AOF

Operation and Maintenance

This Edition: 26th May 2026

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CAUTIONS

Do not place this product near a powerful magnetic field or expose to static electricity.

Do not drop unit or damage the unit body.

Do not clean with corrosive products.

Pre filter system must be washed periodically. When cleaning pre filter, we recommend also cleaning the interior of the machine.

This unit is not ATEX rated.

It is your responsibility under ATEX regulations to ensure this unit is located in an area which is rated as suitable for the specification of the unit.

We do not accept responsibility for any inconvenience or damage caused by unusual or unspecified applications. If the product is damaged or service is required, please contact us.

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INTRODUCTION

Overview

Thank you for choosing AOF as your mist control system. Please read this document before installation and use.

This document details maintenance activities which are essential to the safe use of your AOF. We recommend that the Responsible Person reads this manual fully prior to installation and operation of the AOF.

This document refers to the AOF range. Models of this type are available with a range of filter configurations. The filter configuration in use is detailed on the system Commissioning Certificate and on order.

About AOF

AirBench is a dedicated coolant mist / smoke filter system designed for installation to machine tools, for the removal of contaminants from most types of machining.

AOF is currently patent pending.

About this Document

This document provides general maintenance and operation instructions for the AOF range. It should be read in conjunction with the Commissioning Certificate supplied on installation. If you have any concerns or doubts about maintenance or operation of this unit, contact the supplier.

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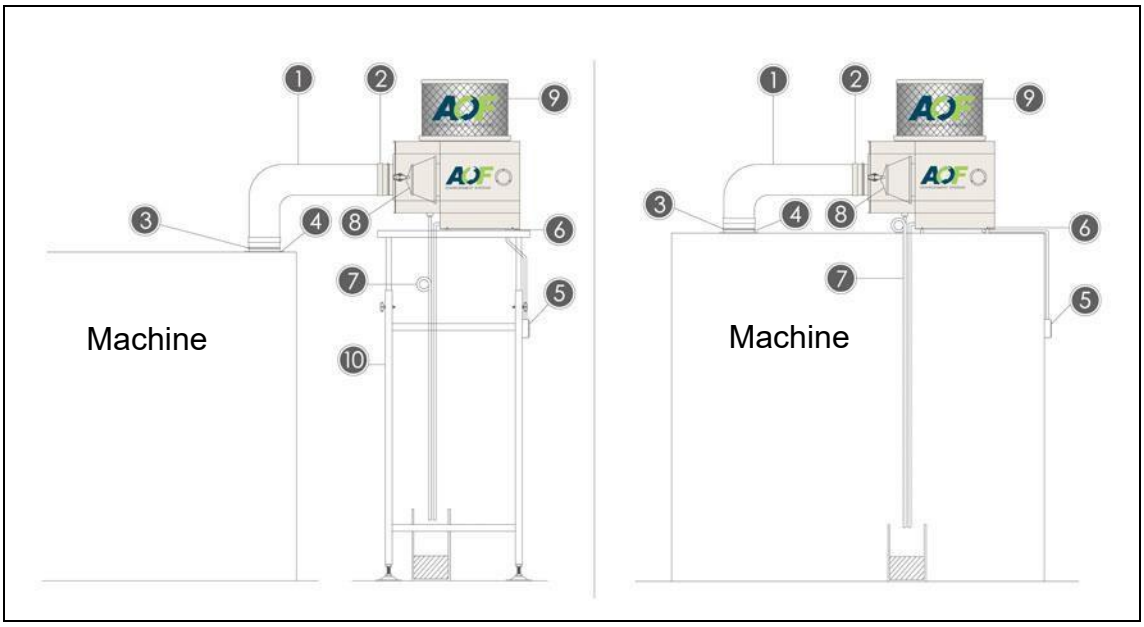
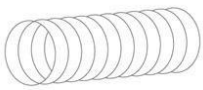
SCHEMATIC AND NUMBERING



NO.	Part			AF-10	AF-20	AF-30
1	Flexible hose (std.)		Type	H-150	H-150	H-150
			Outside dia.	Ø150	Ø150	Ø200
2	Flexible hose clamp (std.)		Type	HB-165	HB-165	HB-215
			Outside dia.	Ø150	Ø150	Ø200
3	Air inlet adaptor with Jacobs connection (std. x 1)		Type	PM-150	PM-150	PM-200
			Outside dia.	Ø150	Ø150	Ø200
4	Anti-vibration mount (std.)		Type		AV-832	
5	Oil resistant cable		Type	CA-1.25mm$_2$x4C		
			Outside dia.	1.25mm$_2$x4C x3.3M		

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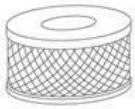
6	Oil drain hose (std.)		Type	DH-300		
7	Pre-filter system (std.)		Type	PF-250	PF-250	PF-300
8	After-filter system (std.)		Type	S – Standard (Coolant) P – Practical (Oil smoke)		
9	Telescopic stand (opt.)		Type	SU-1800 1100-1800mm height		

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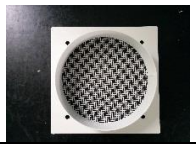
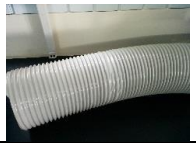
SCOPE OF SUPPLY

Name		Quantity
	Air inlet adaptor	1
	Flexible hose clamp	2
	Jacob Hose Connector	2
	Jacob Clamp	2
	Jacob U-Seal	2
	Anti-vibration mount 8mm	4
	Flexible hose 1.5M	1
	1.25 four-core oil proof cable 3.3M	1

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	Oil drain hose 3M	1 Pre-installed
	Power switch (optional)	1

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INSTALLATION

General

- Installation must only be performed by an authorized Technician/Electrician who has carefully read the installation guide. This is to prevent electric shock or damage to the machine and a trouble free installation.
- To ensure correct performance, the air cleaner should be properly installed on the machine tool. The installation area must be stable and vibration-resistant. If the machine is not capable of supporting the weight of the AOF, use a stand or mount to a wall.
- To maintain efficiency, maintain high bend radius in hoses.
- The electric wiring must comply with electrical standards and should be completed by a qualified and competent Electrician or Technician.
- **Our AOF units come pre-wired for 220V 3 phase supply (220/3/50) and may also be configured for 415V 3 phase (415/3/50). For further electrical information, refer to the following guidance in this manual.**
- When installing the unit, motor / overload protection must be provided. A suitably sized DOL starter or motor protection circuit breaker should be used.
- Do not change the power wire length or use extension wire.
- After installation, the installer should complete commissioning tests as detailed within this document.

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Electrical Configuration

IMPORTANT: As standard, AOF units are supplied configured for 230v 3 Phase supply. To run this unit from a 415v 3 Phase supply, you MUST make changes to the power connections inside the terminal box. For units with LED indicators, you MUST also make changes to the connections powering the LED control circuit.

415V / 3 Phase wiring alteration process

Please ensure that the following instructions are read and understood fully before beginning installation, installation should only be carried out by a trained and competent person.

Failure to do this will result in damage to the unit

When changing supply voltage from 220V 3 Phase to 415V 3 Phase the following alterations are required to the internal wiring.

There are different wiring configuration dependent on the serial number of the AOF unit.
Please check the serial number of the AOF unit and refer to the wiring instruction associated with the range the unit falls within.

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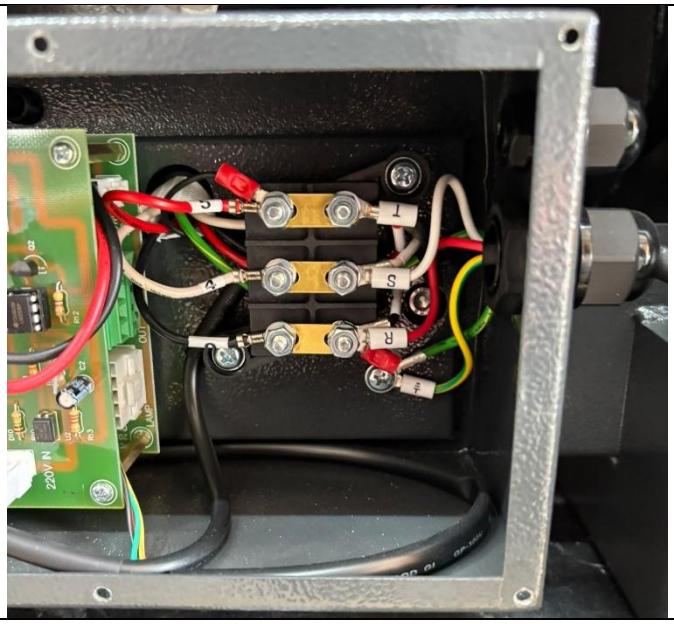
AOF internal wiring change for 415V 3PH supply - New Configuration

The following wiring instructions apply to the AOF models shown in the table below with serial numbers equal to or greater than those listed.

Model	Serial Number
AF10	NLAF10_26000
AF20	NLAF20_26000
AF30	NLAF30_25180
AF40	NLAF40_26000

1. Remove back plate to gain access to electrical terminal box
2. Remove 6 x screws from electrical terminal box and remove cover
3. Remove plastic terminal cover
4. Loosen and remove the required terminal nuts to enable relocation of motor connections
5. Loosen and remove brass connecting bars to change their orientation from horizontally connected, to vertically connected on the left side of the terminal block.
6. Tighten all connections and ensure cores are terminated at the correct terminals – use photographs below to confirm.
7. Refit plastic terminal cover
8. Refit terminal box lid ensuring seal is fitted
9. Refit back plate



Standard configuration for 220V 3 Phase supply - as supplied

The AOF units will be shipped in a standard wired configuration to be connected to a 220V 3 Phase supply.

If a 220V 3 Phase supply is being used then no alteration to the internal wiring is required.

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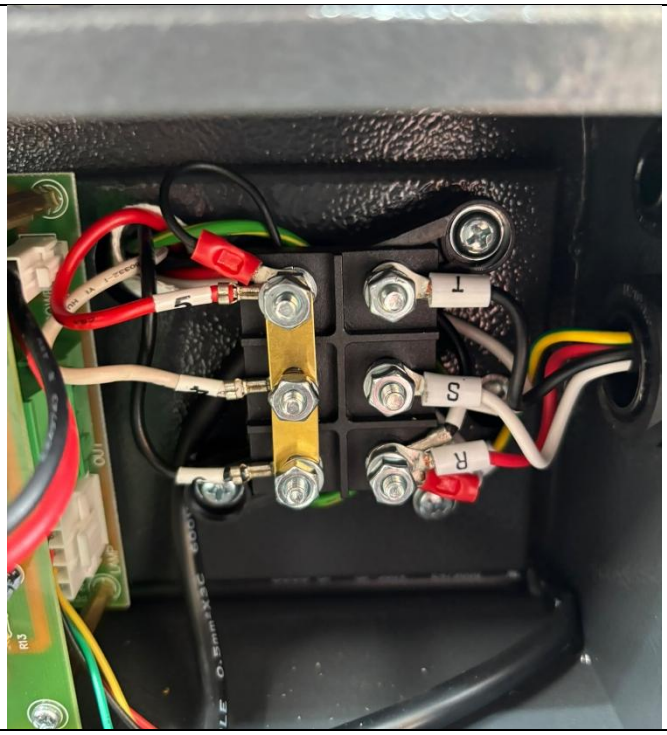

Altered configuration for 415V 3 Phase supply

If a UK standard supply of 415V 3 Phase is intended to be used to power the AOF then alteration to the orientation of the brass jumpers is required.

Failure to carry out this alteration correctly can result in damage to the fan motor and P.C.B.

AirBench will not be held responsible for any damage caused to any system components, it is the responsibility of the installer to ensure all connections and voltages are correct before attempting to run the unit.

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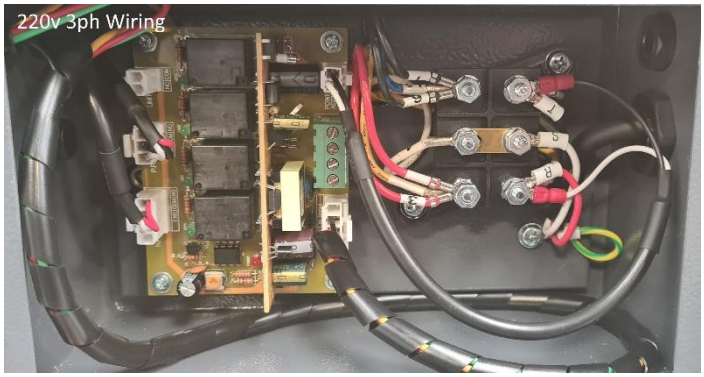
AOF internal wiring change for 415V 3PH supply – Old Configuration

The following wiring instructions apply to the AOF models with earlier serial numbers than those stated in the table above.

1. Remove back plate to gain access to electrical terminal box
2. Remove 6 x screws from electrical terminal box and remove cover
3. Remove plastic terminal cover
4. Loosen and remove the required terminal nuts to enable relocation of motor connections
5. Remove brass connecting bar
6. Locate cores 5 & 6 and remove from original terminals
7. Re-terminate cores 5 & 6 with core 4 to LHS middle terminal
8. For units with LED indicators, also move white LED supply wire to the same terminal as 4,5,6.
9. Tighten all connections and ensure cores are terminated at the correct terminals – use photographs below to confirm.
10. Refit plastic terminal cover
11. Refit terminal box lid ensuring seal is fitted
12. Refit back plate

	**Standard configuration for 220V 3 Phase supply - as supplied** The AOF units will be shipped in a standard wired configuration to be connected to a 220V 3 Phase supply. If a 220V 3 Phase supply is being used then no alteration to the internal wiring is required.

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	Altered configuration for 415V 3 Phase supply If a UK standard supply of 415V 3 Phase is intended to be used to power the AOF then alteration to the motor wiring and LED supply cable are required. **Failure to carry out this alteration correctly can result in damage to the fan motor and P.C.B.** **AirBench will not be held responsible for any damage caused to any system components, it is the responsibility of the installer to ensure all connections and voltages are correct before attempting to run the unit.**

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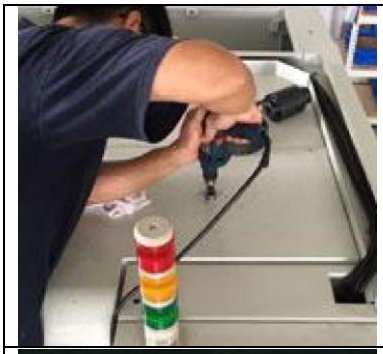
Installation Guide

	Locate a free area on the top of your machine which is suitable for installation; confirm suitability for both the extraction point, and the AOF unit. When determining an installation location, consider the optimum extraction point from the machine tool; airflow should pass through the whole machine to minimize escape of contaminated air through small openings. (If you already have a hole on the top of your machine provided by the manufacturer for an extraction pipe, use this and modify install location to suit).
	Place the air inlet adaptor on the hole, fix the four corners and fill the four sides with silicone ensuring there is no opening for coolant to escape from the inlet.
	Choose a flat area near the hole to house the AOF. Drill the mounting holes (depending on your model) and affix the anti vibration mounts.
	Install the oil mist collector on the mounts and secure the fixings using either a socket or spanner.

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	Cut flexible pipe to the required length. Apply sealant to the hose connector adaptor above and below the ridge, slide the flexible hose onto the adaptor and tighten the twisted jubilee clip ensuring a tight fit, seal both ends of the flexible pipe onto the adaptors.
	Complete connection of newly assembled flexible hose and jacobs adaptors to the unit and spigot plate now connected to the CNC, Using Jacobs seals and clamps ensuring a tight connection to both the AOF unit and spigot plate.
	Install the oil proof pipe under the AOF (front side) by attaching the drain outlet (supplied) and then connecting the pipe, make a loop and fix it. Fill the coolant into the oil pipe to isolate the air from outside (failure to do this will reduce performance).
	Remove rear cover to allow access to electrical connections. Check supply voltage matches AOF voltage (see below for voltage change instructions).

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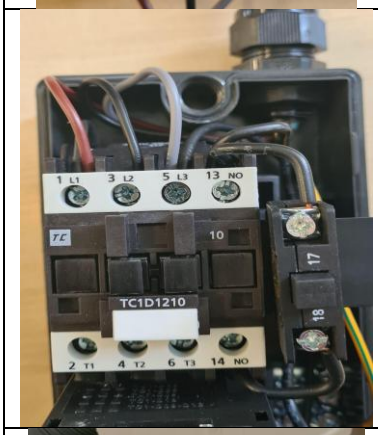
	Fit the 3 phase MCB supplied onto din rail within the CNC machines electrical cabinet, using a multimeter to locate the required 3 phase supply which is to be supplied to the AOF. 220v 3 phase or 415v 3 phase can both be used to operate the AOF Using single 1.5mm cable to supply voltage into the top of the MCB. Place the earth terminal supplied next to the MCB on the Din rain and use this for earth connections on the 4 core cable.
	Using 4 core 1.5mm mechanically protected cable (SY cable is ideal) run this cable from the MCB to the DOL starter/overload and connect to the incoming (top) side of the contactor and earth terminal. Note: Ensure cable run is located away from any moving parts or sources of heat. Connect oil proof 4 core cable from the AOF to the overload terminals now located within the DOL housing.
	Switch on the CNC and check correct voltage at the MCB and DOL, once you are happy that all voltages and connections are correct power can now be applied to the AOF. Run the unit for 2 seconds then switch off again, while the motor is slowing down watch at the back of the unit and ensure fan rotation is correct. If rotation is not correct the unit will not operate as designed.
	If the motor is operating in a clockwise direction this is correct. If not, rotation can be reversed by swapping two cores from the DOL/overload If wired as R S T loosen terminals on cable cores S & T and swap wires. This should now show R T S and rotation will now be correct.

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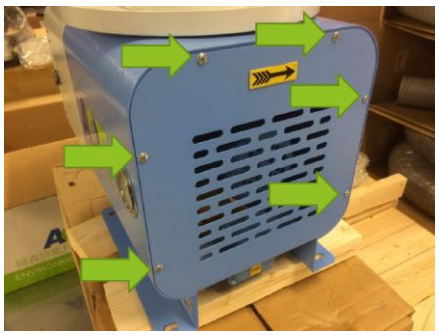
Adjustment of LED Warning Indicators

For units fitted with LED indicators, the LEDs are operated by pressure switches housed within the unit. Follow the steps below to recalibrate the trigger points for these LEDs if required. Ensure tasks are completed by an electrically competent person and units are isolated while working on electrical components.

	Remove 6 x screws from rear cover.
	Remove covers from pressure switches. Left hand switch controls indication for prefilter; right hand switch controls indication for final filter.
	Remove ducting and, using a plate or flat panel, cover approx. 1/3 of the inlet to simulate a dirty prefilter. Adjust the left pressure switch to find the critical point between green and amber indication. Typically this is between 700 and 800pa on AF10.
	Remove the final filter and, again using a flat plate, cover approx. ½ of the outlet on the final filter to simulate a dirty filter. Adjust the right pressure switch to find the critical point between green and red indication. Typically this is between 500 and 750pa on AF10.

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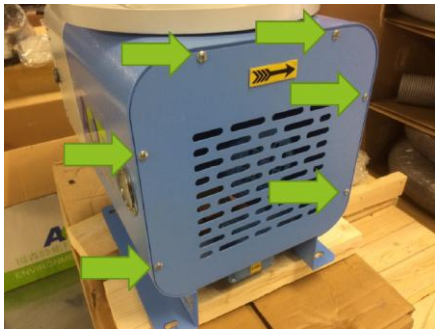	Replace ducting, pressure switch cover plates, and exterior cover plate.

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COMMISSIONING

Following installation, the installer should commission the unit.
Commissioning should follow procedures described in current HSE guidance.
If in doubt please contact the manufacturer quoting the machine serial number.

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MAINTENANCE

Cleaning prefilters

	If the needle of the dial is in the yellow part, the pre-filter has to be cleaned out and/or the prefilter sock replaced. If the needle of the dial is on the zero (severe blockage), the pre-filter must be cleaned out immediately. For LED systems, a yellow LED indicates a blocked pre-filter.
	If the prefilter sock appears blocked or heavily contaminated, it must be replaced. Typically these require replacement every 1-3 months.
	The pre-filtering system should be checked and cleaned at least every 3 months with neutral cleaner. The cleaning time depends on the mist thickness, type, working time and flow rate; adjust cleaning intervals based on your own experience.
	Use an air gun to blow out the remaining water inside and let it dry for 4 to 6 hours. Then, reinstall the filter.

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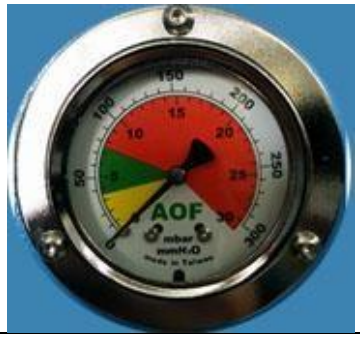
When to replace the after-filter

	If the needle of the dial reaches the red zone (eg 10), the after-filter is slightly blocked. If it goes to the top (30), the after-filter requires immediate replacement. For LED systems, a red LED indicates a blocked after-filter.

On completion of all routine maintenance tasks, update the system logbook. Retain logbook with the machine.

Spare logbook copies are downloadable from airbench.com/manuals

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TROUBLESHOOTING

The following instructions are intended for qualified service personnel only.
Disconnect power before servicing the unit.

The motor is operating, but no air is drawn into the unit.	
Reason	**Solution**
The fan is rotating in wrong direction. (The fan must be rotating clockwise)	Turn off the power. Swap each 2 of the R/S/T cables in the main power supply unit. Turn on the power again and make sure the fan is rotating clockwise.

The motor does not start after switching the power on.	
Reason	**Solution**
A. Incorrect power voltage is supplied. B. Power switch is faulty.	A. Check whether the supplied power voltage is correct. B. Please contact us to replace the power switch

Machine is making a loud noise.	
Reason	**Solution**
A. The air inlet is jammed B. The air hose is deformed or squashed	A. Check and clean the shielding net of the inlet. B. Check the position of the air hose to make sure the air is flowing smoothly.

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Machine is vibrating during operation.	
Reason	**Solution**
A. Improper installation area. B. The oil mist collector is positioned without anti-vibration screws	A. The oil mist collector must be installed on a proper area that is stable and vibration resistant. B. Anti-vibration screws are necessary for positioning the oil mist collector (It is a standard accessory in the package).

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THOROUGH EXAMINATION AND TESTING

If AOF is used as an LEV system it must be tested at regular (normally 12 month) intervals and certificated under the COSHH regulations. This service is available from us, or our approved testers.

Thorough examination and test should include:

- Ensuring the prescribed maintenance routines are being completed and recorded within the system logbook.
- Condition check of fan, filters, electrics.
- Performance testing according to recommended duct velocities.
- Visual check that operators are working within effective area.
- Visual check of effectiveness using, for example, smoke tubes.

Completion of Thorough Examination and Testing should be recorded within the system logbook.

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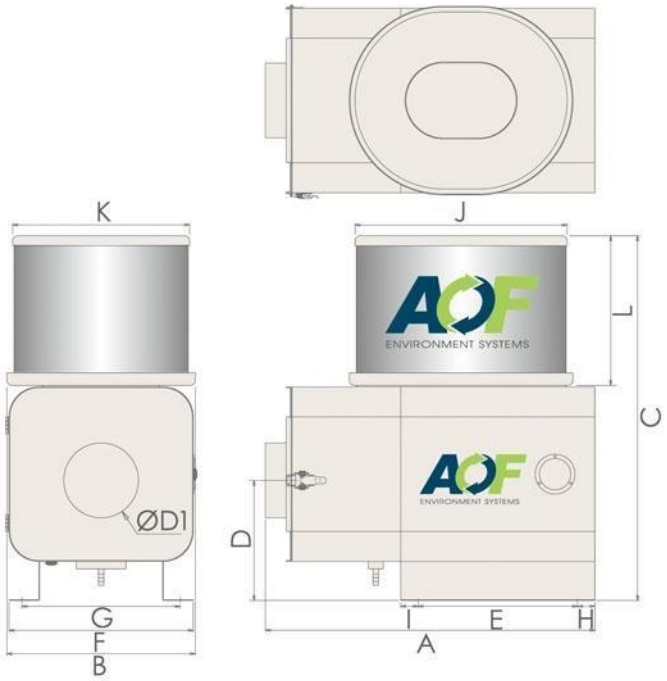
TECHNICAL



Model	Power Source	Motor	Air Flow Rate (m^3/min) (50Hz/60Hz)	Static Pressure (kPa) (50Hz/60Hz)	Noise Value db(A) (50Hz/60Hz)	Filtering Effect	Weight (kg)	Air Inlet Port	Effective Filtration
AF-10P	3Ø AC220V or AC380V	0.2 KW	11/14	0.78/1.15	60/63	99.97% EU E12 Standard	39	Ø150	<4m^3
AF-20P		0.4 KW	19/22	1.71/2.06	66/71		42	Ø150	<12m^3
AF-30P		1.15 KW	37/42	1.92/2.35	68/73		66	Ø200	<24m^3

Above table is showing the testing results from the P series models.

Model	A	B	C	D	D1	E	F	G	H	I	J	K	L
AF-10P	613	379	726	231	148	300	335	283	25	25	426	355	313
AF-20P	653	379	736	231	148	320	350	298	25	25	426	355	313
AF-30P	765	432	808	290	200	388	420	368	25	25	492	408	313

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WARRANTY TERMS

1. During the warranty period, we will provide free repair or part replacement for mechanical or electrical issues arising as a result of manufacturing defects.
2. The warranty period is one year following date of supply (or date of installation if installed by us or our approved installers)
3. During the warranty period, if any of the following conditions occur, we will charge for the maintenance cost:
   - 3.1 Improper operation or use in a special working environment (For example: high temperature or aggressive chemical environments)
   - 3.2 Self-repair or self-modification, breakage or transportation damage.
   - 3.3 Problems caused by abnormal power supply or incorrect voltage or frequency.
   - 3.4 Use in a location containing too much dust or oily dust without proper maintenance.
   - 3.5 Lack of routine maintenance or use of non-approved parts.
4. If any of the following conditions occur, we will charge the actual costs:
   - 4.1 The warranty period is over.
   - 4.2 The warranty is not shown.
   - 4.3 The contents of warranty (such as model and serial number) do not comply with the actual product.
   - 4.4 Problem is caused by external damage, natural disaster or other root causes outside the manufacturers control.
5. Consumable items are excluded from warranty; consumable items include filters and external cabling.
6. When installing the oil mist collector, if service space and personnel safety are not considered, service and repair may require additional works. The user shall be responsible for the cost of these additional works.
7. If the replacement part is not available after five years from the date of purchase, we will endeavour to provide the equivalent for repair. However, in some cases, we are sorry for not being able to provide an equivalent for replacement.
8. The warranty is effective only for the original purchaser. If the product is resold other than by an authorized distributor, the warranty will be terminated.

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AIR-O-FILTER ENVIRONMENT SYSTEMS, INC.

http://www.air-o-filter.com

No. 611-6, FengZhou Rd., ShenGang Dist. TAICHUNG CITY 42949, TAIWAN

TEL+ 886 4 25280316 FAX: +886 4 25280336

E- Mail: aof.filters@msa.hinet.net

CE DECLARATION OF CONFORMITY

Machine Manufacturer	:	AIR-O-FILTER ENVIRONMENT SYSTEMS, INC.
Manufacturer's Address	:	No. 611-6, FengZhou Rd., ShenGang Dist. TAICHUNG CITY 42949, TAIWAN
Machine Type	:	Oil Mist Collector
Machine model	:	AF-10P
Machine's serial number	:	NLAF10P15011
Date of Issue	:	AUGUST .25, 2015
Place of Issue	:	No. 611-6, FengZhou Rd., ShenGang Dist. TAICHUNG CITY 42949, TAIWAN

DECLARATION:

We, AIR-O-FILTER ENVIRONMENT SYSTEMS, INC. , hereby declare that the above mentioned machine fulfills all relevant provisions of following directive:

2006/42/EC Machinery Directive (Article 12, paragraph 2 and Annex VII)
2004/108/EC Electromagnetic compatibility
2006/95/EC Low voltage Directive

Signature of Authorized Representative: _____

Date : AUGUST .25, 2015

CE

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