



TECHNICAL MANUAL

Blast & Blast Mini



There are no generic rules for recycling of used filters. Different rules exist on local level in all countries. Please contact the recycling company in your area and ask how to handle used filters.

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Introduction

Thank you for buying an air cleaner from Smart Air UK. We hope that you will be delighted with your Blast or Blast Mini.

Our commercial air cleaners are designed to deliver exceptional performance, unobtrusive operation, low noise and unbeatable value. Our air cleaners are on wheels for manoeuvrability and mechanical, which means no interference with essential electromagnetic medical devices and automatic start-up (at last speed) after a power failure.

As a plug and play with no electronics, it is simple to use and maintain with no training necessary. Such simplicity means reduced costs for 'on the ground' support, although we can be there for the delivery of the units and to advise on set-up.

Important! Before using your Blast/Blast Mini air cleaner, it is important that you, as the user, read the user manual and this technical manual. The purpose of the technical manual is to give details of the design of the Blast and Blast Mini air cleaners from Smart Air and how it works, including details of safety procedures associated with the use of the machine.

Guarantees and undertakings

The guarantee relates to full functionality as per the details in this user manual and covers motor faults for a period of two years from the delivery date. The guarantee covers the use as a floor mounted portable air cleaner, should this be fixed to a wall or ceiling, the guarantee doesn't cover the incorrect installation or any consequences thereof.

The Smart Air portable air cleaners are mechanical and not having electronics allows us to keep the price down and reduce the number of faults, most of which tend to be with electronics.

The motors in both the Blast and Blast Mini are equipped with a failsafe design, to prevent overheating. That means you can run your Blast and Blast Mini continuously, without issue. However, to prolong the lifespan of the motors, we advise that you occasionally turn off your motor, to allow it to cool. We generally recommend turning your air cleaner off after 12 hours to provide the longest lifespan for the motor. Should the equipment develop a fault, please contact your distributor:

Smart Air UK (trading name of Airbon Ltd)

Kings Park Fulfilment Centre

Broomhills Farm

Halstead CO9 2PD

uk@smartairfilters.com



The infographic features a circular photo of a diverse group of children and adults smiling. To the right is the Smart Air logo. The background is split into light blue and dark blue sections with white text.

100% of profits reinvested in three key areas:

- clean air education/workshops
- open data and research
- affordable clean air tools

Every US\$1 invested in Smart Air delivers US\$4.59 in social value

About us

Smart Air is a social enterprise and the only certified B-Corp dedicated to protecting people from the harms of air pollution

Technical specifications

	Blast Mini Mk II	Blast Mk II
Speed	1 - 2 - 3	1 - 2 - 3
CADR (m ³ /h)	340 – 450 – 740	450 – 680 – 950
Noise (dBA)	36 – 43 – 49	29 – 37 – 43
Power (W)	49 - 82 - 122	48 – 81–118
Coverage (m ²)	48 – 63 – 85	74 – 99 – 130
HEPA lifespan (months)*	13 (UK: 20)	22 (UK: 33)
Dimensions L × W × H (cm)	57.5 × 33 × 63	57.5 × 33 × 123
Purifier dimensions (w x d x h) and weight	575 x 330 x 630mm 21.25 kg	573 x 330 x 1230mm 31.25kg
Box dimensions	640 x 375 x 670mm 25.2 kg	635 x 365 x 1265mm 37.45 kg
Cable length	1.5m	1.5m
Warranty	2 years	
Filter	HEPA H13 (carbon optional)	
Power supply	220 – 240V/50-60Hz	
Safety certifications	CE Certified (LVD/EMC/RoHS) CQC GB/T 18801-2015 Certified	

Use

Portable Air Cleaners

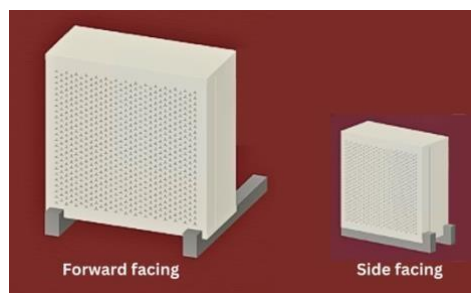
The Blast and Blast Mini air cleaners are portable air cleaners that mechanically filters the air through highly efficient filters. It is designed to be used as a floor mounted unit. If the choice is to wall mount or ceiling mount, it is your responsibility to ensure the use of stable mounting on a load-bearing wall/ceiling.

Wall and ceiling mounting

If you choose to mount the Blast units to a ceiling or a wall, the following points must be borne in mind:

1. Ceiling mounting – the unit must be mounted that there is no risk of anything colliding with it.
2. The ceiling or wall must be able to take a load of 85 kg.
3. Only fixed mounting is permitted.
4. Mounting devices must be able to take a load of at least 85 kg.
5. The units must be on a stable, firm and flat surface.

At just 22kg, the Blast Mini can be secured to the wall with brackets as long as there is a 15cm (from widest point) clearance at the back.



Fresh air vents for Aspergillus

The Blast and Blast Mini have an optional plenum or grille which allows it to be ducted outside to bring in fresh air. This solution creates a Positive Pressure environment using fresh filtered air rather than filtering recirculated air.

Remove the pre-filter and the fresh air vent attachment simply slides on the back. Attach your own flexible pipe then connect to an external vent opening on the wall or window.

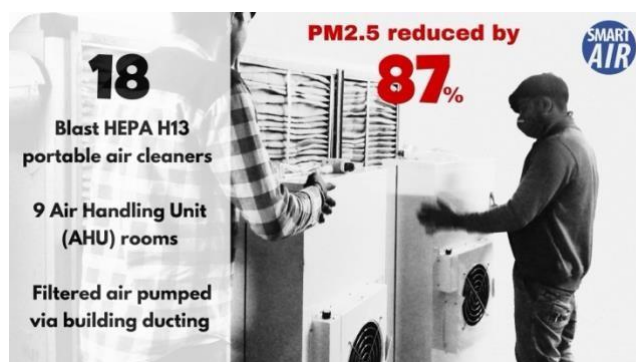


Filter the air of your Air Handling Units (AHUs)

The Blast can be set up in AHU rooms to provide filtered air via the HVAC / AHU system.

Remove the pre-filter at the back and face the front close to the inlet of the AHU.

In this example, 18 Blast air cleaners were installed in 9 Air Handling Unit (AHU) rooms, resulting in filtered air delivered across the building via ducting.



Understanding 'air changes' helps you find the right solution for infection control

[Current UK healthcare guidance](#) for new buildings and major refurbishments specifies a *minimum of 10 air changes per hour (ACH) for treatment rooms*. One ACH occurs when a volume of air delivered is equal to the volume of the room.

However as fresh air enters and mixes with 'contaminated' air in the room, **not all the contaminated air is removed by one air change**. Under well-mixed conditions, one air change removes approximately 63.2% of air contaminants, and a second air change removes about 63.2% of what remains, and so on.

This means that a room with 10 ACH can take 28 minutes to reduce the starting contaminant concentration by 99%.

Air changes/hour (ACH) and the time required for airborne-contaminant removal by efficiency

ACH	Time (mins) required for removal	
	99% efficiency	99.9% efficiency
2	138	207
4	69	104
6	46	69
8	35	52
10	28	41
12	23	35
15	18	28
20	14	21
50	6	8

Table source: [CDC - Guidelines for Environmental Infection Control in Health-Care Facilities](#)

Time required for reduction of airborne particles using HEPA filtration at various air changes per hour [123].

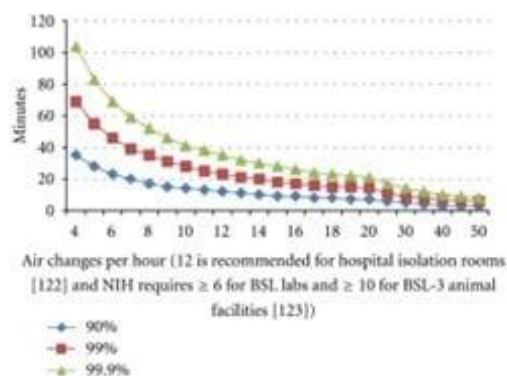


Chart source: [Aerobiology and its Role in the Transmission of Infectious Diseases](#)

Exceeding PHE guidelines with portable air cleaners in addition to your ventilation system can reduce your bioburden faster. We have more details on our site: [The Air We Share - how to meet PHE guidelines for treatment rooms](#).

Safety instructions

Read the user manual and follow the instructions given therein.

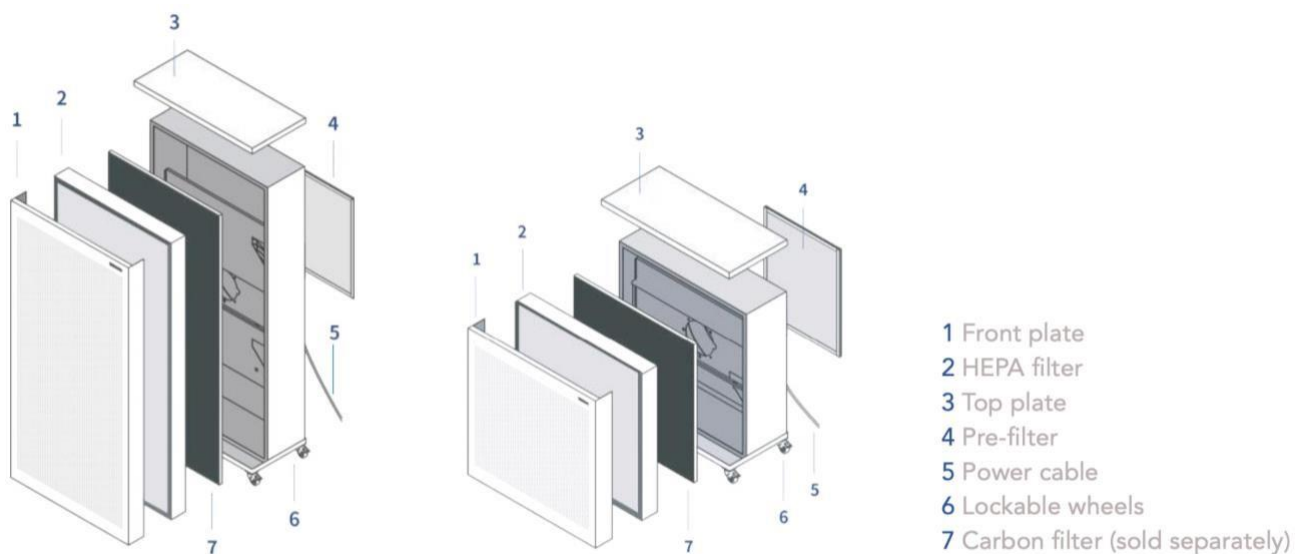
1. For installation, servicing, maintenance or filter replacement, the machine's power supply must be disconnected from the socket. Rotating parts do not stop immediately once power has been cut or the machine has been switched off.
2. If the air cleaner is used for purposes other than those set out in the user manual, or is handled otherwise than set out therein, Smart Air UK can accept no liability whatsoever for the consequences of said use/handling.
3. Fixed installation should only be carried out by a professional who has appropriate qualifications for the assignment and who takes responsibility for the installation.
4. Accessories, filters, spare parts, etc. must be approved by Smart Air UK. Guarantee undertakings cease to apply if the foregoing is not respected. Please contact Smart Air UK for the correct accessories.
5. Do not cover inlets or outlets.
6. Inserting objects through inlets or outlets is forbidden.
7. The Blast and Blast Mini must not be used in environments where burning/smouldering objects can get into the machine.
8. The Blast and Blast Mini must be used indoors only, including transportation as the wheels are designed for smooth indoor floor surfaces only
9. The Blast and Blast Mini must be used in the 5 °C – 50 °C temperature range only.

10. The Blast and Blast Mini must not be drenched with water. The highest permitted humidity is 85%.
11. The Blast and Blast Mini must not be used for point extraction or dust separation. It must also not be used in environments where dust explosions may occur.
12. Your Blast and Blast Mini is mechanical which means that, on power restoration after a power disruption, the fan automatically returns to its speed before the disruption.
13. Follow the filter handling and replacement instructions very carefully. Incorrect handling can damage the filter medium. In turn, this can mean that the promised filter class will not be achieved.
14. Take great care when handling used filters. Incorrect handling can result in ill health or sickness. Follow the instructions for filter replacement.
15. The wheels must be locked throughout operation.

Design

The Blast and Blast Mini is a self-standing two-section design. The sealed section houses the motor and fan and the section behind the removable front panel houses the HEPA H13 filter and optional carbon filter. The pre-filter is on the outside at the back making cleaning easy

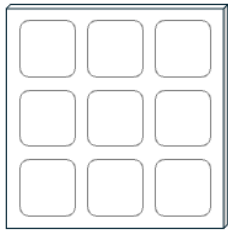
The unit is entirely constructed of stainless steel or painted steel plates. Thus, it is readily recyclable.



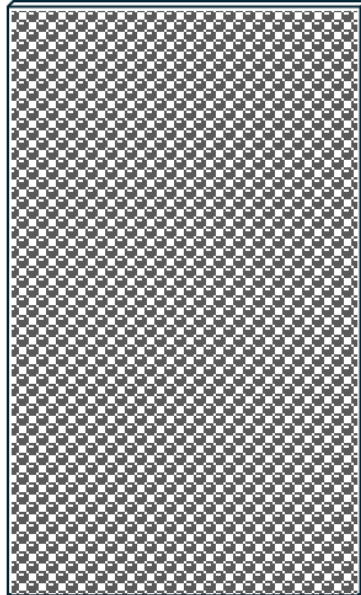
If anything is missing, or if you require further information about accessories, please contact admin.uk@smartairfilters.com.

3 layers of filtration

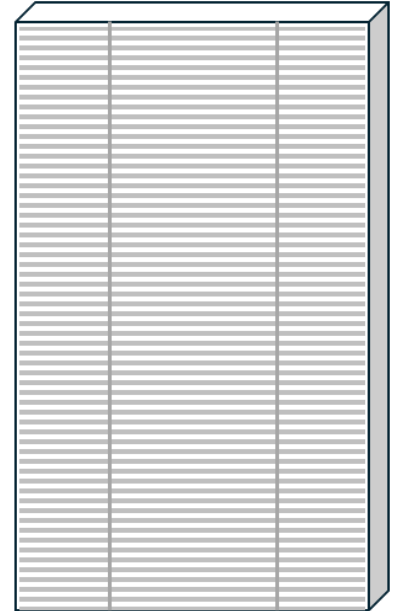
Nylon pre-filter
Removes large particles and protects the HEPA filtration layer



Activated Carbon filter
Optional filter sits behind the HEPA filter. Filled with carbon granules to reduce odours and chemicals from the air

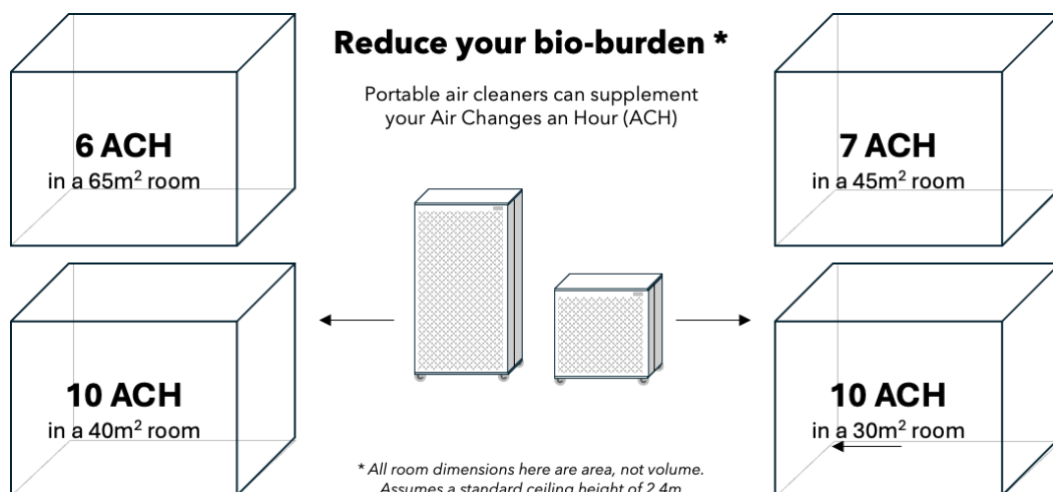


HEPA H13 filter
Traps bacteria, fungi, viral aerosols, pollen, dust, mould spores and other allergens



Filtration capacity

You can lower the infection load in your space with portable air cleaners. If you have mechanical or natural ventilation, supplement it with portable air cleaners.



Please note that ventilation dilutes particles, it doesn't remove it. Only filtration will do this.

SMART AIR Ventilation AND Filtration can reduce long-range transmission rates

	Gases	Particles	Pathogens
Outside air ventilation Assuming good outdoor air quality	✓		✓
Filtration		✓	✓
UV disinfection			✓

Based on a chart by Johnson Controls, 2023

Reduces long range transmission

Reduces long and short range transmission

SMART AIR Localised filtration can be more effective than increasing ventilation

22 variations studied using an AI robot with 20 sensors

Increasing outside air up to 75%
Displacement ventilation
Demand based exhaust
Portable/localised air cleaners

Local desk-based filtration reduced suspended aerosol mass by 45% after 10 minutes, compared to best case ventilation reduction of 17%

Source: Patrick Chambers (BEC 2024) - Strategic Artificial: Ventilation as a key defence against infectious diseases



Combining portable filtration with mechanical ventilation offers a versatile solution that adapts to changing IAQ needs

- A portable air cleaner (PAC) is a low-cost way to test the efficacy of filtration
- PACs use substantially less energy than increasing mechanical ventilation
- A PAC can be moved to the source of the pollution offering localised filtration at breathing level
- Low wattage of PACs offers a low [carbon footprint](#) solution and more environmentally friendly than adaptations to current HVAC systems
- The proliferation of budget or noisy models that won't provide enough filtration for the room size (at the speed it is run) can result in dissatisfaction of portable filtration as a viable solution

Simply HEPA

Smart Air units are simply a 'fan' and a 'filter', we use no additive technologies. There are a large number of air cleaners in schools / hospitals which contain ionisers but not all manufacturers make this clear upfront.

Ionisers add ozone

Ionisers can add ozone to the air, which is a lung irritant. The [NHS guidelines on HEPA filters](#) states: Devices which incorporate ionisation, photocatalytic oxidation, electrostatic precipitation or other similar technologies alongside filters are not currently recommended for healthcare use unless there is clear evidence for both effectiveness and safety. These devices can sometimes introduce, or create through secondary reactions, chemical by-products into a room which may themselves have an adverse health effect. In the US, the EPA provides a similar caution against [ionisers in air cleaners](#).

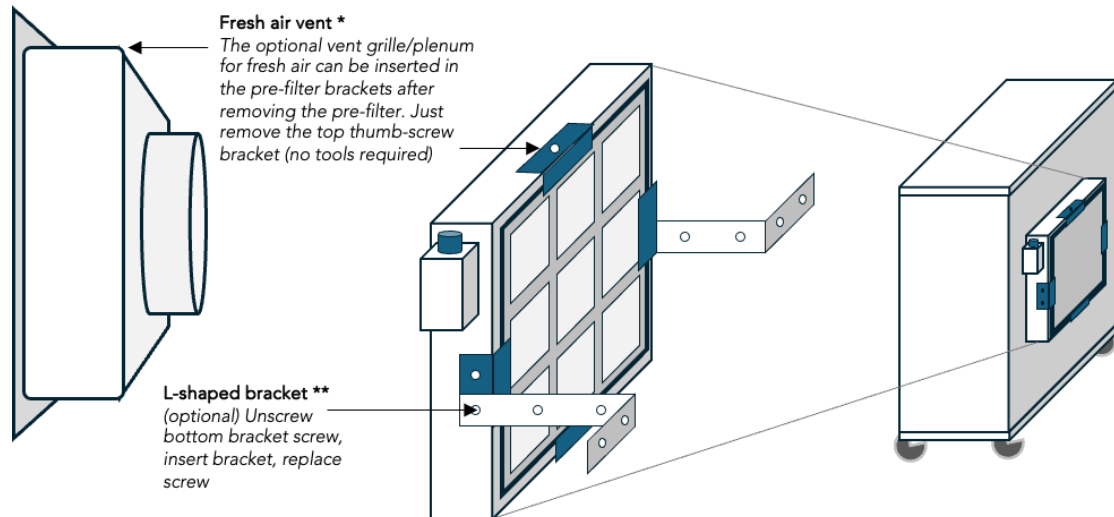
Low noise

Noise matters – noisy air cleaners will be switched off, even with staff training and posters asking for these not to be switched off. An air cleaner should run at the speed capable of providing enough clean air for that space at noise levels conducive to working/recovering. If turned down lower (or worse, turned off), an air cleaner is no longer effective. Manufacturers list the Clean Air Delivery Rate (CADR) on top speed but noise on the lowest speed.

By making noise as essential as airflow, Smart Air delivers the quietest, high-airflow, commercial air cleaners in the market today.

Additional attachments

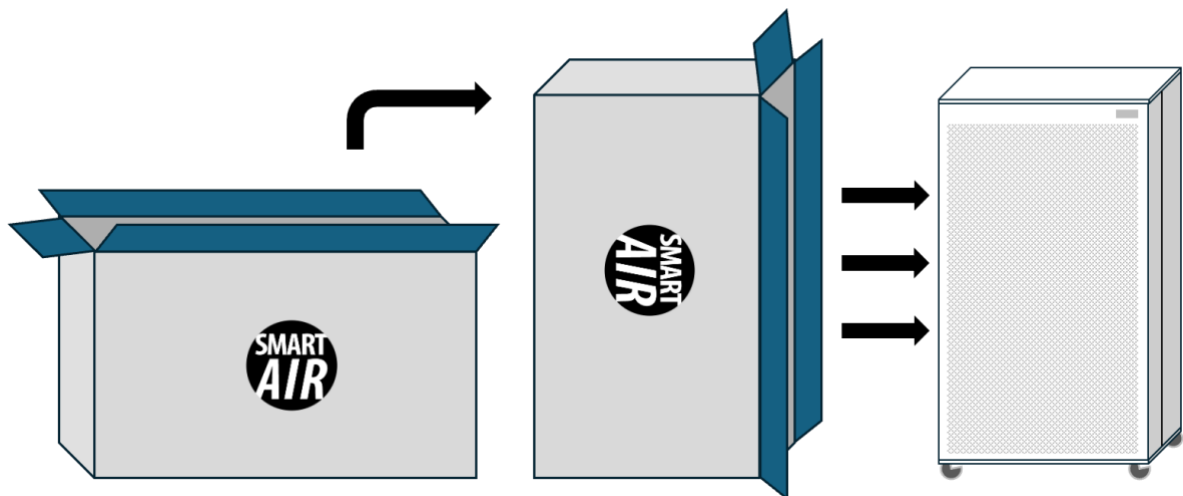
If you choose to add optional extras such as the fresh air vent or wall fixing brackets, these can be placed at the back of the unit as shown below:



* The fresh air vent excludes the pipe. These can be ordered from any duct supplier according to the length you need

** Optional brackets can be used with the Blast if you are worried about the height. Look for L Brackets 125mm long

Transport and unpackaging



Both the Blast and Blast Mini are large, heavy items so please take care when unboxing. Both boxes should be delivered on its side. To remove, open the top flaps and flip the box to the right (see diagram).

Check that the product has not been damaged during transport. Report any transport damage to the carrier and ensure you keep the box until you have confirmed the delivery is complete.

User guide

As a mechanical unit, rather than an electronic unit, less can go wrong with it and no training is required. The only options are on/off and speeds 1-2-3.



1. Your Blast comes with a detachable cable. Plug the short end into the back of the Blast, here. It's round the back, next to the pre-filter. Plug the other end into your wall socket.



2. For speeds, we kept things simple. The Blast has a single dial with 3 speeds. 0 is off. Turn it to the right (clockwise) for maximum clean air.

Placement of your air cleaner

As air flows in from the back, it is crucial you leave enough space for air to flow in.

- We ran with the Blast air cleaner flat against the wall, the airflow was only about 5%!
- Moving the air cleaner 4 cm from the wall increased the airflow from 5% to 94%.
- At 10 cm from the wall, airflow was back up to 100% of its normal value • The air cleaners must always be positioned and used indoors only
- When using the air cleaner, lock its wheels.
- Air outlets and intakes must not be obstructed during use
- Before it is taken into operation, ensure that there is sufficient space behind the machine



Regular maintenance

Outer case

If necessary, the Blast units can be cleaned using a mild cleaning agent. Before cleaning, always switch off the machine and pull out the electrical cable!

Pre-filter

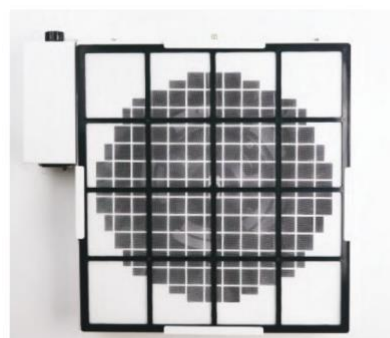
How frequently you clean the pre-filter depends on the environment. Due to high levels of pet dander, a vet may need to clean it every 2 weeks.

For other environments, we recommend checking it every few weeks to see if it has a build-up of dust that may prevent airflow.

Cleaning the pre-filter will extend the lifespan of the HEPA filter. Here's how.



1. Unscrew the top screw using a screw driver.



2. Slide the pre-filter up and out. You can wash it with a damp cloth or water. Make sure it's dry before putting it back.

⚠ Remember to remove the power cable before removing or washing the pre-filter or opening up your Blast! ⚠

As the pre-filter needs to thoroughly dry before putting it back on, it may be useful to purchase a second pre-filter from www.smartair.uk.

HEPA filter

The HEPA filters need replacing and cannot be cleaned, see Filter Replacement and Lifespan in this guide. Vacuuming the HEPA filter can damage the filter media and impact airflow.

WARNING! When handling used filters and cleaning the pre-filters, personal protective equipment such as protective gloves and masks must be used. To choose the correct type of respiratory protection, consult either the safety representative/officer at the workplace or the manufacturer of the respiratory protection.



Used filters may contain harmful substances and particles. With incorrect handling, these can escape to the environment and present risks of sickness and ill health.

Filter lifespan and replacement

Changing the filter takes less than 5 minutes with no tools required. The Blast and Blast Mini don't come with filter change lights because these are usually set to China's air quality index.

UK filter lifespan

- Blast: 8100 hours (33 months if running 8 hrs a day, 11 months if running continuously 24/7)
- Blast Mini: 4850* hours (20 months if running 8 hrs a day, 6 months if running continuously 24/7)

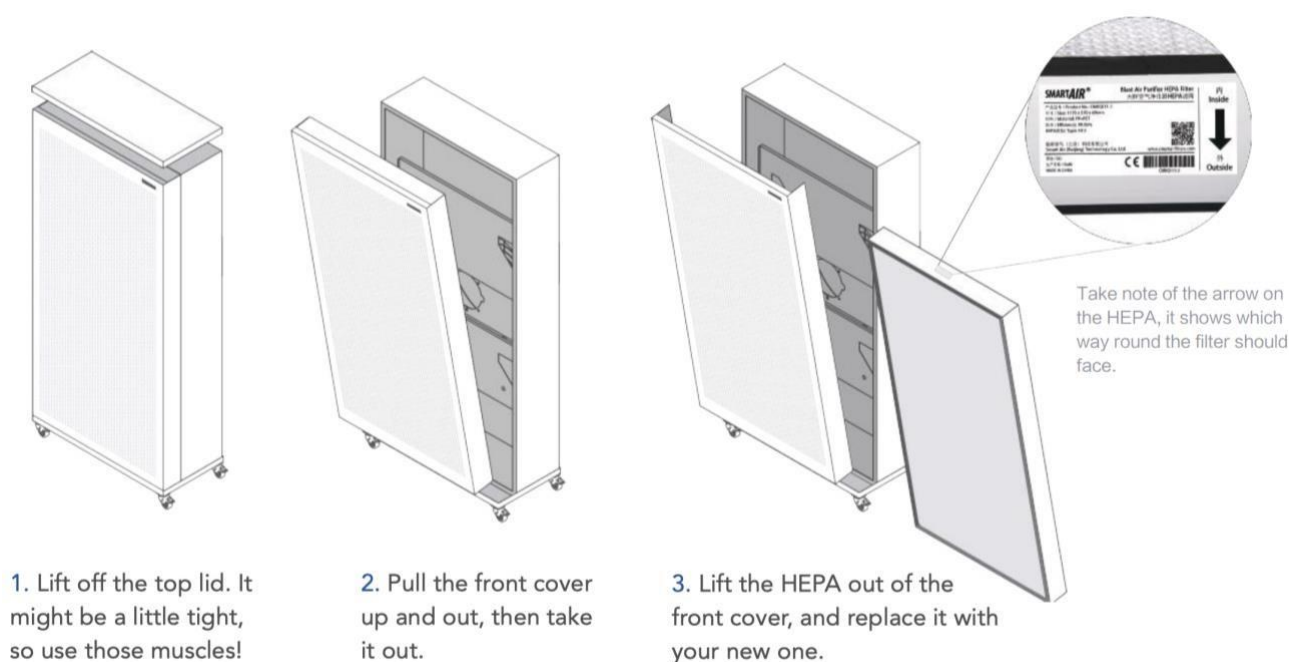
* Based on China AQI, this would be 3150 hours. This is just 65% of the lifespan in the UK, which is why we don't rely on filter lights. Filter lights (and our calculator) is based on top speed only so if you run it at a lower speed, it will last longer. Due to noise levels, air cleaners are rarely run at top speed with the exception of the low-noise Blast.

Please bear in the mind that the AQI is based on the annual averages listed by the World Health Organisation. As this changes annually, the filter lifespan will also change. We regularly update our calculator:

<https://smartairfilters.com/en/when-change-hepa-filter/>

Replacing the filter

1. Always use protective gloves and respiratory protection when handling used filters to reduce the risk of ill health and sickness. For hospitals, please also read the HEPA Disposal Guidelines.
2. Switch off the Blast / Blast Mini by turning the dial to 0. Wait until the fan has stopped, remove the cable from the socket
3. Follow the instructions in the schematic below:



For further information on new filters, please visit www.smartair.uk

HEPA filter disposal guidelines

HEPA filter disposal guidelines vary based on the type of substances the filter is used to remove. This document outlines the general guidelines for the disposal of HEPA filters and contains the procedures for the disposal of HEPA filters used to filter general as well as hazardous waste. When disposing of HEPA filters, individuals should adhere to the relevant disposal guidelines of the specific business, school or hospital.

Procedure for the disposal of HEPA filters - General Waste

1. Ensure that the area surrounding the air cleaner is free of open flames, liquids spillage, or other possible hazards.
2. Ensure that the individual conducting the disposal is using masks, hand gloves, and any other protective equipment necessary.
3. Insert old filter into the packaging of the new filter and dispose the used HEPA filter in accordance with the business, school, hospital safety guidelines for general waste.
4. During this process, some dust might come out from the filters. Ensure that they are properly cleaned and disposed of.



Procedure for the disposal of HEPA filters – Hazardous Waste

1. Ensure that the area surrounding the air cleaner is free of open flames, liquids spillage, or other possible hazards.
2. Ensure that the individual conducting the disposal is using full personal protective equipment, masks, safety goggles, hand gloves, and any other protective equipment necessary.
3. Seal the HEPA filter in a bag in accordance with the hospital's policy for the disposal of hazardous waste. For the larger Blast filters, this can be sealed in mattress bags.
4. Dispose the used HEPA filter in accordance with the hospital's safety guidelines for hazardous waste.
5. During this process, some filtrates might come out from the filters. Ensure that they are properly cleaned and disposed of, in accordance with the hospital's safety guidelines for hazardous waste.

Smart Air UK and the environment

We designed our Blast units with lead-free components and the outer casing in high-quality steel rather than plastic. Because these can be recycled, used models must always be sent to a recycling station for correct recycling and/or disposal of parts and components.

Cardboard-framed filters

At the end of 2021, we switched to using cardboard-framed HEPA filters. This not only reduced the carbonfootprint our filters, it also provided us with the following benefits:

- Lighter weight results in reduced transport costs
- The filter effectiveness exceeds that of the old aluminium-frame filters

Unfortunately, like all filters, these aren't recyclable. Recycling or disposal must always be carried out at an approved waste facility. If you have any questions about this, please contact your local authority or distributor for advice on correct care.

Environmentally friendly packaging

We upgraded our packaging to ensure it is 99% plastic-free, yet sturdy enough to withstand transportation.



Reduce your carbon emissions with Smart Air

Not all portable air cleaners are equal. Here's a comparison we did between the Blast and 2 other brands currently in NHS hospitals across the UK.

	Power	Clean Air Delivery Rate	Price ex VAT	Cost per m3/hr clean air	Annual energy cost*	Annual carbon emissions*
Blast	118w	950 m3/hr	£485.00	£0.51	£279.00	206Kg CO2e
NHS Brand 1	135w	440 m3/hr	£832.50	£1.89	£319.00	235Kg CO2e
NHS Brand 2	150w	1270 m3/hr	£2,877.05	£ 2.27	£355.00	261Kg CO2e



Source: Smart Air UK

* Simulations based on typical costs/emissions per unit on maximum speed, 24/7 for a whole year

Choosing the Blast air cleaner over others can help hospitals reach net zero faster:

- **412%** more cost-effective per m3/hr
- **27%** cheaper to run
- **270mg** less high-level nuclear waste
- Maximum noise levels of **43dBA** make it the quietest portable air cleaner in its class

Making the “Smart” choice has never been easier!