Donaldson
BOFA™

Spark Arrestor V2

Spark Reduction 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-SPARK ARRESTOR V2-BOFA-US
Revision 1.5

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.

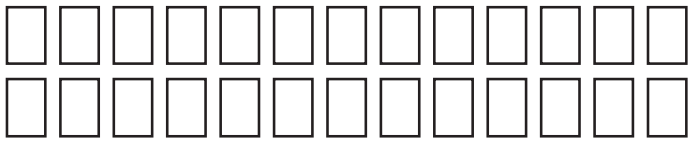
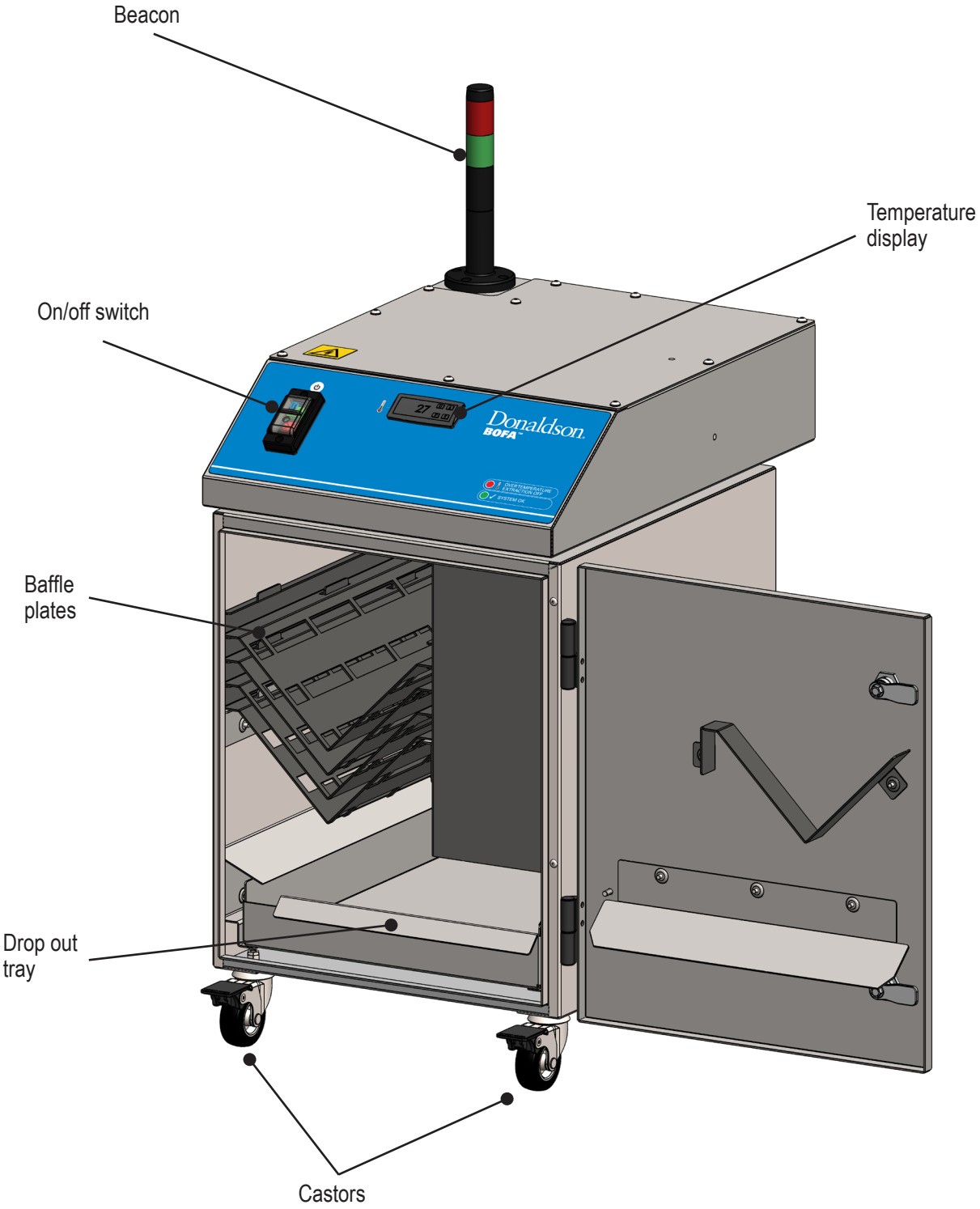


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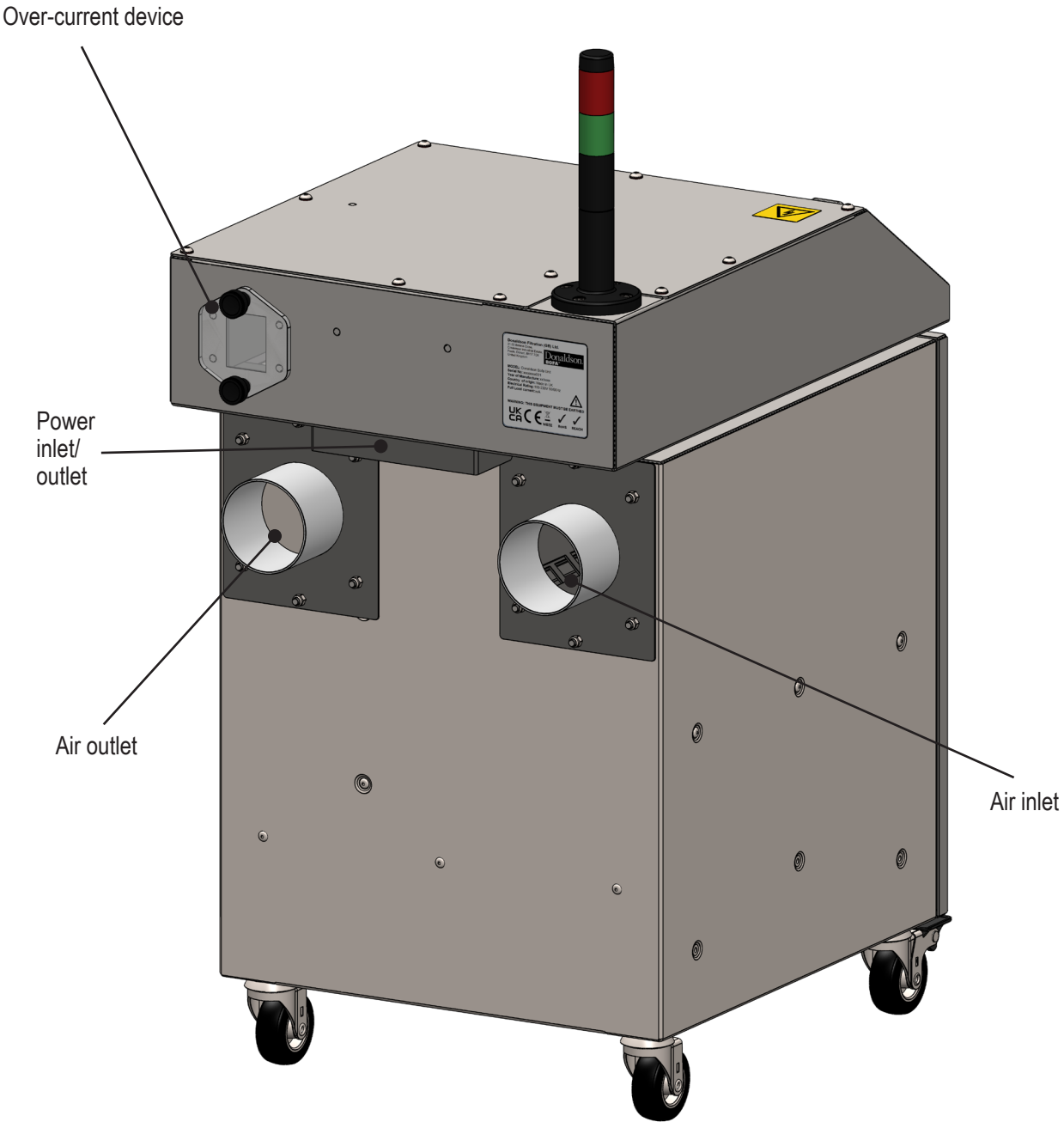
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1 Overview

1.1. Front view of Spark Arrestor V2



1.2. Rear view of Spark Arrestor V2



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 internal area of the system may contain a mixture of particulates, some of which may be sub-micron size. When the internal parts 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 opening the door, always wear a mask, safety shoes, goggles, and gloves.

Intended use

This equipment has been designed to prevent potentially damaging particulate from entering fume extraction systems. However, it is the user's responsibility to ensure the equipment is installed correctly and is suitable for the application. This 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 indicates that appropriate personal protective equipment (PPE), including goggles, gloves, and a mask, should be worn when handling or cleaning the baffle plates.
	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 system, it may be possible that the material inside the system will ignite. Whilst any resultant fire would typically be retained within the system, the damage to the 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 system should not be used on processes 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

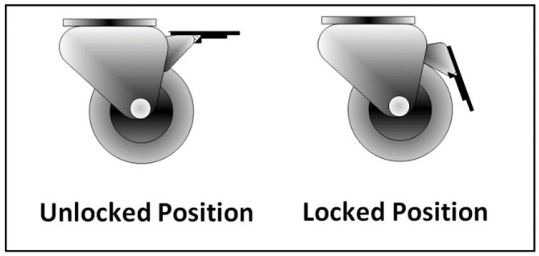
Before installation, check the system for damage.

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

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

Mechanical handling equipment should be used in accordance with local operating procedures.

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. Open the front door and remove the transit foam from system. Ensure that 20" (500 mm) space is available around any vented panels on the system to ensure adequate airflow.
3. With the system in position, lock the two front castors.





	CAUTION	Due to the weight of the 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 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. Check the baffle plates are located in their correct position before closing the door and securing the door latches.



4 Installation

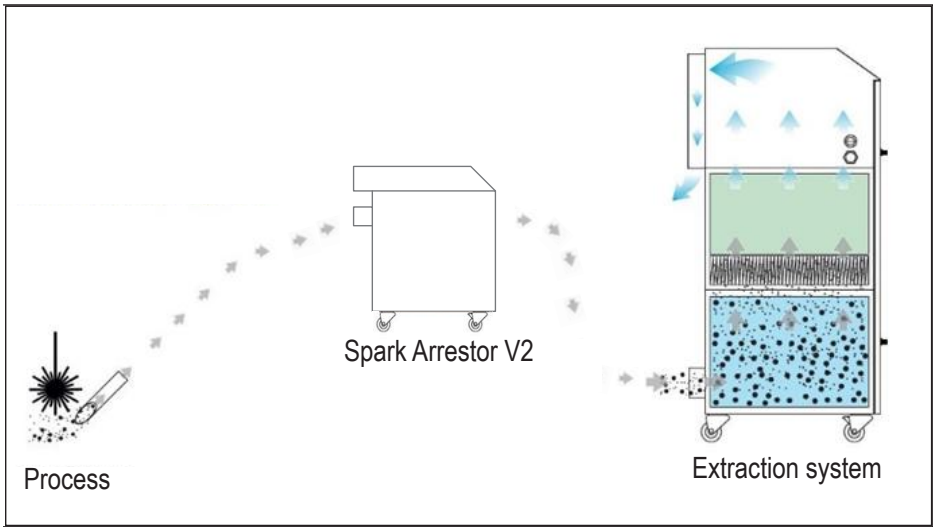
The system has been designed to be installed as an inline device that should be connected between the fume source and the extraction system. Please ensure correct risk assessments are carried out before this system is installed. If you are unsure whether your application is suitable for this system, please contact Donaldson BOFA.

	CAUTION	Metal pipework must be used.

4.1. Connecting to an auxiliary extraction system

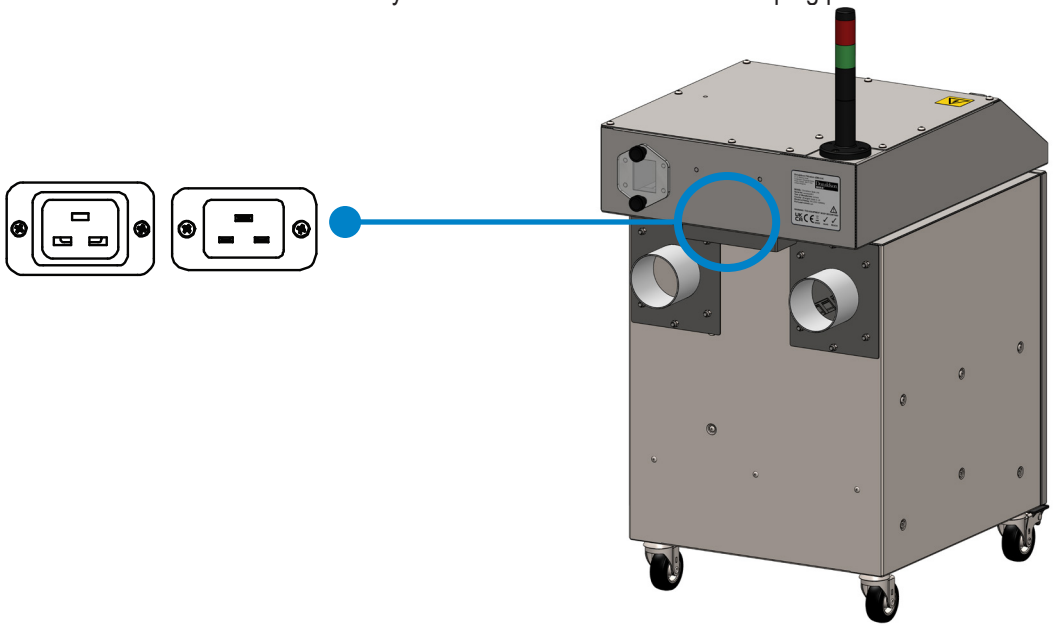
The Spark Arrestor V2 should be paired with a Donaldson BOFA extraction system with airflow capacity of up to 500 cfm (850 m³/h).

The system should be connected in-line with the process and the extraction system as shown below. Please refer to section 1.2 for hose connections to the system.



The power supply for the extraction system should be connected through the Spark Arrestor V2 to ensure the airflow is stopped when the Spark Arrestor V2 detects an issue (max 13 A).

The mains cable from the extraction system should be wired with the IEC plug provided and connected to the IEC outlet below.



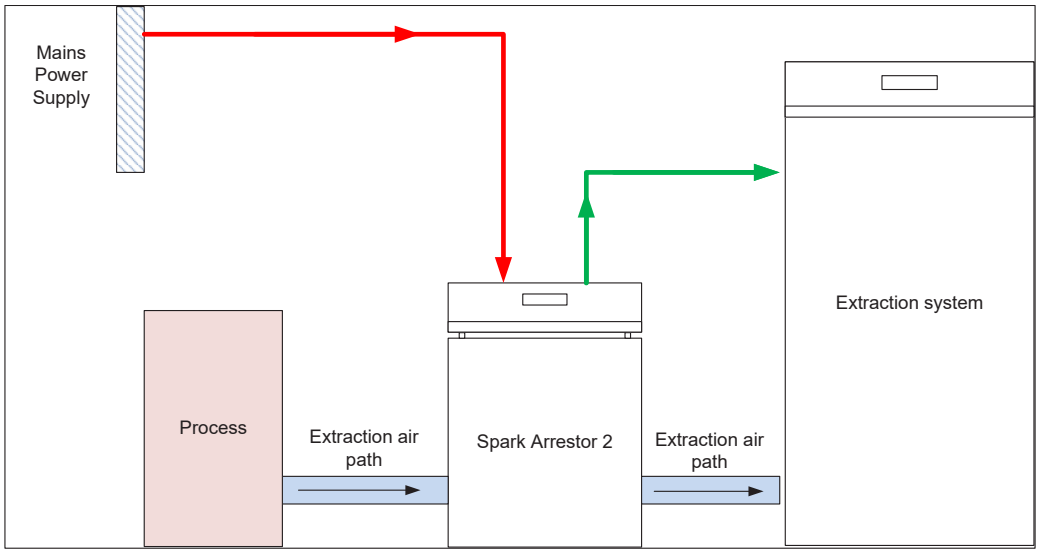
4.2. Connection to power supply

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 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.

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.



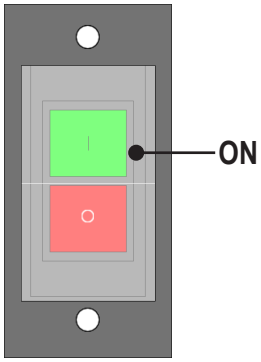
5 Operation

5.1. Turning system on

	CAUTION	Ensure the ambient temperature is below 86 °F (30°C) before switching the Spark Arrestor V2 on for the first time.

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.

Please note: Turning the Spark Arrestor V2 off will disconnect the power to any auxiliary system connected through the Spark Arrestor V2.



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

5.2. Setting the controller

The controller is factory set at 86 °F (30°C) but it is very important that the controller is adjusted 50°F (10°C) higher than the airflow temperature when running in normal conditions.

When the controller reaches the set temperature, the power to the extraction system will be stopped.

Setting the temperature too low will cause the power to be cut prematurely.

Setting the temperature too high will not cut the power at the correct time.

It is the user’s responsibility to set the correct temperature set point.

5.2.1. How to set the controller

Take an ambient temperature measurement in the area where the Spark Arrestor V2 will be located.

1. Press the “P” button and the screen will display “SP” as shown below:



2. The controller is now in set mode. Use the up/down buttons to set the temperature.



3. Press the ‘P’ button once again. This will save the new trip point.

5.3. Warning beacon

The Spark Arrestor V2 includes a 2-color beacon. This is used to provide the operator with a clear indication on the status of the system.

The diagram below provides information on each color.



Green light – system is operational and running within the temperature parameters.

Red light – system has detected a temperature rise above the set point. At this point, the Spark Arrestor V2 will shut down the extraction system.

In the event of over-temperature (red light)

The Spark Arrestor V2 will have stopped the extraction system. At this time, it is important to follow your risk assessment procedure. If the extraction system has been inspected and is safe to use, then cycle the power continue use. If not, then the system should be taken out of use and replaced.

At this time, some parts of the Spark Arrestor V2 may be hot, so suitable precautions must be taken to avoid harm.

Symbols on the temperature display:



	This indicates the main relay is set to OK (power output is on and beacon displays green).
	This indicates the temperature is within 41 °F (5°C) of the set point (the point at which the relay cuts the power, the red beacon light comes on and the alarm sounds).

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, only the manufacturers trained maintenance technicians are authorized to carry out component testing and replacement. Unauthorized work 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 system

Personal protective equipment (PPE) should be worn in accordance with your local guidelines. When cleaning the product, appropriate cleaning chemicals should be used, taking into consideration what contaminants the system has been used to extract. If your system has a powder-coated finish, this may be affected by more aggressive detergents.

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

6.1.3. Cleaning the baffle plates and collection tray

Refer to section 2.2 for PPE requirements.

A risk assessment should be conducted to determine the required frequency for cleaning of the baffle plates and the emptying of the collection tray.

To clean the baffle plates:

1. Isolate the electrical supply to the system.
2. Open the door of the system.
3. Remove all baffle plates.
4. Brush off the particulate.
5. Replace the plates, close the door and turn the sytem on.

To empty the collection tray:

1. Isolate the electrical supply to the system.
2. Open the door of the system.
3. Remove the tray.
4. Empty the tray and brush out.
5. Replace the tray, close the door and turn the sytem on.

7 Replacement parts

7.1. Maintenance protocol

Cleaning and tray emtying may be recorded in the table below:

System Serial Number:	
Cleaning & tray emptying	
Date	Engineer

7.2. Part disposal

The method of disposal of the used parts 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 baffle plates to see if they fall into the hazardous category. If so, they will need to be disposed of in line with the local/national regulations.

*European Waste Catalogue

8 Optional components

8.1. Power module installation

1. Isolate the Spark Arrestor V2 from all power sources.
2. Move the module to the location where it is going to be installed and remove the outer packaging.
3. Using an M5 tool, remove the two lower bolts on the system's spigots (see point "A" on figure 1).
4. Position the module to line up with the two holes and secure in place using the bolts and washers provided with the module.
5. Connect the power cable from the module to the Spark Arrestor V2 (see figure 2), and then the power lead from the extraction system to the Spark Arrestor V2 (see figure 3).
6. Ensure the extraction system still has adequate ventilation area with 20" (500 mm) space around any vented panels once the module has been installed. Do not block or cover the system openings.



Figure 1

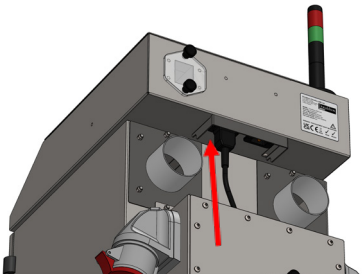


Figure 2

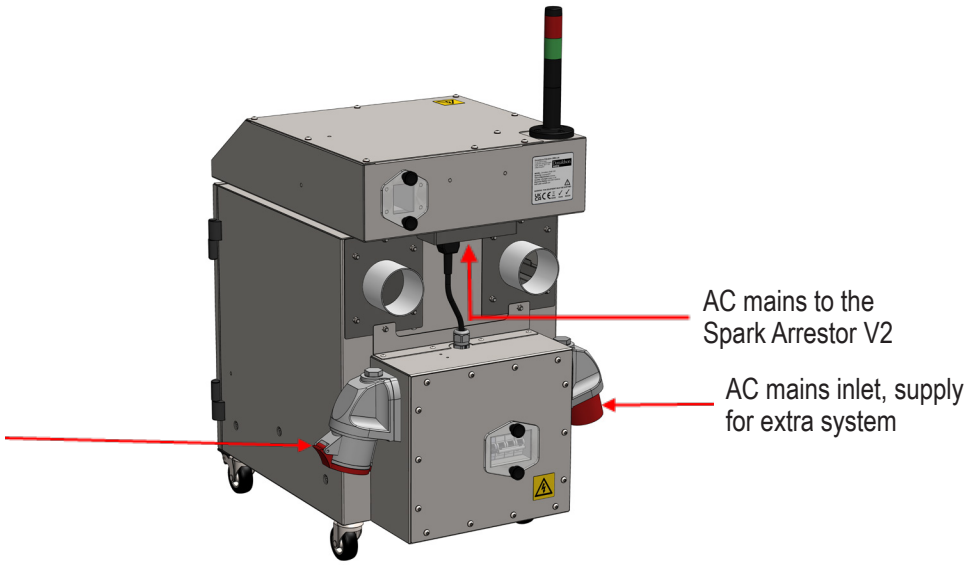


Figure 3

9 System specifications

System: Spark Arrestor V2

*Airflow capacity: up to 500 cfm (850 m³/h)

Weight: 90 lbs (41 kg)

Electrical supply: 115-230 V

Hertz: 50/60 Hz

Full load current: 13 A (with extraction system connected)

0.4 A (Nominal)

Indoor use only

Overvoltage category II

Pollution degree 2

Not for use in wet applications

Maximum altitude: 2000 m

System: **Spark Arrestor V2 Power Module**

Hertz: 50/60 Hz

Full load current: 13 A (with extraction system connected)

0.4 A (Nominal)

Power module socket colour coding:

Blue: 230 V (32 A max)

Red: 415 V (3 Ph) (32 A max)

Yellow: 110 V (32 A max)

Size:

	Imperial (inches)	Metric (mm)
Height without/ with beacon	26.4 34.3	670 870
Width	16.3	415
Depth	21.1	535

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)

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

Wiring schematic and spare parts list available upon request.

*The Spark Arrestor 2 should be paired with a Donaldson BOFA extraction system with airflow capacity of up to 500 cfm (850 m³/h).

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

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					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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					
35					
36					
37					
38					
39					
40					
41					
42					
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46					
47					
48					
49					
50					
51					
52					

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

Inspection and Maintenance Record

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 routine checks, inspection of baffle plate condition, blower, and electrical system, and cleaning of the baffle plates where required.			
Annual thorough inspection and testing of LEV system in accordance with C.O.S.H.H. regulation 9 (max interval 14 months) including reporting.			