

FUME HOOD ORDERING INFORMATION:

STEP 1:

- A. Select the model of fume hood that best fills your laboratories needs:
1. Slim Wall, Control Air, Demonstrator, Perchloric Acid, Radio Isotopes, Pass Through, Low Flow, and Flat Face. These hoods are all **bench type hoods** that are mounted on a counter top or base.
 2. All Accessible and HOPEC IV fume hoods: These hoods are designed to meet the needs of the physically challenged. The hood design allows wheel chair access.
 3. Walk-in fume hoods: This hood is designed for large equipment and apparatus.
 4. Special Purpose Hoods: These hoods are more specifically designed to meet your intended use. Consult our engineering design team for help in solving your needs.

STEP 2:

- B. What operating type do you need?
1. For bench type, HOPEC IV, All Accessible, Walk-in and Special Purpose fume hoods there are three classifications:
 - 1) BYPASS (The Low Flow style hood is a Bypass type)
 - 2) ADD AIR SUPPLY
 - 3) RESTRICTED BYPASS

STEP 3:

- C. Select fume hood interior material: (For greater detail see the accessories section)
1. White poly resin, or comparable
 2. Phenolic resin color white or Black epoxy resin
 3. #304 stainless steel
 4. PVC
 5. Polypropylene

STEP 4:

Select fume hood exterior:

1. Cold Rolled Furniture steel with chemical resistant powder coat finish
2. Stainless steel
3. Specials – Wood or plastic

STEP 5:

Select a sash configuration:

1. The *standard sash* is a vertical sliding painted or stainless steel frame containing safety glass. All hoods that are 70" and larger contain center mullions.
2. The *Horizontal sliding sash* is constructed from painted steel or stainless steel. The frame houses track top and bottom this allows the trimmed safety glass panels to slide from left to right.
3. The *Combination - horizontal* and vertical sliding sash is constructed from painted steel or stainless steel. But unlike the horizontal sash. Sliding it vertically can also open it. All vertically sliding sash are typically counter balanced with a steel weight.

STEP 6:

Select a color: Our standard colors are Cool White #6H20, Desert Sand #8389 and Smoke #0232. For other colors, contact Keur Industries, Inc. or visit our web site <http://www.keurind.com/ki-color.html>.

STEP 7:

Select the accessories for your fume hood:

For all add on items from alarms to explosion proof lights see the accessories section in this catalog. As a reminder some add on features displayed in the accessories may not be applicable for your fume hood selection.

TESTING:

All fume hood designs are tested in accordance with the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Test 110-1995. This test is the standard used to evaluate the performance of a fume hood to efficiently capture contaminants. The test consists of three parts which are average face velocity, reverse air flows, and dead air space within the hood along with tracer gas containment. All testing performed on Keur Industries fume hoods is carried out by an independent HVAC or testing firm for reliable test results.

All fume hoods comply with U.L. 1805 as we are currently certifying our complete product line. We also offer additional certification based on needs per customer request.

QUALITY CONTROL:

Steps are being taken to implement a five step process to eliminate quality defects. This is a continuous improvement program that also eliminates waste and improves the products we sell. For more information on our QC control processes contact Keur Industries, Inc.

REFERENCES:

Keur Industries has used materials for reference to construct product to fall within guidelines pre-established by the Department of Agriculture, Science, and Education & NIH. The subject matter concerned laboratory chemical fume hoods and their relating standards. (For reference see manual 232.1)

"Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes" is a handbook published by ACGIH.

American Conference of Governmental
Industrial Hygienists, Inc.
P.O. Box 1937
Cincinnati, OH. 45201

For information relating to exposure outside of the fume hood and permissible levels of exposure contact Safety and Health Program Management Branch Administrative Services Division, S&E
Federal BLDG.
6505 Belcrest Road
Hyattsville, Maryland 20782

ARS MANUAL 242.1 (Construction Project Design Standard)

BIOSAFTEY LEVELS:

- A. Bio-safety level 1 (BL1). Involves agents of known or minimal potential hazard to laboratory personnel, animals, and the environment. Presents no potential economic loss to the animal industry.
- B. Bio-safety level 2 (BL2). Involves agents of moderate potential hazard to personnel, animals, and the environment with minimal economic loss to the animal industry.
- C. Bio-safety level 3 (BL3). Involves agents which are indigenous or certain ones that are exotic to the United States which can be contracted via the respiratory route and may cause serious or lethal diseases to man, animals, or cause moderate economic loss to the animal industry.
- D. Bio-safety level 4 (BL4). Involves highly dangerous and exotic agents which pose a high individual risk of life-threatening disease to man and food animals. These agents have the potential for severe economic loss to the animal industries.

Fume hoods and safety cabinets fall into 3 classes based on hazards which are classes I, II, and III. (See ARS Manual 242.1 for greater details relating to levels and class.)

WARRANTY:

Keur Industries Inc. warrants the materials and workmanship for a period of one year from time of shipment. This warranty is only good if the products sold have been properly installed. This warranty however will not cover damages incurred during shipping, installation, or the improper use of our products. Keur Industries, Inc. will not be held accountable for any injuries or damages to persons or property caused by misuse or incorrect operation of our products. This applies but is not limited to accidental or intentional circumstances.

An important consideration is the equipment type and its use-

FUME HOOD CLASSES:

- **Class A Hoods-** These hoods are used in when handling extremely toxic and hazardous materials, such as metal carbonyls, carcinogens, beryllium compounds, and tetraethyl lead. The recommended hood face velocity should be 125 to 150 LFM, with minimums of 100 to 125 LFM at any point during operation.
- **Class B Hoods-** This hood is commonly used in most laboratories dealing with materials and operations of the lab. This hood type is designed to protect the operator from noxious fumes and processes generating odors, smoke, fumes, etc.. Recommended face velocity should be 100 LFM. A reduced air consumption fume hood is also a viable choice, see the Low Flow fume hood model for greater detail.
- **Class C Hoods-** Used for materials and conditions where the hazard level is not high. Uses include low toxicity materials like ethanol and strait – chain hydrocarbons to name a couple. Also for materials or operations that generate dust and fumes. Recommended face velocities are 80 LFM with a minimum of 50 LFM during any point of operation.

Ordering information for fume hoods-

Once the class of hood is determined there are a few more criteria to be determined before selecting your fume hood. The hood with all the traits you need should be selected. This could be either a large walk-in type unit to the common Control Air type bench hood to a special purpose unit. This determination is based on your lab needs.

When looking through the different types of hoods if one particular model does not fully compliment what you are trying to achieve we have an engineering group that will develop a system that works for you.

Once you have figured out the type and the specific needs you wish to achieve you must now select an operating type. The selections include **Bypass, Low Air Flow constant volume, Add Air, and Restricted Bypass.**

CONSTANT VOLUME EXHAUST SYSTEMS:

BYPASS - This is the air that is allowed to flow through the fume hood with the sash lowered to keep face velocities within an acceptable level. As the sash is lowered the face velocities rise allowing less air to move through the hood. The bypass helps maintain a clean environment within the hood keeping fumes, smoke, and particles moving into the exhaust. An airfoil of some kind or louvered front panel is typically used to achieve this.

To conserve energy and maintain a constant volume system see the Low Flow style hood in the Fume Hood section. You can greatly reduce the amount of air being pulled from your lab and still maintain a safe working environment. This is our most efficient hood offered

ADD AIR FUME HOODS WITH CONSTANT VOLUME EXHAUST - After consulting with an HVAC expert there maybe a determination that your lab cannot sufficiently supply the fume hood with enough air. In this case an Add Air system is recommended. The air is typically brought in from the outside or another part of the building. This air is dumped in front of the hoods face from above so as the sash opens the added air is taken. Typically, 30% of the room air is used with 70% coming from the supplemental air chamber. This results in higher hood efficiencies and reduced costs to temper your laboratories air. There are some drawbacks to this exhaust system, fore instance controlling the air and its moisture content so as not to interfere with experiments. The Add Air hoods must be balanced once installed.

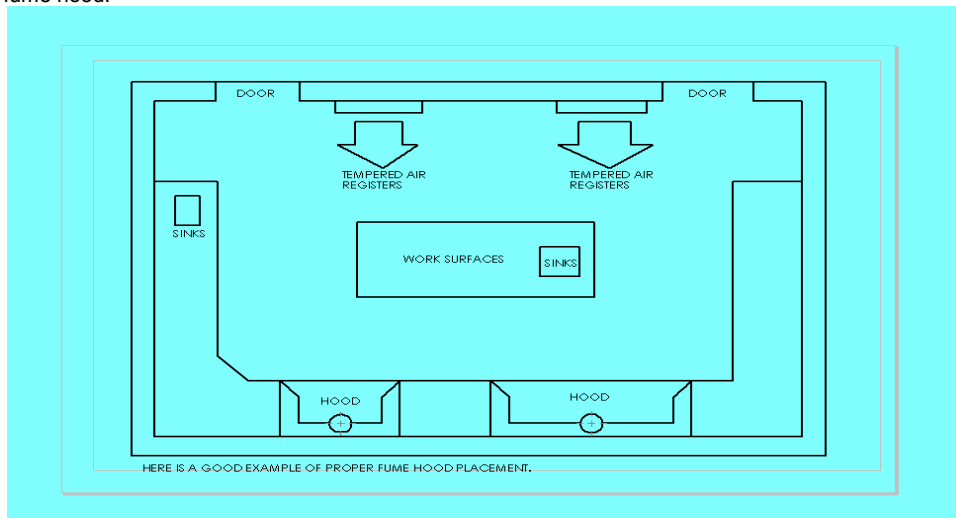
RESTRICTED BYPASS - Constant volume operation with restricted bypass can be achieved with the help of proper exhaust duct sizing and face opening reducing devices. Use of an airfoil such as with the Keur Industries Airflow hood or sashes like horizontal and combination can also help. These sash designs can help reduce exhaust volumes as much as 50%. The reduced exhaust volume helps the bypass air volume to be reduced and in doing so still achieve constant volume.

VARIABLE AIR VOLUME (VAV) EXHAUST SYSTEMS:

It is recommended that all VAV systems use restricted bypass fume hoods to maintain the safety and energy savings within the lab. The intent behind the VAV system is to vary the exhaust volume in response to sash position. So as the sash opens up in order to maintain the same face velocity the exhaust volume increases as the sash closes a minimum of air is exhausted. All exhausted air is pulled from the lab/room the system operates in. All sash configurations can be used with this system. This system has its benefits with reduced energy costs but on the down side it is more sophisticated to operate and maintain compared to constant volume.

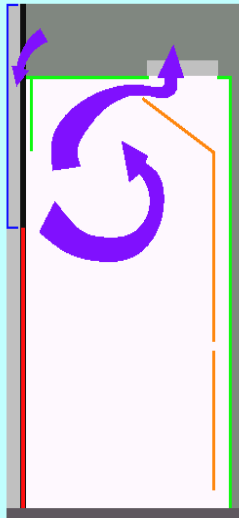
CONSIDERATIONS FOR FUME HOOD INSTALLATION:

Here are a few things to consider before and after the fume hood is installed. If it is possible when designing a new lab or including a fume hood to an existing one avoid locating the hood next to doors, windows, vents, or main walk ways. The reasoning is to reduce the amount of uncontrolled air near the hood and reduce foot traffic in front of the hood which also causes disturbances in the air. Once the fume hood has been installed take the time to look over all the connections from the exhaust duct, fixture connections, and wiring. If there are problems consult with your contractor to fix the problems related to the install. Once the hood has been looked over, it must then be balanced when it is tied into an exhaust system. Bring in a qualified HVAC expert to balance your hood especially if you will be operating more than one unit on your exhaust system. Verify that the hoods face velocity is where it should be while testing the hood. A smoke test is a good way to see how well the system is functioning. The hood should remove the smoke quickly and proficiently with no drop in air exhaust cfm. Once the items above have been completed you should have years of trouble free service from your new fume hood.

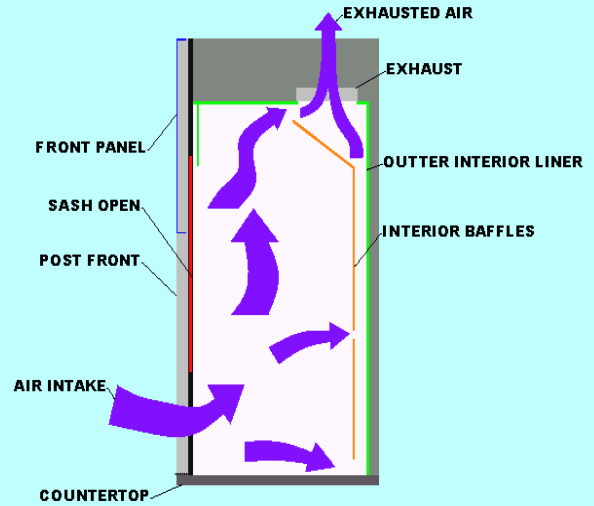


AIR FLOW PROFILES:

The below diagrams represent air patterns based on the type of fume hood from a constant bypass to a restricted bypass.

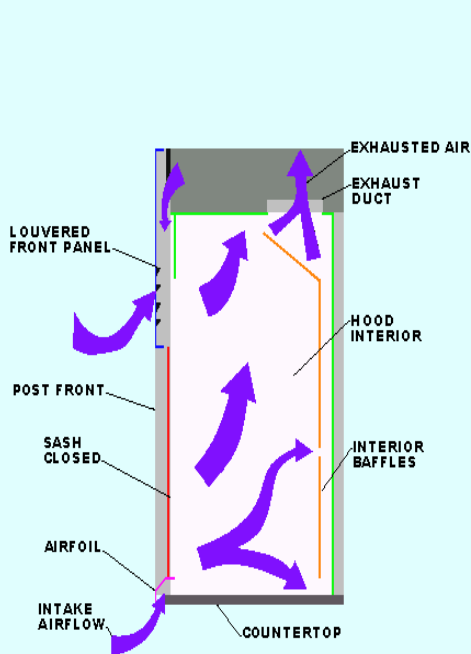


RESTRICTED BYPASS W/ SASH CLOSED

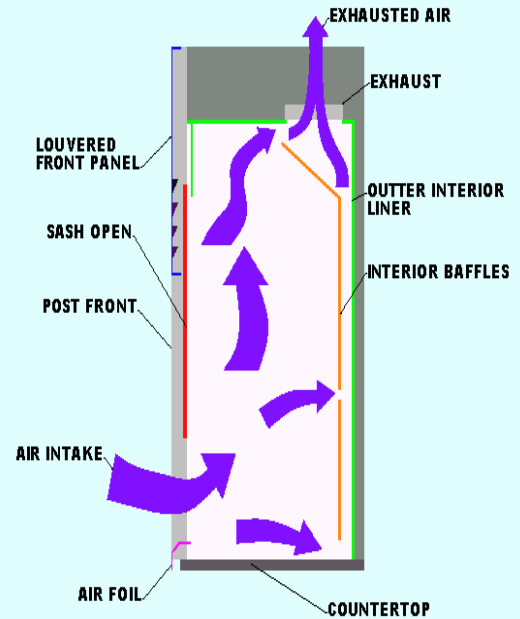


RESTRICTED BYPASS W/ SASH OPEN

The hoods above represent **restricted bypass** hoods, these hoods **do not** have louvers in the front panel or an airfoil. When ordering your fume hoods specify which type you would prefer.



CONSTANT BYPASS W/
SASH CLOSED



CONSTANT BYPASS W/
SASH OPEN

The above fume hoods represent the **constant bypass** type system with **louvered** front panel and an airfoil. This system allows the air to freely flow through the hood even when the sash is closed. There are many advantages to this type of system the biggest being your fume hood interior will clean out faster if your system is functioning properly. This can be used on all Keur Industries fume hoods, if you have questions consult with us to answer your questions.