Purair® BASIC

Air Science Purair Basic Fume Hoods

Includes the Purair NANO, Purair RX, Purair SafeSEARCH, EDU-JUNIOR and CAGEX

Air Science®

USER OPERATION MANUAL

Air Science Manual Revision No.:
PURAIR-BASIC-SERIES.V4.2021

Specifications are subject to change without notice or obligation on the part of Air Science. For questions, contact Air Science.

Table of Contents

Safety Warnings

- 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. Additionally, the operation should be monitored by a suitably trained individual.

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

Symbols

 Warning of hazardous area or situation

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 regulations are the sole responsibility of the users of the cabinet. The liability of Air Science® is limited with respect to user compliance with such regulations.

European Directive on Waste Electrical and Electronic Equipment (WEEE)

 At the end of your product / accessories life, it must not be discarded as domestic waste. Ref: EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment Directive (WEEE). Please contact your distributor / supplier for further information. For end users outside of the EU consult applicable regulations.

Warranty

Air Science products come with a Legacy Limited Lifetime Warranty™ and can be registered online by visiting our website: www.airscience.com/warranty-registration.

Read more about our Legacy Limited Lifetime Warranty and Damaged Freight Claim Information.

• Legacy Limited Lifetime Warranty: www.airscience.com/warranty.

• Damaged Freight Claim Information: www.airscience.com/damage-claims-policy.

Warranty Registration

Register your new Air Science product online by visiting: www.airscience.com/warranty-registration.

Customer Satisfaction Survey

Air Science values your business, so your satisfaction is important to us. To help serve you better, please take a few minutes to complete our Customer Satisfaction Survey.

I. 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 hazardous vapors 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.

Visit our website for Purair Basic Series ductless fume hood specifications:
www.airscience.com/purair-basic-ductless-fume-hoods.

Visit our website for Purair NANO Series ductless fume hood specifications:
https://www.airscience.com/purair-nano-ductless-nanoparticle-enclosures.

Visit our website for Purair RX Series fume hood specifications:
https://www.airscience.com/purair-rx-ductless-balance-enclosures.

Visit our website for Purair SafeSEARCH Series fume hood specifications:
https://www.airscience.com/purair-safesearch-ductless-fume-hoods.

Visit our website for Purair EDU-JUNIOR Series fume hood specifications:
https://www.airscience.com/edu-class-demo-hoods.

Visit our website for Purair CAGEX fume hood specifications:
https://www.airscience.com/purair-cagex.

II. Unpacking Your Cabinet

This chapter aims to provide relevant information on how to handle the cabinet properly upon receipt. Failure to follow these 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 Damaged Freight Claim Information on our website.

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.

    » When lifting the pallet, always ensure that the floor jack or mechanical lift truck has fully entered 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 necessary.

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 refer to the Damaged Freight Claim Information on our website.

4. Removing the Packaging Material.

    » The cabinet is protected by Styrofoam, cardboard and/or shrink-wrap.
    » If you find any damage during this stage of unpacking please refer to the Damaged Freight Claim Information on our website.
    » We recommend leaving 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.

    Note: Choosing the best location for your cabinet in order to achieve optimum operating performance 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, always ensure that the floor jack or mechanical lift truck has fully entered under the pallet. This is to increase the stability of the cabinet and reduce the risk of the cabinet falling down. Please use a suitable extension bar when necessary. During the moving of the cabinet, ensure there is enough distance between the supports of the pallet and the ground. Dragging the pallet against the ground will damage the pallet and possibly your new cabinet.
    » When removing cabinet from pallet or placing cabinet onto pallet, use at least two people.

6. Removing the Strapping.

    » Remove the strapping by cutting it at a safe position to prevent any scratching 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, non-porous and resistant to the disinfectants and chemicals used in conjunction with the cabinet.

2.2 Packaging Contents

The following items are included with your manual:

• 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 providing the cabinet model, serial number and a brief description of the information desired.

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 airflow of the cabinet 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:

  » Personnel traffic flows.
  » Air vents (in and out).
  » Doors and windows.
  » 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 (20 in) to the top of the ceiling is recommended for blower changing purposes.

- A clearance of 183 cm (6 ft) in front of the 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 < 2,000 m (6,562 ft).
  » Temperature range 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.
  » Electrical supply tolerance of –10% / +10%.
  » 120VAC, 60Hz, 10A or 230VAC, 50Hz, 5A.
  » Fuse: 250V, 10A, Time Lag Low Breaking for 120VAC or Fuse: 250V, 5A, Time Lag Low Breaking for 230VAC.
  » Always ensure unit is connected to a reliable and properly grounded receptacle.
  » Appliance inlet on this device is the disconnect device; appliance should not be positioned so that it is difficult to operate it.

Power Cord:

» 1) For units intended to be operated at 120 volts (North America): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

» 2) For units intended to be operated at 230 volts: Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

» 3) Connect only to power outlet with reliable protection earth connection. Use only certified detachable mains power cord set with adequate rating to operate the equipment.

3.3 Installing Your Cabinet

1. Please refer to Unpacking Your Cabinet - page 5.
2. Inspect your cabinet carefully. Should you find any defect please refer to the our Legacy Warranty.
3. Peel off any protective masking that was left on the cabinet during manufacturing.
4. Wipe down the interior and exterior of the cabinet with water or a mild household detergent.
5. 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.

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WARNING! Do not move the cabinet without observing the following precautions:

• Observe the necessary precautions when relocating the cabinet, as it is heavy.

• Warning - Tipping Hazard. Pushing high up on the unit may cause system to tip over. Be careful when moving. Move with assistance only.

3.4 Set Up

Your Air Science product is shipped in two parts. The following instructions and photos 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/airflow control.

• Adjust the filter blockage alarm.

Prior to beginning assembly, ensure the following:

1. Area is free of obstructions, tripping hazards, etc.

2. Ample clearance is available on sides and over head.

3. Appropriate number of personnel are on hand: two people recommended.

Fume Hood Assembly

1. Unpack fume hood enclosure and set on top of casework. In most cases the enclosure is shipped fully assembled.

2. Unpack fan/filter module (aka head unit). Lift head unit above and onto enclosure, allowing airflow sensor/wire harness to hang inside the enclosure.

Please allow a minimum clearance of 150 mm (6 inches) 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 end rails of your unit are completely on workbench and do not overhang the workbench in any location.

Filter Installation

3. Pre-filter tray now inserts into four slots on the sides of the cutout. Two tabs are bent at 90° to allow it to hinge down into the workzone. Once installed, lay the pre-filter on top of the tray.
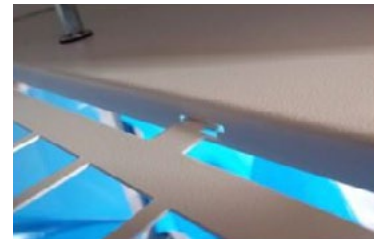
4. Main filter now requires a painted metal "hat" frame to be placed on top of the filter(s) before lowering the clamping bar to secure them in place.

5. Remove the filter access door using the barrel key provided.

6. Insert the main filter, gasket side down, centering it over the cutout.
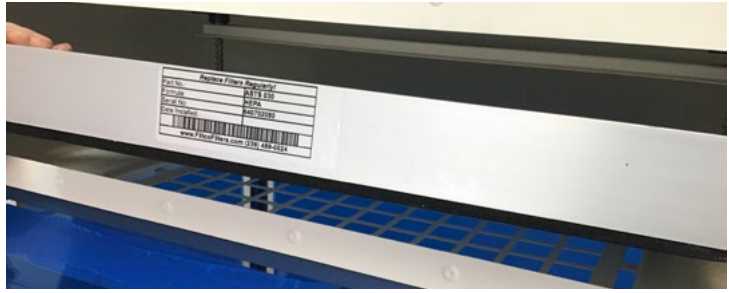
7. If using two filter types, stack the second filter on top of the first with the gasket side down. Make sure the corners are squared up to ensure proper installation.

8. Place the white metal hat frame on top of the filter.

9. Rotate the black knobs inside the compartment to lower the clamping bar. The filter gasket should compress and the filters should not wiggle if you attempt to pull/push on them.

10. Reinstall the filter door and secure the locks using the barrel key.

Final Assembly
Monitair and Autocal Equipped Units
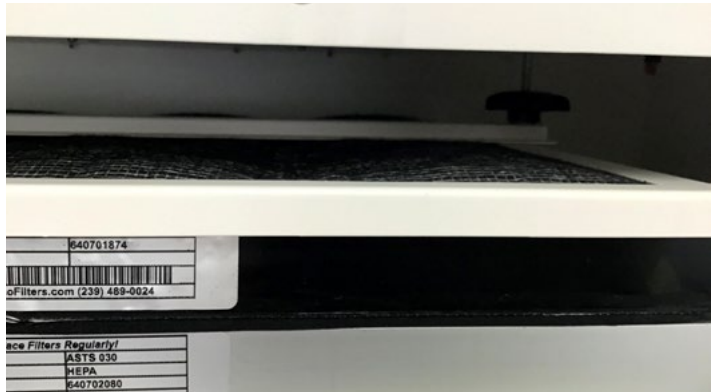
11. To install the airflow sensor, remove the clear panel on the inner right sidewall. Open the screw cap on the outside of the enclosure, undo the screw and nut and set aside.

    DO NOT DISCARD!

12. Remove any tape on the airflow sensor which is used to protect the sensor wires. Install the sensor by attaching to the enclosure with the screw and nut.

13. If not already installed, slide the polypropylene spill tray into the enclosure. The side with the extended handle/lip should go toward the back of the hood.

Warning - Once installed do not remove spill tray from enclosure. Do not use tray like a drawer. Do not push down, lean on or apply excessive force. Tray is only intended to sit over existing work surface.

14. Attach the power cord to the inlet on the right side of the head unit and connect to appropriate power source.

DWYER Equipped Units

15. Add airflow meter as follows:

» Insert vane/film into the airflow meter.

    a. Slide out vane holder from side of meter (just below the screw).

    b. 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.

    c. Slide the vane holder back into the meter.

» 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.

» Push the screw into the screw hole from the outside of the enclosure.

» Align the meter to the screw from the inside of the enclosure.

» Tighten the screw to secure the meter in place.

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.

16. Removable yellow caps are provided in the rear wall of the enclosure to allow cables and hoses to be fed inside of the enclosure as required; refit the yellow caps when the holes are not in use.

17. To calibrate the filter blockage alarm (see Calibration - page 26), use a small Phillips screwdriver to adjust the screw inside the calibration port. NOTE: Adjustment screw is made of nylon, so please use care not to damage the screw.
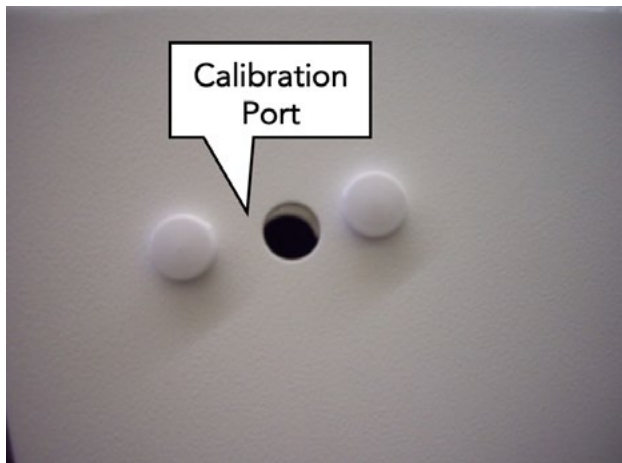
Exhaust Plenum Installation
(RX and NANO Fume Hoods Only)

1. Place the plenum in the correct orientation on the metal top panel of the fume hood.
2. Insert the provided self-tapping screws into each hole in the plenum housing.
3. Use a drill with a nut driver to tighten down the plenum.

Waste Chute Installation
(RX Fume Hoods Only)

1. Locate the blanking panel currently installed on the side of the fume hood.
2. Remove the mounting screws in each corner of the blanking panel and disconnect the panel from the fume hood.
3. Align the waste chute on the outside of the fume hoods, matching the mounting holes with the existing holes in the side of the fume hood.
4. Insert the mounting screws and tighten down evenly (screw heads can be oriented to the inside or outside of the fume hood).
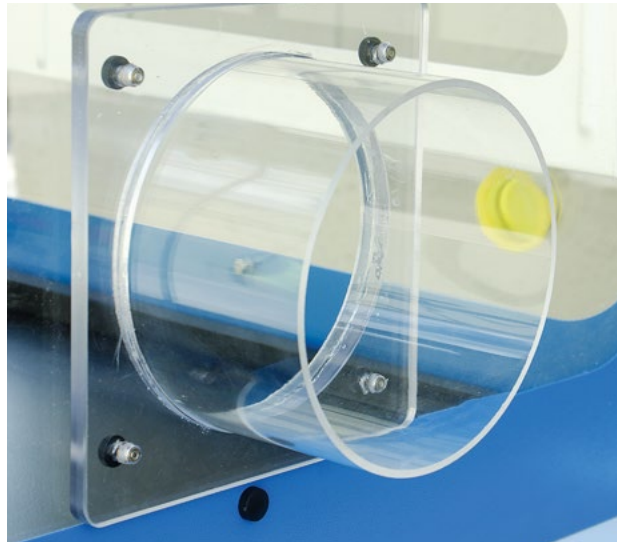
Balance Enclosure Assembly
(RX and NANO Fume Hoods Only)

1. Stand up the rear baffle; it will pivot from an attached hinge located on the left and right side panels.

2. Align the tabs for the rear baffle into slots in the top baffle keeping the 1/4 turn clips facing down. This will support the rear portion of the top baffle and keep the rear baffle in the upright position.

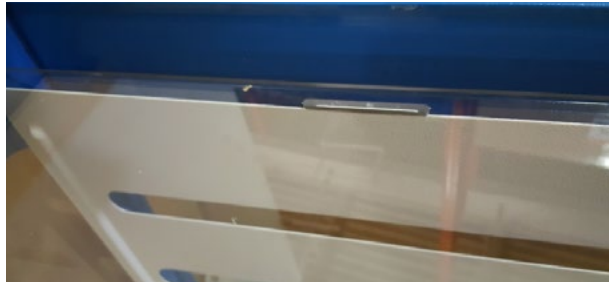3. Secure top baffle with brackets on the left, right and front sides.

4. Secure the baffle to the brackets using 1/4 turn clips. They are accessed from the bottom side of the baffle.
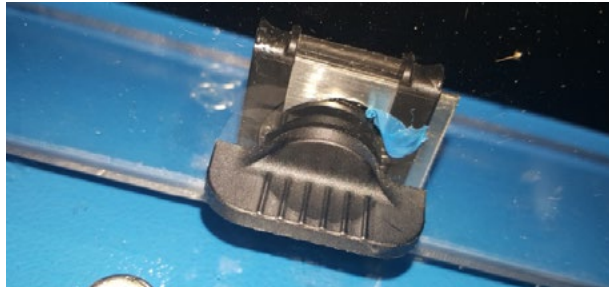
3.5 Performance Validation / Certification

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 Importance of Performance Validation / Certification

An 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 after transit and installation. Therefore on-site testing is always recommended.

IV. Operating Your Cabinet

4.1 Control System

Basic Control Panel (Standard)

The **basic control panel** is standard and includes an On/Off switch and Filter Blockage alarm. If the indicator lamp starts to flash intermittently or stays illuminated, the filters are beginning to become blocked and air-flow may be reduced to unsafe levels. Check airflow and/or replace filters as needed. Alarm may be reset and tested.

FSA / Autocal Control Panel (Optional)

The **optional FSA/Autocal controller** displays the airflow and offers limited detection of low concentrations of hydrocarbon, some gases and organic acids. Audio and visual alarms alert users to filter saturation and if the airflow reaches preset thresholds. An Hour Counter with preset alarm intervals for pre-filter and main filter change out is also included.

Calibration Procedure

CUSTOMER:	Triangle Electronic Controls Ltd	**PRODUCT:**	Autocal Led Airflow Alarm
DATE:	03/05/12	**ISSUE:**	2
PROCEDURE NUMBER:	CL00037	**APPROVED:**	DJP

1. Power up unit.
2. To set nominal run point, press and hold the mute key for 4 seconds; when an audio beep is observed, release the mute switch.
3. Using a calibrated anemometer, set the airflow to the desired velocity.
4. Using the up and down arrows, set the display to read that reading.
5. Press the mute switch once to store calibration point.
6. To set an alarm point, press and hold the mute switch then press and hold the up arrow key for 4 seconds; after audio beep release both switches.
7. Set the display using the up and down arrows to the desired alarm point, in 0.05 m/s increments.
8. Press the mute switch once to store the alarm point.
9. To display in FPM remove LK1, to display in m/s fit LK1.

CONNECTIONS	PL2
PL2 ANEMOMETER	PIN 1 RED
PL1 POWER	PIN 2 BLUE
PL3 VOLTFREE CONTACT	PIN 3 YELLOW
PL3 PINS 1 & 2 N/O	
CLOSED ON ALARM	

FSA Control Panel (Optional)

The **optional FSA controller** offers limited detection of low concentrations of hydrocarbon, some gases and organic acids. Audio and visual alarms alert users if filter saturation reaches preset thresholds. An Hour Counter with preset alarm intervals for pre-filter and main filter change out and Low Airflow alarm are also included.

Autocal Control Panel (Optional)

The **optional Autocal controller** displays the airflow. Audio and visual alarms alert users if the airflow reaches preset thresholds. An Hour Counter with preset alarm intervals for pre-filter and main filter change out is also included.

Monitair Control Panel (Optional)

The **optional Monitair microprocessor controller** monitors and displays cabinet operating parameters, air-flow, containment and offers limited detection of low concentrations of hydrocarbon, some gases and organic acids. Emits audio and visual alerts if conditions become unsafe. All displayed on a LCD screen.

Note: The unit is calibrated at the factory.

» A set face velocity is maintained on sash opening and closing using the incorporated Variable Air Volume System. (The system can also operate on fixed drive.)

» On initial power up, the system auto detects the main AC supply frequency and sets the triac drive accordingly (230 Vac or 115 Vac).

» On system start, three (3) screens are displayed in turn:

Screen 1: Can display company logos, text or both for a preset time.

Screen 2: Displays the data screen with details of elapsed time, alarm set time and filter ID for a preset period of time.

Screen 3: If an elapsed time alarm is present, the alarm screen will be displayed; on acknowledgement the NORMAL RUN screen will be displayed.

Monitair Control Panel Operation:

» The systems calibration of airflow and organic filter saturation alarm are all carried out from the front membrane (no potentiometers) using easy to follow on screen instructions.

» The target face velocity is variable on calibration from 0.25 m/s to 0.80 m/s.

» The alarm point is software set and adjusted incrementally from the target face velocity set point.

» The display PCB auto detects if a sensor has been fitted; if not, the organic saturation is disabled.

» The filter ID are identified and displayed on the DATA screen (maximum 6 characters per ID) which can be customized as required.

» Any filter ID can be tagged in firmware so if an acid composite carbon or HEPA filter is fitted, the organic filter alarm is disabled.

» An elapsed time display and alarm is incorporated in the MENU section; the user select alarm point is in hours.

» The menu access is code protected. To access, press and hold the MENU OPTIONS button for 4 seconds or a coded button sequence.
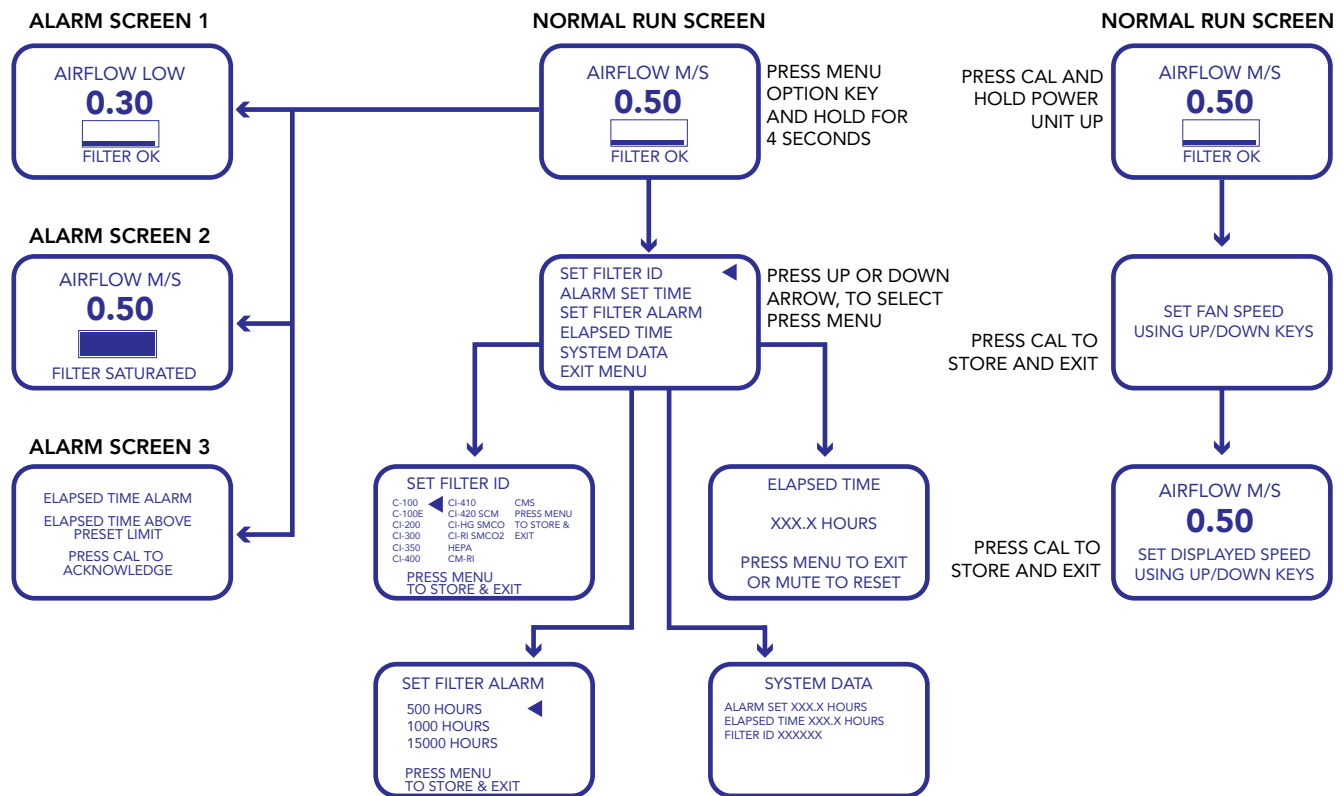
Inputs

1 X1 Anemometer

X1 Organic alarm sensor

X1 Data connect cable

X1 Interlock (sash high or door position)

Outputs

2 X1 White light 2.5 amp max 230 Vac or 115 Vac

X1 Spare or UV toggle

X1 Variable ac output 6 amp max

For units equipped with this option, please follow the online screens below for set up.

ALARM SCREEN 1

AIRFLOW LOW
0.30
FILTER OK

ALARM SCREEN 2

AIRFLOW M/S
0.50
FILTER SATURATED

ALARM SCREEN 3

ELAPSED TIME ALARM
ELAPSED TIME ABOVE PRESET LIMIT
PRESS CAL TO ACKNOWLEDGE

NORMAL RUN SCREEN

AIRFLOW M/S
0.50
FILTER OK

PRESS MENU OPTION KEY AND HOLD FOR 4 SECONDS

SET FILTER ID
ALARM SET TIME
SET FILTER ALARM
ELAPSED TIME
SYSTEM DATA
EXIT MENU

PRESS UP OR DOWN ARROW, TO SELECT PRESS MENU

SET FILTER ID

C-100	CI-410	CMS
C-100E	CI-420 SCM	PRESS MENU
CI-200	CI-HG SMCO	TO STORE &
CI-300	CI-RI SMCO2	EXIT
CI-350	HEPA	
CI-400	CM-RI	

PRESS MENU
TO STORE & EXIT

ELAPSED TIME

XXX.X HOURS

PRESS MENU TO EXIT OR MUTE TO RESET

SET FILTER ALARM

500 HOURS ◄
1000 HOURS
15000 HOURS

PRESS MENU
TO STORE & EXIT

SYSTEM DATA

ALARM SET XXX.X HOURS
ELAPSED TIME XXX.X HOURS
FILTER ID XXXXXX

NORMAL RUN SCREEN

PRESS CAL AND HOLD POWER UNIT UP

AIRFLOW M/S
0.50
FILTER OK

SET FAN SPEED USING UP/DOWN KEYS

PRESS CAL TO STORE AND EXIT

AIRFLOW M/S
0.50
SET DISPLAYED SPEED USING UP/DOWN KEYS

PRESS CAL TO STORE AND EXIT

Monitair Control Panel Calibration

» Hold in CAL button while applying main power to the cabinet.

» Release the CAL button when two beeps sound.

» After the second audio beep, the message SET FAN SPEED will appear on the LCD display.

» Allow the system to run for a minimum of 15 minutes to stabilize and permit the gas sensor to reach its running temperature.

» Using a calibrated handheld anemometer, set the average face velocity to the required setting 0.5 m/sec by using the ▼▲ keys.

» When the required velocity has been set and allowed to stabilize, press the CAL button and the display will show airflow in m/sec (0.00).

» Use the fan ▼▲ to set the display to read the same as the measured VELOCITY (0.50).

» When the desired reading has been achieved, press the CAL button again to store the setting.

» The system will now return to the main display screen.

» To enter the main menu, hold the menu option switch for more than 4 seconds and the following submenu will appear:

    AIRFLOW UNITS

    SET FILTER ID

    ALARM SET TIME

    ELAPSED TIME

    VIEW SYSTEM DATA

    EXIT

» To view or change any of the parameters above, select and follow the onscreen instructions.

» LCD backlight contrast can be adjusted by turning VR1 on the display PCB.

» The airflow unit can be changed from m/sec to FPM via the airflow units in the menu section.

» When in normal running mode, the airflow can be altered; one press of ▼▲ will decrease or increase the set point by 0.05 m/sec.

4.2 Cabinet Operating Procedure

- The fume hood should only be operated with the correct filter installed for the application. Refer to Filter Information - page 32 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 and their byproducts 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.

- To start the system, apply power to the system and switch on the green power On/Off switch. The lights and fan will automatically turn on.

- Check the airflow and the filter condition of the cabinet on a regular basis. This is covered in Maintenance - page 25.

- 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.

- 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 be used or boiled off in the cabinet.

- 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.

- 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 reused, providing they have not reached the saturation level.

- 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.

- 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.

- The operators should maintain the normal safety equipment and procedures for dealing with hazardous chemicals.

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WARNING!

- » Do not use a gas flame (Bunsen burners) whenever possible, as it interferes with airflow.
- » Do not change the original blower speed of the cabinet 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.

V. Monitoring

5.1 General

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

» If the pre-filters become blocked, the velocity of the cabinet will begin to fall and will eventually cause the filter blockage alarm to illuminate.

» Manual checking of the main filters by the use of a Gastec™ or Draeger™ 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 per year, as 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 alcohols, toluene and trichloroethylene.

For testing acid filters (acid adsorbing) or multi combination layered filters incorporating an acid layer, use sulphur dioxide gas (SO_2) at 2 bubbles per second through water.

The readings should be below your Country's Occupational Exposure Limit (see Filter Information - page 32). 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.

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 main 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

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

6.5 Airflow

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.
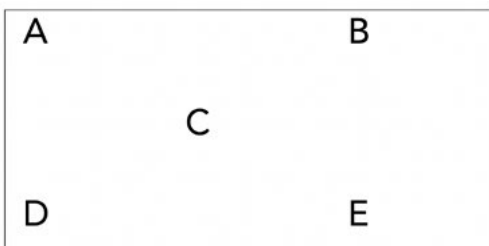
$$\frac{A+B+C+D+E}{5} = \text{Average}$$

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, the filter should be checked as follows:

» Select a suitable test chemical (examples include alcohols, 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 hot plate inside the cabinet. Set the hot plate 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) or multi combination layered filters incorporating an adsorbing layer, use sulphur dioxide gas (SO_2) 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, 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 Filter Blockage Alarm

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

» Switch the unit off. Block the pre-filter using paper or cardboard to permit airflow of <0.3 m/sec or 60 fpm.

» Switch the unit on. The red/amber neon should illuminate. If not, the calibration should be reset.

Calibration
The filter blockage 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 Photograph #17 - page 14).

» 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 restart the machine. The red/amber neon should not be illuminated.

6.8 Changing Out 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 application of the hood. 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 into a plastic bag prior to disposal, preferably by incineration.

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

NOTE: 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 pre-filter and place it into a bag. Seal for disposal. Refit the new filter and refit 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. Lift the filter slightly to break the seal and then withdraw the filter. Place the filter in a plastic bag. Seal the bag 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 recalibrate the airflow system. This procedure can be found in .

6.9 Airflow Adjustment

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

6.10 Maintenance Schedule

Please 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.

Semiannually

1. Replace HEPA/ULPA filters.
2. All quarterly activities.

Annually

1. Replace all main carbon filters.
2. All semiannual activities.

Biennially

1. Replace 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			

6.12 Fault Finding

⚠️

WARNING! Before attempting any inspection or replacement of electrical components, always isolate the cabinet from the main power supply and remove the power supply cable.

Fault	Check
Filter Blockage Alarm	• Check airflow at aperture • Check pre-filter is not blocked • Check fan is running • Recalibrate
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 • Bypass speed controller; if fan works, replace speed controller • Replace fan capacitor • Replace fan

6.13 Component Changing

SHOULD ONLY BE CARRIED OUT BY TRAINED PERSONNEL

⚠️

WARNING! Ensure main power supply has been removed prior to any work being carried out.

Light Bulbs

To replace a light bulb, use the following instructions:

Access panel located on rear of hood.

1. Remove 6 screws to release the panel.

2. Rotate bulb ¼ turn counter clockwise to remove and replace.

Fuse Replacement

Many Air Science products are fitted with a slow blow fuse. If you have the product connected to power but are unable to operate, and the on/off switch does not illuminate, replace the fuse using the following steps:

1. Locate: The fuse is integrated into the power inlet.

2. Access: Use a flat head screwdriver to open the fuse panel.

3. Manipulate: Pull out the fuse holder to inspect/replace.

4. Put Back: slide fuse holder back into the slot until it is flush with the surrounding surface

6.14 Replacement Parts List

Replacement Parts List 120 Volt Units with EC Fan
P5-24, P5-36, P5-48 - 120V 60HZ

Part Description	Part Number
Power Switch	WRG32F2FBGLN
Indicator Light	C0480AABA2
Pressure Switch	6753-AEJA-U000
T8LED Bulb (P5-24)	VP-LT-9W
T8LED Bulb (P5-36)	VP-LT-15W
T8LED Bulb (P5-48)	VP-LT-18W
Speed Control	420-05-0640
Fan Motor	BI2422063TB2M-SB
Power Supply	RSP-200-24
Input Power	719W-00/04
Fuse	0218010.HXP

Replacement Parts List 230 Volt Units with EC Fan
P5-24, P5-36, P5-48 - 230V 50HZ

Part Description	Part Number
Power Switch	WRG32F2FBGLN
Indicator Light	C0480AABR3
Pressure Switch	6753-AEJA-U000
T8LED Bulb (P5-24)	VP-LT-9W
T8LED Bulb (P5-36)	VP-LT-15W
T8LED Bulb (P5-48)	VP-LT-18W
Speed Control	420-05-0640
Fan Motor	BI2422063TB2M-SB
Power Supply	RSP-200-24
EMI Filter	20ERK1
Input Power	719W00/04
Fuse	0218005.HXP

VII. Filter Information

For detailed information on filtration types and how to customize your application, underline>visit the Filtration Guide on our website: www.airscience.com/filtration-guide.

Filter Types
Air Science offers over 12 types of activated carbon and particulate filter media. These formulas can be customized or layered into nearly 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.

7.1 Filter Descriptions

Formula	Description
GP Plus!	The most widely used filter in the range, primarily for solvent, organic and alcohol removal.
ACI Plus!	Neutralizes volatile inorganic acid vapors.
ACR	Iodine and methyl iodide vapors as well as low level radioactive iodine.
ACM	Mercury vapor.
AMM	Removes vapors from dilute ammonia solutions; removes low molecular weight amines.
SUL	Designed to remove hydrogen sulphide and low molecular weight mercaptans.
CYN	Removal of hydrogen cyanide. Many cyanide compounds will evolve HCN gas if acidified, so this filter is normally specified if working with any cyanide compound.
FOR	Designed to oxidize formaldehyde and glutaraldehyde fumes; widely used in hospital pathology laboratories.
EDU	Designed to handle chemicals normally used in a university level chemistry curriculum.
MIL	Designed for military applications involving war gasses.
HEPA/UPLA	Powders, particulates and biologicals.
EFT	Universal filtration.

VIII. Product Specifications

For additional product information, drawings, dimensions and specifications:

Purair Basic

Purair NANO

Purair RX

Purair SafeSEARCH

Purair EDU-JUNIOR

Purair CAGEX

ISO 9001
ISO 14001
BUREAU VERITAS
Certification

N° US014542 / N° US014543