Monmouth Scientific

Operating & Maintenance Manual

Circulaire®

Powder Containment Booth

PCB1800

THE MARKET LEADER IN *CLEAN AIR SOLUTIONS*

www.monmouthscientific.co.uk

Contents

This manual is intended to provide information about the product. Monmouth Scientific Limited assumes no liability whatsoever for the accuracy of any information contained herein, as products can be subject to improvement and/or changes at any time.

WARNING

This cabinet must be used in compliance with these instructions and any repairs or maintenance carried out by qualified personnel. See explanation of hazard symbols at the end of this document.

For parts or service information please contact Monmouth Scientific:

info@monmouthscientific.co.uk

+44 (0) 1278 458090

https://monmouthscientific.co.uk

SECTION 1

General notes

Symbols used in this manual.

	DANGER
	Indicate[s] a hazardous situation which, if not avoided, *will* result in death or serious injury.
	WARNING
	Indicate[s] a hazardous situation which, if not avoided, *could* result in death or serious injury.
	CAUTION
	Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.
	ELECTRICAL HAZARD
	Indicates an electrical hazard which, if not avoided, *could* result in death or serious injury.
	NOTE
	Best practice, housekeeping, security permissions and general notices which do not necessarily indicate a hazard.

General Safety instructions for service work and repairs

Servicing or repairs to this product must be carried out, only by personnel with the appropriate qualifications and training. They must have been specifically trained and authorised to work on Monmouth Scientific cabinets.
Allowing unauthorised personnel to carry out service or repairs will invalidate the product warranty.
Prior to carrying out any service on the product or changing any components this service document must be read carefully and fully understood.

Note:

- Local regulations must be adhered to when any service work is carried out.
- Any electrical work is to be carried out by trained electricians.
- Any work on gas lines / supplies is to be carried out by appropriately certified personnel.
- For any service issues not covered adequately in this manual, please immediately contact Monmouth Scientific.
- The contents of this manual may change or be updated without notice.

Be aware that prior to service or maintenance on any potentially contaminated zone, the cabinet is decontaminated, and any hazardous residue is removed.
It is recommended that:

- Prior to any maintenance work, the users should be asked about the potential hazardous materials used and make sure that the cabinet is cleaned and decontaminated.
- Proof or certification of decontamination from the operator/customer is presented to the service engineer.

	**ELECTRICAL HAZARD**

Motor driven components (e.g., fans / window motors) may cause injury if switched on accidentally.
Prior to any repair work it is recommended to:

- Isolate the cabinet from the electrical supply
- Ensure the cabinet cannot be reconnected accidentally

- Ensure any components such as capacitors etc. are fully de-energized.

	**CAUTION**
	Before any service/ Maintenance work is carried out;

- Ensure the work area is adequately ventilated.
- Read any data sheets/ COSHH information about the product used within the cabinet and take appropriate action to illuminate any hazards.
- Report any faulty with parts to cabinet user / facility manager.

	**Recycling**
	All components (except for the filters) can be recycled.

The cabinet must be fully decontaminated prior to disposal and a certificate of decontamination must be produced by the operator/customer before removal for disposal or recycling.

	**NOTE – Before start-up following repairs or service**
	If any safety devices (shielding / earth connections etc.) were removed or disabled prior to or during repairs, then the cabinet must not be started up until these devices are re-installed and checked for correct operation.

Standards and safety regulations.

The cabinet (and/or contained parts within), has been tested and complies to, the following standards and directives:

- EN ISO 12100-2:2010
- BS EN ISO 14121:2007
- BS EN 60204-1:2006+A1:2009
- DS/EN 61010-1: 2010
- EN 61326-1:2013
- Machinery Directive 2006/42/EC, as amended.
- HSG258

Warranty

Monmouth Scientific Ltd guarantee the operational safety and functions of the cabinet provided that:

- The cabinet is not modified or changed without authorization.
- Only original spare parts or accessories as supplied by Monmouth Scientific are used. Use of non-original parts will invalidate the warranty.
- Maintenance and service checks are carried out at specified intervals.
- The standard warranty period is 5 year from date of purchase.

  Full terms and conditions available from:

  www. monmouthscientific.co.uk/5-year-warranty/

Description

The Circulaire® Powder Containment Booth has been designed to provide local extraction & containment of powders handled within the filter capture zone. The cabinet provides an adjustable inflow of air, refer to HSG258 for detailed guidance on application and suitable capture velocity. Below are the measured capture velocities which are achievable on this unit**

Distance from centre of filter face	Max Velocity (m/sec)
10mm	2.1
30mm	1.7
50mm	1.5
70mm	1.3
100mm	1.15
150mm	0.95
200mm	0.8
250mm	0.65
300mm	0.6
400mm	0.4

The unit has a two-stage filter system. The contaminated air is passed through an electro-statically charged pre-filter to remove coarse particulate, then through a HEPA filter for fine particulate. The clean air is re-circulated back to the laboratory.

The cabinet is fitted is an audible low airflow alarm, meaning that if the airflow drops below a safe level, it will alert the user with a sound and flashing light.

Please contact Monmouth Scientific for further information.

Technical Data

MODEL NO.	PCB-1800
AIRFLOW	
TOTAL AIRFLOW	1700M^3/H+/- 5%
NOMINAL AIRFLOW VELOCITY (@ PRE-FILTER APERTURE)	ADJUSTABLE ≥0.9 m/sec
DIMENSIONS	
EXTERNAL (H X W X D)	2300 X 1800 X 7500mm * Min 150mm additional height required above unit
INTERNAL (H X W X D)	2000 X 1700 X 600mm
ELECTRICAL	
POWER (MAX)	960 Watts
VOLTAGE INPUT	115v/230V, 50-60 Hz (Factory configured ONLY)
AUDIO VISUAL	
LIGHT INTENSITY LEVEL (AT 1M FROM GROUND LEVEL)	0->800 LUX (1500mm LED)
SOUND LEVEL (ISO6081)	<60 dB(A)
FILTERS (FOR FULL DETAILS SEE SECTION 3)	
PRE-FILTERS	ELECTROSTATIC – G4 GRADE
MAIN FILTER	HEPA FILTER (H13)
WEIGHT	
WEIGHT (NET)	150kg APPROX
MATERIALS	
CABINET	POLYESTER POWDER-COATED ZINTEC STEEL
FILTRATION HEAD	POLYESTER POWDER-COATED ZINTEC STEEL

Normal Environmental Conditions

INDOOR OR OUTDOOR USE	INDOOR USE
TEMPERATURE	5 °C to 40°C
RELATIVE HUMIDITY	MAX HUMIDITY 80%
OVERVOLTAGE CATEGORY	OVERVOLTAGE CATEGORY II
POLLUTION DEGREE (II)	POLLUTION CATEGORY II
ALTITUDE	UP TO 2000m
MAINS SUPPLY VOLTAGE FLUCTUATION	230V -6% +10%

SECTION 2

Packaged Items

	**1-OFF** *POWDER CONTAINMENT BOOTH FACTORY CONFIGURED TO YOUR SPECIFICATION*
	**1-OFF** *MAINS SUPPLY CABLE*
	**1-OFF** *CIRCULAIRE FUME FILTRATION CABINET USER MANUAL*

Installation and assembly

The cabinet will be delivered part assembled to aid with transportation on siting. Trained engineers will then fully assemble the unit to ensure it is ready to use. Points are provided to anchor the unit to a wall and should be used to avoid any accidents.

The cabinet should be sited in a suitable location, on a stable and flat surface capable of safely supporting the cabinet. It should be installed in accordance with recommendations and guidance given in BS EN12469:2000 & BS 5726-2005

	**WARNING**
	HEAVY OBJECT. Ensure the correct lifting equipment and PPE are used during assembly. Appropriate precautions and risk assessments should be carried out prior to installation in accordance with local regulations or working practices.

Installation (general)

- The cabinet should be sited in a draught free position.
- The cabinet is supplied with the main filter fitted.
- Check the pre-filter is in place by turning the silver knobs, which will allow the pre-filter retaining grille to be lowered.
- Connect the cabinet to a 13A outlet socket.
- Switch the cabinet on.
- The red low airflow warning light will flash along with an audible alarm until the airflow has reached its correct velocity and stabilised.
- When the green 'SAFE AIRFLOW' light is illuminated the cabinet is ready to use.

Connections

The cabinet is shipped with an IEC lead terminated with a standard domestic plug (type dependant on region). The lead plugs into the left-hand side towards the rear. The IEC inlet socket is protected by a fuse. This should only be replaced with a fuse of same type and rating.

	**ELECTRICAL HAZARD**
	This appliance must be earthed.

	**WARNING**
	Before plugging the unit in, ensure the supply corresponds to those stated in the specifications and on the serial label plate.

Testing / Commissioning

Certification is provided with each unit. Individual certificates are provided for HEPA filters. The airflow should be checked using a vane anemometer and the results recorded.

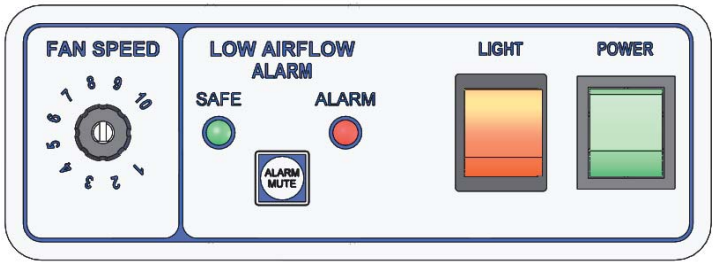
The main HEPA filter will have been factory tested before delivery.

A DOP filter challenge test should be carried out to verify filter integrity when the cabinet is installed.

	**NOTE**
	The cabinet should be tested at least every 12 months.

SECTION 3

General Operation



The booth is started by first operating the green rocker switch on the control panel. The Red airflow monitor warning light will flash until the correct airflow is achieved.

The internal light may be turned on or off as required.

The airflow is constantly monitored. Should the airflow drop below a pre-set minimum level during operation, the red warning light will flash, and an audible alarm will sound. The most likely cause is a blocked Pre-Filter which should be changed at the next opportunity (see section 4 for details).

The fan speed control knob is to be used for initial set-up and low airflow monitor calibration only (see section 4 for details).

Pre-Filters are available from Monmouth Scientific (see section 4 for details).

Filter replacement

Genuine Monmouth Filters are fitted with a label to indicate the part numbers needed when ordering replacement filters, Details are also given below.

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

	**CAUTION**
	Personal Protective Equipment must be worn when changing filters, including gloves & particulate facemask

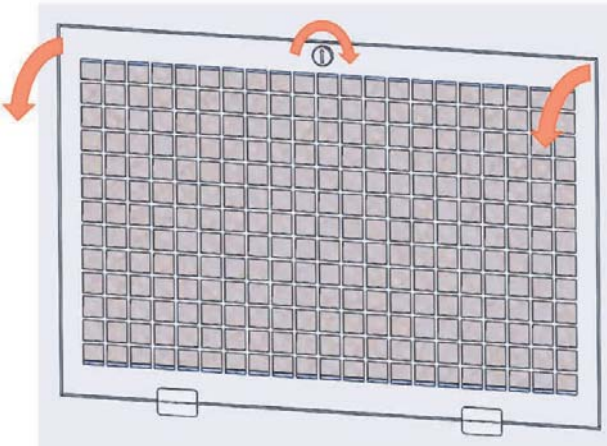
Filter part numbers

PCB1800	Pre filter	Main HEPA filter
	PF-1065 (x3)	K-HF0460 (x3)

Pre-filter changing

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

These are located behind grilles on the front panel of the enclosure and can be changed by turning the thumbscrews and lowering the securing frame downwards.

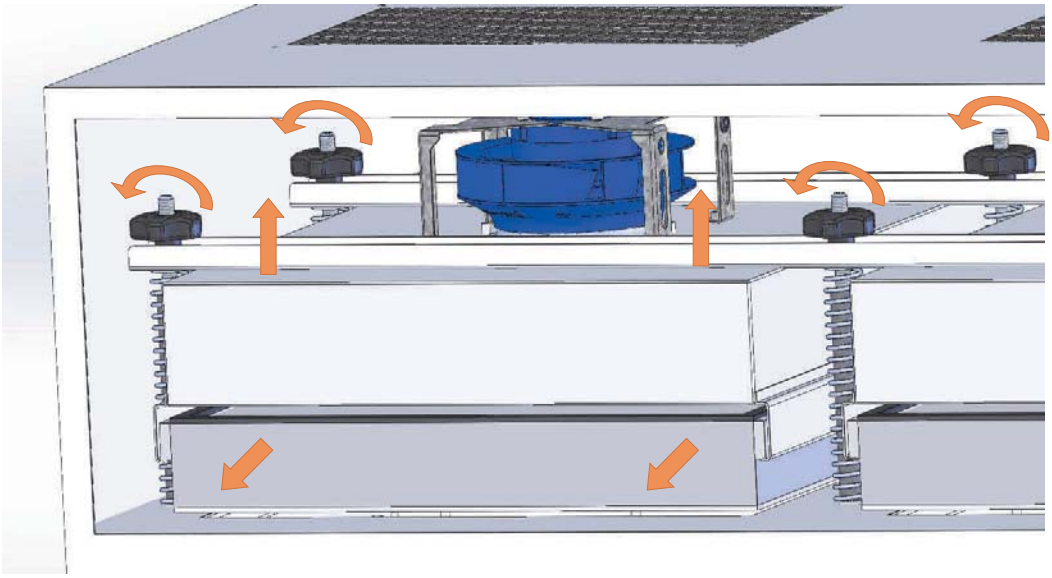


- Remove prefilter and bag for disposal.
- Place new filter into grille & refit prefilter frame.

Main filter changing

Replacement HEPA Filter Part Number: K-HF0460 (3 off/Cabinet) Using the supplied key, unlock and drop-down the access door.

Working inside the enclosure, slacken the 4 off clamp knobs clamping each fan box module to the filter. Work each side in turn to raise the fan box evenly, until a sufficient gap is present to enable the removal of the HEPA filter which should freely slide out of place.



	CAUTION
	Used filter should be bagged & disposed of appropriately.

To refit, check there is sufficient gap and engage the new filter into the side guide rails, taking particular care to ensure the seal does not drag on the bottom face. Slide the filter all the way back until it rests against the backstop.

Re-tighten the clamp knobs, ensuring an even filter seal when fully tightened.

The replacement filter should be DOP tested prior to use and the airflow and alarm re-calibrated if necessary.

	**NOTE**
	It is recommended to always change the pre-filters when installing new HEPA filters.

	**NOTE**
	Filter should be fully tested (DOP) before cabinet is used.

Low airflow alarm calibration

For factory calibration purposes, the unit is set to alarm at 0.5m/sec with a boundary point 10mm from the filter face. It is recommended the user sets their own parameter to suit their specific application and limits.

- Turn off the cabinet and turn on again whilst holding down the 'ALARM MUTE' button. Release the button and the airflow indicator lights will flash Red/Green alternately.
- Using a 100mm rotating vane anemometer positioned at the required minimum capture velocity boundary point from the pre-filter face and by rotating the adjustment knob, adjust the fan speed to the desired minimum allowable velocity. Check in at least 3 positions per pre-filter to obtain an average and adjust as necessary.
- Wait approximately 20 seconds for the airflow to stabilise and press MUTE again to record the set point.
- The low airflow alarm point is now set, and the system calibrated.
- Re-Adjust the fan speed back up to the normal operating velocity as required.

SECTION 4

General Cleaning

Surface cleaning and decontamination

The powder coated surfaces should be kept clean to preserve the finish by preventing stains. Only soapy water or mild detergents should be used on painted surfaces, abrasive products and harsh chemical cleaners should be avoided.

	**NOTE**
	Do Not use abrasive or strong chemicals/ solvent cleaners as these ma attack or damage materials.

Maintenance

To ensure reliable containment and optimum performance the unit must be maintained in accordance with the service intervals detailed. Filters must be changed promptly when indicated on the display panel.

Fuses

	**ELECTRICAL HAZARD**
	If a fuse blows, ensure the unit is checked thoroughly to identify any faults with the electrical components or connected circuitry.

	**ELECTRICAL HAZARD**
	Isolate cabinet before changing fuses.

Replacing the main fuse

The two Type T main fuses are 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.

	**ELECTRICAL HAZARD**
	Always replace fuses with the correct type & rating.

Lighting

The high efficiency, low voltage LED light is fitted to the underside of the head. They should provide many years of service without requiring replacement. replacements are available from Monmouth Scientific and have the following part numbers: GS-04377

	**ELECTRICAL HAZARD**
	Always isolate power before working on any electrical component.

SECTION 5

Servicing

An annual service is recommended to maintain optimum operating conditions and testing is mandatory under C.O.S.H.H regulations. This will include the following points: -

- Test unit for full functionality
- Replace pre-filter elements.
- DOP test HEPA filter/s.
- Check filter inlet and exhaust outlet air flows.
- Check general condition of cabinet - fasteners, seals, corrosion etc.
- Inspect electrical components.
- Issue test report and airflow certificate.
- Note any feedback from customer.

For parts or service information please contact Monmouth Scientific

Monmouth Scientific

Monmouth Scientific Limited
UK Headquarters
Monmouth House,
Peninsula Business Park,
Bridgwater,
Somerset,
TA6 4QB.
+44(0)1278 458090

www.monmouthscientific.co.uk
info@monmouthscientific.co.uk