



**05806 05812 SIP FX-WM
Wall Mounted Welding Fume
Extractor**

**AERService ICAP 2
Wall Mounted Welding Fume Extractor**



**OPERATOR
AND MAINTENANCE MANUAL**



CONTENT:

Introduction: User Manual & Maintenance Manual	3 - 4
Introduction: Glossary & Pictograms	5 - 8
Declaration	9 - 10
General Information:	
Machine Description	11 - 12
Technical Data	13 - 14
Components	14
Installation:	15
Initial Start-Up	16 - 17
Electrical Panel	18
Machine Maintenance:	
Filter Replacement	19
Filter Information	20
Troubleshooting	21
Schedule	22
Filter Replacement:	23
Contact Information	24

INTRODUCTION: User Instruction & Maintenance Manual

This instruction manual is an integral part of the machine and has the purpose of providing all the necessary information for the following purposes:

Raise the awareness of operators as regards safety matters;

Safe handling of the machine when packaged and unpackaged;

Correct installation of the machine;

Thorough knowledge of the machine's operations and limits;

Correct use in total safety;

Correct and safe maintenance;

Dismantling of the machine in total safety, in compliance with the regulations in force on the health and safety of workers and the environment.

Departmental managers & operators must carefully read the content of this Operating Manual and ensure that all users and maintenance staff working on the machine read the relevant parts.

This will ensure safe operation of the machine.



This document is based on the assumption that the area in which the machine is to be installed is in compliance with the health and safety at work regulations.

The instructions, drawings and documentation contained in this Manual are of a technical confidential nature and are property of the manufacturer; they may not be reproduced in any way, in part or fully.

If this manual is amended by the manufacturer, the Customer has the responsibility of ensuring that only the updated versions are available in the points of use.

INTRODUCTION: Instruction Manual Access

The instruction manual must be kept safely and must be handed over to new owners in case of sale throughout the lifecycle of the machine.

The manual must be stored in an environment away from humidity and heat, in a position near the machines to which it refers.

INTRODUCTION: Instruction Manual Updates

The manufacturer reserves the right to modify the project and improve the machine without informing customers and without updating the manual already delivered to the User.

If modifications are made to a machine installed at the customer's premises, in agreement with the manufacturer, and which entail the amendment of one or more chapters of the manual, the manufacturer shall send the amended chapters to the holders of the Instruction Manual and its new overall revision.

According to the instructions that will accompany the updated documentation, the User shall replace the old chapters in the copies held with the new ones, as well as the first page and table of contents with the new revision level.

INTRODUCTION: Glossary & Pictograms

GLOSSARY (Annex I point. 1.1.1 Dir. 2006/42/EC)

HAZARD

A potential source of injury or damage to health;

DANGER ZONE

Any zone within and/or around machinery in which a person is subject to a risk to his health or safety;

EXPOSED PERSON

Any person wholly or partially in a danger zone;

OPERATOR

The person or persons installing, operating, adjusting, maintaining, cleaning, repairing or moving machinery;

RISK

A combination of the probability and the degree of an injury or damage to health that can arise in a hazardous situation;

GUARD

A part of the machinery used specifically to provide protection by means of a physical barrier;

PROTECTIVE DEVICE

A device (other than a guard) which reduces the risk, either alone or in conjunction with a guard;

INTENDED USE

The use of machinery in accordance with the information provided in the instructions for use;

REASONABLY FORESEEABLE MISUSE

The use of the machinery in a way not intended in the instructions for use, but which may result from readily predictable human behaviour.

OTHER DEFINITIONS:

MAN-MACHINERY INTERACTION

Any situation in which the operator interacts with machinery in any of the operating phases during the lifecycle of the machinery.

OPERATOR QUALIFICATIONS

Minimum level of skill that an operator must have to carry out the described operation.

NUMBER OF OPERATORS

The suitable number of operators, able to carry out the operation described in an optimal way, as established by a careful manufacturer analysis, whereby a different number of operators might not make it possible to obtain the expected result or might endanger the safety of the personnel involved.

MACHINE FUNCTIONS

Machine functions includes operating modes, for example automatic running mode; jog command; stop etc.; the condition of the safety devices on the machines such as protection devices provided (or not provided), pressed emergency button, type of isolation from energy sources, etc.

RESIDUAL RISK

Risks that persist despite the adoption of the protective measures included in the design of the machine and despite the additional protective devices and measures adopted.

SAFETY DEVICE

Device:

That carries out a safety function; which, when faulty and/or broken, endangers the safety of people.

(e.g. lifting equipment; fixed, mobile, adjustable protective device, etc., electric, electronic, optical, pneumatic, hydraulic device interlocking a protection device, etc.).

PICTOGRAMS

The descriptions that follow this pictogram contain:

Very important information / instructions, in particular as regards safety.

Failure to respect them may lead to:

danger for the safety of the operators;

Waiver of the manufacturer's liabilities.

PICTOGRAMS CONCERNING OPERATOR QUALIFICATIONS

Symbol	Description
	Unskilled worker: operator without specific skills that can only carry out simple tasks following the instructions of qualified technicians.
	Driver of lifting and handling means: operator qualified to use machines and material handling and lifting equipment (strictly following the manufacturer's instructions), according to the laws in force in the country of use of the machine.
	Mechanical service person: a qualified technician that can manage the machine in normal conditions, operate in jog mode with the protection devices disabled and work on its mechanical parts to make the necessary adjustments, repairs and maintenance. Usually he / she is not qualified to work on live electrical systems.
	Electrical service person: a qualified technician that can use the machine in normal conditions, operate in jog mode with the protection devices disabled and work on electrical parts to make the necessary adjustments, repairs and maintenance. He / she can work on live cabinets and junction boxes.
	Manufacturer's technician: qualified technician provided by the manufacturer to carry out complex operations in particular situations, or in any case as agreed with the user. According to the situation the technician will have mechanical and/or electrical and/or electronic and/or software skills.

Table 0 - 4.1

Machine Status Pictograms

Symbol	Description
	Machine off: Power supply disconnected.
	Machine on: Power supply connected and in safe stop condition with open mobile protective devices (specifying which); JOG disabled; fixed protection devices closed.
	Machine on: Power supply connected and in safe stop condition with emergency stop button pressed or other control with the same function activated.
	Machine running: in automatic mode, with mobile protection devices closed, the relevant interlocking devices activated, and the fixed protection devices closed.
	Machine running: in JOG mode, with mobile protection devices closed, the relevant interlocking devices activated, and the fixed protection devices closed.
	Machine running: in JOG mode, with one or more mobile protection devices, that can be disabled, open (specifying which) with the relevant interlocking devices activated and fixed protection devices closed.
	Machine on: in stand-by and waiting for functional consent to start (e.g. presence of product), mobile protection devices closed with safety device closed, and fixed protection devices closed.

Table 0 - 4.2

SAFETY SIGNS

The pictograms inside a triangle indicate **DANGER**;

Symbol	Description
	Dangerous electrical voltage
	Danger of crushing of upper limbs
	Danger of entanglement
	Danger of being dragged by machine parts
	General hazard
	Danger of entanglement in transmission belt
	Hot surfaces; danger of burning
	Danger of being dragged by impellers or rotating parts
	No access to unauthorised people
	Do not remove safety devices
	Do not manually clean, oil, grease, repair or adjust moving parts
	Do not carry out any work without disconnecting the power
	Protective gloves must be worn
	Safety footwear must be worn
	Safety helmets must be worn

DECLARATION:

The machine is manufactured in conformity with relevant EC Directives, applicable when the machine is put on the market.

ANNEX IV Directive 2006/42/EC

The machine does not belong to the category of machines mentioned in Annex IV to directive 2006/42/EC



EC DECLARATION OF CONFORMITY

(Annex IIA DIR. 2006/42/CE)

THE MANUFACTURER

Aerservice Equipments S.r.l.

Company

Viale dell'Industria 24

Address

35020

Postcode

Padua

Province

Legnaro

City

Italy

Country

DECLARES THAT THE MACHINE

Wall mounted air cleaner for welding fumes

Description

ICAP 2.0

Model

Serial number

Year of manufacture

ICAP 2.0

Commercial name

Extraction and purification of welding fumes for occasional and not intensive work processes and with medium to low level concentration of pollutant gases or micro particles in suspension

Intended use

IS IN COMPLIANCE WITH THE FOLLOWING DIRECTIVES

Directive 2006/42/EC of the European Parliament and Council of 17 May 2006 on machinery and amending directive 95/16/EC.

Directive 2004/10/8/EC of the European Parliament and Council of 15 December 2004 on the approximation of the laws of the member States relating to electromagnetic compatibility.

Directive 2014/35/EU of the European Parliament and Council of 26 February 2014 on the approximation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Reference to harmonised standards:

EN 349:1993+A1:2008, EN 614-1:2006+A1:2009, EN 614-2:2009, EN 626-2:2008, EN 842:2008, EN 894-1:1997+A1:2008, EN 894-2:1997+A1:2008, EN 894-3:2000+A1:2008, EN 953:2009, EN 1005-2:2008, EN 1037:1995+A1:2008, EN 1037:1995+A1:2008, EN 1093-1:2008, EN 1093-4:2008, EN 13478:2008, EN ISO 13849-1:2008,

AND DECLARES THAT THE TECHNICAL FILE

Has been compiled by the manufacturer and is kept at:

Aerservice Equipments S.r.l. in Viale dell'Industria 24 – 35020 – Legnaro – PD – Italy

Place and date of document

Legnaro, __/__/____

The manufactur-

er



GENERAL INFORMATION: Machine Description

The portable unit is the ideal solution for the extraction and filtration of welding fumes from variable position work stations for occasional and not intensive welding operations. The gases and fumes given off during welding are captured to prevent them from spreading throughout the workplace; the air containing the pollutants is thoroughly filtered and recycled back to the workplace. This unit is designed for the suction and treatment of dry fumes produced by work processes such as spot or discontinuous welding wire or electrode welding, hence involving the emission of low concentrations of pollutants containing gas or suspended welding slag.

National and international regulations allow the use of these devices in replacement of conventional air cleaners with external emission in special conditions such as occasional or discontinuous use (e.g. 20 hours out of a 40-hour working week). In addition, the filtration unit also purifies the air in the surrounding environment, thus not only treating the area contaminated by the work process but simultaneously creating air exchange in the workplace and further decreasing the level of pollutants which might be present. To comply with regulations and to obtain high quality filtration with consequent safety for the operator, it is essential to perform correct maintenance/ periodic replacement of the filters, which, in our units, allow high capacity for accumulation of contaminants and very low costs for the filtration sections.

MACHINE CHARACTERISTICS

The wall mounted unit is equipped with a high efficiency aspirator put under pressure with respect to the filters and placed directly above the articulated arm.

Its small size and versatility of installation, allows you to use the machine even in special conditions where the space available is very small, even for a trolley -machine

The filtration section ,depending on the version ,is as follows:

STAGE OF FILTRATION	SIP FX-WM / ICAP 2.0 H
1	METAL PREFILTER
2	ACRYLIC FILTER
3	RIGID POCKET BAG HEPA FILTER

General Information: Machine Description (cont)

The machine is supplied with the following arm:-

IBF ARMOFLEX

The internal supporting structure is constructed with reinforced steel pipes and 6061 aluminum alloy components after CNC worked for T6 in physical state, then anodized to ensure durability despite continuous exposure to fumes.

The flexible hose cover is in a multi-layered PVC to guarantee the protection from sparks and a high temperature resistance (max 40°C).

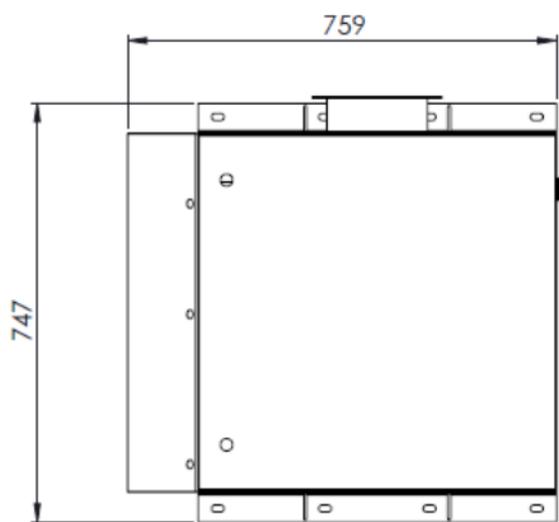
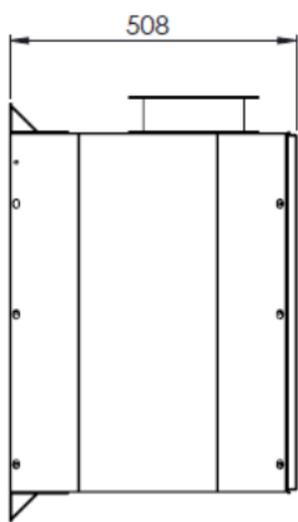
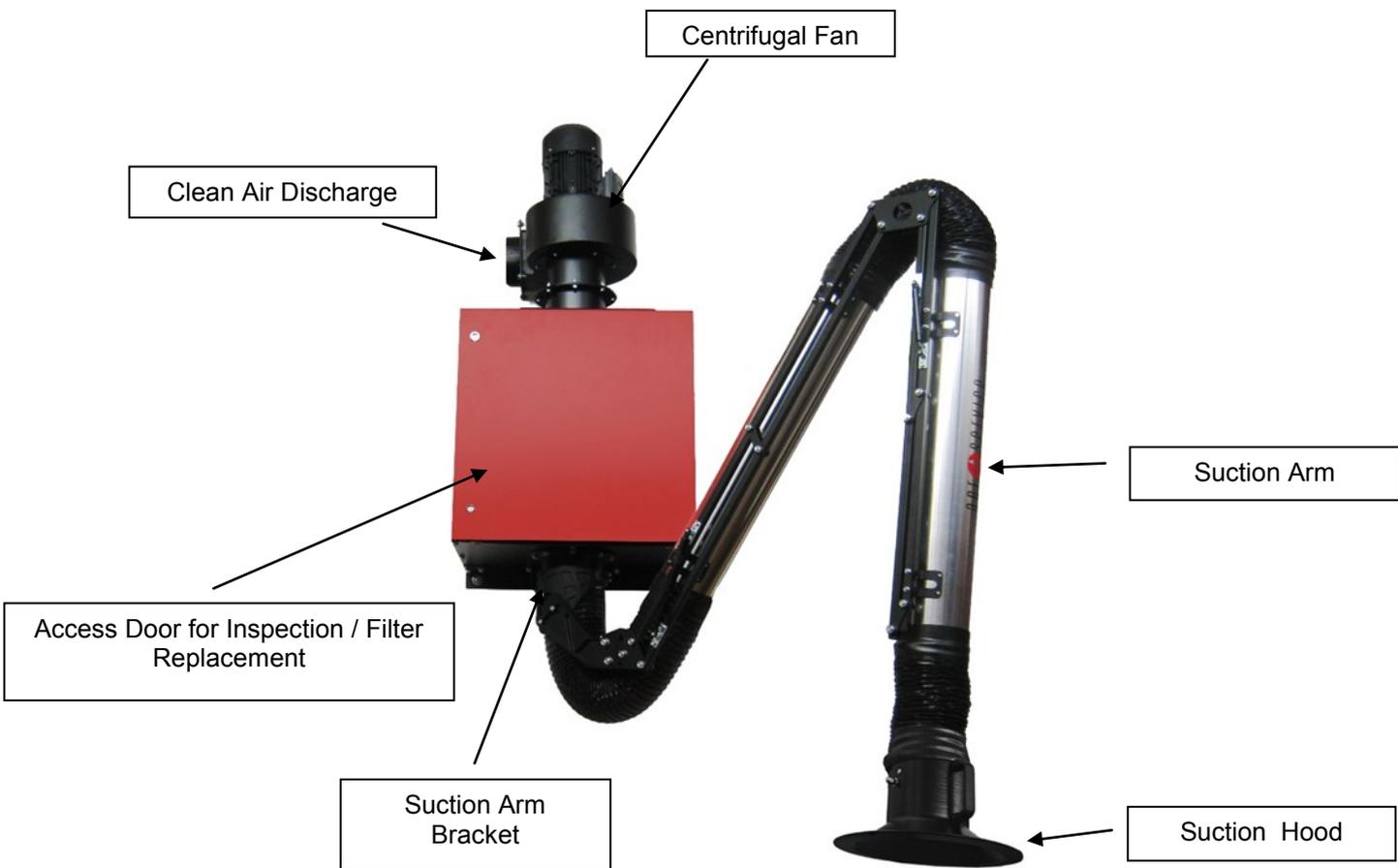
The extraction hood has a round profile for a maximum efficiency of extraction, complete with manual damper for the airflow adjustment, anti-intrusion grille and bridge handle



General Information: Technical Data

Unit data		SIP FX-WM / ICAP 400 V	SIP FX-WM / ICAP 230 V
Suction arm	N°	2	2
Supply voltage	V	400	230
Mains frequency	Hz	50	50
Installed power	kW	1.5	1.5
Absorbed current	A	3,2	6,5
Maximum extractor fan flow rate	m ³ /h	2500	2500
Extractor fan negative pressure	Pa	1400	1400
IP Protection class		55	55
ISO insulation class		F	F
Machine air flow rate	m ³ /h	2x1250	2x1250
Machine negative pressure	Pa	630	630
Filtration efficiency According to EN 779 (G2-G4) EN 1822	%	G2 25%	G2 25%
	%	G4 70%	G4 70%
	%	E12 99,5%	E12 99,5%
Sound pressure level	dB(A)	73	73

General Information: Components



INSTALLATION:

Fix the filter module on the wall, making sure that it rests naturally on the whole length of the brackets, if not it will be necessary to insert appropriate support.

You must use the screws and wall plugs suitable for the type of construction of the wall;

The equipment does not come with fixings because the choice is totally up to the installer, who can evaluate the best available product.

Lift the suction arm and by means of the screws provided, attach the thrust block to the wall bracket which has just been clamped to the wall

During tightening process, check that the movement of the arm is fluid and eventually apply grease spray in those sections that are in contact.

Then place the centrifugal fan in the upper flange of the black bracket installed in the upper side of the filtering unit.

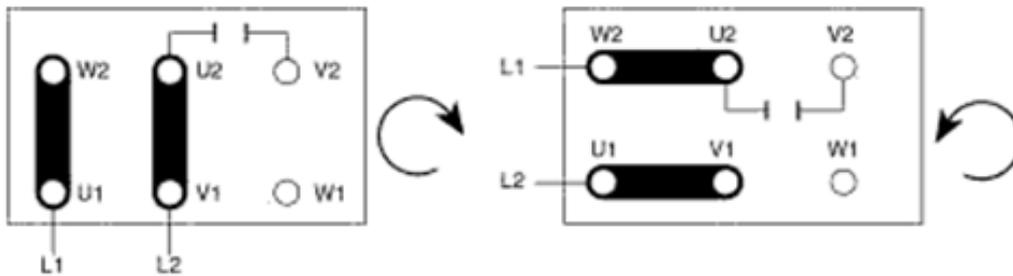
Depending on the space available and on any possible impediment to the structure or any device already installed, you can orient the direction of expulsion of air from the fan. In fact it is possible to choose the direction to the right or to the left.

INSTALLATION: Initial Start-Up

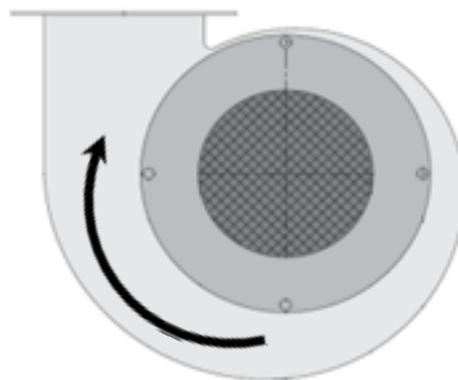
All versions of the portable air cleaner are equipped with a 5 mtr power supply cable.

SINGLE-PHASE POWER SUPPLY

The terminal box of the electric motor is able to perform the following electrical connections depending on the direction of rotation requested



You should ensure that the direction of rotation is in accordance with the arrow indicated in the cochlea impeller housing of the electric motor, otherwise the fan will run in the opposite direction causing an over-absorption of current which will trigger the electrical protection of the machine.



Direction of rotation of the electric motor

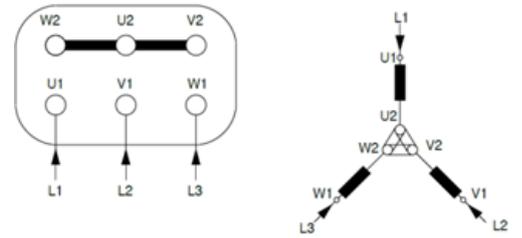
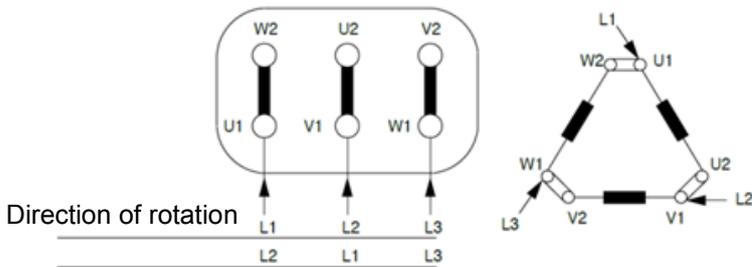
INSTALLATION: Initial Start-Up

THREE-PHASE POWER SUPPLY

The terminal box of the electric motor is able perform the following electrical connections depending on the direction of rotation requested

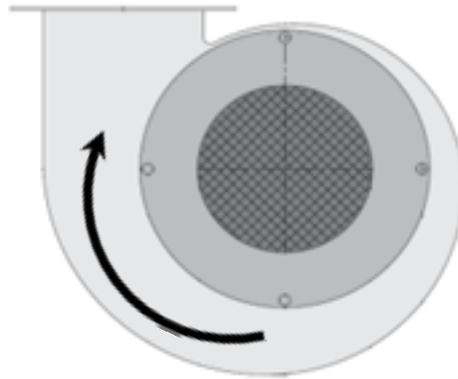
DELTA CONNECTION

Y CONNECTION



Reversal of direction of rotation

You should ensure that the direction of rotation is in accordance with the arrow indicated in the cochlea impeller housing of the electric motor, otherwise the fan will run in the opposite direction causing an over-absorption of current which will trigger the electrical protection of the machine.



Direction of rotation of the electric motor

INSTALLATION: Electrical Panel

The wall unit is not equipped with electrical protection / control of the fan and it is up to the customer to ensure that the machine is adequately protected.

For a correct operation, it is necessary to install an appropriate electrical panel, which is connected exclusively to the electric motor of the **SIP FX-WM / ICAP** module, which will act both as a dashboard (on-off) and as protection.

minimum requirements are:

- 1) ON-OFF;
- 2) Overload protection (to be calibrated according to the data of the electric motor);
- 3) Operation alerted by lamp;
- 4) Voltage presence indicated by lamp.

MACHINE MAINTENANCE: Filter Replacement

The replacement of the filters, when clogged, may vary in terms of frequency and duration time according to the type of use.

There could be different variables, such as:

Welded material :each material produces different fumes / micro powders;

Type of welding : each welding process (MIG, TIG, MMA etc..) has different behavior;

Elements in contact : eg. oil, grease, paint, etc.. can make the generated smoke "stronger" .

Visual signs of poor extraction means that the filter condition must be checked then cleaned / replaced as required.

In order to replace the filters , it is necessary to have a Hex key (Photo 4 - 1.1), which can be used to undo the screws of the inspection filters.

Once you have opened, you have access directly to the filtering section and you can pull outwards to remove one filter at a time, until all the filters are taken out.

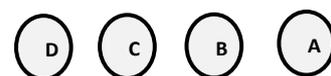
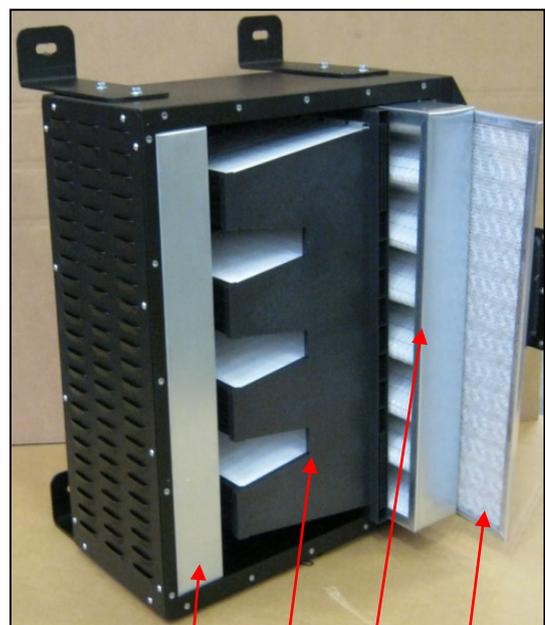


Photo 4 - 1.1

It is important to keep in mind that the filter section might be difficult to remove because of the gaskets all along the perimeter of the filters. Such seals (which are put under pressure) allow the maximum sealing of the whole filter section and therefore give the guarantee that all the suctioned particulate is filtered by the whole section.

The extraction of the filters must be done starting from the rigid bag filter which has a frame on which you can grip to remove it; the other filters can be easily pulled out in turn

It is recommended to replace at least once per year all the filters provided in the device in order to keep maximum performance, suction and filtration.



MACHINE MAINTENANCE: Filter Information

1) FIRST STAGE OF FILTRATION

Anti-Spark Metallic Filter

Filter code: WE08-00009

It is recommended to clean this filter (by washing) at least once a week to maintain highest machine performance



2) SECOND STAGE OF FILTRATION

Pre Filter

Filter code : WE08-000010

size	490 x 592 mm
Filtering material	Polyester fibre
Regenerable	Yes (shaking)
Fire behaviour	DIN 53438 F1

Corrugated and metal filters are constructed with inert materials which, if not polluted by toxic-noxious substance arising from the use, can be disposed of as solid urban waste



It is recommended to clean this filter at least once every two weeks to maintain optimum machine performance.



3) THIRD STAGE OF FILTRATION

Absolute Filter

Filter code : WE08-00008

Size	490 x 592 mm
Filtering material	Glass Fibre H13
Regenerable	No
Fire behaviour	M1

Bag filters are made of materials that can be completely incinerated / dismantled without emitting any toxic gas.



It is recommended to clean this filter at least once per month to maintain optimum machine performance



MACHINE MAINTENANCE: Troubleshooting

FAULT	CAUSE	ACTION
STARTING PROBLEMS	Low voltage supply	Check the motor data plate and the mains power supply
	No power supply	Check the connection of the plug and/or socket
FAILURE TO START	No power supply	Check the connection of the plug and/or socket
	Motor burnt out	Replace extractor fan / motor
	Check if micro-switch safety circuit is closed or damaged.	Check that the door is closed and that micro-switch is engaged.
THE POWER ABSORBED IS GREATER THAN THE ONE INDICATED ON THE IDENTIFICATION LABEL AND/OR MOTOR PLATE	The motor rotates below its normal rotation speed	Check power supply. Check if the fault is in the motor windings and if necessary replace it.
EXCESSIVE VIBRATIONS	Unbalanced rotating parts	Check balancing of rotating parts
	Loose or unsuitable ant vibration devices	Check the tightness of the anti-vibration mounts and their condition
REDUCED SUCTION	Wrong rotation of the electric motor	Reverse the electrical connections on the plug in the case of three-phase power or in the motor in case it is single-phase .
	Clogged filters	Check the condition of the filters and the signal on the electrical panel; if necessary replace with a new set of filters.
	Air leak	Check the casing for air leaks. If possible try to seal everything with silicon.
	Unbalanced impeller	Check the condition of the impeller and check for damaged parts or dirt on the blades. Remove the fan unit and thoroughly clean the impeller.

MACHINE MAINTENANCE: Schedule

PERIODICAL CHECKS

	KIND OF CHECK OR MAINTENANCE	METHOD	REGULARITY	DATE AND SIGNATURE				
				1	2	3	4	5
1	GENERAL CHECK OF THE STATUS OF THE AIR CLEANER	VISUAL	DAILY					
2	CLEANING	MANUAL	DAILY SEE NOTE A					
3	CHECK THE STATUS OF CLOSING	VISUAL	150 HOURS SEE NOTE B					
4	CHECK THE TIGHTENING OF THE NUTS	MANUAL	150 HOURS SEE NOTE B					
5	CHECK FILTER CLOG	VISUAL OR MANUAL	600 HOURS SEE NOTE B					
6	CHECK THE FAN	MANUALE	SEE NOTE C					
7	REPLACEMENT OF THE BEARING	MANUAL	40000 HOURS SEE NOTE D					

NOTE A

Cleaning intervals are closely related to the type of fluid transported and its concentration, as well as the working environment in which it is exposed. It is therefore necessary that the end user makes regularly cleaning intervals so as the machine is always perfectly clean and that on the fixed parts there will not be accumulations of material thicker than 5 mm

NOTE B

The replacement of the filters is indicated by the label attached to the machine. It is advisable to check for clogging in order to always obtain the maximum suction and the maximum efficiency of the machine. It would be preferable to give a cleaning schedule as shown, as well as changing the complete set of filters annually. Filters that are not often used regularly can deteriorate.

NOTE C

It is necessary to check the machine regularly by the user to verify that it is working correctly, and that there are no damages nor faults to the impeller and that the electric motor is in good working order.

NOTE D

Bearings should be checked periodically and changed should their performance be affected.

FILTER REPLACEMENT: Part Codes

Code	Description	Image
WE08-00008	Absolute Filter	
WE08-00009	Aluminium Anti-Spark Filter	
WE08-00010	Pre Filter	



SIP INDUSTRIAL

machinery specialists since 1968

SIP (INDUSTRIAL PRODUCTS) LTD

GELDERS HALL ROAD

SHEPSHED

LOUGHBOROUGH

LEICESTERSHIRE

LE12 9NH

TEL: 01509 500300 FAX: 01509 500456 www.sip-group.com

Email: technical@sip-group.com