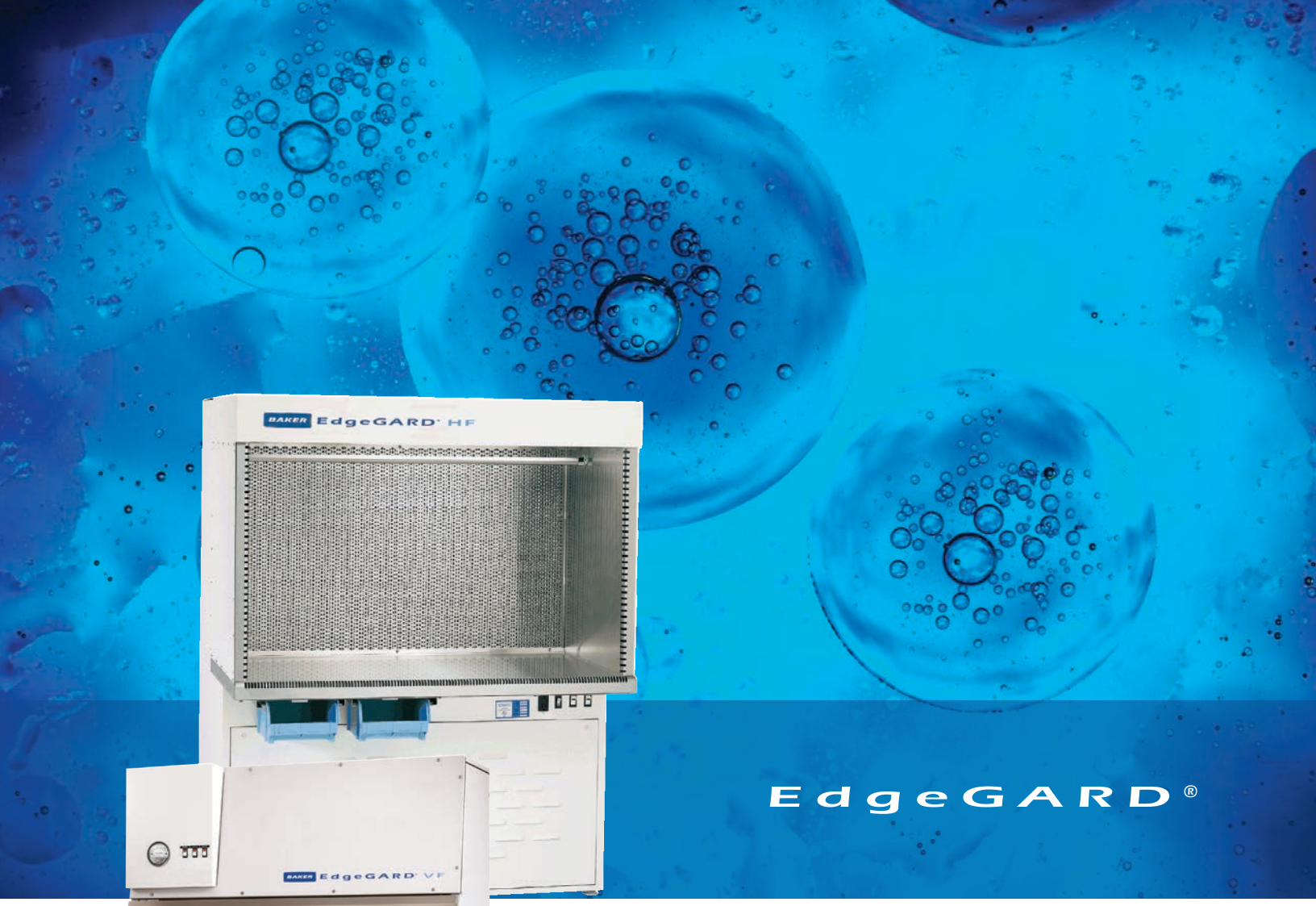


EdgeGARD®

BAKER

Environments For Science™

c UL us
Underwriter
Laboratories Listed

EdgeGARD® Clean Benches

EdgeGARD® HF

EdgeGARD® VF

Where comfort meets industry-leading dependability

Baker's exclusive technology maximizes product protection and helps meet up to ISO Class 4 (Class 10) air cleanliness requirements

- High-performance airflow system provides uniform airflow to the work surface, extends filter life and minimizes maintenance costs
- HEPA supply filter with 99.99% minimum efficiency in capturing 0.3 micrometer particulates
- Spacious, easily accessible work areas accommodate multiple users and a variety of applications and instrumentation
- Ergonomic design increases user comfort and productivity
- Industry's most reliable clean bench means lower life-cycle costs and years of trouble-free operation

EdgeGARD® HF

Horizontal Laminar-Flow Clean Bench 3', 4', 5', 6' and 8' Models

The EdgeGARD® HF horizontal laminar-flow clean bench ensures product protection for a variety of life science and industrial laboratory and process applications where product protection is essential. With a brightly illuminated, spacious work area and unique high-velocity air return slots, the EdgeGARD HF offers superior user comfort, product protection and productivity. Equipped with a HEPA supply air filter, airflow across the work area provides a particulate-free work surface. The patented cabinet design of the EdgeGARD HF provides precise control of airflow volumes and velocities, thereby maximizing product protection and ensuring ISO Class 5 (Class 100)* cleanliness in the work area.

Available in Console and Space-Saver Bench Model.

Comfortable User Experience

- The 22" work area depth provides ample space for safe, efficient operation; heights vary from 28⅛" to 34⅛", depending on model.
- Each EdgeGARD HF clean bench includes fluorescent lamps which provide balanced lighting at the work surface.
- The cool white illumination exhibits better color fidelity.
- Optional adjustable leg risers permit work surface heights of 35 11⁄16" to 37 7⁄16".
- Satin finish work surface diminishes harsh light reflection.
- Optional isolated/microbalanced blower/motor provides lowest vibration**

EdgeGARD® HF Clean Benches

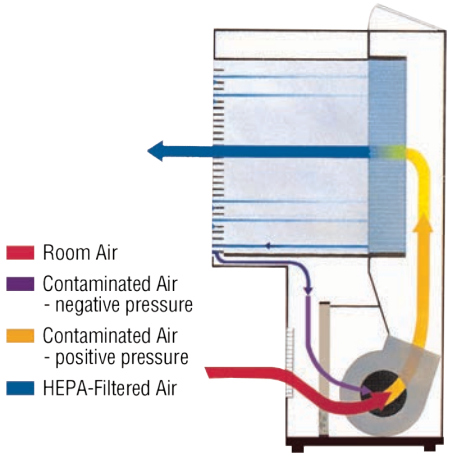
NOTE: EdgeGARD clean benches protect product only. They are not designed to contain aerosols generated in the work area and do not protect personnel or the environment.

* For 0.5 micrometer particulates

** Not UL listed with this option.

Baker Builds It Better

- High-velocity return air slots maximize cleanliness and product protection by precisely controlling airflow volumes and velocities.
- Protective HEPA filter screen is easily removed for cleaning or service, and concealed HEPA filter frame eliminates turbulence at the rear wall.
- Washable, reusable Scott Foam® pre-filter extends HEPA filter life.
- Blower/motor system provides a steady volume of air even as filter loads, ensuring consistent performance and further reducing HEPA filter changes.
- Exclusive StediVOLT® motor speed controller automatically compensates for routine voltage fluctuations, maintaining the steady airflow required for cleanliness and product protection.
- Performance-enhancing design features corrosion-resistant stainless steel interior, powder-coat protected cold-rolled steel exterior, and a 1/2" lip at the rear of the work surface to protect the HEPA filter from spills.
- Easy-to-access front hinged panel simplifies cleaning and service.



Laminar airflow across the work surface provides a particulate-free environment for maximum product protection

See how Baker's exclusive technologies protect your work from particulates carried by turbulence and cross-contamination.

Versatile and Productive For Your Lab

- Designed for a variety of industries and applications, such as IV admixture preparation, drug compounding, plant cell culture, media preparation, pharmaceutical procedures, electronic assembly and limited experimental research.
- Exterior GFCI duplex outlet accommodates most commonly used instruments and equipment.
- Optional wide-tread casters provide stable mobility when needed.
- Flexible electrical and plumbing connection options adapt EdgeGARD HF to your lab.
- Optional storage bins help keep lab space organized.
- Flexible electrical and plumbing connection options adapt EdgeGARD HF to your lab.

Space Saver Model Available!

For applications where space is at a premium, such as IV and nursing stations, satellite pharmacies, intensive care units and other small volume clinical or industrial situations. (Pictured at right.)

Options and Accessories

- Adjustable leg risers (for work surface height of 35 7/16" to 37 7/16")
- Service petcocks (in right or left side wall)
- Stainless steel IV bar (removable)
- Plastic storage bins (below work surface)
- Casters
- Additional duplex outlet
- Isolated blower/motor (for lowest vibration)*
- Mag gauge
- Germicidal UV light with reflective shade*
- Seismic restraints*
- Aluminum framed filters
- Data ports
- Pharmacy diffuser
- Drip Pan

Phocus Rx® : A Fully Integrated Pharmacy Compounding Validation Software Package

To optimize the validation and documentation of sterile compounding procedures, Baker offers fully-integrated Phocus Rx® software by Grifols in both BioChemGARD and EdgeGARD clean bench products. This fully-embeded solution is safe, reliable and easy to use .

- Built-in Phocus Rx keeps the compounding environment clean with no wires or devices within the hood. Compounding space is not altered.
- Phocus Rx uses a powerful 5 megapixel imaging system that closely focuses in on the names, numbers, labels, color and other details of drugs and syringes.
- Includes image recognition and barcode scanning features.
- Storage and retrieval image system allows documentation of the compounding process for quality purposes.
- Easily accessed from desktops, laptops, tablets, and mobile devices.
- Compounding status dashboard is automatically updated.
- Scalable and modular system is flexible and adaptable to the customer environment.

EdgeGARD® HF with PhocusRX®

* Not UL listed with this option.

EdgeGARD® VF

Vertical-Flow Recirculating Clean Bench
4', 5' and 6' Models

The EdgeGARD® VF is a vertical-flow recirculating air clean bench that provides protection for samples and work procedures where product protection and particulate control are required.

Unlike conventional horizontal flow clean benches, the EdgeGARD VF provides vertical, uni-directional and controlled airflow over the entire work surface, while reducing energy consumption, noise and airflow turbulence.

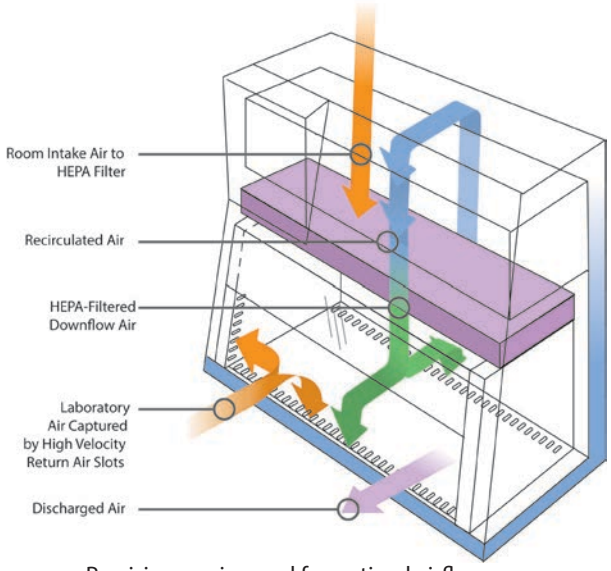
Recognized as the industry's most reliable clean bench, this extension of Baker's EdgeGARD brand provides lower life-cycle costs and years of trouble-free operation.

Comfortable User Experience

- Slanted 10° viewscreen for operator comfort and direct line-of-sight viewing.
- Low noise level improves operator comfort and reduces effect of ambient noise in the lab.
- Well-lighted workspace reduces eyestrain.
- Provides ISO Class 4 (Class 10)* protection by delivering HEPA-filtered air to the work surface.

Baker Builds It Better

- Microbiologically challenged for product protection in accordance with NSF International 49.
- Exclusive high-velocity momentum air curtain to help ensure product protection without restricting access.
- One-piece stainless steel work surface helps prevent surface contamination.
- Designed for serviceability — includes access panels for all electrical components, while the primary HEPA supply filter is removed through the front plenum area.
- An additional pre-filter below work surface helps capture large particles and prolongs HEPA filter life.



Precision engineered for optimal airflow

* For 0.5 micrometer particulates

Versatile and Productive for Your Lab

- 14" high access opening accommodates a variety of application and instrument needs, and offers a wide work area for multiple users.
- Fits through standard doorways and down laboratory aisles.
- Easy to move and maneuver when configured with mobile stand, casters and pull bars.
- Hinged viewscreen opens to 30 ⅜" allowing access to work area.

Available as a benchtop model or on a channel stand (with or without casters).

Options and Accessories

- Plumbing: One petcock on right-hand side (option for more); petcock connection choices located on bottom, back and top for channel stand option
- Stationary stand
- Optional wide-tread, stainless steel casters, 5" diameter x 1", with brakes.

* For 0.5 micrometer particulates

Console Models

MODEL NUMBER	EG3252	EG4252	EG4320	EG5252
Electrical	115V, AC	115V, AC	115V, AC	115V, AC
Amps	12	16	16	16
Required Breaker	15 amps	20 amps	20 amps	20 amps
Exterior Width	38"	50"	50"	62"
Interior Width	34½"	46½"	46½"	58½"
Interior Height	28⅛"	28⅛"	34⅛"	28⅛"
Interior Depth	22"	22"	22"	22"
Exterior Height	64" to 66"	64" to 66"	70" to 72"	64" to 66"
Net Weight / Ship Weight	360 / 485 lbs	440 / 590 lbs	460 / 610 lbs	520 / 695 lbs
Filter Size	36"x30"x6"	48"x30"x6"	48"x36"x6"	60"x30"x6"

MODEL NUMBER	EG6252	EG6320	EG8252
Electrical	115V, AC	115V, AC	115V, AC
Amps (with/without outlet)	24/16	24/16	24 or 2x16
Required Breaker	24A	24A	24A
Exterior Width	74"	74"	98½"
Interior Width	70½"	70½"	95"
Interior Height	28⅛"	34⅛"	28⅛"
Interior Depth	22"	22"	22"
Exterior Height	64"	70"	64"
Net Weight / Ship Weight	680 / 880 lbs	720 / 920 lbs	800 / 1050 lbs
Filter Size	72"x30"x6"	72"x36"x6"	48"x30"x6" (2)

Note: Models EG4252, EG4320 and EG5252 include 11-foot line cord with 3-prong plug (7-foot cord on Model EG3252).
Models EG6252, EG6320 and EG8252 require a hard wire connection to junction box located in the lower inside right hand corner of the cabinet.
*Exterior heights are listed as minimum dimensions, for maximum height add 2 inches.

Filtration System

- Supply filter, zero-probed HEPA filter, 99.99% efficient on all particles 0.3 micron by DOP test
- Pre-filter, washable Scott Foam®
- Dust count, leak test and particle count by single particle monitor or cold DOP photometer which conforms to requirements of FS290b and U.S.A.F. T.O. 00-25-203

Space-Saver Model

MODEL NUMBER	EGBIV22
Electrical	115V, AC
Amps	11.2
Required Breaker	15 amps
Net Weight / Ship Weight	200 / 325 lbs
Filter Size	24"x24"x6"

Note: This model includes a 9-foot line cord with 3-prong plug.

Illumination

- Console models, 200 foot-candles at work surface
- Space-Saver model, 75 foot-candles at work surface

MODEL NUMBER	EG4VF	EG5VF	EG6VF
Size (nominal)	4′	5'	6'
Exterior Dimensions w/ Stationary Stand (w x d x h [min to max])	53 ½″ x 32″ x [89 1⁄16″ - 97 9⁄16″]	65 ½″ x 32″ x [89 1⁄16″ - 97 9⁄16″]	77½″ x 32″ x [89 1⁄16″ - 97 9⁄16″]
Interior Dimensions (w x d x h)	46″ x 25 1⁄8″ x 31 13⁄16″	58″ x 25 1⁄8″ x 31 13⁄16″	70″ x 25 1⁄8″ x 31 13⁄16″
Shipping Weight			
Benchtop model	435 lbs.	499 lbs.	564 lbs.
With channel stand	507 lbs.	576 lbs.	646 lbs.
Access Opening (working position)	14″	14"	14"
Access Opening (loading/cleaning position)	30 3⁄8″	30 3⁄8″	30 3⁄8″
Electrical Requirements	115 V, AC	115 V, AC	115 V, AC
Amps / Breaker	16 / 20	16 / 20	16 / 20

General Specifications

- Interior workspace made from 16-gauge stainless steel.
- ISO Class 4 (Class 10)* air cleanliness in the workspace.
- 16-gauge cold-rolled steel exterior construction with white powder coated finish.
- HEPA filters with 99.99% minimum efficiency in capturing 0.3 micrometer particles.
- Separate switches for blower and light; if blower is not on, light switch will not work.
- Large, easy-to-read magnehelic gauge confirms cabinet operation.
- Washable pre-filter extends HEPA filter life.
- One duplex on left-hand side (option for one on right-hand side).

EdgeGARD® Horizontal Laminar-Flow Clean Bench

1. High-velocity return air slots to be located at the leading edges of work surface and side walls. Return air slots protect against backwash of dirty air entering the work area when items are placed within the air stream on the work surface.
2. Unit shall be all steel construction, 18-gauge, cold-rolled steel, with a white powder coated finish, stainless steel work surface and stainless steel inner work area side walls.
3. Unit shall be provided with permanent split capacitor type motor and special blower which automatically compensates for increasing pressure drop across filter in excess of that which is required by existing standards.
4. Complete unit shall be listed as certified by Underwriters Laboratory (UL) for cULus electrical, fire and mechanical safety.
5. All joints and seams offering a possible path of contaminated air from outside to the inside of the work area shall be sealed.
6. Framing for the filter seal shall be of rigid aluminum construction and only the filter media shall be exposed to the work area opening, to eliminate picture frame effect.
7. Unit shall have washable, reusable Scott Foam® pre-filters.
8. Each unit, before shipping, shall have a complete test to assure clean bench meets all requirements of ISO 14644. A copy of this test will be provided with the unit.
9. The unit manufacturer must be able to provide evidence that this unit has been tested by an independent laboratory or research organization.
10. Speed controller shall automatically compensate for voltage change to maintain constant voltage to motor while allowing for manual adjustments during filter loading.
11. Unit work surface shall feature ⅝" Spill Guard at rear to prevent accidental spillage into HEPA filter area.
12. The unit shall have standard HEPA filters for a protection effectiveness of 99.99% when filtering particles of 0.3 micron size.
13. A removable HEPA filter protective screen shall be provided.
14. Shall be provided with externally mounted GFCI-protected duplex outlet with circuit breaker.

EdgeGARD® VF Vertical-Flow Recirculating Clean Bench

1. EdgeGARD® VF vertical flow clean bench is available in 4', 5' and 6' work surface widths. Each unit shall be provided with a certified copy of the factory tests showing that filter leak checks, electrical tests, down flow velocities, smoke patterns, and airflow balancing have been performed. Tests to prove Class 10 (ISO Class 4) air cleanliness for 0.5 micrometer particles for model design shall be available if requested.
2. Hinged view screens shall be constructed of ¼ inch shatterproof scratch and chemical resistant polycarbonate, with a maximum opening of 30" for equipment loading. To decrease glare and offer the best ergonomics, the view screen shall be mounted at a 10° angle from vertical.
3. Supply filters shall be front loading and meet the zero-probed HEPA 99.99% efficiency requirements on all particles 0.3 micron in size. System shall have washable pre-filters to extend HEPA filter life. Magnehelic pressure gauge(s) are provided to monitor filter loading and as a secondary means of monitoring mass airflow.
4. The cabinet body shall be double walled. The exterior walls shall be constructed of a single sheet of #16 gauge cold-rolled steel with a white powder coated finish. Internal side and back walls, as well as the work surface, shall be constructed of #16 gauge 304 stainless steel. The side wall and the back shall be of one-piece construction formed with radius 7/16" corners. Either a stainless steel air diffuser or filter protector is provided in the work area.
1. Interior Dimensions:
    a) EG4VF – 46" L x 25 1/8" D x 31 13/16" H
    b) EG5VF – 58" L x 25 1/8" D x 31 13/16" H
    c) EG6VF – 70" L x 25 1/8" D x 31 13/16" H
5. High-velocity return air slots shall be located at the leading edges of the work surface and side walls. Return air slots protect against the backwash of dirty air entering the work area when items are placed within the air stream on the work surface.
6. Cabinet shall have a momentum air curtain down flow velocity profile, which provides a higher airflow velocity of 100 FPM nominal behind the view screen relative to a down flow velocity of 50-65 FPM nominal over the work surface.
7. Cabinet shall have a welded, full perimeter drain pan with 7/16" radius corners for cleaning ability with a 1" drain valve to capture any cleaning liquids or spills.
8. Each cabinet work area shall be provided with an internally mounted GFCI duplex 120V outlet with drip-proof cover and circuit breaker (mounted on the left), fluorescent lighting providing 100 foot-candles of illumination at work surface and electronic ballasts. The cabinet shall have separate switches for the blower and the light; if the blower is off, the light switch shall not work.
9. The cabinet shall be capable of automatically handling a 40% minimum increase in pressure drop across the filter without reducing total air delivery by more than 10%. A manual speed controller shall be capable of handling a minimum 112% increase in pressure drop across the filter. Test data to verify these capabilities shall be provided upon request.
10. Cabinet design shall utilize a steel plenum provided to allow filters to be directly clamped to the plenum against a closed cell neoprene gasket. Plenum applies force to full perimeter of filters rather than point force. Service of the system shall be accessible from the front.
11. System shall be factory pre-wired and have a 17-foot external length power cord with 20 Amp plug (type NEMA 5-20P). System design shall have easy access to electrical panel.
12. All system components shall be certified by Underwriters Laboratory (UL61010-1 2nd Edition) for electrical, fire and personal safety.
13. Noise levels should meet 67 dBa or lower to provide operator comfort and reduce effect of ambient noise in the laboratory.
14. System shall be capable of moving through a standard 80" high doorway.
15. Cabinet shall have permanently affixed label located directly above the viewing window that has the following phrase: "Do not use for biological, chemical or radiological work where hazardous materials are present."
16. The system shall be warranted for three (3) years, parts and labor.

Caution

A clean bench is not designed to protect personnel or the environment from potentially harmful agents. The adequacy of this product for the user's personal safety, as with any clean bench, should be determined by an industrial hygienist or safety officer. Site preparation information, architectural drawings, detailed dimensions and purchase specifications are available.

Warranty

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

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

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, 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 THE GOODS.)

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BAKER

Environments For Science™

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EG-SpecrevA-072314

Biological Safety Cabinet

Germfree

Class II Type A2

Pharmacy | Biopharma | Biocontainment

Safe, Durable, and Effective

The Class II, Type A2 Laminar Flow Biological Safety Cabinet provides protection for the user, product and the environment from particulate and aerosol hazards. The work area of the biological safety cabinet is continuously bathed with positive pressure ISO 5 HEPA-filtered air to protect the product from contamination while an inward airflow protects the user. Approximately 70% of the air from each cycle is recirculated through the supply HEPA filter while the remaining air is discharged from the biosafety cabinet through the exhaust HEPA filter.

Germfree's Biological Safety Cabinets are available with all-welded stainless steel stands for operation at a fixed sitting or standing work height. An optional thimble transition allows the BSC to ducted to the outside.

Equipment pictured may include custom or optional features

Germfree Laboratories, Inc +1 386-265-4300 | info@germfree.com

Application

Class II, Type A2 Laminar Flow Biological Safety Cabinets are designed for the safe handling of cytotoxic agents and other hazardous materials in laboratory, cleanroom, and pharmacy settings.

These biosafety cabinets eliminate cross-contamination and the accidental release of carcinogenic aerosols and drugs to the outside environment. Other applications include handling materials such as powders and allergens.

Codes and standards

– All BSC units pass the Biological Tracer Containment Tests of the National Institutes of Health (NIH), The National Cancer Institute (NCI) and the National Sanitation .

– Foundation (NSF). All units are NRTL listed with MET Labs to comply with ANSI/UL STD 61010-1 Certified to CAN/CSA C22.2.

Testing, warranty, and support information

– Equipment and HEPA filters are Factory Acceptance Tested (FAT) prior to shipment, meeting AGS and EN guidelines and an airflow test prior to shipping.
– Independent 3rd party certification on-site is recommended prior to operation.
– An operation and maintenance manual is included.
– Germfree Standard equipment carries a 2 year parts warranty. Consult a Germfree Expert for more information.

Specifications

Standard features

■ **All Stainless Steel Construction**
Interior coved corners and radiused bends for easy cleanup, both inside and out.

■ **Contoured Front Window**
Front lifting viewing panel is easily removed and is gasketed to provide a proper seal when in place.

■ **Front Loading HEPA Filter**
Supply and exhaust HEPA filters are parallel to work area and each other to prevent turbulence.

■ **External Fluorescent Lighting**
Externally mounted to minimize heat build-up and separate lighted power ON/OFF switches.

■ **Removable Work Tray**

■ **Magnehlic Gauge**

■ **I.V. Bar With Hooks**

Electrical

■ **System requires 115V, 60Hz, 15-amp (220 V, 50-60Hz system available)**

■ **Separate lighted power ON/OFF indicator switches for blower and lighting**

■ **Ten foot power cord with molded grounded plug**

	Overall Dimensions			Work Area Dimensions		
Model	W	D	H	W	D	H
BBF-2SSCH*	24.5″	26.5″	47″	24″	17.5″	21″
BBF-2SSRX*	24.5″	26.5″	54″	24″	17.5″	29″
BBF-3SSRX	36.5″	31″	57.5″	36″	22″	29″
BBF-4SSRX	48.5″	31″	57.5″	48″	22″	29″
BBF-6SSRX	72.5″	31″	57.5″	72″	22″	29″

OPTIONAL FEATURES

☐ Custom Sizes

☐ Digital Differential Pressure Control

☐ Stainless Steel Stand 30″ or 36″ High

☐ Hydraulic Lift Adjustable Stand

☐ Stopcock for Air, Gas or Vacuum

☐ Sealed Data Port Passage

☐ Counter-top Only Model (no stand)

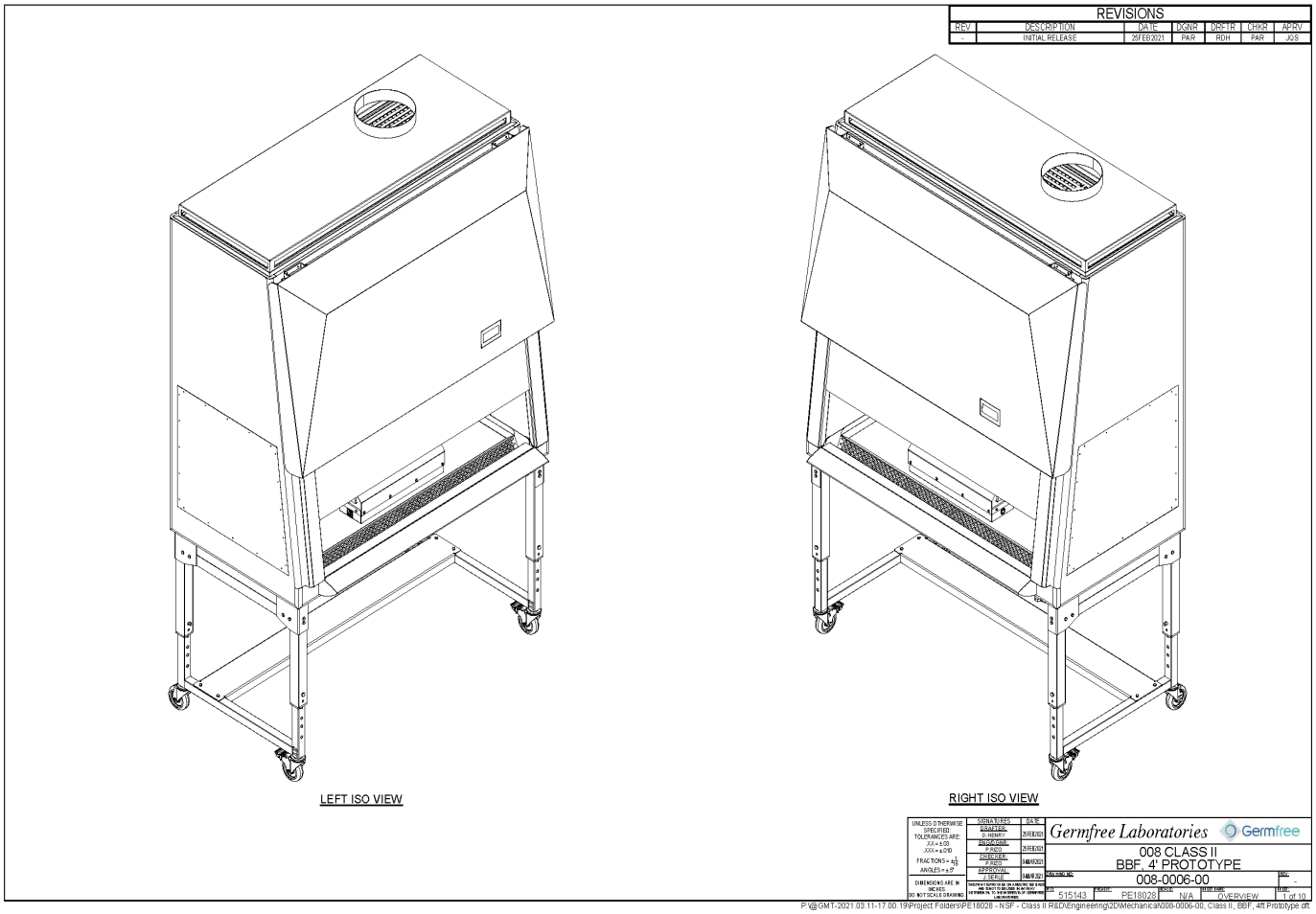
☐ Locking Cleanroom Grade Casters

☐ Bin Cart for Storage Under Workdeck (30″ W x 26.5″D x 20″ H)

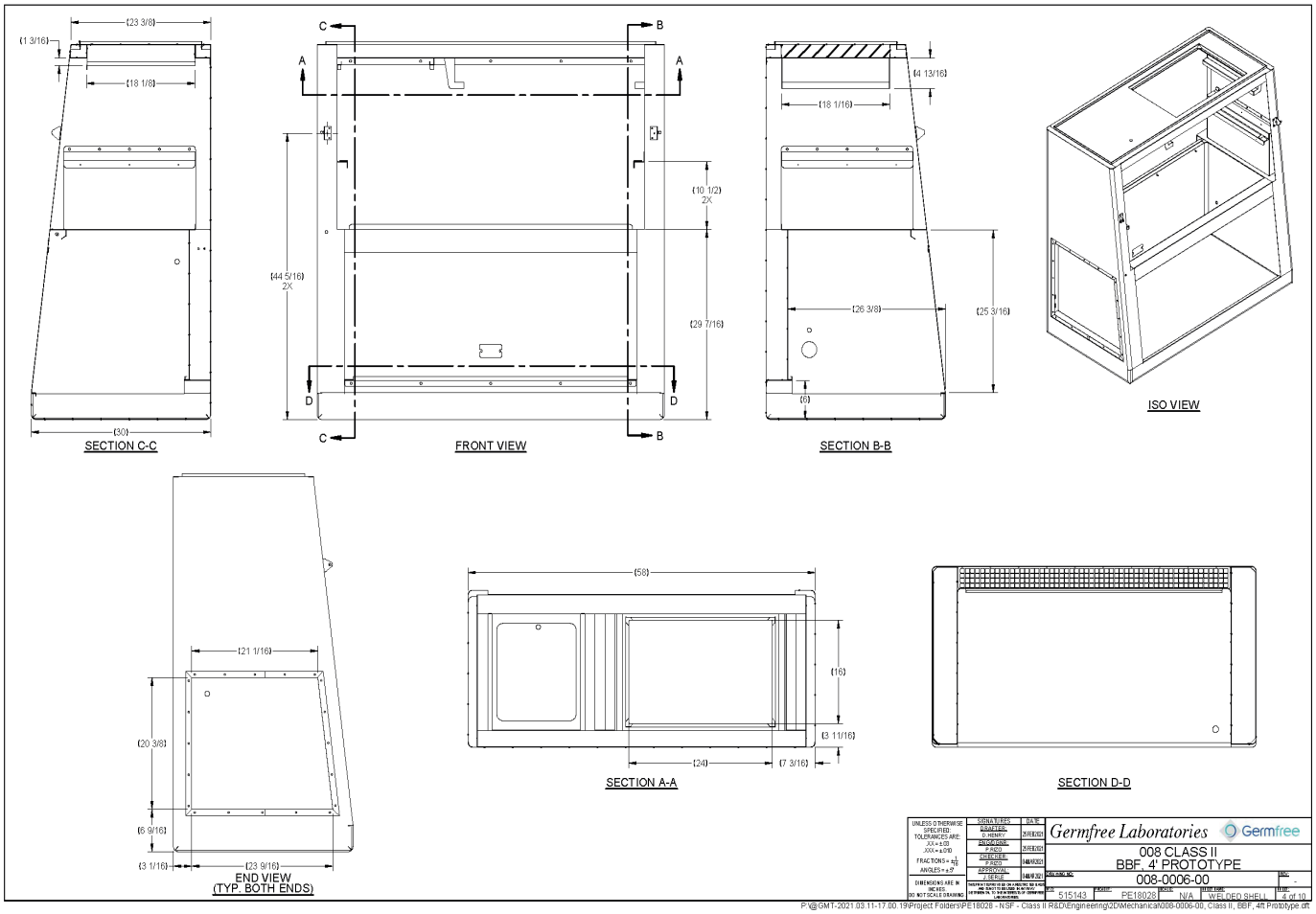
☐ Exhaust Transition for External Venting

*Equipment pictured may include custom or optional features

Technical drawings



Technical drawings



4 Sunshine Blvd., Ormond Beach, FL 32174 ▪ Phone 800-888-5357 ▪ Fax 386-677-1114 ▪ www.Germfree.com

BBF SERIES
4 FOOT CLASS II, TYPE A2 BIOLOGICAL SAFETY CABINET
Model: BBF-4SSRX

PART I. PERFORMANCE DATA

The Class II, Type A2 Laminar Flow Biological Safety Cabinet provides protection for the user, product and the environment from particulate and aerosol hazards. The work area is continuously bathed with positive pressure ISO 5 / Class 100 HEPA filtered air to protect product from contamination while an inward airflow protects the user. Approximately 70% of the air from each cycle is recirculated though the supply HEPA filter while the remaining air is discharged from the hood through the exhaust HEPA filter. The BBF Series of Vertical Laminar Flow Biological Safety Cabinets pass the Biological Tracer Containment Tests of the National Institute of Health (NIH), the National Cancer Institute (NCI) and the National Sanitation Foundation (NSF). All units are NRTL listed with MET Labs to comply with ANSI/UL STD 61010-1 Certified to CAN/CSA C22.2. Equipment is compliant with USP <797>, USP <800> and validated to the CETA CAG-003-2006 performance standards.

PART II. EQUIPMENT SPECIFICATIONS

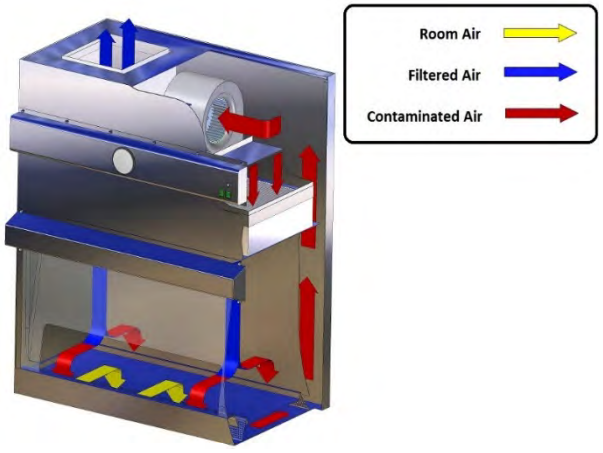
Overall Dimensions:

	BBF-4SSRX (Type A2)
Width	48.125 ”
Depth	31” (27" at base)
Height	57”

Work Area Dimensions:

	BBF-4SSRX (Type A2)
Width	48”
Depth	22”
Height	29”

-Outer cabinet and work surface are welded stainless steel with a #4 pharmaceutical grade finish.
-Front lifting viewing panel is easily removed and is gasketed to provide a proper seal when in place.
-Front loading design for easy removal of filters/blowers without disassembly of the control panel.
-Ergonomic front panel is concave permitting operator to lean into work area, reducing strain. (3’, 4’, and 6’ models only)
-High capacity motor/blower system with speed control to extend HEPA filter life.
-Supply and exhaust HEPA filters are parallel to work area and each other to prevent turbulence.
-Filter screen is removable for easy cleaning.
-Removable stainless steel work tray supports facilitate easy clean up.
-Stainless Steel I.V. Bar with 6 Hooks
-Fluorescent lights are externally mounted to minimize heat build-up.
-Separate lighted power ON/OFF indicator switches for blower and lighting.
-Voltage = 110/115Volt, 60 Hz (220/50-60 Hz also available).
-Ten-foot (305 cm) power cord with molded grounded plug.
-Constructed to allow for optional outside venting of exhaust air.
-Twenty-four (24) month standard Warranty on workmanship and parts
-Operator/User Manual



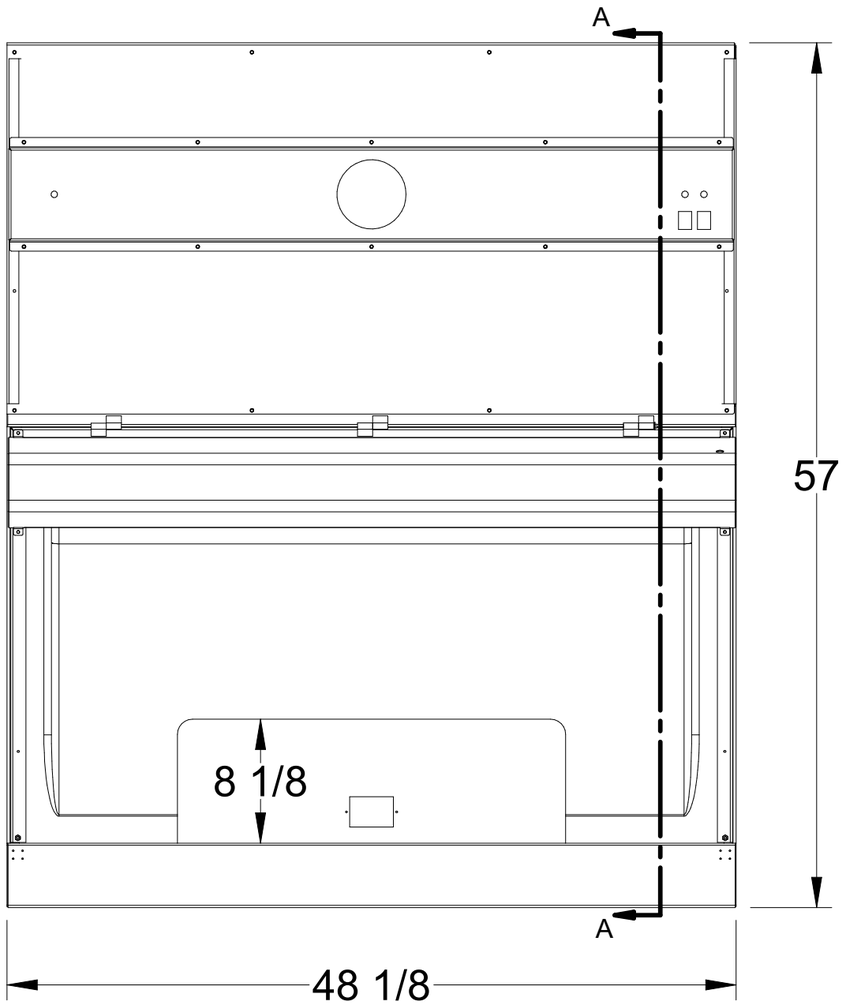
PART III. ADDITIONAL SPECIFICATIONS

	BBF-4SSRX (Type A2)
Supply HEPA Filter WxLxD	20” x 46” x 6”
Exhaust HEPA Filter WxLxD	18” x 16” x 6”
Exhaust Duct Flange Size WxDxH	12 ¾” x 14 ¾” x ¾”
Motor Hp	1/3
Voltage/Phase	115/1
Weight uncrated	360 lbs.
Shipping Weight	480 lbs.

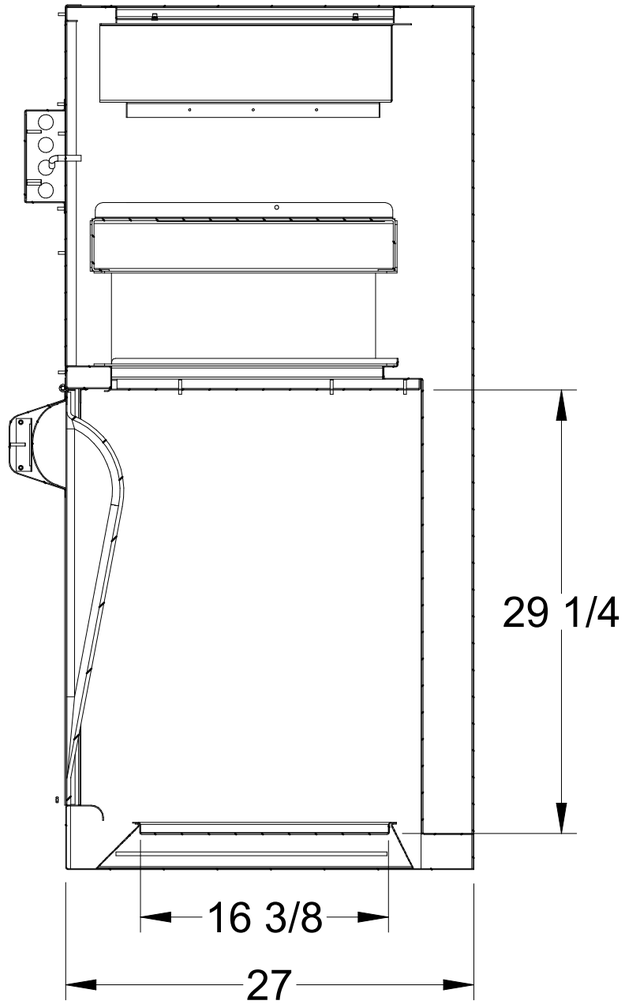
PART IV. AVAILABLE OPTIONS *(CONSULT YOUR SALESPERSON FOR PRICING)*

- Stopcock for Gas, Air or Vacuum
- Duplex Electrical Outlet in Work Area
- Ultraviolet Light
- Low Flow Audible Alarm
- Stainless Steel Bin Cart
- Bins for Stainless Steel Bin Cart
- Gas Shock Lift for Viewing Panel
- Stainless Steel Stand (Fixed height option for sitting or standing)
- Stainless Steel Electric Height Adjustable Stand
- Stainless Steel Casters for Stand
- Exhaust Transition Piece for External Venting
- Seismic Anchors, set of 2
- Low Flow Alarm with Digital Display
- Exhaust Flow Alarm
- Upgrade from 110V to 220V/230V

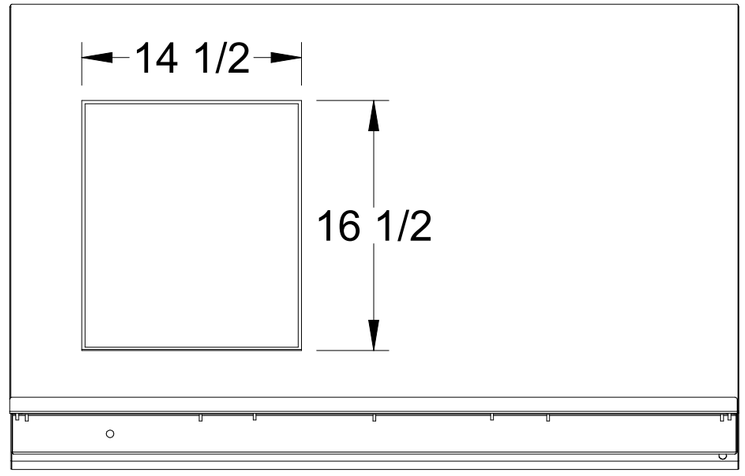
REVISIONS					
Rev	Description	Date	Drawn By	Checked By	Approved
A	INITIAL RELEASE	xx/xx/xx	XXX	XXX	XXX



FRONT VIEW



SIDE VIEW
(SECTION A-A)



TOP VIEW

UNLESS OTHERWISE SPECIFIED: TOLERANCES ARE: .XX = ±.03 .XXX = ±.010 FRACTIONS = ± 1/16 ANGLES = ±.5°	SIGNATURES	DATE	Germfree Laboratories
	DRAWN BY: T. JAFA	05/08/20	- CATEGORY - BBF-4 USER MANUAL DRAWING
	CHECKER: B.SERLE	XX/XX/XX	
	APPROVAL: B.SERLE	XX/XX/XX	DRAWING NO. XXX-XXXX-XX REV. A
DIMENSIONS ARE IN INCHES. DO NOT SCALE DRAWING.	THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE IS ANY WAY DETRIMENTAL TO THE INTERESTS OF GERMFREE LABORATORIES		MATERIAL N/A FINISH N/A
			MATERIAL THICKNESS N/A SHEET NAME DETAILS SHEET 1 OF 1

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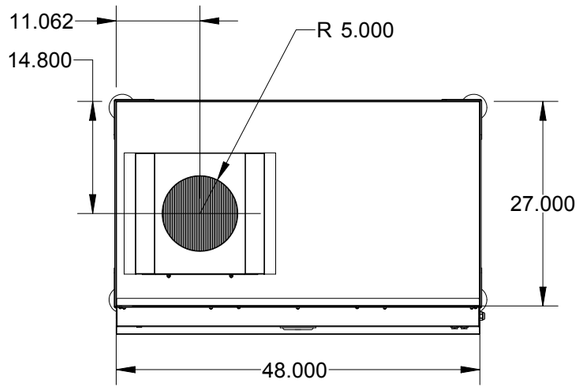


TOP VIEW

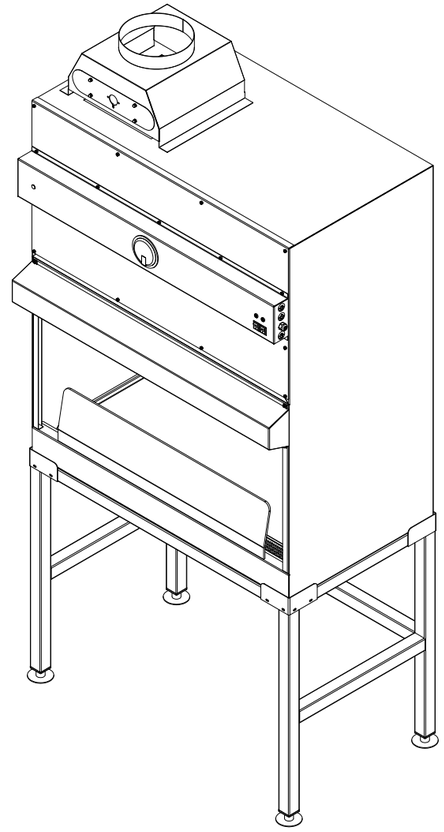
NOTES:

1.VENTING RANGE REQUIRMENT WHEN CONNECTED VIA A THIMBLE IS 278-308 CFM.

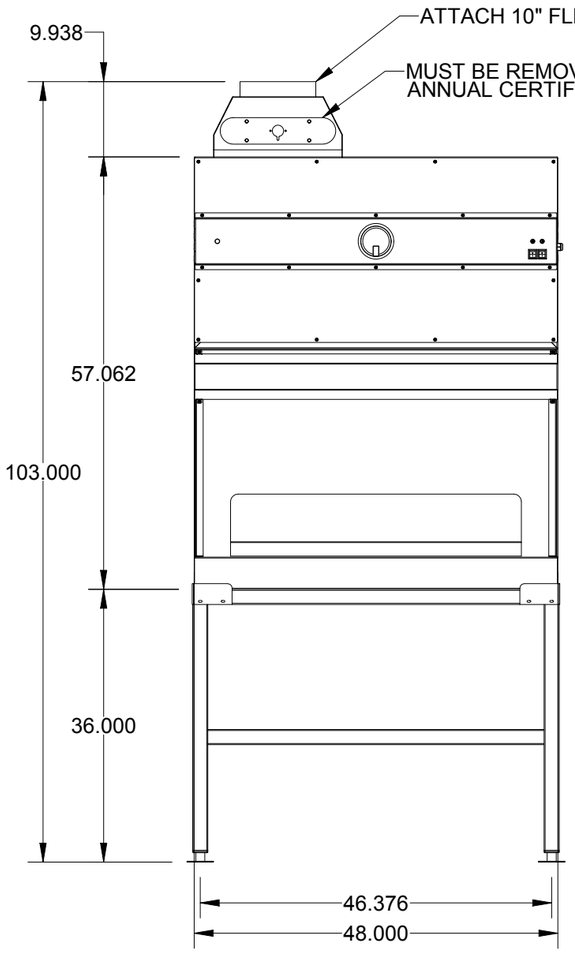
2. NEED A MINIMUM OF 9' FEET CEILING HEIGHT

3. ALTERNATE LOW PROFILE CONNECTION AVAILABLE FOR 8’ CEILINGS

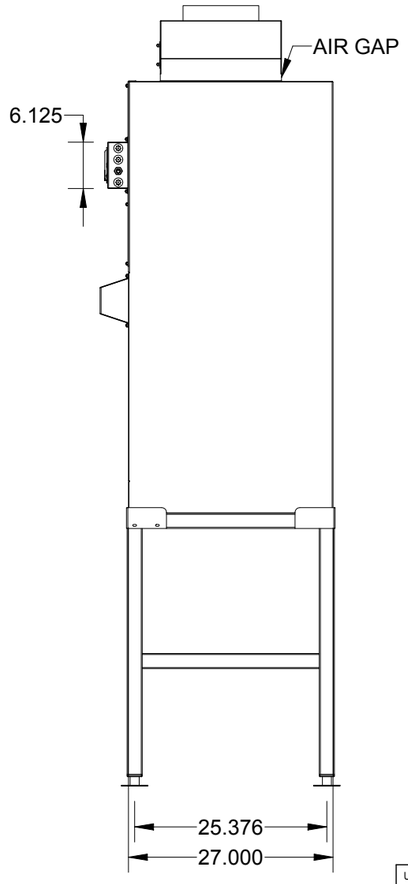
4. FLEXIBLE DUCT RECOMMENDED WITH CASTER OPTION



ISO VIEW



FRONT VIEW



SIDE VIEW

UNLESS OTHERWISE SPECIFIED:
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FRACTIONS = u 1/16
ANGLES = u.5v

DIMENSIONS ARE IN INCHES.
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CHECKER:	B.SERLE	04/15/19
APPROVAL:	R. LAVICOTT	04/17/19

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SCALE: N/A	FILE NO.	SHEET NAME: OVERVIEW	SHEET: 1 OF 1

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Annex E[35]

Recommendations for installation

E.1 Recommendations for installation

E.1.1 Location

E.1.1.1 The Class II (laminar flow) biosafety cabinet should be located out of the traffic pattern and away from room air currents that could disrupt the containment provided by the work access opening air barrier. Annex E, figure E1 shows a suggested location after all air turbulence sources have been considered.

E.1.1.2 If there is a window in the laboratory, it should remain closed at all times. Cabinets should not be located where room ventilation air inlets blow across the front opening or onto the exhaust filter.

E.1.1.3 Where space permits, a 12 in (30 cm) clearance should be provided behind and on each side of the cabinet. If not feasible, a minimum 3 in (8 cm) clearance on each side and 1.5 in (3.8 cm) clearance in back are recommended. The electrical outlet for the cabinet should be accessible for the cabinet service and electrical safety testing without moving the cabinet.

E.1.2 Recommendations for installation

E.1.2.1 Type A1 and A2 cabinets

Type A1 and A2 cabinets are designed to return air to the laboratory and do not generally require external venting. It is critical that a minimum of 3 in (8 cm) clearance be provided between the exhaust opening on top of the cabinet and the ceiling. Less than 3 in (8 cm) clearance constricts the exhaust and reduces the flow into the cabinet at the front access opening. At least 12 in (30 cm) clearance is required between the exhaust opening on top of the cabinet and the ceiling to allow the use of a thermal anemometer to measure the exhaust velocity when calculating the cabinet inflow velocity.

When it is desirable to exhaust air to the atmosphere, exhaust should be via a 100% exhaust system (i.e., a system that does not recirculate its exhaust air into other parts of the building). The recommended exhaust system connection for types A1 and A2 cabinets is an exhaust canopy connection as shown in annex E, figures E2 and E3. Every canopy design must be tested to determine the airflow rate exhausted by the canopy that will ensure performance. Whenever the cabinet is field certified, the minimum exhaust flow by the canopy should be verified by measurements using the approved instruments and techniques cited in annex A, sections A.9 and A.10. No type A cabinet should ever be hard connected to an exhaust system (see figures E4 and E5).

It is preferable that cabinets be installed using an exhaust connection that allows for scan testing of the exhaust HEPA filter in accordance with annex F, section F.5.3.1.

A properly designed and installed exhaust canopy will allow a Type A1 or A2 cabinet to maintain acceptable inflow velocity at the front access opening even when the flow through the exhaust canopy is completely stopped. The performance of the exhaust canopy should be assessed by either the manufacturer of the exhaust canopy or the user to ensure awareness of the performance characteristics of the exhaust canopy with the particular model of cabinet being exhausted.

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35 The information contained in this Annex is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

When the exhaust canopy is used to capture hazardous nonparticulate material being exhausted from the cabinet, the exhaust and associated alarm system should meet the same criteria as indicated for the Types B1 and B2 cabinets.

When Type A1 and A2 cabinets are found to be directly attached to the exhaust system and vented to the outside without the use of an exhaust canopy, it is recommended that the exhaust connection be modified to an exhaust canopy.

E.1.2.3 Roof exhaust systems

Roof exhaust systems serving biosafety cabinets should have a stack that extends straight upward at least 10 ft (3 m) above the roof surface to avoid re-entrainment by the building, and should be increased in elevation when necessary to avoid the influence of surrounding structures. Raincaps or any other structure that deflects the straight upward flow of the discharged air should be avoided. No precipitation can enter the stack when air is being exhausted at normal stack velocities. To take care of precipitation during periods when system is shut off, a 1 in (2.5 cm) hole can be drilled in the lowest point of the fan casing and the water allowed to drain onto the roof. It is recommended that roof exhaust fans be energized by direct-connected electric motors to avoid failures caused by slipping and breaking of belts. Another advantage of direct-connected fans is the ability to use the motor non-function to activate an alarm in the laboratory, whereas when a malfunctioning belted fan is employed, the motor can be operating when the fan is idle. A diagram illustrating a recommended roof exhaust facility is shown in annex E, figure E7.

E.1.3 Electrical

Variations in line voltage may affect the cabinet airflows. A voltage regulator should be installed in order to reduce the potential of variations in airflows.

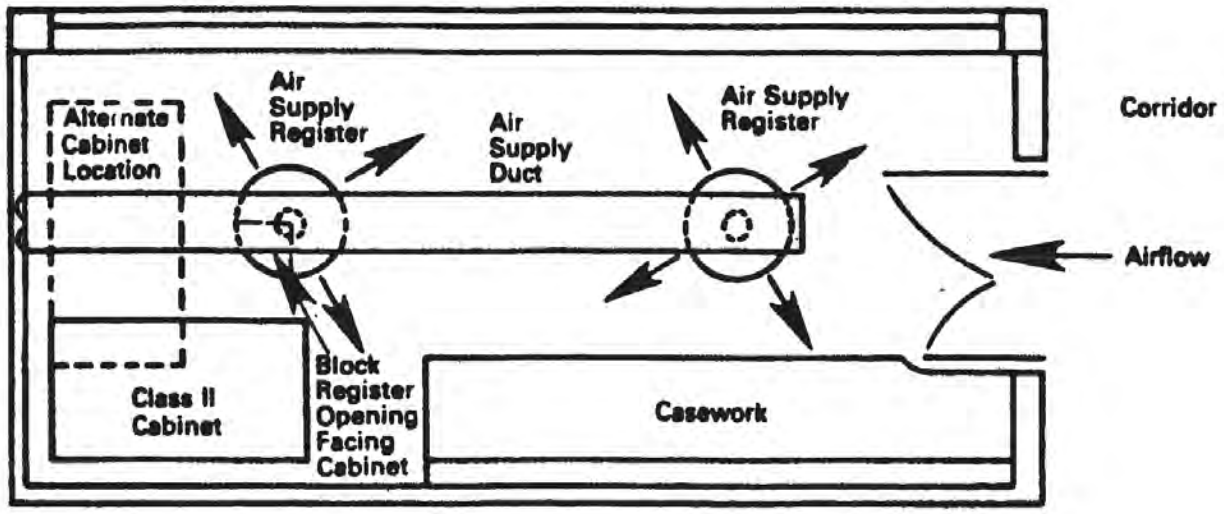


Figure E1 – Suggested laboratory location for Class II (laminar flow) biosafety cabinet

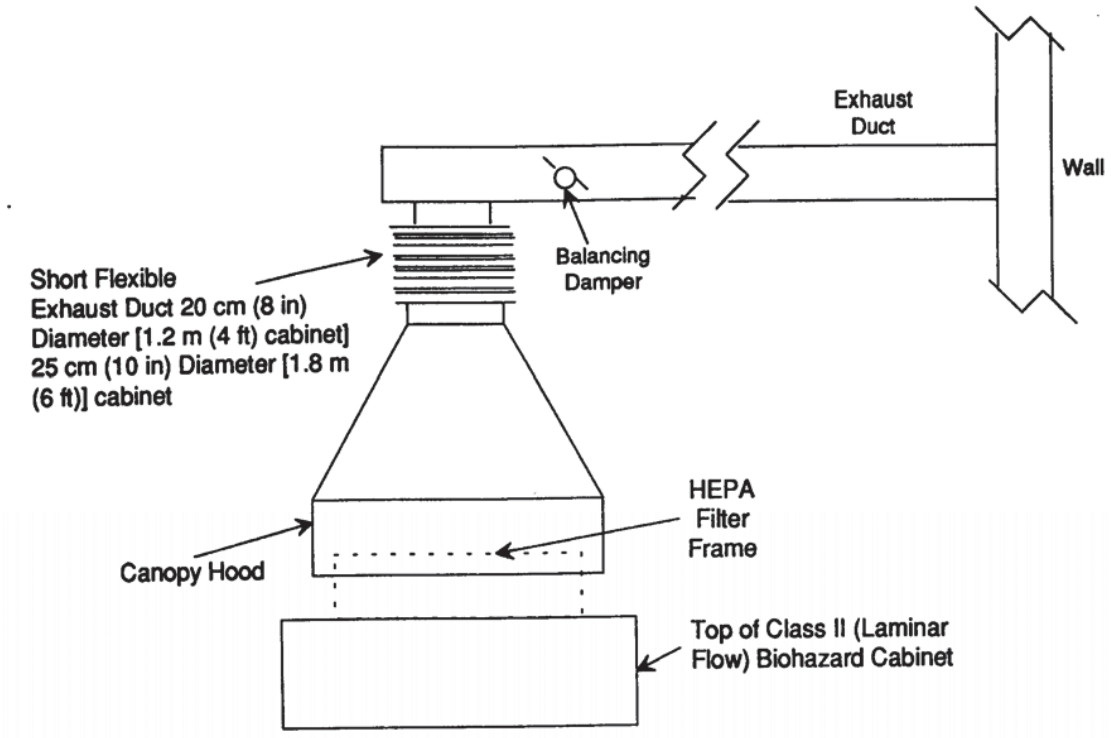


Figure E2 – Suggested Class II (laminar flow) Type A biosafety cabinet venting system

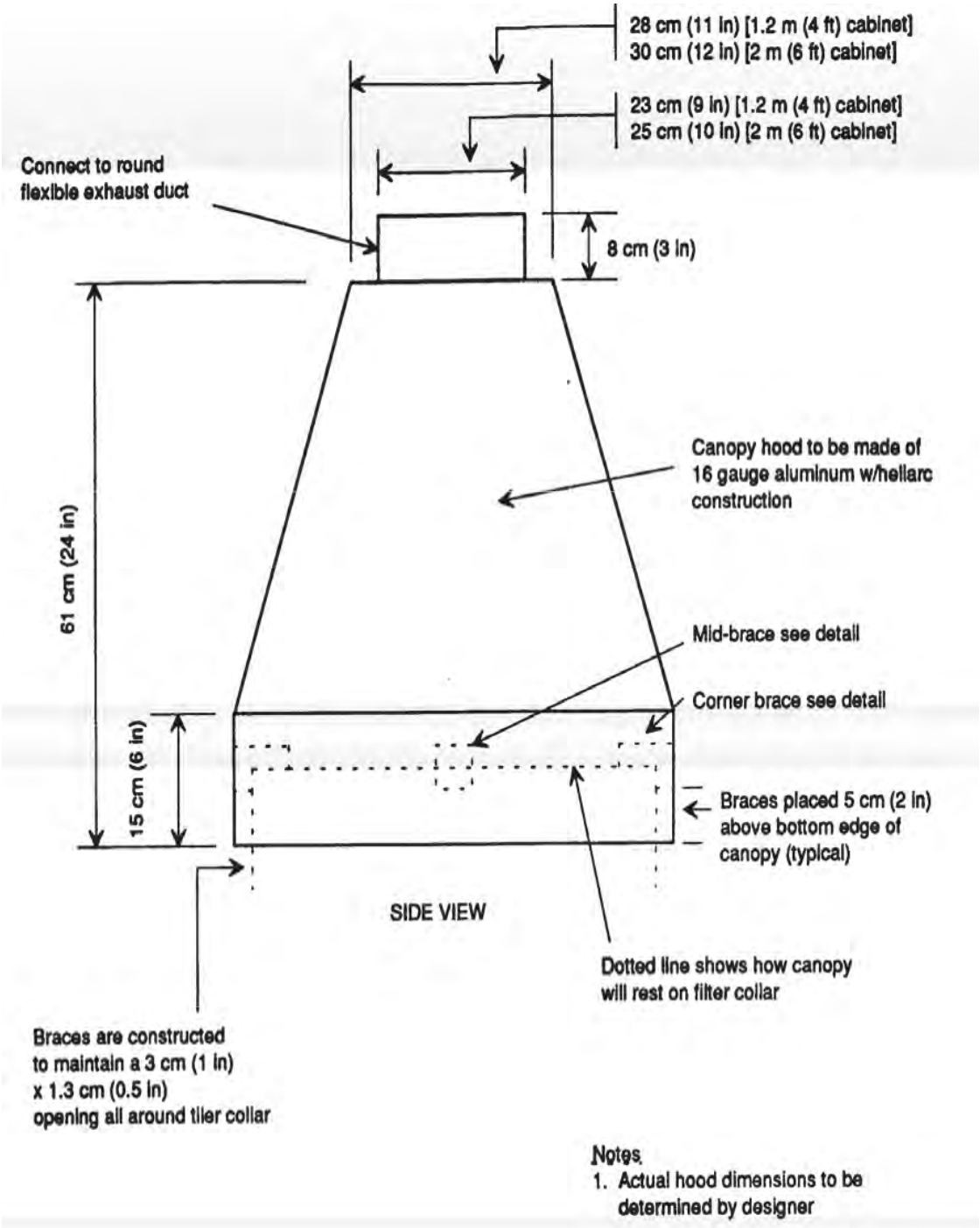
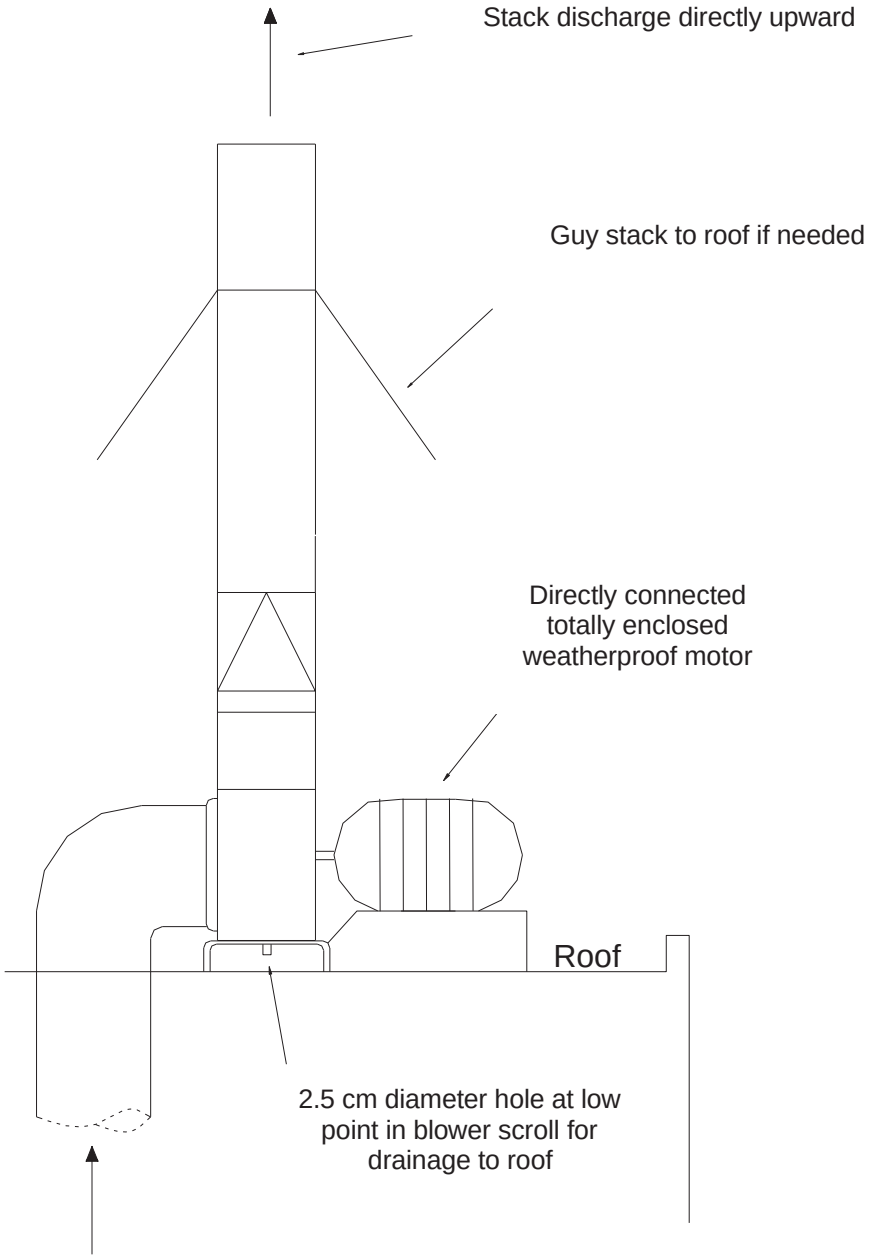
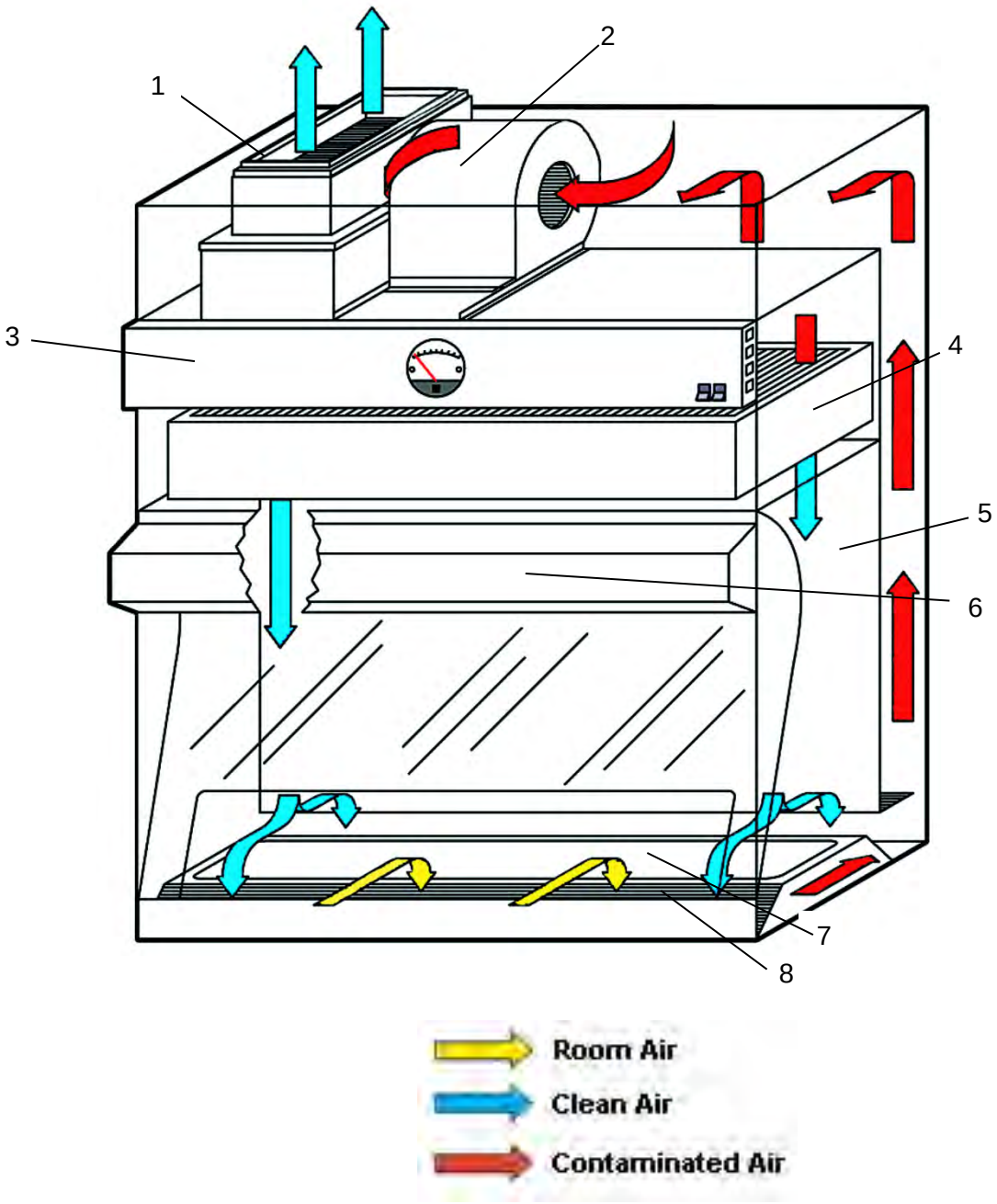


Figure E3 – Suggested canopy venting for Class II (laminar flow) Type A, biosafety cabinet



E7. Exhaust stack and blower



1. **Probed 99.99% Efficient Exhaust HEPA Filter**
2. **High Capacity Motor/Blower**
3. **Control Panel**
4. **Probed 99.99% Efficient Supply HEPA Filter**
5. **Metal Diffuser to Protect Supply Filter**
6. **High Intensity Fluorescent Light**
7. **Removable Stainless Steel Work Tray**
8. **Angled Air-Intake Grill to Prevent Blockage of Air Circulation**

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INSTALLATION GUIDE refer to the Quick Start Card for sensor placement

Rooster™-Airflow Alarm Series

1. Power up

Apply power to the Rooster Airflow Alarm with the supplied AC voltage adapter (24vDC) voltage connection or complete a hardwired installation (TC62300 only).

The Cambridge Accusense® logo will light up sequenced LEDs and the audio alarm will announce its startup sound.

If the Rooster has been previously calibrated, startup sequence will read the airflow threshold from nonvolatile memory. If all systems are go, the green LED will light-up and flash once every two seconds.

If your Rooster has not been previously calibrated, the red LED will turn on for three seconds and then off

2. Calibration Process A (see alternative Process B and DIP switch settings on back)

Once the cabinet airflow is running at operational air velocities you can calibrate the Rooster.

To establish new threshold settings:

- Locate the small hole on the faceplate below the sound holes and above the Accusence™ logo.
- While powered up, using a paperclip, depress internal switch for only 3 seconds. Audio alarm chirps once.
- During calibration cycle (about 24 seconds) the red LED light will flash once per second.
- System finishes calibration when the red LED flashes three times fast and the audio alarm chirps once.
- The LED light turns green during airflow monitoring and will flash once every 2 seconds.

Calibration settings remain in memory even when the Rooster is turned off.

3. Turbulence Fault

If during the calibration cycle the reset button is yellow and flashes quickly, the airflow probe is sensing a turbulent airflow condition and cannot establish a velocity threshold.

Install probe in a more reliable location or make adjustments to the airflow path through the duct system. Make sure the L-shaped sensor probe & head point toward the direction of airflow.

The reset button will continue to flash until a new calibration setup is done. See Calibration Process.

4. Run State

During airflow monitoring, with a calibration threshold setting established, the alarm relay is energized and a green LED will flash every 2 seconds. If the airflow velocity drops below the threshold level for more than 5 seconds, the audio and visual alarms will be activated.

5. Alarm State

When a low-airflow condition has been detected the alarm relay is de-energized, flashing the red light quickly and triggering the audio alarm with a two-part hi-low tone. By pushing the reset button you can silence the audio alert, the red LED will continue to flash.

To return to operational monitoring mode, push and hold the reset button for 5 seconds. The green LED will light and return to Run State, but will trigger the alarm if fault still exists.

To reset the Rooster to new airflow velocities, establish the necessary airflow conditions in your cabinet and duct system and initiate a new calibration process (**2**).

6. Error State

If the Rooster reaches a fault condition the reset button will light up yellow and the an audible warming sound will be heard. In this condition a forced power reset is necessary. Disconnect the power source, wait ten seconds, and reinstate power. The Rooster will go through its power-up system test and a green LED will light up based on previously established calibration settings.

7. Night Setback (TC62305 only)

If your Rooster is configured with the Night Setback* enabled, when the Building Management System signals the Rooster, the center reset button will flash yellow but will not make a warning tone. If there is an equipment fault the LED light will flash red.

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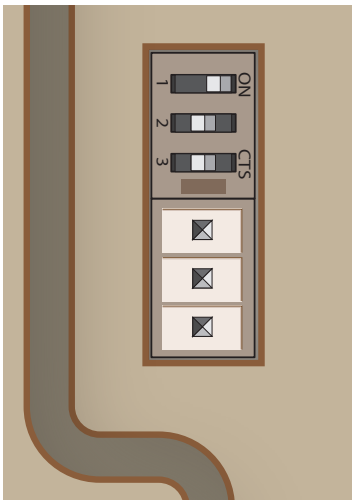
CONFIGURATION GUIDE advanced system settings



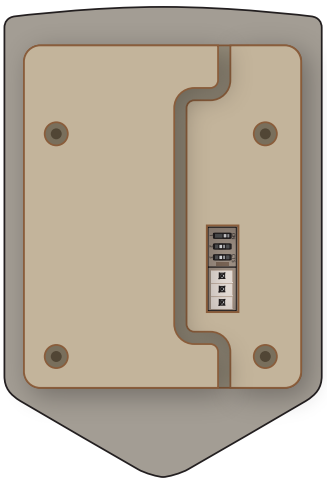
To set the DIP switches, locate the opening on the back of the Rooster enclosure.
Settings include:

DIP switch One
Method of calibration for Alarm Process A (see below)
set switch to OFF - Alarm threshold is set at -20% of operational airflow, when BSC or Fume Hood is running at proper flow rate.

Method of calibration for Alarm Process B (see below)
set switch to ON - Establish airflow rate at 80% of operational airflow, set Alarm threshold, increase BSC or Fume Hood to proper flow rate.

DIP switch TWO
set switch to OFF - Alarm is latched, must be reset by EH&S facility member.
set switch to ON - Alarm will auto-reset (deactivate) when proper airflow conditions return

DIP switch Three
set switch to OFF - Audible alarm is silenced when RESET button is pressed
set switch to ON - Audible alarm will ringback when silenced by RESET button after 120 seconds



2A. Calibration Process A

Once the cabinet airflow is running at operational air velocities you can calibrate the Rooster.

To establish new threshold settings:

- Locate the small hole on the faceplate below the sound holes and above the Accusence™ logo.
- While powered up, using a paperclip, depress internal switch for only 3 seconds. Audio alarm chirps once.
- During calibration cycle (about 24 seconds) the red LED light will flash once per second.
- System finishes calibration when the red LED flashes three times fast and the audio alarm chirps once.
- The LED light turns green during airflow monitoring and will flash once every 2 seconds.

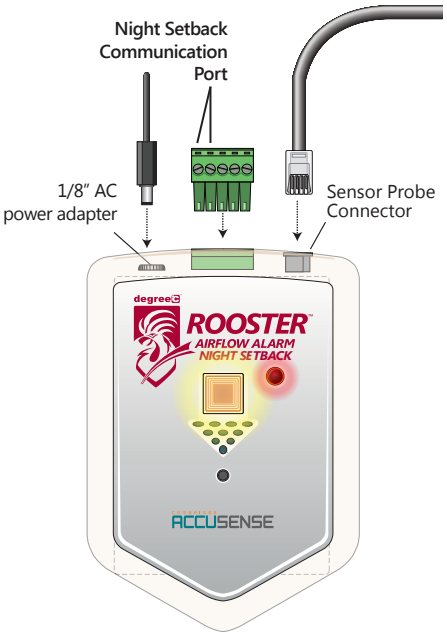
Calibration settings remain in memory even when the Rooster is turned off.

2B. Calibration Process B

Determine the operational airflow velocity, and run the BSC at 80% of that flow rate.

- Locate the small hole on the faceplate below the sound holes and above the Accusence™ logo.
- While powered up, using a paperclip, depress internal switch for only 3 seconds. Audio alarm chirps twice.
- During calibration cycle (about 24 seconds) the red LED light will flash once per second and there will be two chirps.
- System finishes calibration when the red LED flashes three times fast and the audio alarm chirps once.
- Increase the BSC airflow rate to operational velocities.
- The LED light turns green during airflow monitoring and will flash once every 2 seconds.
- If the airflow drops to the calibrated velocity (-20%) the alarm will start.

Calibration settings remain in memory even when the Rooster is turned off.



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* **Night Setback Mode**

The communication connection to the BMS is configured through the Phoenix connector located on the top of the Rooster, positions 1 & 2 nearest to the power adapter port. A yellow flashing reset button, without the alarm tone, will indicate when the Rooster has been switched to Night Setback. If this yellow flashing reset button occurs with a red flashing LED, it indicates an equipment fault.

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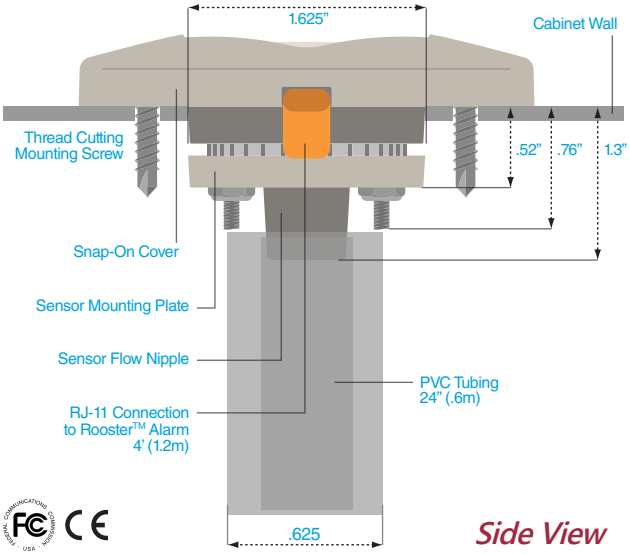
ROOSTER™ Airflow Alarm Series
Quick Start Card - Sidewall Sensor

Refer to the Manual for more detailed setup and calibration steps.

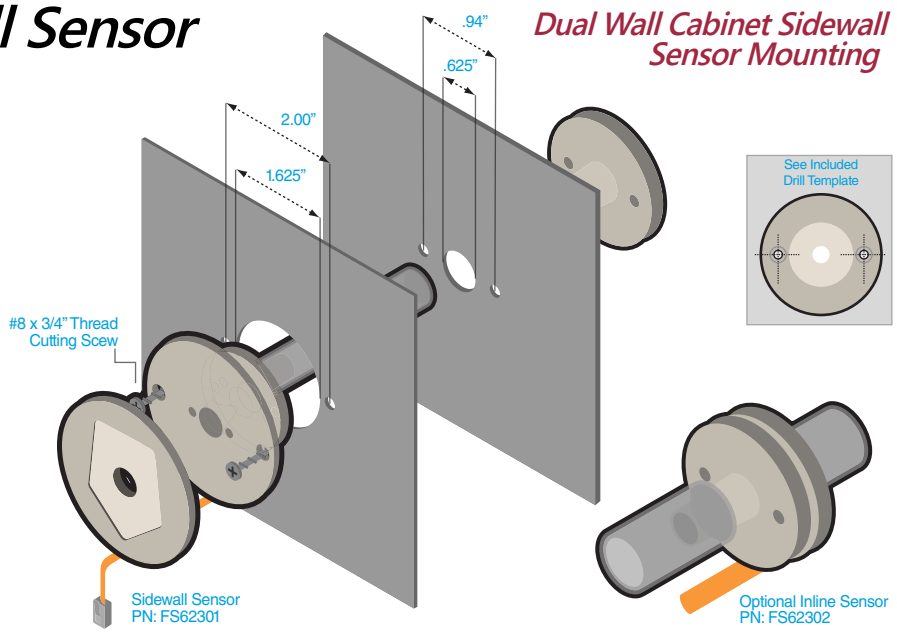
The Sidewall and optional Inline Sensor assemblies are used when it is not desirable to place a Probe style velocity sensor into the overhead ducting. The Sidewall/Inline sensors measure the negative pressure of the cabinet, by installing them in an airflow path created by cutting a through-hole in the side of the cabinet, which, due to negative pressure, pulls in laboratory air. This measured airflow self-correlates to face velocity.

Single Wall Cabinet Sidewall Sensor Mounting



Side View

Dual Wall Cabinet Sidewall Sensor Mounting



Installing the Sidewall Sensor

The Sidewall sensor has been designed for single and dual wall cabinet installations. In a dual wall installation, the airflow path is made using the supplied 24" (.6m) of supplied PVC tubing and plastic end cap. In a single wall installation, no tubing or end cap is required.

In a single wall cabinet, the side wall sensor is placed on the front or side of the unit, above the sash operating height by at least 4" (100mm). If cutting through the side of the cabinet, the hole should be roughly halfway to the back of the cabinet.

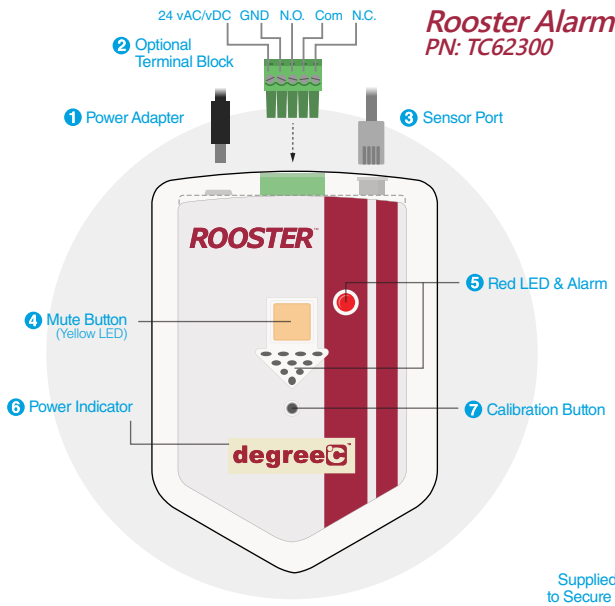
In a dual wall cabinet, the sensor assembly is generally placed on the front of the cabinet, and connected to the through hole via the PVC tubing.

62300FA005-R03

ROOSTER™ Airflow Alarm Series
Quick Start Card - Probe Sensor

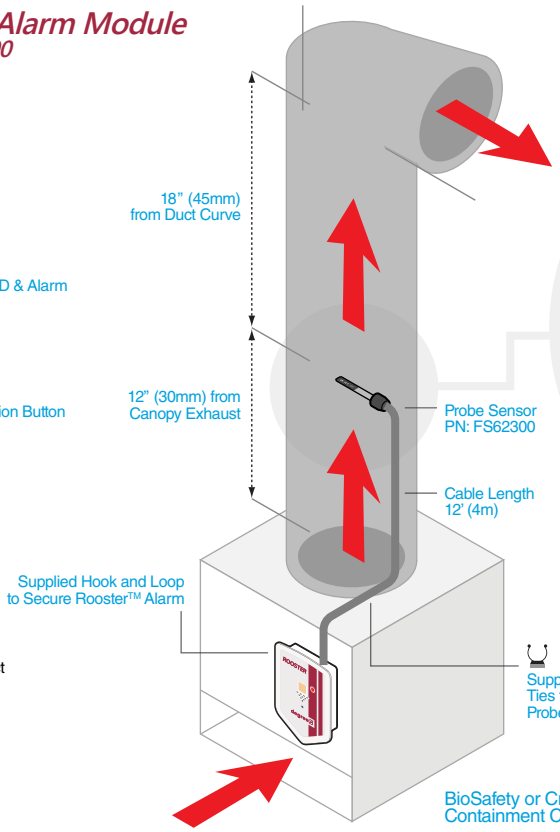
Refer to the Manual for more detailed setup and calibration steps.

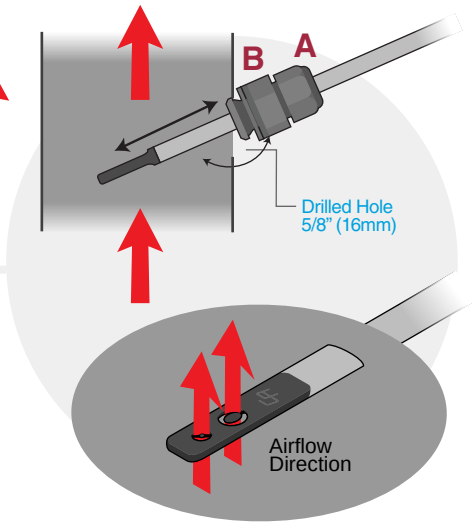
Rooster Alarm Module
PN: TC62300



1. Supplied AC/DC Wall Adapter
2. Optional Input Connector (Not Supplied) 5-position orderable Phoenix Contact *PN: 1840395 - See manual for details*
3. RJ-11 Sensor Connection
4. Mute Button: Silences alarm and shows turbulence or *NSB* status
5. Flashing Red LED with Audible Alarm
6. Power indicator
7. Calibration Button: Press for three seconds to initiate calibration procedure

Probe Sensor Duct Mounting





Securing the Probe Sensor Into the Duct

1. Drill through-hole into duct as shown
2. Adjust gland fitting to desired sensor insertion depth, and screw (**A**) to secure against sensor probe
3. Insert sensor and gland into duct at an angle, in order to seat the oblong flange
   Note: Ensure airflow direction is through the sensing element! (see below)
4. Screw (**B**) (this is a reverse, or left-hand thread) to secure gland nut into the duct