

AIR SCIENCE® PURAIR™ BASIC DUCTLESS FUME HOODS AND EDU-JUNIOR™



— Purair P5-24

USER OPERATION MANUAL

Air Science Manual Revision No. PURAIR-BASIC-SERIES.V2.2010
Specifications subject to change without notice.



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SAFETY WARNINGS

- This cabinet does not offer product and/or sample protection.
- Read all instructions before proceeding and observe the installation procedure and environmental/electrical requirements
- Anyone working with, on or around this equipment should read this manual. Failure to read, understand and follow the instructions given in this documentation may result in damage to the unit, injury to operating personnel, and / or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous material in the cabinet must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual.
- Explosive or inflammable substances should never be used in the cabinet unless a qualified safety professional has evaluated the risk involved.
- If chemical, radiological or other non-microbiological hazards are being used in the cabinet, additional protective measures should be taken. Besides that, the operation should be monitored by a suitably trained individual.
- Before you proceed, you should thoroughly understand the installation procedures and take note of the environmental/electrical requirements of the cabinet.
- In this manual, important safety related points will be marked with this symbol.



- If the equipment is used in a manner not specified by this manual, the protection provided by this equipment may be impaired.

LIMITATION OF LIABILITY

The disposal and / or emission of substances used in connection with this cabinet may be governed by various local regulations. Familiarization and compliance with any such regulation are the sole responsibility of the users of the cabinet. Air Sciences' liability is limited with respect to user compliance with such regulations.

EUROPEAN UNION DIRECTIVE ON WEEE AND RoHS

The European Union has issued two directives:

• Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE)

The objective of the WEEE directive is to promote "...the reuse, recycling and other forms of recovery of such wastes (WEEE) so as to reduce the disposal of waste besides improving the environmental performance of all operators involved in the life cycle of electrical and electronic equipment, e.g. producers, distributors and consumers..." and hence this directive refers to the disposal of this cabinet within the EU. A "wheelie bin" sticker (*shown alongside*) has to be pasted on all products covered by this directive, indicating that at the time of disposing of the product, it should not be grouped together with general unsorted municipal waste. Instead, distributors of electrical and electronic equipment should be responsible for the collection and scrapping of the products they have sold Please note that this cabinet has been classified as "fixed industrial equipment" and hence the WEEE directive is not applicable to its disposal.



• Directive 2002/95/EC on Restriction on the use of Hazardous Substances (RoHS)

With respect to the directive on RoHS, please note that this cabinet falls under category 9 (*monitoring and control instruments*) and is therefore exempted from requirement to comply with the provisions of this directive.



SYMBOLS



Warning of hazardous area or situation



Warning of dangerous electric voltage



Earth (ground) protective conductor

Local government may require proper lamp disposal



FREIGHT CLAIM INFORMATION

Air Science inspects each product for defects before shipment. Air Science products are then carefully packed in compliance with carrier regulations and thoroughly inspected before leaving our plant. Responsibility for their safe delivery is assumed by the carrier upon acceptance of the shipment. Occasionally damage occurs in transit. Claims for loss or damage sustained in transit must be made upon the carrier.

Please remember that you are responsible for all freight claims and the cost of all replacement pieces for each shipment you accept. Inspect each shipment very carefully before acceptance.

Carefully inspect each pallet or crate upon arrival. If a shipment is found to be damaged upon delivery, be sure to have the driver/carrier note all damage details on the delivery receipt.

This is essential or your claim may be denied. Also if pallets are stacked, please note "Stacked Pallets" on the delivery receipt (pallets are not stacked when shipped, unless otherwise stated for certain products). Air Science is not responsible for pallets stacked at carrier terminal. Any unloading difficulties or damages due to stacked materials are carrier's responsibility.

If freight damage is discovered, please refer to the following guidelines in order to process and effective freight claim:

ACCEPTED FREIGHT WITH NOTED/VISIBLE LOSS OR DAMAGE

- Any external evidence of loss or damage must be noted on the freight bill or delivery receipt and signed by the courier's agent or delivery driver

NOTE: Failure to properly describe evidence of loss or damage may result in the carrier refusing to honor a claim

- Contact delivering terminal to arrange for a claim form and inspection report to be faxed or mailed to you
- Notify Air Science regarding which items need replacement
- Keep all damaged items and packing material until claim is resolved between you and the carrier

ACCEPTED FREIGHT WITH CONCEALED LOSS OR DAMAGE

When a damage or loss is discovered during unpacking:

- Contact the carrier immediately upon discovery of damage and request for inspection by the carrier's agent.
- Carrier will determine inspection needs based on value and time elapsed
- Notify Air Science regarding which items require replacement
- Air Science will fax to you an order acknowledgment that includes value of items for claim (less freight amount)
- Air Science will invoice you for replacement materials
- Air Science standard payment terms will apply

UNACCEPTED FREIGHT

- If substantial damage is noted upon inspection you have the right to refuse part or all of a shipment. Do not unpack pallets or crates with damaged materials. Individual items cannot be refused. You must refuse the entire pallet or accept the freight with noted damage (see above)
- Air Science will handle all freight claim procedures and process a replacement order for your company for the damaged pieces at no charge. (if the original order was shipped under CIF terms i.e. Air Science had covered the insurance)

NOTE: Any correspondence with Air Science regarding loss or damage must be accompanied by a copy of the shipping carrier's report. Air Science will not accept returns that have not been authorized.

In the event of accepted freight with damage or loss, notification of loss or damage must be sent to the carrier within 10 days of receiving the freight. Notification outside the 10-day time frame may result in shipping damage claim being denied.



WARRANTY TERMS AND CONDITIONS

Air Science value your business, so your satisfaction is important to us, so please complete and return our customer satisfaction survey at the end of this manual.

Should you be unfortunate to receive product that appears to be damaged or defective or does not appear to be working satisfactorily, then please contact our experienced technicians for assistance at the address shown at the foot of this page.

The Air Science range of cabinets has been carefully designed to produce a system that will provide product safety in an easy to use system. However, basic safety precautions should always be followed when:

- ☐ Using an electrical product; and
- ☐ Handling hazardous substances.

Air Science products come with a 2-year limited warranty beginning on the date of shipment from the Air Science. Air Science's limited warranty covers defects in materials and workmanship. Air Science's liability under this limited warranty shall be, at our option, to repair or replace any defective parts of the equipment, provided if proven to the satisfaction of Air Science that these parts were defective at the time of being sold.

This limited warranty does not cover:

- ☐ Installation (inside delivery handling) damage.
- ☐ Products with missing or defaced serial numbers
- ☐ Consumables such as filters (HEPA, ULPA, carbon, pre-filters) and fluorescent / UV bulbs
- ☐ Problems that result from:
 - External causes such as accident, abuse, misuse, problems with electrical power, improper operating environmental conditions
 - Servicing that is not carried out by Air Science personnel or their appointed agents, or in the case of electrical work by a qualified electrician
 - Usage that is not in accordance with these product instructions
 - Failure to follow these product instructions
 - Failure to perform preventive maintenance
 - Problems caused by using accessories, parts, or components not supplied or approved by Air Science
 - Damage by fire, floods, or acts of God
 - Customer modifications to the product

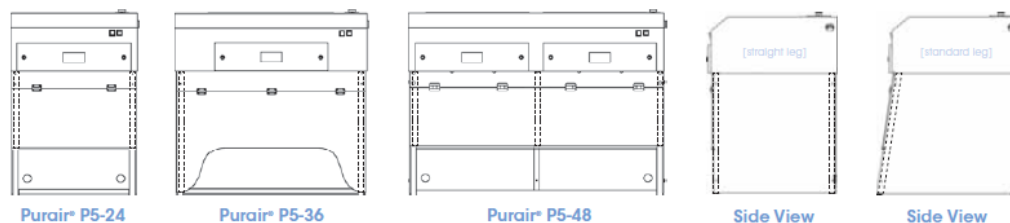
ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN TIME TO THE TERM OF THIS LIMITED WARRANTY. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. AIR SCIENCE DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST WORK. AIR SCIENCE LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH AIR SCIENCE IS RESPONSIBLE. FLORIDA LAW GOVERNS THIS WARRANTY



CHAPTER I

BASIC PRODUCT INFORMATION

The Purair® Basic Series ductless fume hoods are a series of high efficiency products designed to protect the user and the environment from odors generated on the work surface. At the heart of the Purair fume hood product line is the innovative Air Science Multiplex™ Filtration Technology that creates a safe work environment over the widest range of applications in the industry.



MODEL	DIMENSIONS			WEIGHT (lbs/Kg)	
	Internal Height	External (W x D x H)	Shipping (W x D x H)	Net	Ship

Standard Models

P5-24	19" 484 mm	24" x 27" x 31" 610 x 676 x 781 mm	40" x 40" x 30" 1016 x 1016 x 762 mm	68 / 31	125 / 57
P5-36	19" 484 mm	36" x 27" x 31" 914 x 676 x 781 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	95 / 43	152 / 69
P5-48	19" 484 mm	48" x 27" x 31" 1219 x 676 x 781 mm	45" x 55" x 40" 1143 x 1397 x 1016 mm	133 / 60	190 / 86

Models with Straight Legs (Reduced Depth)

P5-24S	19" 484 mm	24" x 24" x 31" 610 x 610 x 781 mm	40" x 40" x 30" 1016 x 1016 x 762 mm	65 / 29	110 / 50
P5-36S	19" 484 mm	36" x 24" x 31" 914 x 610 x 781 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	92 / 42	142 / 64
P5-48S	19" 484 mm	48" x 24" x 31" 1219 x 610 x 781 mm	45" x 55" x 40" 1143 x 1397 x 1016 mm	130 / 59	187 / 85

Standard Models with Extra Tall Legs

P5-24-XT	24" 610 mm	24" x 27" x 35" 610 x 676 x 889 mm	40" x 40" x 30" 1016 x 1016 x 762 mm	72 / 33	129 / 59
P5-36-XT	24" 610 mm	36" x 27" x 35" 914 x 676 x 889 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	99 / 45	157 / 71
P5-48-XT	24" 610 mm	48" x 27" x 35" 1219 x 676 x 889 mm	45" x 55" x 40" 1143 x 1397 x 1016 mm	138 / 63	195 / 88

Models with Extra Tall Straight Legs (Reduced Depth)

P5-24-XTS	24" 610 mm	24" x 24" x 35" 610 x 610 x 889 mm	40" x 40" x 30" 1016 x 1016 x 762 mm	72 / 33	129 / 59
P5-36-XTS	24" 610 mm	36" x 24" x 35" 914 x 610 x 889 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	99 / 45	157 / 71
P5-48-XTS	24" 610 mm	48" x 24" x 35" 1219 x 610 x 889 mm	45" x 55" x 40" 1143 x 1397 x 1016 mm	138 / 63	195 / 88

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Air Science™

120 6th Street, Fort Myers, Florida, 33907 USA, www.Airscience.com, Tel: 239-489-0024, Fax: 239-489-0922

CHAPTER II

UNPACKING YOUR CABINET

This chapter aims to provide relevant information on how to handle the cabinet properly upon receipt. Failure to follow the following instructions may damage the cabinet. We strongly advise you to read this chapter carefully before proceeding further.

2.1 STEP-BY-STEP PROCEDURE

1. Inspecting the crate, pallet, boxes

Upon receipt of your new cabinet, inspect all cartons. If there is any visible damage to the exterior please refer to freight claim information.

2. Moving the Pallet

- The pallet is designed to protect our cabinet from any foreseeable circumstances. However, excessive impact onto the boxes or pallet may also damage the cabinet. Prevent any direct impact or hitting to the pallet when moving.
- b. When lifting the pallet, please always ensure that the floor jack or mechanical lift truck has always entered fully under the pallet in order to achieve stability. Failure to do so will increase the risk of the pallet falling off the floor jack or mechanical lift truck during handling. Please use a suitable extension bar when the situation arises.

3. Opening the Boxes

- If you did not receive one or more of the parts listed on the packing checklist, or if any of the items are damaged, please contact your distributor or Air Science immediately for further instructions.

4. Removing the packaging material

- The cabinet is protected by Styrofoam, cardboard, and or and shrink-wrap.
- If you find any damage during this stage of unpacking please refer to freight claim information.
- It is the best practice to leave the cabinet secured with straps to the pallet until the cabinet is located in its approximate final position to facilitate ease and safety in handling.

Choosing the best location for your cabinet in order to achieve optimum operating performance of your cabinet is determined by a number of factors. Please refer to the next chapter for some guidelines.

5. Moving the cabinet

- When lifting the pallet with the cabinet, please always ensure that the floor jack or mechanical lift truck has always entered fully under the pallet. This is to increase the stability of the cabinet and reduce the risk of the cabinet falling down. Please use extension bar when necessary. During the moving of the cabinet, please ensure there is enough distance between the supports of pallet and the ground. Dragging the pallet against the ground (at one side or otherwise) will damage the pallet and possibly your new cabinet.

6. Removing the strapping

- Remove the strapping by cutting it at a safe position to prevent any scratch on the surface of your new cabinet.
- Do not discard the packaging material for your cabinet until you have checked all of the components, installed and tested the unit.

7. Lifting the cabinet

- The Cabinet can be lifted in two sections: The HEAD unit and ENCLOSURE.
- Install the cabinet on the existing work surface or Air Science support stand (if ordered)

NOTE:

- *When installing the cabinet onto an existing work surface, ensure that the structure can safely support the combined weight of the cabinet and any related equipment. Some modifications to the work surface may be necessary.*
- *The work surface should be smooth and nonporous and resistant to the disinfectants and chemicals used in conjunction with the cabinet.*



2.2 PACKAGING CONTENTS

The following items are included together with your manual:

- Test certificate
- Test report

In case this manual and/or test report is lost or misplaced, Air Science retains a copy in our files. A replacement copy can be obtained by contacting Air Science and stating the cabinet model, serial number and a brief description of the information desired.



CHAPTER III

INSTALLING YOUR CABINET

3.1 CHOOSING A SUITABLE LOCATION

Location impacts the nature and extent of external airflow disturbances, which may affect performance of the cabinet when it is exposed to these disturbances.

When installing the cabinet, it should be located as far away as possible from sources of airflow disturbance and in an orientation which optimally shields the cabinet's airflow from all external airflow disturbances. Please note that the cabinet should not be placed close to another cabinet.

Please follow these guidelines when choosing a suitable location for your cabinet:

- The location must be far away from :
 - a. personnel traffic flows
 - b. air vents (in and out)
 - c. door and window
 - d. any other sources of disruptive air currents or air drafts

If drafts or other disruptive air currents exceed the face velocity of the filter, the potential exists for contaminated air to enter the work zone of the cabinet.

- A minimum distance of 50 cm to the top of the ceiling is recommended for blower changing purpose.
- A clearance of 183 cm (6ft) in front of cabinet is strongly advised in order to maintain proper airflow.
- Please permit adequate space for cleaning behind the cabinet.

3.2 ENVIRONMENTAL/ELECTRICAL CONDITIONS

The equipment is designed to be safe for at least the following conditions:

- Indoor use
- Altitude < 6,500 ft (2,000 m)
- 5°C to 40°C (41°F to 104°F) Ambient
- Relative Humidity <80% up to 31°C (88°F) decreasing to <50% at 40°C (104°F)
- UL Installation Category II
- UL Pollution Degree 2
- Continuous operation
- Mains supply tolerance of -10%/+10%
- 120 VAC, 60 Hz, 10A or 230VAC, 50Hz, 5A
- Fuse: 250V, 10A, Time Lag for 120VAC or Fuse: 250V, 5A, Time Lag for 230VAC
- Always ensure the unit is connected to a reliable and properly grounded receptacle
- The appliance inlet on this device is the disconnect device and the appliance should not be positioned so that it is difficult to operate it.

3.3 INSTALLING YOUR CABINET

1. Please refer to the unpacking your cabinet on the previous chapter section on lifting the cabinet
2. Inspect your cabinet carefully, should you find any defect please refer to the freight claim information and our warranty terms and conditions
4. Peel off any protective masking that was left on the cabinet during manufacturing.
3. Wipe down the interior and exterior of the cabinet with water or a mild household detergent.
4. Connect cabinet to the main power supply and turn on the blower. Each cabinet requires its own dedicated 13A (230V) or 15A (115V) power outlet which should not be shared with other appliances.



NOTE:



DO NOT MOVE THE CABINET WITHOUT OBSERVING THE FOLLOWING PRECAUTIONS:

1. Observe the necessary precautions when relocating the cabinet as it is heavy
2. Warning Tipping Hazard. Pushing high up on the unit may cause system to tip over. Be careful when moving. Move with help.

3.4 Set-up

Your Air Science product is shipped in two parts. Please follow the following instructions and photos (shown is a standard Purair 5XL-36) that explain how to:

- Assemble the base “enclosure” and place the head unit (fan and controls) on top.
- Fit the main filter and the pre-filter
- Fit the optional airflow meter
- Adjust the fan-speed/air-flow control
- Adjust the “low airflow alarm”

1. Unpack the base enclosure unit. In most cases the enclosure is shipped fully assembled. If unit is flat packed, please follow “Flat-packed enclosure assembly sheet” (see Appendix C).

2. Place the unit on the workbench in location required.

Please allow a minimum clearance of 6 inches (150mm) between the right hand side of the unit and any adjacent wall to allow the detachable power supply cord to be disconnected from the power source.







Warning – Tipping Hazard. Please ensure that all 4 legs of your unit are fully on your workbench and do not overhang the workbench in any place.





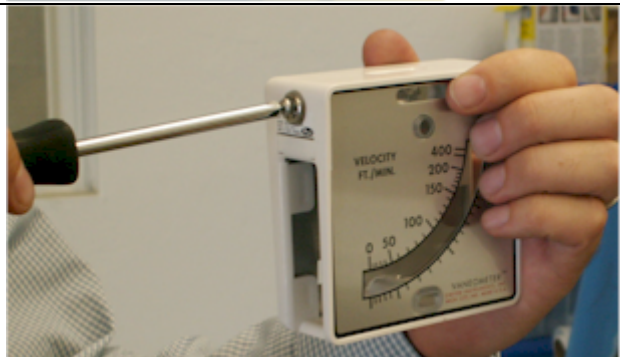
3. Remove protective film to enclosure panels.



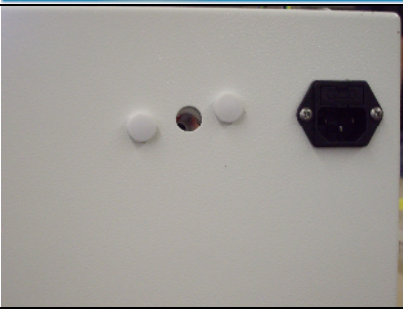



4. Unpack head unit
5. Lift into place to fit squarely over the base unit with overlap all round (NOTE: Head units are heavy, so you may need more than one person to set in place)



<p>6. Add main filter as follows:</p> <ol style="list-style-type: none"> Remove blue filter door to access filter compartment on head unit using the key supplied 	
<ol style="list-style-type: none"> Insert your hand through the bottom enclosure door to loosen the clamps on underside of the head unit <p>Warning – Crush Hazard. Never put your fingers between the gap between two open hinged panels.</p>	
<ol style="list-style-type: none"> Unwrap the main filter from bag. Slide filter unit in place, ensuring that the side with the foam rubber gasket is on the down side Most units can handle up to two stacked filters. 	
<ol style="list-style-type: none"> Re-tighten clamps from inside closure until filter gasket is about 50% compressed 	
<ol style="list-style-type: none"> Note your filter details on the Filter Maintenance sticker for easy reference and place sticker in convenient location on outside of unit. You may also write the install date on the filter itself. 	
<ol style="list-style-type: none"> Replace the front blue cover to the filter compartment – turn locking key until dots align indicating lock in engaged. PLEASE KEEP THIS KEY IN A SAFE PLACE. 	

<p>7. Add pre-filter filter as follows:</p> <ol style="list-style-type: none"> Unpack pre-filter and pre-filter tray from “installation pack” Twist pre-filter clamps on the ceiling of the enclosure 	
<ol style="list-style-type: none"> Place pre-filter on top of pre-filter tray Fit tray and pre-filter into space in top of inside of enclosure 	
<ol style="list-style-type: none"> Rotate the spring clamps back into place to clamp the pre-filter 	
<p>8. Add optional airflow meter as follows:</p> <ol style="list-style-type: none"> Insert vane/film into fit the vane to the airflow meter: <ol style="list-style-type: none"> Slide out vane holder from side of meter (just below the screw) Carefully remove vane from plastic bag and cardboard envelope (two vanes are enclosed, one is a spare). Hang the vane by the wire in the two slots provided in the vane holder. Slide the vane holder back into the meter. 	
<ol style="list-style-type: none"> The enclosure design allows the airflow meter to be fitted to either side of the enclosure as required. Ensure that the side not to be used has the airflow opening covered by the supplied blanking plate. The side to be used should have an open hole to fit the meter Remove the attaching screw from the meter 	

<p>d. Push the screw into the screw hole from the outside of the enclosure</p> <p>e. Align the meter to the screw from the inside of the enclosure</p> <p>f. Tighten the screw to secure the meter in place</p> <p>NOTE: The meter is now ready to take readings. It is pre-calibrated. If the vane becomes damaged, it is easily replaced with the spare vane. The vaneometer is accurate to +/- 5% of full scale from 0-100 fpm and +/- 10% from 100 fpm to 400 fpm. The permanent mounting bracket provided in the box is not used.</p>	
<p>9. Removable yellow caps are provide in the rear wall of the enclosure to allow cables and hoses, etc to be fed to inside of enclosure as required; refit the yellow caps when the holes are not in use</p>	
<p>10. To calibrate the “low airflow alarm” (see Chapter VI – Maintenance), use a small Philips screw-driver to adjust the screw inside the calibration port (same side as power inlet). NOTE: Adjustment screw is made of nylon, so please use care not to damage the screw.</p>	
<p>11. Slide in optional spill tray (if ordered) between blue legs.</p> <p>Warning. Once installed do not remove spill tray from enclosure. Do not use tray like a drawer. Do not push down, lean, or apply excessive force. Tray is only intended to sit over existing work surface.</p>	

3.5 PERFORMANCE VALIDATION/CERTIFICATION

After installation and prior to use, cabinet performance must be validated and certified to factory standards. The following tests should be performed:

- Airflow velocity

The testing methods and equipment required are specified on the test report. It is recommended that these tests be performed only by a qualified technician who is familiar with the methods and procedures for certifying these types of cabinets.

3.6 THE IMPORTANCE OF PERFORMANCE VALIDATION/CERTIFICATION

Airflow velocity value that falls below the value specified inside the test report will not provide adequate operator protection.

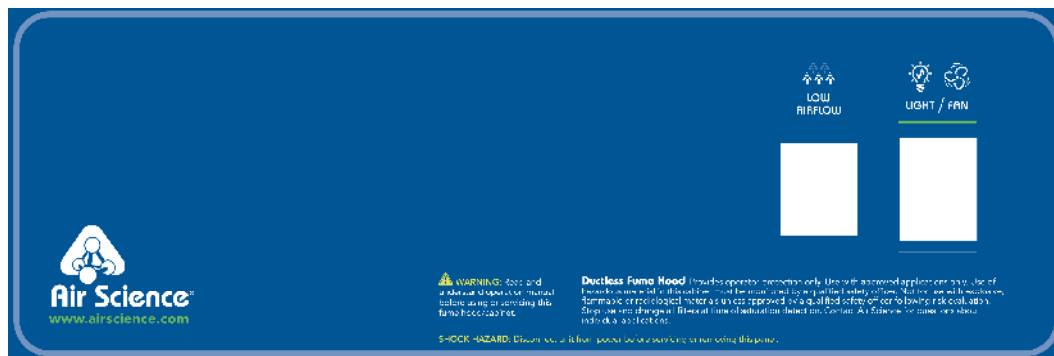
3.7 DISCLAIMER

The performance of the cabinet, while rigorously evaluated at the factory, cannot be guaranteed once after transit and installation. Therefore the on-site testing is always recommended.



CHAPTER IV OPERATING YOUR CABINET

4.1 CONTROL SYSTEM



Mains ON / OFF

Press the switch down to switch on. The green indicator lamp will illuminate to confirm the power is on. The fan will start and the internal task light unit will illuminate.

Low Airflow Alarm

The alarm status is displayed on the control panel. In normal operation the lamp will not show. If the airflow falls below the pre-set point, the lamp will illuminate red/amber. This alarm may be tested and calibrated.

4.2 CABINET OPERATING PROCEDURE

- A. The fume hood should only be operated with the correct filter installed for the application. Refer to Appendix A for further information. The ductless fume cabinet must not be used for laboratory work in which chemicals of different types are used that do not match the filter type; or that the primary chemicals or their by-products are not known. The ductless fume cabinet should not be used for different chemical processes where chemicals from the different processes could react in the filter.
- B. To start the system running, apply power to the system and switch on the green power on/off switch. The lights will automatically switch on as will the fan.
- C. Check the airflow's and the filter condition of the cabinet on a regular basis. This is covered in the maintenance section.
- D. Please note, filter blocks do not absorb carbon monoxide or hydrogen. Small quantities will not cause hazards because of the large dilution factor from the amount of air passing through the cabinet, and the retardation of the chemical in the filter matrix.
- E. Air Science fume hoods have been designed to handle fumes and vapors given off during everyday laboratory procedures. These will be at the parts per million (PPM) level in the air stream entering the filter block. It is not recommended that large quantities of solvents or acids are used or boiled off in the cabinet.
- F. In the event of a large spillage in the cabinet the amount of fumes entering the filter block may temporarily reduce the efficiency of the filter. For this reason any major spillage must be cleared up immediately, preferably using spillage absorption granules rather than paper which may aggravate the evaporation of toxic fumes from the spillage area.
- G. Following a major spillage the filters must be changed, as the heat of wetting may reduce the efficiency of the filter. After a period of stabilization the old filters may be re-used, providing they have not reached the saturation level.

- H. The electrical equipment in the cabinet such as the lights and controls are not in the dirty air stream of the system. The system should not be used in a flammable room atmosphere. Special modified cabinets can be provided for use in these areas. Contact Air Science for further information on these applications.
- I. Operators should avoid sudden movements within the fume cabinet, such as rapid opening or closing of the sash window, as this may cause temporary reversal of the airflow.
- J. The operators should maintain the normal safety equipment and procedures for dealing with hazardous chemicals.



WARNINGS

- The equipment should not be used in a flammable room atmosphere. The fume hood should only be operated with the correct filter installed for the application. Refer to Appendix A for further information. The ductless fume cabinet must not be used for laboratory work in which chemicals of different types are used that do not match the filter type; or that the primary chemicals or their by-products are not known. The ductless fume cabinet should not be used for different chemical processes where chemicals from the different processes could react in the filter.
- Do not use a gas flame (Bunsen burners) whenever possible as it interferes with airflow
- Do not change the cabinet original blower speed unless the change is required by a decrease in measured air velocity. Adjustment should be made only by a qualified technician. Do not operate the cabinet if fan fails to run
- Minimize arm movement. Move arms in and out of the cabinet slowly to avoid disrupting cabinet airflow
- Use absorbent pads on the work surface where appropriate to minimize splatter and aerosol generation in case of spillage.
- Keep lids/covers on all containers, dishes, or sample plates



CHAPTER V MONITORING

5.1 GENERAL

The purpose of the monitoring program is to ensure consistent reliability from the system. This is achieved by the checking of the following:

- a) Condition of the Pre-filters, if these are becoming blocked the velocity of the cabinet will begin to fall and will eventually cause the airflow alarm to light.
- b) Manual checking of the main filters by the use of a Draeger™ Test or Gastec™ test kit will confirm the condition of the filters.

5.2 MANUAL MONITORING

Manual monitoring of the cabinet should be carried out at least once every year, this will ensure the monitoring systems are all within calibration and performing correctly.

Airflow Measurements

The inflow velocity of the hood should be checked with the sash at the correct operating height using an anemometer such as a hot wire, vane anemometer, or propeller type.

Depending on the size of the cabinet a series of readings are to be taken at the front opening, these are to be recorded on a service sheet or system log sheet.

Manual Filter Testing

The condition of the filter is to be checked using a Gastec™ or Draeger™ test kit. Boiling off a suitable chemical normally used in the cabinet or a controlled release should challenge the filter. Examples can include Alcohol's, Toluene, and Trichloroethylene.

For testing Acid filters (acid adsorbing), or multi combination layered filters incorporating an acid layer, use Sulphur dioxide gas (SO₂) at 2 bubbles per second through water.

The readings should be below your Country's Occupational Exposure Limit (see section 10). The results are to be recorded on a service sheet or system log sheet.

If a significant amount of chemical is noted at the exhaust of the system, the main filters should be changed.



CHAPTER VI MAINTENANCE

6.1 GENERAL

In some countries it is mandatory to maintain written records of checks, tests and repairs carried out on safety equipment. These records must be kept for 5 years. A full list of Occupational Exposure Limits should be obtained from your safety officer.

Regular preventative maintenance on the cabinet will reduce the possibility of hazard to the operator and ensure reliable performance from the cabinet.



WARNING! Before attempting inspection and repairs to the cabinet please ensure the power to the system has been removed and that the power lead has been removed. It should also be noted that fume cabinets are sometimes used to contain and protect users of the cabinet from hazardous or harmful substances. Before commencing this schedule it is important to ensure the cabinet is safe to work on.

6.2 GENERAL CLEANING

Wipe down the unit with only soapy water.

6.3 PRE-FILTERS

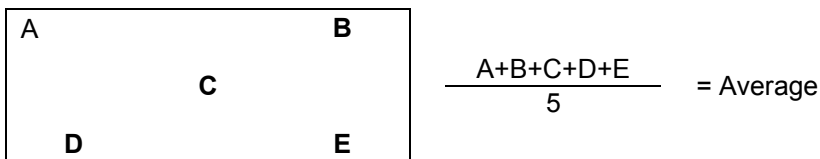
Check condition and replace if required;

6.4 LIGHTS

Check the light diffuser is clean before switching the system on. Check that the light is working.

6.5 AIR FLOWS

Check and record the inflow air velocity at the working aperture as follows: Using a calibrated hot wire or vane anemometer or similar approved airflow meter take a minimum of 5 readings across the fume cabinet aperture as shown below. Calculate the average airflow, which should be greater than 0.5 m/sec or 100 fpm +/- 10%. The readings should be recorded on the service sheet or system log.



6.6 FILTER CONDITION MONITOR (fitted as an option)

Under normal operating conditions (if option fitted) the display will show a green filter to indicate it is safe. If the filter display is red/amber then the filter should be checked as follows:

Select a suitable test chemical (examples include Alcohol's, Toluene, Trichloroethylene or any suitable chemical in routine use in the cabinet providing it is well adsorbed and not dangerously toxic) and a matching Gastec™ or Draeger™ test kit.

Place 6 ml of the chemical into a beaker on a hotplate inside the cabinet. Set the hotplate to boil off the chemical over a 2-minute period. This should give a concentration of about 100 - 200 PPM (parts per million) challenge to the filter.

If testing Acid filters (Acid adsorbing) multi combination layered filters, which include an adsorbing layer, then, use Sulphur Dioxide gas (SO₂) at 2 bubbles per second released through water to challenge the filter.



Using the test kit take a sample reading at the outlet of the cabinet. Follow the instructions supplied with the tubes i.e. the number of strokes for each type of tube,

If a significant level of chemical is recorded at the outlet then the filter must be changed. It is also worth checking the gasket condition for any damage that may result in a bypass.

6.7 CALIBRATION INSTRUCTIONS

Testing the Low Airflow alarm.

Ensure the pre-filters fitted are new. Switch on the cabinet; the red/amber neon should not be illuminated.

Switch off the unit. Block the pre-filter using paper or card to give airflow of <0.3m/sec or 60 fpm. Switch the unit on. The red neon should illuminate. If not then the calibration will need to be reset.

Calibration

The low airflow alarm operates using a differential pressure switch to detect a “high vacuum” situation when the pre-filter is blocked or blocking up. The pressure switch is calibrated and tested prior to leaving our factory and under normal circumstances will not require any adjustment.

With the cabinet running and the pre-filter blocked as described above locate the grey pressure switch through the hole in the right hand sidewall. Adjustment is made by turning the small screw in the end of the switch. (See “Section 3 – Installation”, item 10 for photograph)

Adjust the screw to make the alarm show. You may have to repeat these steps to ensure an accurate setting has been achieved.

Remove the blockage and re-start the machine. The red/amber neon should not be illuminated.

6.8 CHANGE OUT OF FILTERS



WARNING: Ensure persons removing filters are made aware of any potential hazards and that they are provided with any necessary protective clothing and equipment.

Hazards associated with the removal and disposal of used filters will depend on the use to which the fume hood has been put. If an activated carbon filter is used with hydrocarbon solvents, the filter will retain the solvents without loss, and can be removed in the laboratory. The used filter should be sealed in to a plastic bag prior to disposal, preferably by incineration.

If the filter has contained any dangerous materials such as asbestos dust or radioactive chemicals, then operator protection must be used including the use of a respirator is advised. The used filters may require disposal by a specialist company.

CONSULT YOUR SAFETY OFFICER OR INDUSTRIAL HYGIENIST BEFORE REMOVING OR DISPOSING ANY FILTERS.

PRE-FILTERS

The pre-filter is located below the main filter. Remove the perforated pre-filter tray. Remove the old filter place it in to a bag, which is then sealed ready for disposal. Refit the new filter and re fit the pre-filter tray.



MAIN CARBON / HEPA FILTER



WARNING: Disconnect the power supply before removing filter access cover.

Remove the front cover to gain access to the filter. Loosen the filter clamps from inside the bottom enclosure. Lift the filter slightly to break the seal and then withdraw the filter. Place the filter in a plastic bag, seal the bag ready for disposal.

Slide the new filter into position by pushing the filter fully into the module. Refit the front cover and lock it in position.

Please note, sometimes after new filters are fitted, it may be necessary to re-calibrate the airflow system. This procedure can be found in the maintenance section.

6.9 Airflow Adjustment

The speed controller on the cabinet can be accessed behind the main control panel.

6.10 MAINTENANCE SCHEDULE

Please kindly follow the suggested maintenance schedule in order to maintain your Air Science cabinet at its optimum performance.

Monthly

1. Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front and top of the cabinet, to remove any accumulated dust. When needed use soap or other household mild detergent.

Quarterly

1. Replace pre-filters
2. All monthly activities

Annually

1. Replace all main HEPA or Carbon filters
2. All quarterly activities

Biannually

1. Replace the fluorescent lamps
2. All annual activities



6.11 USER MONTHLY MAINTENANCE SCHEDULE

Model:		Year	
Serial Number:		Responsible Person:	

Month	Clean exterior surface	Notes:	By Who
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			

Monthly

1. Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front and top of the cabinet, to remove any accumulated dust. When needed use soap or other household mild detergent.

Quarterly

1. Replace pre-filters
2. All monthly activities

Annually

1. Replace all main HEPA or Carbon filters
2. All quarterly activities

Biannually

1. Replace the fluorescent lamps
2. All annual activities



6.12 FAULT FINDING



Warning: Before attempting any inspection or replacement of electrical components, always isolate the fume cabinet from the mains supply and remove the power supply cable.

FAULT

Low Airflow Alarm

CHECK

Check Airflow at Aperture
Check Pre-filter is not blocked
Check Fan is running
Re calibrate

Filter Saturated (Optional)

Check Filter condition with Gastec™ or Draeger™ Test Kit
Check Filter seal
Check Filter is correct for application
Check Date on Filter
Replace all filters

Fan not working

Check inlet fuse
Check any loose wires to terminal blocks
By pass speed controller. If fan works, then replace speed controller.
Replace fan capacitor
Replace fan

6.13 COMPONENT CHANGING – SHOULD ONLY BE CARRIED OUT BY TRAINED PERSONNEL.



Warning: Ensure mains power supply has been removed prior to any work being carried out.

Light Units

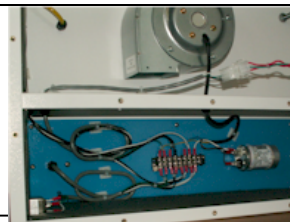
To change a light unit, use the following instructions:

1. ENSURE THE POWER CABLE IS DISCONNECTED FROM THE MAINS SUPPLY!
2. Remove the top cover to the top of the head unit by removing all the screws.



FOR UNITS MANUFACTURED BEFORE JULY 2008

3. Remove the electrical cover over the lighting enclosure to access the light units.
4. Replace the light unit
5. Replace each cover and tighten all screws



FOR UNITS MANUFACTURED BEFORE AFTER 2008

6. Remove the light box cover on the back side on the rear of the unit.
7. Replace the light
8. Replace the light box cover and tighten all screws



Replacement Parts List 120 Volt Units

P5, P5XL-36, P5XL-48 - 120V 60HZ

Part Description	Part Number
Power switch	WRG32F2FBGLN
Indicator light	C0480AABA2
Speed control	706-123S
Lamp holder	DL-80
Light bulb	EDX0-14
Fan motor	EE1G-115-160-01
Fan capacitor	450-20-0031
Input Power	719W-00/04
Fuse	0218010.HXP
Pressure switch	6753-AEJA-U000

Replacement Parts List 230 Volt Units

P5, P5XL-36, P5XL-48 - 230V 50HZ

Part Description	Part Number
Power switch	WRG32F2FBGLN
Indicator light	C0480AABR3
Speed control	706-123S
Lamp holder	DL-80
Light bulb	FLE15TBX/T3/827/E27
Fan motor	VBL6/3-00024
Fan capacitor	EN 60252-1
Input Power	719W-00/04
EMI Filter	6VSK1
Fuse	0218005.HXP
Pressure switch	6753-AEJA-U000



CHAPTER VII

6.1 COMPACT FLORESCENT LAMPS (CFL's)

Why do we use CFL's?

CFL's use less electricity and prevent greenhouse gas emissions that lead to global climate change. CFL's use up to 75 percent less energy (electricity) than other light bulbs and last up to 10 times longer.

Do CFL's contain mercury?

CFL's contain a very small amount of mercury sealed within the glass tubing – an average of 4 milligrams – about the amount that would cover the tip of a ballpoint pen. Mercury is an essential part of CFL's; it allows the bulb to be an efficient light source. No mercury is released when the bulbs are intact (not broken) or in use.

What is mercury?

Mercury is an element (Hg on the periodic table) found naturally in the environment. Mercury emissions in the air can come from both natural and man-made sources. Coal-fired power plants are the largest man-made source because mercury that naturally exists in coal is released into the air when coal is burned to make electricity. Coal-fired power generation accounts for roughly 40 percent of the mercury emissions. The use of CFL's reduces power demand, which helps reduce mercury emissions from power plants.

How do CFL's result in less mercury in the environment compared to traditional light bulbs?

CFL's use less electricity than incandescent lights, meaning CFL's reduce the amount of mercury into the environment and landfill waste (because the bulbs last longer).

What precautions should I take when using CFL's in my Lab?

CFL's are made of glass and can break if dropped or roughly handled. Be careful when removing the bulb from its packaging, installing it, or replacing it. Always screw and unscrew the light bulb by its base (not the glass), and never forcefully twist the CFL into a light socket. If a CFL breaks in your lab, follow the clean-up recommendations below. Used CFL's should be disposed of properly (see below).

What should I do with a CFL when it burns out?

We recommend that you take advantage of available local recycling options for CFL's. Please contact your local municipal solid waste agency directly, or go to www.epa.gov/bulbrecycling or www.earth911.org to identify local recycling options. If your state or local environmental regulatory agency permits you to put used or broken CFL's in the garbage, seal the bulb in two plastic bags and put it into the outside trash, or other protected outside location, for the next normal trash collection. Never send a fluorescent light bulb or any other mercury-containing product to an incinerator.

How should I clean up a broken fluorescent bulb?

Because CFL's contain a small amount of mercury, we recommend the following clean-up and disposal guidelines, but please contact your Safety Manager for instruction before following this guideline:

1. Before Clean-up: Air Out the Room

- Have people leave the room, and don't let anyone walk through the breakage area on their way out.
- If possible, open a window and leave the room for 15 minutes or more.
- If possible shut off the heating/air conditioning system.

2. Clean-Up Steps for Hard Surfaces

- Wear gloves and carefully scoop up glass fragments and powder using stiff paper or cardboard and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass pieces and powder.
- Wipe the area clean with damp paper towels or disposable wet wipes. Place towels in the glass jar or plastic bag also gloves.
- Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

3. Clean-up Steps for Clothing

- If clothing materials come in direct contact with broken glass or mercury-containing powder from inside the bulb that may stick to the fabric, the clothing should be thrown away. Do not wash such clothing because mercury fragments in the clothing may contaminate the machine and/or pollute sewage.
- You can, however, wash clothing or other materials that have been exposed to the mercury vapor from a broken CFL, such as the clothing you are wearing when you cleaned up the broken CFL, as long as that clothing has not come into direct contact with the materials from the broken bulb.
- If shoes come into direct contact with broken glass or mercury-containing powder from the bulb, wipe them off with damp paper towels or disposable wet wipes. Place the towels or wipes in a glass jar or plastic bag for disposal also gloves.

4. Disposal of Clean-up Materials

- Immediately place all clean-up materials outdoors in a trash container or protected area for the next normal trash pickup.
- Wash your hands after disposing of the jars or plastic bags containing clean-up materials.
- Check with your local or state government about disposal requirements in your specific area. Some local governments/states do not allow such trash disposal. Instead, they require that broken and unbroken mercury-containing bulbs be taken to a local recycling center.



FILTER INFORMATION

DISCLAIMER

This chemical list is developed as a guideline to assist in the safe use and operation of a ductless fume hood. It is intended to assist in the control of health hazards and should only be interpreted and applied by a person trained in an industrial hygiene discipline. It provides a philosophical and practical bases for the uses and limitations of carbon filters.

The information presented was gathered from best available sources including the carbon supplier, in-house and external testing under dynamic conditions, extrapolation from available data, and engineering judgment. Actual values achieved will vary depending on actual environmental and operational conditions. All information is believed to be accurate as of printing date. We are not responsible for typographical errors. Updates to this list are continuous and it is the responsibility of the user to contact us for the most current data.

The operative source for Threshold Limit Values (TLV) is the ACGIH and the reader should always refer to the most current edition of "Threshold Limit Values for Chemicals Substances and Physical Agents and Biological Exposure Indices" before using this chemical listing. Each country may have their own standard so please contact them accordingly.

USE

The use of activated carbon filters in ductless hoods is dependent on the chemicals being used and the quantity of chemical being evaporated into the filter. Generally speaking, chemicals with a molecular weight over 30 and a boiling point higher than 60 degrees Centigrade are candidates for adsorption with carbon filters but there are exceptions and combinations which need to be evaluated by your supplier.

FILTRATION TECHNOLOGY

The main principle on which the filtration of gas molecules is based is the concept of adsorption. Two main processes by which adsorption takes place are physical adsorption and chemisorption.

FILTER MONITORING

There are two aspects to filter monitoring: Checking the airflow to ensure the pre-filter is not clogged with dust and, Checking the exhaust air for chemical contaminants to ensure the main filter has not reached the breakthrough point.

ADSORPTION EFFICIENCY

The ability of a filter to function efficiently is dependent on a number of factors including: Temperature, Humidity, Residence time, Age of filter, Evaporation Rate, Concentration of chemical.

FILTER TYPES

AIR SCIENCE offers 10 types of activated carbon and particulate filter media. These formulas can be customized or layered into practically limitless combinations to best suit your specific application. HEPA filters are available for applications involving particulates and can be combined together with any of our activated carbon filters.

FILTER DESCRIPTIONS

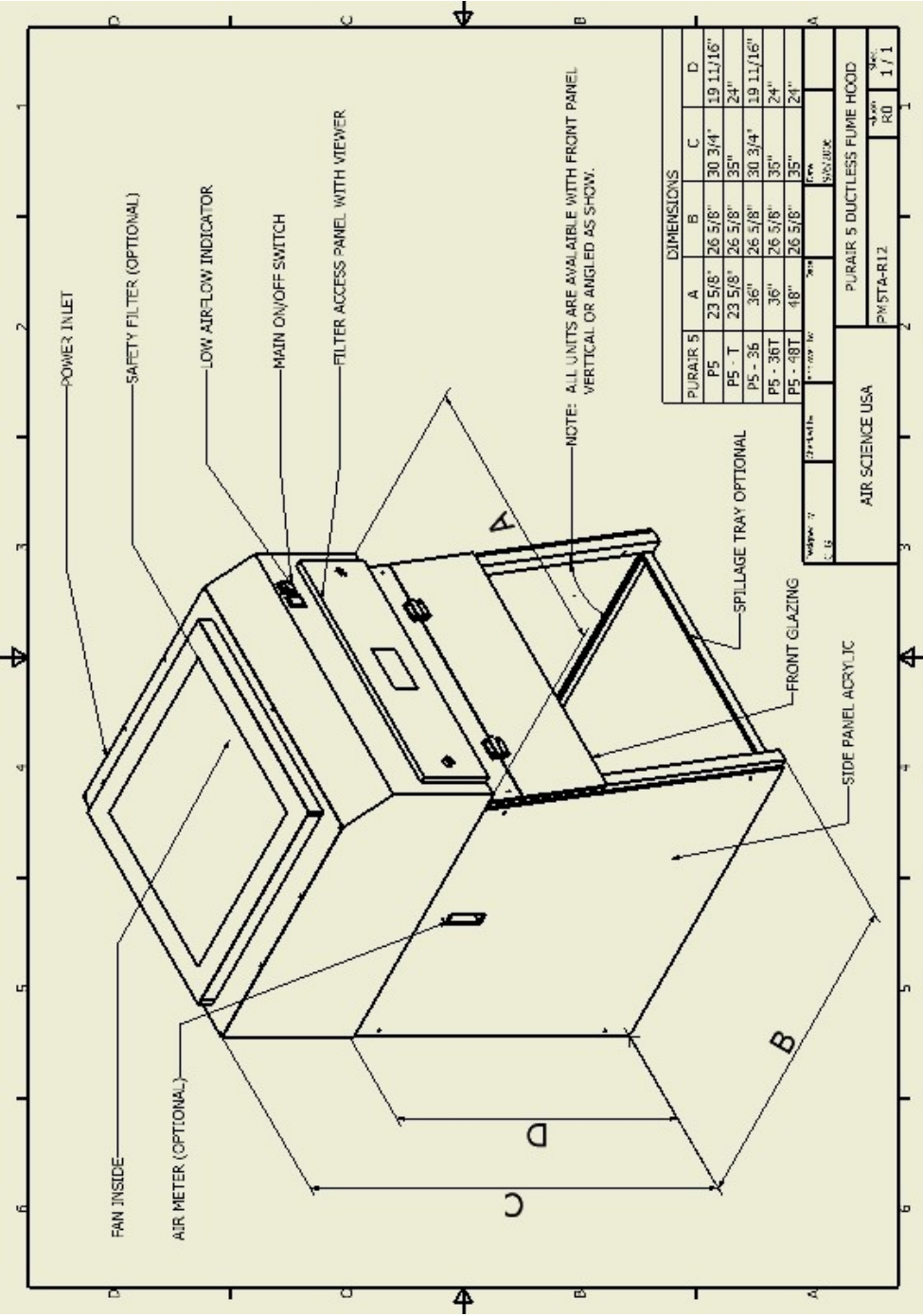
FILTER TYPE	DESCRIPTION
PRE-FILTER	Filtrete high performance electrostatic material designed to remove particulates from the air stream including aerosols and mists. 99% efficient for particle size 0.5 micron. Required on all units.
HEPA FILTER	The High Efficiency Particulate Air Filter is a pleated glass fiber material sealed with epoxy resin in an aluminum frame. Each filter is tested to a stated particle filtration efficiency 99.997% for 0.05 micron.
GP Plus!	The most widely used filter in the range, primarily for solvent, organic, and alcohol fume removal. It is manufactured from coconut shell based activated carbon. Diethyl ether is also removed.
ACI Plus!	This alkali impregnated filter will neutralize volatile inorganic acid vapors such as hydrochloric and hydrofluoric acids and acid gases such as sulphur and nitrogen dioxides. Designed to also remove hydrogen sulphide and low molecular weight mercaptans, hydrogen cyanide gas, and organics.
ACR	This filter is impregnated for the high efficiency removal of radioactive iodine and other low level radioactive compounds (also organics)
ACM	This filter is impregnated for removal of mercury vapor.
AMM	This filter is impregnated to efficiently remove vapor from dilute ammonia solutions, and to remove low molecular weight amines.
FOR	This filter is impregnated with an oxidizing agent to oxidize formaldehyde and glutaraldehyde fumes. It is widely used in hospitals pathology laboratories and endoscopy units.
EDU	This multi-layered filter is designed to handle chemicals normally used in a University level chemistry curriculum.
MULTI	Depending on filter size, up to 4 filter types / formulas can be combined into a single multi-layered main filter for a filter designed for your exact application.

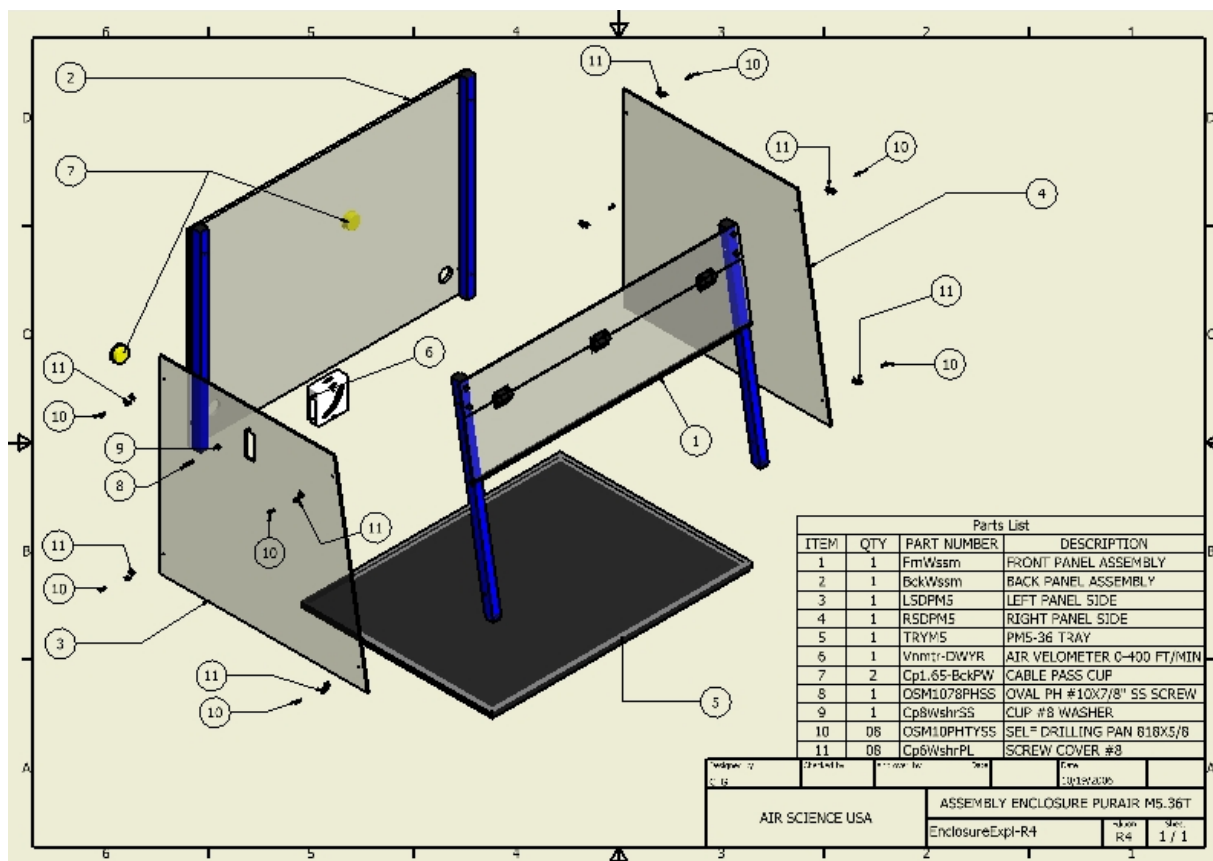
The below table gives a short list of common laboratory chemicals, together with the filter recommended and an estimate of filter capacity. NOTE: Please call a filter specialist for a complete detailed listing of chemicals. The recommended filter is the main single-layer filter used for the application. It may be possible to use other filters, in all cases the filter efficiency for a single layer filter will be close to 100%. Chemicals marked * are poorly absorbed by all filters and should be used in small quantities only. Their exhaust concentration may however be quite low due to dilution with air and retardation in the filter matrix. The filter capacity is given as the equilibrium saturation capacity, a standard test procedure for activated carbon (ASTM-D3467). The capacity is expressed as the final filter weight at saturation as a percentage of initial filter weight. In many cases these values have been determined by experiment, in other cases estimated values are used based on experience with activated carbon material and knowledge of the chemical structure. The actual capacity obtained will depend on the conditions of use, but the breakthrough point to reach the TLV of the chemical may be up to 70% of this value for normal input loadings.

IN THE TABLE BELOW YOU WILL FIND THE CHEMICAL NAME, FOLLOWED BY RECOMMEND FILTER TYPE, AND THE EQUILIBRIUM SATURATION CAPACITY %											
Acids			Esters			Halogens			Nitrogen Compounds		
Acetic	GP	33	Butyl acetate	GP	40	Bromine	GP	53	Acetonitrile	CYN	20
Acetic anhydride	GP	33	Cellosolve acetate	GP	45	Butyl chloride	GP	40	Ammonia	AMM	10
Acrylic	GP	40	Ethyl acetate	GP	40	Carbon tetrachloride	GP	65	Amines - low MW	AMM	10
Butyric	GP	40	Ethyl acrylate	GP	45	Chlorine	GP	20	Amines - high MW	AMM	40
Caprylic	GP	40	Ethyl formate	GP	40	Chlorobenzene	GP	53	Aniline	GP	40
Carbolic	GP	40	Isopropyl acetate	GP	45	Chlorobutadiene	GP	40	Diethyl amine	AMM	20
Formic	ACI	20	Methyl acetate	GP	40	Chloroform	GP	60	Diethyl aniline	GP	53
Lactic	GP	40	Methyl acrylate	GP	45	Chloro picrin	GP	65	Dimethyl amine	AMM	20
Osmium tetroxide	GP	40	Methyl formate	GP	40	Chloro nitropropane	GP	60	Ethyl amine	AMM	20
Palmitic	GP	40	Methyl methacrylate	GP	45	Dibromoethane	GP	60	Hydrogen cyanide	CYN	20
Phenol	GP	40	Aldehydes and Ketones			Dichlorobenzene	GP	60	Indole	GP	53
Propionic	GP	40	Acetone	GP	32	Dichlorodifluoro methane	GP	20	Nicotine	GP	40
Valeric	GP	40	Acetaldehyde	FOR	10	Dichlorodifluoro ethane	GP	40	Nitric acid fumes	ACI	10
Alcohols			Acrolein	GP	32	Dichloroethylether	GP	53	Nitrobenzene	GP	53
Ethyl	GP	32	Benzaldehyde	GP	40	Dichloromethane	GP	53	Nitroethane	GP	53
Amyl	GP	40	Butyraldehyde	GP	32	Dichloromonofluoro methane	GP	20	Nitrogen dioxide *	ACI	-
Butyl	GP	40	Caproaldehyde	GP	40	Dichloropropane	GP	53	Nitroglycerine	GP	53
Cyclohexanol	GP	45	Crotonaldehyde	GP	40	Dichlorotetrafluoro ethane	GP	20	Nitromethane	GP	40
Isopropyl	GP	40	Cyclohexanol	GP	40	Ethyl bromide	GP	20	Nitropropane	GP	40
Methyl (methanol)	GP	32	Diethyl ketone	GP	32	Ethyl chloride	GP	20	Nitrotoluene	GP	53
Propyl	GP	40	Dipropyl ketone	GP	40	Ethylenechlorohydrin	GP	40	Pyridine	AMM	53
Aliphatic Hydrocarbons			Formaldehyde	FOR	10	Ethylene dichloride	GP	53	Urea	GP	53
Acetylene	GP	20	Gluteraldehyde	FOR	10	Fluorotrichloro methane	GP	50	Uric acid	GP	53
Iso-butane	GP	10	Mesityl oxide	GP	40	Freon (BP > -20°C)	GP	45	Miscellaneous		
Butylene	GP	10	Methyl butyl ketone	GP	40	Hydrogen bromide	ACI	5	Adhesives	GP	40
Butadiene	GP	-	Methyl ethyl ketone	ACI	32	Hydrogen chloride	ACI	5	Animal Odors	OAL	30
Cyclohexane	GP	35	Methyl isobutylketone	GP	40	Hydrogen iodide	ACI	7	Camphor	GP	40
N-decane	GP	-	Propionaldehyde	GP	32	Iodine	GP	55	Carbon monoxide *	GP	-
Ethane *	GP	-	Valeraldehyde	GP	40	Iodoform	GP	53	Carbon dioxide *	GP	-
Ethylene *	GP	-	Valeric aldehyde	GP	40	Methyl bromide	GP	25	Citrus fruits	GP	40
N-heptane	GP	-	Ethers			Methyl chloride	GP	20	Cooking odors	GP	40
Heptylene	GP	-	Amyl	GP	35	Methyl chloroform	GP	45	Deodorizers	GP	20
Hexane	GP	35	Butyl	GP	35	Monochlorobenzene	GP	45	Detergents	GP	40
Hexylene	GP	-	Cellosolve	GP	40	Fluorotrichloro methane	GP	45	Hospital odors	OAC	30
Methane *	GP	-	Dioxan	GP	45	Paradichlorobenzene	GP	45	Human odors	OAC	30
N-nonane	GP	-	Diethyl (ethyl)	GP	10	Perchloroethylene	GP	45	Leather	GP	30
N-octane	GP	-	Ethylene oxide	GP	20	Phosgene	-	20	Ozone	GP	30
N-octylene	GP	-	Isopropyl	GP	25	Propyl chloride	GP	40	Nicotine	GP	30
Pentane	GP	26	Methyl cellosolve	GP	45	Tetrachloroethane	GP	53	Perfumes	GP	30
Propane *	GP	-	Methyl *	GP	10	Tetrachlorotheylene	GP	53	Petro	GP	40
Propylene	GP	10	Propyl	GP	30	Vinyl chloride	GP	20	Putrescine	OAC	30
Aromatic Hydrocarbons			Sulphur Compounds						Resins	GP	30
Benzene	GP	40	Carbon disulphide	GP	20				Toilet odors	OAL	30
Napthalene	GP	47	Dimethyl sulphate	GP	50						
Ninhydrin	GP	47	Ethyl mercaptan	ACI	40						
Styrene monomer	GP	47	Hydrogen sulphide	ACI	20						
Toluene	GP	47	Mercaptans-high MW	ACI	40						
Toluidine	GP	47	Sulphur dioxide	ACI	10						
Xylene	GP	40	Sulphur trioxide	ACI	20						
			Sulphuric acid	ACI	40						
			Tetrahydrothiapene	GP	40						



General Arrangement Drawings





To Assemble a Flat-Packed Enclosure:

1. Screw Side Pieces (3) & (4) to the Front and Rear enclosure pieces (1) & (2) using the 8 self-tapping screws provided (10).
2. When fitting a screw, please add the screw washer / cover (11) to each screw before inserting the screws in the pre-drilled holes.
3. Tighten screws and close screw caps
4. Add optional air-flow tray (5).
5. To fit optional air-flow meter
6. Fit the two Yellow caps



WARRANTY REGISTRATION AND CUSTOMER SATISFACTION SURVEY

Model		Serial #		Purchase Date	
Contact Person			Position:		
Company & Address					
Telephone			Fax:		
E-Mail					

Air Science values your business, so your satisfaction is important to us. To help us to serve you better, please take a few minutes to complete our Customer Satisfaction Survey. You may return the results by post, fax, or e-mail using the details above.

Please circle the number that best describes your evaluation of Air Science and add your comments, if any, at the bottom (and continue on another sheet if necessary). We are also interested to receive comparison against any competitors if you are able to provide the information:

	<u>Excellent</u>	<u>Very Good</u>	<u>Good</u>	<u>Must Improve</u>	<u>Poor</u>
1. Were our quotations provided to you promptly and courteously?	5	4	3	2	1
2. Was your order correct when you received it?	5	4	3	2	1
3. Did you receive your order on time and without damage?	5	4	3	2	1
4. Do our products operate properly?	5	4	3	2	1
5. Do our products meet your requirements?	5	4	3	2	1
6. What is your overall judgement of Air Science?	5	4	3	2	1

We enjoy using Air Science products because:

How could Air Science improve its products and /or service to you?

How could Air Science improve this survey?

Thank you very much for your time. Your comments are much appreciated.



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120 6th Street, Fort Myers, Florida, 33907 USA, www.Airscience.com, Tel: 239-489-0024, Fax: 239-489-0922