream of the cabinet away from anything that may cause air turbulence such as duct transitions, elbows or dampers. The AFM requires non-turbulent airflow to operate properly (NSF recommends two duct diameters spacing).
NOTE: The AFM probe comes with a 10ft [3.05m] cord.
4. The ductwork where the AFM probe will be located will require a sealed fitting for the probe to insert into and be held firmly. Figure 3 shows one example of a sealed fitting that may be used. If the nut cannot be installed inside the duct then another method of firmly fastening the strain relief to the duct will be required. (Example: Use ½" NPT half coupling welded or glued to the exterior ductwork.) **NOTE: If the duct is directly over the cabinet exhaust opening, the cabinet exhaust should be covered to prevent drill chips from dropping on to the exhaust filter media.**
5. Insert the 7" [177.8mm] long AFM probe into the sealed fitting. The probe has a long scribe mark on its side. Rotate the probe so the scribe mark is positioned facing upstream of the airflow. This will orientate the thermisters (glass beads) on the probe tip in the proper plane so it can properly sense the airflow. Fully insert the probe into the sealed fitting and secure in place. **NOTE: Make sure that the probe doesn't rotate out of position when tightening the gland nut.**

6. Confirm that the cabinet and exhaust airflow in the building ductwork are at the proper set point.
7. Check cable connections for power and probe on AFM.

Calibration for low airflow alarm condition

8. Reduce the exhaust airflow in the building ductwork until the CEC is no longer able to contain the cabinet's exhaust air. This can be verified by blowing smoke around the CEC opening. If any smoke is blown out away from the opening then it is not containing.
9. At this reduced airflow, the AFM's yellow light should come on, followed by the flashing red light and audible alarm (if the slide switch for the audible alarm is in the ON position).
10. If the red light is off, turn the ADJUST screw *very, very* slowly in a counterclockwise direction until the yellow light appears, followed in six (6) seconds by the red light.
11. Next, turn the ADJUST screw *very* slowly clockwise until the red light goes off. Wait 30 seconds and turn the screw counterclockwise again until the yellow light appears, followed by the red light. This sets the low airflow alarm point for the AFM.
12. Readjust the exhaust airflow in the building ductwork back to the proper set point. The AFM's green light will come on.

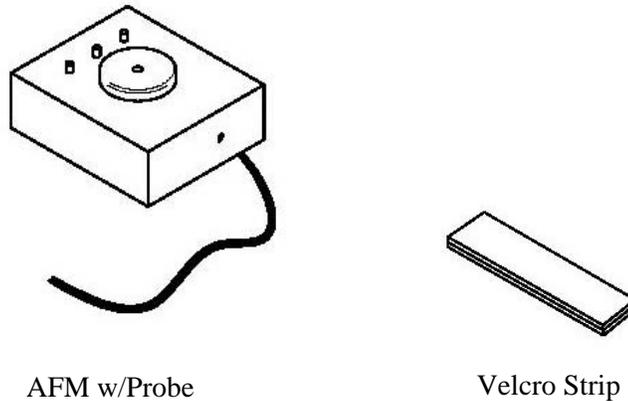


Figure 2: Parts Included for field installation

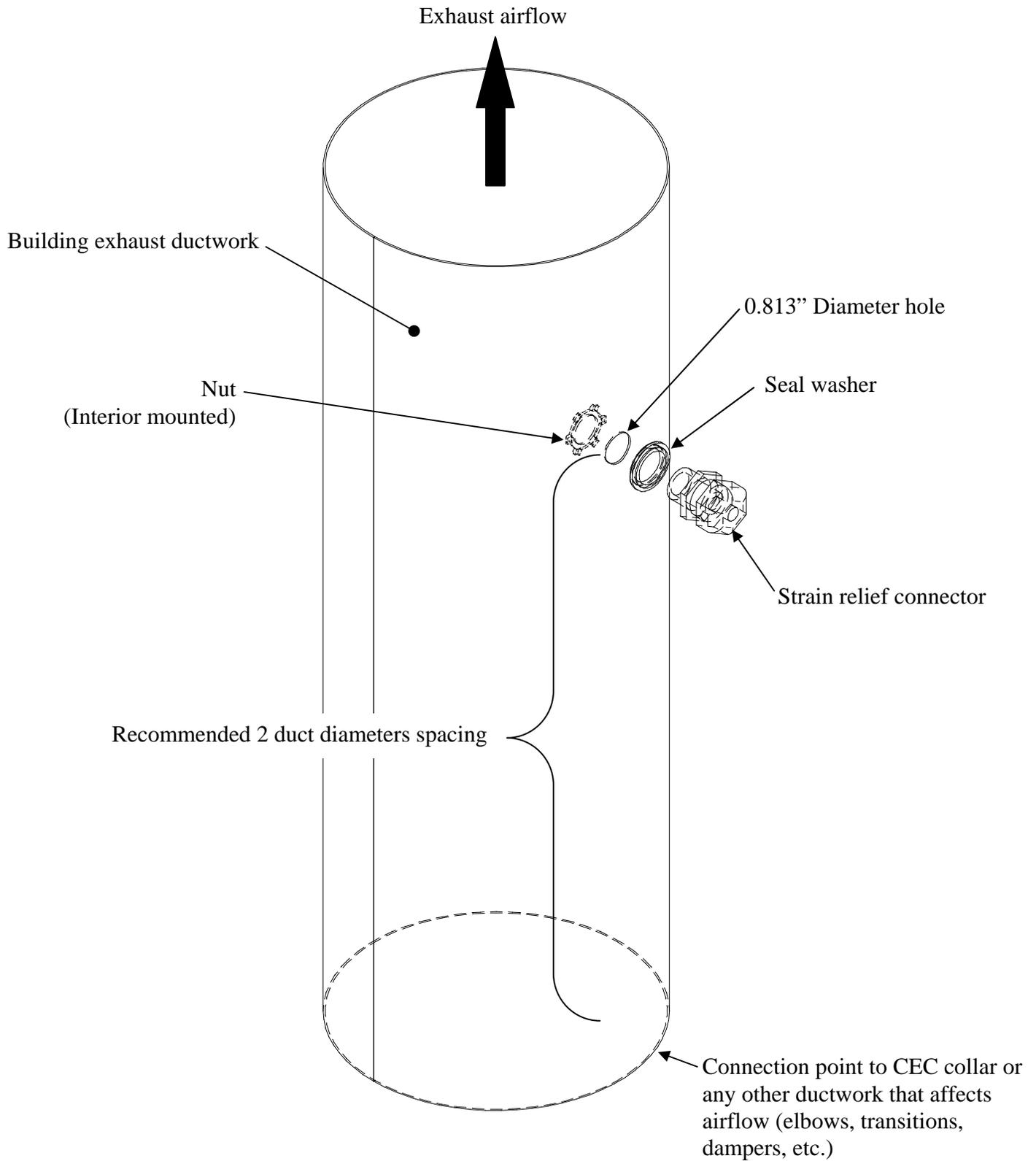
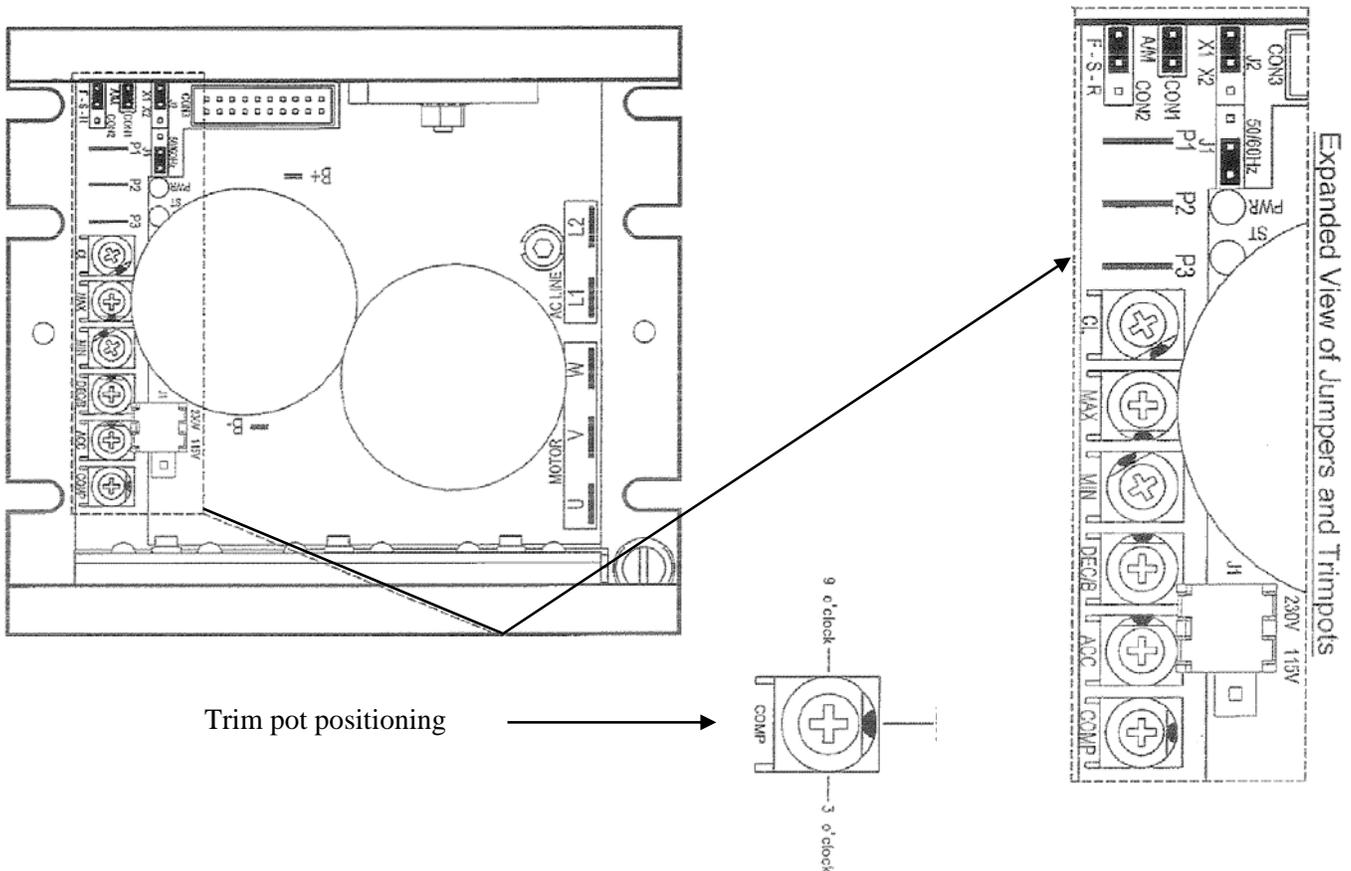


Figure 3: Example of exhaust duct with port for AFM probe used with CEC

Motor Control Adjustment Detail

SG-HE OR SG-HE-INT & SG-HE-INT (EN)



Under normal operating conditions the motor control should not require adjustment except when setting of alarms.

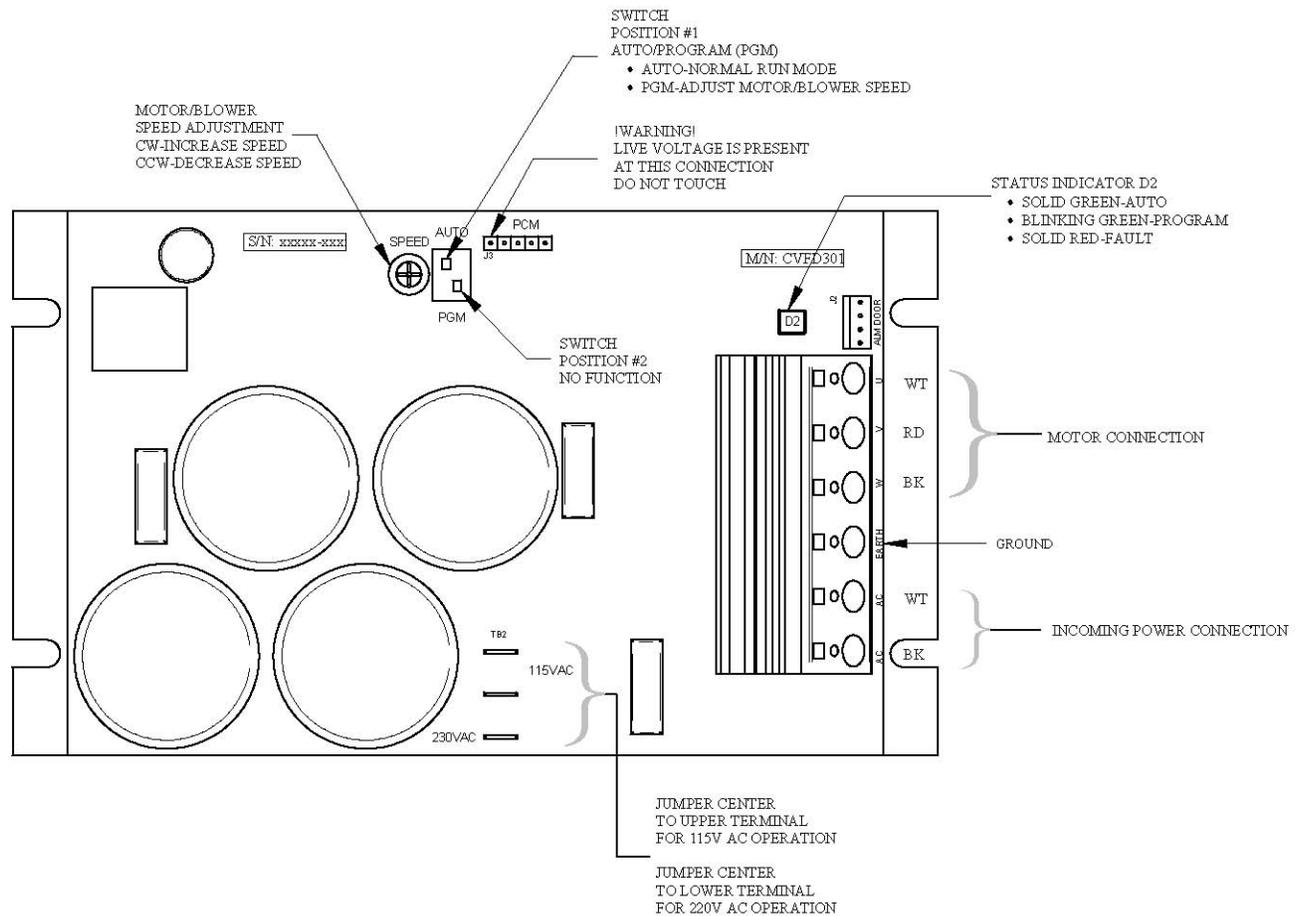
CAUTION: DO NOT ADJUST ANY OTHER TRIMPOTS OTHER THAN THE ONES DESCRIBED IN THIS PROCEDURE.

During the motor speed adjustment process the **only two trim pots used** are the ones marked DEC/B and COMP.

DEC/B trim pot changes controller from auto normal operating mode (maximum counter clockwise) to manual operating mode (maximum clockwise).

COMP trim pot increases motor speed (turn clockwise) or decrease motor speed (turn counter clockwise).

1. To adjust motor speed, turn DEC/B trim pot from auto to manual (maximum clockwise).
2. Turn COMP trim pot to increase and decrease motor speed to the desired airflow alarm point. See factory test report for alarm setting and test procedure.
3. Return DEC/B trim pot to auto normal operating mode (maximum counter clockwise) after alarm testing is complete.

SG-HE ONLY

SG-HE cabinets utilize the Control Resources Motor Control as seen above. Instructions to adjust motor speed are as follows:

Adjusting the Control Resources VFD

1. Before powering cabinet, ensure that the jumper selection is wired for the unit's incoming voltage; top 2 terminals (115V), lower 2 terminals (230V).
2. Verify that the wires secured to the terminal block are in this order from top to bottom: motor white, motor red, motor black, ground green or green/yellow, line white, line black.
3. Once the unit is powered up, standard intake and down flow measurements can be made. In order to adjust the motor controller, the left DIP switch must be in the downward position to switch into PGM mode.
4. With the drive in PGM, the blue speed potentiometer can be used to increase (turn clockwise) or decrease (turn counterclockwise) the cabinet airflow.
5. After the cabinet damper and motor controller are set to produce the desired intake and supply airflow, allow the drive to operate for **at least 1 minute** in PGM mode. After 1 minute, set the left DIP switch to the (AUTO) position. This switches the drive into the standard operating mode.
6. Once in AUTO, the drive will automatically compensate for filter loading, and will maintain set point airflow for the life of the HEPA filters.

NOTICE – O.S.H.A. Federal Regulation

The following is 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 contain, 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 humans. 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 humans.

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.

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Patent pending – Air Bypass Armrest, Cable Port, FlexAIR™

