



HEAT RECOVERY  
VERY HIGH EFFICIENCY  
MACH+



CE<sub>18</sub>

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**USER AND INSTALLER MANUAL**

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## READ THIS MANUAL CAREFULLY BEFORE OPERATING THE MACHINE

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## 1 FOREWORD

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The user and maintenance manual should be used as follows:

- every operator and personnel assigned to the use and maintenance of the unit shall read this manual entirely and with the utmost attention and comply with what is stated;
- the employer is obliged to ascertain that the operator has the aptitude requirements for operating the unit and has carefully read the manual; The employer must also carefully inform the operator about the risks of injury and especially about the risks arising from noise, the personal protective equipment provided and the general accident prevention rules laid down by international laws or standards and those of the country of destination of the unit;
- the manual must be available at all times to the user, those responsible, those in charge of transportation, installation, use, maintenance, repair and final dismantling;
- Keep the manual in areas protected from moisture and heat and consider it an integral part of the unit throughout its life, handing it over to any other user or subsequent owner of the unit;

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



**With reference to serious dangerous situations that may occur with the use of the unit to ensure the safety of people.**



**With reference to dangerous situations that may occur with the use of the unit to prevent damage to property and the unit itself.**



**In reference to additions or suggestions for the proper use of the unit.**

The manufacturer has the right to change the production and related manuals, without the obligation to update previous versions, except in special cases.

This manual reflects the state of the art at the time the unit was placed on the market and cannot be considered inadequate simply because it was subsequently updated to reflect new technology.

### 1.1 RESPONSIBILITY

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The unit is guaranteed in accordance with the contractual agreements made at the time of sale.

The manufacturer shall be relieved of all liability and obligations, and the form of warranty provided in the sales contract for any accident to persons or property that may occur due to:



- **failure to follow the instructions in this manual with regard to the conduct, use, maintenance and events otherwise unrelated to the normal and proper use of the unit**
- **modifications made to the unit and safety devices without prior written authorization from the manufacturer;**
- **Attempts at repairs made on one's own account or by unauthorized technicians;**
- **failure to perform periodic and constant maintenance or use of non-original spare parts.**

In any case, should the user attribute the accident to a defect in the unit, he or she must prove that the damage that occurred was a main and direct consequence of that "defect."

### 1.2 OPERATING DIRECTIVES

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The regulations described in this manual, are an integral part of the supply unit.

These standards, moreover, are intended operator already expressly instructed to conduct this type of unit and contain all the information necessary and indispensable for the operating safety and the optimum use of the unit.

Carefully read and strictly observe the following prescriptions:

- **initial start-up should be carried out only by qualified personnel authorized by the manufacturer;**
- when installing or when work is to be carried out on the unit, the rules in this manual must be strictly adhered to, the indications on board the unit must be observed, and in any case all appropriate precautions must be applied;
- possible accidents to persons and property can be avoided by following these technical instructions compiled with reference to Machinery Directive 2006/42/EC and subsequent supplements. In any case always observe national safety standards;
- do not remove or deteriorate guards, labels and markings, especially those required by law and, if no longer legible, replace them.

The Machinery Directive 2006/42 / CE provides the following definitions:

**DANGER ZONE:** *any zone within and / or near a machine in which the presence of an exposed person constitutes a risk to the health and safety of the same.*

**EXPOSED PERSON:** *any person wholly or partially in a danger zone.*

**OPERATOR:** *the person in charge of installing, operating, adjusting, maintaining, cleaning, repairing and transporting the machine.*



*All operators must comply with the international safety regulations and the country of destination of the unit in order to avoid possible accidents.*

The European Community has issued directives concerning the safety and health of workers among which are 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 enforce.

The units were designed and built according to the current state of the art and current rules of technology. Compliance was made with the laws, regulations, prescriptions, ordinances, and directives in force for such machines.

The materials used and equipment parts, as well as the manufacturing, quality assurance and control procedures, meet the highest requirements for safety and reliability.

Using them for the purposes specified in this user's manual, operating them with due diligence, and performing thorough maintenance and overhaul in a workmanlike manner will maintain the units' continuous performance and functionality and longevity.

### 1.3 OPERATIONS AND MAINTENANCE

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The user manual is never a substitute for adequate user experience. For some particularly demanding maintenance operations, this manual is a reminder of the main tasks to be performed by operators with specific training acquired.

Please read the following tips:

- A constant and careful preventive maintenance will always ensure the high operational 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 should be kept clean, tidy, and clear of objects that may restrict free movement.
- Operators should avoid clumsy operations, in awkward positions that may affect their balance.
- The workplace must be adequately lit for the intended operations. Insufficient or excessive lighting can pose risks.
- Any servicing of this unit must be performed by qualified personnel;
- before performing any intervention or maintenance on the unit, make sure to remove the power supply;
- Make sure that the safety devices are operating properly and have no doubts about their functioning; otherwise not start in any case the unit;
- Use only tools prescribed by the unit manufacturer. To avoid personal injury, do not use worn or damaged, low-quality, or improvised tools;



- **once the cleaning of the unit has been carried out, the operator must check that there are no worn or damaged parts or parts that are not solidly attached; if not, ask the maintenance technician for assistance;**

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

For cleaning the unit does not use diesel, petrol or solvents as the former leave an oily layer that promotes adhesion of dust, while solvents (although weak) damage the paint and thus favor the formation of rust. Do not use water or steam jets on sensors, connectors or any electrical parts.

## 1.4 INTENDED USE

MACH+ recuperators, with very high efficiency, are designed to ventilate small residential or commercial rooms, as well as to save energy by recovering the heat contained in the exhausted air. The machines are a system component and are not capable of operating independently: they require ducts for air intake and distribution.

MACH+ recuperators are built in different models, either for ceiling or wall installation. Their use is recommended within the operating limits given in this manual.



**Place the unit in environments where there are no explosion, corrosion, or fire hazards and where vibration and electromagnetic fields are not present. Do not operate other than as directed 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, helmet for head protection, safety glasses, safety shoes, headphones for noise protection.

### 1.5.2 FIRE EXTINGUISHER AND FIRST AID

Place a first-aid kit and a fire extinguisher near the unit.

### 1.5.3 WARNINGS FOR INSPECTIONS AND MAINTENANCE

Affix a sign reading, "IN MAINTENANCE" on all sides of the unit. Check the unit carefully by following the list of operations in this manual.

### 1.5.4 SAFETY PLATES



General alarm Electrical voltage Moving organs Burns Cut wounds

## 2 PRODUCT DESCRIPTION

### 2.1 DESCRIPTION

The very high-efficiency heat recovery units of the MACH + series , are designed for use in residential and small commercial where stale air is to be exhausted without wasting the heat it contains.

The installation of IDEAL CLIMA heat recovery units with very high efficiency makes it easy to achieve energy consumption appropriate to Class A, with a proportional increase in property value.

Brushless electronically commutated permanent-magnet motors with built-in inverters are used in the MACH+ series units, ensuring high performance with extremely low consumption and noise.

The entire range mounts countercurrent heat exchangers, made of synthetic materials, which guarantee efficiencies in excess of 90 percent. All materials used, electrical and aeraulic, are of the highest quality and ensure maximum efficiency and reliability, with minimum noise. Abundant layers of sound-absorbing material are used, inside, to make its operation particularly quiet.

## 2.2 MODELS

The MACH + series, with flow rates from 160 m<sup>3</sup> /h to 510 m<sup>3</sup> /h, is composed of:

- n° 4 **horizontal** models with **manual free-cooling** : MACH+160; MACH+270; MACH+ 360; MACH+510.
- 4 **horizontal** models with **automatic free cooling** : MACH+ 160; MACH+ 270; MACH+ 360; MACH+ 510
- n° 2 **vertical** models with **manual free-flowing** : MACH+ 360; MACH+ 510.
- n° 2 **vertical** 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 sheet steel, painted white. The panels are lined on the inside with open-cell polyurethane material that excellently absorbs noise. The material used is class 1 according to UL 94 standard and is CFC-free. Screws and fasteners, when not made of stainless steel, are of carbon steel superficially treated with anti-corrosives. Convenient openings, downward for ceiling models and forward for wall models, allow easy cleaning and maintenance.

### 2.3.2 OPERATION

The fresh air coming from outside (A) is filtered (4) and sent to the countercurrent exchanger (3), and, again under the thrust of the inlet fan (1) is fed into the inlet ducts (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 up all its heat to the fresh air, before being sent by the fan (2) to the emission ducts outside.

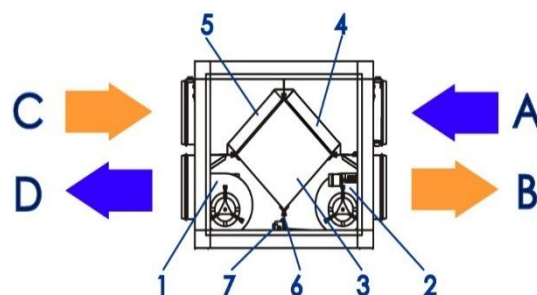
The air flows, which countercurrently pass through the exchanger, are separated by exchange surfaces, which prevent mixing of fresh and exhaust air. Condensate that forms inside the exchanger is collected in a basin (6) and carried outside (7)

### 2.3.3 FREE-COOLING

The device “**free cooling**” allows the exchanger to be bypassed when the fresh air (A) does not need to be heated or cooled by the exhaust air (C). This is useful when outdoor air conditions are more favorable than indoor air conditions. By-pass activation can be manual or automatic according to versions.

### 2.3.4 FILTER ALERT

A dirty filter alarm is provided. Light signal and its reset are different from each other in models with manual free-cooling or automatic free-cooling.



MACH+ manual free-cooling	MACH+ automatic free-cooling
<ul style="list-style-type: none"> <li>- On-board as standard</li> <li>- Remote indicator light (not standard)</li> <li>- The alarm is triggered when the pressotat detects that the filters are clogged.</li> </ul> <p>N.B. The warning light automatically resets when the filters are cleaned.</p>	<ul style="list-style-type: none"> <li>- The warning light is installed, next to the reset button, in the panel or in a flush-mounted box.</li> <li>- The alarm comes on after a predetermined time (about 4000 hours).</li> </ul> <p>N.B. The indicator light resets after pressing the reset button for 10 seconds</p>

### 2.3.5 ANTIFREEZE THERMOSTAT

A device that reduces or shuts off the cold air intake from outside when temperatures are such that there is a risk of the heat exchanger freezing is fitted as standard.

## 2.4 OPERATING LIMITS

Each unit is designed for operation in an enclosed 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 that there is a risk of the heat exchanger freezing (thermostat is optional on manual free-cooling models, standard on automatic free-cooling models).

## 3 AERACULIC CIRCUIT

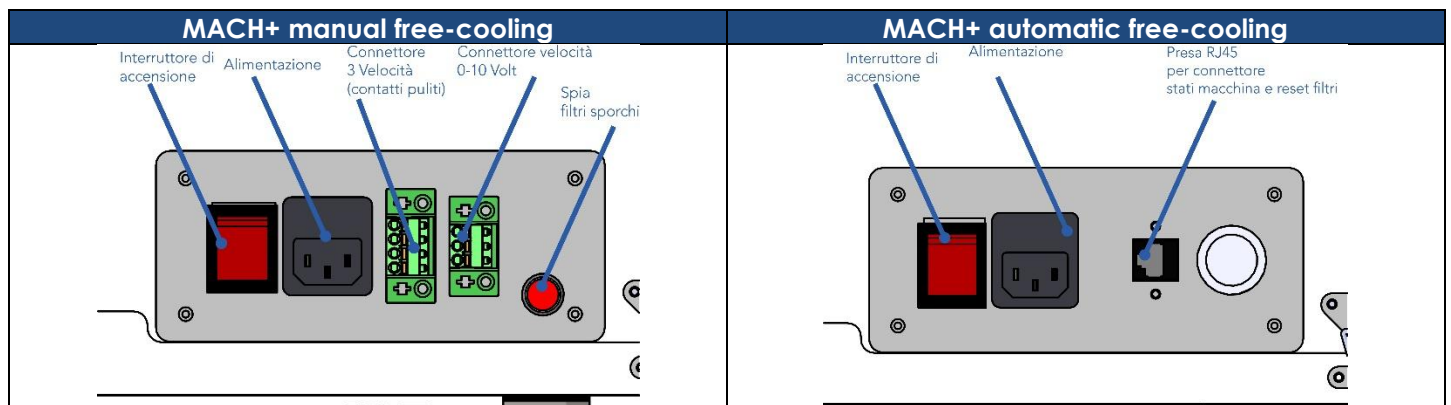
External air intake and exhaust ducts must be insulated, to avoid condensation on them in cold months. The connection of the nozzles to the distribution ducts should be flexible, so as not to transmit possible vibrations to the whole system. See the chapter "CHANNELS" for the connection diagram.

## 4 ELECTRICAL CIRCUITS

### 4.1 ELECTRICAL EQUIPMENT

Electrical instrumentation is in accordance with EN low voltage and electromagnetic compatibility standards. The fans are centrifugal type with backward blades and EC technology motors, characterized by maximum energy saving and minimum noise emission.

The electronic board, which manages the machine, also contains potentiometers for possible flow rate adjustment and terminals for connecting remote controls. The external electrical connection board is equipped with light switch, fuse and power socket.

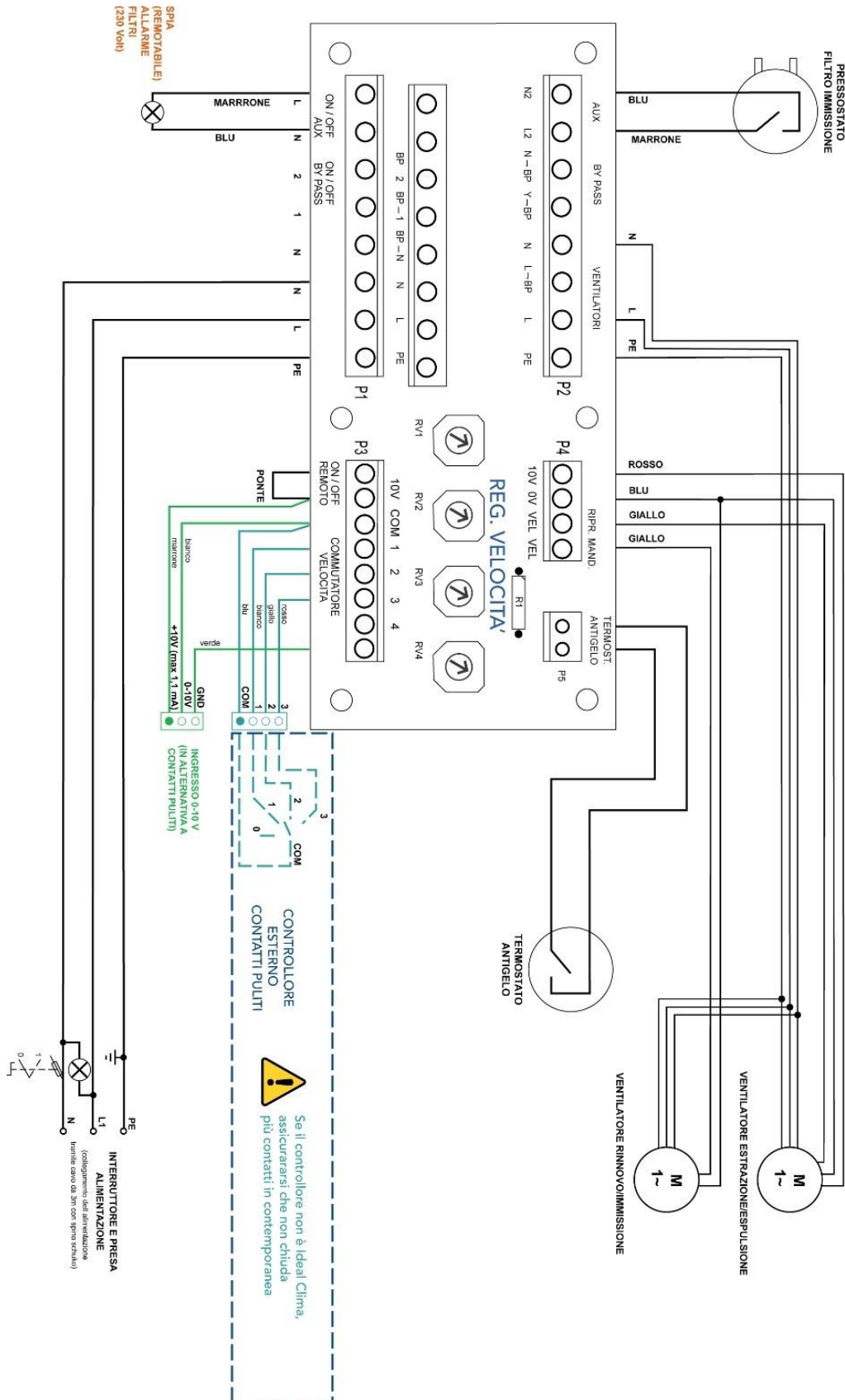


## 4.2 ELECTRICAL DIAGRAMS THE



The ground connection is required. The installer must make the connection of the ground wire. MACH+ is powered at 230V 50 Hz single-phase.

### 4.2.1 MACH+ WIRING WITH MANUAL FREE-COOLING





## 5 TECHNICAL DATA

### 5.1 TECHNICAL DATA.

Description		MACH+ 160 horizontal	MACH+ 270 horizontal	MACH+ 360 horizontal	MACH+ 510 horizontal
Code	man. autom.	VRTS16 VRFS16	VRTS27 VRFS27	VRTS36 VRFS36	VRTS51 VRFS51
Nominal air flow rate	mc/h	172	269	352	510
Nominal head	Pa	100	100	100	100
Electrical power input	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	A	0,8	1,5	1,54	2,7
Motors type		EC	EC	EC	EC
Filters		F4	F4	F4	F4
Net weight	Kg	20	42	46	49
Sound pressure at maximum speed at 1.5 m	dB(A)	41	39	42	44

Description		MACH+ 360 vertical	MACH+ 510 vertical
Code	man. autom.	VRTP36 VRFP36	VRTP36 VRFP36
Nominal air flow rate	mc/h	394	568
Nominal head	Pa	100	100
Electrical 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	A	1,5	2,7
Motors type		EC	EC
Filters		F4	F4
Net weight	Kg	75	77
Sound pressure at maximum speed at 1.5 m	dB(A)	42	44

### 5.2 DIMENSIONS

MODEL	LENGTH	WIDTH/DEPT H.	HEIGHT	DIAMETER BOOTS
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

CE marking certifies compliance with the following standards: Machinery Directive (2006/42/EEC); Low Voltage Directive(2014/30/EU); Electromagnetic Compatibility (2014/35/EU; RoHS (2011/65/EU; ErP Regulations 2016 and 2018 (1253/14/EU and 1254/14/EU; EN12100 of 2010 ;EN60204-1 of 2016

## 6 AFTER SALE

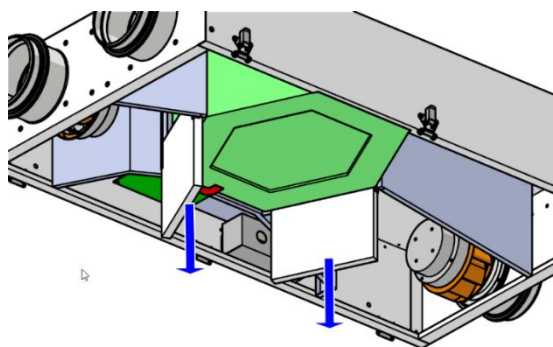
### 6.1 FAULT SEARCH

Listed below are the most common causes that can cause the unit to stall, or operate abnormally. The subdivision is made according to easily detectable symptoms.

NR	ANOMALY	ANALYSIS OF POSSIBLE CAUSES	CORRECTIVE ACTIONS
1	The recuperator will not start	-The unit is not connected to the power supply. -The unit is in OFF mode -Presence of alarms	-Check for voltage at terminals-. - Move the switch to any speed -Delete the cause of alarm and restart.
2	Supply air too cold.	-Ice accumulation in the heat exchanger. -Exhaust filter clogged. -Blocked by-pass valve (only in frre-cooling models).	-Check for the presence of ice in the heat exchanger. If present, stop the machine and allow the ice to melt. If present, stop the machine and allow the ice to melt. --Check or install the anti-ice thermostat. --Clean and replace the exhaust filter. -Open the machine and check the movements of the free-cooling valve
3	Circuit breaker trips	A short circuit has produced an overcurrent.	-Turn off the unit and contact a service center.
4	Air flow rate reduced	-Fan speed too low -Filters clogged -Air handling system clogged	-Check speed -check filters -check air paths
6	Water leakage	-Hydraulic circuit fittings are not tightened properly	-tighten hydraulic fittings, open faucets.
7	Vibrations and noises	-The fan is dirty -The screws on the housing or outer cap are loose	-Clean the fan -Tighten the screws of the unit and outer hood
8	Condensate leakage	- drain line is clogged, damaged. - the recuperator is not in proper slope. - yard debris clogs the drain pan	- clean the drainage line. - tilt the recuperator 2° toward the drain. - clean tray

### 6.2 ROUTINE MAINTENANCE

Disconnect the unit from the power supply, open the machine and perform the following operations:



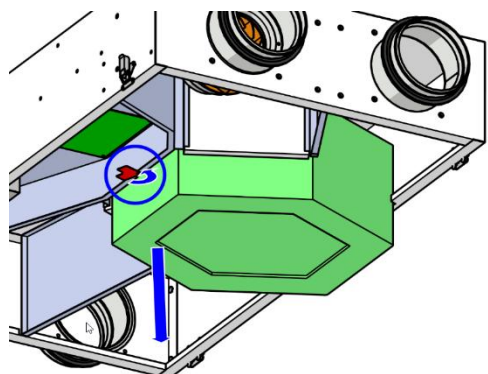
- **Filter cleaning** (twice a year):

An indicator light signals the need for filter cleaning. Dirty filters increase resistance to air passage and impair proper distribution in rooms.

In normally dusty environments, filters should be cleaned at least twice a year with a vacuum cleaner.

To disassemble the filters, open the door and pull out the filters as shown.

After cleaning, the alarm light resets automatically in models with manual by-pass, while the reset button must be pressed for 10 seconds for models with automatic by-pass.



- **Heat exchanger cleaning** (once a year):

Even regular filter maintenance does not prevent dirt from accumulating in the heat exchanger housing, so it is necessary to thoroughly clean the heat exchanger on a regular basis.

Remove the exchanger from the unit and wash it with a hot detergent, allow it to dry and reassemble it, dry, inside the recuperator.

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

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

- **Check condensation drain** (once a year):

The condensate drain line may become clogged with dust

particles dragged in by condensate.

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

The air inlet grille from the outside can get clogged with leaves, pollen or insects. This can affect the performance of the machine and air circulation. Check the grille and clean it if necessary.

- **Pipeline control** air (every 5 years)

N.B. The figures represent horizontal recuperators but, by analogy, are also indicative of operations to be performed on vertical recuperators

## 7 DECOMMISSIONING THE UNIT

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



## 8 INSTALLATION

### 8.1 PREMISES

#### 8.1.1 INSPECTION

Upon receipt of the unit, check its integrity: the machine left the factory in perfect condition; any damage should be immediately reported to the carrier and noted on the Delivery Sheet before countersigning it.

#### 8.1.2 LIFTING AND TRANSPORTING

When unloading and positioning the unit, great care should be taken to avoid abrupt or violent maneuvers. Internal transports should be carried out carefully and gently, avoiding using machine components as points of force.



**In all lifting operations ensure that the unit is securely anchored in order to avoid accidental tipping or falling.**

### 8.1.3 UNPACKAGING


The unit's packaging must be removed carefully without causing damage to the machine; the materials making up the packaging are of different kinds, wood, cardboard, nylon, polystyrene, etc. It is good practice to store them separately and deliver them, for disposal or eventual recycling, to the companies in charge of this purpose and thus reduce their environmental impact.

## 8.2 POSITIONING

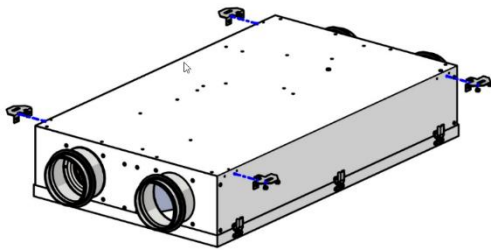


All MACH+ models are designed for indoor installation.

Do not install the unit outdoors and avoid exposing it to weather such as rain, hail, moisture and frost.

It is  necessary that the machine be accessible for periodic maintenance operations (filter change, exchanger pack cleaning, etc.) and that it be fully removable for any extraordinary maintenance. For this purpose, hatches or hatches must be provided for access to machines installed in false ceilings or cavities.

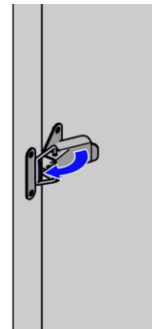
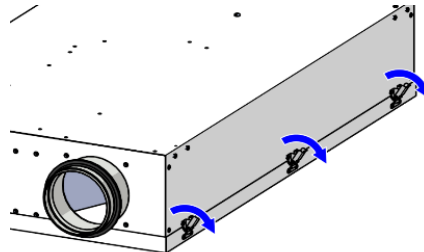
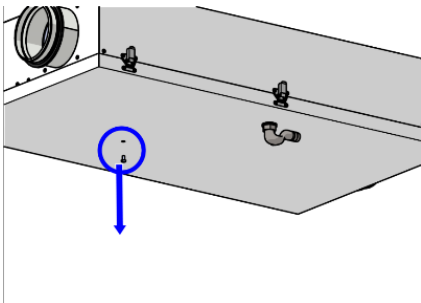
## 8.3 PREPARATION



After removing the recuperator from the packing box, take out the accessories contained inside the recuperator itself (envelope with power cable, No. 4 or 6 fixing brackets, tapping screws and, for MACH+ 160 and MACH+ vertical, the condensate drain connection). The accessories envelope can be reached from a mouthpiece, without opening the door. For the MACH+ series with automatic free-cooling, the indicator-led light and RJ45 plug necessary for wiring the dirty filter alarm are also in the bag.

Attach the brackets to the machine, each with three screws, in the most suitable position. For MACH+160 only, the position is predetermined by appropriate drilling of the shroud. Preparation of vertical models is similar to that of horizontal models.

## 8.4 DOOR OPENING

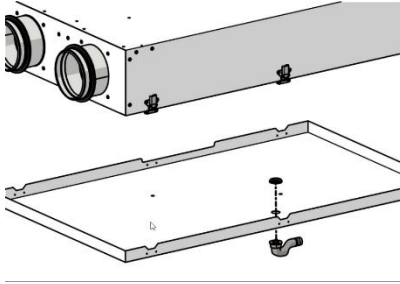


The recuperator door is opened for installation and for extraordinary and routine maintenance.

The sequence, identical for horizontal MACH+ and vertical Mach+, is as follows:

- Remove the safety screws located on the outside of the hatch (1 or 2 depending on the models)
- Open all the hinges, taking great care to prevent the internal components as well as the door itself from falling off.
- Carry out the planned operations on the inside.
- Close the hatch, with the hinges, so that it fits perfectly on the recuperator, leaving no air passages.
- Attach the safety screws

## 8.5 CONDENSATE DRAIN CONNECTION ARRANGEMENT

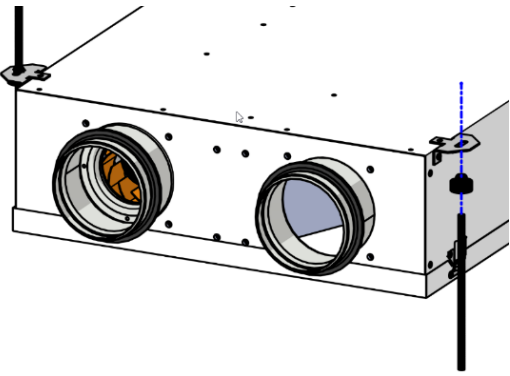


All recuperators have the condensate drain pipe built (DN12) into the portela, except for the MACH+ 16 horizontal model and MACH+ vertical models, for which the drain must be applied, on the outside as follows:

- Remove the hatch (see specific chapter)
- For horizontal MACH+16: remove the rubber plug from the hatch and drill a hole in the insulation at the same location.
- For vertical MACH+: remove the rubber stopper from the hatch and drill, in correspondence, a hole in the insulation.

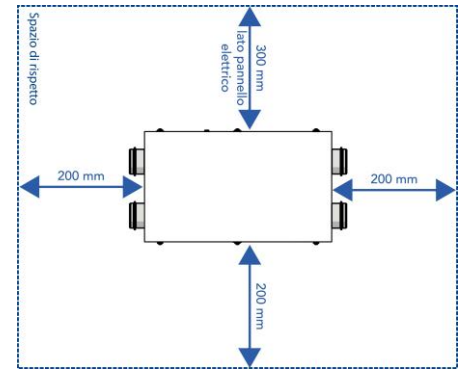
- For both, apply the drain (supplied). If necessary, adjust the thread length to the space limitations imposed by the ceiling.
- Carefully close the hatch with hinges and screws.

## 8.6 MOUNTING HORIZONTAL RECUPERATOR ON CEILING



As shown in the figure, leave clear spaces for access during maintenance. If there is a false ceiling, install movable panels to open the recuperator downward.

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 plugs



are available.

## 8.7 VERTICAL WALL ASSEMBLY RECUPERATOR



Once the brackets are mounted, The vertical recuperator is fixed to the wall with expansion plugs and screws (not supplied).

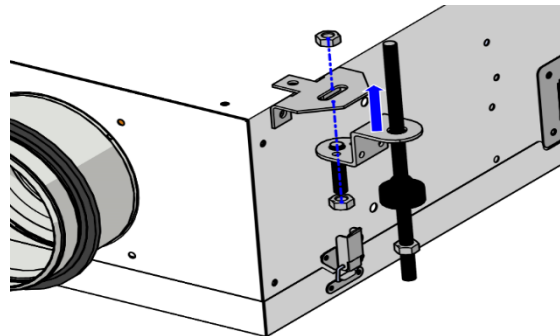
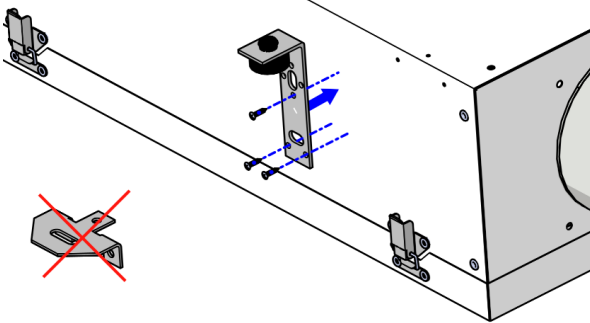
Leave a space of at least 500 mm in front of the machine, to open the inspection hatch, and at least 400 mm at the top, for the air ducts to exit.

## 8.8 ANTI-VIBRATION KITS

Anti-vibration kits are available for horizontal models, to be mounted as shown in the figure.

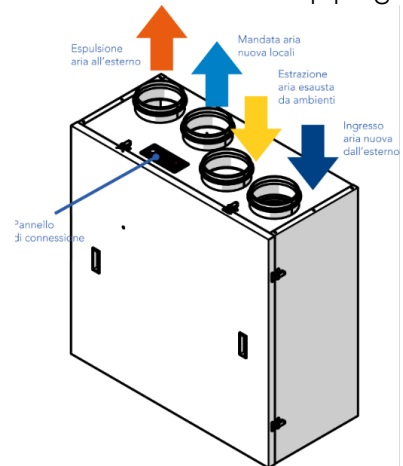
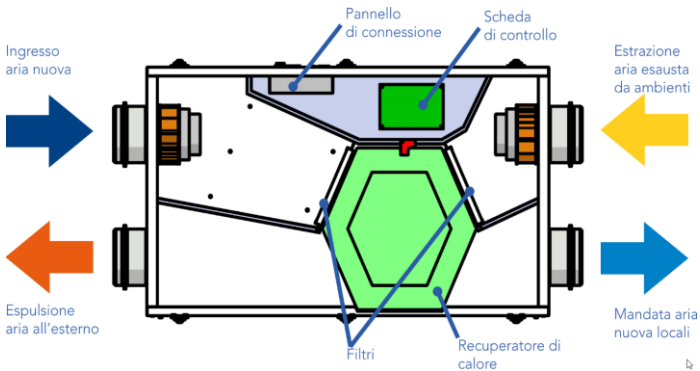
Cod. VPKT01: for MACH+ 160, consisting of 4 S-shaped brackets with shock absorber and washer (hardware and bars not included)

Cod. VPKT02: for MACH + 270/360/510, consisting of 4 L-shaped brackets with shock absorber and washer (hardware and bars excluded)



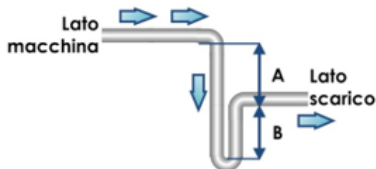
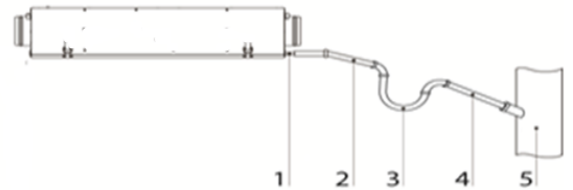
## 8.9 DUCTING

The air inlet and outlet nozzles from the recuperators have sealing gasket on the outside diameter. Before connecting the ductwork, make sure that any cellophane guards have been removed. The inlet and return connections from the rooms, as well as expulsion and renewal to the outside, are shown in the following figures. To avoid transmitting vibrations to the entire system, the first section should be made with flexible piping. Ideal Clima's TREO distribution system is perfectly suited to the use of MACH+ recuperators.



## 8.10 CONDENSATE SIPHON-DRAIN

Connect the drain pipe 1), to the siphon 3) (not supplied) and these to the wastewater collection system 5) with metal, plastic or rubber pipes 2) and 4). The slope of the pipe should be at least 3°. Ensure that water flows freely into the wastewater collection system. The drainage system should be thermally insulated or equipped with pre-heating if it passes through areas with temperature below 0°C



To prevent bad backflow, install a siphon at least as high as the working head of the fans.

At normal operating flow rate  $A=B=60$  mm

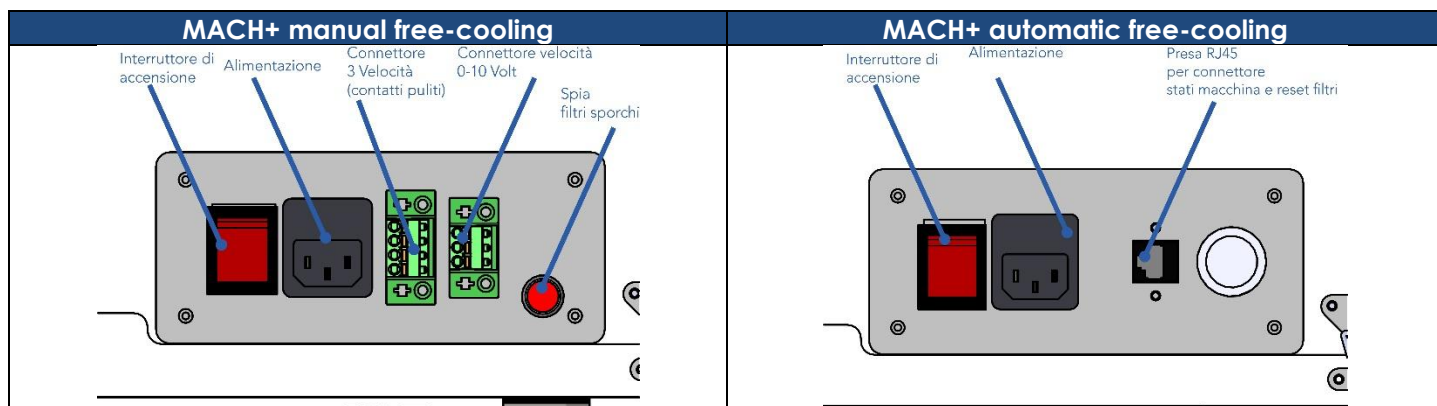
## 8.11 ELECTRICAL CONNECTION

The electrical connection, 230V +T ;50Hz, should be made according to the wiring diagram in Chapter 4.2 of this manual.

The most appropriate upstream line switch is MGT-C10. The power line should have characteristics equal to or better than those of the FROR-3G1.5 cable.

### ON-BOARD PANEL:

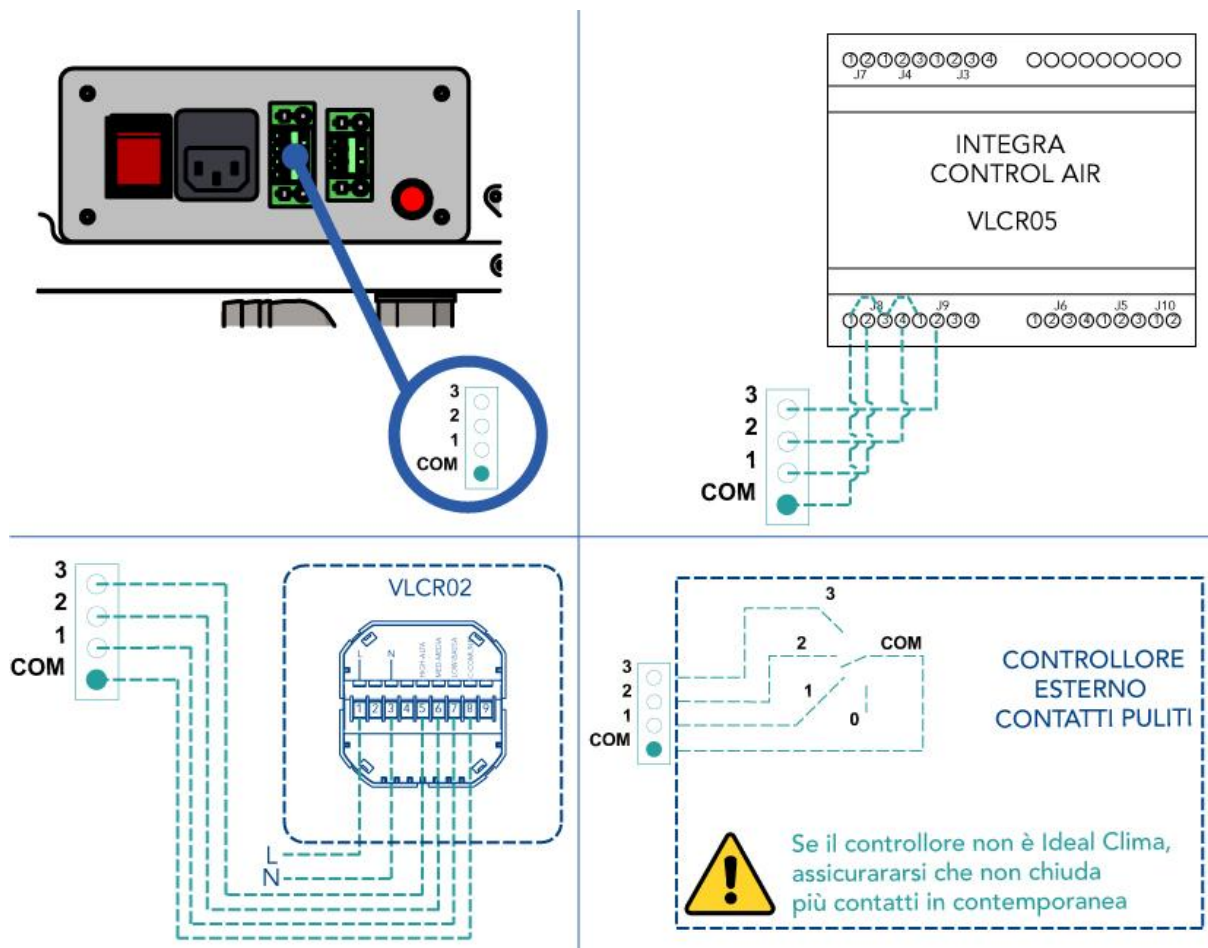
The on-board panel and its contacts change according to the version and in particular according to the presence of automatic free-cooling regulation:



### WIRING MACH+ MANUAL FREE-COOLING

#### Remote control line:

Connect common and speed selector as shown in diagram 4.2.1 to the terminal block located on the electrical connection board. Dry contacts are mandatory. If not, interpose relays.



**Clogged filter signal line:**

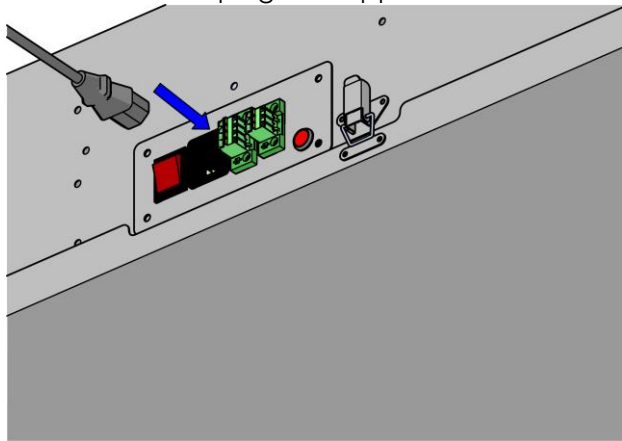
The signal light, located on the electrical connection board, requires no further connection. To remote the signal connect a second warning light, (230V, not supplied) in parallel with the existing one.

**Filter alarm reset line**

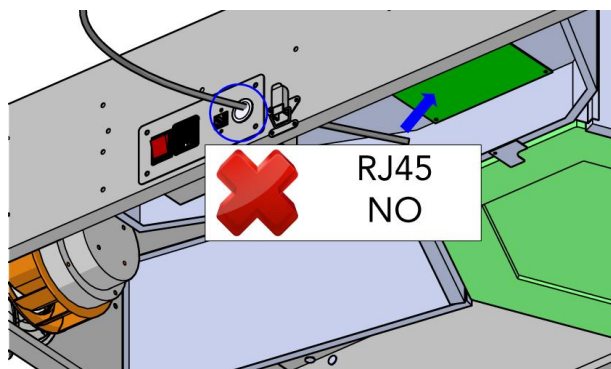
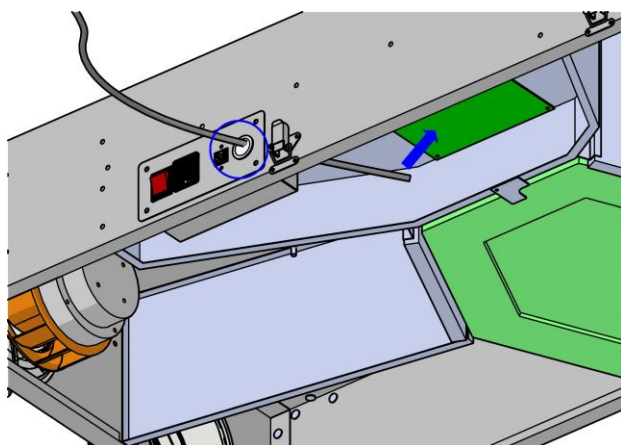
It is not necessary to set up any electrical connection for filter reset. Once the filters have been cleaned or replaced, the indicator lights will automatically turn off (the differential pressure switch returns to the off position)

**Power supply line:**

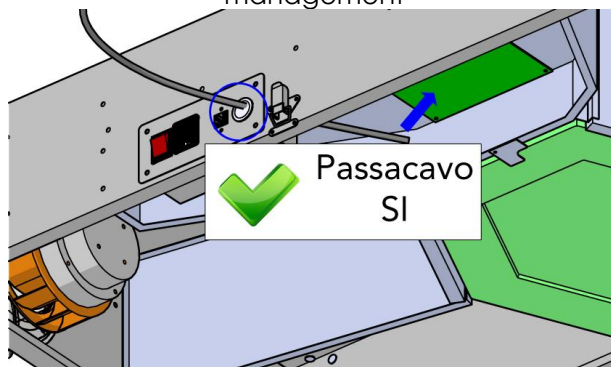
Insert the power VDE plug into the connector located next to the power switch, on the electrical connection box. Cable and plug are supplied.

**AUTOMATIC MACH+ FREE-COOLING WIRING****Remote control line:**

Enter with the control cable through the grommet on the panel to reach the internal circuit board. Connect common and speed selector as shown in diagram 4.2.2 to terminal block CN2 and CN3 of the circuit board. Dry contacts are mandatory. If not, interpose relays.

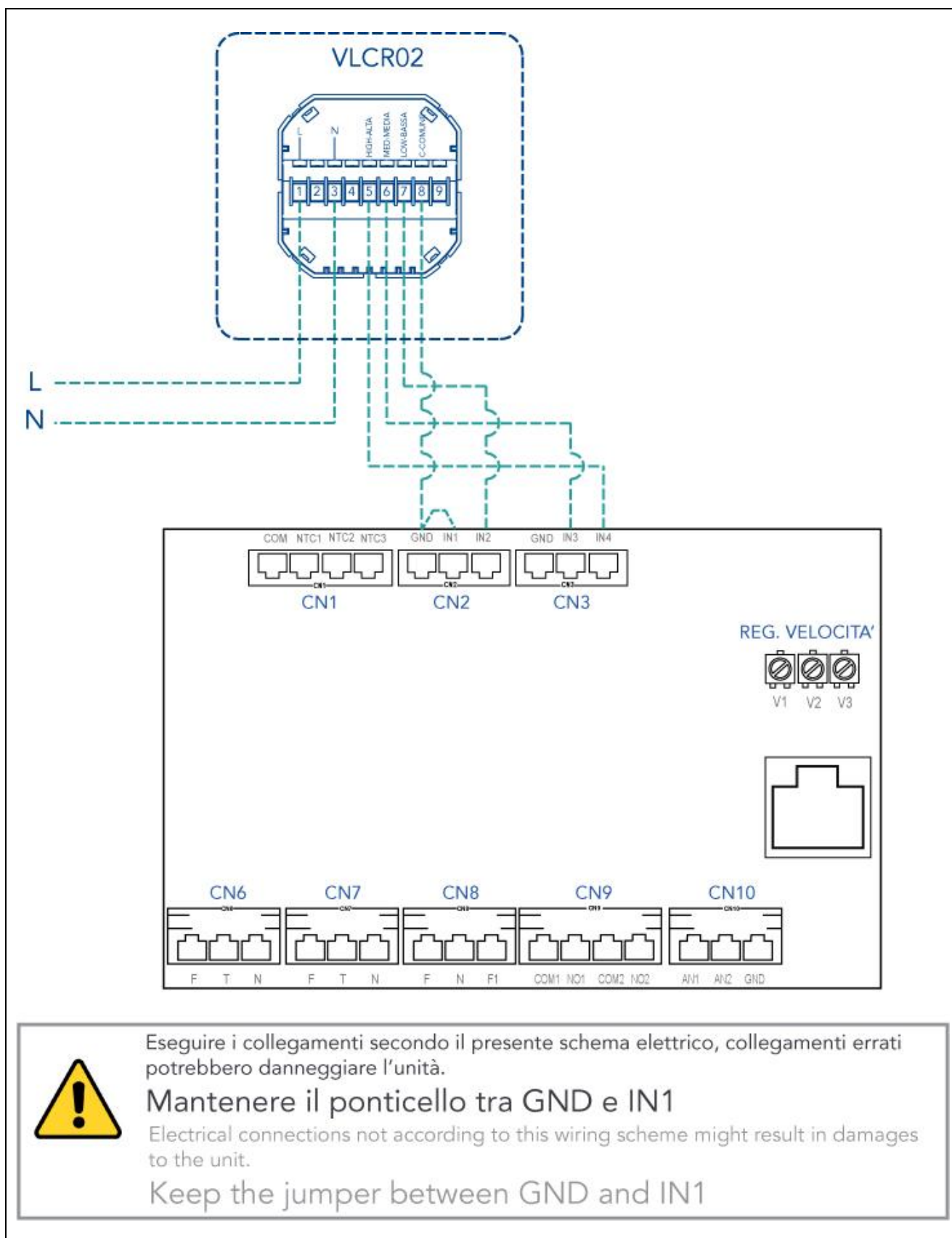


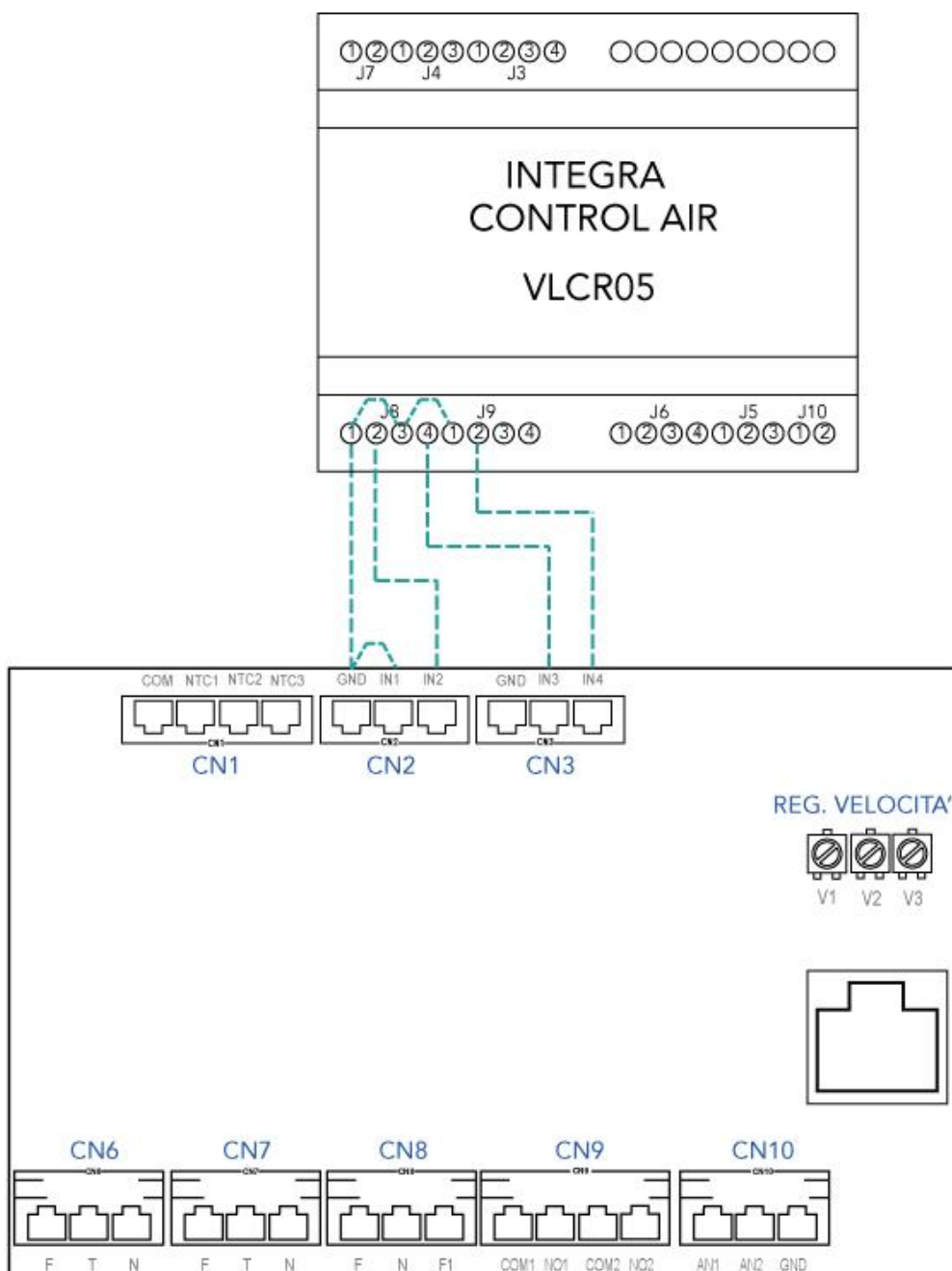
The RJ45 connector must not be used for speed management



Speed commands must be taken directly to the internal board via a 4-wire cable through the grommet

Flush-mounted VMC programmer (Ref. VLCR02)





Eeguire i collegamenti secondo il presente schema elettrico, collegamenti errati potrebbero danneggiare l'unità.

**Mantenere il ponticello tra GND e IN1**

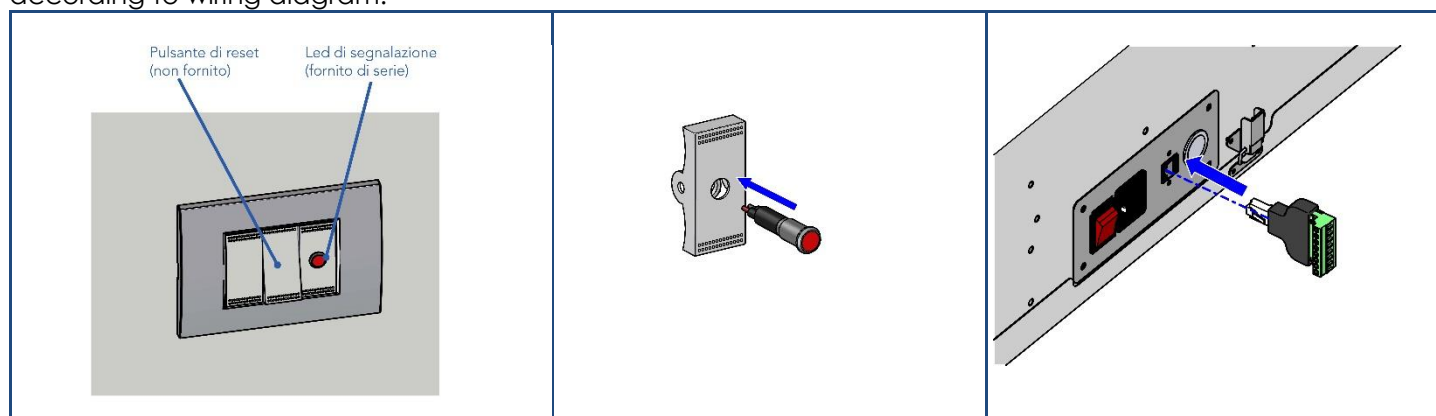
Electrical connections not according to this wiring scheme might result in damages to the unit.

**Keep the jumper between GND and IN1**

Clogged filter warning line:



Clogged filler warning light (3 V LED as standard) must be installed in a civilian standard hole cover. RJ45 plug with terminals (supplied) should be inserted into the socket of the electrical connection box and connected according to wiring diagram.

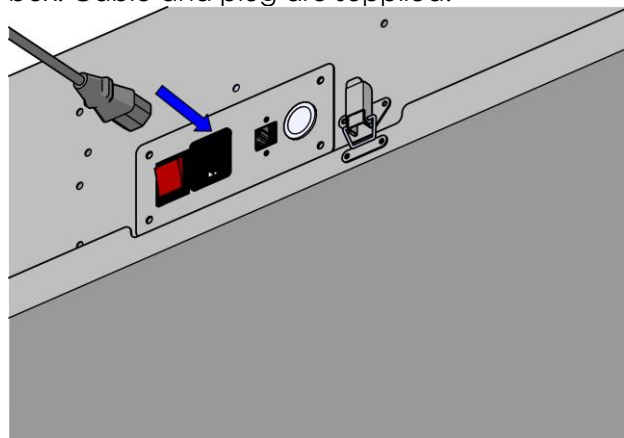


### Filter alarm reset line

Reset button is a civil series button (not supplied), to be connected according to wiring diagram.

### Power supply line:

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



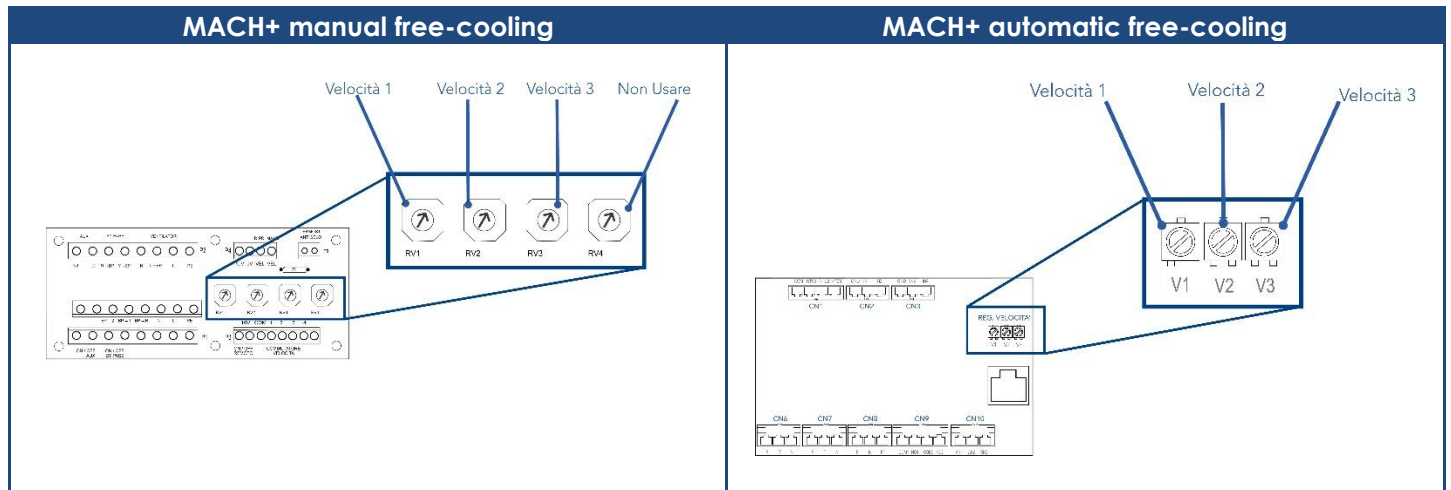
## 8.12 CALIBRATION OF FAN CAPACITIES

Fan speeds are calibrated at the factory in the following way, which statistically corresponds to the most common applications:

- Minimum speed: 40% of maximum fan capacity.
- Medium speed: 60% of maximum fan power.
- High speed: 80% of the maximum power of the fans.

The flow rate indicated in the flow rate/prevalence graphs on the data sheets corresponds to 50%, 72% and 100% of the maximum power respectively. To adjust the factory setting values to the actual needs of the system, act on the potentiometers located on the control board, one for each speed.

Each potentiometer changes the speed of both fans of the unit



### 8.13 STARTUP AND TESTING

Before starting the machine, check that all closure panels are in their proper position and tightened securely with their own screws.



**Verify that all connections (plumbing, electrical, and aeraulic) are properly installed and that all directions on labels and user manual are followed.**

The start-up and testing of the recuperators should preferably be carried out together with the testing and start-up of the entire system, which also extends to the ventilation network, radiant panels, and dehumidification, if planned interconnected.

Testing should be carried out by qualified personnel who are also adequately trained for subsequent maintenance.

## 9 WARRANTY CONDITIONS

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

Ideal Clima guarantees its products against manufacturing faults or defects, with the express exclusion of any defect or fact inherent in the installation, operation and maintenance of the product. - 15.2 Recipients - Ideal Clima provides 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 the event of repairs, the Customer undertakes to have those repairs carried out by its end customer that Ideal Clima deems indispensable, allowing access to the system. In the event of replacement, Ideal Clima undertakes to replace its defective products with its own products with equal or superior characteristics, excluding any cost to restore the asset (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 ex works. - 15.4 Effective date and duration - The warranty starts from the date of purchase of the product and has a duration of two years. The purchase date is proven by the invoice and by the delivery note. In the event of a dispute regarding the date of supply, the lot / date of production / serial number indicated on the product will prevail. 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 5.0 August 2022

In a process of constant improvement, the company reserves the right to make changes to the product at any time, even without notice.