SISTEMI DI ASPIRAZIONE
E DEPURAZIONE

SYSTEMES D'ASPIRATION ET
FILTRATION

EXTRACTION AND FILTRATION
SYSTEMS

REINIGUNGS-UND
ABSAUGANLAGEN

"AK" SERIES ELECTRIC EXTRACTORS USE AND MAINTENANCE BOOK

FILCAR S.p.A. *thanks you for having purchased a product from its range and invites you to read this manual.*
It contains all necessary information for the purchased machine to be used correctly; the user is therefore kindly
requested to carefully follow the warnings herein and read it in its entirety.
You are also kindly requested to keep this manual intact in a safe place.
The contents of this manual may be amended without prior notice, or further obligations, in order to include variations
and improvements to the units already shipped.
The reproduction or translation of any part of this manual is forbidden, without the owner's written notice.

GENERAL INDEX:

1. INTRODUCTION.

The machine described in the present booklet is an electric extractor created in aluminium fusion, which allows for the extraction and evacuation of fumes, gases, vapours and dusty air. It is particularly indicated for the creation of extraction systems and systems for the evacuation of exhaust gases of vehicles from work environments such as automobile repair shops.

Our AK series is built in full respect of regulations in force, spark proof CEE regulations, since shims in contact with rotating parts are all created in aluminium which is spark proof material.

For installation and electric connection it is recommended to refer to professionally qualified personnel and to refer to the instructions contained in this *Use and Maintenance Booklet*.

Upon reception check that the device has not suffered damage during transport.
If in doubt, do not use the machine and immediately contact Our Reseller or refer to professionally qualified personnel.

2. TECHNICAL FEATURES

The electric extractors are supplied in the standard 220-380 V and 50 Hz versions.
For different voltages and/or frequencies refer to Our Technical Office.
The following are the main technical features of the machines belonging to the *AK* series and the relative characteristic curves.

2.1 Technical Features

Item	Power [Kw/Hp]	Absorbed current 400/230V [A]	No. revs [rpm]	Noise (*) [dB]	Input/Output ∅ [mm]
AK 50	0,37/0,5	1,01/1,8	2800	70	120
AK 75	0,55/0,75	1,5/2,6	2800	73	120
AK 100	0,75/1	2/3,14	2800	75	120
AK 150	1,1/1,5	2,9/4,6	2800	78	120
AK 200	1,5/2	4,1/6,6	2800	80	120
AK 300	2,2/3	5,5/8,6	2800	82	120

(*) Noise values are obtained through readings carried out in the four cardinal points at a distance of 1.5 m from the fan.
Free fan reading with piped fans according to the UNI Standards.

2.2 Characteristic Curves

Item	***AK 50***	***AK 75***	***AK 100***	***AK 150***	***AK 200***	***AK 300***
Q [m³/h]	***Pt [mm H_2O]***					
200	133					
250	135					
300	137					
350	135	210				
400	133	212	240			
500	130	210	236	255		
600	122	205	232	252	320	
700	110	198	226	247	318	316
800			218	242	312	313
900			208	234	305	304
1000				226	290	288
1100				214	280	277
1200				200	270	268
1300					260	259
1350						240

2.3 Overall Dimensions

Item	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	∅ F [mm]	G [mm]	H [mm]	I [mm]	L [mm]	∅ M [mm]	Weight[kg]
AK 50	164	230	404	446	254	120	155	10	100	149	120	10
AK 75	180	253	441	486	276	120	155	10	100	149	120	11
AK 100	201	283	493	529	295	120	155	10	100	154	120	19
AK 150	231	321	577	619	348	120	200	10	140	154	120	30
AK 200	231	321	577	619	348	120	200	10	140	154	120	30
AK 300	231	321	577	619	348	120	200	10	140	154	120	30

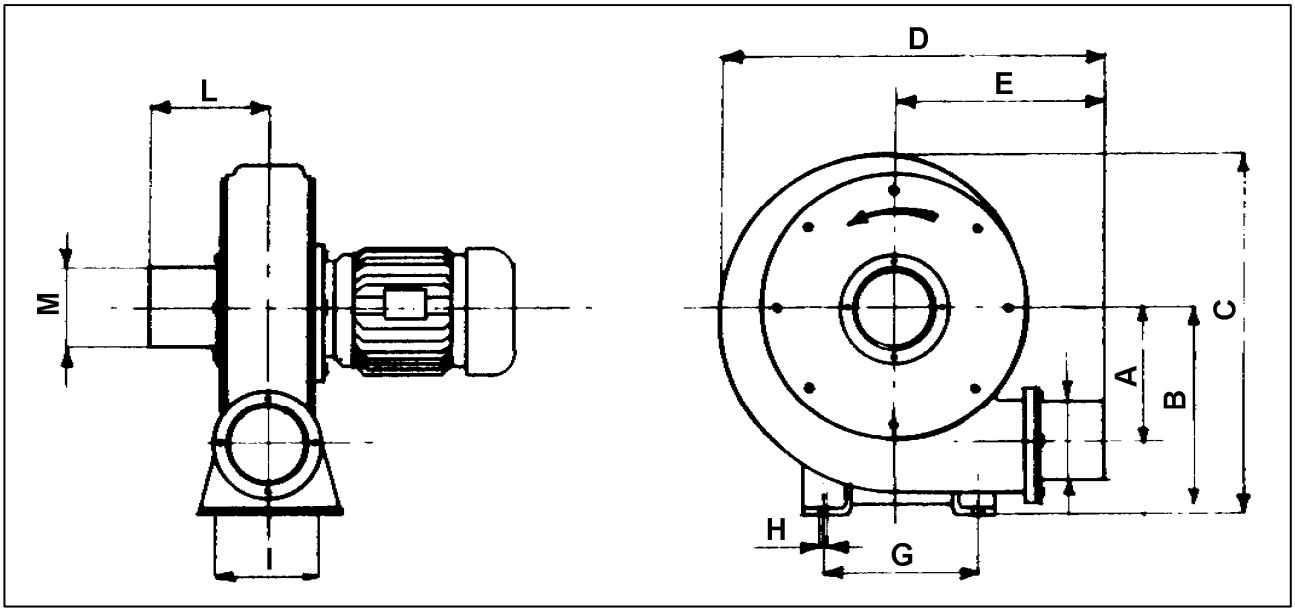


fig. 1 – overall dimensions

3. GENERAL WORK SAFETY STANDARDS

- Do not leave the packaging components (expanded polystyrene, nails, cardboard, wood, etc.) within the reach of children as they are a potential source of danger.
- Ascertain, before connecting the device, that the tag data responds to the electric distribution network data.
- This equipment must be intended only for the use for which it was expressly conceived. Every other use is to be intended improper and dangerous. **FILCAR S.r.l.** cannot be held responsible for eventual damage stemming from improper, wrong and unreasonable use.
- Do not perform maintenance when the device is running or when connected to the electric energy source. During such phases it is recommended to disconnect it through the system switch.
- In case of fault and/or malfunction of the device, turn it off and do not tamper with it. For any repairs contact Our technical assistance and request that original spare parts be used. Non-compliance with the above can jeopardize the safety of the equipment.
- In case the device is no longer to be used, it is advised to make it inoperative by disconnecting it from the mains and dispose of the machine according to the current standards in the country of use.
- Execution of the electric system must be compliant to regulations in force.
- Avoid installing the device in proximity of heat sources.
- Function with maximum environment temperature of 40°C.
- Maximum temperature of gases or fumes to convey 60 ¸ 70°C.
- Installation must be carried out by professionally qualified personnel, according to the instructions of **FILCAR S.r.l.**. An erroneous installation may cause damage to persons, animals or things in front of which the manufacturer may not be held responsible.
- If a device using solid, liquid or gas not "balanced flow" type combustible, meaning watertight compared to the room itself, is installed in the premises to ventilate, it is necessary to pre-emptively ensure that there is an adequate air return necessary to guarantee perfect combustion in the existing device and correct functioning of the fan.
- If the device is accidentally dropped or suffers violent blows it can also suffer non visible damage and become dangerous, therefore do not use it, but have it immediately checked by Our technical assistance.
- Do not use the device to convey air and fumes with presence of corrosive chemical agents or highly explosive mixtures into ducts.
- Do not start up the machine with *open outlet.*

THE DEVICE IS BUILT UP TO STANDARD. ITS DURATION AND ELECTRIC AND MECHANICAL RELIABILITY WILL REMAIN UNALTERED IF CORRECT AND REGULAR MAINTENANCE IS CARRIED OUT

DO NOT START UP THE MACHINE WITH OPEN OUTLET

4. PRELIMINARY CHECKS AND INSTALLATION

Upon delivery, the electric extractor is completely assembled. The operator must:

- Unload the package
- Unpack
- When opening the package, check that all the details are present and they did not suffer damage during transport, in case of the contrary contact our reseller.

a) The extractor is suitable to extract and expel fumes or gases only through a duct and/or flexible piping (fig. 2,3).

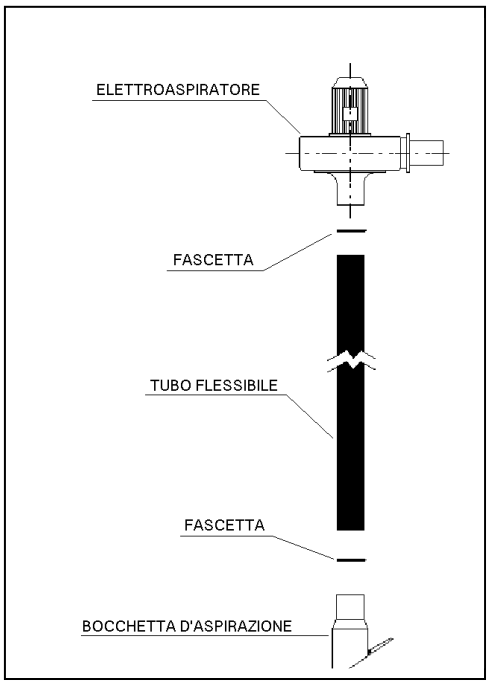


fig. 2 – Installation with flexible hose

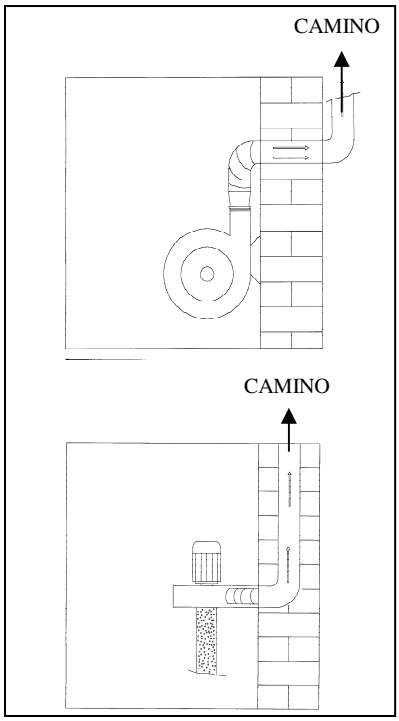


fig. 3 – Installation with duct

b) Device installation may be carried out from the beginning, in an intermediate point or at the end of a duct, both in extraction and in ventilation phase.

c) If changes in diameter should become necessary in the duct, make the fitting by using the appropriate reducer cones in order to avoid sudden section changes with subsequent decrease of system extraction capacity (fig, 4).

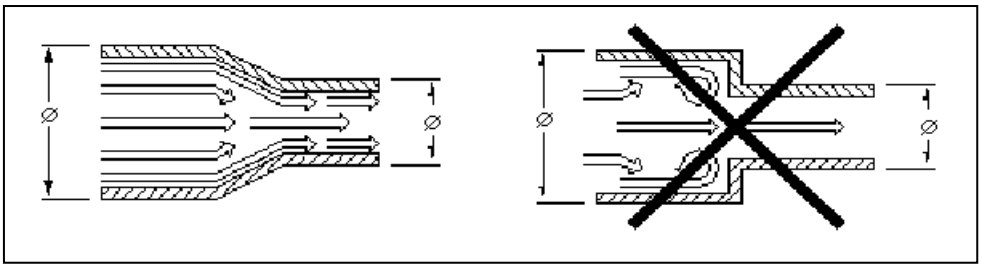


fig. 4

d) The electrical safety of this device is ensured only when it is correctly connected to an effective grounding system as foreseen by the regulations in force for electrical systems.

e) It is necessary to check the fundamental safety requisite of point d) and, in case of doubt, request an accurate check of the system by professionally qualified personnel.

f) **FILCAR** cannot in any way be held responsible for eventual damage caused by lack of earthing system.
g) Check that the system's electrical capacity is adequate to the maximum power of the device which is indicated in the tag. In case of doubts refer to qualified personnel.
h) In the circuit upstream of the electric extractor install a protection device against overloads, calibrated in function of the current and voltage values indicated in the tag, meaning an omnipolar circuit breaker switch with at least a 3 mm contact opening distance.
i) The evacuated air must not be input in hot air ducts (ex. flue).
j) For models with power lower than 3 HP installation may be carried out on the wall or ceiling regardless. For models with power equal to 3 HP, it is advised to fix it to the wall through the use of a "ME" model shelf (see optional features).
k) Fix the outlet (expulsion) of the device to the duct flange, with screws, washers, nuts and/or pipe clamps, which may normally be found on the market. If the device is assembled outside of the premises, it is advised to provide for appropriate protection against atmospheric agents.
l) Carry out the electric motor connection according to the indications on page 10, ensuring to also carry out earthling inside the terminal box casing.
m) If the device should be assembled on the floor or at a height above 2 meters, provide for adequate additional protection in order to avoid accidental contact with the device in function.
n) Carry out a brief switch on of the electric extractor to verify the correct rotation direction of the electric motor, thus of the electric extractor itself, indicated by the appropriate sticker placed on the fan cover behind the motor (fig. 10). In case of the contrary, if the motor is three phase reverse one of the three phases connected to the inside of the terminal box, if the motor is single phase ensure that the electrical connections correspond to "counter-clockwise" direction, indicated in page 10.
o) In installation phase, check motor absorption (reference to paragraph 2.1)

THE MACHINE MUST ONLY BE USED CONNECTED TO THE SYSTEM.
DO NOT START UP THE MACHINE WITH OPEN OUTLET

INSTALLATION OPERATIONS MUST BE EXECUTED WITH SUITABLE MEANS AND IN RESPECT OF LEGISLATIVE DECREE 626/94.
ALWAYS REFER TO QUALIFIED PERSONNEL.

5. MAINTENANCE

Avoid dust accumulations above the motor because they prevent correct cooling. To remove the eventual dust use a dry brush or compressed air. **Never use water or other liquids for any reason to clean the electric motor.**

To guarantee optimal functioning of the device proceed to accurate cleaning of the extractor every 6 months, following the instructions indicated below and referring to fig. 12 on page 12:

1. Interrupt electric power supply to the device by acting on the main switch.
2. Disconnect the motor power supply cables by carefully marking them in order to be able to correctly restore the connection later on.
3. Unscrew and unslip the screws, the nuts and the fixing washers of the extraction nozzle (detail 6) and remove the nozzle itself.
4. Unscrew and unslip the screws, the nuts and the fixing washers of the outlet nozzle (detail 5) to the half spirals and remove the nozzle itself.
5. Unscrew and unslip the screws, the nuts and the fixing washers of the motor shaft impeller (part. 2) and manually extract the impeller – motor shaft impeller – disk (partt. 1, 2, 3).
6. Unscrew and unslip the screw and the fixing washer of the motor shaft impeller and manually extract the impeller (detail 3), if this is not possible, do not excessively stress the impeller, but use the appropriate *extractor* tool and repeat the operation.
7. Unscrew and unslip the screws and the fixing washers of the motor body (detail 1) to the half spiral (detail 2) and remove the motor body itself by being careful not to lose the key connected to the shaft.
8. Unscrew and unslip the screws, the nuts and the fixing washers of the half spiral (detail 3) to the clamp (detail 2) and remove the half spiral.
9. Clean the impeller and the components needing to be cleaned with a water and detergent solution, eventually using a non abrasive and/or metallic brush.
10. Re-assemble the clean components in reverse order to disassembly and restore electrical power supply to the device.

DO NOT IMMERSE THE MOTOR IN WATER OR IN LIQUIDS OF ANY NATURE.

6. PROBLEMS AND SOLUTIONS

Before carrying out any maintenance or repairs operation, ascertain that the electric extractor is turned off and disconnected by the electrical power supply network and that the same operation may not cause any type of danger.

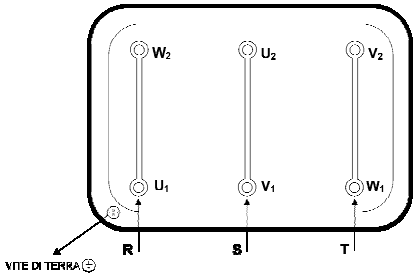
ALWAYS REFER TO QUALIFIED PERSONNEL

Problems	Causes	Solutions
No device start-up	Incorrect power supply connection	Check the correct electrical connections in the omnipolar circuit breaker switch and in the motor terminal box
	Excessive load	Check that the impeller is not blocked
	Voltage too low	Check the voltage of the electric mains distribution
	Defective or disconnected condenser (single phase only)	Contact Our technical assistance or professionally qualified personnel for a more precise verification.
Insufficient extraction capacity	The impeller rotates in the opposite direction	Check whether the fan is rotating in the correct direction (fig. 10, page 11).
	Obstructions and/or physical impediments	Check (and resolve if necessary) that there are no eventual constrictions and curves with a particularly low radius along the duct or that there are no extraneous bodies inside the piping.
	One or more phases are disconnected or interrupted	Check the correct electrical connections in the omnipolar circuit breaker switch and in the motor terminal box (page 10) and that the feeding cable is intact.
	One or more internal envelopments of the electric motor are different.	Contact Our technical assistance or professionally qualified personnel for a more precise verification
	Short circuit (in the electric motor)	Contact Our technical assistance or professionally qualified personnel for a more precise verification
The fuses of the general electric system are burning and/or the differential switch triggers (circuit breaker)	Short circuit (in the connections)	Check the correct electrical connections in the omnipolar circuit breaker switch and in the motor terminal box (page 10) and that the feeding cable is intact
	Short circuit (in the electric motor)	Contact Our technical assistance or professionally qualified personnel for a more precise verification

7. CONNECTION DIAGRAMS

7.1 Three phase Motor

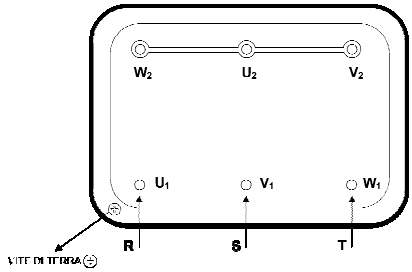
Delta connection
230 V – Three phase - Alternate



Power supply

fig. 5

Star connection
400 V - Three phase - Alternate

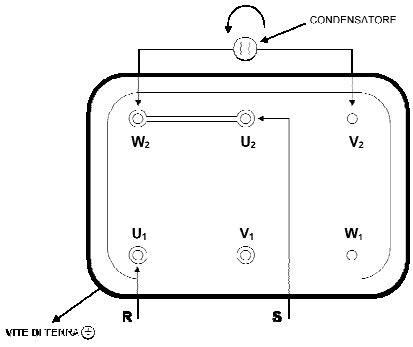


Power supply

fig. 6

7.2 Single phase Motor

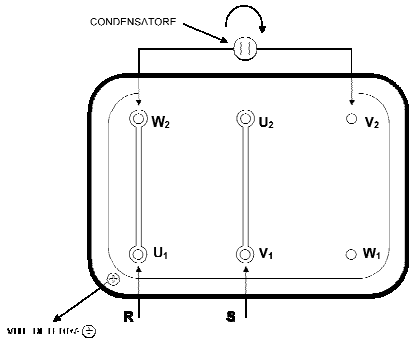
"Clockwise" motor rotation



Power supply

fig. 7

"Counter-clockwise" motor rotation



Power supply

fig. 8

8. DESCRIPTION OF THE ADHESIVES

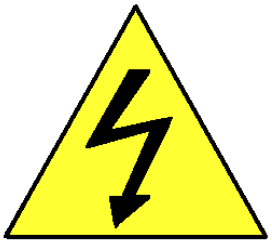


fig. 9

Sticker which indicates that inside the terminal box cover there are parts under voltage (if the motor is in single phase “MONO (Single) 220 V” is also specified).

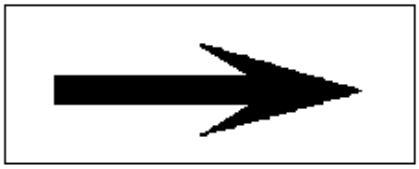


fig. 10

Sticker which indicates the correct rotation direction of the impeller.

9. MARKS AND CERTIFICATIONS

The following model has been examined in accordance with Directives 2006/42/CE, 2004/108/CE, 2006/95/CE and subsequent amendments. Eligibility is advertised by the plate here below with the CE mark that is affixed to the machine, and the declaration of conformity that accompanies the booklet.

fig. 11

10. SPARE PARTS AND OPTIONAL FEATURES LIST.

To request eventual spare parts always explicitly refer to the electric extractor model in possession (**Ex.** Impeller for AK 50):

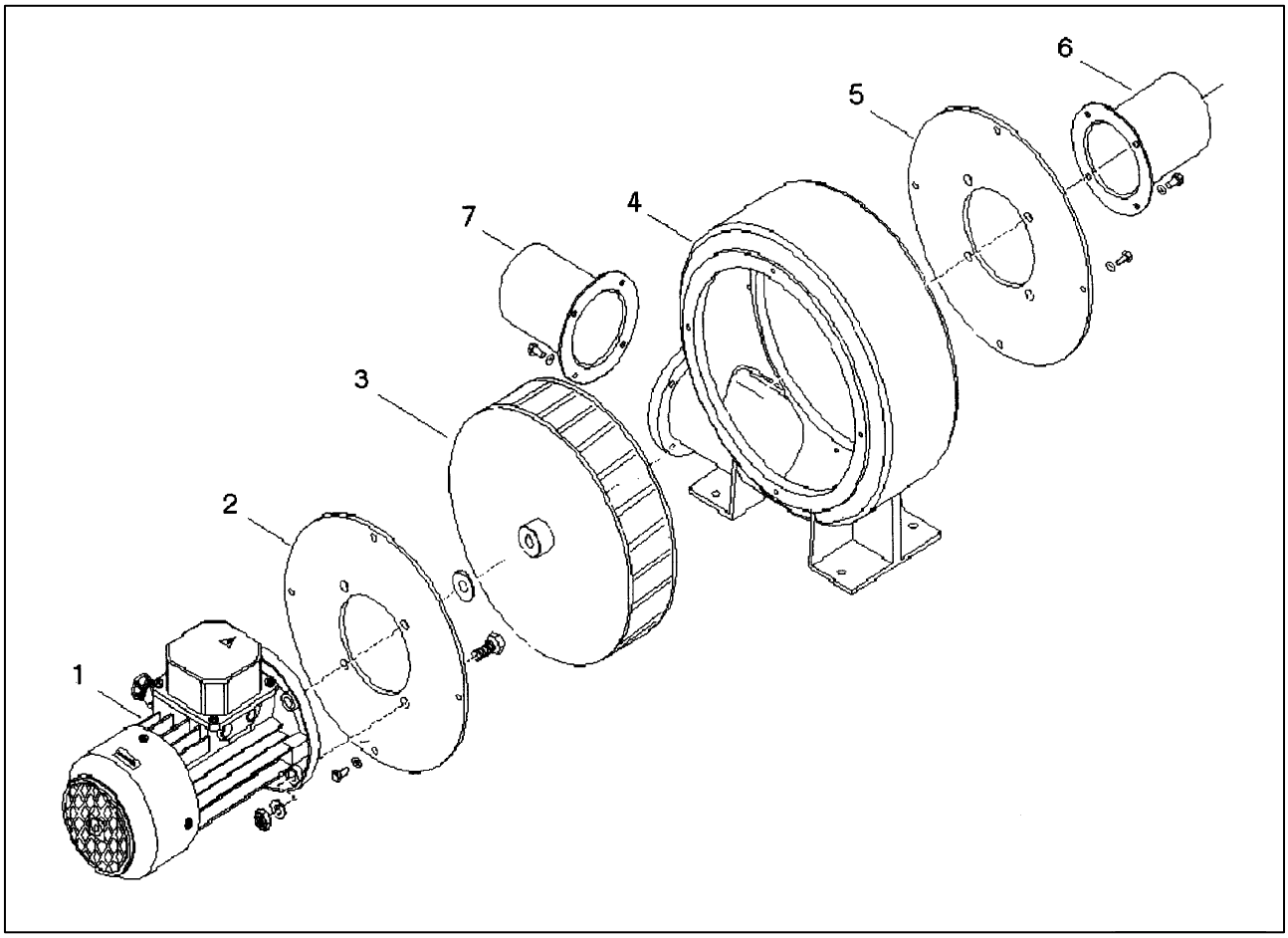


fig. 12

POS.	DESCRIZIONE
1	Motor body
2	Engine support
3	Impeller
4	Half spiral
5	Sparkle-proof plate
6	Suction intake
7	Outlet mouth

10.1 Optional Features

Shelf for fixing to wall;
Sound-proof box;
Anti-vibration feet.

11. DECLARATION OF CONFORMITY

CE DECLARATION OF CONFORMITY

THE COMPANY

FILCAR S.p.A.
Via G. Balla, 18
42040 Loc. Cella - Reggio Emilia
ITALY

DECLARES UNDER ITS EXCLUSIVE RESPONSIBILITY THAT THE PRODUCT:

ELECTRIC EXTRACTOR
MODEL

AK 50	☐	**AK 150**	☐
AK 75	☐	**AK 200**	☐
AK 100	☐	**AK 300**	☐
……	☐		

TO WHICH THIS DECLARATION REFERS IS CONFORM WITH THAT PRESCRIBED BY 2006/42, 2006/95, 2004/108 DIRECTIVES AND FOLLOWING MODIFICATIONS.

Reggio Emilia,.....….

FILCAR S.p.A.

(Amm. Delegato Menozzi Paolo)

12. MAINTENANCE RECORD

No. Progr.	Date	Description of intervention	Signature

NOTES

FILCAR S.p.A. è certificata ISO 9001:2008

Filcar S.p.A. is certified ISO 9001:2008

Filcar S.p.A. ist Zertifizierung nach ISO 9001:2008

Filcar S.p.A. est certifié ISO 9001:2008

Filcar S.p.A. está certificada ISO 9001:2008