

NCB™

ENERGY EFFICIENT ENGINEERED

Class II, Type B1 Biological Safety Cabinet, Vertical Flow



Developed to exceed the
National Cancer Institute's
Expectations... And Yours.

THE BAKER COMPANY



Meets NSF
Standards



Underwriter
Laboratories Listed



UniPressure™
Prewall Plenum

NCB™ e3 - Class II Type B1 Biological Safety Cabinets

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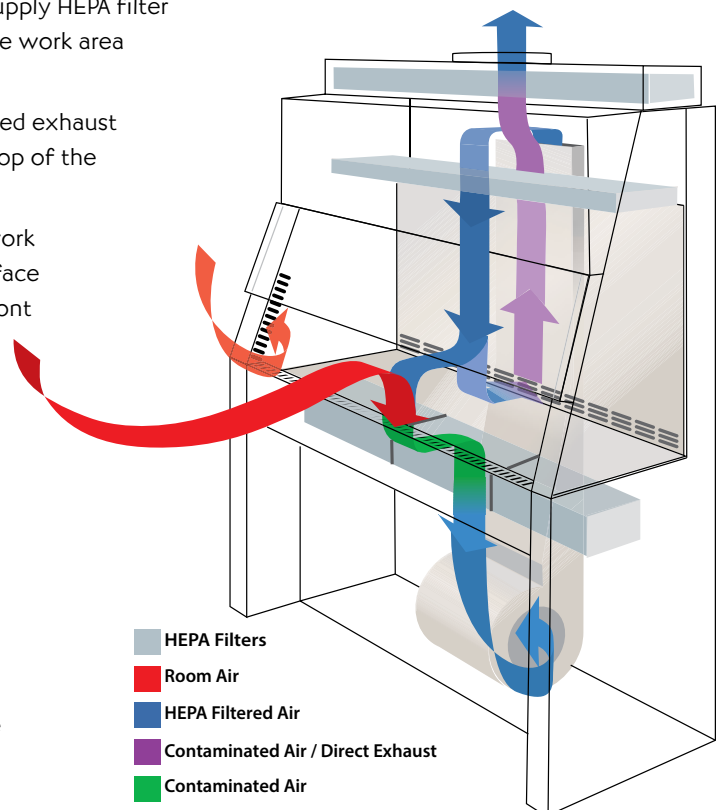
The NCB™ e3 Class II Type B1 biological safety cabinet exceeds the requirements of the National Cancer Institute (NCI) specification for a General Purpose Clean Air Biological Safety Cabinet. The cabinet includes unique Baker design features that have been proven to enhance containment while inhibiting cross contamination and exposure to chemicals, vapors and gases.



- All exhaust air is removed directly from the work area and pulled through a dedicated exhaust duct into the facility's separate exhaust system.
- Vapors and gases emitted from vessels or work behind the air split - approximately half way back from the cabinet front - are removed and not recirculated.
- Dual supply HEPA filters assure that all positive pressure areas are free of particulate contamination. Recirculated air is HEPA-filtered immediately below the work surface before it is passed through a HEPA supply filter above the work area.
- The HEPA filter located directly under the surface captures aerosols to prevent contamination of the cabinet interior plenums - and the patent-pending ExchangeSAFE™ Sealed Access Filter Exchange System, permits filter bagging and exchanges within the work area, providing improved access, a simpler process, and an overall reduction in maintenance time while still minimizing exposure to contaminants by running the exhaust during the filter change.

NCB™ e3 Airflow

- The supply blower forces air through the secondary-supply HEPA filter above the work area. This air moves downward into the work area in a unidirectional flow pattern.
- Approximately 60% of the air is drawn into the dedicated exhaust plenum, through the exhaust HEPA filter, and out the top of the cabinet by the facility exhaust system.
- Approximately 40% of the air is drawn into the front work surface perforation, then mixes beneath the work surface with incoming room air which is drawn through the front access opening.
- In the base of the cabinet, the air drawn through the front perforated grille is pulled by the blower / motor through the primary-supply HEPA filter and pushed through a plenum to the top of the cabinet.
- Upon reaching the top of the cabinet, the air travels through the secondary-supply HEPA filter and re-enters the work area as particle-free laminar flow unidirectional air.
- Escape of potentially harmful agents is prevented in part by an air barrier of inward-flowing room air at the front access opening.



Baker Builds it Better

Craftsmanship Ensures Quality

Baker cabinets represent many years of experience in fabrication and craftsmanship. Our design improves comfort, simplifies cleaning, and maintains proper containment.

- Work surface and walls are one-piece, corrosion-resistant stainless steel with smooth radius corners for easy cleaning. A white powder finish protects the cold-rolled steel cabinet exterior.
- The entire cabinet is airtight. Each component is welded, gasketed, or assembled with hermetically sealed joints. At the factory prior to shipping, each cabinet is bubble-tested under pressure to verify the integrity of seals.

Electrical System Provides Safeguards

The NCB™ e3 electrical system is designed for safety and convenience.

- GFCI-protected duplex outlets with drip-proof covers are provided on each side wall.
- UL-listed for electrical and mechanical safety and integrity.
- Viewscreen position and UV interlock are monitored by reliable noncontact proximity switches.

Supply and Exhaust Filters Perform Optimally

Because filters remove microorganisms and airborne particulates (i.e., aerosols) from the air, the quality, performance, and useful life of supply and exhaust HEPA / ULPA filters are critical biosafety considerations.

- Leak-free performance is verified through scan tests conducted at the factory prior to shipping - these should be confirmed as part of the cabinet's initial certification.
- A closed-cell neoprene gasket provides an airtight seal between the filter assembly and the metal plenum.
- Variable frequency drive (VFD) motor system and large-sized filters yield the longest filter life in the industry.



Energy Efficient Engineered



The NCB™ e3 utilizes StediFLOW™, a self-adjusting motor technology that requires less energy, extends filter life, and reduces heat output to the lab without sacrificing performance.

Class II, Type B1 Applications

The NCB™ is designed primarily for work involving laboratory procedures assigned to biosafety levels 1, 2, and 3 including microbiological studies, cell culture, pharmaceutical procedures and toxicology. This type of biosafety cabinet requires an external facility exhaust system hard ducted to the top of the cabinet.

Not sure which biosafety cabinet is right for you?

Scan code to the right or visit <http://hub.am/ZxbDic> to download our free guide to Class II Biosafety Cabinets.

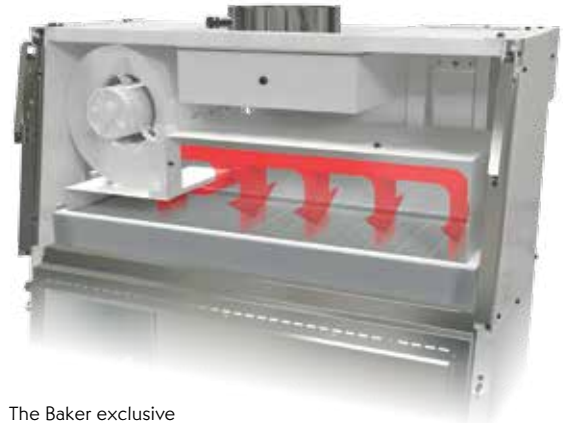


Superior Protection and Maximum Efficiency

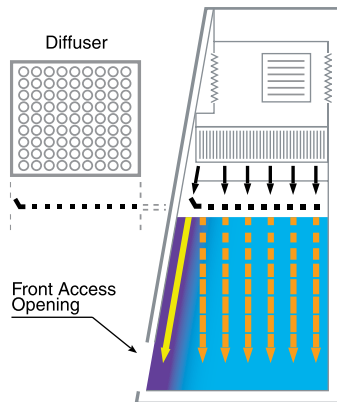
StediFLOW™ VFD Motor Controller Automatically Achieves Optimum Performance

Baker's StediFLOW™ VFD motor controller uses less energy, reduces heat output, and operates more quietly. VFD is state-of-the-art technology in HVAC systems for performance and energy savings.

- Maintains precise airflow - automatically compensates for normal power line variations, air disruptions, and filter loading.
- Provides constant air volume - reduces risk of performance degradation, which can compromise personnel and product protection.
- Extends filter life - minimizes filter replacement and decontamination costs.
- A 65% reduction in energy consumption and operating costs is typical when compared to previous models. That equals around **\$800 in annual savings** based on an average electricity rate of \$0.09 per kilowatt-hour.



The Baker exclusive UniPressure™ Preflow Plenum provides quieter, more efficient operation.



The momentum air curtain provides an added measure of containment and protection.

Momentum Air Curtain and High-Velocity Return Air Slots Increase Protection

The NCB™ e3 cabinet employs a unique momentum air curtain that offers an added measure of containment and protection exclusive to the Baker design.

- Creates a strong air barrier, or momentum air curtain, at the front of the cabinet that increases protection for both personnel and product.
- When combined with the cabinet's high velocity air slots, aerodynamically contoured front opening surface, and optimum air intake velocity, the momentum air curtain minimizes turbulence and migration of airborne contaminants into or out of the work area.

Negative-Pressure Double-Wall Plenums Enhance Safety

Baker's unique all metal, double-wall design of the NCB™ e3 cabinet creates base, side, and back wall plenums that capture and contain contaminated air under negative pressure. This prevents contaminated air from escaping into the laboratory environment in the event of damage to the cabinet walls.

Our optional NSF-approved, patent-pending cable ports are an industry exclusive. They can be located in both the left and right side walls of the cabinet, and provide a safe and ergonomic way of introducing cables or siphoning tubes into the work area without interfering with the viewscreen opening.



Double-wall construction captures and contains contaminated air under negative pressure.

Comfortable and Easy to Use

The NCB™ e3, like all Baker cabinets, includes design features to improve safety, productivity, user-comfort, and performance throughout a range of tasks performed on a daily basis. Our cabinets are designed with the user in mind so that routine tasks can be done comfortably, efficiently, and with less fatigue.

Highly Productive Work Environment

Design considerations such as wide radius corners, aerodynamically shaped surfaces, and glare-reducing satin finish interiors combine to improve comfort, simplify cleaning, and maintain proper containment.

- Large unobstructed, usable work area can accommodate more lab equipment since rear grille is parallel to the straight back wall.
- Reduced front grille depth moves the work surface area closer to front of the cabinet for better arm position and less back strain.
- Fluorescent lamps and electronic ballasts save energy, improve visibility, and enhance productivity.
- Petcocks, valves, and plumbing connections are strategically placed for convenience and proper air management.
- Stand with telescoping legs allows the work surface height to be set from 31½" to 40" for optimum comfort.

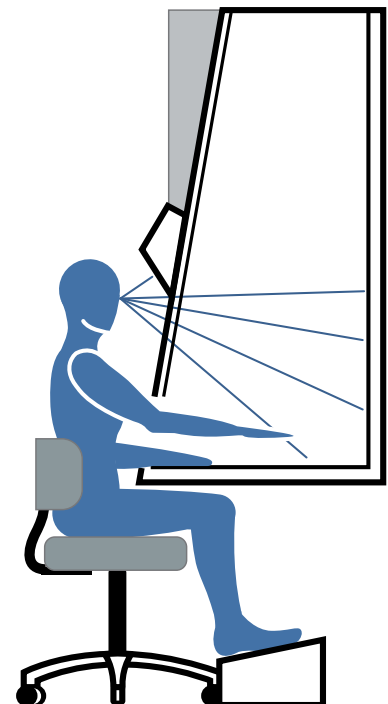
Slanted Viewscreen

The slanted sliding viewscreen minimizes glare and makes the cabinet easier and more comfortable to use.

- Maximum opening of 17 ½" simplifies equipment and instrument loading and unloading and allows for placement of large items more easily.
- Allows the operator a more comfortable head and elbow position, reducing fatigue.
- Provides a safe, highly visible, and easily accessible work area for a wide range of procedures.
- Laminated safety glass with a stainless steel edge protector increases durability and safety.



Unique air bypass padded armrest provides support and comfort.



MODEL NUMBER	NCB405	NCB605
Size	4'	6'
Interior Dimensions (w x d x h)	46" x 18 7/8" x 26"	70" x 18 7/8" x 26"
Usable Workspace (w x d)	46" x 17 1/16"	70" x 17 1/16"
Exterior Dimensions (w x d x h [min to max])	53 11/16" x 34" x [91 1/4" to 99 3/4"]	77 5/8" x 34" x [91 1/4" to 99 3/4"]
Cabinet Weight	875 lbs.	1,200 lbs.
Shipping Weight	1,000 lbs.	1,350 lbs.
Working Access Opening Height (8" standard)	8" / 12"	8" / 12"
Opening Max.	17 1/2"	17 1/2"
Operating Amperage	4.0 Amps	5.5 Amps
Power Consumption	460 Watts	633 Watts
Heat Generation	1,569 BTU/hr	2,159 BTU/hr
Electrical Service Requirement	115V AC, 20 A, 60 Hz, 1Ø 16 A max usable current	115V AC, 20 A, 60 Hz, 1Ø 16 A max usable current
Noise, exhaust & cabinet, NSF International	60 dBA	63 dBA

EXHAUST AND STATIC PRESSURE REQUIREMENTS

Working Access Opening Height	8" / 12"	8" / 12"
Exhaust Flow Rate (Total CFM)	276 CFM / 422 CFM	433 CFM / 642 CFM
Exhaust Static Pressure Adjusted Value (Per NSF 49)		
8" Exhaust Duct Diameter	-0.73" W.G. / -1.20" W.G.	-0.85" W.G. / -1.50" W.G.
10" Exhaust Duct Diameter	-0.70" W.G. / -1.19" W.G.	-0.83" W.G. / -1.47" W.G.
12" Exhaust Duct Diameter	-0.69" W.G. / -1.16" W.G.	-0.80" W.G. / -1.45" W.G.

Options and Accessories

Most options, accessories, and modifications are factory installed and should be specified when ordering. Common options are listed below. For additional information, contact The Baker Company.

- Viewscreen sash opening: 7½" and 12" - (voids NSF listing)
- Exhaust duct collar: 10" and 8" diameter
- UV germicidal lamp
- Stainless steel IV bar
- Cable port(s)
- Additional petcocks
- Plumb to back or top of unit
- Reinforced work surface
- Floor and wall seismic restraints
- Remote-controlled petcocks
- Ergonomic adjustable footrest
- Plastic storage bins
- ULPA filters
- 220 V, 16 A, 50 Hz unit
- 100 V, 20 A, 50/60 Hz unit

NCB™ e3 Class II Type B1 Biological Safety Cabinet, Vertical Flow, 115 V, 60 Hz Model

PERFORMANCE

1. Manufacturer shall provide a certified copy of the personnel, product, and cross-contamination (biological) tests, equivalent to or more demanding than as specified in NSF International Standard 49, performed on the unit selected from the corresponding statistical sample. Tests may be witnessed by a representative of the purchaser.
2. Cabinet shall have a momentum air curtain downflow velocity profile, a higher velocity of downflow behind the viewscreen relative to downflow velocity over the work surface, for added personnel and product protection.
3. High-velocity return air slots shall be located at each end of the front access opening. These slots help to prevent contaminated air from being drawn into the work area along the edges of the side wall and from escaping the work area to the ambient environment.
4. High-velocity return air slots shall also be located behind the viewscreen on the top edge for enhanced containment and product protection.
5. Cabinet shall be capable of automatically handling a 100% minimum increase in filter loading without reducing total air delivery by more than 10%. Test data to verify these capabilities shall be available upon request.
6. Intake velocity through the front access opening shall be minimum of 100 FPM. Standard opening is 8". Opening of 7½" and 12" are also available.
7. Each unit, before shipping, shall have a complete physical test to assure cabinet meets Class II requirements. A copy of this test will be provided with the operator's manual shipped with the unit.

8. The unit shall have standard HEPA filters for a protection effectiveness of 99.99% on 0.3 micron size particles by DOP test. Filters shall be serviceable from front of cabinet.

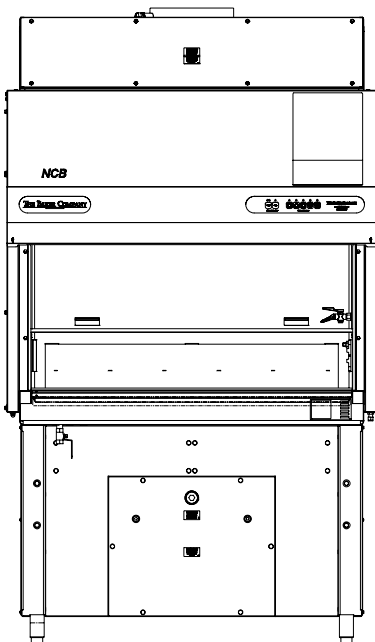
CONSTRUCTION

1. The vertical sliding viewscreen shall be slanted at an angle of 10° from vertical, and capable of moving to a fully closed position during shutdown periods.
2. Viewscreen shall be constructed of ¼" laminated safety plate glass, with a maximum opening of 17½" for equipment loading.
3. All biologically contaminated ducts, plenums, and work area side walls shall be permanent metal construction and maintained under negative pressure or enclosed within a negative-pressure zone.
4. Interior work area shall be 26" high.
5. Cabinet shall have Baker's exclusive UniPressure™ Preflow Plenum, designed to provide more uniform airflow to the supply filter.
6. Supply and exhaust filters shall be front-loading.
7. Cabinet shall be equipped with ExchangeSAFE™, a sealed access filter exchange system where exhaust filters are located directly below the work surface. This location facilitates particle capture close to the site of generation.
8. Exhaust filters shall be designed for safe bagging and removal in the work area and shall be sized to fit in a standard Department of Transportation (DOT) container for removal in a manner appropriate to their level of contamination.
9. Unit shall have an audible alarm and a flashing LED to indicate when the sliding viewscreen is in an unsafe position. An alarm mute switch shall be provided on the front-mounted cabinet control panel to allow the operator to mute the alarm tone for brief adjustments.
10. Cabinet exterior construction: seal panels and dress panels of 16-gauge cold-rolled steel, powder coated finish, painted PermaWhite™.
11. Cabinet interior (work area) construction: one-piece, 16-gauge, Type 304 stainless steel, with a smooth, 7/16" radius between rear and side walls, and easily cleanable, radiused corners on the work surface tray.
12. Work area side walls and rear wall to be one-piece construction. A straight back wall shall be provided to maximize work area and easily accommodate laboratory equipment.

13. Cabinet shall be double-wall construction with negative-pressure airflow between the walls, from drain pan to top, surrounding the sides and back of work area.
14. Bottom of access opening shall have an aerodynamic airflow design directing airflow into the front grille to improve access opening containment capability and bypass armrest.
15. Stainless steel air diffuser and filter protector provided in work area. Filter protector on top of cabinet is cold-rolled steel with a powder coated finish.
16. One petcock and one plugged penetration are provided as standard on the right side wall. Left side wall is prepunched for optional/additional plumbing connections.
17. All external plumbing connections to the petcocks shall be made through the back or the top of the cabinet and not the sides, allowing zero clearance between the unit and the building walls or equipment to its right and left.
18. The unit comes with a stand, which includes telescoping legs that allow the work surface height to be set from 31½" to 40".
19. Viewscreen guide design shall be a counterweighted pulley system allowing ease of movement up and down.

ELECTRICAL

1. Complete unit shall be listed as certified by Underwriters Laboratory (cULus) for electrical, fire, and personal safety.
2. Cabinet shall have adjustable timers for fluorescent lights, outlets and optional UV lights. Timers operate in 15-minute and 1-hour intervals.
3. Work area shall be provided with two GFCI-protected duplex outlets, with drip-proof covers and shall be protected by a self-resetting circuit breaker.
4. A single 16' power cord and plug (NEMA 5-20P) shall be provided for electrical power source.
5. If equipped with the optional UV light, the unit shall have a shutoff safety feature when the viewscreen is raised.
6. Cabinet shall have an externally mounted fluorescent light fixture with electronic ballasts producing an average of 100 foot-candles illumination at work surface.



Caution

Class II, Type B1 cabinets may be used for work with volatile chemicals and radionuclides required as adjuncts to microbiological studies. These cabinets may also be used for work treated with volatile chemicals and radionuclides required as an adjunct to microbiological studies if work is done in the direct exhausted portion of the cabinet, or if the chemicals or radionuclides will not interfere with the work when recirculated in the downflow air (as stated in National Sanitation Foundation International Standard #49).

Note: The adequacy of this containment cabinet for the user's personal safety, as with any containment cabinet, should be determined by an industrial hygienist or safety officer. Site preparation information, architectural drawings, detailed dimensions and purchase specifications are available.

36 Month 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 from the invoice date. Thirty-six month warranty is only available in the United States; international warranty is twelve (12) months.

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.)



PROUDLY MADE IN THE U.S.A.

THE BAKER COMPANY

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NCB™, StediFLOW™, UniPressure™ Preflow Plenum, and ExchangeSAFE™ are trademarks of The Baker Company.
The Baker cable ports are patent pending.

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