INSTRUCTION MANUAL

AIRONE FC 750
Filtration Fume Cupboard with
Filter Saturation Alarm

SAFELAB SYSTEMS
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Contents

FOREWORD

This manual has been prepared to give guidance in the use of the Airone FC750 filtered fume cupboard, and to ensure its optimum operation.

It is recommended that service and maintenance operations should only be undertaken by SAFELAB Service Engineers or their authorised agents.

Details of Service Contracts, along with information on these and other products is available on request from:

SAFELAB SYSTEMS LTD
Airone Building
8 Beaufighter Road
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BS24 8EE

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NOTE:

This Airone FC750 Filtration Fume Cupboard requires annual service and inspection under the requirements of COSHH regulation 9 by a suitably qualified engineer.

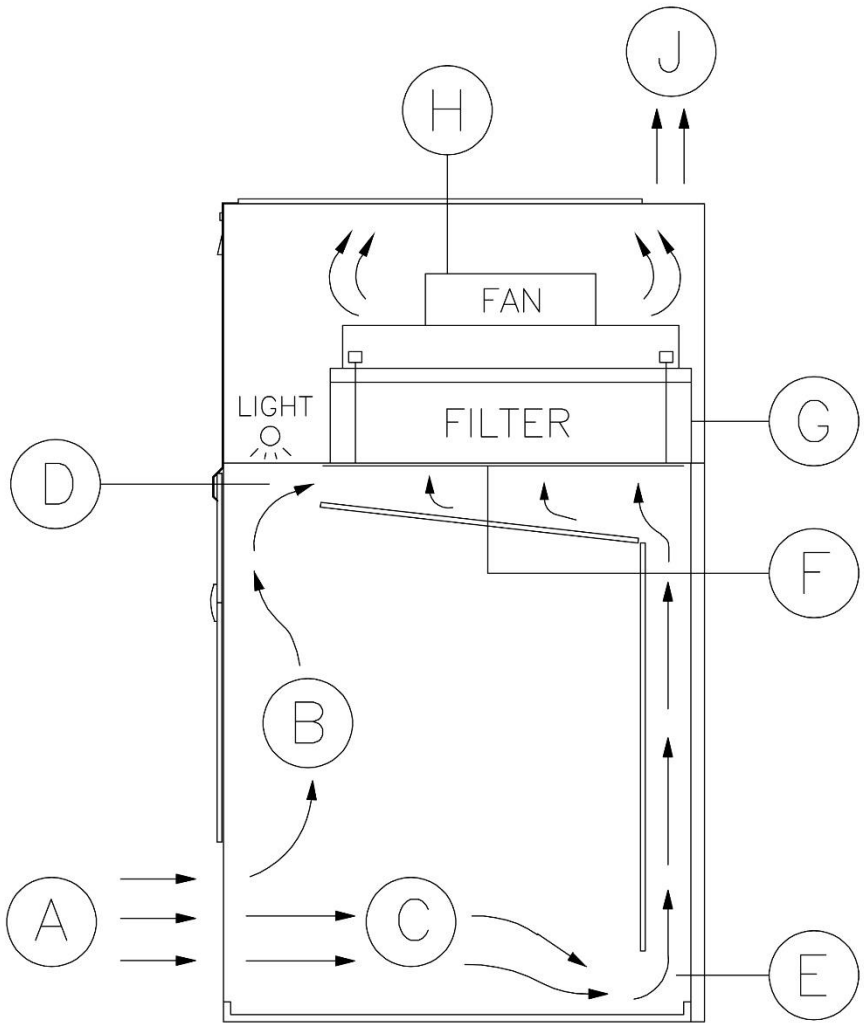
PRINCIPLES OF OPERATION

Air is drawn into the cupboard at the working aperture **A** below the hinged clear acrylic front window, at a velocity high enough to ensure entrainment of any fumes/odours given off by the processes carried out within the cupboard.

The fumes from within the cupboard are drawn either upwards as in the case of lighter than air fumes **B** to the extract slot **D**, or drawn across the work surface to the secondary extract slot **E** created by the back baffle, as in the case of heavier than air fumes/particulates* **C**.
The combination of extract slots **D** and **E** ensure that all fumes/particulates* are carried by the moving body of air to the pre-filter **F** and main filter **G** to be absorbed before being expelled by the exhaust fan **H** as clean air **J**

The fan **H**, which is mounted above the main filter exerts a negative pressure on the internal space within the cupboard. This in turn pulls external air into the cabinet through the working aperture **A** and keeps a constant circulation of pre-filtered clean air passing through the cupboard whilst ensuring that fumes/particulates* are trapped and adsorbed by the main filter.

*dependent on main filter type fitted.



INSTALLATION AND ASSEMBLY INSTRUCTIONS

Contents of Packaging (as standard):

- **Pre-filter (fitted).**
- **Main filter .**
- **Allen key.**
- **Mains power lead.**
- **Safety Log Book.**
- **Operational manual.**
- **Quality Pass.**
- **Service and Maintenance Letter**.
- **Conformity certificates.**
- **Warranty form.**

Your Airone FC750 fume cupboard should be assembled and sited by specialists using the correct handling equipment. Please contact Safelab systems for assistance in this matter.
Space for free air circulation must be provided around the Airone FC750 Filtration Fume Cupboard (see page 6 for a guide to siting the cupboard).

FILTER INSTALLATION (SEE ALSO SPECIFICATION DIAGRAM ON PAGE 8):

1. Ensure cupboard is switched off. Remove the outer front fascia panel by removing the four Allen screws.

2. Remove the two Allen screws securing the light. Lift the light assembly clear, and unplug it if necessary.

3. Unpack the main filter and prepare suitable equipment for its safe handling and installation.
   Before lifting the main filter please note that a size B filter weighs approx. 15kg, and may require two people to safely handle it.
   Slide the filter gasket side down between the guides in the filter chamber (if using HEPA/carbon filter, the HEPA is the lower filter, unless the unit is sited in a clean room, in which case the HEPA filter will be the upper one).
   Use the thumbscrews on the filter/fan plenum to evenly clamp the filter in position.

4. Fill in the date on the filter identification label and stick it to the front of the filter, ensuring it will be clearly visible through the viewing window on the cover panel.

5. Replace both the light unit and front cover panel and retaining screws, ensuring the lighting plug is reconnected.

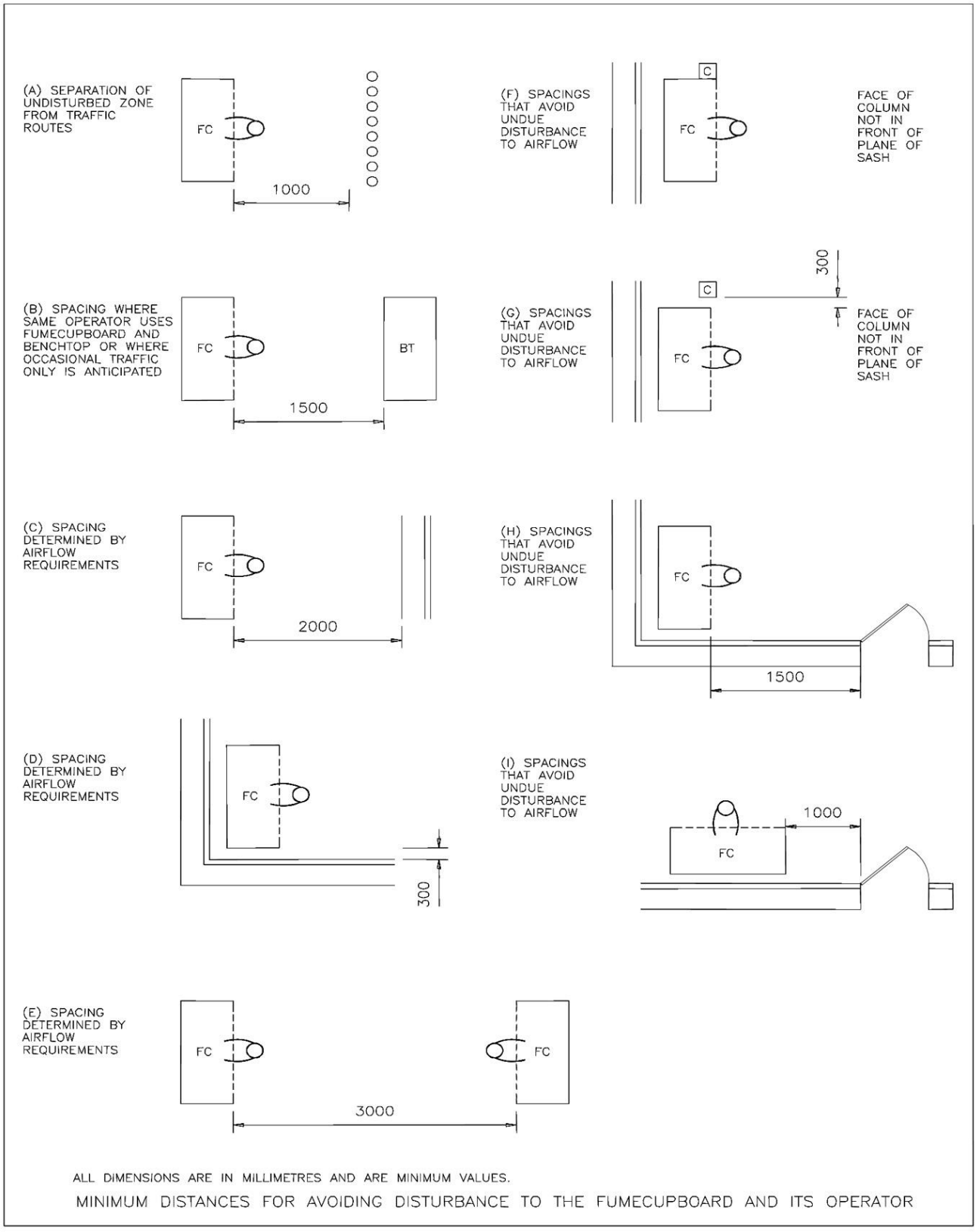
6. Following this procedure, it is recommended that the filter monitoring procedure detailed in the Operational Safety Manual is performed. This ensures correct seating of the filter within the cabinet.

   Written records of filter monitoring are a legal requirement under COSHH.

7. Connect to the power supply and the cabinet is ready for commissioning.
   See **Calibration** instructions on page 12.

INSTALLATION AND ASSEMBLY INSTRUCTIONS (CONTINUED)

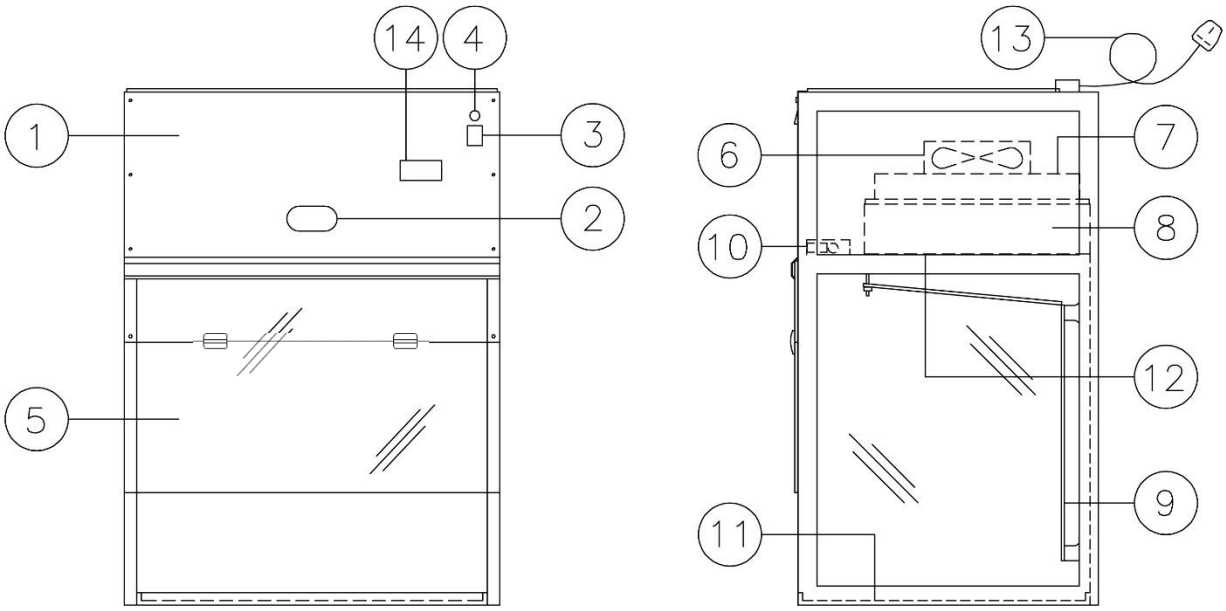
GUIDE TO POSITIONING LOCATIONS FOR THE AIRONE R FUME CUPBOARD



SPECIFICATION

Definition:	The **SAFELAB** Airone FC750 Filtration Fume Cupboards are designed for the protection of operators from gaseous or particulates contaminants produced within the unit.
Application:	Wherever the operator and the environment need to be protected from gaseous phase or particulate contaminants.
Construction:	Aluminium extrusions and mild steel, painted in epoxy powder coat, Light Grey RAL-7035 and White RAL-9016. The sides of the fume enclosure are laminated safety glass, and white compact laminate. The fixed upper section and hinged lower section front window is made from clear acrylic. The work tray is white polypropylene as standard.
Pre-filter/s:	Size B – 1 pre-filter.
Filter Housing:	Located above the fume cupboard. This contains the main filter and exhaust fan.
Low Airflow Light:	Red, gives a visual indication of a low airflow condition or when the pre-filter or main filter needs changing. Located on the top RH side cabinet.
ON/OFF Switch:	Illuminated green, and located on the top RH side of the cabinet below the red low airflow light.
Supply:	230 V 50Hz – 1.0A
Lighting:	Fluorescent Lamp - 20 watts
Performance:	The average inflow at the working aperture is 0.4 m/s. The working aperture is 200mm high.
Main Filters:	Size ‘B’ to customer spec. 1 Filter Safelab Systems Ltd offer a wide variety of filter types for different applications, please consult your Operational Safety Log Book.
Weight	44 Kg.
Dimensions:	750mm x 600mm x 1030mm (W x D x H)

SPECIFICATION DIAGRAM



1) **Fascia panel.**
2) **Filter viewing window.**
3) **Illuminated ON/OFF switch (green).**
4) **Low airflow warning light (red).**
5) **Hinged acrylic front window.**
6) **Exhaust fan.**
7) **Plenum.**
8) **Main filter/s.**
9) **Rear baffles.**
10) **Fluorescent light.**
11) **Work tray.**
12) **Pre-filter.**
13) **Mains lead with moulded plug.**
14) **Saturation Alarm.**

OPERATING INSTRUCTIONS
(ENSURE THE UNIT IS PLUGGED IN TO THE MAINS ELECTRICAL SUPPLY)

1. Before switching on the unit, check that the main filter is fitted (the filter identification label will be visible through the filter viewing window on the upper fascia panel.

2. Switch on at the mains socket and at the green ON/OFF switch on the cupboard and allow it to run for approximately 10 minutes prior to use.

3. Always use appropriate PPE (personal protection equipment) when using the Airone FC750 Fume Cupboard.

4. Assess the potential hazard of the intended procedure before commencing work. The hazard level can be reduced by:

    - Working with a reduced height of sash opening.
    - Using reduced quantities of substances involved.
    - Lowering reaction rates where acceptable.

5. When working in the cupboard, ensure that the hinged acrylic front window is in the closed position, in order to achieve containment at 0.4M/sec and always keep closed when the fume cupboard is not in use.

6. If using Bunsen burners, place them at least 20cm from the front sash, sides or rear baffle.

7. For access to the inside of the fume cupboard for loading apparatus or cleaning, the hinged lower front acrylic panel, can be fully open and will be held in position by the two black detent hinges.

NOTE

The hinges will only hold the lower front panel in the fully open position, when opening make sure that they click into the fully open position.

OPERATING INSTRUCTIONS
(CONTINUED)

8. Try to place everything required for your process inside the fume cupboard prior to starting any operation. This will reduce the amount of arm movements into and out of the fume cupboard and hence reduce possibility of breakout (fume escape).

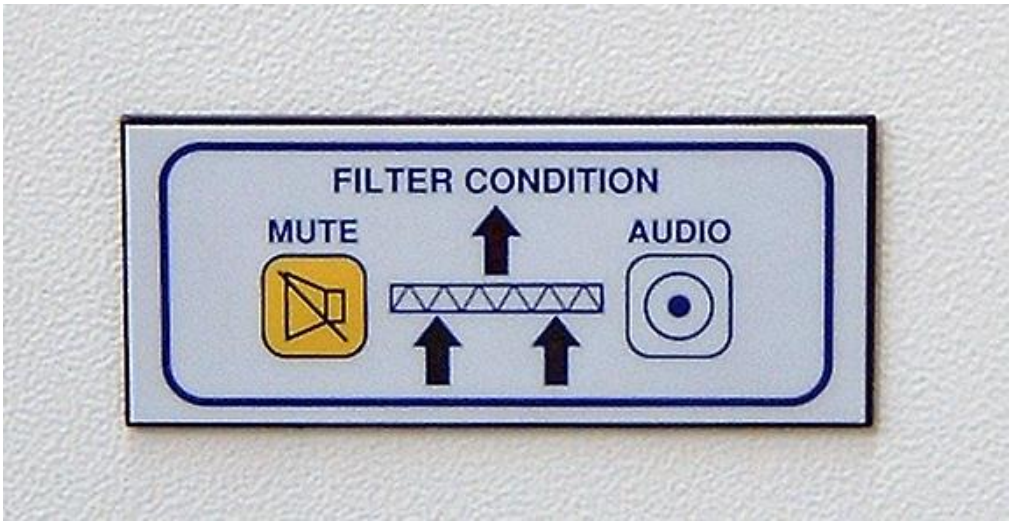
9. Position apparatus inside the fume cupboard so that disturbance to airflow at the sash opening is minimised.

10. After use follow the correct procedure for disposal of any residues and leave the fume cupboard in a safe state for further use by others.

11. Before switching off the cabinet after use, allow it to run for a further 5 to 10 minutes to make sure all hazardous vapours or gasses have cleared, and check that any bottle are capped or stoppered and no material has been left on the necks or pooled around the bases.
Good housekeeping is essential to prolong carbon filter life.

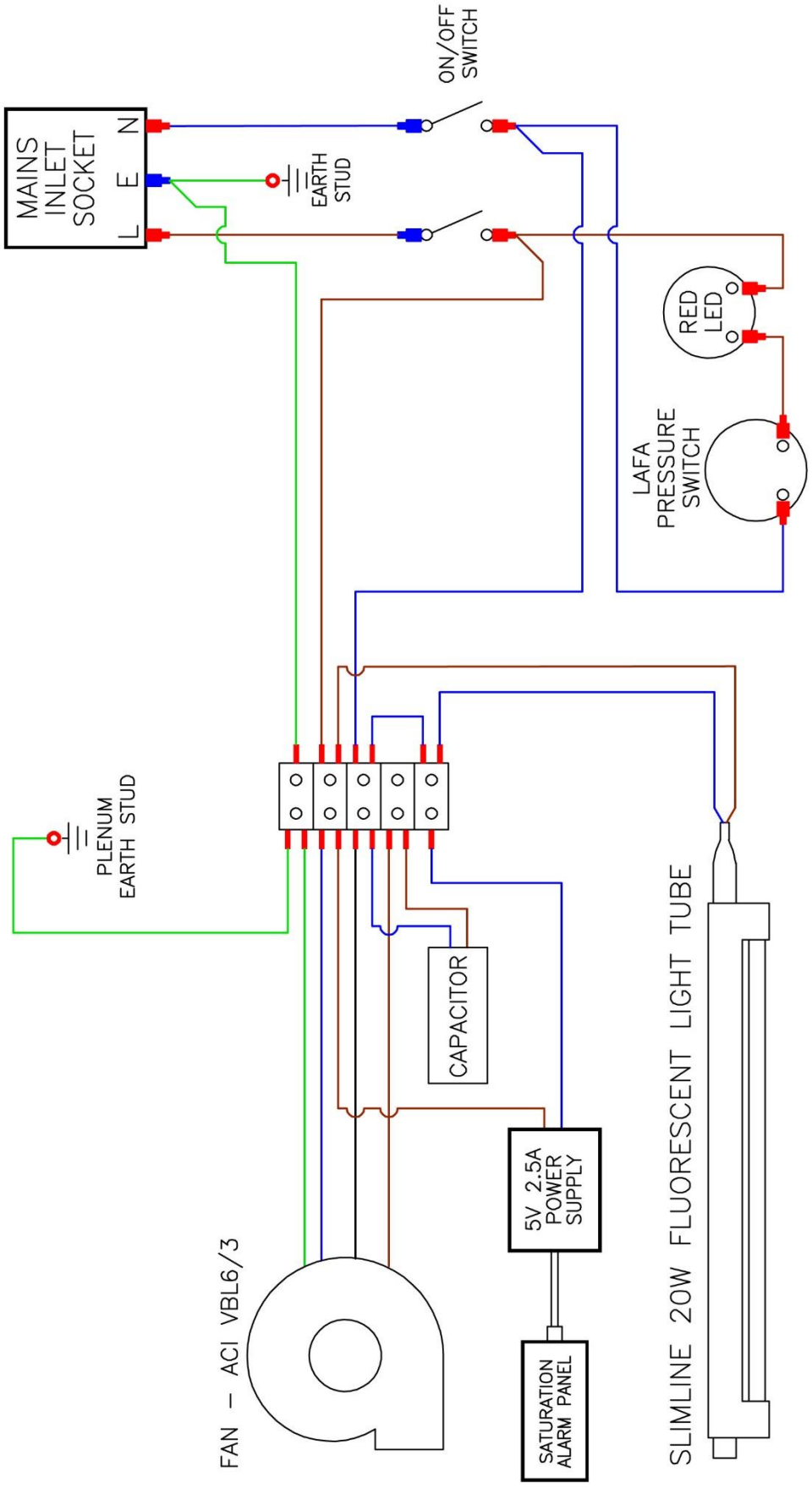
FILTER SATURATION ALARM

This unit is fitted with a filter saturation alarm:–



In normal operation, the arrows will be lit with green LEDs. If these turn red and the audible alarm sounds, it will indicate that the filter is potentially saturated or a breakthrough has occurred.

WIRING DIAGRAM



CALIBRATION

(SHOULD ONLY BE UNDERTAKEN BY A SUITABLY QUALIFIED PERSON)

1. Remove the outer front fascia panel by removing the four Allen screws.

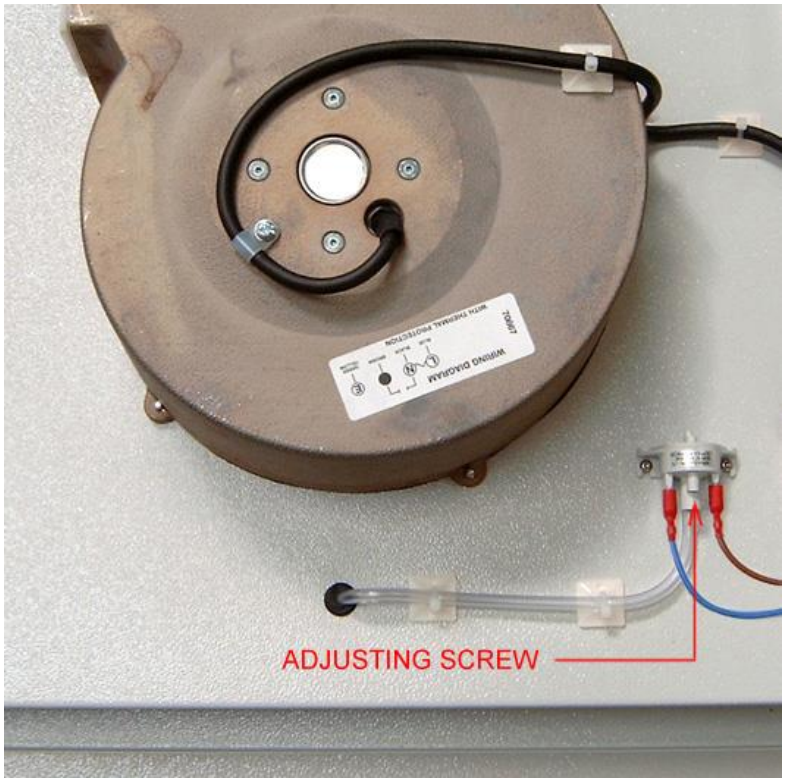
2. Open the hinged acrylic front window.

3. Hinge down the upper baffle by unscrewing and removing the two thumbscrews at the front.

4. Switch on the fume cupboard and cover approximately two thirds of the pre-filter area at the top inside of the enclosure with a suitable piece of paper or card.

5. If the red warning light comes on, rotate pressure switch adjuster screw (see photo) anticlockwise until it goes out, then slowly rotate it clockwise until the red warning light just comes on.
   If the red waning light doesn't come on, rotate the adjuster screw clockwise until the light just comes on.

6. Remove paper or card and check that the light goes out. Repeat steps 4 and 5 until this is achieved.



7. Switch off the fume cupboard and remove the paper/card covering the pre-filter.

8. Raise the hinged baffle, refit the thumbscrews, and fold down the front window.

9. Refit the front fascia panel.

MAINTAINANCE AND PERFORMANCE MONITORING:

Your Airone FC750 Fume Cupboard should have an annual service by a suitably qualified person, to maintain it's optimal working condition and reduce the possibility of hazard to the operator.
We recommend that a service programme be arranged with Safelab Systems ltd**.**

Regular maintenance by our qualified personnel will ensure safe running of your equipment and also ensure that you meet your requirements under COSHH regulation 9.

The minimum requirement to comply with COSHH Regulations is that a routine service and inspection is carried out at least once every 14 months (including face velocities and filter efficiencies), and a written record kept of the results. Tables printed on back pages of the Operational Safety Log-Book are suitable for keeping these records.

Refer to page 14 for face velocity and filter checking procedures.

It is also recommended that the pre-filter be replaced a minimum of once every 3 months.

Safelab Systems offer Service Contracts for regular filter-monitoring and servicing of all AIRONE Filtration Fume Cupboards. Please contact our Service Department for details:

Email - service@safelab.co.uk
Phone - 01934 421340
Fax - 01934 641569

Safelab Systems recommend that a simple air sampling test be carried out once a week at eye and mouth level and/or at the outflow port of the AIRONE Fume Cupboard utilising an appropriate GASTEC Chemical Detector Tube (available from Safelab Systems). Record result in the Operational Safety Log-Book.

Information for users for Easy Do-It-Yourself filter-monitoring checks:

Equipment Needed:

A calibrated vane anemometer with a diameter of 100mm and the facility to average readings over a period of 10 seconds.
Unidirectional Hot-wire Anemometers are also available with the facility of averaging readings.

Refer to Building Bulletin # 88 of the DfEE (rev. of Design Note #29)

GASTEC Volumetric Gas-Detection kit consisting of a disposable tube used with a volumetric detector hand pump that draws a measured volume of air through the tube. The length of colour change in the tube indicates the concentration of the gas tested. SAFELAB SYSTEMS supply a suitable model:

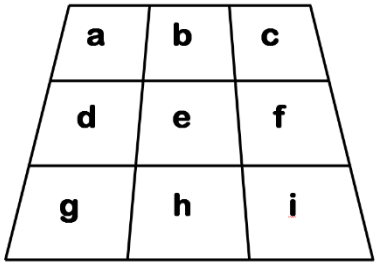
GASTEC Volumetric Detector Pump (Safelab code SRV604).
Additionally packs of disposable tubes will be required.

Pack of 10 Sulphur Dioxide Tubes, 1 pack of 10 Trichloroethylene. Tubes.
Refer to Operational Safety Log-Book and Chemical Listing for correct selection from over 500 different GASTEC chemical detector tubes available for measuring ppm concentration levels of over 800 compounds in gaseous phase.

MAINTAINANCE AND PERFORMANCE MONITORING (CONTINUED):

INSTRUCTIONS FOR FACE VELOCITY MEASUREMENTS
(Record results on record form - page 15)

PROCEDURE:



Imagine the face of the fume cupboard divided into nine cells.

Stand as far as practicable from the fume cupboard with the sensing head in the plane of the sash and take airflow readings at approximately the centres of each of the nine cells.

Record for each cell the approximate average reading over a period of at least ten seconds, applying any corrections from the air flow meter calibration chart.

Look at the table and repeat any reading which seems to be very different from the general pattern. Record the average of this and the previous reading.

CALCULATION:

Minimum face velocity -

Record which of a,b,c,d,e,f,g,h,i, is the smallest, i.e.: the minimum face velocity.

VARIATION:

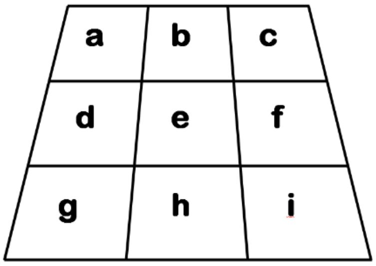
Check for variation as follows :

- Add together the values a,b,c,d,e,f,g,h,i and divide by 9 to get the average.
- Find the biggest and smallest of a,b,c,d,e,f,g,h,i.
- The upper percentage variation is the biggest minus the average, divided by the average and multiplied by 100.

The lower percentage variation is the average minus the smallest, divided by the average and multiplied by 100. Each of these should be below 30%.

MAINTENANCE AND PERFORMANCE MONITORING (CONTINUED):

AIRONE FC750 EXAMINATION RECORD



Site:..

....…………

Air flow meter used:...……

…………………………………………………………...

Date of Check	Readings in each of the cells as above.									Average (m/s)	Pre Filters Clean? Yes/No	Any deterioration or damage observed. Fail if face velocity < 0 . 3 m / s	Initials of Tester
	a	b	c	d	e	f	g	h	i				

If a drop of 10% is found then the cause of the problem should be cleared. (Check Pre-filters)
If the minimum face velocity is below 0.3 m / s then airflow in the fume cupboard is inadequate.

MAINTAINANCE AND PERFORMANCE MONITORING (CONTINUED):

INSTRUCTIONS FOR FILTER SATURATION TESTING.

Regular filter checks and monitoring (once a week is recommended) to test quality of the air breathed in by operators and filtration efficiency. Filter challenge tests can be carried out during routine Service and Maintenance procedures once every 6 months as described in the Operational Safety Log Book.

The recommended procedure for testing the efficiency of the system requires a GASTEC Volumetric Detector Pump and Gastec Chemical Detector Tubes. Test the quality of air by sampling at eye and mouth level at regular intervals once a week with Gastec tubes calibrated for the particular compound in concentrations below its respective OEL (Occupational Exposure Limit) MEL (Maximum Exposure Limit) or OES (Occupational Exposure Standard (or MAK in Germany and/or TLV in the USA).

Please refer to the Operational Safety Log-Book for further information.

CLEANING

The materials used to construct the Airone FC750 Fume Cupboard have been selected to give maximum durability and a long life. It is beneficial however to regularly clean and decontaminate the internal and external surfaces.

It is recommended that the cabinet is switched on during any cleaning procedure and that suitable protective clothing (face-mask, gloves and safety glasses) is worn.

All surfaces should be cleaned with a mild detergent solution then finished off with a damp cloth and wiped dry.

If required, the rear/upper baffles can be removed for cleaning. It is recommended that two people undertake this operation.
Remove the upper screws from the rear baffle, then undo and remove the thumbscrews supporting the front of the upper baffle and allow in it fold down flat against the rear baffle. Carefully remove the remaining bottom two screws holding the rear baffle whilst supporting it.

FILTER REPLACEMENT

DURING THE PRE-FILTER AND MAIN FILTER REPLACEMENT PROCEDURE, SUITABLE PROTECTIVE CLOTHING (FACE-MASK, GLOVES AND SAFETY GLASSES) MUST BE WORN

PRE-FILTER REPLACEMENT

(SAFELAB RECOMMENDS THAT THE PRE-FILTER IS REPLACED EVERY THREE MONTHS)

1. With the cabinet switched on, raise the hinged front window.

2. Measure and take note of the distance from the front edge of the upper baffle to the inside top of the fume cupboard and remove the thumbscrews supporting the front of the upper baffle and allow in it fold down flat against the rear baffle.

3. Undo and remove the thumbscrews retaining the pre-filter clamp frame a little and remove the pre-filter by folding the front edge away from you so that it is folded in half, withdraw it, then place and seal it directly into a plastic bag for disposal.

4. Locate the new pre-filter on the clamp frame, raise into position, and replace and tighten the retaining thumbscrews.

5. Raise the upper baffle and refit the thumbscrews. Adjust to give the same distance from the inside top as before.

6. Lower the front window.

FILTER REPLACEMENT (CONTINUED)

DURING THE PRE-FILTER AND MAIN FILTER REPLACEMENT PROCEDURE, SUITABLE PROTECTIVE CLOTHING (FACE-MASK, GLOVES AND SAFETY GLASSES) MUST BE WORN

MAIN FILTER/S REPLACEMENT

(SAFELAB RECOMMENDS THAT THE MAIN FILTER IS REPLACED EVERY FIVE YEARS DEPENDING ON USE AND APPLICATION)

1. Switch off the cabinet and disconnect it from the mains electricity supply.

2. Remove the front fascia panel by removing the four Allen screws.

3. Remove the two Allen screws securing the light. Lift the light assembly clear, and unplug it if necessary.

4. Check that the replacement Safelab carbon filter is correctly selected (consult Safelab Ltd by phone, fax or e-mail for assistance).

5. Unscrew the four knurled knobs inside the main filter housing that clamp the fan and plenum assembly on top of the filter. Four springs lift the assembly clear of the main filter as these are released.

6. Unpack the Main filter and prepare suitable equipment for its safe handling. Place the filter gasket side upwards on a clean flat surface (Retain the packaging for disposing of the old filter).

7. **Before removing the main filter, please note that a size B filter weighs approx. 15kg, and may require two people to safely handle it.**
   Firmly grip each side of the main filter, push up to break the seal, and withdraw the filter.

8. With the gasket side downwards, slide the new filter into place between the guides in the main filter housing ensuring that it's located fully to the back stop and evenly retighten the knurled knobs to clamp the filter in position.
   Good filter seating is essential for effective filtration.

9. Fill in the date on the filter identification label and stick it to the front of the new filter, ensuring it will be clearly visible through the viewing window on the cover panel.

10. Replace both the light unit and front cover panel and retaining screws, ensuring the lighting plug is reconnected.

11. Reconnect to the mains electricity supply and switch on the cabinet.

12. Enter details of main filter/s change in the safety Log Book.

13. Following this procedure, it is recommended that the filter monitoring procedure detailed in the Operational Safety Manual is performed. This ensures correct seating of the filter within the cabinet.
    Written records of filter monitoring are a legal requirement under COSHH.

SPARE-PARTS

Main filter/s (to customer spec.):	B size filter
Pre-filters:	Part No. 111092 (supplied as pack of 12)
Mains lead:	Part No. 050201
Fan:	Part No. 060250
Red Neon Light:	Part No. 050643
On/Off switch:	Part No. 050245
Fluorescent light	Part No.050520
Hinge	Part No.130407

TROUBLESHOOTING

1. What if I can smell the vapours or gases being used in the procedure?

   Filters have a high efficiency but, because the nose is very sensitive, the residual gases passing through the filter may sometimes be smelt, even though their level is not hazardous. If the gases are causing distress, the operation should be finished and the degree of filter saturation monitored.

2. What if I can smell the vapours or gases being used in the procedure, but I have checked the filter performance and it is satisfactory ?

   Check siting of the cabinet to ensure that nothing is being allowed to escape out through the sash. Fume containment is easily impaired by draughts from windows, doors or fan heaters and air vents.

3. What if there is a release that the filters of the Airone FC750 cannot contain?

   If the initial chemical hazard analysis or risk assessment (under COSHH) has been carried out correctly resulting in correct selection of appropriate types of carbon filters followed by weekly air sampling and filter monitoring checks this is unlikely to occur. In case it does happen, due to accidental release of gas or vapour or an unexpected spillage, then leave the fan running and evacuate the area. Subject to the hazard assessment and local considerations, it may be that personnel with breathing apparatus would have to return to open windows and ensure that all hazardous vapours or gases had been dispersed.

   It is recommended that replacement carbon filter/s are kept available at short notice for such an event.

WARNING:

If a spill exceeds the capabilities of the Airone FC750, it is likely to exceed the capabilities of carbon filtration facemasks. This means that only an air or oxygen cylinder based breathing apparatus could provide adequate protection.

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CE

E.C. DECLARATION OF CONFORMITY

Safelab Systems Ltd

hereby certify that the

Airone FC 750
Filtration Fume Cupboard

Conforms to the requirements of the
Low Voltage Directive #73/23/EEC and the
Electromagnetic Compatibility Directives # 89/336/EEC and #92/31/EEC

Complying with the conformity criteria of European Standards:

EN 61010-1: 1993 safety requirements for electrical equipment for measurement, control and laboratory use Part 1 : General requirements
EN 50081-1, EN 50082-1 : Emission Limits to Reference Standards:
EN 60555-2 & 3, EN 55022/B, EN 55014

Signed: .....

Roger Guess, Manager Director
Safelab Systems Ltd

Dated: 24th April 2008

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GB00365

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Registered Office: Unit 29 Lynx Crescent, Weston Super Mare BS24 9BP

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