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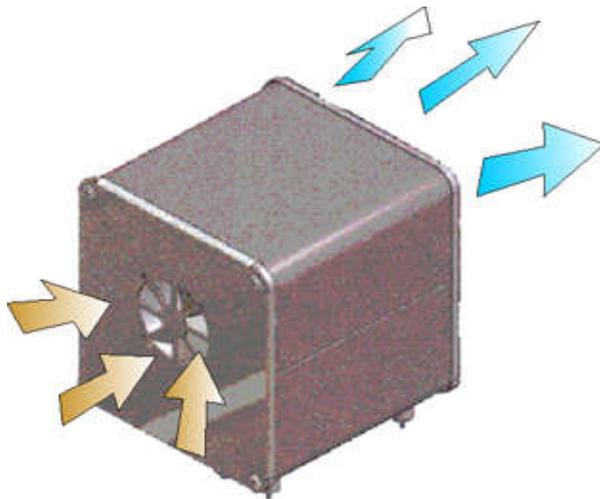


1.0 INTRODUCTION

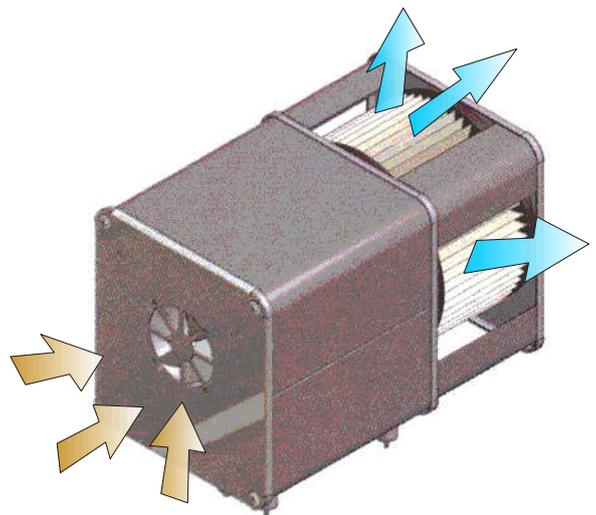
This manual contains all the information necessary in order to use the machine correctly. The user is requested to read it thoroughly and follow the directions it contains carefully. It is also important to keep the booklet in a suitable place out of harm's way. The content of this manual may be changed without notice in order to include variations and improvements to units which have already been sent out.

2.0 DESCRIPTION OF THE FUNCTIONS

The KUBE series of centrifugal extractor fans are designed for use on all types of machine tools using emulsified or neat lubricating oil coolant. The range comprises three models which, fitted with various impellers and motors, offer a wide selection (up to 6 different combinations) of extraction flow rates, depending on the size of the machine tool to serve. All the models of extractor fans can be used in combination with pre- and post-filters at any time, depending on the work carried out and the materials processed by the machine tool. This ensures the right configuration for the specific problem.



Pic. 1



Pic. 2

Polluted air from the oily particles is conveyed into the mist collector due to the negative pressure effect exerted by the special backward-inclined impeller which, thanks to the high tangential speed imparted to the air and the configuration of the extractor fan casing, imparts a powerful centrifugal and coalescent effect which is able to bring together the larger micro oil particles. These are turned back into liquid to then be evacuated and recovered through the two drainage tubes. Then, the air is conveyed to the second stage of filtration consisting of a stainless steel drop separator, fitting KUBE in a special inclined position able to grant higher surface of air impact, so higher efficiency. After the drop separator the air is conveyed to a regenerable coalescing filter with a high storage capacity, which binds and protects a cellulose cartridge with a large filtering surface area. The air purified in this way, can be released back into the environment.



The dual combination of dynamic reduction and static filtration guarantees a high level of pollutant removal, which can be further elevated through post-filtration (see picture 2).

3.0 DIRECTIONS FOR USE AND LIMITS OF USE

The KUBE series of filters has been designed, according to the specificity of their different versions, to filter neat or emulsified oil mists with modest amounts of dust which are produced in mechanical industry processing and in particular in turning, milling, boring and grinding.



THE FILTER IS NOT DESIGNED TO TREAT VAPOURS WHICH ARE NATURALLY FLAMMABLE OR EXPLOSIVE OR BECOME SO DURING A REACTION.



THE FILTER IS NOT SUITABLE FOR FUMES FROM HARDENING TREATMENTS OR IN CASES WHERE THE FUMES ARE AT A HIGH TEMPERATURE.



IN THE PRESENCE OF FUMES, MICRO OIL MISTS AND VAPOURS THAT COULD BE PRODUCED AS A RESULT OF HEAVY PROCESSING (HIGH REMOVAL LEVELS, HIGH-SPEED CUTTING, COOLANT COMBUSTION), IT IS ESSENTIAL TO CARRY OUT POST FILTERING THROUGH A CARTRIDGE.



IT IS COMPULSORY TO EARTH THE FILTER BY CONNECTING THE CONTACT POINTS TO A COPPER PLAIT WITH A SUITABLE CROSS SECTION (A CROSS SECTION OF 2.5 MM² IS RECOMMENDED), SECURED TO THE ARTICLE, TAKING CARE TO MAINTAIN CONTINUITY.



A HIGH LEVEL OF SEPARATION OF THE CELLULOSE CARTRIDGE FILTER (RESIDUAL <0.1%) IS ONLY GUARANTEED WITH FILTRATION RATES UNDER 0.05 M/S, WITH INCOMING CONCENTRATIONS OF POLLUTANT OF 200 MG/M³ AND WITH INCOMING PARTICLES WITH A GRANULOMETRY OF BETWEEN 0.8 AND 5 µM.



A HIGH LEVEL OF SEPARATION OF THE TEFLON-COATED POLYESTER POST-FILTER, FOR THE VERSIONS WHERE APPLICABLE, (RESIDUAL <0.1%) IS ONLY GUARANTEED WITH FILTRATION RATES UNDER 0.05 M/S, WITH INCOMING CONCENTRATIONS OF POLLUTANT OF 200 MG/M³ AND WITH INCOMING PARTICLES WITH A GRANULOMETRY OF BETWEEN 0.2 AND 2 µM.





THE CROSS SECTION OF THE TWO OIL DRAINAGE TUBES MUST BE THE SAME AS THAT OF THE DRAINAGE CONNECTOR. THIS MUST BE CONNECTED TO A WATERTIGHT COLLECTION TANK, TO THE MACHINE'S OIL RECOVERY SYSTEM OR THE CENTRALISED DISTRIBUTION SYSTEM. PLEASE NOTE THAT IT IS FORBIDDEN TO DISPOSE OF THE OILS INTO THE ENVIRONMENT.

Particle size [µm]	0.2	0.5	0.8	5	10
Filtered Material	Fumes and oil vapours		Oil mists		

The emulsified/neat oil mists (air + liquid pollutant with particle size between 0.8 and 10 microns) are generated by the (purely mechanical) action of the rotating parts such as tools, pieces being processed etc.

The emulsified/neat oil vapours (air + liquid pollutant with particle size between 0.2 and 0.5 microns) are generated by thermal action (heat of friction between the piece and tool, heat from the electric resistor which develops in induction hardening) and by pressure (pre-nebulised cooling systems, forced high-pressure lubrication).



Any act which compromises the functionality, integrity and/or safety of the machine structure, the internal equipment, both electrical and mechanical and any control and connection component is considered improper use. The MICRONFILTER support service is always available for any further information about using the product.

4.0 PRELIMINARY INSPECTION AND INSTALLATION

KUBE series filters and their relative accessories/optional reach the customer fully assembled, protected by suitable packaging.



IN ORDER TO MOVE THE MATERIAL, USE APPROPRIATE LIFTING EQUIPMENT AND TAKE ALL THE SAFETY PRECAUTIONS ENVISAGED ON THE CONSTRUCTION SITE.

After removing the material from the packaging, make a visual check that it has not been damaged during transportation and use the checklist to check that all the components have been supplied. If this is not the case, inform your dealer as soon as possible and nevertheless no later than 10 days from delivery.

4.1 INSTALLATION



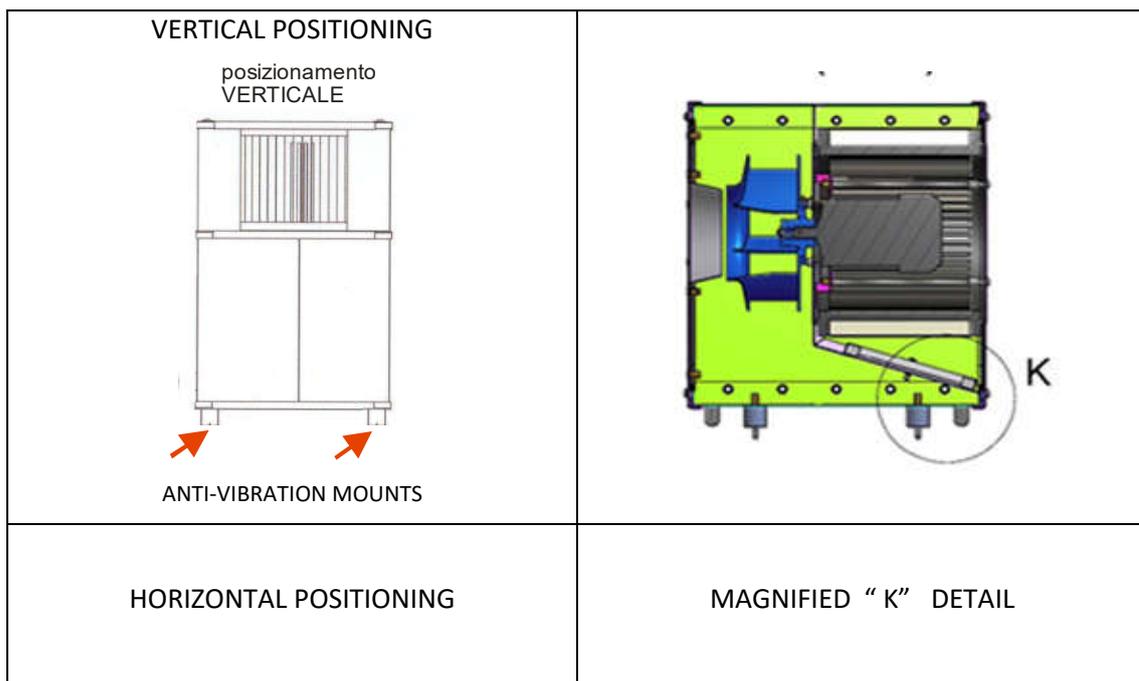


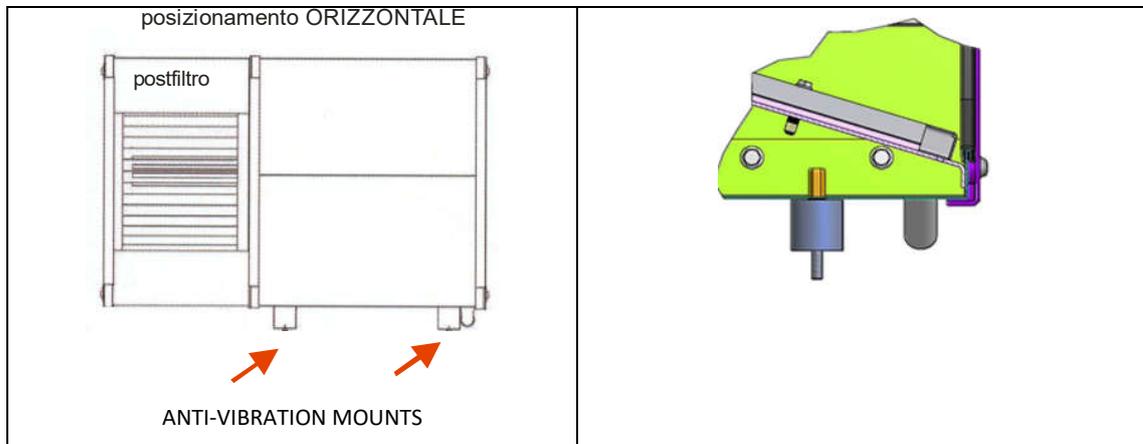
The mist collector must be installed by qualified personnel only.

KUBE series filters are installed near the machine tool and connected via rigid or flexible pipelines, to be secured to the collection systems using clamps. It is advisable not to exceed a radius of 4-5 m around the machine. It is also advisable to place them in protected locations to avoid collisions with the handling systems.

The unit can be mounted BOTH horizontally and vertically and must be secured with the appropriate feet on the stand, on a shelf or directly on the machine tool.

To dampen any vibrations caused by rotating parts, it is possible to use anti-vibration mounts (supplied); in this case, it is necessary to secure the KUBE using two steel cables so that if the anti-vibration mount should break, the machine will not fall from its position.

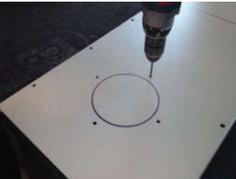
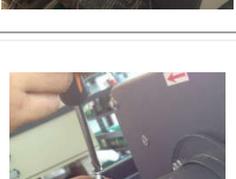




4.2 HORIZONTAL INSTALLATION

REQUIRED: 2 SLEEVES WITH THEIR FLANGES, PIPE CONNECTION AND CLAMPS).



		<p>The KUBE filter, upon request, comes with HORIZONTAL installation kit. We recommend, whenever possible, to remove the panel from the machine tool identified for the housing unit, in order to carry out all the installation steps in complete safety. As a first step, using a meter and a pen, locate the 4 points for the INSERTION of anti-vibration mounts.</p>
		<p>Once reported 4 points for anti-vibration mounts (for precise measurements refer to section 8.0 of this manual) drill the machine tool roof by 8 mm drill bit. At this point, using the flange of the sleeve that came with the kit, mark with a pen the inner circumference of the flange of the sleeve and the 4-holes mounting flange.</p>
		<p>Repeat the operation of drilling with the drill and, using a suitable tool (for example a jig saw) to cut the sheet along the entire circumference. At this point you can bolt the suction hose. Take care to properly apply silicone between the plate of the machine tool and the flange, to prevent possible leakage of oil (if a die-cut gasket is not included).</p>
		<p>Repeat the drill with the drill and using a suitable tool (for Screw the 4 anti-vibration mounts (included in delivery) in the inserts of the vacuum, then screw the suction hose to the lid of the KUBE, take care to properly apply silicone between the cover and flange, to prevent possible leakage of oil (if a die-cut gasket is not included)</p>
		<p>Is now possible to fit the KUBE mist collector onto the 4 holes previously made, take care to properly tighten the nuts onto the threads of anti-vibration mounts to lock properly the mist collector. At this point you can connect the two sleeves together with the hose supplied with the kit.</p>
		<p>Using the drain hose and the T connector merge the two drainage pipes as shown in the picture, leaving a portion of the tube sufficient to reach the desired collection point. KUBE mist collector, after these steps, is ready to be placed on the machine tool for the next electrical connection, in this regard refer to Chapter 11.0 of this manual. In the left picture Pictured there's an example of KUBE installed horizontally.</p>



4.3 VERTICAL INSTALLATION

		<p>KUBE MIST COLLECTOR, upon request, is provided with VERTICAL installation kit to properly mount the suction unit on the machine tool. We recommend that, whenever possible, to remove the panel from the machine tool identified for the housing unit, in order to carry out all the installation steps in complete safety. As a first step, using a meter and a marker pen, draw the 4 points for the inclusion of anti-vibration mounts and suction hose.</p>
		<p>Unlike horizontal installation, in this case holes have to be performed on a single template. Inside of points scored for anti-vibration mounts, you have to draw the hole for suction, paying attention to the measurements, because the suction hole IS NOT CENTERED at the intersection of the axes of the lid. IMPORTANT: To design the suction hole using DIAMETER AS THE CIRCUMFERENCE OF INNER FLANGE SLEEVE INCREASED BY 20 mm.</p>
		<p>Operate with the drill and the hacksaw as described in the previous chapter to complete the preparation of the panel. Once the work has been completed, make sure that the gasket supplied with the KIT matches the hole. IMPORTANT: the gasket must be locked with the SPECIFIC FLAT FLANGE supplied with the KIT.</p>
		<p>Working with the drill and the saw as described in the previous chapter to complete the preparation of the panel. After the completion of work to ensure that the gasket supplied with the kit, combine with drilling. IMPORTANT: The gasket must be locked with the FLAT FLANGE SPECIFICATION supplied with the kit. ALWAYS USE SILICON BETWEEN INLET SLEEVE AND KUBE BODY FOR AVOIDING LEAKAGES</p>
		<p>Prepare the drainage as described in the previous chapter, turn the KUBE 90 ° and invite the sleeve into the hole, taking care not to damage the seal. The gasket has the inner diameter smaller than the suction sleeve in order to ensure sealing.</p>

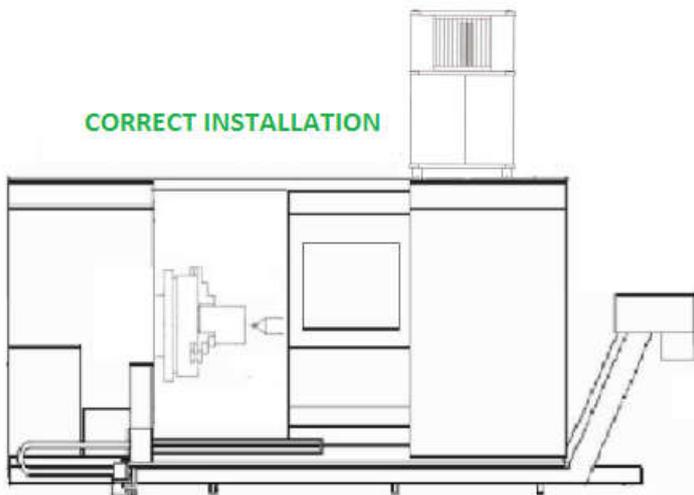




Screw the threads of anti-vibration mounts the bolts to permanently block the mist collector. In the two photos on the left some detail of final installation.

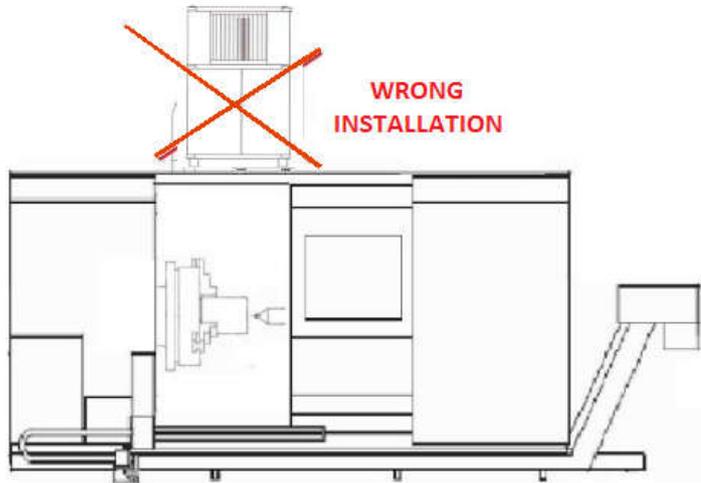
REQUIRED: 1 SLEEVE AND THE RESPECTIVE FLANGE AND A SEAL WITH ITS FLAT FLANGE

The filter extraction outlet must be made on the machine fairing **at the OPPOSITE SIDE (or even further) from the tool processing point**, in order to avoid any uptake of solid material or excessive intake of coolant (see pic.1: **CORRECT INSTALLATION** and pic.2: **WRONG INSTALLATION**)



Pic. 1





Pic. 2



5.0 USING AND INSTALLING THE PREFILTER “PF” or “PREKUBE”

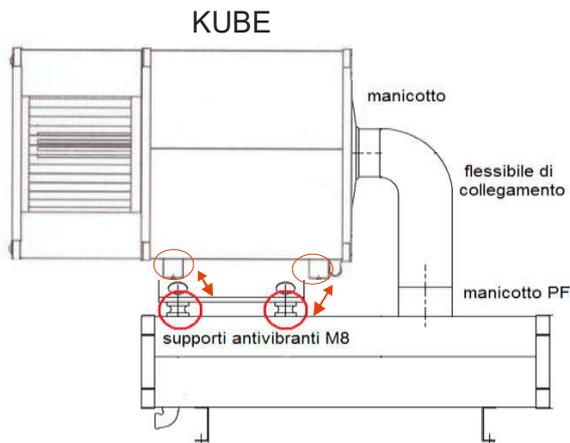
PF series pre-filters can fit also KUBE, when needed, in all cases where there are high levels of production of oil mists together with dust and metal shavings. For all the limitations of use, the points mentioned in chapter 3.0 apply.

5.1 INSTALLING THE PREFILTER “PF” or “PREKUBE”

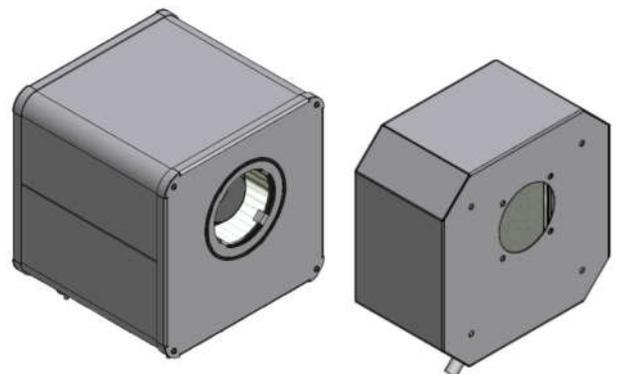
PF series pre-filters normally (when ordered with) come already assembled together with the KUBE mist collector directly from MICRONFILTER. If this is not the case, proceed as follows:

1. Place the PF on a flat surface.
2. Screw the four M8 anti-vibration mounts (supplied) into the blind inserts on the top of the PF (pic.1)
3. Place the KUBE on the anti-vibration mounts and tighten the M8 nuts (supplied)
4. Fit a sized hose to connect the KUBE coupling to that of the PF (fig. 1).
5. Use the two-wire hose clamps (supplied) to secure the hose firmly to the couplings.

KUBE WITH PREFILTER TYPE MICROIL



KUBE WITH PREFILTER TYPE PREKUBE



6.0 USING AND INSTALLING THE POST-FILTER

“P” series post-filters are especially suitable, as post-filtration modules combined with our KUBE mist collectors, in all cases where there is production of oil micro mists, vapours or combustion fumes/smokes (see table on page 3 chapter 3.0).

6.1 INSTALLING THE “P” POST-FILTER ON THE KUBE

P series post-filters are normally supplied separately from the KUBE mist collector. To connect them, proceed as follows:

1. On the back cover of KUBE, put onsite with the suitable tool, the 4 corner-spacer legs. (pic.1 pic. 2)
2. Insert the P cartridge in the middle of the ideal square generated from the 4 corner legs (pic. 3)
3. Place the closing cover pressed on the cartridge and screw well the system, in order to get the right sealing. (pic. 4) and realizing the final assembly (pic. 5).



Foto 1



Foto 2



Foto 3



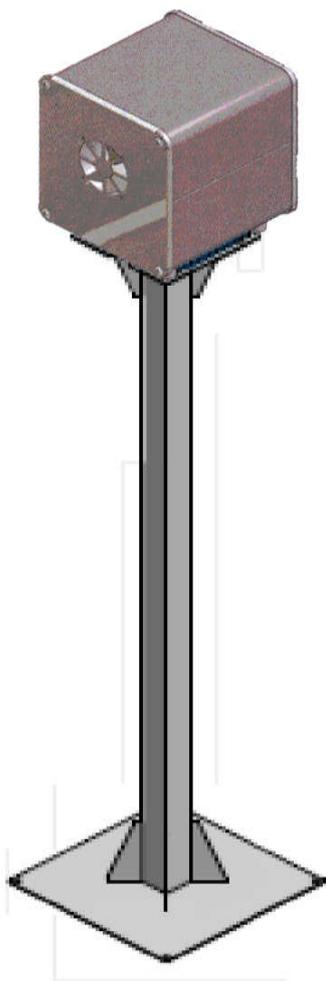
Foto 4



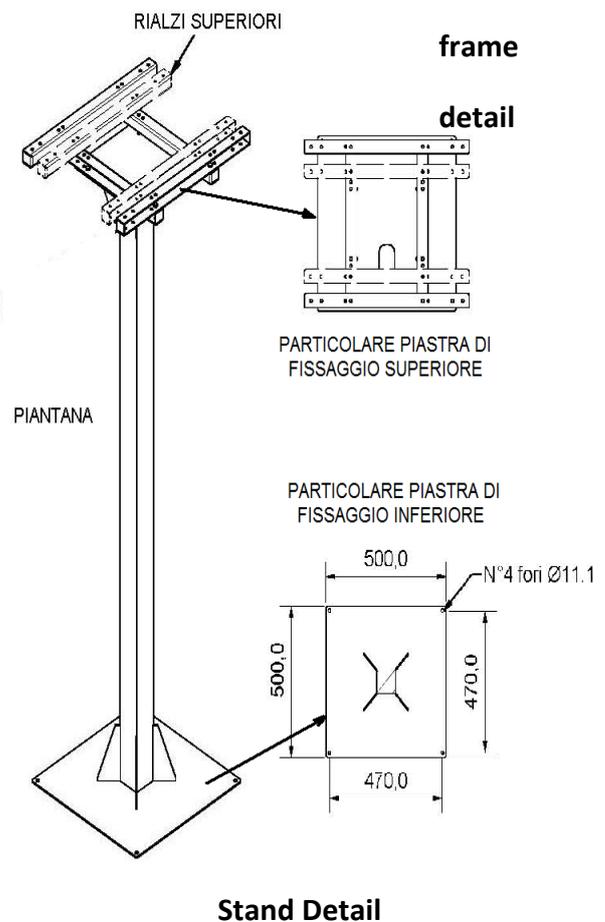
7.0 INSTALLING KUBE AND PRE-FILTER ON THE STAND

In all cases where it is not possible to place the mist collector with its relative pre- and post-filtering accessories directly onto the fairing of the machine tool, it is possible to install the unit on a support stand. The stand (optional) is normally provided separately to the KUBE mist collector. To connect it, proceed as follows:

1. Place the stand in the immediate vicinity of the machine tool, taking care to position it as close as possible to the extraction outlet on the fairing.
2. Drill holes in the floor, copying the distance between centres on the lower anchor plate (see diagram), using appropriate anchor bolts (we recommend the use of M8 metal expansion bolts for concrete floors).
3. Assemble the upper rises supplied together with the stand on the upper plate, screw on the anti-vibration mounts in the seats fitted with inserts.
4. Lift the extractor fan (fitted with pre-filter where applicable) using suitable equipment and place it on the anti-vibration mounts then tighten the retaining nuts.



**KUBE
On STAND**



8.0 KUBE TECHNICAL DATA

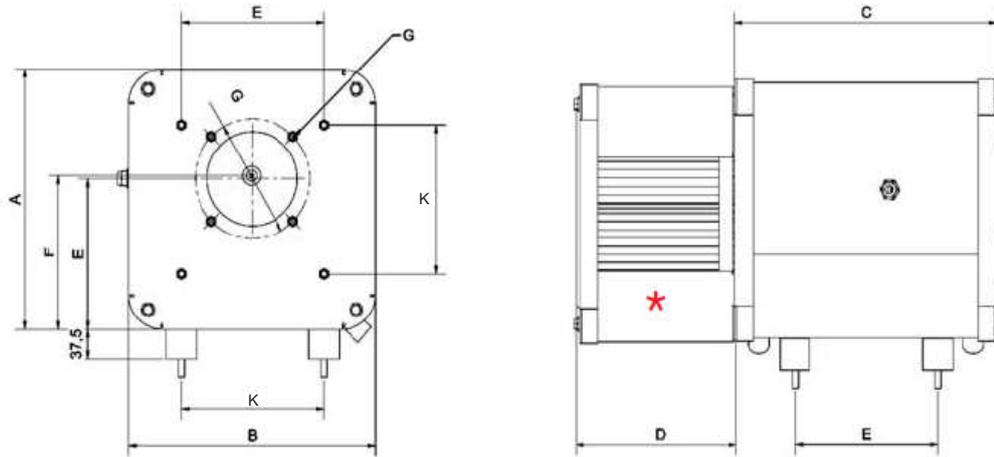
	KUBE400	KUBE400	KUBE800	KUBE1200	KUBE2000	KUBE2500
Power	0,18 kW	0,25 kW	0,37 kW	0,55 kW	0,75 kW	1,1 kW
Electrical Connection	230/400V 50 Hz 230/460V 60 Hz					
RPM	2800 a 50Hz					
Noise	62 dB(A)	64 dB(A)	66 dB(A)	67 dB(A)	68 dB(A)	69 dB(A)
Weight	25 kg	25 kg	40 kg	41 kg	54 kg	55 kg
Throughput	200 m3/h	400 m3/h	800 m3/h	1200 m3/h	2000 m3/h	2500 m3/h
Static Pressure	30 mmH2O					
Drenaige	D. 25mm					
Insite coalescing prefilter	Polyester	Polyester	Polyester	Polyester	Polyester	Polyester
Insite filter cartridge	Cellulose	Cellulose	Cellulose	Cellulose	Cellulose	Cellulose
Filtering Surface	2 m2	2 m2	6 m2	6 m2	12 m2	12 m2

After Filter cartridge

Filtering Surface	3,6 m2	3,6 m2	9 m2	9 m2	14 m2	14 m2
Classification BIA	"M"	"M"	"M"	"M"	"M"	"M"
After filtration	H 13 DIN EN 60335-2					



8.1 SIZE TABLE



KUBE 200/400 KUBE 800/1200 KUBE 2000/2500

DIMENSIONI (mm) DIMENSIONS (mm) DIMENSIONS (mm) ABMESSUNGEN (mm) MEDIDAS (mm)	A	B	C	* D	E	F	G	K
	332	328	349	212	192	196	4 x M8 Ø153	192
	467	467	451	260	300	283	4 x M8 Ø183	300
	610	610	551	471	300	349	6 x M8 Ø233	400



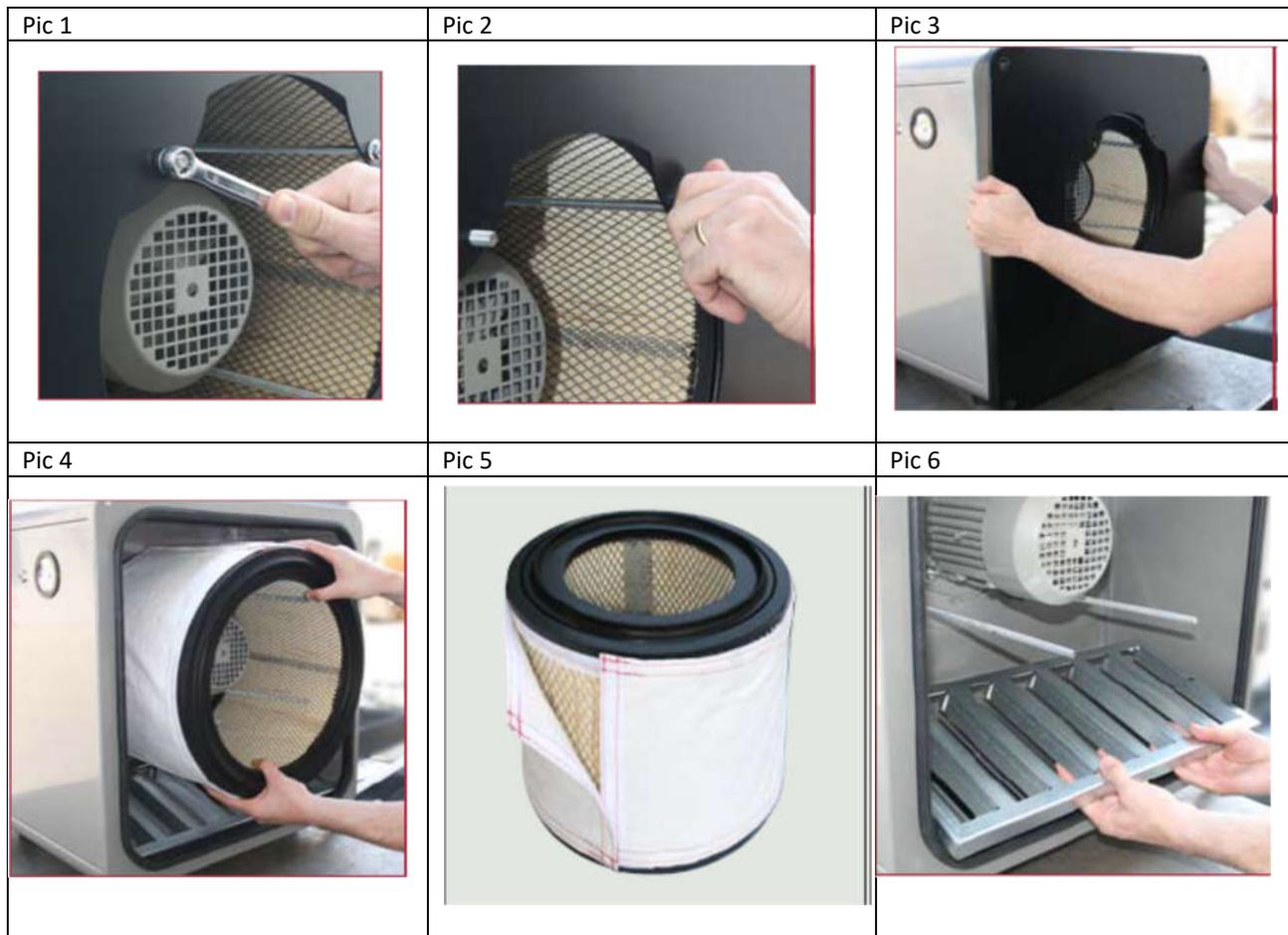
9.0 FILTER MAINTENANCE AND REPLACEMENT



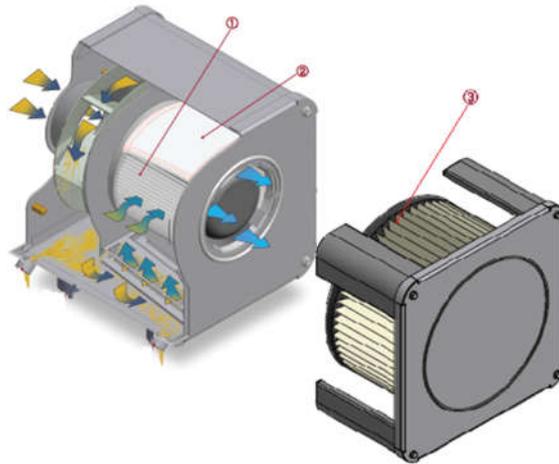
Do not perform maintenance while the machine is operating or connected to the electrical energy source. During these phases, remember to disconnect the plug to prevent unwanted start-ups.

In order to keep the machine in perfect working order, the following operations must be carried out:

- check the condition of the electrical power cables;
- Clean the various components comprising the filtration device. To access the filter, loosen the closing screws and remove the cover (pic. 1)
- Remove the cover and take out the filter cartridge (pic. 1)
- Remove the coalescing filter from the cartridge (pic. 2) and check the wear of both. Replace if necessary.



9.1 DESCRIPTION OF SPARE PARTS



1. **Cellulose filter:** this is the high efficiency filter that traps the oil mists. Check its condition visually. As it is a storage filter, its duration is variable and depends on the type of processing and its intensity.
2. **Coalescing filter:** this is the filter whose role is to facilitate the condensation of the oil mists and retain any coarse impurities. Clean using a detergent solution in a pressure washer at low pressure and about 40 °C (this operation can be carried out no more than twice). Allow to dry thoroughly before reinstalling. Careful maintenance of this filter allows the cellulose cartridge to last longer
3. **Polyester post-filter (optional):** this is the high efficiency filter that traps the micro impurities, vapours and combustion fumes. As it is a storage filter, its duration is variable and depends on the type of processing and its intensity.

Dispose of the used filters carefully, sending them to specialised disposal companies in compliance with applicable legislation.



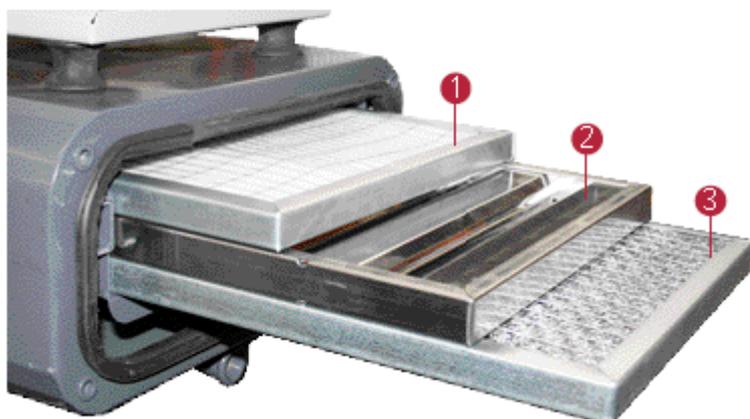
9.2 PRE- FILTER MAINTENANCE AND REPLACEMENT



Do not perform maintenance while the machine is operating or connected to the electrical energy source. During these phases, remember to disconnect the plug to prevent unwanted start-ups.

The prefilter has 3 filters with increasing filtration efficiency of which 2 are completely regenerable. In order to keep the machine in perfect working order, the following operations must be carried out:

- Remove the cover and take out the filters (see the picture)
- If necessary, clean the metallic filter (3) and the drop separator (2) using a detergent solution in a pressure washer at low pressure and about 40 °C. Allow to dry thoroughly before reinstalling. Careful maintenance of these filters allows the internal KUBE filters to last longer.
- The acrylic filter (1) is not re-generable so its duration is variable and depends on the type of processing and its intensity.



1. Filtro acrilico - Filtre acrilique -
Acrylic filter - Akryl- Filter -
Filtro acrilico
2. Filtro labirinto - Filtre labyrinthe
Labyrinth filter - Filterlabyrinth -
Filtro laberinto
3. Filtro metallico - Filtre metallique
Metallic filter - Metallfilter -
Filtro metalico



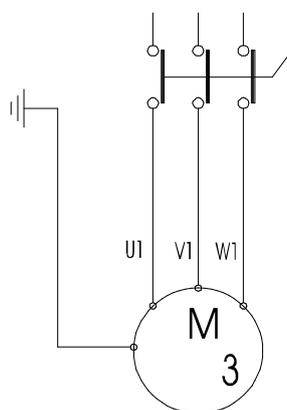
Model	Labyrinth Filter	Metallic Filter	Acrylic Filter	Filter size	DIN EN 779 classification		
					Labyrinth	Metallic	Acrylic
PreFilter KUBE 200-400-800-1200	1	1	1	287x592x25 mm			
PreFilter KUBE 2000-2500	1	1	1	592x592x25 mm	G1 regenerable	G2 regenerable	G3 consumption

*SAME DIRECTIONS FOR PRE-FILTER MODEL PRE-KUBE

10.0 ELECTRICAL CIRCUIT DIAGRAMS

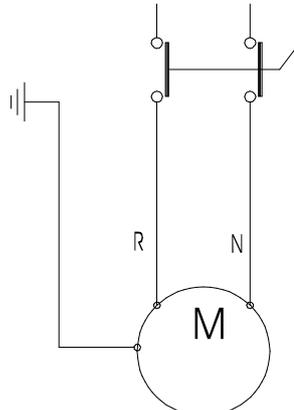
Make connections to the power supply according to current safety standards.

Before starting up the machine, check the correct direction of rotation of the electric motor shown by an arrow on the fan.

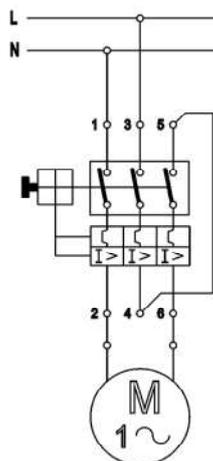


THREE-PHASE

(STANDARD)

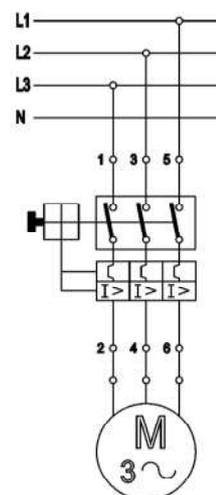


SINGLE PHASE



MONOFASE

(OPTIONAL)



TRIFASE



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11.0 MARKING AND CERTIFICATION

The KUBE models have been examined in compliance with the EEC Machinery Directive 2006/42/EG as amended. Their suitability is shown by the application of the CE marking on the machine and the declaration of conformity which accompanies this manual.



12.0 SYMBOLS

These symbols,  together with the relative wording, indicate the potential risk resulting from disregarding the provision with which they have been combined, as specified below:



Sticker indicating that live parts at 400 V are present on the control panel.



Sticker indicating the correct direction of rotation of the fan wheel

13.0 TROUBLESHOOTING

N°	Fault	Cause	Possible solutions
1	Machine fails to start	Incorrect power supply connection	Check that the electrical power supply is connected to the terminal board correctly
2	The air emitted is not sufficiently purified	Inefficient filter effect	Check that the filters are clean and remove and replace them if necessary
3	Decrease in air extraction	Ineffective filter effect	Check that the filters are clean and remove and replace them if necessary
4	Decrease in air extraction	The impeller is running in the wrong direction	Reverse the polarity of the two power cables



14.0 KUBE FILTERS TECHNICAL DATA SHEETS AND CERTIFICATION



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Soggetta all'attività di direzione e coordinamento della COFISE S.p.a.

14.1 CELLULOSE FILTER CARTRIDGE DATA SHEET

70/33 cellulose filtering fabric has a special phenol resin base structure. This method ensures constant air permeability throughout for better filtering efficacy and higher stability. The 70/33 **BIA** certificate (a copy is available upon request) complies with ZH1/487 Directives specifying release less than 0.1% for 0.2 to 2 micron size range dust and a flow rate of 0.056 m/s corresponding to a USGC rating. The maximum continuous working temperature is 60°C.

ARTICOLO Article - Article Artikelbezeichnung - Artículo		7033
COMPOSIZIONE Composition - Composition Faserzusammensetzung - Composición		100% PAPER
PESO Poids - Weight Gewicht - Peso	[g/m²]	129
SPESSORE Epaisseur - Thickness Dicke - Espesor	[mm]	0,32
DENSITÀ Densité - Density Dichte - Densidad	[g/cm³]	-----
MASSIMA RESISTENZA ALLA TRAZIONE TRASVERSALE Résistance maximum à la traction transversale - tensile strength md hochstzugkraft langs - Máxima resistencia a la tracción transversal	[N/5cm]	526
MASSIMA RESISTENZA ALLA TRAZIONE LONGITUDINALE Résistance maximum à la traction longitudinale - tensile strength cd hochstzugkraft - Máxima resistencia a la tracción longitudinal	[N/5cm]	383
CONTENUTO DI RESINA Resin content - Contenu en résine Harz gehalt - Contenido de resina	[%]	21
PERMEABILITÀ ALL'ARIA Perméabilité à l'air - permeability to air luftdurchlässigkeit - Permeabilidad al aire	[m³/m²h]	950 ca
DIMENSIONE DEI PORI Dimensions des pores - size of pores porengrosse - Dimensión de los poros	[µm]	NOT MEASURABLE
VOLUME DEI PORI Volume des pores - volume of pores porenvolumen - Volumen de los poros	[%]	71
CLASSIFICAZIONE POLVERI Dust class- classification poussières Staubklasse- clasificación polvos		"M"
CLASSIFICAZIONE BIA Classification BIA - BIA Rating Klassifikation BIA - Clasificación BIA		USGC
TINTA Couleur - Color Farbe - Color		YELLOW



14.2 TEFLON-COATED POLYESTER FILTER CARTRIDGE (post-filter) DATA SHEET

THE COMBINATION OF POLYESTER FABRIC AND A PTFE (TEFLON) LAYER GIVES AN EXCELLENT PERFORMANCE FILTERING FABRIC. THIS FABRIC IS VERY EASY TO CLEAN THANKS TO ITS VERY SMOOTH, NON-STICK SURFACE.

The PTFE (Teflon) layer withholds even the smallest particles on the surface of the fabric. Furthermore, **COL 270B-TF** is especially used to filter very fine, sticky, fibrous, critical powders. The **BIA** certification no. 9604611/6210 of **COL 270B-TF** (copy available upon request) complies with Directive ZH1/487 which establishes a release lower than 0.1% for powder with a granulometry in the range from 0.2 to 2 microns, at a crossing speed of 0.056 m/s which corresponds to class USGC. **COL 270B-TF** offers high mechanical resistance, high chemical resistance to acid and organic solvent vapours. The maximum working temperature for continuous use is 150°C.



ARTICOLO Article - Article Artikelbezeichnung - Artículo		COL 270 B-TF
COMPOSIZIONE Composition - Composition Faserzusammensetzung - Composición		100% POLYESTER SPUNBONDED
PESO Poids - Weight Gewicht - Peso	[g/m ²]	270
SPESORE Epaisseur - Thickness Dicke - Espesor	[mm]	0,60
DENSITA Densité - Density Dichte - Densidad	[g/cm ³]	-----
MASSIMA RESISTENZA ALLA TRAZIONE TRASVERSALE Résistance maximum à la traction transversale - tensile strength md hochstzugkraft langs - Máxima resistencia a la tracción transversal	[N/5cm]	1 200
MASSIMA RESISTENZA ALLA TRAZIONE LONGITUDINALE Résistance maximum à la traction longitudinale - tensile strength cd hochstzugkraft - Máxima resistencia a la tracción longitudinal	[N/5cm]	700
MASSIMO ALLUNGAMENTO ALLA TRAZIONE TRASVERSALE Allongement maximum à la traction transversale - elongation md dehnung langs - Máximo alargamiento a la tracción transversal	[%]	40
MASSIMO ALLUNGAMENTO ALLA TRAZIONE LONGITUDINALE Allongement maximum à la traction longitudinale - elongation cd dehnung quer - Máximo alargamiento a la tracción longitudinal	[%]	30
PERMEABILITÀ ALL'ARIA Perméabilité à l'air - permeability to air luftdurchlässigkeit - Permeabilidad al aire	[m ² /m ² h]	1 100 ca
DIMENSIONE DEI PORI Dimensions des pores - size of pores porengrosse - Dimensión de los poros	[µm]	NOT MEASURABLE
VOLUME DEI PORI Volume des pores - volume of pores porenvolumen - Volumen de los poros	[%]	66
ASSORBIMENTO ACQUA Absorption d'eau - water absorbency wasseraufnahme - Absorción de agua	[%]	-----
CLASSIFICAZIONE BIA Classification BIA - BIA Rating Klassifikation BIA - Clasificación BIA		USGC
TINTA Couleur - Color Farbe - Color		WHITE/GREEN



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Soggetta all'attività di direzione e coordinamento della COFISE S.p.a.

15.0 WARRANTY

1. General conditions

Micronfilter Srl (hereinafter known as *Supplier*) undertakes to deliver to the purchaser products conforming to the agreement which are exempt from defects such as to make them unsuitable for the use to which products of the same type are employed and guarantees the products sold for 365 days from the date of delivery with an hourly limit of use equal to 2000 hours.

The guarantee *ex-Supplier's* works is limited to the replacement or repair of the products which, in the unquestionable opinion of the *Supplier*, are defective. Components not directly constructed by the *Supplier* will be the subject of a guarantee according to the conditions used by his supplier to the *Supplier*.

It remains understood that all the components replaced shall be the property of the *Supplier* or his supplier.

2. Notification of non-conformity to guarantee or defective product

The notification of non-conformity or defect of the product must be communicated in writing to the *Supplier* with a clear indication of its nature within 15 days of the date it was found or could have been found following a thorough examination of the product. In addition, the purchaser, against *Supplier's* request, must place at the disposal of the *Supplier*, the product deemed non conforming and/or allow people assigned by the *Supplier* to carry out all the checks that the *Supplier* deems suitable in order to ascertain the effective non conformity or defect of the product. The lack of communication of the potential non-conformity or fault of the product in the times indicated and/or if the latter is not made available shall cause the immediate termination of the guarantee. The purchaser also forfeits the guarantee if, the supplier has requested the faulty piece to be returned at his expense and the purchaser omits to return such piece within a short period of the request.

The regulations of articles 40 and 44 of the Vienna Convention shall not be applicable in any case.

3. Repairs or replacements

The *Supplier* shall fulfill the obligations set out in the guarantee by repairing or replacing the non-conforming or defective parts. In order to fulfill the guarantee the *Supplier* can choose:

- a) to carry out the repairs at his factory: in this case the purchaser is obliged to send at his expense, the products to the factory indicated by the *Supplier* and to collect them ex-factory, after the execution of the guarantee.
- b) to carry out or have carried out by third parties the repairs and/or replacements in the place where the products are located. In this case the travelling costs, board and lodgings shall be at the expense of the purchaser;
- c) to have the repair and/or replacement carried out by the purchaser supplying the relative instructions and possibly supplying free of charge, ex the *Supplier's* factory or reimbursement of the spare parts.

The guarantee for the pieces replaced or repaired terminates on the same day as the guarantee of the product.



4. Exclusions

The *Supplier* shall not be held liable for defects or faults pertaining to the product which are directly or indirectly attributable to information, data, projects, materials and to any other tangible or intangible good supplied, indicated or requested by the purchaser or by third parties acting in whatever role, in the name and on behalf of the latter.

Not covered by this guarantee are all the defects directly or indirectly attributable to incorrect, excessive or improper use of the equipment and including all the times the equipment is used in a manner different from that described in the technical documentation accompanying the product. In addition excluded from the guarantee are all the parts normally subject to wear and tear such as filters, seals, fuses etc.

The guarantee shall terminate if the product is tampered with, modified, repaired by service centres other than that of the *Supplier* and by personnel not directly employed or authorized by the *Supplier* himself and/or in the case of the use of non-original components or consumables (filters, seals etc).

The *Supplier* does not guarantee the inexistence of claims or rights based on industrial or intellectual property of third parties, relating to the product or documentation transmitted to the purchaser

5. Limitations of the *Supplier's* responsibility (responsibility for damages)

Except in the case of malice or serious wrong of the *Supplier* the possible reimbursement of any damage to the purchaser cannot however exceed the value of the product relating to the defective part. The guarantee as per this article includes and replaces the guarantees or responsibilities provided by the law and excludes all other responsibilities of the *Supplier* not originated by the products, in particular the purchaser cannot advance other requests for compensation for damage, price reduction or termination of the contract.

Once the guarantee has expired no claims shall be made to the supplier.

6. Jurisdiction

Any dispute arising between the parties, the jurisdiction will be in Turin.

