

Dynamic Barrier



LOW CONSTANT VOLUME
Fume Hoods

KEWAUNEE®

...encouraging new discovery

The Low Constant Volume Solution from Kewaunee Scientific Corporation

Dynamic Barrier Fume Hood



Unique, six-panel, low profile framed lower sash and large upper sash provide multiple protective working configurations and unobstructed view.

Safety:

- Vigorously tested to ANSI/ASHRAE 110-1995 guidelines. In addition, the Dynamic Barrier fume hood has been subjected to stringent dynamic testing including walk-bys, cross-drafts, and multiple breathing zone challenges, while maintaining unsurpassed containment.

Energy Conservation:

- Requires over 70 percent less exhaust air volume than a traditional by-pass fume hood. This design conserves natural resources while saving thousands of dollars per fume hood:
 - On initial HVAC system requirements, and
 - On annual energy consumption.

Design:

- Engineered for safety and convenience.
- Low profile sash frame for easy access through horizontal panels.
- Flush sill for unobstructed access through vertical opening.
- Double vertical sash design allows full view into hood interior, and 37" opening height for apparatus setup.
- Service ports provide convenient, safe passage for equipment connections.
- Exclusive Air Alert 500 alarm provides a visual one-hour time line of fume hood performance.
- Exclusive static pressure averaging mechanism provides accurate face velocity readings regardless of sash positioning.
- Quiet fume hood operation, under 40 dBA!
- UL listed when pre-wired per UL 3101-1 1993.



Sash stop provides 10" high, full width working opening while maximizing splatter and fume barrier for user protection.



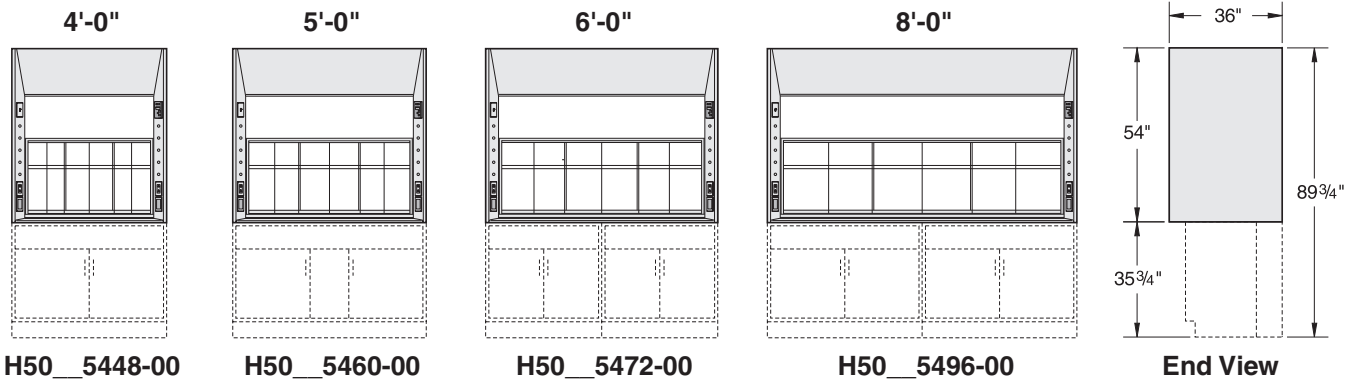
Twin interlocking sashes provide 37" high opening for easy hood setups while projecting only 9" above the hood.

System Simplicity:

- Proven constant volume technology avoids the requirements of expensive, high maintenance alternatives.

Dynamic Barrier Fume Hood

Combination Vertical Rising/Horizontal Sash



Liner Options:

- K** = KMER
Kewaunee Modified Epoxy Resin
- G** = Kemglass
Fiberglass reinforced polyester
- S** = Type 304 Stainless Steel
- T** = Phenolic Resin

The blank left in the fume hood catalog numbers is for designating the desired lining.

Example: H50K5448-00 would designate a 4' hood with a KMER lining.

| DIMENSIONS | HEIGHT | LENGTH | | | | DEPTH |
|---------------------|-----------|--------|-----|-----|-----|---------|
| Overall Dimension | 89 3/4" * | 48" | 60" | 72" | 96" | 36" |
| Sash Opening | 37" | 40" | 52" | 64" | 88" | ... |
| Work Top | 37" * | 40" | 52" | 64" | 88" | 25 1/2" |
| Clearance (sash up) | 98 3/4" * | ... | ... | ... | ... | ... |

* Subtract 1" in height if wood base cabinets are used.

| Overall Hood Length | Maximum Face Opening of Horizontal Sashes | | | | Face Opening with Vertical Sash at 10" Sash Stop | | | | Total CFM and Static Pressure | |
|---------------------|---|-----|-------------------|----------|--|-----|-------------------|----------|-------------------------------|-------|
| | W | H | Ft ² * | Velocity | W | H | Ft ² * | Velocity | CFM | S.P. |
| 4'-0" / 48" | 14 1/2" | 22" | 2.25 | 100 fpm | 40" | 10" | 2.78 | 81 fpm | 225 | 0.10" |
| 5'-0" / 60" | 18" | 22" | 2.80 | 100 fpm | 52" | 10" | 3.61 | 80 fpm | 280 | 0.11" |
| 6'-0" / 72" | 22" | 22" | 3.50 | 100 fpm | 64" | 10" | 4.44 | 80 fpm | 350 | 0.18" |
| 8'-0" / 96" | 30" | 22" | 4.85 | 100 fpm | 88" | 10" | 6.11 | 80 fpm | 485 | 0.10" |

* Includes free area contributions from sash clearance spaces and by-pass opening.

Static pressures shown are for the pressure drop through the hoods only. The total pressure drop through the hood and the duct system must be calculated to select the proper exhaust fan.

Accessories Include: Two 120 volt AC 20 amp GFI receptacles, two-tube fluorescent light fixture (bulbs not included) with 20 amp light switch, Air Alert 500 Air Flow Alarm and two cord ports. **No wiring for the electrical fixtures is included unless H-Option is added to part number.**

Optional Accessories: Each front post and interior end liner is punched for up to five (5) remote control service fittings. **Service fittings, fan, fan switch, work top, cupsink, and base units must be ordered separately.**

Add On Options:

Electric & Plumbing Options:

- G** = Front Load Fixtures
- H** = Pre-Wired to Top of Hood
UL Listed

Interior Lighting Options:

- J** = Fluorescent T-8 Ballast
- K** = Vapor Proof Light
- L** = Explosion Proof Light

Sash Options:

- 3** = Tempered Glass Sashes

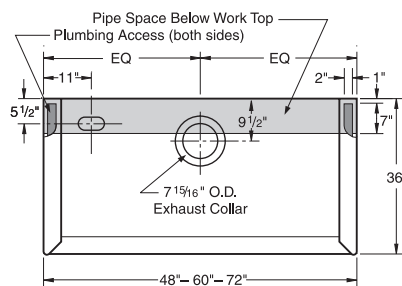
Other Options:

- D** = Distillation Rack
- E** = Fire Extinguisher
- O** = St. Steel Deflector Vane
- 6** = Tissue Screen
- 7** = St. Steel Duct Collar

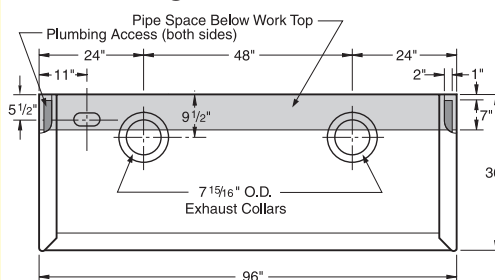
To specify option, add option letter or number to the end of the part number.

Example: H50K5448-00H.

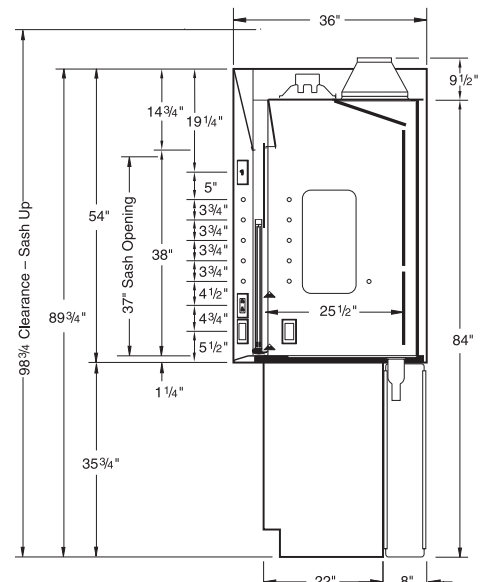
Rough-In for 4' - 5' - 6' Hoods



Rough-In for 8' Hoods



Vertical Section



70% Savings

Exhaust Air Requirements

Dynamic Barrier Fume Hood

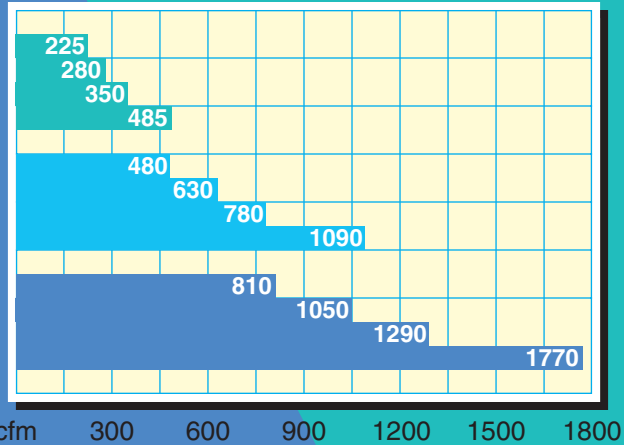
4 foot
5 foot
6 foot
8 foot

Typical Combination Sash Fume Hood

4 foot
5 foot
6 foot
8 foot

Typical Constant Volume Fume Hood

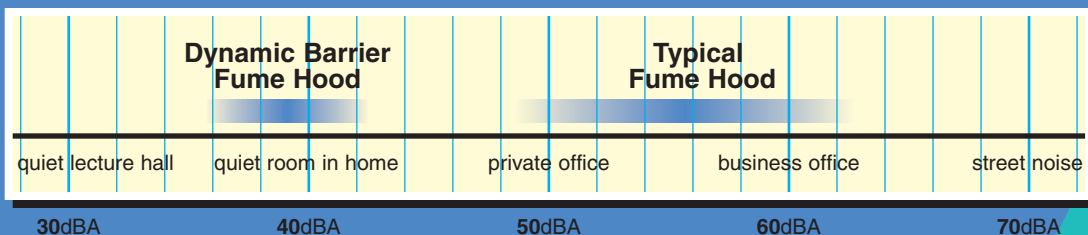
4 foot
5 foot
6 foot
8 foot



Published Face Velocity Recommendations

| Org | Citation | Face Velocity |
|-----------|--|---------------|
| ACGIH | <i>Industrial Ventilation</i> 19th edition p.5.24 | 60-100 fpm |
| ASHRAE | <i>1999 ASHRAE Handbook</i> 13.5 | 60-175 fpm |
| ANSI/AIHA | ANSI/AIHA Z9.5, Sect 5.7 | 80-120 fpm |
| CALOSHA | CCR Title VIII Subchapter 7.5454.1 | min 100 fpm |
| NRC | <i>Prudent Practices</i> p.187 | 80-100 fpm |
| NFPA | NFPA 45 6-4.5 & A6-4.5 | 80-120 fpm |
| NIOSH | <i>Recommended Industrial Ventilation Guidelines</i> p.166 | 100-150 fpm |
| NRC | NRC Guide 6.3 | 100 fpm |
| OSHA | 29 CFR 1910 Appendix A Sec. A.C.4.g | 60-100 fpm |
| SEFA | SEFA 1.2: 5.2 | 75-100 fpm |

Noise Level Comparisons



Section 11610 – Dynamic Barrier LCV Fume Hood Specifications (abbreviated)

- 1.01 SUMMARY AND SCOPE
Furnish, deliver, and install all fume hoods, work tops, and understructures based on Kewaunee Scientific Corporation's Dynamic Barrier LCV fume hood design. Fume hood shall be UL listed.
- 1.02 FUME HOOD PERFORMANCE REQUIREMENTS
LCV fume hoods shall be flush-sill airfoil design to maximize containment. The sash shall be a dual synchronized system with an upper vertical frameless sash and a lower combination sash. The CFM exhaust shall be as detailed, (see catalog chart), to provide 100 FPM through the maximum horizontal sash opening.
- 1.03 SUBMITTALS
The fume hood shall be factory tested per ANSI/ASHRAE 110-1995. Provide certification that the fume hood meets established criteria plus a 40 fpm cross-draft test.
- 2.01 MANUFACTURER
Dynamic Barrier fume hoods, manufactured by Kewaunee Scientific Corporation, Statesville, North Carolina.
- 2.02 MATERIALS AND CONSTRUCTION
- A. Fume Hood Superstructure Frame: Steel angle rigid frame construction for independent support of interior and exterior components.
- B. Side Walls: Double wall ends, maximum 4" wide, with interior end panels and sash track flush with the fascia.
- C. Airfoil: Flush airfoil mounted to the worktop, 12 gauge painted steel (option, stainless steel).
- D. Duct Collar: 12" diameter polyethylene bell-mouthed duct collar with a separate 12" to 8" adapter flange for use in ganged ducted systems.
- E. Lighting: Two-tube fluorescent light fixture (bulbs not included).
- F. Dual Vertical Sash: A two panel vertical/combination sash system designed so the lower sash controls movement of both sashes. The top vertical sash is of frameless design, with 1/4" laminated safety glass. The bottom framed sash uses eccentrically sized 22" high panels of 1/4" laminated safety glass.
- G. Sash Stops: Defeatable sash stops set at vertical openings of 0" and 10".
- H. Warning Signage:
1. At 0" sash stop: Close Horizontal Sash Panels Before Raising.
 2. At 10" sash stop: Setups Only Above This Point.
 3. On lower rail of upper sash: Close Horizontal Sash Panels. This sign is hidden until lower sash is raised above 0" sash stop.
- I. Fume Hood Plumbing Services: Plumbing services shall consist of remote control valves as selected, located within the end panels. Interior fitting for gases and water shall be angle serrated hose connectors, color coded. All plumbing fittings shall be factory installed and piped between the valve and the outlet, and be pre-piped for one point connection to services, by others.
- J. Fume Hood Electrical Services: The hood superstructure shall be pre-wired and be UL listed. Electrical services shall consist of two 20 amp, 120 volt AC, GFI duplex receptacles and a 20 amp light switch.
- K. Service Ports: Fully enclosed service ports shall be provided on each fume hood side wall creating cord and service line access from the hood interior to the exterior front fascia immediately below the duplex outlets. The service ports shall have cross-sectional dimensions of 1-1/2" by 3" and be designed for smooth cord and service line pass-through.
- L. Hood Worksurface: Epoxy resin hood worksurface shall be 1-1/4" thick molded epoxy resin made in the form of a watertight pan, not less than 3/8" deep to contain spillage with a 6" wide safety ledge across the front edge. The worksurface and cup drain shall be available in either black or white.
- M. Access Opening: The interior end liner panels shall be furnished with an opening that provides access to the service piping and valves to facilitate installation and maintenance. Panels that require tools to remove are not acceptable. The panel shall provide an overlapping seal on all edges.
- N. Fume Hood Finish: (Electrodeposition process required; no substitutes.) The steel surfaces shall be coated with a corrosion-resistant finish using an electrodeposition dip procedure to guarantee complete paint coverage. Powder-coat or solvent-based spray paints are unacceptable for the initial base paint coat. The coating shall then be cured by baking at elevated temperatures to provide maximum properties of corrosion and wear resistance. Finishes receive an additional topcoat, of the color specified, on all surfaces exposed to view.
- O. Fume Hood Liners (Choose one):
1. KMER Epoxy Resin Lining:
Interior liner panels shall be 1/4" thick epoxy resin sheets of a white color. Interior liner panels shall be fastened using stainless steel screws with plastic covered heads. Flame spread of material as measured by ASTM E84 shall be 6.2 or less. Fiberglass reinforced plastics or polyesters shall not be acceptable substitute liner materials for epoxy resin.
 2. Stainless Steel Lining:
Interior liner panels shall be 16 gauge Type 304 stainless steel with a No. 4 finish. Interior liner panels shall be fastened using stainless steel screws.
- P. Fume Hood Bypass System:
All bypass air shall pass through a horizontal perforated 304 stainless steel grille located between the interior top front liner panel and the operating plane of the top sash member. Laboratory air shall always be the source of bypass air.
- Q. Digital Face Velocity Alarm System:
Fume hoods shall be provided with an alarm system to detect low hood face velocities. The alarm system shall indicate the actual face velocity of the hood regardless of sash position or orientation. The system shall have an air velocity sensor mounted on the interior side liner of the hood connected to a perforated averaging tube running across the entire front interior of the hood. The velocity monitor shall have a digital display of the air velocity through the hood face in feet per minute. The alarm signals shall activate any time the face velocity falls below the low velocity alarm set point or rises above the high velocity alarm set point. There shall be both visual and audible alarm signals. The audible alarm shall have a mute. Low alarm contacts shall be provided for remote monitoring. A scroll-type recorded read-out of alarm events for the past 60 minutes will also be displayed.
- 3.01 INSTALLATION
- A. Performance:
Install fume hoods, plumb, level, rigid, securely anchored to building and adjacent furniture in proper location, in accordance with manufacturer's instructions and the approved shop drawings.
- B. Certification:
Fume hood manufacturer shall field test a random sample of 20% of the installed units using ANSI/ASHRAE 110-1995 to a control level of AI 0.01 ppm or better.

For complete specifications of all Kewaunee products, visit our website.