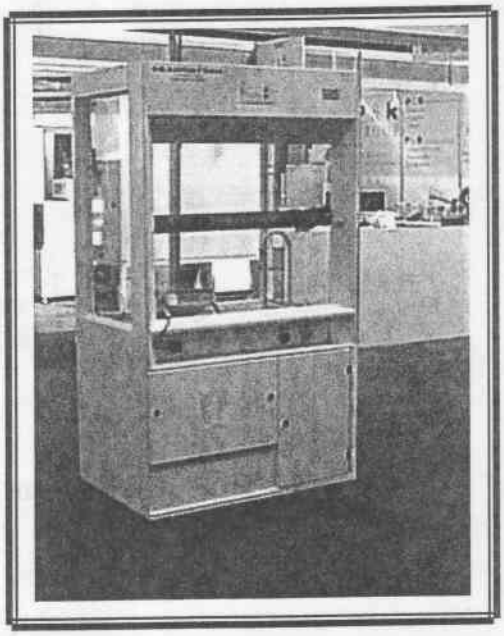
Clean Air Limited

S.S.R.2000

SLIDING SASH RECIRC FILTRATION FUME CUPBOARD



OPERATING & MAINTENANCE MANUAL

FUME CUPBOARD MANUFACTURERS AND DUCTING SPECIALISTS

Dunscar Industrial Estate
Blackburn Road
Dunscar
BOLTON
LANCASHIRE
BL7 9PQ
UK

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CLEAN AIR LTD	CONTENTS	YEAR 2001/2

1.1 OVERVIEW

The SSR 2000 – is part of Clean Air's commitment to protecting people and the environment.

Clean Air is a quality company which occupies a significant part of the prestige section of the fume cupboard market. The SSR 2000 underlines the investment Clean Air continually makes in research and development.

This fume cupboard incorporates all the features of a sliding sash unit with the benefits of carbon filtration. Using carbon filters ensures the fumes are rendered harmless creating a safe working environment.

The SSR 2000 fume cupboard gives operator safety with excellent visibility. This operates at a very low noise level (only 50dBa) and because they recirculate they do not pump out expensive conditioned and/or heated air.

1.1 COMMISIONING

Commissioning and testing of unit after installation is available.

1.2 STAFF TRAINING

Demonstration of equipment and training of your staff by Clean Air staff is available.

1.3 STATEMENT OF PURCHASE

Clean Air Ltd will be responsible for the safety, reliability and performance of the installation if the following criteria are met:-

1. Extensions, modifications or repair are done by CAL
2. Only replacement parts approved by CAL are used
3. The electrical installations in the room comply with national regulations
4. The equipment is used with these operating instructions

1.4 SERVICE SUPPORT

Clean Air provides a first class support service.

For details of on-site servicing, contact:-

Tel: 01204 591115
Fax: 01204 591116
E-mail: sales@cleanairltd.co.uk
Website: www.cleanairltd.co.uk

2.0 OVERVIEW

The structure of the SSR 2000 is epoxy-coated aluminium or mild steel. The working opening has an aerodynamic airflow fascia at the sides and top with an aerodynamic cill at the bottom complete with a scavenge gap. The chamber is lined with toughened glass and it is fitted with a full width back baffle assembly to ensure both high and low level exhaust, the back baffle is removable for ease of cleaning.

The standard worktop is glass reinforced plastic (G.R.P.) alternatives are solid grade laminate or cast epoxy resin.

The fume cupboard has a vertical sliding sash which can be fully opened to allow equipment and materials to be placed inside the work area and for cleaning.

Below the worktop is the carbon filter, pre-filter and fan and flexible hoses for gas, water and waste services.

The control panel is fitted on the top front panel.

A filter saturation panel is available which indicates when the filter needs to be changed. An alarm will sound for low airflow or fan failure.

The fume cupboard is designed to keep noxious and dangerous fumes within the cabinet and isolated from the operator. The contaminated air is passed through a carbon filter to remove hazardous fumes, vapour or particles.

The carbon filter is designed to absorb efficiently at a face velocity of plus 0.3 m/sec up to 0.5/sec at a sash opening of 400mm..

The sense of smell is very sensitive for certain chemicals, such as ammonia or hydrogen sulphide, but a slight smell does not mean that the exhaust levels are above the occupational exposure limits.

The Fume Cupboard has been designed to conform to BS 7258 parts 1 and 4,
Design Note 29,
Building Bulletin 88,
Schools Science Service,
S.S.E.R.C. – Scotland
C.L.E.A.P.S.S. – England and Wales.

The carbon filter can be chosen from a range of 14 different filters, including one specifically designed to absorb the fumes generated during GCSE and 'A' Level experiments. A clamping arrangement ensures an even seal at the filter face.

The worktop is dished to contain any spillage, and can be fitted with gas and water services. The controls and electric sockets are mounted in a recess outside the chamber and these and the integral lights are isolated from any contamination.

2.1 FUME CUPBOARD COMPONENTS

External chamber	Epoxy coated aluminium or mild steel
Internal chamber	Toughened glass – all around
Baffle	Clear acrylic
Working level	1. G.R.P. - standard 2. Solid grade laminate – alternative 3. Cast epoxy resin - alternative
Sash	6mm thick toughened safety glass
Lighting	2 No. 20w fluorescent tubes
Services	1 x SSS0 1 x Gas
Control panel	
Fan variable volume	0-600m3/h
Voltage	230v/1ph/50hz
Pre-Filter	450 x 600 x 100
Carbon type GRD, 14kg	Technostat electrostatically charged
Specific Chemical Schools curriculum (list attached)	Efficiency – 99.997% down to 0.3 micron particle size

2.7 OTHER INFORMATION

Airflow

Airflow	300m3/HR
Face Velocity	0.30m/sec to 0.50/sec

Electrical

Supply	230v 50Hz single phase
Lights	2 x 20w (fuse 5 amp)
Switches	Fan on/off lights on/off
Monitoring	Low airflow
Noise	50dBa
Electric	1 x 13 amp socket

Construction

Cabinet	Epoxy coated Aluminium/zintec steel
Colour	White RAL 9010 finish
Glazing	Toughened glass 6mm
Fan	Centrifugal (fuse spur 13 amp)
Spillage Tray	G.R.P.

Meets the Requirements of:

- BS7258 Parts 1 and 4
- Building Bulletin 88 on Fume Cupboards in Schools
- Design Note 29
- Schools Science Service
- S.S.E.R.C. – Scotland
- C.L.E.A.P.P.S. – England and Wales
- Full fail-safe sliding sash for operator protection
- No harmful fumes to atmosphere - integral carbon filter
- Mobile from laboratory to laboratory
- Energy conservation
- All round visibility
- Optional gas, water and waste services
- Optional acid breakthrough detector
- Optional control panel and analogue meter

3.1 The carbon filters are in the base of the chamber. The panel on the front of the chamber is removable. The filters are flat bed type, polypropylene cased and filled with a specific grade of carbon. Replacement filters are processed from Clean Air Ltd, Unit 9, Dunscar Industrial Esate, Blackburn Road, Dunscar, Bolton BL7 9PQ.

A pair of plastic gloves and a plastic bag are supplied with each filter, for removing the filters. The used filter should be put in the plastic bag and sealed before disposal.

To ensure maximum performance and operator safety the following points should be followed:-

1. Sash stops should be kept in the locked position so that the sash opening is kept at the working height of 400mm. It should not be operated with the sash in the fully opened position.

2. The extraction fan should be turned off when not in use.

3. The front lip aerofoil cill should always be in position.

4. The back baffle should have no obstruction behind the baffle, or blocking the lower slot opening.

5. Spring loaded adjustment screws in the sash guide track can be turned in or out to vary the grip of the guide on the sash. This allows the sash to slide freely, and also takes up wear.

6. Any chemicals stored in the fume cupboard should be in covered containers or capped bottles.

7. Equipment used should be placed inside the working area before start-up, to prevent fume escape caused by movements in the chamber.

8. Do not overload with equipment or materials as this will cause airflow disturbances.

5.1 MONTHLY

1. Clean down inner cabinet and base.
2. Clean down outer surfaces with mild disinfectant cleaner.
3. Clean sealant around drip cups/sinks/wastes.
4. Clean glass using glass cleaner.
5. Oil internal fittings.
6. Check service valves and outlets for leaks or damage.

5.2 SIX MONTHLY

1. Remove and clean the back baffle. Clean the rear of the chamber.
2. Wash all the interior surface of the chamber with diluted detergent.

When the carbon filter needs changing please contact:- CLEAN AIR LIMITED
Dunscar Industrial Estate (Unit 9), Blackburn Road, Bolton BL7 9PQ.
Tel: (01204) 591115
Fax: (01204) 591115

5.3 Please note

The "Control of Substances Hazardous to Health" (COSHH) regulations, effective from the 1st October 1998, says it is mandatory to maintain records of checks, tests and repairs carried out on safety equipment, and these records must be kept for 5 years. A summary of COSHH regulations is provided in Appendix 1.

Regular maintenance will protect the operator and prolong the life of the fume cupboard.

Before attempting any inspection or replacement of electrical components in the head assembly, always isolate the fume cupboard from the mains electricity supply.

Clean Air Ltd products are warranted under normal usage for one-year part and labour costs, from the date of purchase.

The warranty operates providing the following conditions are met:

6.1 The warranty card has been returned to Clean Air Ltd.

6.2 The product has been installed and used as stated within the instruction manual.

6.3 The warranty does not include servicing or maintenance. An approved service company must carry out the maintenance. Failure to maintain or service this product will invalidate the warranty. Maintenance must be carried out in accordance with the service manual and within the stated periods. Failure to use approved service companies or Clean Air Ltd. personnel also affect the CE marketing status of the product, removing Clean Air Ltd's duty of care and responsibility.

6.4 Supplies used such as cleaning solutions, disinfectants, are not covered by this warranty.

6.5 Carbon filters, pre-filters, HEPA filters, light bulbs and tubes are not covered by this warranty.

6.6 The warranty is void is faults are caused by accidental damage, mishandling by unauthorised personnel or failure to follow the correct maintenance and safety precautions in the instruction manual.

6.7 The warranty is the sole warranty provided in connection with the product and no other warranty, expressed or implied, is provided. Clean Air Ltd. assumes no responsibility for any other claims, consequential loss (including lost time or profit) or other damage, whether based in contract, tort or otherwise, not specifically stated in this warranty.

6.8 The seller shall not be liable to the buyer by reason of any representation (unless fraudulent), or any implied warranty, condition or other term, or any duty at common law, or under the express terms of the contract for any loss of profit or any indirect, special or consequential loss, damage, costs, expenses or other claims (whether caused by the negligence of the seller, it's servants or agents or otherwise) which arise out of or in connection with the supply of the goods or their use or resale by the buyer, and the entire liability of seller under or in connection with the contract shall not exceed the price of the goods.

6.9 **NOTE:**
When instructing a warranty visit, please provide the following:

1. Product model number and name
2. Serial number
3. Type of fault and any other comments

Clean Air Ltd or other nominated personnel will carry out the warranty visits.

6.10 WARRANTY

Please Read This Manual Before Using This Equipment

Thank you for purchasing our Clean Air Ltd Product.

To register the product for our warranty, we ask you to return the Warranty Card. This card is to found in the wallet at the back of the manual or alternatively you can copy this page and fax the details to us on 01204 591116. Full conditions of our warranty and how to arrange a warranty visit are enclosed.

The units are calibrated for airflow before leaving the factory. However, trained personnel can recalibrate on site.

If you require any help, advice or have any problems please contact us on our Technical Help-Line 01204 591115. If a warranty visit is required please complete the warranty request fax and sent to us on 01204 591116.

WARRANTY VISIT REQUEST FAX

Customer Name
Address and contact Telephone number
Product model number and name
Serial number
Nature of fault
Please fax this form to the supplier of the product or in the **UK ONLY** Fax No: 01204 591116

WARRANTY REGISTRATION FAX

Company, University School, Hospital	
Contact	
Telephone Number and Fax Number	
Address	
Equipment	
Model	
Serial Number	
Location	
Please tick if you require details of our service recommendations and Prices	

Fax a copy of this sheet to Clean Air Ltd
Fax Number 01204 591116. Attention of Sales Department

7.1 The fume cupboard must only be operated with the correct filter installed.

7.2 To start the units, switch the power switch on. The fan will automatically run to give 0.5m/s.

7.3 Check the airflow and filter saturation on a regular basis.

7.4 The face velocity at the working aperture (and therefore containment of fumes) is at a maximum with the sash at 400mm from the worktop.

7.5 Bunsen burner or other heat source should not be placed too close (<1500mm) to the side or back panels.

7.6 All units are provided with a G.R.P. spillage tray that has good chemical resistance.

7.6 Filter blocks do not absorb carbon monoxide or hydrogen. However, small quantities (such as used in schools) will not present a hazard because of the large dilution factor from the airflow through the fume cupboard, and retardation or the chemical in the filter matrix.

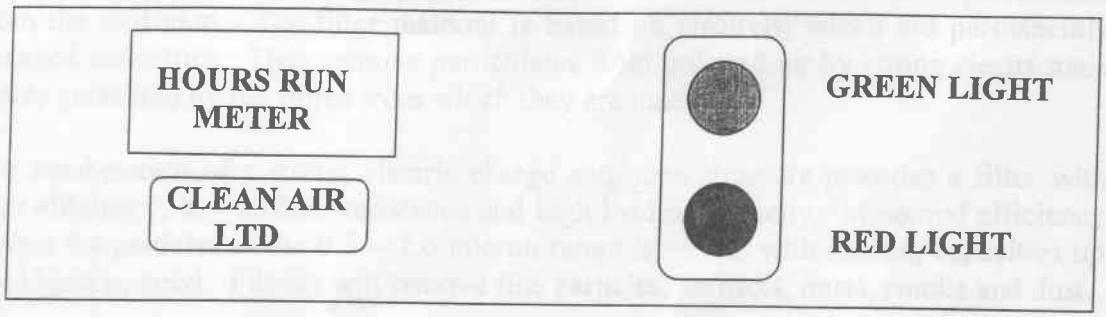
7.7 The fume cupboards are designed to handle fumes and vapours given off during normal laboratory procedures.

7.9 Always keep a spare set of filters

7.10 High concentrations of fumes entering the filter block may temporarily reduce the filtration efficiency. For this reason any major spillage within the fume cupboard should be cleared up quickly.

7.11 Following a major spillage, the main filters must be changed. After stabilisation, the original filters can normally be re-used, provided saturation has not been reached.

7.12 Control Panel/Display Board



7.13 Mains ON/OFF

Turn the switch on and the green indicator lamp will show that power is connected to the unit. The fan will run at full speed, ready for normal operation of the fume cupboard and the lights will come on. The cupboard can be used immediately.

7.14 Hour Meter

This indicates the total number of hours running time for the fume cupboard.

7.15 Low Airflow Alarm

The alarm is the red light at the front of the unit. In normal operation, the red light will not light up.

If the red indicator lamp starts to flash on intermittently or stays on, the pre-filter is starting to block with dust and an airflow reading should be taken at the aperture to determine if the pre-filter needs changing. We advise changing the pre-filter if an airflow of 0.3m/sec cannot be maintained.

The correct operation of the alarm may be tested as described in Appendix 2.
Instructions on replacing filters are given in Section 3 of this manual.

7.16 Filter Status (if fitted)

The green LED constantly displayed while the filter is actively absorbing the chemical fumes. The light goes out every six seconds as the mechanism samples the airstream. When a chemical breakthrough is detected the red light comes on intermittently and the audible alarm bleeps 4 times every minute showing the filter requires changing.

See Appendix 4 for calibration and testing.

8.1 Pre-Filters

Filtrete pre-filter. This is a high performance pre-filter, designed to remove particulates from the airstream. The filter material is based on electrets, which are permanently changed dielectrics. They remove particulates from polluted air by strong electrostatic forces generated by the fibres from which they are made.

The combination of a strong electric charge and open structure provides a filter with high efficiency, low airflow resistance and high loading capacity. Measured efficiency figures for particles in the 0.5 – 2.0-micron range is +99%, with loading capacities up to 113g/m squared. Filtrete will remove fine particles, aerosols, mists, smoke and dust.

8.2 Main Filters

CA.SCHOOL Filter – The CA.SCHOOL filter has been specially formulated to absorb the normal range of chemical fumes generated in Schools during GCSE and 'A' Level classes.

8.3 Monitoring

If the pre-filters are blocked, the airflow will be reduced at the fume cupboard aperture. If the main filters are saturated, they will cease to remove the fumes effectively.

The Fume Cupboards are fitted with:

1. A low airflow alarm
2. A filter saturation detector
3. An on/off power switch

If an odour is noticed, it is sensible to check the fume cupboard. However, it must be remembered that the sense of smell is very sensitive for some chemicals (e.g. ammonia or hydrogen sulphide) and a slight smell does not mean that the exhaust levels of chemical have approached the maximum acceptable concentration.

8.4 Manual Monitoring

Manual monitoring should be carried out yearly to check the fume cupboard systems.

Airflow Measurements

An anemometer is used to check the airflow (face velocity) at the working aperture, with the lower panel down. A minimum of six readings should be taken across the working aperture.

8.5 Manual Filter Saturation Detection

1. Select a suitable test chemical and matching Gastec sampling tube. Examples include alcohols, toluene, trichloroethylene, or any suitable chemical in routine use in the fume cupboard, provided it is well absorbed and is not toxic.

2. Place 6ml of chemical in a beaker on a hotplate. Adjust the hotplate to boil off the chemical in about two minutes. This gives a concentration of about 100-200 PPM to challenge the filter.

3. For testing ACI Filters (acid absorbing) or multi-filters with acid absorbing layers, use sulphur dioxide (SO_2) at 2 bubbles per second through water.

4. Using the Gastec tube, sample the outlet airstream from the unit, following instructions given with the Gastec tube (one pump stroke for trichloroethyl eight pump strokes for sulphur dioxide for example).

5. The reading should be below the occupational exposure limit (see s Enter the result in the record book kept for this purpose.

6. If a significant level of chemical is noted in the exhaust air, should be changed.

8.6 ORGANIC/INORGANIC SUBSTANCES

The activated charcoal filter will absorb substances used in normal school experiments.

ORGANIC

aluminium chloride & bromide
ammonia
ammonium chloride fumes
bromine
chlorine
chromium (vl) dichloride dioxide (chromyl chloride)
hydrogen acid vapour
hydrogen sulphide
iodine
iodine chlorides
lead fumes
lead bromide fumes
mercury and its compound
nitric acid vapour
nitrogen oxides (acidic)
phospine
phosphorous chlorides & bromides
phosphorous oxides
silicon tetrachloride
sulphur chloride
sulphur dioxide
thionyl chloride
tin (iv) chloride
titanium tetrachloride
zinc chloride fumes

INORGANIC

acid amides
acid anhydrides
acid chlorides
acid nitrogen oxide
alcohols
aldehydes
aliphatic amines & their salts
aliphatic hydrocarbons
aromatic amines & aromatic hydrocarbons
aromatic nitro compounds
carboxylic acids
esters
ethers
ketones
nitriles
organo halogens
phenols
pyridine

SMOKE ETC

fine particles
aerosols
mists
smoke
dust

CAUTION

Note that:

1. hydrogen
2. carbon monoxide
3. nitrous oxide
4. methane

are specifically **excluded** from the lists

SERVICES

Ducted industrial fume cupboards

Re-circulating filtered industrial fume cupboards

Ducted schools laboratory fume cupboards

Re-circulating filtered schools fume cupboards

Safety cabinets

Downflow benches

Laminar flow cupboards

Full laboratory design

Special fume cupboard design manufacture

Fume cupboard extraction design

Ki-Discus containment testing

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