



# INSTRUCTION MANUAL

## AIRONE DS Range of Semi-Mobile Ducted Fume Cupboards



### SAFELAB SYSTEMS

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## **FOREWORD**

This manual has been prepared to give guidance and information to ensure optimum operation of the Airone 1000DS, 1200DS & 1500DS Semi-Mobile Ducted Fume Cupboard.

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

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

### **SAFELAB SYSTEMS LTD.**

**Airone Building  
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### **NOTE:**

**This Airone DS Semi-Mobile Ducted Fume Cupboard requires an 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 below the sliding sash at a velocity high enough to ensure entrainment of any fumes/odours given off by the processes carried out within the cupboard.

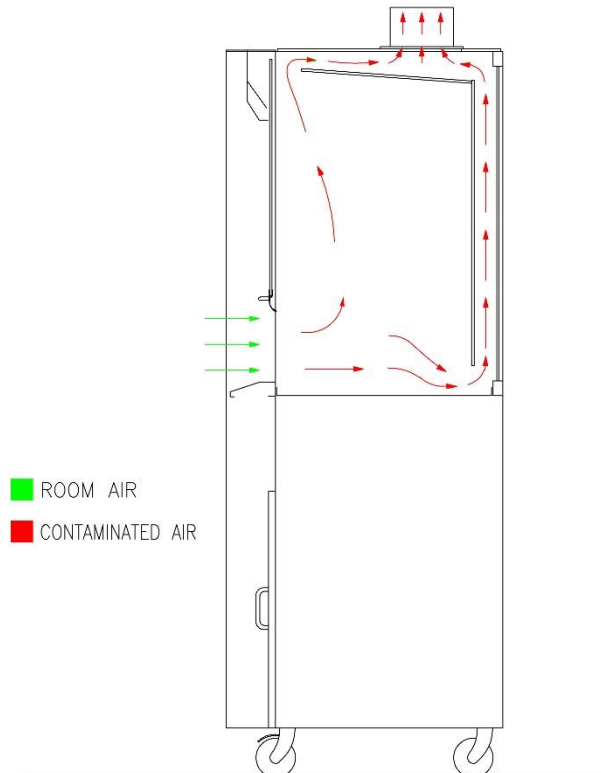
The contaminants are entrained in the airstream, directed past the baffles within the fume cupboard and drawn into the extract ductwork.

Heavier than air contaminants are effectively scavenged from the work surface by the low level slot created by the back baffle.

Lighter than air contaminants are drawn upwards to the extract plenum created by the high level roof baffle.

The extract fan exerts a negative pressure on the entire system preceding it, pulling contaminants through the system and directing them to the exhaust stack.

The exhaust stack is under positive pressure and for standard vertical discharge the wasted discharge cowl ensures a high velocity imparted to the exhaust. This velocity forces contaminants to be dispersed clear of the building and surroundings.





## INSTALLATION AND ASSEMBLY INSTRUCTIONS

### Contents of Packaging (as standard):

- Operational manual
- Service and Maintenance Letter
- Conformity certificate
- Warranty form
- Quality Pass
- Mains power lead
- Safety Log Book

1. Remove outer packaging.
2. Connect the duct spigot on the top of the unit to the extract duct system with the flexible duct (supplied).  
160mm diameter on the 1000DS  
200mm diameter on the 1200DS  
250mm diameter on the 1500DS
3. Connect to the power supply, ensure the extract duct system fan is running, and the cabinet is ready for commissioning.  
See **Calibration** instructions on page 11.

### SERVICES:

Provision has to be made for connecting the fume cupboard services, either via a docking station or plumbed in gas, water and waste. Also a tethering point is required.  
Water coupling – 1/4" BSP male threaded outlet required.  
Gas coupling – 1/8" BSP male threaded outlet required.  
Waste - 38mm Vulcathene mechanical waste fitting (the fitting should be blanked off when not in use, with a type W24 blanking plug and W231 38mm nut.



## SPECIFICATION

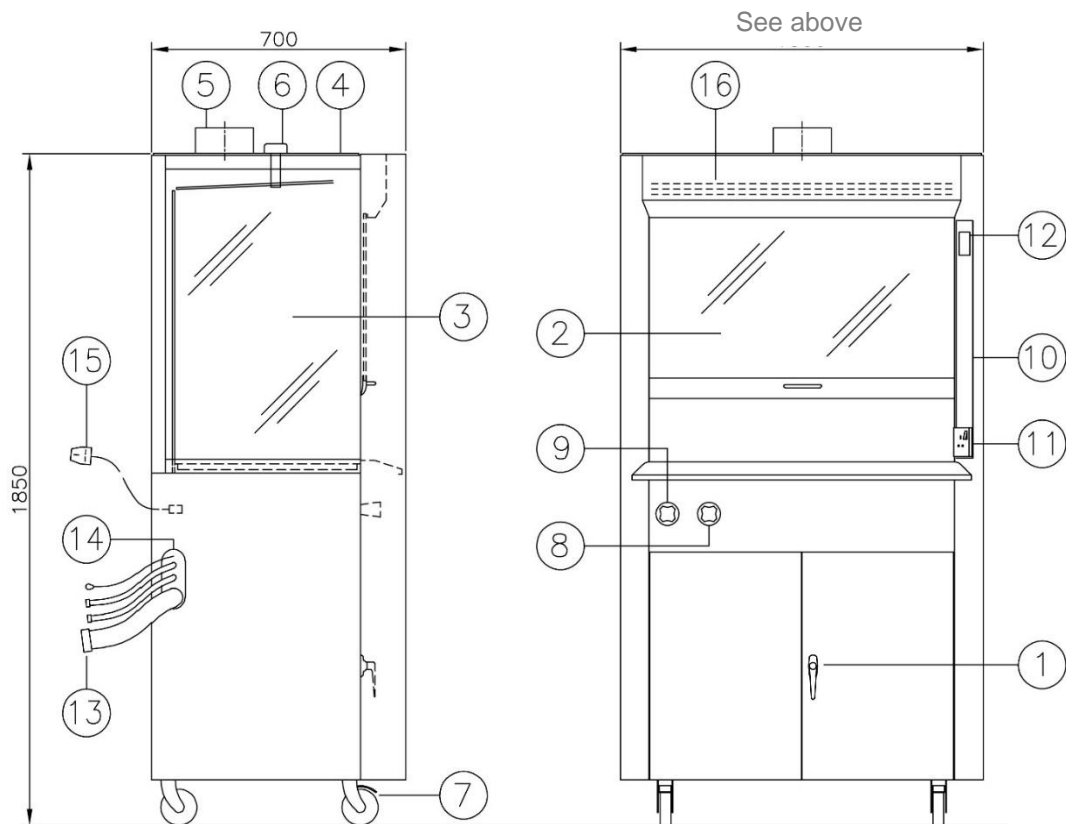
- Definition:** The Airone DS Semi-Mobile Ducted Fume Cupboard has been designed to comply with BS EN 14175 fume cupboards along with Building Bulletin 88 from the Department for Education and Employment and has been tested by CLEAPSS.
- Application:** The unit gives maximum flexibility and can be manoeuvred between different locations (within the range of the flexible extract duct). A counterweighted sliding front sash and clear laminated glass sides and rear provide 360° all round visibility making this ideal for demonstrations. Lowering the sash will reduce the airflow and therefore noise is reduced to a minimum benefiting demonstration.
- 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 laminated safety glass. The top panel and rear baffle are clear acrylic. The suspended/counterweighted front sash is in laminated safety glass with an epoxy powder coated extruded aluminium handle. The work tray is white polypropylene as standard.
- Sash Operation:** The vertical sliding laminated glass sash of the AIRONE DS fume cupboard is suspended and counterweighted providing added advantages over fixed-sash or folding sash fume-hoods. E.g. the sliding laminated glass sash can be closed and this provides protection to operators. The vertical 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 is cut. The fume cupboard uses an air bypass system to give a constant face velocity at different sash heights within the working range.
- Storage Area:** Accessed by double doors located at the bottom of the unit.
- Low Airflow Alarm:** Gives a visual (red light) and audible indication of a low airflow condition. A green light is illuminated in normal operation. Located on the RH side cabinet aerofoil.
- Supply:** 230V 50Hz
- Performance:** The average inflow at the working aperture is 0.4 m/s. The minimum working aperture is 200mm high. The maximum working aperture is 365mm high.
- Services:** Gas, water with remote valves with flexible connection hoses and waste with bottle trap and flexible drainpipe (unless specified otherwise)



## SPECIFICATION (CONTINUED)

Model	1000DS			1200DS			1500DS		
Dimensions (mm)	Width	Depth	Height	Width	Depth	Height	Width	Depth	Height
External	1000	700	1850*	1200	700	1850*	1500	700	1850*
Internal working area									
Max. Sash opening in operation	840	-	365	1040	-	365	1340	-	365
Max. Sash opening for loading	840	-	590	1040	-	590	1340	-	590
Weight (Packed)	120kgs			TBC			TBC		

\*Access clearance height 1,915mm



## SPECIFICATION DIAGRAM

- |   |                                      |
|---|--------------------------------------|
| 1) Lower storage area.                  | 9) Water valve (green).              |
| 2) Vertical laminated glass sash.       | 10) Electrical access panel.         |
| 3) Laminated glass side & rear windows. | 11) 13A electric socket.             |
| 4) Top PVC panel.                       | 12) Low airflow alarm.               |
| 5) Ø160 or Ø250 PVC duct spigot.        | 13) Flexible service pipes & tether. |
| 6) Airflow sensor.                      | 14) Service aperture (both sides)    |
| 7) Castors (locking at front).          | 15) Mains lead with moulded plug.    |
| 8) Gas valve (yellow)                   | 16) Air bypass grille.               |



## OPERATING INSTRUCTIONS

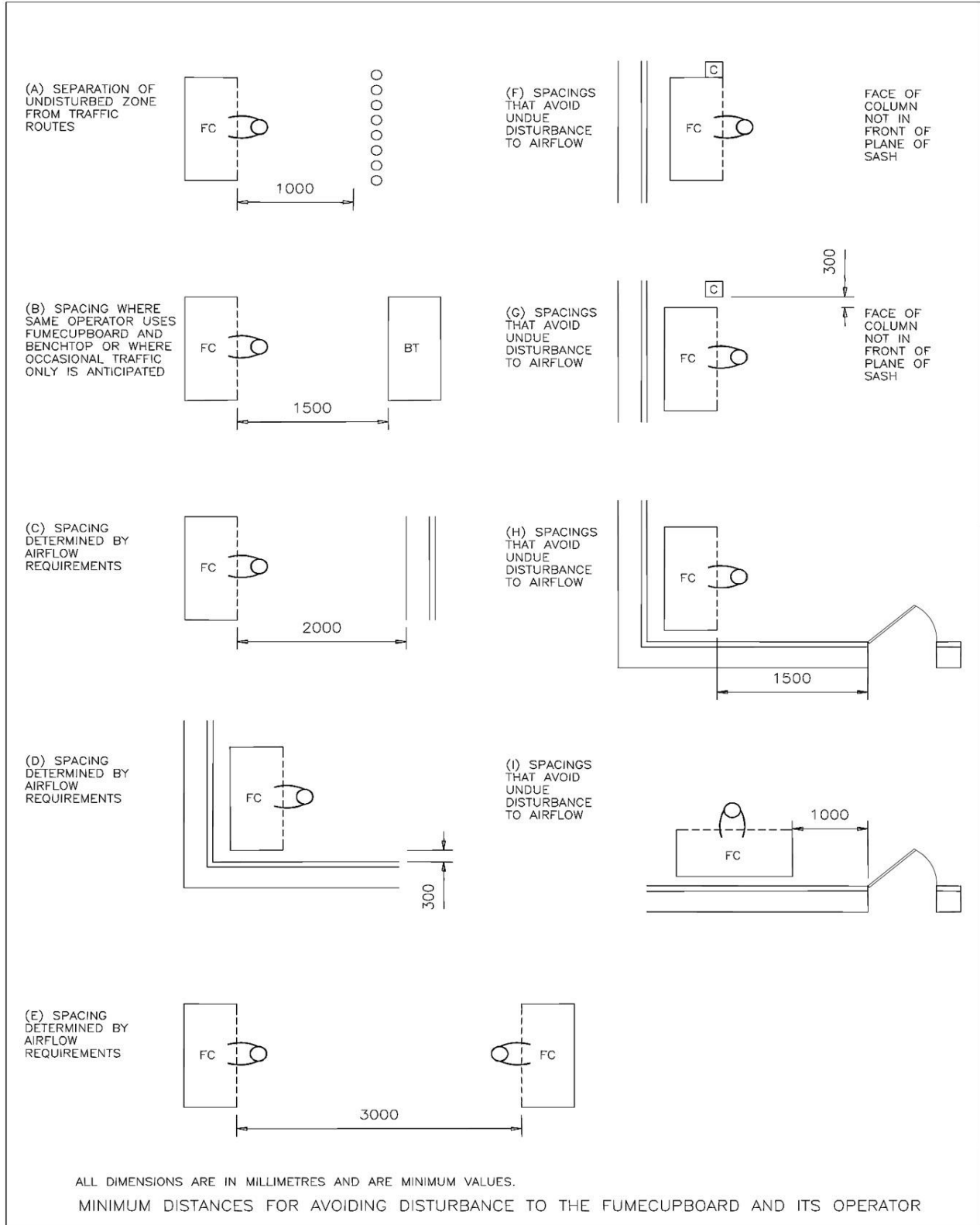
1. Position the Airone DS semi-mobile ducted fume cupboard where it is to be used and lock the front castors (see page 9 for a guide to positioning the fume cupboard).
2. Connect the flexible duct to the extract duct system and clip wire tether to anchor point on the docking before inserting the mains plug into the 13A electric socket.
3. Connect flexible gas, water and waste pipes to the docking station ensuring that the gas and water fittings are securely pushed home and that the waste coupling is screwed on tightly. The services can be connected at either side of the cupboard (see photo at bottom of page).
4. Ensure the extract duct system fan is running and switch on the mains socket that the fume cupboard is plugged in to, and allow it to run for approximately 5 minutes prior to use.
5. Always use appropriate PPE (personal protection equipment) when using the Fume Cupboard.
6. When working in the cupboard try and ensure that the sliding sash is in its lowest position, and always lower the sash when the fume cupboard is not in use.
7. If using Bunsen burners, place them at least 20cm from the front sash, sides or rear baffle.
8. Before switching off the extract fan 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.
9. After use, always run cold water through the waste system, and prior to disconnection, raise the flexible waste pipe to make sure there is no water trapped in the pipe.
10. Disconnect water, gas and waste hoses, unclip the tether and disconnect the flexible ducting (if required) then return the fume cupboard to its storage location. Always replace the cap on the docking station waste fitting after use.





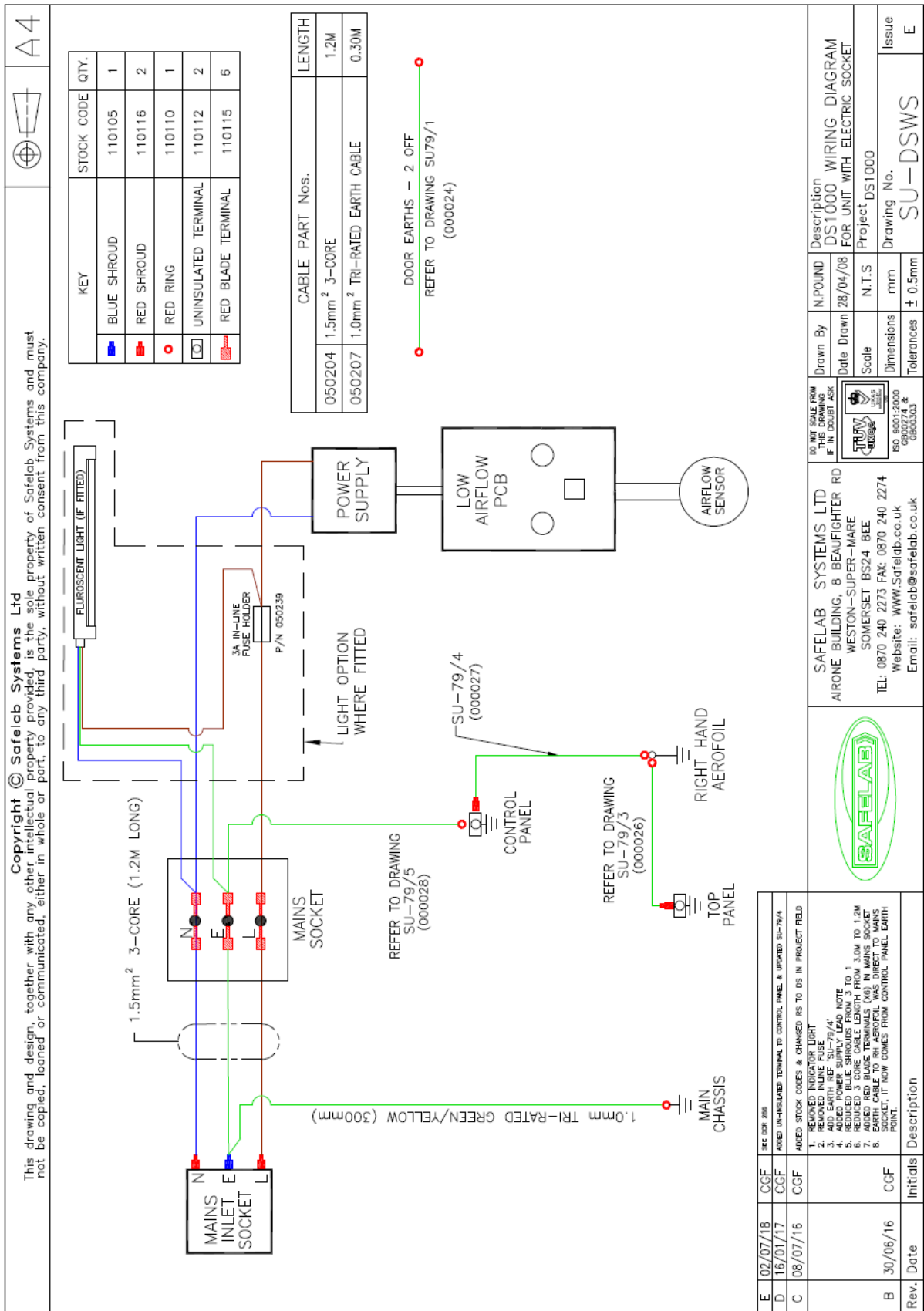
## OPERATING INSTRUCTIONS (CONTINUED)

### GUIDE TO POSITIONING LOCATIONS FOR THE AIRONE RS MOBILE FUME CUPBOARD





# WIRING DIAGRAM



Rev.	Date	Initials	Description
E	02/07/18	CGF	REV FOR 208
D	16/01/17	CGF	ADDED UN-INSULATED TERMINAL TO CONTROL PANEL & UPDATED SU-79/4
C	08/07/16	CGF	ADDED STOCK CODES & CHANGED RS TO DS IN PROJECT FIELD
B	30/06/16	CGF	1. REMOVED INDICATOR LIGHT 2. ADDED UN-INSULATED TERMINAL TO CONTROL PANEL & UPDATED SU-79/4 3. ADDED EARTH WIRE SU-79/41 4. ADDED POWER SUPPLY LEAD NOTE 5. REDUCED BLUE SHROUDS FROM 3 TO 1, 5.0M TO 1.0M 6. ADDED UN-INSULATED TERMINAL TO CONTROL PANEL & UPDATED SU-79/4 7. ADDED RED BLADE TERMINALS (X6) IN MAINS SOCKET 8. EARTH CABLE TO RH AEROFOIL WAS DIRECT TO MAINS SOCKET, IT NOW COMES FROM CONTROL PANEL EARTH POINT.

<p>DO NOT SCALE FROM THIS DRAWING IF IN DOUBT ASK</p> <p>ISO 9001:2000 GB003403</p>	<p>SAFELAB SYSTEMS LTD AIRONE BUILDING, 8 BEAUFIGHTER RD WESTON-SUPER-MARE SOMERSET BS24 8EE TEL: 0870 240 2273 FAX: 0870 240 2274 Website: WWW.Safelab.co.uk Email: safelab@safelab.co.uk</p>	<p>Description DS1000 WIRING DIAGRAM FOR UNIT WITH ELECTRIC SOCKET</p> <p>Project DS1000</p> <p>Drawing No. SU-DSWS</p> <p>Issue E</p>
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## CALIBRATION

(SHOULD ONLY BE UNDERTAKEN BY A SUITABLY QUALIFIED PERSON)



1. Switch off cupboard at mains socket.
2. Press and hold the Mute Button on the Low Airflow Alarm control panel whilst getting an assistant to switch the unit on at the mains socket.
3. When an audible beep is heard, release the Mute Button.
4. The green and red LEDs will alternate off and on, the unit is now in calibration mode.
5. Utilising the inverter or damper decrease the face velocity to the desired alarm point depending on application (see the chart below). This should be measured with a calibrated 100mm diameter vane anemometer.

Standard Non-School Application		School Application	
Minimum Face Velocity:	0.50 m/s	Minimum Face Velocity:	0.45 m/s
Maximum Face Velocity:	0.55 m/s	Maximum Face Velocity:	0.48 m/s
Alarm Point Face Velocity:	0.38 m/s	Alarm Point Face Velocity:	0.35 m/s

6. Press the Mute Button once and release.
7. The LEDs will stop alternating off and on. The alarm point is now stored.
8. Restore the airflow velocity to what it was prior to stage 5 checking that it is suitable for the application.
9. The mute switch will now operate as an audio mute for the alarm.
10. The alarm point can be changed at any time by following steps 1 to 6.
11. To check calibration, turn off the fan or lower the airflow as in 5. The alarm should sound. Switch the fan back on or restore the airflow, and the alarm should reset.



## **MAINTAINANCE AND PERFORMANCE MONITORING:**

This fume cupboard is a 'portable appliance', powered by mains electricity and it complies with EN-BS-61010. The correct fuse (10A) must be fitted to the mains plug or switch fuse spur, 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.

Your Airone DS Semi-Mobile Ducted Fume Cupboard should have an annual service by a suitably qualified person, to maintain its good 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 the face velocities be monitored (at least once every 14 months) and a written record kept of the results. Tables printed on the back pages of the Operational Safety Log-Book are suitable for keeping these records.

Refer to page 13 for face velocity check procedures.

Safelab Systems offer Service Contracts for regular filter-monitoring and servicing of all AIRONE Fume Cupboards. Please phone our Service Department for details. Tel. No. 01934 421340

Email - [service@safelab.co.uk](mailto:service@safelab.co.uk)  
Phone - 01934 421340  
Fax - 01934 641569



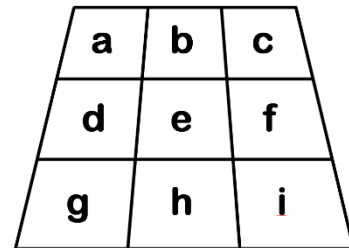
## MAINTAINANCE AND PERFORMANCE MONITORING (CONTINUED):

### INSTRUCTIONS FOR FACE VELOCITY MEASUREMENTS (Record results on record form - page 14 )

#### 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 20%.





## **CLEANING**

The materials used to construct the Airone DS Semi-Mobile Ducted 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.

## **SPARE-PARTS**

Water hose (to supply):	Part No. 170600
Water hose (valve to outlet):	Part No. 170603
Gas hose (to supply):	Part No. 170601
Gas hose (valve to outlet):	Part No. 180604
Flexible waste pipe:	Part No. 170500
Sash cord kit	Part No. 000013
13A electric socket	Part No. 050310



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**E.C. DECLARATION OF CONFORMITY**

**Safelab Systems Ltd**

hereby certify that the

**Airone DS Range  
Ducted 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: 1<sup>st</sup> November 2015

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The single source for the complete clean air solution

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Registered No: 5336826 England and Wales  
Registered Office: Airone Building, 8 Beaufighter Road, Weston-Super-Mare BS24 8EE