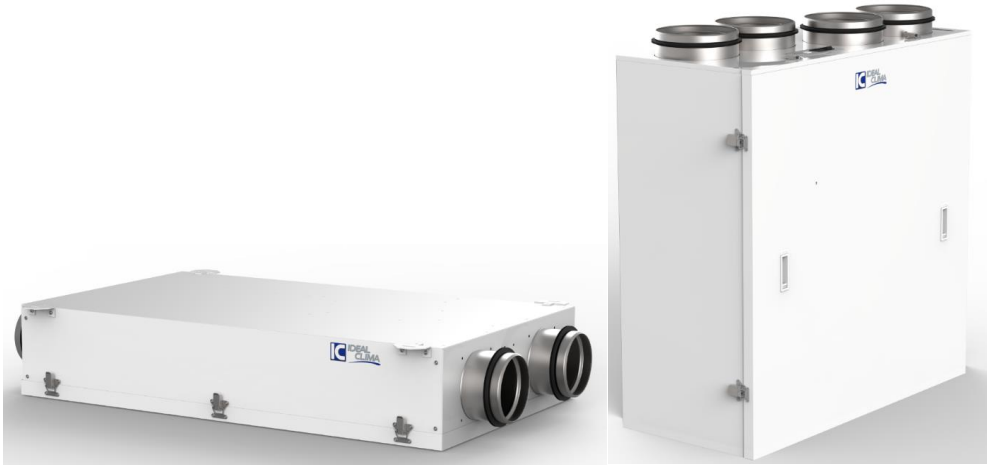
HEAT RECOVERY UNITS WITH HIGH EFFICIENCY MACH +



CE 18

USER AND INSTALLER MANUAL

READ THIS MANUAL CAREFULLY BEFORE OPERATING THE UNIT

SUMMARY

1 FOREWORD

The user and maintenance manual should be used as follows:
- each operator and personnel involved in the use and maintenance of the unit must read this manual in full and with the utmost care and respect what is stated;
- the employer must ensure that the operator meets the requirements for the operation of the unit and has carefully read the manual; the employer must also inform the operator thoroughly of the accident risks and in particular of the risks arising from noise, personal protective equipment and General Accident rules laid down by international laws or standards and of the country of destination of the unit;
- the manual must always be available to the user, the managers, the persons in charge of the transport, installation, use, maintenance, repair and final dismantling;
- store the manual in areas protected from moisture and heat and consider it an integral part of the unit for its entire duration, handing it over to any other user or subsequent owner of the unit;

Pay close attention to the following symbols. Their function is to highlight particular information such as:

In relation to serious dangerous situations that may occur with the use of the unit to ensure the safety of persons.

In reference to dangerous situations that may occur with the use of the unit to avoid damage to things and the unit itself.

With reference to additions or suggestions for the correct use of the unit.

The manufacturer shall have the right to modify the production and its manuals, without the obligation to update previous versions, except in special cases.
This manual reflects the state of the art at the time of sale of the unit and cannot be considered inadequate only because it has subsequently updated on the basis of new technologies.

1.1 LIABILITY

The unit is guaranteed according to the contractual agreements entered into at the sale.

The manufacturer is deemed exempt from all liability and obligation, and the form of warranty provided by the sales contract for any accident to persons or things that may occur due to:

- failure to comply with the instructions in this manual with regard to the operation, use, maintenance and events in any case unrelated to the normal and correct use of the unit
- modifications made to the unit and safety devices without prior written authorization from the manufacturer;
- repair attempts carried out on their own or by unauthorised technicians;
- no regular and constant maintenance or use of non-original spare parts.

In any case, if the user attributed the accident to a defect of the unit, he must prove that the damage occurred was a main and direct consequence of such "defect".

1.2 SERVICE STANDARDS

The service standards described in this manual are an integral part of the delivery of the unit.
These rules are also intended for the operator already specifically instructed to operate this type of unit and contain all the information necessary and essential for the safety of operation and optimal use of the unit.

Carefully read and scrupulously adhere to the following tips:

- **the first start-up must be carried out exclusively by qualified personnel authorised by the manufacturer;**
- at the time of installation or when action is required on the unit, it is necessary to adhere strictly to the rules contained in this manual, observe the indications on board the unit and in any case apply all appropriate precautions;
- possible accidents to persons and things can be avoided by following these technical instructions compiled with reference to the Machinery Directive 2006/42 / EC and subsequent additions. In any case always comply with national safety standards;
- do not remove or deteriorate protections, labels and writings, especially those required by law and, if no longer legible, replace them.

The Machinery Directive 2006/42 / EC gives the following definitions:

HAZARDOUS AREA: *any area within and / or in the vicinity of a machine where the presence of an exposed person constitutes a risk to the safety and health of the machine.*

EXPOSED PERSON: *any person who is wholly or partly in a hazardous area.*

OPERATOR: *the person (s) responsible for installing, operating, adjusting, servicing, cleaning, repairing and transporting the machine.*

All operators must comply with international and country of destination accident regulations in order to avoid possible accidents.

The European community has adopted directives on the safety and health of workers, including directives 89/391/EEC, 89/686/EEC, 89/654/EEC, 89/655/EEC, 89/656/EEC, 86/188/EEC, 92/58/EEC and 92/57/EEC which each employer is obliged to comply with and to enforce.

The units have been designed and built according to the current state of the art and the current rules of the technique. The laws, provisions, prescriptions, ordinances, directives in force for such machines have been observed.
The materials used and the equipment parts, as well as the production processes, quality assurance and Control meet the highest demands of safety and reliability.
By using them for the purposes specified in this user manual, by handling them with due diligence and by performing accurate maintenance and revisions to the art, continuous performance and functionality and durability of the units can be maintained.

1.3 OPERATIONS AND MAINTENANCE

The user manual can never replace an adequate technical expertise. For some particularly demanding maintenance operations, this manual is a reminder of the main activities to be performed by operators with specific training acquired.

Read the following tips carefully:

- Constant and accurate preventive maintenance always guarantees the high operating safety of the unit. Never postpone necessary repairs and have them carried out only and exclusively by specialized personnel, using only original spare parts;
- Operators ' workplaces must be kept clean, tidy and free of objects that may restrict free movement.
- Operators must avoid clumsy operations, in uncomfortable positions that can compromise their balance.
- The workplace must be adequately illuminated for the intended operations. Insufficient or excessive lighting may involve risks.
- Any intervention on the unit must be carried out by qualified personnel;
- before carrying out any operation or maintenance on the unit, make sure that you have removed the power supply;
- Make sure that the safety devices are working properly and there is no doubt about their operation; otherwise do not start the unit under any circumstances;
- Use only tools prescribed by the manufacturer of the unit. In order to avoid personal injury, do not use worn or damaged, low-quality or improvised tools;

- after cleaning the unit, the operator must check that there are no worn or damaged parts or not securely fixed, otherwise ask the maintenance technician for help;

- the use of flammable fluids in cleaning operations is prohibited.

For cleaning the unit do not use diesel, petroleum or solvents as the former leave an oily patina that promotes the adhesion of dust, while the solvents (even if weak) damage the paint and thus promote the formation of rust. Do not use water or steam jets on sensors, connectors or any electrical part.

1.4 INTENDED USE

MACH+ recovery units, with high efficiency, are designed to ventilate small residential or commercial environments, as well as to save energy by recovering low heat in the exhausted air.
Machines are a component of the system and are not able to operate autonomously: they need channels for air intake and distribution.

MACH+ heat recovery units are built in different models, both for false ceiling, ceiling or wall installation.
Their use is recommended within the operating limits specified in this manual.

Place the unit in environments where there is no danger of explosion, corrosion, fire and where there are no vibrations and electromagnetic fields. Do not operate differently than indicated and do not neglect operations necessary for safety.

1.5 GENERAL SAFETY RULES

1.5.1 WEAR PROTECTIVE CLOTHING

Each operator must use personal protective equipment such as gloves, head protection helmet, safety glasses, safety shoes, noise protection headphones.

1.5.2 FIRE EXTINGUISHER AND FIRST AID

Place a first aid box and a fire extinguisher near the unit.

1.5.3 WARNINGS FOR CHECKS AND MAINTENANCE

Apply a sign with the words: "under maintenance" on all sides of the unit.
Carefully check the unit according to the list of operations in this manual.

1.5.4 SAFETY PLATES

General alarm electrical voltage moving organs burns cutting wounds

2 PRODUCT DESCRIPTION

2.1 DESCRIPTION

The very high efficiency heat recovery units of the MACH + series have been designed for use in residential and small commercial areas, where you want to expel spoiled air, without waste the heat contained in it.
The installation of IDEAL CLIMA heat recovery units with very high efficiency, allows to easily achieve energy consumption appropriate to Class A, with proportional increase in the value of the property.
Mach+ series' units use Brushless electronic commutation motors with permanent magnets, and with built-in inverter, which guarantee high performance with extremely low fuel consumption and noise.

The entire range includes counter-current heat exchangers, made of synthetic materials, which guarantee efficiencies of more than 90%. All the materials used, electrical and aeraulic, are of absolute quality and guarantee maximum efficiency and reliability, with minimum noise. Abundant layers of sound-absorbing material are used, inside, to make its operation particularly quiet.

2.2 MODEL

The MACH + series, with flow rates from 160 m³/h to 510 m³/h consists of:

- n° 4 **horizontal** models with **manual free-cooling** : MACH+160; MACH+270; MACH+ 360; MACH+510.
- n° 4 **horizontal** models with **automatic free-cooling** : MACH+ 160; MACH+ 270; MACH+ 360; MACH+ 510
- n° 2 **vertical** models with **manual free-cooling** : MACH+ 360; MACH+ 510.
- n° 2 **vertical**i models with**automatic free-cooling**: MACH+ 360; MACH+ 510.

2.3 STRUCTURE AND OPERATION

2.3.1 STRUCTURE

The structure of the machines is made of steel sheet, painted white. The panels are covered with open-cell polyurethane material that absorbs noise very well. The material used is Class 1, according to UL 94 standard and is free from CFCs. Screws and fixing systems, when not in stainless steel, are carbon steel surface treated with Anticorrosive. Convenient openings, downwards for ceiling, and forward for wall models, allow easy cleaning and maintenance.

2.3.2 OPERATION

Fresh air coming from outside (A) is filtered (4) and started at the countercurrent exchanger (3), and, always under the push of the input fan (1) is fed into the input channels (D)
At the same time, the exhausted air (C), extracted from the technical rooms, is filtered (5) and sent to the countercurrent exchanger (3) where it gives all its heat to the fresh air, before being sent by fan (2) to the emission channels outside.
The air flows, which cross the exchanger countercurrent, are separated from the exchange surfaces, which prevent mixing between fresh air and exhausted air. The condensate that forms inside the exchanger is collected in a basin (6) and brought to the outside (7)

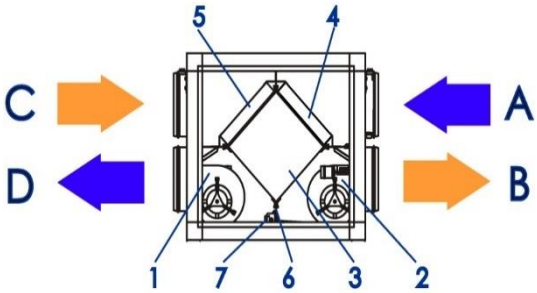
2.3.3 FREE-COOLING

The **"free cooling"** device allows to bypass the exchanger when fresh air (A) should not be heated or cooled by exhausted air (C). This is useful when the conditions of the outside air are more favorable than those of the internal air. The activation of the by-pass can be manual or automatic according to the versions.

2.3.4 ALARM FILTERS

It is expected to report dirty filters. Light signalling and the relative reset are different in models with manual free-cooling or automatic free-cooling.

MACH+ with manual free-cooling	MACH+ with automatic free-cooling
- Onboard Series Machine - Remote warning light (not standard) - The alarm triggers when the pressure switch detects the clogging of the filters. N. B. The indicator light resets automatically with the cleaning of the filters.	- The warning light is installed, next to the reset button, in the switchboard or in a recessed box. - The alarm will turn on after a set time (about 4000 hours). N. B. The warning light resets after pressing the reset button for 10 seconds



2.3.5 ANTIFREEZE THERMOSTAT

A device is fitted as standard which reduces or interrupts the cold air inlet from the outside when temperatures are such that the heat exchanger may freeze.

2.4 OPERATIONAL LIMITS

Each unit is designed for operation in a closed environment at ambient temperatures from 0°c to +50°C with relative humidity not exceeding 90%. A safety thermostat reduces the inflow of fresh air, when the temperature is such as to risk freezing of the exchanger (the thermostat is optional on manual free-cooling models, of series on models with automatic free-cooling.

3 AERAULIC CIRCUIT

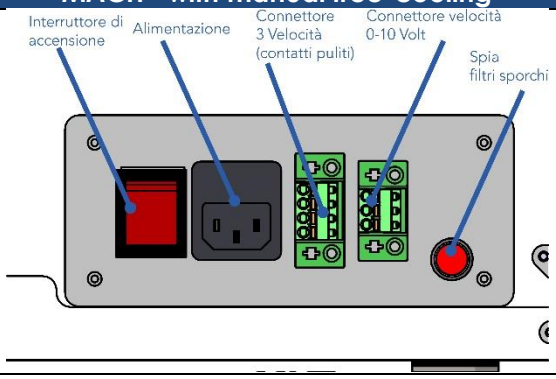
The external air intake and exhaust ducrs must be insulated to avoid condensation on them in the cold months. The connection of the nozzles to the distribution ducts must be flexible, so as not to transmit vibration to the whole system. For the connection diagram see the chapter "DUCTS".

4 ELECTRICAL CIRCUITS

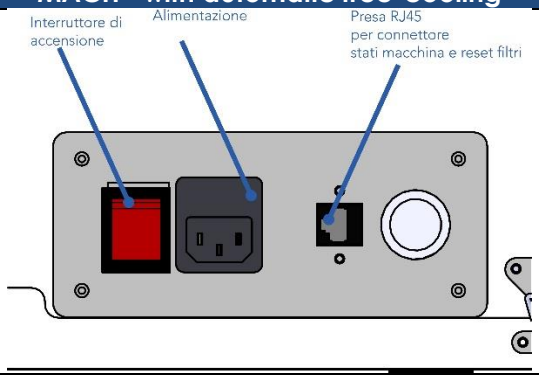
4.1 ELECTRICAL EQUIPMENT

The electrical instrumentation is in accordance with the regulations En Low Voltage and electromagnetic compatibility. The fans are centrifugal type with backwards blades and motors with EC technology, characterized by maximum energy savings and minimal noise emission.
The electronic board, which manages the machine, also contains the potentiometers for a possible adjustment of the flow rates and the terminals for connecting remote controls. The electrical panel for external connection is equipped with light switch, fuse and power socket.

MACH+ with manual free-cooling



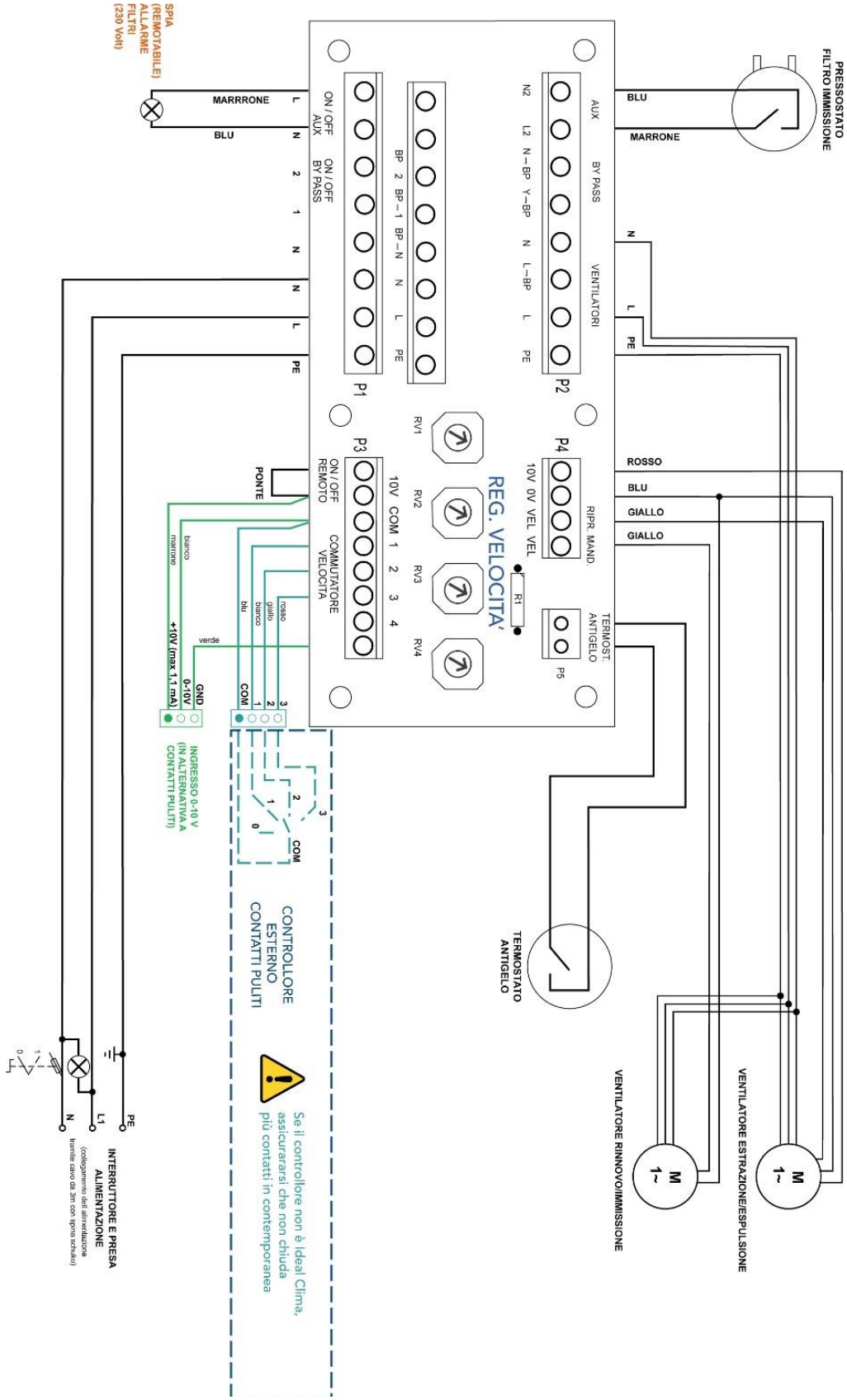
MACH+ with automatic free-cooling



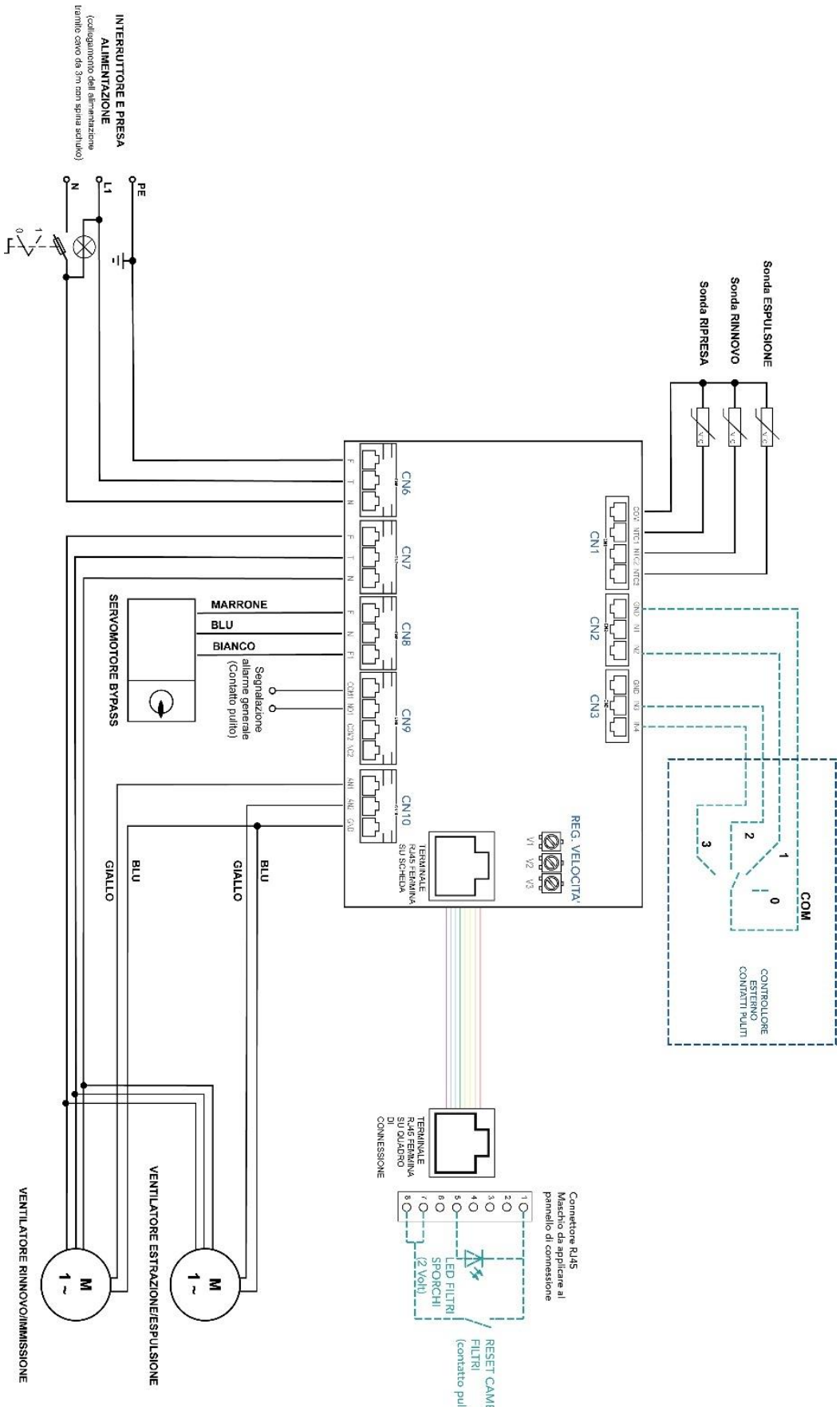
4.2 ELECTRIC SCHEMES

Ground connection is mandatory. The installer must connect the ground cable. MACH + is powered at 230V 50 Hz single-phase.

4.2.1 MACH+ WIRING WITH MANUAL FREE-COOLING



4.2.2 MACH+ WIRING WITH AUTOMATIC FREE-COOLING



5 TECHNICAL DATA

5.1 TECHNICAL DATA

Description		MACH+ 160 horizontal	MACH+ 270 horizontal	MACH+ 360 horizontal	MACH+ 510 horizontal
Code	manual automatic	VRTS16 VRFS16	VRTS27 VRFS27	VRTS36 VRFS36	VRTS51 VRFS51
Rated air flow	mc / h	172	269	352	510
Nominal head	Pa	100	100	100	100
Power consumption	W	100	173	175	332
Heat exchange efficiency	%	‘ > 90	‘ >90	‘ >90	‘ >90
Sound power	dB (A)	52	51	53	56
Power supply	V	230/1+N/50			
Maximum current	To	0.8	1.5	1.54	2.7
fan type		EC	EC	EC	EC
Filter		F7	F7	F7	F7
Net weight	Kg	20	42	46	49
Maximum sound pressure at 1,5 m	dB (A)	41	39	42	44

Description		MACH+ 360 vertical	MACH+ 510 vertical
Code	manual automatic	VRTP36 VRFP36	VRTP36 VRFP36
Nominal air flow	mc / h	394	568
Nominal head	Pa	100	100
Power consumption	W	176	334
Heat exchange efficiency	%	‘ >90	‘ >90
Sound power	dB (A)	54	51
Power supply	V	230/1+N/50	
Maximum current	To	1.5	2.7
fan type		EC	EC
Filter		F7	F7
Net weight	Kg	75	77
Maximum sound pressure at 1,5 m	dB (A)	42	44

5.2 DIMENSIONS

MODEL	LENGTH	WIDTH/DEEP	HEIGHT	DIAMETER MOUTHPIECES
MACH+ 160 horizontal	950	560	180	125
MACH+ 270 horizontal	1000	605	262	160
MACH+ 360 horizontal	1100	720	275	160
MACH+ 510 horizontal	1100	720	275	200
MACH+ 360 vertical	900	410	900	160
MACH+ 510 vertical	900	410	900	200

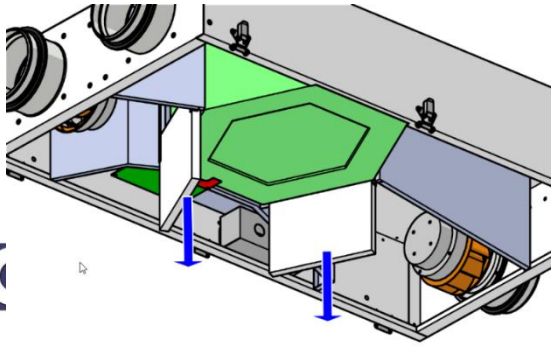
The CE marking certifies compliance with the standards: Machinery Directive (2006/42/EEC); Low Voltage Directive (2014/30/EU); Electromagnetic compatibility (2014/35/EU; RoHS (2011/65/EU; ErP 2016 Regulation and 2018 (1253/14/EU E1254/14/EU; EN12100 of 2010; EN60204-1 of 2016

6 AFTER SALE

6.1 TROUBLESHOOTING

Below are the most common causes that can cause the unit to block or malfunction. The categories are sorted according to easily identifiable symptoms.

No	ANOMALY	ANALYSIS OF POSSIBLE CAUSES	CORRECTIVE ACTIONS
1	The unit does not start	- The unit is not connected to the mains. - The unit is off -Presence of alarms	- Check the presence of voltage at the terminals- - move the switch to any speed - eliminate the cause of alarm and start again.
2	Supply air too cold.	- Accumulation of ice in the heat exchanger. - Clogged exhaust filter. - By-pass valve blocked (only in free-cooling models)	- Check for ice in the heat exchanger. If present, stop the machine and let the ice melt. — Check or install the anti-ice thermostat. - Clean and replace the drain filter. - open the machine and check the movements of the free-cooling valve
3	Trigger the auto switch	A short circuit caused an overcurrent.	-Turn off the unit and contact a service center.
4	Reduced air flow	- Fan speed too low - Clogging filters - Clogged air treatment system	- control speed - check filters - check the air paths
6	Water leakage	-The hydraulic system fittings are not well tightened	- Pull thehydraulic connections, open the taps.
7	Vibration and noise	- The fan is dirty - The screws of the housing or outer cap are loose	- Clean the fan - Tighten unit and outer cap screws
8	Condensate leakage	- the drainage line is clogged, damaged. - the recuperator is not on the right slope. - construction site residues clog the collection pan	- clean the drainage line. - tilt the recuperator 2 ° towards the drain. - clean pan

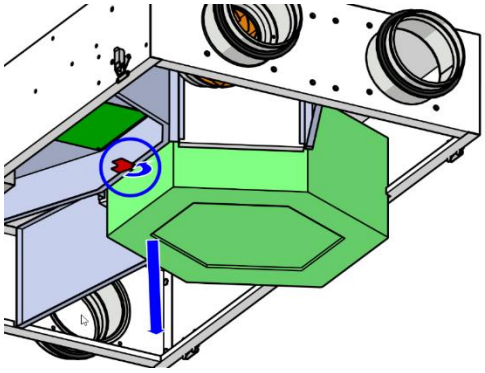


6.2 ROUTINE MAINTENANCE

Disconnect the unit from the mains, open the machine and do the following:

- **Cleaning filters** (2 times a year):

A special indicator light indicates the need for cleaning the filters. Dirty filters increase the resistance to air passage and compromise the correct distribution in the premises.
In residential or residential-like environments, filters should be cleaned at least twice a year with a vacuum cleaner.
To remove the filters open the door and pull out the filters as shown in the picture.
After cleaning, the alarm light automatically resets in models with manual by-pass, while the reset button must be pressed for 10 seconds for models with automatic by-pass.

to 

- **Cleaning the heat exchanger** (once a year):

Even regular maintenance of the filters does not prevent the accumulation of dirt in the heat recovery core, so it is necessary clean the exchanger thoroughly regularly.
Remove the core from the unit and wash it with a warm detergent, let it dry and put it back on, dry, inside the recuperator.

- **Fan cleaning** (once a year):

Clean the fans with a soft cloth or brush. Do not use water, aggressive solvents or sharp objects that could damage the fan.

- **Condensate drain check** (once a year):

The condensate discharge line may become clogged with dust particles dragged by the condensate.

- **Checking the fresh air intake duct** (once a year):

The air intake grille from the outside can be clogged with leaves, pollen or insects. This can impair machine performance and air circulation. Check the grill and clean it if necessary.

- **Check the** air ducts (every 5 years)

N. B. The figures represent horizontal recovery units, but, by analogy, they are also indicative of the operations to be carried out on vertical recovery units

7 DECOMMISSIONING OF THE UNIT

When the unit reaches the end of its intended life and needs to be removed and replaced, the structure and the various components, if unusable, must be demolished and broken down according to their type of product.

8 INSTALLATION

8.1 PRESS

8.1.1 INSPECTION

Upon receipt of the unit, check its integrity: the machine has left the factory in perfect condition; any damage must be immediately challenged to the conveyor and noted on the delivery sheet before counter-signing.

8.1.2 LIFTING AND TRANSPORT

During unloading and positioning of the unit, care must be taken to avoid abrupt or violent manoeuvres. Internal transport should be carried out carefully and gently, avoiding the use of machine components as points of application of force.

In all lifting operations make sure that you have firmly anchored the unit, in order to avoid overturning or accidental falls.

8.1.3 UNPACKING

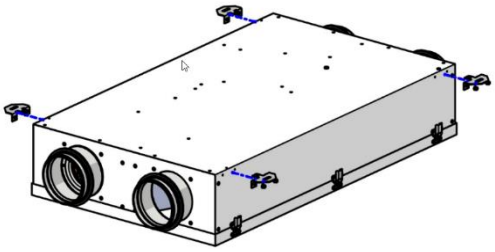
The packaging of the unit must be removed carefully without causing damage to the machine; the materials constituting the packaging are diverse in nature, wood, cardboard, nylon, polystyrene, etc., it Is a good rule to keep them separately and deliver them to the disposal or possible recycling, the companies responsible for the purpose, and to reduce so the impact on the environment.

8.2 POSITIONING

All MACH+ models are designed for indoor installation.
Do not install the unit outdoors and prevent it from being exposed to weather conditions such as rain, hail, moisture and frost.

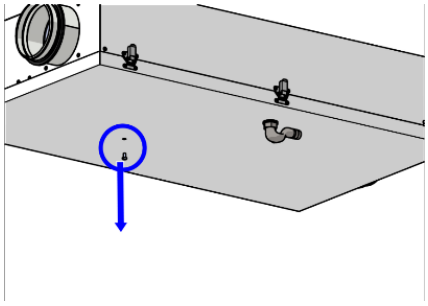
It is necessary that the machine is accessible for periodic maintenance (Filter Change, Exchange package cleaning, etc.) and that it is entirely removable for any extraordinary maintenance. For this purpose, hatches or hatches must be provided to access machines installed in suspended ceilings or vaults.

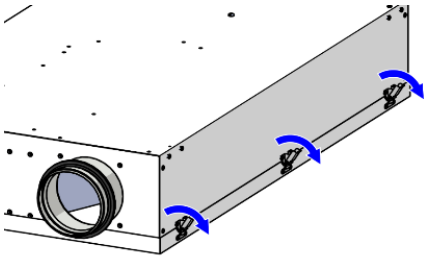
8.3 PREPARATION

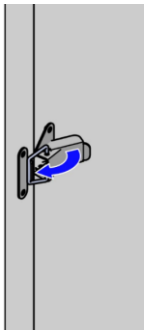


Remove the recuperator from the packaging box, pick up the accessories contained inside the recovery unit itself (envelope with power cable, n°4 or 6 fixing brackets, tapping screws and, for MACH+ 160 and MACH+ vertical, the condensate drain connection). The bag of accessories can be reached by a mouthpiece, without opening the hatch. For the MACH+ series with automatic free-cooling are also found in the bag the LED warning light and the RJ45 plug necessary for the alarm wiring dirty filters.
Attach the brackets to the machine, each with three screws, in the most suitable position. Only for MACH+160, the position is predetermined by a special hole of the mantle. The preparation of vertical models is similar to that of horizontal models

8.4 DOOR OPENING



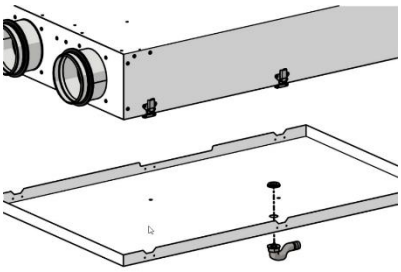




The door of the recovery unit is opened for installation and for extraordinary and ordinary maintenance.
The sequence, identical for horizontal MACH+ and Vertical Mach+, is as follows:

- Remove the safety screws that are on the outside of the door (1 or 2 according to the models)
- Open all hinges, with the utmost care to avoid the fall of the internal components as well as the door itself.
- Perform the planned operations inside.
- Close the door, with hinges, so that it fits perfectly on the recovery unit, leaving no air passages.
- Apply safety screws

8.5 PREDISPOSITION FOR CONDENSATE DRAIN CONNECTION

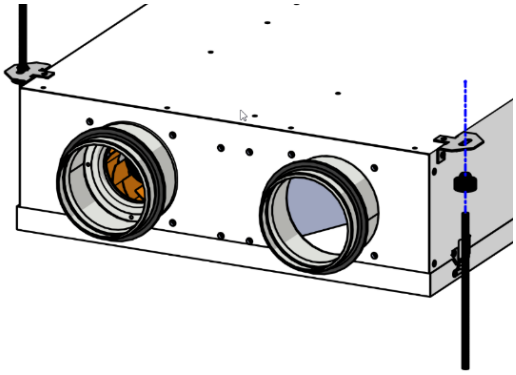


All recuperators have a built-in condensate drain pipe (DN12) in the door, with the exception of the MACH+ 160 horizontal model and the vertical MACH+, for which the drain is to be applied, outside as follows:

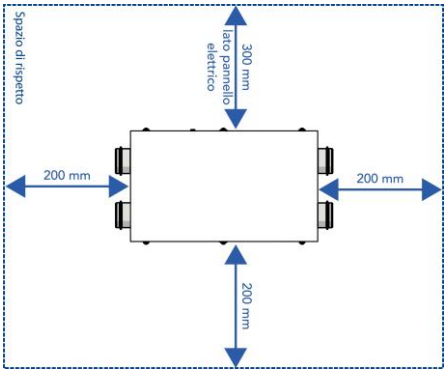
- Remove the door (see specific chapter)
- For horizontal MACH+160: remove the rubber cap from the door and drill a hole in the insulation correspondingly
- For vertical MACH+: remove the rubber stopper from the door and drill a hole in the insulation correspondingly.

- For both, apply the drain (supplied). If necessary, adjust the length of the thread to the dimensions imposed by the suspended ceiling.
- Carefully close the door with hinges and screws.

8.6 CEILING HORIZONTAL RECOVERY UNIT ASSEMBLY



As shown in the figure, leave free spaces for access during maintenance. In the presence of suspended ceiling, install furniture panels that allow you to open the recovery unit downwards
The units are fixed to the ceiling with dowels, threaded rods, or chains (not supplied). To minimize the transmission of vibration to the structure, anti-vibration kits with elastic dowels are available.

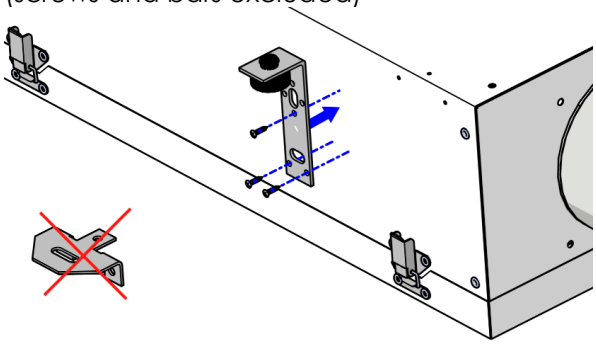


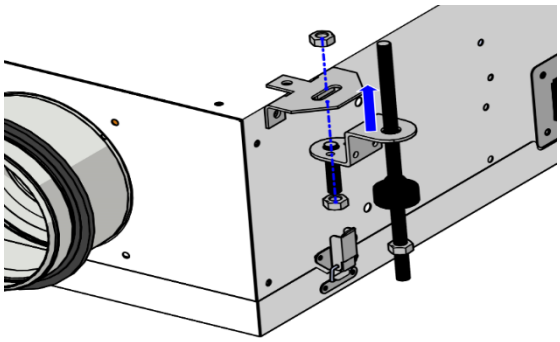
8.7 WALL-MOUNTED VERTICAL RECOVERY UNIT

Mount the brackets. The vertical reclaimer is fixed to the wall with expansion plugs and screws (not supplied).
Leave a gap of at least 500 mm in front of the machine, to open the inspection hatch, and at least 400 mm at the top, for the outlet of the air channels.

8.8 ANTI-VIBRATION KITS

Anti-vibration kits are available for horizontal models, to be mounted as shown in the figure.
Cod. VPKT01: for MACH+ 160, consisting of 4 S brackets with shock absorber and washer (screws and bars excluded)
Cod. VPKT02: for MACH + 270/360/510, consisting of 4 L-shaped brackets with shock absorber and washer (screws and bars excluded)

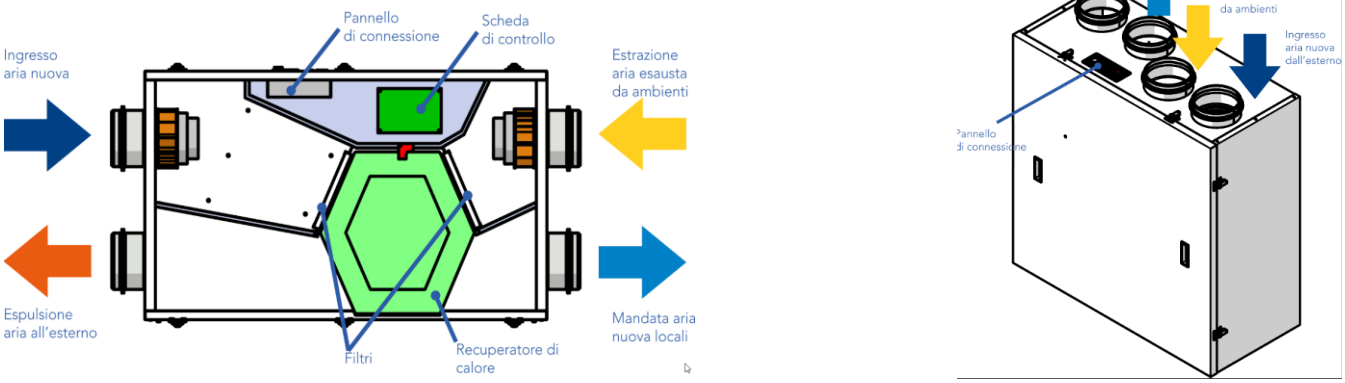




8.9 DUCTING

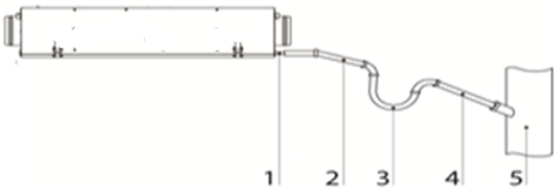
The inlet and outlet air nozzles from the recuperators have sealing gasket on the outer diameter. Before connecting the ducts, make sure that any cellophane protectors have been removed. The connections of supply and extract from the premises, as well as expulsion and renewal to the outside, are shown in the

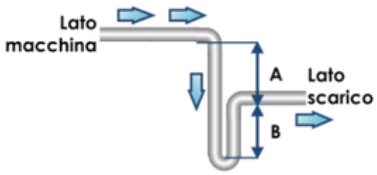
following figures. In order not to transmit vibration to the entire system, the first section must be made with flexible pipes.
Ideal Clima's TREO distribution system adapts perfectly to the use of MACH+ recovery units.



8.10 SIPHON - CONDENSATE DRAIN

Connect the drain pipe 1), to the siphon 3) (Not supplied) and these to the wastewater collection system5) with metal, plastic or rubber pipes 2) and 4). The slope of the pipe must be at least 3°. Ensure that water flows freely into the wastewater collection system. The drainage system must be thermally insulated or pre-heated if it passes through areas with a temperature below 0°C





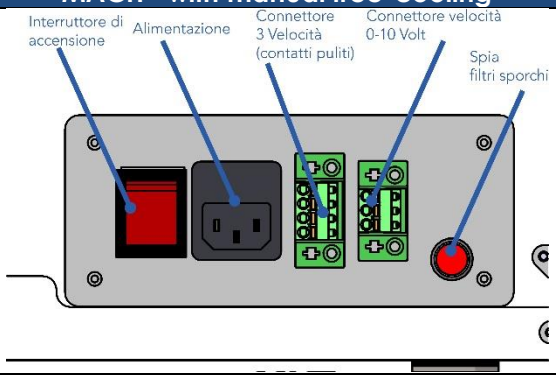
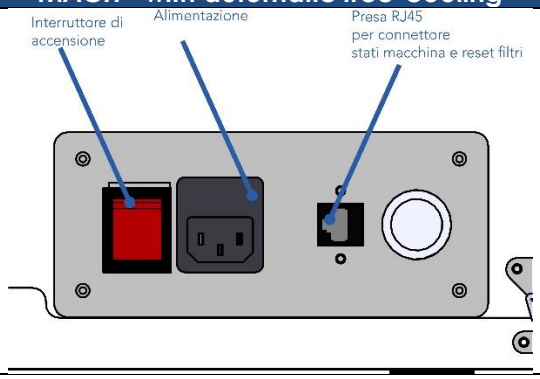
To avoid backflow of bad smell, install a siphon of height at least equal to the working prevalence of fans.
At normal operating range A = B = 60 mm

8.11 ELECTRICAL CONNECTION

The electrical connection, 230V +T; 50Hz, must be carried out according to the wiring diagram set out in Chapter 4.2 of this Manual.
The most appropriate upstream switch of the line is the MGT-C10. The power line shall have the same or greater characteristics as the fror-3g1, 5 cable.

PANEL ON BOARD MACHINE:

The on-board panel and its contacts change depending on the version and in particular according to the presence of automatic freecoling adjustment:

MACH+ with manual free-cooling	MACH+ with automatic free-cooling
	

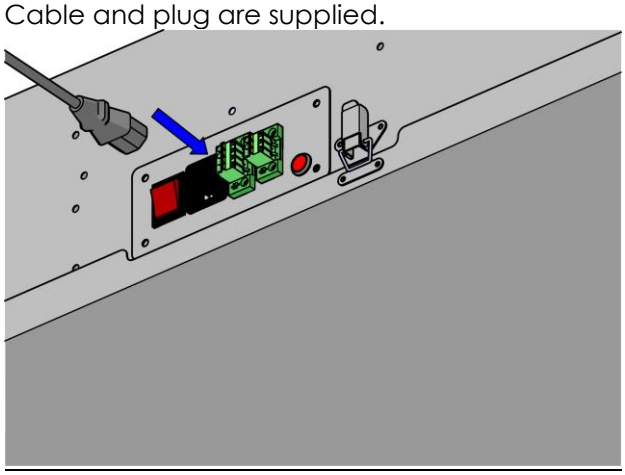
MANUAL FREE-COOLING MACH+ WIRING

Remote Control Linea:
Connect the common and speed selector as indicated in diagram 4.2.1 to the terminal block placed on the connection electrical panel. Clean contacts are mandatory. Otherwise, interpose relays.

Signal line clogged filters:
The warning light, placed on the electrical panel of connection, does not require additional connection.
To remote the signal connect a second indicator light, (at 230V, not supplied) in parallel to the existing one.

Line reset alarm filters
There is no need to set up any electrical connection for filter reset. Once the filters are cleaned or replaced, the indicator lights will turn off automatically (the differential pressure switch returns to the rest position)

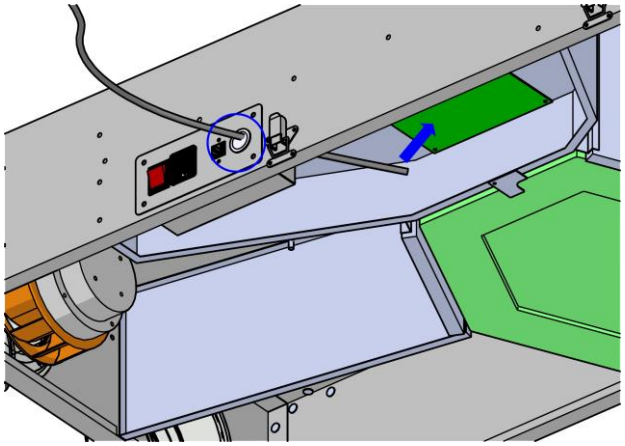
Supply Line:
Insert the VDE power plug into the connector next to the ignition switch, on the electrical connection panel. Cable and plug are supplied.



WIRING FOR MACH+ FREE-COOLING AUTOMATIC

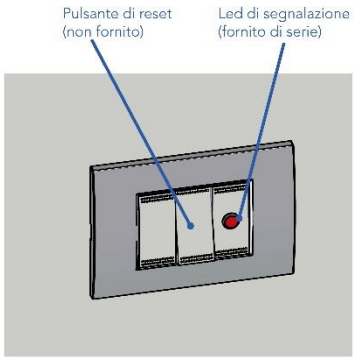
Remote Control Linea:

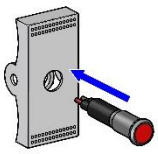
Enter with the control cable through the appropriate cable gland on the panel to get to the internal electrical board. Connect common and speed selector as shown in diagram 4.2.2 to the CN2 eCN3 terminal block of the electronic board. Clean contacts are mandatory. Otherwise, interpose relays.

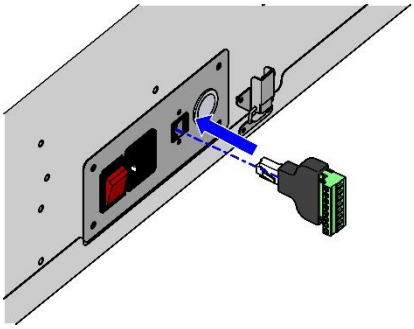


Signal line clogged filters:

The clogged filters warning light (3 V led as standard) must be installed in a civil series hole cover. The RJ45 plug with clamps (supplied) must be inserted into the socket of the electrical panel of connection and connected according to wiring diagram.





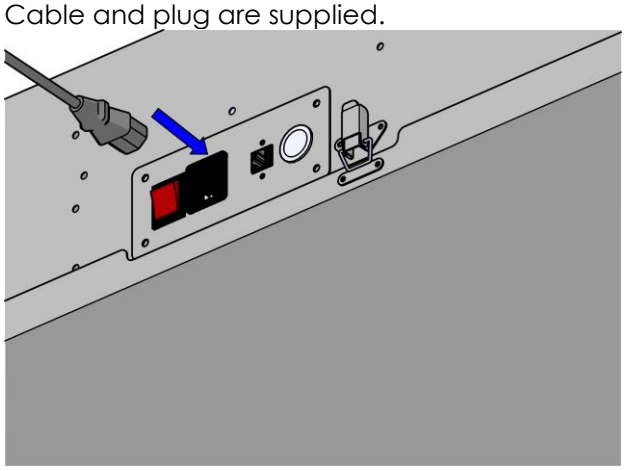


Line reset alarm filters

The reset button is a standard electrical button (not supplied), to be connected according to wiring diagram.

Supply Line:

Insert the VDE power plug into the connector next to the ignition switch, on the electrical connection panel. Cable and plug are supplied.



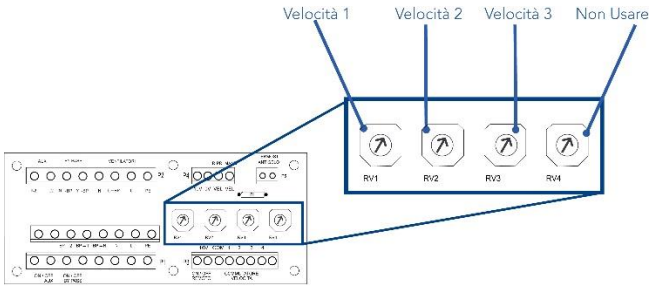
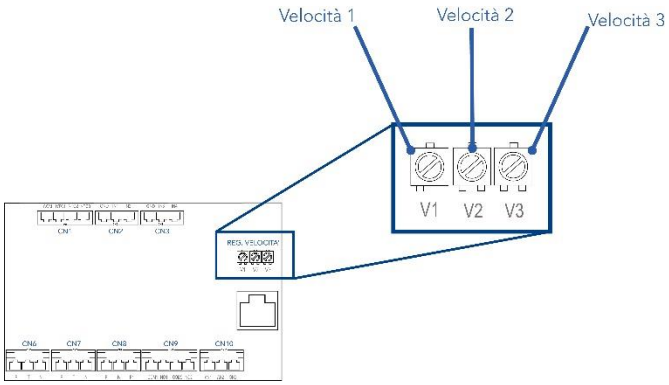
8.12 CALIBRATION OF FAN FLOW RATES

Fan speeds are calibrated at the factory as follows, which statistically corresponds to the most common applications:

- Minimum speed: 40% of the maximum power of the fans.
- Average speed: 60% of the maximum power of the fans.
- High speed: 80% of the maximum power of the fans.

The flow rate indicated in the flow/head graphs on the data sheets corresponds respectively to 50% ,72% and 100% of the maximum power. To adjust the factory calibration values to the actual needs of the system, act on the potentiometers placed on the control board, one per Speed.

Each potentiometer changes the speed of both fans in the unit

MACH+ with manual free-cooling	MACH+ with automatic free-cooling
	

8.13 START-UP AND TESTING

Before starting the machine check that all the closing panels are in their position and well tightened with their own screws.

Check that all connections (hydraulic, electrical and ducting) are installed correctly and that all indications on labels and user manual are observed.

Starting and testing of the units should preferably be carried out in conjunction with the testing and starting of the entire ventilation system, which also extends to the ventilation network, radiant panels and dehumidification, if they are present.
The test must be carried out by qualified personnel and adequately trained also for subsequent maintenance.

9 WARRANTY CONDITIONS

The warranty of this product is governed by the general conditions of sale Ideal Clima (version 3.0) of which the part relating to the warranty:

Ideal Clima guarantees its products for defects or manufacturing defects, with the express exclusion of any defect or fact inherent in the installation, conduct and maintenance of the product. - 15.2 target audience- Ideal Clima supplies products only to professional companies. By giving the order, the client declares that the products are intended for use in the context of his professional, commercial or entrepreneurial activity. It is therefore excluded the application of Norm 1999/44 / EC and D. Leg nr. 24 of 2 February 2002. The warranty is limited to the products provided by Ideal Clima and only to the customer. Ideal Clima reserves the right to apply their own conditions to guarantee, directly or indirectly through the subjects to be identified, the end user only upon specific request and authorization of the Client, who remains entitled to the fulfillment of any obligations with the end user in accordance with the regulations in force. - 15.3 performance under warranty- the intervention under warranty implies, in Ideal Clima's opinion, the repair or replacement of the defective product. In case of repair, the client undertakes to have its final customer perform those repairs that Ideal Clima considers essential, allowing access to the plant. In case of replacement, Ideal Clima undertakes to replace its defective products with other products with equal or superior characteristics, excluding any expense of restoration of the property (labor, travel, transport, works etc.). In any case, production defects must be recognized by Ideal Clima technicians. The components replaced under warranty remain the property of Ideal Clima, to which they must be returned free of charge. - 15.4 validity and duration-the warranty starts from the date of purchase of the product and has a duration of two years. The date of purchase is evidenced by the invoice and the DDT. In case of dispute about the date of delivery, the batch/date of production/serial number shown on the product will be authentic. The customer shall forfeit the warranty if he does not report the defect within 8 days of the discovery and before the expiry of the maximum term of the warranty. The duration of the warranty is not changed by warranty interventions - 15.5 limitations and exclusions - the warranty does not cover defects attributable to transport, handling of the product, poor storage (eg. non-dry environments, direct sun exposure etc.), installation and/or maintenance not carried out by qualified personnel and enabled, according to the manufacturer's instructions and the regulations in force, usage not in accordance with product characteristics, use of water, gas and electricity which is not suitable to the product, use or maintenance, improper product, normal wear and tear -15.6 Right call: Ideal Clima reserves the right to ask for a contribution for the intervention of the technical assistance centre authorized, starting from the seventh month of the warranty period. This contribution will be quantified in advance and will have to be paid directly to the CAT. This contribution will also be due if the product is defective.

10 NOTE

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Version 4.0 October 2020