## Contents

### Overview

| 1 | 01 | Overview of your extraction system (front) |
|   | 02 | Overview of your extraction system (back) |
|   | 03 | Overview of the Control Panel |

### Safety Instructions

| 2 | 01 | Important safety notes |
|   | 02 | Safety labels |

### Before Installation

| 3 | 01 | Unpacking and unit placement |

### Installation

| 4 | 01 | Fume Capture Methods |
|   | 02 | Connecting to power supply |
|   | 03 | Optional Added Features |

### Operation

| 5 | 01 | Turning extractor On / Adjusting Airflow |
|   | 02 | Setting the AD 350 Air flow rate |

### Maintenance

| 6 | 01 | Cleaning the unit |
|   | 02 | Filter replacement |

### Replacement Parts

| 7 | 01 | Consumable Spares & Filter Disposal |

### System Specifications

| 8 | 01 | AD350 Specifications |
Overview

Air Outlet

Motor Cooling

Mains Isolation Switch

Mains Inlet

Signal Cable Inlet

Air Inlet
Overview

Flow Adjustment

Filter Blocked

Filter 75% full

Company Branding

System Running Clean

VOC Alarm

THE WORLD LEADER IN FUME EXTRACTION TECHNOLOGY

BOFA
Safety Instructions

Important safety notes
Concerning symbols used on the extraction unit and referred to within this manual.

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.

Electrical Safety
The AD350 has been designed to meet the safety requirements of the Low Voltage Directive 2006/95/EC (previously numbered 73/23/EEC).

Warning
When working with the pump/motor 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 pump/motor 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 AD350 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.

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

Carbon selection
Please note that the media within the filter fitted in the AD350 is capable of adsorbing a wide range of organic compounds. However, it is the responsibility of the user to ensure it is suitable for the particular application it is being used on.

BOFA Technical Service
If problems arise with your AD350 unit or if it displays a fault code, please contact us:

* Visit our website at [www.bofa.co.uk](http://www.bofa.co.uk) for on-line help.
* Or contact the helpline on +44 (0) 1202 699444, Mon-Fri, 9am-5pm.
* Email: Technical@bofa.co.uk

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 unit.

Serial Number: AD350
Safety Instructions

Warning and Information labels
The following listing details labels used on your AD350 unit.

Goggles, Gloves & Mask Label
Location: Front face of filter.
Meaning: Goggles, Gloves and Masks should be worn while handling used filters.

Do Not Cover Label
Location: Rear Exhaust Panel
Meaning: Do not cover any louvers or holes adjacent to the label.

Electrical Danger
Location: Electrical access panel, top half of unit.
Meaning: Removal of panels with this label attached will allow access to potentially live components.

Warning Label
Location: Next to release clips.
Meaning: Power should be isolated before the panel with this label attached is opened/removed.

Serial Number Label
Location: right face of unit, top right corner.
Meaning: This label contains a variety of information about the extraction unit, including:

- Company name, Address & Contact number
- Extractor model
- Unit serial number
- Operating voltage range
- Maximum current load
- Operating frequency
- Year of Manufacture
- Relevant approval markings/logos

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

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

It is therefore essential to minimise 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 unit should not be used on processes where sparks could occur, with explosive dusts and gases, or with particulates which 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.
Before installation

Packaging Removal & Unit Placement

Before installation, check the extraction unit for damage. All packaging must be removed before the unit is connected to the power supply. **Please read all instructions in this manual before using this extractor.**

1. Move the unit to the location where it is going to be installed and remove the outer packaging. **This unit should be installed in a well-ventilated area.** Ensure that 500 mm space is available around any vented panels on the extractor to ensure adequate airflow.

2. Check the filter is located in its correct position before replacing the lid and securing the clips.

**Caution**
Due to the weight of the extractor suitable lifting equipment should be used and with regard to appropriate safety precautions. (See Appendix for product weight details)

**Caution**
Do not block or cover the cooling vents on the unit, as this severely restricts airflow and may cause damage to the unit.

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

The AD350 has been designed to remove and filter fume containing potentially hazardous particulate and gases generated during manufacturing processes. Such hazardous substances are captured within a multistage filtration system after which the cleaned air is returned to the workplace.

Fume Capture Methods
The fume is normally captured by 1 of 3 methods.

- Flexible arm/ Nozzle
- Enclosures
- Cabinets

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)

Flexible Arm & Nozzle Extraction
The stay put arm should be mounted as close as possible to the marking point using the horseshoe clips. Unscrew the push fit connector from the other side of the flexible hose. Cut the flexible hose to suit the distance back to the extractor connection and push onto the extractor inlet.

Purge air should be kept to a minimum, where possible, to prevent the fume being blown away from the nozzle. High speed bottling lines may need bigger scoops or nozzles both sides of the bottles because of the turbulence caused by the speed of the bottles.

Moving products
For applications where the product to be marked is moving past the stationary laser head the capture nozzle should be positioned as close as possible to the marking area on the side the product is moving towards.

Enclosures
The extraction hose and nozzle can be attached to the enclosure surrounding the marking zone provided that the extraction point is within 50-75mm of the marking point.
Connection to Power Supply
Please follow the above specification when selecting the power supply outlet for the AD350 system, ensure the power supply is suitable before connecting the AD350 system.

Check the Integrity of the electrical power cable, if the supply cord is damaged the extraction unit should not be connected to the mains. The supply cord should only be replaced by a BOFA engineer as an electrical safety test may be required after replacement.

⚠️ The AD350 MUST be connected to a properly earthed outlet.

If your AD350 system was ordered with any optional extras please read section 4.03 before the power connection is made as additional connections may be required before power is connected to the extractor.

Connect the power cable to an isolated electrical supply.

The mains socket should be installed near the extractor it should be easily accessible and able to be switched On/ Off. The cable run should be arranged so as not to create a trip hazard.

Cabinets
Cabinets normally have a 75mm or 100mm spigot for fume extraction. For best performance use the same diameter hose as the spigot and reduce at the extractor end if necessary. Keep the hose run as short as possible.

Connection to extraction unit
All ductwork should be installed and connected to the extraction unit before the extraction system is turned on.

Exhausting filtered air outside
If requested your extraction unit will have been fitted with an exhaust outlet spigot. This provides a connection point for exhaust pipework to be fitted. It is important to keep any ducting to a minimum, in order to reduce back pressure within the system.
Installation

Optional added features
The AD350 can be configured to suit customer specification. These optional extras would be discussed, arranged and installed prior to delivery. (If unsure what features your system is equipped with please contact the seller with the unit serial number, (Refer to section 2 for location) who will be able to advise what specification has been supplied.

Remote Stop/Start feature
Enables the extraction unit to be remotely turned On / Off via an external signal.

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

DC Voltage input
This configuration requires the Black & Red cores of the signal cable (Refer to section 1 for location) to be connected to a known and tested DC power supply, in order to start the extractor. The signal needs to be connected to a double insulated DC power supply.

The operating voltage for this signal is 24VDC. Only this voltage should be connected. Voltages connected outside of this range may cause irreversible damage to the relay.
Red cable = V+
Black cable = V-

When the extractor is provided with the correct DC voltage the motor will start and maintain the set flow rate (Refer to section 5 for how to set the flow) when the DC voltage is removed the motor will slow down and come to a stop.

The extractor will need to be turned on (See section 5 for turning the extractor on) in order for this feature to operate.

Override
Enables the extractor 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 internal motor access panel (see below for switch location)

Switch in “On” position
In this position the extractor will require a start signal (either Voltage input or Volt free, depending on the requested specification) to enable the motor within the extraction unit.

Switch in “Off” position
In this position the extractor motor will run without the requirement for an external start signal. This feature is useful for engineers carrying out works/ tests on the extractor without the need for the laser / auxiliary signal being present.

Filter Blocked / System Fail Signal
With this option the extraction system will output a signal to alert the user when the extractor has failed or when the filters are blocked.

This feature will not directly stop the extractor from running correctly, but if fitted this feature should be terminated correctly before power is applied to the extraction system.

Connection specification
This signal is available via the Green and White cores of the signal cable. The system will provide a volt free Open / Closed signal that can be connected to an external interface, beacon or warning device following the specification below. The signal needs to be connected to a double insulated DC power supply.

- Maximum input voltage: 24V AC
- Maximum current load: 3A @ AC
OR
- Maximum input voltage: 24V DC
- Maximum input load: 3A @ DC

Filter Signal
When the filters become blocked or the system develops a fault the connection between the Green & White cables will become “Open”
When the extraction system is running normally the connection between the Green & White cables will become “Closed”
Operation

Turning extraction unit on
The main isolation switch must be switched to the “On” position (Refer to section 1 for switch location) by depressing the ‘I’ side of the switch.

To set the airflow
Press the Up arrow button to increase airflow and press the down arrow button to decrease airflow. The level of airflow is indicated by the vertical row of six blue LEDs to the right of the mains isolation switch. As the airflow increases, more blue LEDs light up and the opposite for decreasing the airflow.

Setting the desired airflow
The AD350 features manual flow control. This enables the user to set the required airflow rate. Over time as the filters begin to block the user should manually increase the motor 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.

The extractor and all pipe work must be fully installed and connected before the airflow is set.
Setting your AD350 BOFA Air Flow Rate

This unit is designed to promote a healthy, safe and productive environment. Achieving this is dependent on setting the appropriate airflow and utilizing the proper filter set for your engraving laser application. Correct fume extraction will also extend the life and reliability of your laser by keeping the optics cleaner.

Upon correct completion of installation, the optimum air flow rate must be assessed and set.

See Manual Operation 5.01

When setting airflow many factors must be considered:

- Substrate – all materials behave differently when processed by a laser and can create a range of by-products
- Speed – faster cutting/marking/engraving speeds can create fumes more quickly
- Intensity – higher laser power settings can create greater volumes of fumes and particulates
- Work done – in general cutting may produce more fumes than light engraving

When setting airflow for the AD350 fume extractor we recommend maintaining enough airflow to capture particulates and fumes from the laser.

Setting the airflow too high can reduce the dwell time for fumes inside the unit. This can result in reducing the capture efficiency of the unit. Dwell time must be adequate for the carbon in the unit to absorb odors/fumes.

Recommended initial setting:

1. Once AD350 is installed set the airflow to the 3rd LED (See Manual Operation 5.01)

2. Begin running your process (start using your laser)

3. Observe the plume of fumes produced by the laser.
   1) If the plume is not captured - increase airflow until capture is seen.
   2) If the plume is captured – decrease the airflow until it is not captured and then increase again until capture is confirmed.

4. Periodically check the work area of the laser for uncaptured particulates (you may need to increase airflow or check and replace filters) see manual 6.02

5. Check for Odors – Should odors enter the environment whilst using your laser. (check and replace filters as needed Manual 6.02)

If unsure on settings, substrates or by-products contact BOFA Americas, Inc.

Technical Support: (618) 205-5007
email: technical@bofaamericas.com
Maintenance

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.

Maintenance General

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

Cleaning the unit

The powder coat 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 unit.

Filter Information

A log of filter changes should be maintained by the user. The filters require attention when the display shows the configuration shown on the next page or when the extractor no longer removes fume efficiently.

All filters are tested to EN1822. A certificate of conformity for each filter is available on request.

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

To prevent overheating, units should not be run with a blocked filter condition, or with dust obstruction of Inlets / Outlets.

Fire Risk Warning

In the very rare event that a burning ember or spark is drawn into the fume extraction unit, it may be possible that the filters will ignite.

Whilst any resultant fire would typically be retained within the fume extraction unit, the damage to the extractor could be significant.

It is therefore essential to minimise 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 unit should not be used on processes where sparks could occur, with explosive dusts and gases, or with particulates which 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.
Maintenance

Filter Replacement
During use, the AD350 will alert the user when its filter needs replacing. When the filter needs to be changed, the LED to the left of the bell symbol will glow red.

To remove and replace the pre filter follow the procedure detailed below.

1. Isolate the electrical supply to the unit.
2. Undo the latches on either side of the unit and lift the motor section off.
3. Remove the filters from the base.
4. Vacuum out any dust in the base.
5. Remove the pre filter from inside the combined filter and replace with a new pre filter.
6. Locate the combined filter into the base.
7. Replace the motor section and fasten the latches.
8. Reconnect the power supply.

To remove and replace the combined filter follow the procedure detailed below.

1. Isolate the electrical supply to the extractor
2. Undo the two clips on the sides of the unit and remove the motor section using the two handles on the sides of the lid.
3. Lift the filter out of the unit. Once removed it is recommend that the used filters are bagged and sealed.
4. Lower the new filter into position. If the current pre filter is found to be serviceable place into the new combined filter.
5. Replace the motor section, and fasten the two clips.

If the VOC (Volatile Organic Compound) alarm option is installed in your AD350 unit, the extractor will monitor and detect the level of VOC particles in the air. If the VOC level rises above a pre-set level then the LED to the right of the bell symbol will illuminate red. This requires the replacement of the filter.

Note: The unit needs to be set at above 75% power for the filter condition LEDs to function.

Note: The filter MUST be fitted when the extractor is in use.
Replacement Parts

Consumable Spares

The AD350 extraction system contains two filters. These should be replaced when instructed to do so by the AD350 system (see section 6 for replacing the filters).

To maintain performance it is important that the filters are replaced with identical BOFA filters. To re-order please refer to the Filter number printed on the filter installed in your extraction unit.

Maintenance Protocol

Users can record changes in filter change intervals on the table below.

<table>
<thead>
<tr>
<th>Unit Serial Number:</th>
<th>Pre Filter</th>
<th>Combined Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>Engineer</td>
<td>Engineer</td>
</tr>
</tbody>
</table>

Filter disposal

The AD350 combined filter is manufactured from non-toxic materials. Filters are not re-usable, cleaning used filters is not recommended. The method of disposal of the used filters depends on the material deposited on them.

For your guidance

<table>
<thead>
<tr>
<th>Deposit</th>
<th>EWC Listing</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Hazardous</td>
<td>15 02 03</td>
<td>Can be disposed of as non-hazardous waste.</td>
</tr>
<tr>
<td>Hazardous</td>
<td>15 02 02M</td>
<td></td>
</tr>
</tbody>
</table>

*European Waste Catalogue
System Specifications

Unit: AD 350

Capacity: 380 m³/hr (223cfm)
Weight: 40Kg (88.2lb)
Motor: Centrifugal Fan
Output: 1.1Kw
Electrical supply: 115-230V
Hertz: 50/60Hz
Full Load Current: 12.5 A
Noise Level: Below 62dB (A)
(at typical operating speed)
Approvals: CE, UL, cUL

Size:

<table>
<thead>
<tr>
<th></th>
<th>Metric (mm)</th>
<th>Imperial (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>588</td>
<td>23.1</td>
</tr>
<tr>
<td>Depth</td>
<td>484</td>
<td>19</td>
</tr>
<tr>
<td>Width</td>
<td>398</td>
<td>15.7</td>
</tr>
</tbody>
</table>

Filters:

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Surface area</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Filter (F8)</td>
<td>4.2 m²</td>
<td>95% @ 0.9 microns</td>
</tr>
<tr>
<td>HEPA Filter (Combined filter)</td>
<td>2.1 m²</td>
<td>99.997% @ 0.3µ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Carbon Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon filter (combined filter)</td>
<td>Activated Carbon</td>
<td>8.5kgs</td>
</tr>
</tbody>
</table>

Environmental operating range:

Temperature: +5°C to +40°C
Humidity: Max 80% RH up to 31°C
Max 50% RH at 40°C
Contact Information

BOFA Headquarters
21-22 Balena Close
Creekmoor industrial Estate
Poole
Dorset
BH17 7DX
UK
Phone: +44 (0) 1202 699444

BOFA Americas
303 S.Madison Street
Staunton
Illinois
62088
USA
Phone: 001 (618) 205-5007