



INSTRUCTION MANUAL

Mobile AIRONE™1000RS (110 Volt) Filtration Fume Cupboard



SAFELAB SYSTEMS

Airone Building • 8 Beaufighter Road • Weston-Super-Mare • BS24 8EE
Telephone: 01934 421340 • Fax: 01934 641569 • E-mail: Safelab@safelab.co.uk
WWW.SAFELAB.CO.UK



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SPECIFICATION

Construction: Aluminium extrusions and mild steel sheet, welded and painted in epoxy powder coat, Light Grey RAL-7035 and White RAL-9016. The fume enclosure is safety glass. The front sash is safety glass. The top panel and baffle is acrylic.

Work Top: Polypropylene tray as standard.

Sliding Sash: The suspended/counterweighted front sash is in laminated safety glass.

Dimensions:

External: 1000mm wide x 700mm deep x 1850mm high.
Internal (Fume Hood Enclosure): 950mm wide x 500mm deep x 865mm high.
Max. Sash Opening in Operation: 840mm wide x 365mm high.
Max. Sash Opening for Loading: 840mm wide x 600mm high.
Weight (packed): 125kgs (including carbon filter).

Air-Flow Indication:

Low airflow indicated by red LED.

Fan: 2 x Centrifugal Fan

Noise level: 59 dBA

Supply: 110V 50/60Hz

THE SASH AND TWO SPEED FAN SYSTEM

The vertical sliding safety glass sash of the AIRONE 1000RS fume cupboard is suspended and counterweighted providing added advantages over fixed-sash or folding sash fume-hoods. E.g. the sliding safety glass sash can be closed and this provides protection to operators in case of explosions.

The vertical sliding safety glass sash conforms to Paragraph 4.12 of the Building Bulletin # 88 of the DofEE (Rev. of Design Note # 29) and BS:7258 requirements in that the sash cannot fall if one of the suspending cable-cords are cut.

Moving the vertical sliding safety glass upwards and downwards causes the fan to speed up or slow down to give a constant face velocity, this is controlled by a micro switch.



SAFELAB FILTERS

Pre-filter: One piece cardboard framed blended synthetic fibre with polypropylene spun-bonded scrim. (Safelab code: 101297 pack of 10 off)

The pre-filter is the white filter-layer which will filter out dust, smoke and mists.

It is accessed from the front of the cabinet. As the pre-filter becomes clogged from dust, aerosols and particles accumulating on its surface the face velocity of the air gradually decreases. Pre-filter replacement will be required more frequently than that of the main filter. Replace pre-filters minimum of once every 3 months.

Main Filters 'CMS' Schools Impregnated/Activated Carbon Filter.
(Safelab code: 101094)
Weight: 22 kg - subject to humidity fluctuations. Or any one of
14 SAFELAB activated/impregnated carbon filters and/or HEPA
Filters (please refer to SAFELAB Filter-Guide)

Please refer to Adsorption Index - in Operational Safety Log-Book - consult with Safelab Systems to obtain guidance in selection of appropriate filter and monitoring procedures.

Safe Use

Following any fitting or replacement of the Main Filter the Work Station should be run and the filter tested to ensure it has been installed correctly. Additionally, the filter test for organic gases must be performed to verify correct filter seating.

Safelab Systems activated/impregnated carbon filters are of very high filtration efficiency but, as human sensory perception is very acute and subjective (i.e. the nose is very sensitive and its capability of sensing odours at various thresholds varies from person to person) residual gases passing through the filter (such as mercaptans or H₂S) may sometimes be smelt, even though their levels of concentration may be much below OEL and therefore may not be hazardous.

Calibrated GASTEC chemical detector tubes, or other approved/certified appropriate chemical detectors/monitors should be employed when monitoring concentration of compounds in gaseous phase in the laboratory, within the fume enclosure or at the exit port of the workstations in the atmosphere. N.B.: If odours of vapours or gases are causing distress, the operation should be finished and the filter saturation monitored.

Users releasing hazardous vapours or gases must make their own assessment as to whether it is safe to do so. Consult the Adsorption Index Chemical Listing in the Operational Safety Log-Book when selecting the appropriate filter combination in the AIRONE Fume Cupboard.



Chemical Hazard Analysis - Risk Assessment - under COSHH

Users must make their own assessment as to its efficiency of filters selected in light of the variety of toxic vapours, gases and particulate contaminants released within the fume enclosure and this filter selection must become part of routine COSHH assessment. If in any doubt do not perform the operation. Consult Safelab Systems to ensure correct filter selection was made and users have acquainted themselves with filter monitoring procedures.

Siting

The intended locations for operation of the AIRONE 1000RS should be chosen so that:

- The airflow into the sash opening is not hindered by walls, other fume cupboards, cross draughts etc.
- Any wall opposite the front of the fume cupboard should be at least 2 meters away.
- The effects of doors and windows producing cross draughts are minimised.
- Please refer to BS:7258, Building Bulletin # 88 of the DfEE and the Safelab Systems Operational Safety Log-Book for guidance on correct siting.

We recommend that the face velocity should be measured and variation checked in all sites likely to be used.

NB: The fume cupboard should never be sited where it blocks an escape route.

Services

Electricity The Mobile AIRONE 1000RS requires a normal switched socket outlet. The lead for the AIRONE 1000RS must be fitted with a 13 amp fuse. Extension cables should not be used.

Water/Gas Gas and water inlet and water outlet hoses can be passed through the hole on the side of the base enclosure.

Note: The left and right front wheels should always remain locked when services are connected.



INSTRUCTIONS FOR OPERATION

1. Use the AIRONE 1000RS sited in a place checked to be suitable.
2. Remember to lock the front wheels.
3. If intending to use Gas or Water services, make sure that the guidelines of BS:7258 and Building Bulletin # 88 of the DfEE are met.
4. If you have Gas or Water on plumbed-in couplings, make sure that the connectors are properly pushed home, the waste is secure and the hoses do not cause a tripping hazard, and the tether is attached to the anchor point on the wall or docking station.
5. Check through the window on the front of the cabinet that the filter label with the code and name of the filter is clearly visible and that the filter is fitted.
6. Remove everything from the cabinet that is not needed for your procedure.
7. Try to arrange apparatus and any emergency spillage kits beforehand.
8. Remember that the more compounds you handle and the more vapours you release within the fume enclosure the shorter the filter life. Try to use smaller amounts.
9. The spillage containment of the work top is 6 to 7 litres. The carbon filter capacity varies from compound to compound and it is likely to be less than 3 litres. NB: Do not introduce chemical compounds and liquids in amounts higher than the spillage tray and respective carbon filter capacities in order to minimise risks of an overflow and/or filter saturation and filter-breakthrough in case of accidental spillages.
10. Connect to power by inserting electric plug into socket and switch 'On' main On/Off Switch. The Green Neon Light will come on to indicate the fans are running.
11. Allow the fan to run with appropriate filter fitted for a few minutes before introducing toxic chemical compounds into the fume enclosure to ensure that the system has acquired its normal operational characteristics providing the required/adequate face velocity.
12. Always wear eye protection while using the AIRONE Work Station.
13. If using Bunsen burners, always place them at least 20cm from the front, sides or back baffle of the cabinet.
14. Always wait for all hazardous vapours or gases to clear before switching off the cabinet. (Check that any bottles are stoppered and that no material has been left on the necks or pooled around the bases.)



CLEANING

It is recommended that the AIRONE Fume Cupboard or Work Station is left running during any cleaning procedure and that suitable protective clothing, face mask, gloves and safety glasses are worn. Clean glass, acrylic, metalwork and work surfaces with a mild detergent solution. After cleaning, wipe down all surfaces with a damp cloth.

WHAT IF ? AND FAULT FINDING.

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 1000RS 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.

Always keep a set of replacement carbon filters in the laboratory available at short notice for such an event.

WARNING:

If a spill exceeds the capabilities of the Airone 1000RS, it is likely to exceed the capabilities of carbon filtration face masks. This means that only an air or oxygen cylinder based breathing apparatus could provide adequate protection.



MONITORING

The minimum requirement to comply with COSHH Regulations is that the face velocities and filter efficiencies must be monitored (at least once every 14 months) 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.

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.

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

Safelab Systems offer Service Contracts for regular filter-monitoring and servicing of all AIRONE Filtration Fume Cupboards. Please phone our Service Department for details. Tel. No. 01934 421342

Refer to Appendices IV and V for face velocity and filter checking procedures.



Appendix I.

FITTING OR REPLACING THE MAIN CARBON FILTER

- There should be no hazardous vapours or gases on the worktop and within the fume enclosure during filter fitting or replacement.
 - During the filter replacement procedure, suitable protective clothing, face-mask, gloves and safety glasses must be worn.
1. Disconnect the AIRONE cabinet from the mains supply.
 2. Remove the filter-housing cover panel at the front to expose the main carbon filter enclosure.
 3. If replacing the main filter, remove the pre-filter from the top, and unscrew the filter clamping knobs on each side of the filter.
 4. Check that the new or replacement Safelab carbon filter is correctly selected. Consult SAFELAB by phone, fax or e-mail.
 5. Unpack the filter and place it gasket side upwards on a flat work surface. (If replacing a filter, save the wrapping from the new filter and use it to safely pack the old).
 6. If replacing a filter, grip either side of the old main carbon filter and slide it out of the housing, TAKE CARE ! the filter weighs about 22 kg and it may require two people to remove it from the housing.
 7. Slide the new filter into the place, between the guides in the main filter chamber, gasket facing downwards and fully to the back of the unit. When the filter is in place, tighten the two filter clamp knobs evenly and firmly and stick the self-adhesive filter label to the front of the filter and write the date of replacement on the label. Refit the pre-filter.
N.B. Good filter seating is essential for effective filtration.
 8. Replace the front filter cover panel and securely fasten the screws.
 10. Switch 'On' the cabinet.
 11. Perform a filter seating test with Propan-2-ol (Isopropanol) to verify correct seating of the newly fitted main filter.
 12. Do not forget to update the Examination Record or fill in line on relevant page in the Operational Safety Log-Book with a statement of filter fitting and any results of the monitoring tests.

Written records of monitoring are a legal requirement under COSHH.



Appendix II.

PRE-FILTER REPLACEMENT

- There should be no hazardous vapours or gases in the fume enclosure during filter fitting or replacement.
- During the filter replacement procedure, suitable protective clothing, face-mask, gloves and safety glasses must be worn.

Access to the pre-filters is via the front of the work station.

1. Unscrew and remove the screws holding the filter access panel.
2. Withdraw the pre-filter from the top of the main filter. Seal the old pre-filter into a polythene bag for disposal.
3. Should the pre-filter be particularly dusty, it can be gently sprayed with a little water or glue from an aerosol can.
6. Carefully slide the new pre-filter in to place above the main filter with the tab facing outwards.
7. Replace the filter access panel.



Appendix III.

MONITORING THE AIRONE 1000RS

This fume cupboard is a 'portable appliance', powered by mains electricity and it complies with EN-BS-61010. The correct fuse must be fitted to the mains plug and this and other exposed parts of the electrical system should be examined frequently for obvious damage. There should be regular formal inspections including earth bonding and insulation testing.

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

Equipment Needed

Airflow Meter: A rotating vane air flow meter with a vane diameter between 60 to 100mm., with the facility to average readings over a period of 10 seconds. Safelab Systems supply a suitable airflow monitor (Safelab code SRVANE).

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:

The GASTEC gas-detection kit consists 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).

N.B. Additionally packs of disposable tubes will be required.

Examples:

1 pack of 10 Sulphur Dioxide Tubes, 1 pack of 10 Trichloroethene. 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.



Appendix IV

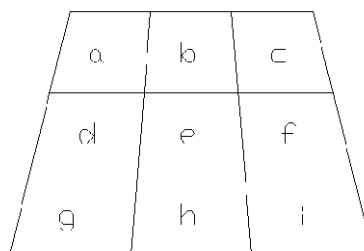
INSTRUCTIONS FOR FACE VELOCITY MEASUREMENTS

(Record results on record form - page 18)

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.

If it is below 0.3 m/s then containment factors are impaired and the cause will have to be found and remedied.

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%, if not, then the Airone 1000RS has been parked in an unsuitable site and will have to be moved.

(See Appendix IX for siting guidance.)

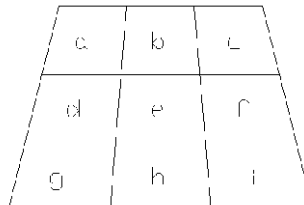


AIRONE 1000RS EXAMINATION RECORD

Site:.....

Location of Airone 1000RS:

Air flow meter:
 used



Date Of Check	Readings in each of the cells as above.									Average (m/s)	Drop > 10% from Before	Do filters PASS Check	Is Fume flow Inward	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 Prefilters.)
 If the minimum face velocity is below 0.3 m / s then airflow in the fume cupboard is inadequate.



Appendix V.

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.

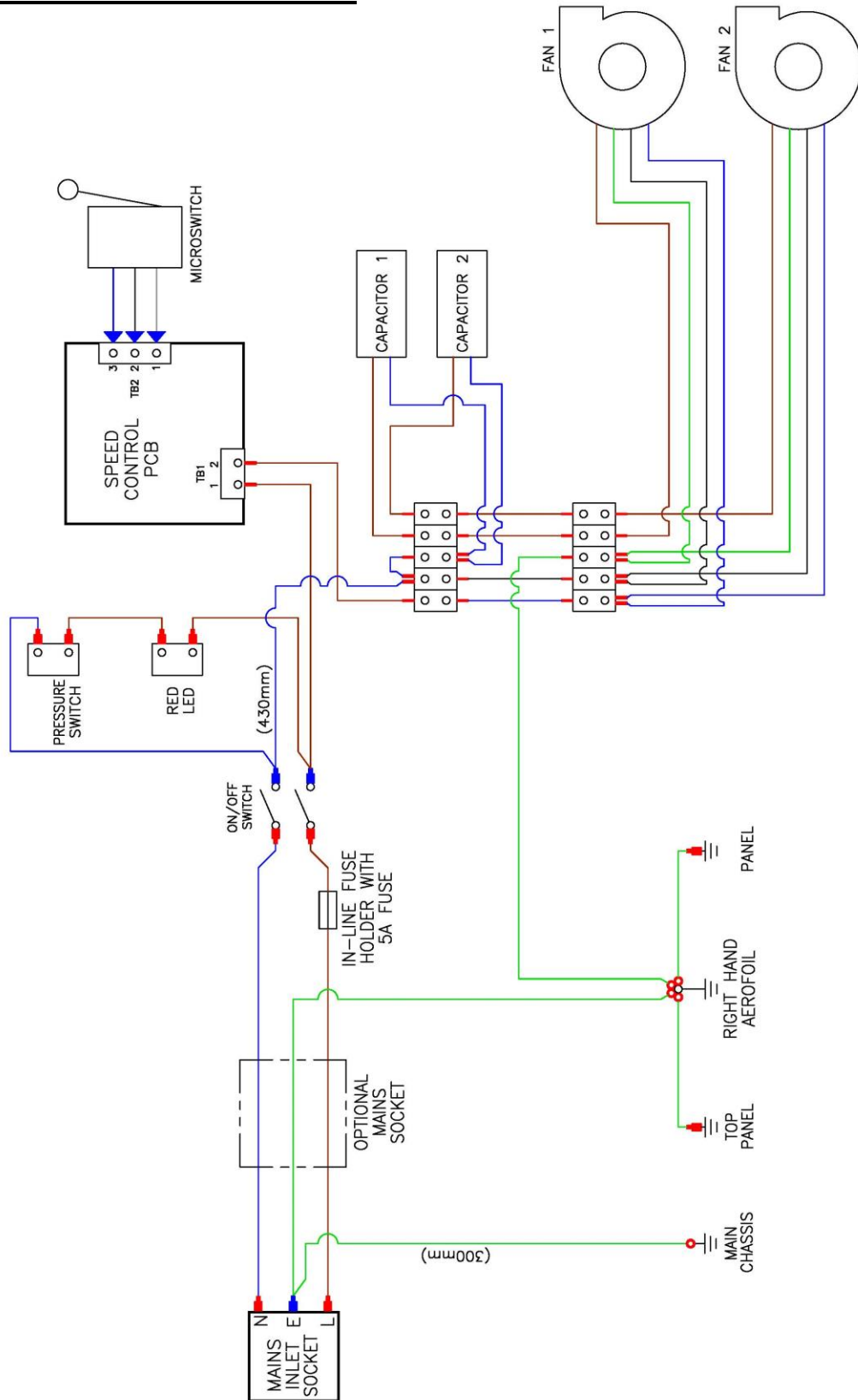
The recommended procedure for testing the efficiency of the system requires a GASTEC Volumetric Detector Pump and Gastec Chemical Detector Tubes. Test the quality of air by sampling at eye and mouth level at regular intervals once a week with Gastec tubes calibrated for the particular compound in concentrations 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 Chemical Listing, Adsorption Index and Gastec Detection Guide published in our Operational Safety Log-Book.



Appendix VI.

MAIN BLOCK WIRING DIAGRAM



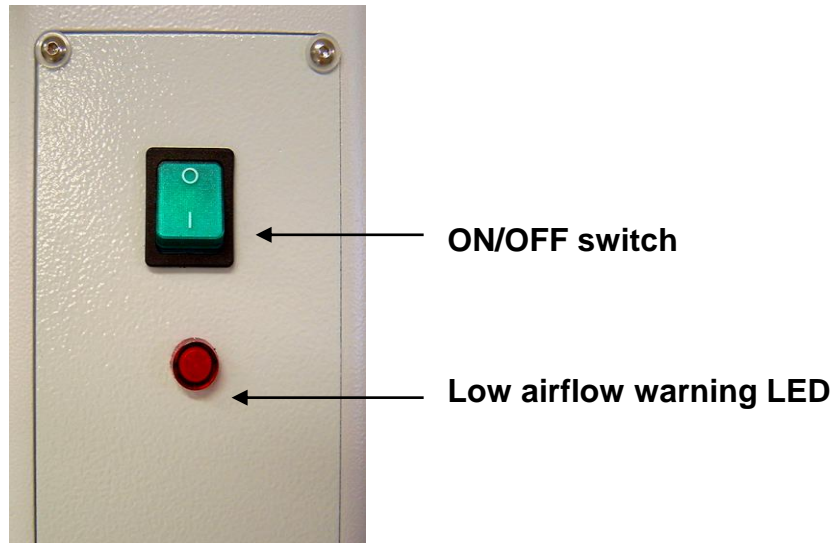


Appendix VII.

CONTROL SYSTEM

The Low Air Flow Alarm indicator does not replace confirmatory checks and routine frontal face velocity testing requirements with a calibrated anemometer or airflow meter.

These should be carried out regularly and the results recorded in the appropriate section this book, or the Operational Safety Log-Book as required under COSHH Regulations.



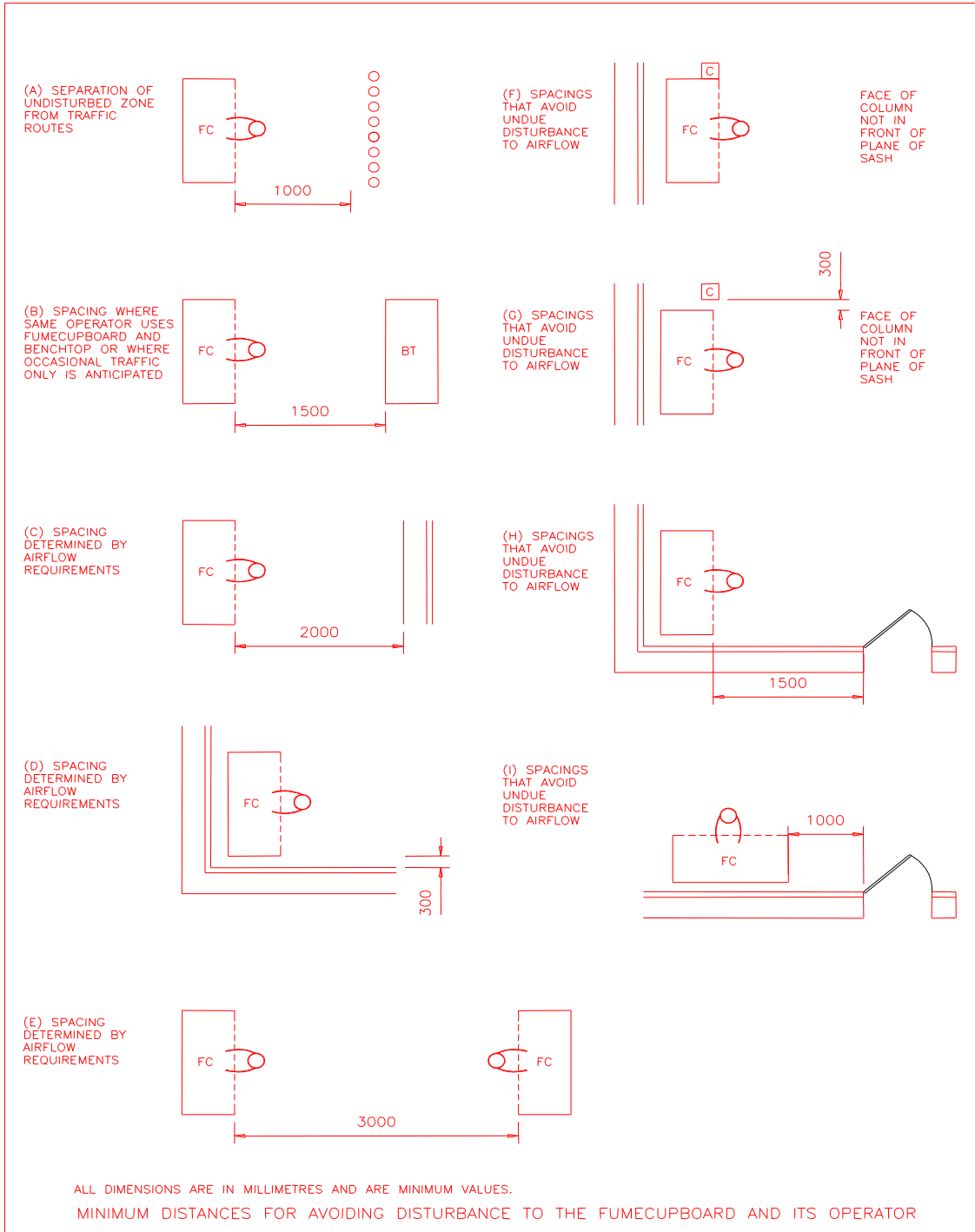
Appendix VIII.

CALIBRATION PROCEDURE

- 1) Remove control panel to access speed control PCB and pressure switch.
- 2) Switch on unit, and position the sash so that the top edge is just below micro switch (top RH side behind upper fascia panel).
- 3) Using a hand held anemometer, adjust RV1 on the speed control PCB until an average airflow of 0.4m/s is achieved at the sash opening.
- 4) Raise the sash to its highest position (365mm), and rotate RV2 on the speed control board fully clockwise (fans at full power).
- 5) Raise sash to just trigger micro switch. Block approx. 90% of the rear air duct at the back of the work tray..
- 6) Adjust the screw on the pressure switch so that the red LED warning light just starts to flicker.
- 7) Switch off the unit and replace the control panel.

Appendix IX.

SITING LOCATIONS FOR AIRONE 1000RS.





Appendix X

SERVICES

Couplings for Services.

When supplied with services, provision has to be made to connect the Airone 1000RS to gas, water or waste plumbing.

Water and Gas.

The quick connect hose couplings used on the Airone 1000RS are self sealing - both at the wall coupling (male) and at the hose coupling (female).

Plumbing fittings that will have to be provided on the building pipework are :-

For the water coupling - one 1/4" BSP male threaded outlet.

For the gas coupling - one 1/8" BSP male threaded outlet.

Each of these should have a suitable stopcock and local regulations should be consulted with respect to requirements for air-breaks and maximum stub pipe lengths.

Waste.

The waste outlet from the Airone 1000RS is a flexible non-kink PVC hose.

The end of this hose is terminated with a modified plug and locking nut arrangement suitable for insertion directly into a 38mm Vulcathene™ mechanical waste fittings.

When the Airone 1000RS is not connected to the waste , the wall fitting should be blanked off using a type W24 blanking plug and W231 38mm nut.

Appendix XI.

SPARE-PARTS

- 101297 - Pack of Pre-filters
- 101094 - Main CMS Filter (For other filters see brochure and price list)
- 050201 - Mains Lead
- 060250 - Fan (x2)
- 170600 - Water Hose (To supply)
- 170603 - Water Hose (Valve to outlet)
- 170601 - Gas Hose Assembly (To supply)
- 170604 - Gas Hose Assembly (Valve to outlet)
- 170500 - Waste Hose
- 050245 - On/Off Switch
- 050643 - Red LED
- 040300 - Dual Speed Control PCB Assembly



Safelab Systems Ltd

**Airone Building
8 Beaufighter Road
Weston-Super-Mare
BS24 8EE**

Tel: + 44 (0) 1934 421 340

Fax: + 44 (0) 1934 641 569

E-mail address: safelab@safelab.co.uk

www.safelab.co.uk



E.C. DECLARATION OF CONFORMITY

Safelab Systems Ltd

hereby certify that the

Airone 1000RS 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: 1st November 2015

The single source for the complete clean air solution

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Registered Office: Airone Building, 8 Beaufighter Road, Weston-Super-Mare BS24 8EE

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