Donaldson
BOFA™

DustPRO Universal

Fume Extraction System

User Manual

Installation, Operation, and Service Information

This manual contains specific precautions related to worker safety. The hazard alert image denotes safety related instructions and warnings in this manual. DO NOT install, operate, or perform maintenance on this system until you have read and understood the instructions, precautions and warnings contained within this manual.

English
Original Instructions

UM-DUSTPRO UNIVERSAL-BOFA-US
Revision 1.2

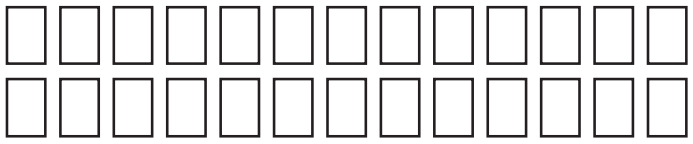
Donaldson BOFA Technical Service

If a problem arises with your system, please refer to the troubleshooting section of this manual. If the problem is still not resolved, please:

- Visit our website at donaldsonbofa.com for online help.
- Or contact the helpline:
    - ROW: +44 (0) 1202 699 444 (Mon-Fri 9am-5pm GMT)
    - US: +1 (618) 205 5007 (Mon-Fri 9am-5pm CST).
- Email:
    - ROW: bofatechnical@donaldson.com
    - US: bofatechnicalus@donaldson.com

Serial Number

For future reference, fill in your system details in the space provided. The serial number is on the rating label located on the side/rear of the system.



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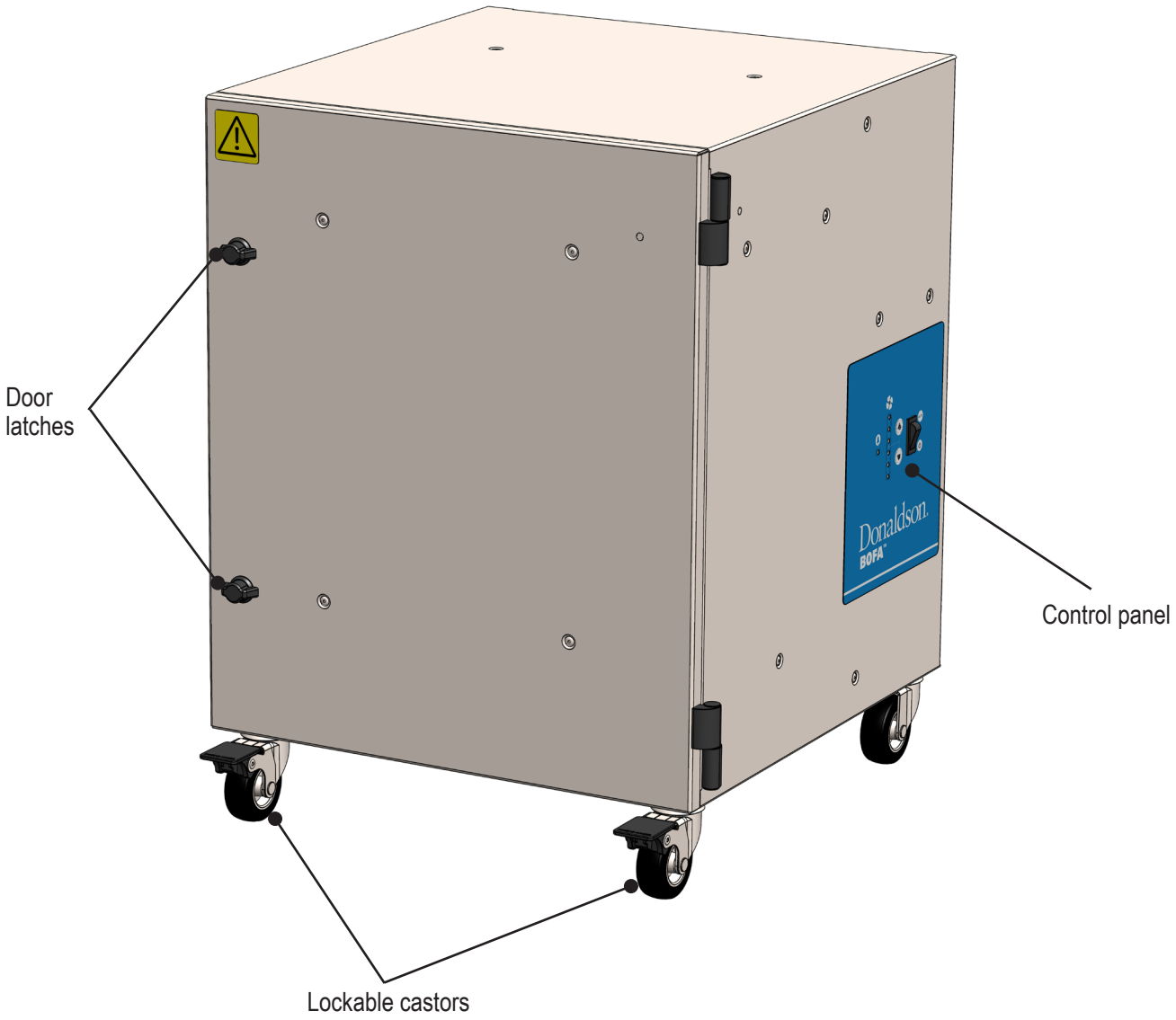
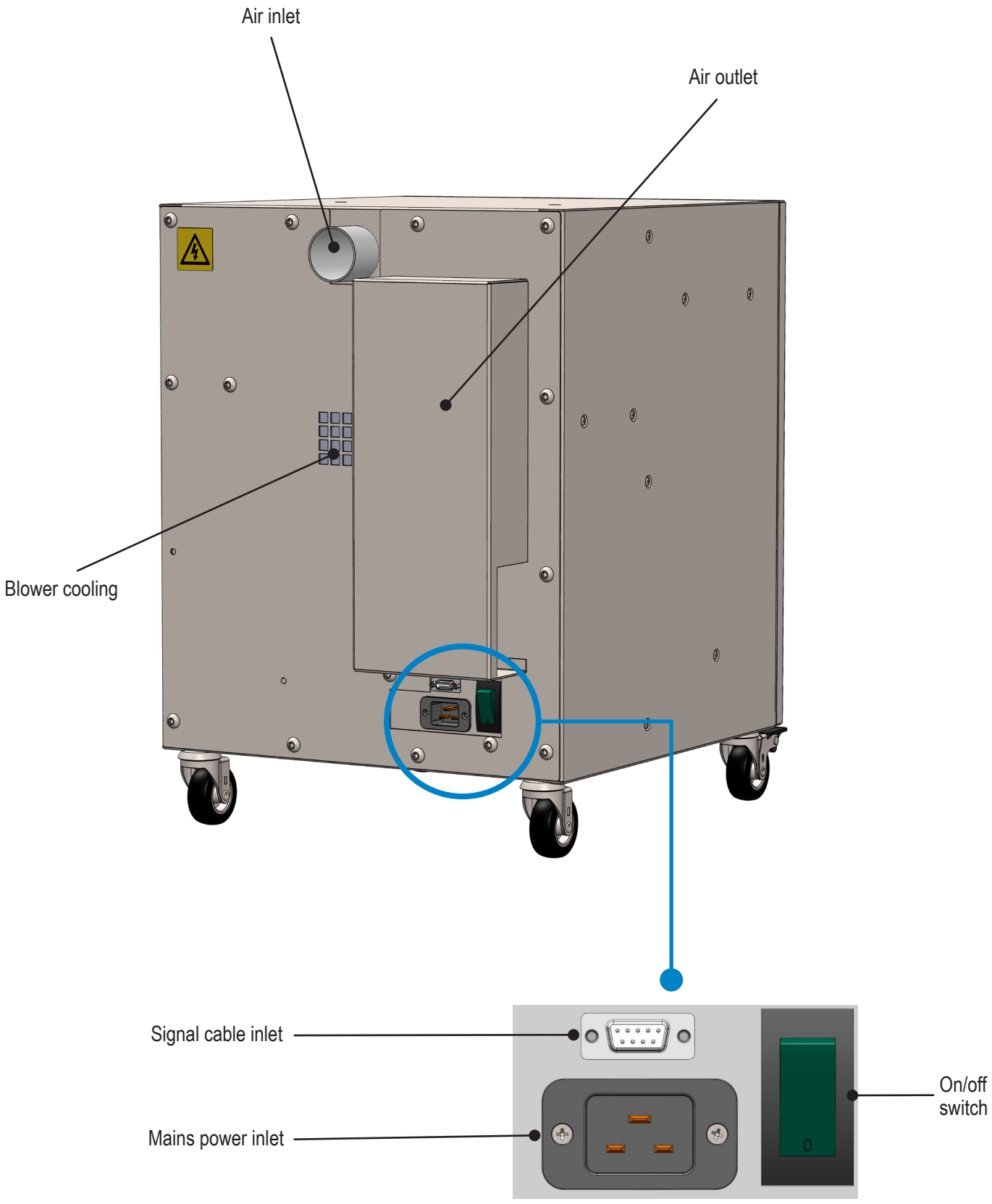
1 Overview

1.1. Front view of DustPRO Universal

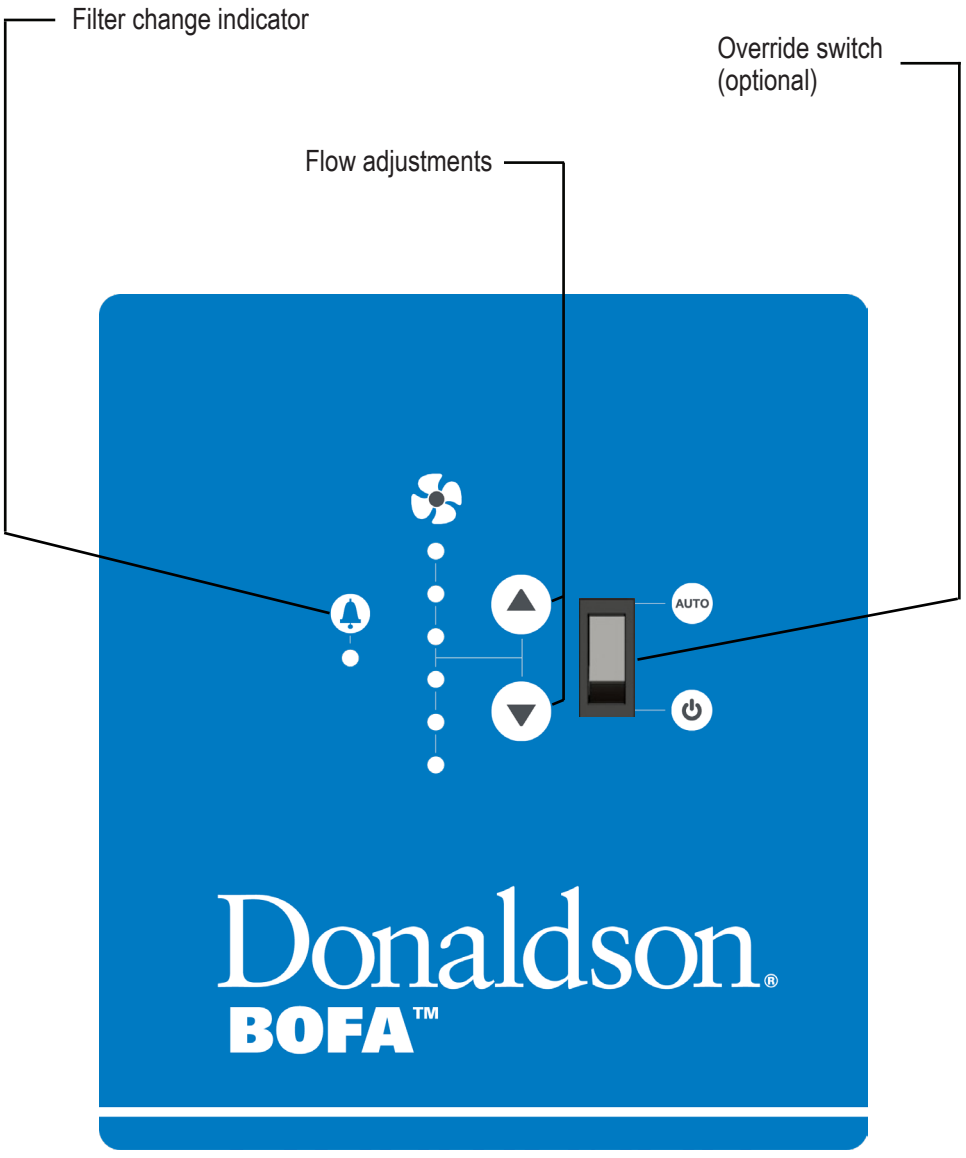


1.2. Rear view of DustPRO Universal



1.3. Overview of control panel

The diagram below shows an overview of the control panel.



2 Safety information

2.1. Important safety notes

Concerning symbols used on the extraction system and referred to within this manual.

Symbol	Meaning	
	DANGER	Refers to an immediately impending danger. If the danger is not avoided, it could result in death or severe (crippling) injury. Please consult the manual when this symbol is displayed.
	WARNING	Refers to a possibly dangerous situation. If not avoided, it could result in death or severe injury. Please consult the manual when this symbol is displayed.
	CAUTION	Refers to a possibly harmful situation. If not avoided, damage could be caused to the product or something in its environment.
	IMPORTANT (refer to manual)	Refers to handling tip and other particularly useful information. This does not signify a dangerous or harmful situation. Refer to manual when this symbol is displayed.

EU Declaration

The system has been designed to meet the essential health and safety requirements of the Machinery Directive 2006/42/EC, Low Voltage Directive 2014/35/EC, and the EMC Directive 2014/30/EU. For the full DOC and further information please contact the technical team:

- US: bofatechnicalus@donaldson.com
- ROW: bofatechnical@donaldson.com

Electrical safety

The system has been designed to meet the essential health and safety requirements of the Low Voltage Directive 2014/35/EC. The requirements of the EMC Directive 2014/30/EU are also met.

Warning

When working with the blower housing open, live 230/115 volt mains components are accessible. Ensure that the rules and regulations for work on live components are always observed.

Important

To reduce the risk of fire, electric shock, or injury:

1. Always isolate the system from the mains power supply before removing the blower access panel.
2. Use only as described in this manual.
3. Connect the system to a properly grounded outlet.

Dangers to eyes, breathing, and skin

Once used, the filters within the extraction system may contain a mixture of particulates, some of which may be sub-micron size. When the used filters are moved, it may agitate some of this particulate, which could get into the breathing zone and eyes of the operative.

Additionally, depending on the materials being processed, the particulate may be an irritant to the skin.

This system should not be used on processes with sparks of flammable materials or with explosive dusts and gases, without implementation of additional precautions.

	CAUTION	When changing used filters, always wear a mask, safety shoes, goggles, and gloves.

Intended use

This equipment has been designed to extract and filter fume from a variety of applications. However, it is the user's responsibility to ensure the equipment is installed correctly and is suitable for the application. This extraction system must not be used on wet applications or acidic fumes.

2.2. Warning and information labels

The following listing details labels used on your system.

Symbol	Meaning	
	GOGGLES, GLOVES AND MASK	This appears on filters, indicating that goggles, gloves, and masks should be worn while handling used filters.
	DO NOT COVER	Do not cover any louvers or holes on panels adjacent to the label.
	ELECTRICAL DANGER	Removal of panels with this label attached will allow access to potentially live components.
	WARNING	Power should be isolated before the panel with this label attached is opened/removed.

PLEASE NOTE: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be compromised.

2.3. Fire risk warning

In the very rare event that a burning ember or spark is drawn into the fume extraction system, it may be possible that the filters will ignite. Whilst any resultant fire would typically be retained within the fume extraction system, the damage to the extraction system could be significant.

It is therefore essential to minimize the possibility of this occurring by undertaking an appropriate risk assessment to determine:

a). Whether additional fire protection equipment should be installed.

b). Appropriate maintenance procedures to prevent the risk of build-up of debris which could potentially combust.

This extraction system should not be used on processes where sparks could occur, with explosive dusts and gases, or with particulates that can be pyrophoric (can spontaneously ignite), without implementation of additional precautions. It is essential that nozzles or other extraction/fume capture devices and hoses/pipework are cleaned regularly to prevent the build-up of potentially ignitable debris.

3 Before installation

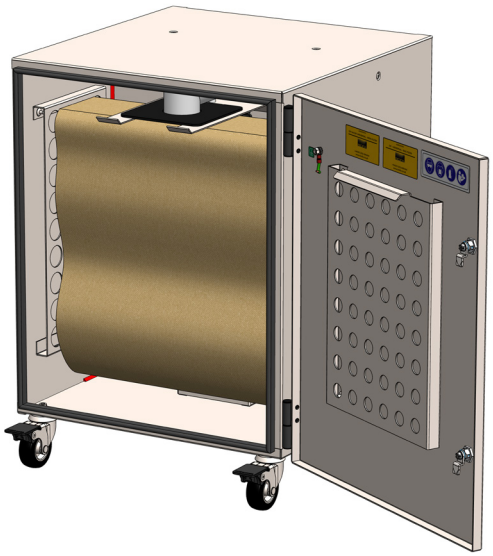
3.1. Packaging removal and system placement

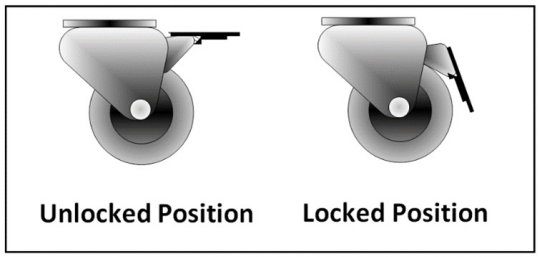
Before installation, check the extraction system for damage.

All packaging must be removed before the system is connected to the power supply.

Please read all instructions in this manual before using this extraction system.

1. Move the system to the location where it is going to be installed and remove the outer packaging.
   This system should be installed in a well-ventilated area.
2. With the system in position, lock the two front castors.
3. Check the filters are located in their correct position before closing the door and securing the door latches.





	CAUTION	Due to the weight of the extraction system, suitable lifting equipment should be used and appropriate safety precautions taken (see system specification section for product weight detail).

	CAUTION	Do not block or cover the cooling vents on the extraction system as this severely restricts airflow and may cause damage to the system.

	CAUTION	Under no circumstances should the exhaust outlet/s be covered as this will restrict the airflow and cause overheating.

4 Installation

During the machining processes which removes material, dust is usually generated as a by-product. This dust needs to be removed in order to prevent interference with the performance of the machine and to help protect the operator. The DustPRO range of systems has been developed to provide effective removal of swarf and smaller particulates created during processes such as routing, mechanical engraving, grinding and lathing. DustPRO systems are compact and portable. They are of robust design, and feature ease of use with minimal maintenance and long life.

Exposure to airborne contaminants at work, such as inhalable and respirable dust particles, can put people's health at risk. Health and safety regulations require employers to control exposure to hazardous substances.

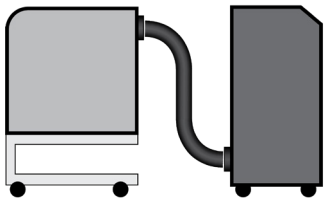
The system has been designed to remove and filter fume containing potentially hazardous particulate generated during manufacturing processes. Such hazardous substances are captured within the extraction system, after which the cleaned air is returned to the workplace.

4.1. General guidelines for a successful installation

- Keep duct run length to a minimum.
- Avoid sharp bends/turns in the ductwork.
- Avoid multiple bends/turns in the ductwork.
- Use a larger diameter duct where able.
- Position the capture device as close as possible to the marking point (if used on high-speed lines, position the capture device slightly downstream).

4.2. Cabinets

Cabinets normally have a 2.95" (75 mm) or 3.93" (100 mm) spigot for fume extraction. For best performance, use the same diameter hose as the spigot and reduce at the extraction system end if necessary. **Keep the hose run as short as possible.**



4.3. Connection to power supply

Please follow the specification at the rear of the manual when selecting the power supply outlet for the system. Ensure the power supply is suitable before connecting the system.

	ELECTRICAL DANGER	Check the integrity of the electrical power cable. If the supply cord is damaged, the extraction system should not be connected to the mains. The supply cord should only be replaced by a Donaldson BOFA engineer as an electrical safety test may be required after replacement.
	CAUTION	The system **MUST** be connected to a properly earthed outlet.
	CAUTION	Do not use the power lead with other devices.

Portable appliance testing guidance

This appliance is a Class I electrical product that requires earth protection. The appliance contains Type 3 SPDs (surge protection devices). During PAT Testing, test voltage L-E and N-E must be limited to 250 VDC to avoid engaging the surge protection.

4.4. Optional added features

The system can be configured to suit customer specification. These optional features would be discussed, arranged, and installed prior to delivery.

If unsure what features your system is equipped with, please contact the seller with the extraction system serial number (refer to section 2 for location), **who will be able to advise what specification has been supplied.**

For other custom filter signal configurations (details of connectors and pin-outs), these will be included in an appendix at the rear of the manual.

4.4.1. Remote stop/start signal (optional)

Enables the extraction system to be remotely turned on/off via an external signal. This feature can be configured in 2 ways:

- DC voltage input – range 24 VDC
- Override – stop/start feature switched off

Note: Care must be taken to ensure that the system is correctly wired in order for the extraction system to function correctly.

4.4.2. DC voltage input (optional)

This configuration requires pins 1 (+) & 6 (-) of the 9-way connector (refer to section 1 for location) to be connected to a known and tested DC power supply to start the extraction system.

The operating voltage for this signal is 24 VDC. Voltages connected outside of this range may cause irreversible damage to the internal control PCB.

Pin 1 = V+

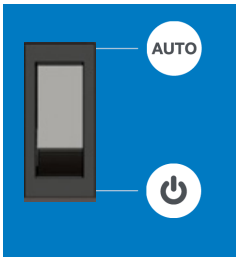
Pin 6 = V-

When the extraction system is provided with the correct DC voltage, the blower will start and maintain the set flow rate. When the DC voltage is removed, the blower will slow down and come to a stop.

The extraction system will need to be turned on and be out of standby mode in order for this feature to operate.

4.4.3. Override (optional)

Enables the extraction system to operate fully with or without either DC voltage input or the volt-free input.



The override feature can be toggled on/off by a switch mounted on the front access panel (see section 1 for switch location).

Switch in “on” position

In this position, the extraction system will require a start signal (either voltage input or volt-free, depending on the requested specification) to enable the blower within the system.

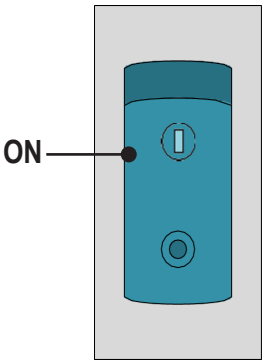
Switch in “off” position

In this position, the extraction system blower will run without the requirement for an external start signal. This feature is useful for engineers carrying out works/tests on the extraction system without the need for the host machine/auxiliary signal.

5 Operation

5.1. Turning extraction system on

The on/off switch must be switched to the “on” position (refer to section 1 for switch location) by depressing the (I) side of the switch.



Powder-coated

5.2. Setting the desired airflow

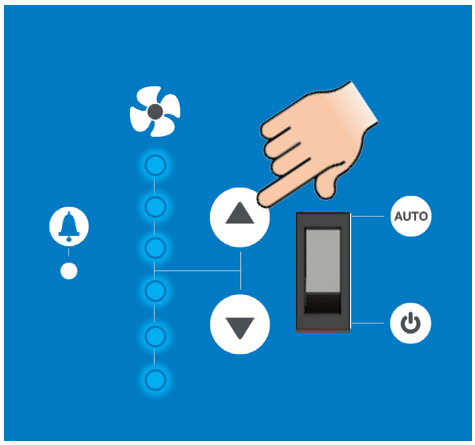
The system features variable airflow speed. This enables the user to set the required airflow rate. Over time, as the filters begin to block, the user should manually increase the blower speed to ensure the correct flow is maintained to compensate for any loss in performance caused by the added restriction of the partially blocked filters.

	IMPORTANT (refer to manual)	The extraction system and all pipework must be fully installed and connected before the airflow is set.

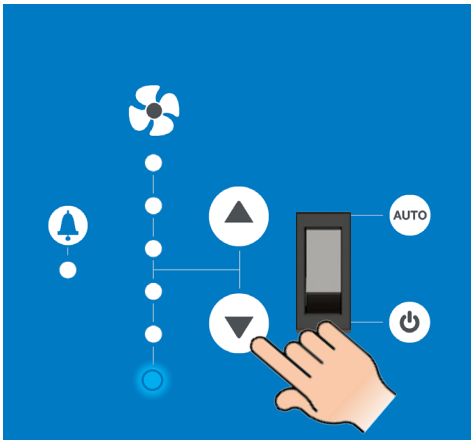
5.2.1. To set the airflow

Press the up button to increase airflow and press the down button to decrease airflow. The level of airflow is indicated by the vertical row of six blue LEDs on the front of the system. As the airflow increases, more blue LEDs light up and the opposite for decreasing the airflow. There are several increments between each LED, so the button may need to be pressed several times to illuminate the next LED.

Increase airflow



Decrease airflow



6 Maintenance

6.1. Maintenance UK

It is a legal requirement, under regulation 9 of the COSHH regulations, that all local exhaust ventilation systems are thoroughly examined and tested at least once every 14 months (typically carried out annually). The approved code of practice recommends that a visual check should be carried out at least once a week.

COSHH requires the annual inspection and testing to be carried out by a competent person and specifies that documentation results are recorded in a log.

Contact the seller for more information about inspection and certification.

6.1.1. Maintenance general

User maintenance is limited to cleaning the system and filter replacement, only the manufacturers trained maintenance technicians are authorized to carry out component testing and replacement. Unauthorized work or the use of unauthorized replacement filters may result in a potentially dangerous situation and/or damage to the extraction system and will invalidate the manufacturer's warranty.

6.1.2. Cleaning the extraction system

The powder-coated finish can be cleaned with a damp cloth and non-aggressive detergent, do not use an abrasive cleaning product as this will damage the finish.

The cooling inlets and outlets should be cleaned once a year to prevent build-up of dust and overheating of the extraction system.

6.2. Filter information

It is recommended to replace filters every 12 months, unless the system prompts for more frequent changes. Users should maintain a record of these replacements.

It is recommended that a spare set of filters are kept on-site to avoid prolonged extraction system unavailability. Part numbers for replacement filters can be found on the filters fitted in your system.

To prevent overheating, extraction systems should not be run with a blocked filter condition, or with dust obstruction of inlets/outlets.

6.3. Replacing filters

The filters will need changing when the green LED on the front of the system starts flashing red. At this point, the pre-filter bag should be changed. If the green LED has not returned, then the HEPA filter should also be changed.

6.3.1. Pre-filter replacement

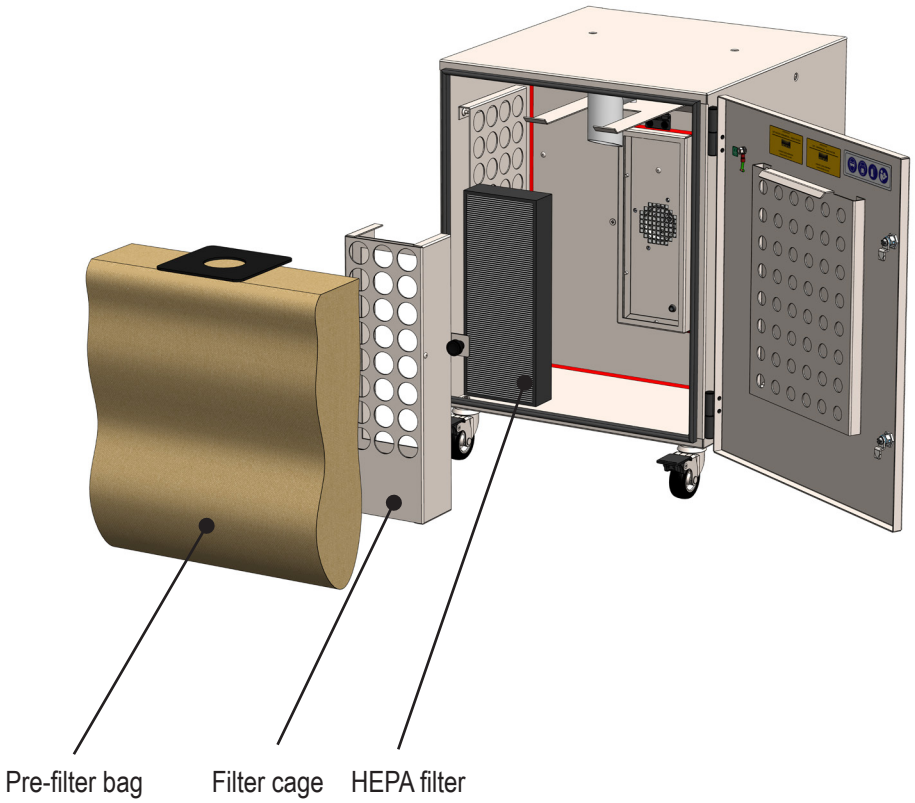
To replace the pre filter bag, follow the procedure detailed below:

1. Isolate the electrical supply to the extraction system.
2. Undo the 2 latches on the front of the system.
3. Lift the filter plate, this will allow access to the filter, slide the filter off the plate.
4. Once removed, it is recommended that the filters are bagged and sealed.
5. Slide the new filter into place on the plate.
6. Replace the lid and secure the 2 latches.
7. Reconnect the mains supply to the system.

6.3.2. HEPA filter replacement

To replace the HEPA filter please follow the procedure below.

1. Isolate the electrical supply to the extraction system.
2. Undo the two latches on front of the system.
3. Lower the filter plate, this will allow the pre-filter bag to be removed.
4. Unscrew the 2 knobs holding the HEPA filter cage in place.
5. Remove the cage and HEPA filter.
6. Once removed, it is recommended that the filters are bagged and sealed.
7. Fit the new filter and replace cage, secure in place.
8. Refit the pre-filter bag.
9. Replace the lid and secure the two latches.
10. Reconnect the mains supply to the system.



7 Troubleshooting

7.1. Fault indication

In the unlikely event of any other issues with the extraction system, please contact your local representative.

8 Replacement parts

8.1. Consumable spares

The extraction system contains a pre-filter bag and a HEPA filter. These should be replaced when instructed to do so by the system (see maintenance section for replacing filters), when the extraction system is not performing efficiently, or at least once every 12 months.

To maintain performance, it is important that the filters are replaced with identical Donaldson BOFA filters. To reorder, please refer to the filter number printed on the filter installed in your extraction system. See part numbers below:

1. **1UA1030170 (pre-filter bag)**
2. **1UA1030161 (HEPA filter)**

8.2. Maintenance protocol

The data logging function enables the retrieval of filter change intervals. Users may also wish to record changes in the table below.

8.3. Filter disposal

Extraction System Serial Number:			
Pre-filter bag (1UA1030170)		**HEPA filter** (1UA1030161)	
Date	Engineer	Date	Engineer

The pre-filter and HEPA filter are manufactured from non-toxic materials. Filters are not reusable, cleaning used filters is not recommended. The method of disposal of the used filters depends on the material deposited on them.

For your guidance:

Deposit	EWC* Listing	Comment
Non-hazardous	15 02 03	Can be disposed of as non-hazardous waste.
Hazardous	15 02 02M	The type of hazard needs to be identified and the associated risks defined. The thresholds for these risks can then be compared with the amount of material in the filters to see if they fall into the hazardous category. If so, the filters will need to be disposed of in line with the local/national regulations.

*European Waste Catalogue

9 System specifications

Extraction system: **DustPRO Universal**

Airflow: 167 cfm (285 m^3/h)

Weight: 73 lbs (33 kg)

Airflow measuring system: Windvane

Suction pressure: 96 mBar

Blower: Centrifugal fan

Output: 1.1 kW

Noise level: Below 66 dB(A) (at typical operating speed)

Maximum altitude: 2000 m

Electrical supply: 115-230 V

Hertz: 50/60 Hz

Full load current: 12.5 A

No. of phases: 1

Indoor use only

Overvoltage category II

Pollution degree 2

Not for use in wet applications

Environmental operating range:

Temperature: +41 °F (5°C) to + 104 °F (40°C)

Humidity: Max 80% RH up to 87.8 °F (31°C)

Max 50% RH at 104 °F (40°C)

Size:

	Imperial (inches)	Metric (mm)
Height	23.2	590
Width	18.1	460
Depth	21.1	535

Filters:

Filter type	Surface area	Efficiency
Pre-filter	8.5 sq ft (0.8 m^2)	99% @ 0.3 microns
HEPA filter	6.9 sq ft (0.6 m^2)	99.995% @ 0.3 microns

Process fume/gas entering this system should be within the above temperature range.

Wiring schematic and spare parts list available upon request.

10 Contact information

Donaldson BOFA head office – UK & ROW:

19-20 Balena Close
Creekmoor Industrial Estate
Poole
Dorset
BH17 7DU
United Kingdom

Tel. +44 (0) 1202 699 444
Email: bofasales@donaldson.com

Donaldson BOFA German office:

Email: bofavertrieb@donaldson.com

Donaldson BOFA US office:

303 S Madison Street
Staunton, Illinois
62088 USA

Tel. +1 (618) 205 5007
Email: bofasalesus@donaldson.com

11 Inspection record

Donaldson BOFA™

Inspection Record

Local Exhaust Ventilation System

Health & Safety at Work Act 1974 - Control of Substances Hazardous to Health - Regulation 9 (2002) Thorough Examination and Testing of Local Exhaust Ventilation Systems

Company:	System Designation:	System Installation Date:
Designated Person:		

Inspection and Maintenance Schedules

1. Daily checks.
2. Weekly inspection of process enclosure, extract offtake, hose/ducting, and system.
3. Monthly inspection of process enclosure, extract offtake, hose/ducting, and system.
4. Yearly inspection/testing.

Process enclosure, extract offtake(s), hose/ducting, and system.

Inspection and Maintenance Record

1. **Daily inspection**
   Inspection of the process to ensure extract devices/nozzles/enclosures/hoses are in place and correctly positioned. Examination of the system to ensure it is running. This to be carried out by the operator. Daily inspection not recorded.

2. **Weekly inspection**

Weekly inspection by supervisor of physical condition of extract devices/nozzles/enclosures/hoses and system for damage, change (parts added or removed) and correct operation, etc. Check also that daily inspections have been completed. Tick boxes to confirm system ok/change. Add details of any changes.

Report changes to Engineering Manager. Record any remedial actions taken.

Week number	Date	System ok	System change	Details of change/repairs, etc.	Initial
1					
2					
3					
4					
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11					
12					
13					
14					
15					
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24					
25					

Weekly inspection by supervisor of physical condition of extract devices/nozzles/enclosures/hoses and system for damage, change (parts added or removed) and correct operation, etc. Check also that daily inspections have been completed. Tick boxes to confirm system ok/change. Add details of any changes.

Report changes to Engineering Manager. Record any remedial actions taken.

Week number	Date	System ok	System change	Details of change/repairs, etc.	Initial
26					
27					
28					
29					
30					
31					
32					
33					
34					
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52					

3. **Monthly inspection**

In addition to weekly checks, disconnect hoses and check for blockage and smooth operation of fan, signs of dust or vapor/gas/odor carry over. Tick boxes to confirm system ok/change. Add details of any changes. Report changes to Engineering Manager. Record any remedial actions taken.

Week number	Date	System ok	System change	Details of change/repairs, etc.	Initial
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

4. **Yearly inspection**

	Comments	Supervisor signature:	Date:
Annual service to include all regular checks, inspection of filter condition, blower, and electrical system, and a filter replacement (if not changed within the previous 12 months).			
Annual thorough inspection and testing of LEV system in accordance with C.O.S.H.H. regulation 9 (max interval 14 months) including reporting.			