



Operating & Maintenance Manual

Recirculating Fume Cupboard

FC65A / FC85A / FC105A

www.labhub.co.uk

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Warning

This system must be used in compliance with these instructions and any repairs or maintenance carried out by qualified personnel.

**For parts or service information
please contact LabHub on +44 (0) 845 094 0951**

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SECTION 1

DESCRIPTION

The LabHub range of recirculating fume cabinets have been designed to provide operator and environmental protection.

The cabinets operate with an inflow air velocity of greater than 0.5 metres per second through the working aperture to provide operator protection.

The standard FC65A, FC85A and FC105A units have a two-stage filter system. The contaminated air is passed through an electro-statically charged pre-filter to remove coarse particulate, then through a deep bed activated carbon main filter to remove chemical contaminants. The clean air is re-circulated back into the room.

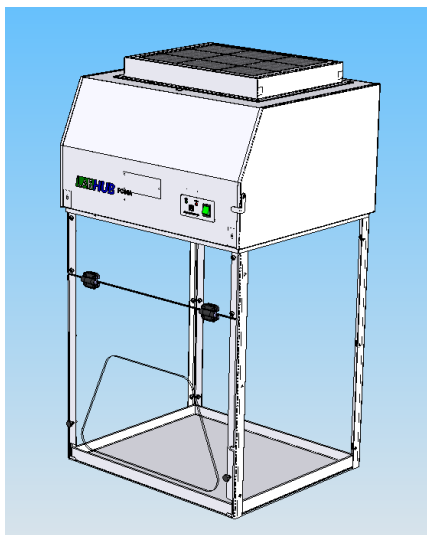
When installed correctly the cabinets comply fully with international standards including BS7989: 2001 for filtration fume cupboards.

The cabinets must be positioned and used on a bench.
An optional polypropylene spillage tray can be supplied if required.

As standard the cabinets are fitted with an Activated Carbon filter. Labhub offer a choice of filter types which are suitable for use with a wide range of pollutants including hydrocarbons. Activated carbon can be impregnated with chemicals to neutralise many types of contaminants. See 'Filter Selection' in Section 3 for further information.

If the cabinet is to be used to contain particulates, a 99.997% eff. @ 0.3 micron particle size HEPA main filter must be fitted instead of the activated carbon filter. Please contact LabHub for further information.

The option is also available to fit secondary carbon or HEPA exhaust filters if required. This permits a combination of fume and particulate filtration.



LabHub FC65A fitted with optional carbon safety filter and optional spillage tray

S P E C I F I C A T I O N S			
Model	LabHub FC65A	LabHub FC85A	LabHub FC105A
Dimensions			
External	650mm wide 570mm deep 1100mm high	850mm wide 570mm deep 1100mm high	1050mm wide 570mm deep 1100mm high
Internal	610mm wide 530mm deep 750mm high	810mm wide 530mm deep 750mm high	1010mm wide 530mm deep 750mm high
Aperture	425mm wide (mid) 300mm high	525mm wide (mid) 300mm high	625mm wide (mid) 300mm high
Weights			
Packed	60 kg	65 kg	70kg
Airflow			
Face velocity	> 0.55m / second	> 0.55m / second	> 0.55m / second
Air volume	250m ³ / hour	310m ³ / hour	370m ³ / hour
Electrical			
Power	230V, 50 Hz, < 80 watts	230V, 50 Hz, < 80 watts	230V, 50 Hz, < 80 watts
Lighting	> 800 Lux (600mm LED X1)	> 800 Lux (600mm LED X1)	> 800 Lux (900mm LED X 1)
Fan	Centrifugal digital low noise, low energy	Centrifugal digital low noise, low energy	Centrifugal digital low noise, low energy
Controls	Mains on/off switch	Mains on/off switch	Mains on/off switch
Monitoring systems			
Airflow	Visual and audible low airflow alarm	Visual and audible low airflow alarm	Visual and audible low airflow alarm
Noise			
Front @ 1m	< 60 d (B) A	< 60 d (B) A	< 60 d (B) A
Filters (for full details of available filters, refer to Section 3)			
Pre-filter	Electrostatic 95% @ 0.5µ particles	Electrostatic 95% @ 0.5µ particles	Electrostatic 95% @ 0.5µ particles
Main filter options	12kg carbon or HEPA 99.997% @ 0.3µ particles	14kg carbon or HEPA 99.997% @ 0.3µ particles	16kg carbon or HEPA 99.997% @ 0.3µ particles
Exhaust options	None, 4kg safety carbon or safety HEPA	None, 5kg safety carbon or safety HEPA	None, 6kg safety carbon or safety HEPA
Construction			
Filtration head	Epoxy painted corrosion resistant zinc coated steel	Epoxy painted corrosion resistant zinc coated steel	Epoxy painted corrosion resistant zinc coated steel
Enclosure	Clear acrylic all round Epoxy painted zinc coated steel frame	Clear acrylic all round Epoxy painted zinc coated steel frame	Clear acrylic all round Epoxy painted zinc coated steel frame
Optional Spillage tray	Chemically inert fully welded white polypropylene	Chemically inert fully welded white polypropylene	Chemically inert fully welded white polypropylene

SECTION 2

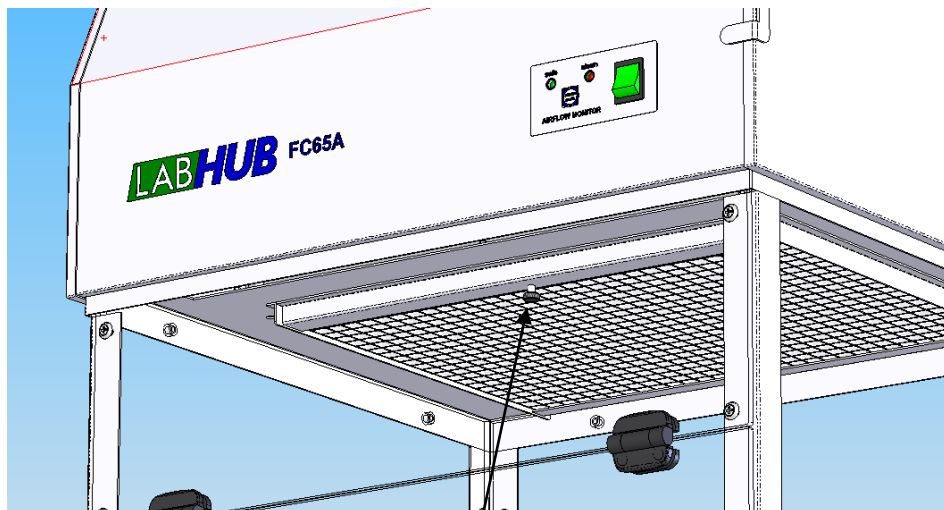
INSTALLATION

- The cabinet should be sited in a draught free position
- The cabinet is re-circulating and requires no connection to ductwork
- The cabinet is supplied with the main filter fitted.
- Check the pre-filter is in place by unscrewing the thumbscrew on the underside of the filtration head at the front, which will allow the pre-filter locating grille to be moved back and down giving access to the pre-filter.
- Connect the cabinet to a 13A outlet socket.

TESTING / COMMISSIONING

An airflow test certificate will be supplied for conformity to CE marking, and electrical test.

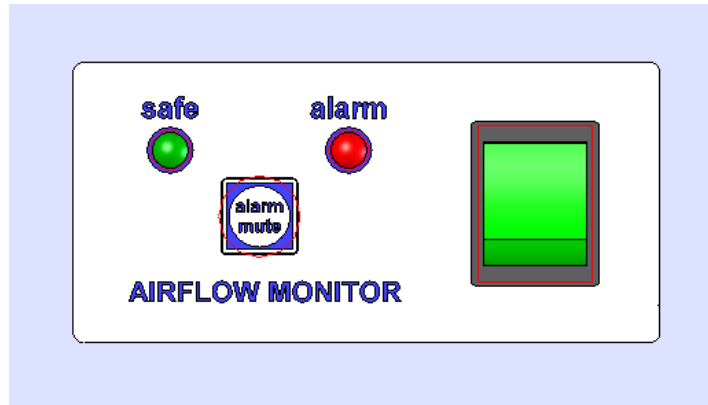
THE CABINET MUST BE TESTED EVERY 14 MONTHS TO COMPLY WITH C.O.S.H.H REGULATIONS.



Pre-filter grille locating thumb-screw

OPERATION

The cabinet is started using the illuminated rocker switch on the control panel.



On/off switch and Airflow Monitor Control panel

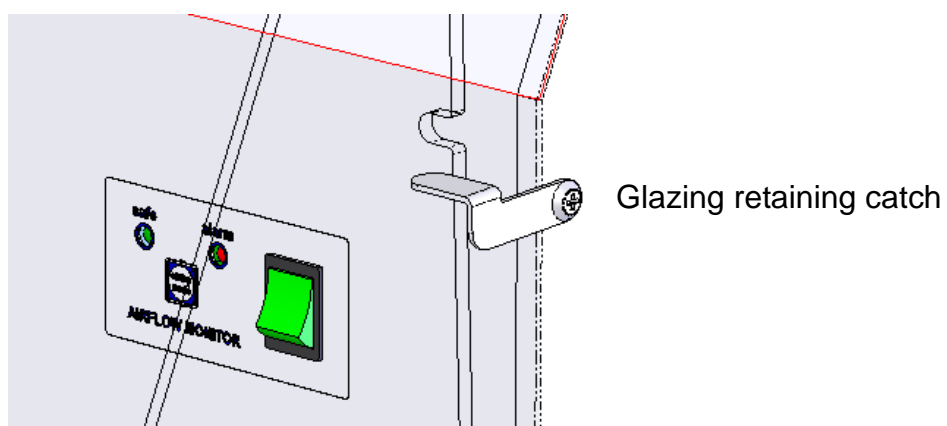
The inflow air velocity at the working aperture is continuously monitored by the airflow monitoring system.

When the airflow velocity into the aperture is normal, the green 'safe' indicator will be illuminated.

If the airflow drops below a safe level, the 'safe' indicator will go off, there will be an audible alarm and the red 'alarm' indicator will flash on the control panel. If this occurs, the most likely cause will be that the pre-filter has become blocked with particulate and will need to be replaced (refer to Section 3 for procedure)

The cabinet should be used with the hinged front glazing in the down position, and secured with the two black thumb-screws

The glazing may be raised to load equipment into the fume enclosure. A glazing retaining catch is provided at the right end to hold glazing temporarily for this purpose.



SECTION 3

FILTERS

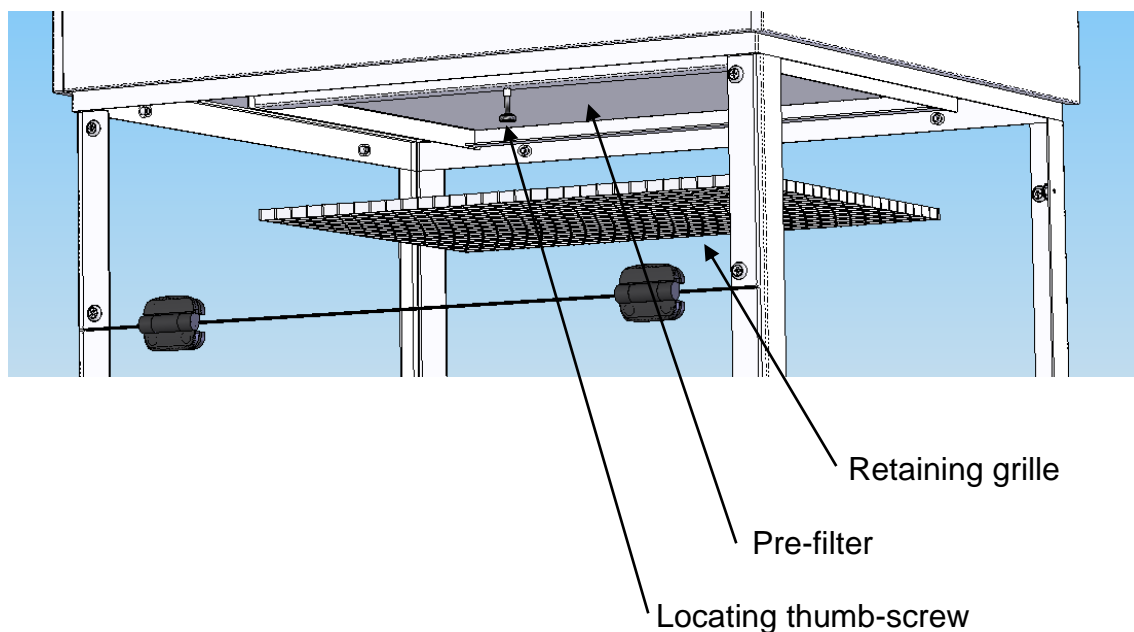
Filters concentrate dust, pollutants etc
Care must be taken when changing filters.

IMPORTANT: Personal Protective Equipment must be worn when changing filters including gloves and particulate facemask.

CHANGING THE PRE-FILTER

This may be carried out with the cabinet running to provide additional protection to the operator.

- The pre-filter is accessed by unscrewing the black thumb-screw on the underside of the filtration head just behind the light panel. This will allow the white plastic pre-filter locating grille to be moved towards the back, down and removed, giving access to the pre-filter.



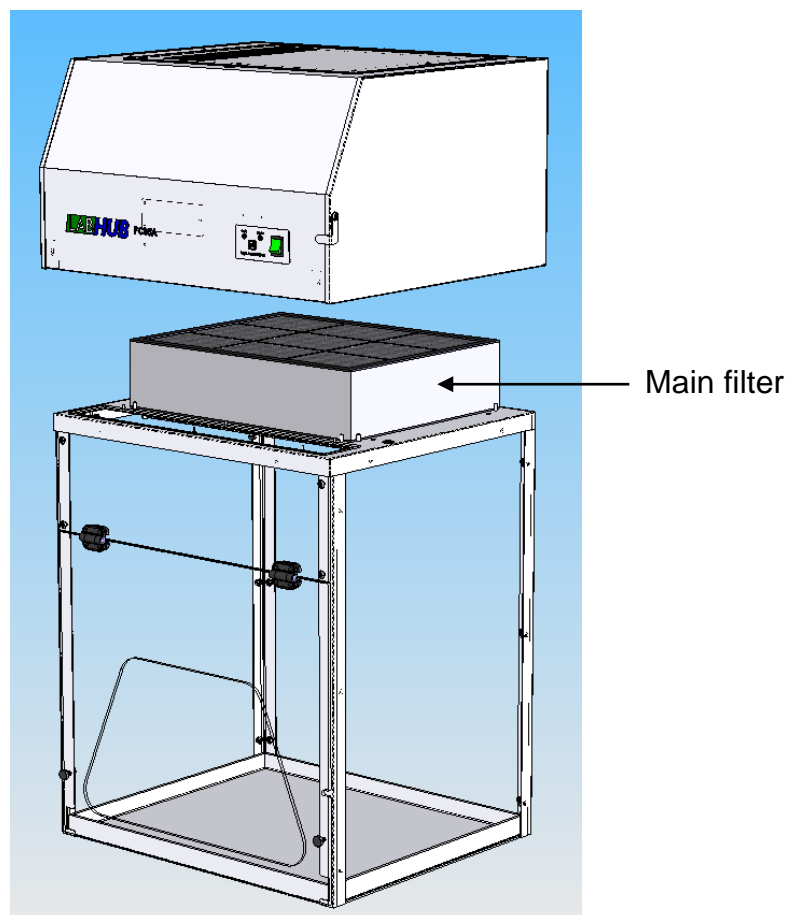
CHANGING THE MAIN CARBON FILTER

**Check filters to be fitted are the correct grade for intended use.
Contact LabHub for information if required**

- The cabinet should be turned off whilst changing the main carbon filter and the mains cable un-plugged.
- Remove the pre-filter (see pre-filter changing procedure).
- From inside the fume enclosure, remove the four M6 screws positioned two each side of the filter opening. This will release the filtration head from the fume enclosure.
- Lift the filtration head off the fume enclosure to expose the carbon filter.
- Remove the filter and seal in a marked bag for disposal.
- Fit the new filter, checking the seals are in place and undamaged.
- Re-assemble the cabinet.

CHANGING THE MAIN HEPA FILTER

- Carry out safety hazard assessment for safe changing.
- Follow the procedure for changing carbon filters taking extra care with operator protection. (a dropped filter can release particulate).
- Dispose of filter as hazardous waste.



CHANGING THE OPTIONAL EXHAUST FILTER (CARBON or HEPA)

- The optional exhaust filter is positioned on the top of the cabinet, and may be released by removing the eight screws around the clamp frame (do not remove the four screws in the main cabinet (visible through holes in the frame))
- Similar safety precautions should be observed as main filter changing
- Remove the filter and seal in a marked bag for disposal.

FILTER SELECTION

It is most important that filters fitted are correct for the particular application

A guide to filter selection is as follows :-

PARTICULATES – HEPA FILTERS

LabHub HEPA filters are 99.997% efficient for particulates greater than 0.3 microns. Typical applications – Asbestos / powders

GASEOUS FUMES – ACTIVATED CARBON FILTERS

Standard activated carbon is suitable for a wide range of pollutants including hydrocarbons. Activated carbon can be impregnated with various chemicals to produce a range of filter types capable of neutralizing other contaminants. LabHub Carbon Filters are available in the types listed below, which offer improved efficiency and extended filter life.

Filter Type	Application	Typical Chemicals
AC (Activated Carbon)	Hydrocarbons	Alcohols, Hydrocarbons, General use
ACID	Acid gasses	SO ₂ , HCL, H ₂ SO ₄
AMM	Ammonia	NH ₃ , NH ₄
CYN	Cyanide compounds	
ETHER	Ethers	
FORM	Aldehydes	Formalin Glutaraldehyde
SCHOOLS	Educational, Animal odours	SO ₂ , H ₂ SO ₄ , BR ₂ , H ₂ S, NH ₃ , CCL ₄ , hydrocarbons
SUL	Sulphur compounds	H ₂ S, mercaptans

- All types of activated carbon have general use capability for hydrocarbons.
- Other types are available for applications not listed above.

Filters can be manufactured in layers suitable for more than one application.

FILTER PART NUMBERS			
Model	LabHub FC65A	LabHub FC85A	LabHub FC105A
Pre-filter (pack of 10)			
-	K-PF0109	K-PF0110	K-PF0111
Main carbon filters			
AC	K-CF0143	K-CF0080	K-CF0270
ACID	K-CF0144	K-CF0081	K-CF0271
AMM	K-CF0147	K-CF0084	K-CF0274
CYN	K-CF0148	K-CF0085	K-CF0275
ETHER	K-CF0149	K-CF0086	K-CF0276
FORM	K-CF0150	K-CF0087	K-CF0277
MCH (special blend)	K-CF0151	K-CF0088	K-CF0278
SCHOOLS	K-CF0152	K-CF0090	K-CF0279
SUL	K-CF0153	K-CF0091	K-CF0280
Main HEPA filter			
-	K-HF0048	K-HF0018	K-HF0173
Exhaust safety carbon filters			
AC	K-CF0281	K-CF0292	K-CF0303
ACID	K-CF0282	K-CF0293	K-CF0304
AMM	K-CF0285	K-CF0296	K-CF0307
CYN	K-CF0286	K-CF0297	K-CF0308
ETHER	K-CF0287	K-CF0298	K-CF0309
FORM	K-CF0288	K-CF0299	K-CF0310
MCH (special blend)	K-CF0289	K-CF0300	K-CF0311
SCHOOLS	K-CF0290	K-CF0301	K-CF0312
SUL	K-CF0291	K-CF0302	K-CF0313
Exhaust safety HEPA filter			
-	K-HF0167	K-HF0168	K-HF0169

All filter types available from LabHub

To determine correct filter type please contact LabHub with details of your application, volumes, concentrations and temperatures etc.

MAXIMISING FILTER LIFE

- Handle minimum volumes of chemicals
- Minimise surface area of exposed chemicals to reduce evaporation rates
- Cover containers as far as practical
- Do not boil off large volumes of chemicals
- Minimise use of heat
- Acids should be at room temperature and covered as far as practical

CARBON FILTER EFFICIENCIES

Typical filter efficiencies are >99% and this efficiency is maintained for most of the filter life.

Filters should be changed when efficiency has reduced to below 90%.

ABSORPTION CAPACITIES

LabHub cabinets are fitted with very large capacity filters, with a typical value of >30% for hydrocarbons.

The cabinet main filter has the following nominal absorption capacities:

The given weight is approximate to standard activated carbon. Impregnated carbons have higher densities and will increase filter weight.

Model	LabHub FC65A	LabHub FC85A	LabHub FC105A
Carbon Weight	1 X 12kg	1 X 14kg	1 X 16kg
Hydrocarbon capacity at 30% absorption	3.6kg	4.2kg	4.8kg

Contact LabHub for absorption capacities for different applications.

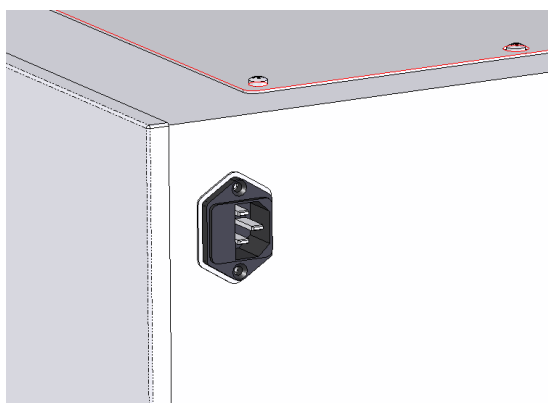
SECTION 4

MAINTENANCE

The cabinet should be isolated from the electricity supply before carrying out any maintenance procedures.

FUSES

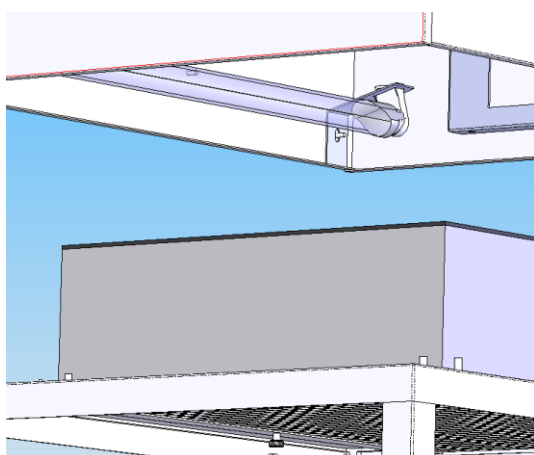
The two Type T main fuses are located in the mains inlet socket on the back of the cabinet. To access these, remove the mains lead and pull the tap using a small screwdriver.



Always replace fuses with the correct type and rating.

LIGHTING

The cabinet is fitted with a long life low energy 12V LED tube. If access is required, the filtration head will need to be removed from the fume enclosure. The tube is removed by rotating it in the lamp-holders, in the same way as a fluorescent tube. Replacement LED tubes are available from LabHub. Refer to main filter changing instructions for head removal procedure.

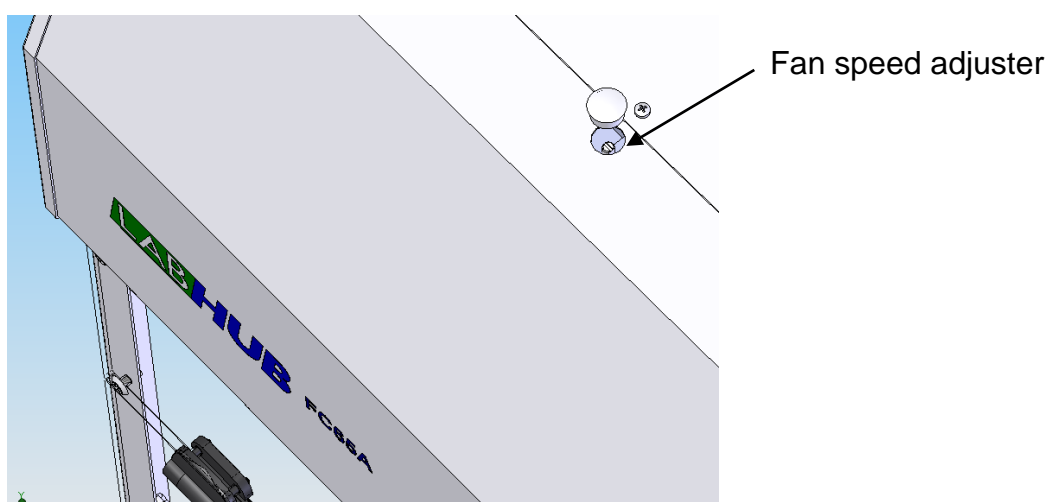



CALIBRATION OF THE LOW AIRFLOW ALARM


This requires the use of a calibrated Ø100mm rotating vane anemometer and should be carried out by a trained service engineer.

Calibration should be carried out in a draught-free environment.

- 1) Place the rotating vane of the anemometer, supported by a laboratory stand, in the centre of the aperture.
- 2) Remove the plastic hole-plug from the top of the filtration head to gain access to the fan speed control potentiometer inside. Using a cross-head screwdriver, rotate the potentiometer to reduce the fan speed to achieve an aperture face velocity of 0.35m/sec.



- 3) Using the main on / off switch, turn the cabinet off, then hold the  button and turn the cabinet back on.
- 4) The 'alarm' and 'safe' lights will flash alternatively to show the system is in calibration mode.

- 5) Allow a minute for airflow to settle, then press and hold the  button.
- 6) The alarm system will beep three times to show that calibration is in progress and the alarm set point has been recorded.
- 7) Reset the fan speed to achieve a face velocity of 0.55m/sec.
- 8) Check operation of the low airflow alarm by slightly raising the lower glazing panel. The alarm should sound when the panel is raised and stop when the panel is lowered to the normal working position.

SECTION 5

SERVICING

An annual service is recommended and testing is mandatory under C.O.S.H.H regulations and will include the following points:

- Check / replace pre-filter
- Check and record face velocity readings
- Check airflow monitor and re-calibrate if necessary
- Check condition of glazing, hinges etc.
- Inspect electrical components, lighting, cables etc.
- Issue test report and airflow certificate.

**For parts or service information please contact
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