

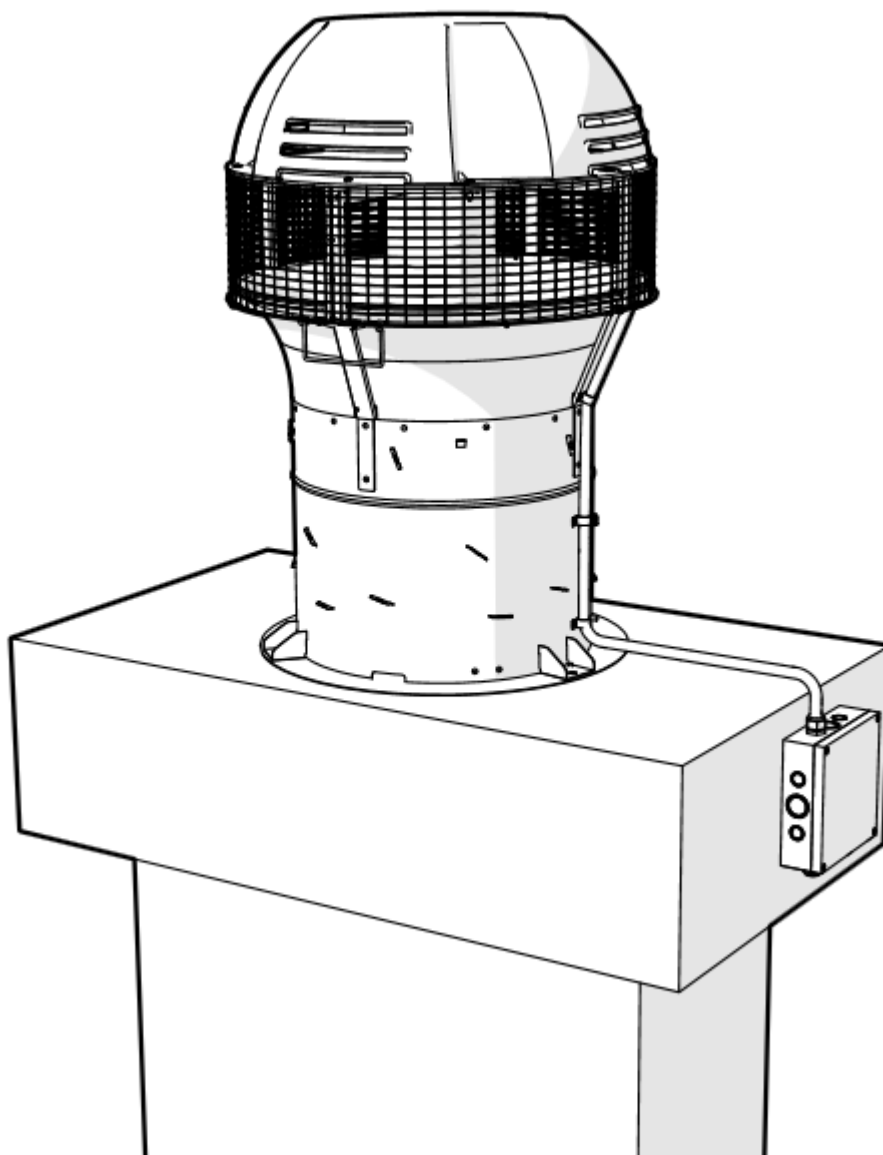
Hybrid assistance ventilation fan

VBP+

Installation and maintenance

ENGLISH

CE





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1. Introduction

1.1. Warnings



BEFORE INSTALLING THE APPLIANCE, PLEASE READ THESE INSTRUCTIONS CAREFULLY.

- The manufacturer cannot be held liable for damage caused by installation in violation of good practice and/or contrary to the directions given in the installation manual.
- This manual describes how the VBP+ fan must be installed and used.
- The whole system must be installed by an approved professional and in compliance with the standards in force.
- Do not use this appliance other than for its intended purpose.
- After unpacking, make sure that it is not damaged. Any functional defect must be reported to your dealer.
- Wearing suitable gloves while handling the product is strongly recommended (some of the metal parts have sharp edges).

Reminders of elementary safety rules:



The use of an electrical appliance requires observance of the following elementary rules:

- Do not touch the appliance, even if it is earthed, if your body is moist or wet (hands, feet, etc.);
- This system is not designed to be installed or used by persons whose intellectual and/or mental faculties are impaired, or who lack experience and knowledge (including children), unless they have been trained and are supervised by a person responsible for their safety during installation. To eliminate any risk of an accident, keep them away from the appliance;
- The electrical installation and connection work must be done by a qualified technician, in accordance with the manufacturer's recommendations and in a manner consistent with the characteristics of the product;
- Before doing any work on the appliance, unplug it or otherwise disconnect it from its power supply and make sure that the power cannot be restored accidentally while the work is being done;
- Any change or replacement of a wire must be done by a qualified technician;
- Young children must be kept far away from the appliance in order to ensure that they do not play with it.



The following instructions must also be observed:

- The number of fans and their arrangement must be studied so as to ensure the proper operation of the system.
- In general, barring special cases, all ducts of a given stack of housing units must be equipped with one or more VBP+ fans.

1.2. General

The VBP+ is a very-low-pressure assistance fan delivering pressure compatible with the design of passive stack ventilation. It is intended to improve and optimize the draught of passive stack ventilation ducts, and belongs to the category of hybrid ventilation systems.

The VBP+ is available in 2 pre-configured versions:

ST version: Version pre-configured in ST mode, uncontrolled stand-alone, at constant speed adjustable on a built-in potentiometer.

MS version: Version pre-configured in MS mode, controlled by a management system:

- Management of the fans in groups (up to 5 groups of 5 VBP+),
- Individual setting/adjustment of the speed of each fan according to the site configuration (number of storeys, type of ducts connected, etc.),
- Control of the speed of each fan according to the temperature,
- Indication of operation of the system and alarm reporting.

This version requires the use of two specific types of modules.

The versions (ST and MS) are the same product with different pre-configurations. It is therefore easy to change from one version to the other.

1.3. Main functions

- Hybrid operation: in passive stack or mechanical mode (low pressure losses when stopped)
- Compatibility with demand controlled ventilation
- Low power consumption
- Fire resistance: 400°C for 30 min (C4 classification in France)
- Direct power supply at 230 VAC, 50-60Hz
- Adjustment of the speed according to the temperature ("MS" mode)
- Reporting of information for alarm ("MS" mode)
- Possibility of grouping several ducts (aeraulic cross-section 984 cm²)

1.4. Range of use

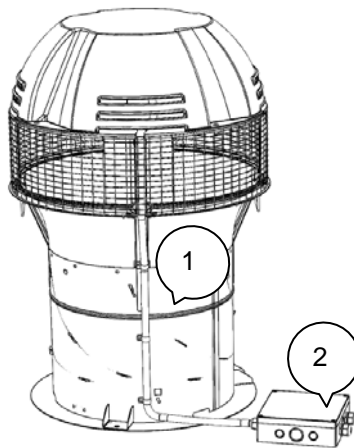
- Ventilation of residential buildings, offices, and other general-purpose premises
- Renovation or new construction¹
- Individual or collective ventilation ducts, which may be made of concrete or metal.

Remarks:

- Use of the fan on ducts serving connected gas-fired appliances is subject to specific approval by the competent authorities.
- The height of the buildings equipped varies according to the regulation flow rate requirements, which are specific to each country.
- In France, this fan is marketed under a CSTB technical approval specifying its dimensioning and installation conditions. The product is sold there under the HELYS-800 name by the Acthys company and is pre-configured in MS mode.

2. Product data

2.1. Components



1: Fan

2: Control unit²

Note: the MS mode also requires two specific modules, a temperature probe and other electrical components. These elements are described in the manual specific to this mode.

¹ In some countries, a specific permit may be required for use in new buildings

² as standard

2.2. Technical data

Hybrid fan	VBP+
Code	VB21116/VB21124

Aeraulic

Maximum flowrate	m ³ /h	1000 (max 20 Pa)
Maximum pressure	Pa	35 Pa (@ 200 m ³ /h)

Electric

Type of motor	EC (Electronic Commutation)	
Power supply	230 VAC, 50-60 Hz	
Maximum power	W	43
Inrush protection (IP) of motor	IP54	
Control/setting of speed	By built-in potentiometer or by MS management system	
Degree of pollution	1	

Characteristics

Weight	kg	20
Colour	Metallic grey/black	
Material (jacket)	Galvanized steel/PE	
Outside dimensions	mm	904 x ø610



Installation

Number of suction connections available	1
Output/discharge	mm \varnothing 354
Installation	On roof, head of duct 3 \varnothing 8mm screws

Operation

Turbine drive	By motor coupler
Maximum speed of rotation	RPM 600

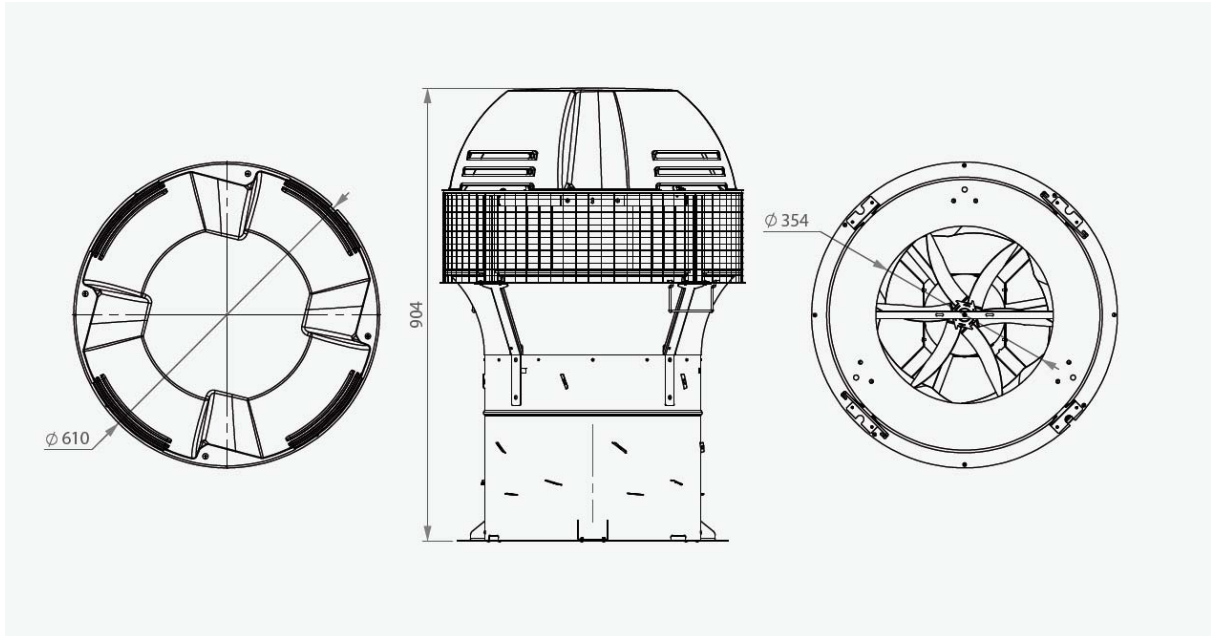
Accessories

Modules	For the VB21124 only: "VBP+" module (ref. VB21118) and "main" module (ref. VB21119)
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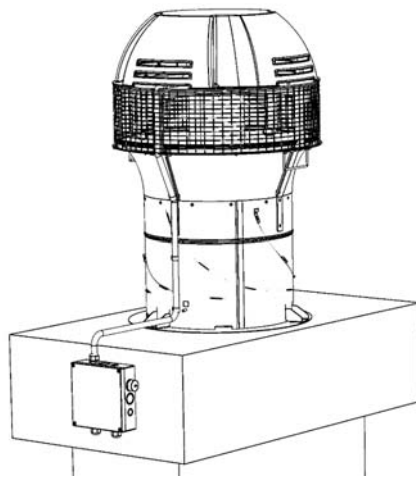
2.3. Dimensions



Dimensions in mm

3. Installation

3.1. Fitting on stack



The components necessary for adaptation to the emergencies of the ducts vary from one site to another.

In the case of an individual duct, a horizontal platform, located at the level of the emergence of the duct, is necessary for attachment and for airtightness with the fan. A plane plate of the right dimensions, attached to the top of the stack, is sufficient.

For the grouping of ducts, an **adaptation plenum** compliant with the recommendations stated below is necessary to ensure proper aeraulic operation of the whole (loss of head minimized) and for attachment and tightness with the fan(s).

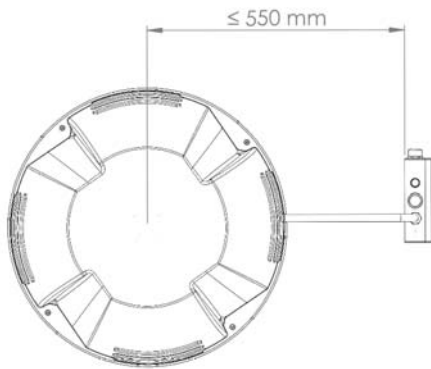
General recommendations for the placement of adaptation components:

- **The adaptation components must be made of a material strong enough to bear the weight of the fan(s).**
- **The latter must be fastened to the stack securely and so as to assure a good seal with it; the plenum as a whole must also be perfectly sealed.**



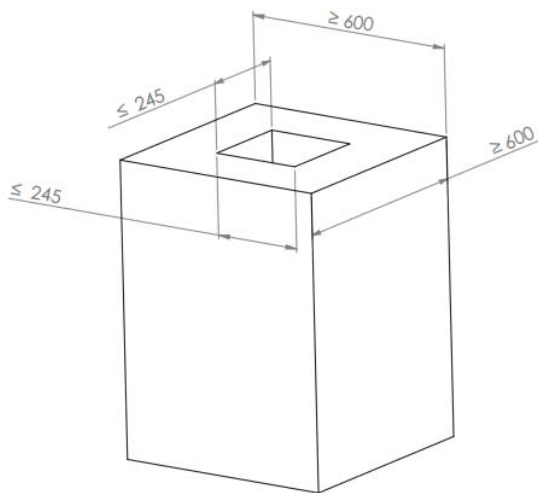
Attachment of the control unit:

For each case encountered, one of the edges of the plenum or of the stack must be within 550 mm of the centre of the fan to allow the attachment of the control unit.



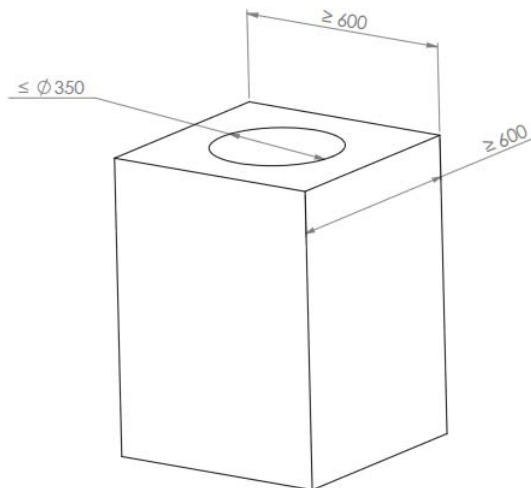
3.2. Case of an individual duct

For a rectangular duct, the constraints are the following:



- The top platform must be rectangular and measure at least 600 x 600 mm.
- The opening cross-section of the duct must not exceed 245 x 245 mm if it is desired to avoid reducing its cross-section.
- The fan must be centred on the duct.

For a circular duct, the constraints are the following:



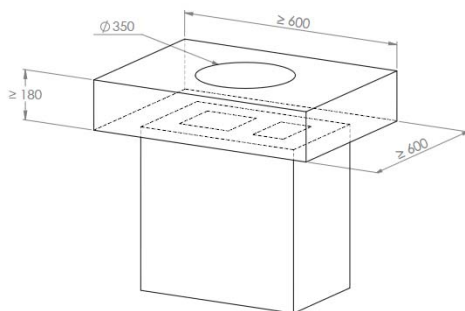
- The top platform must be rectangular and measure at least 600 x 600 mm.
- The opening cross-section of the duct must not exceed $\text{Ø}350$ mm if it is desired to avoid reducing its cross-section.
- The fan must be centred on the duct.

3.3. Case of ducts grouped under a single fan

For all grouped duct configurations, an adaptation plenum is necessary. The plenum must:

- provide a top platform measuring at least 600 x 600 mm.
- provide a circular outlet $\text{Ø}350$ mm centred on the stack
- ensure a height of air of at least 180mm between the end of the stack and the outlet section $\text{Ø}350$ mm.
- The fan must be centred on the outlet section $\text{Ø}350$ mm.

Example of a typical stack of the collective and individual type:





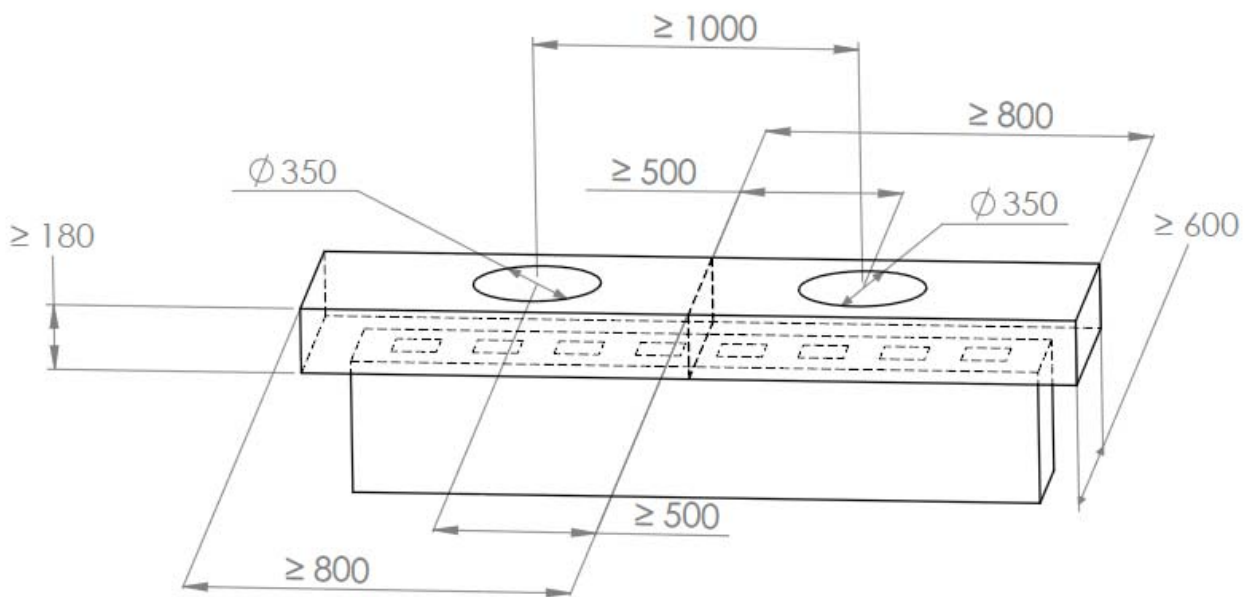
3.4. Case of ducts grouped under 2 fans

For all grouped duct configurations, an adaptation plenum is necessary.

- The plenum, even if made in a single piece, must provide 2 distinct volumes, perfectly sealed from one another.
- For each of the 2 units, the plenum must provide a circular outlet $\text{Ø}350$ mm centred as closely as possible on the grouped duct.
- **The plenum must ensure a height of air of at least 180 mm between the end of the stack and the outlet sections $\text{Ø}350$ mm.**
- The fans must be centred on the outlets $\text{Ø}350$ mm.
- Each 350 mm outlet must be at least 1,000 mm from the other and at least 500 mm from the bulkhead separating the volumes.

The plenum must provide 2 virtual platforms measuring at least 800 x 600 mm each (see example below).

Example of grouping of 8 individual ducts:

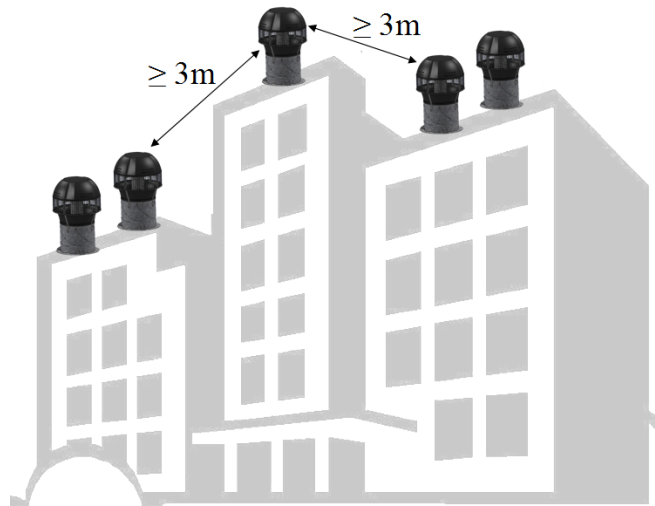


3.5. Limits



All of the following cases must be avoided, because they would lead to non-compliance with European EMC requirements or non-compliant aerualic performance or deterioration of the equipment or of the ventilation system.

- It is forbidden to install more than 2 fans per stack.
- The stacks (1 or 2 fans) must be at least 3 m apart (distance from the outer edge of the fan to the outer edge of the nearest fan of the other stack)



3.6. Anticipation of maintenance and chimney sweeping constraints

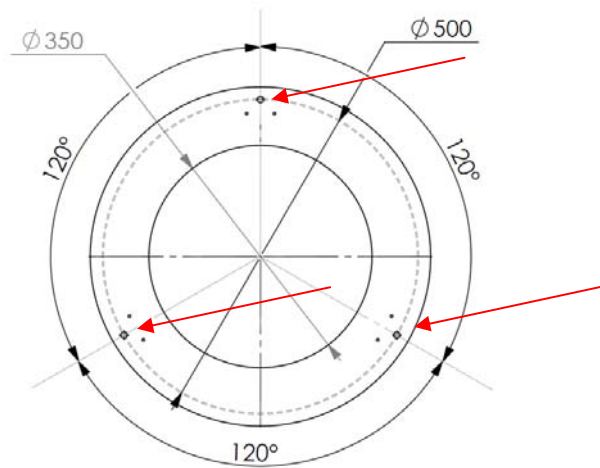
In order to allow access to the ducts located under the fan (inspection, chimney sweeping) it may sometimes be necessary to incorporate one or more of the following features:

- Soot door. This is generally located on the side of the stack or of the plenum.
- Top plate tipping system (with hinges and catches).
- Attachment that can be removed from and refitted on the top plate.

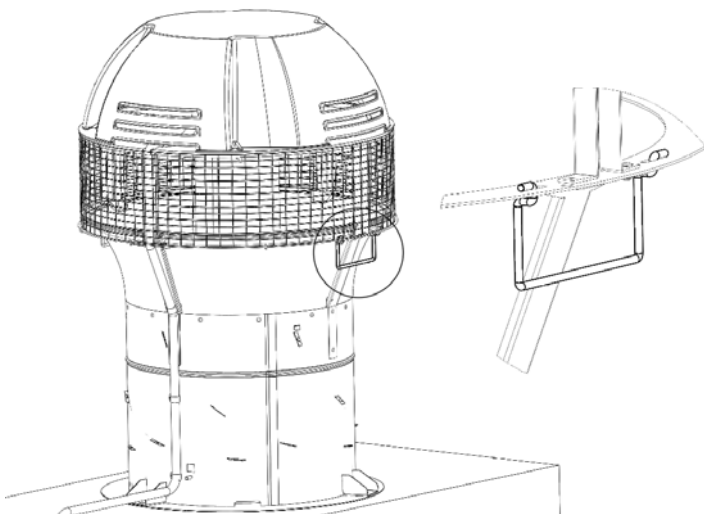
3.7. Installing the fan

1) Ensure the proper adaptation of the fan on its stack (see section above).

⚠ The plate holding the outlet $\text{Ø}350$ mm can be designed with 3 crimped M8 nuts positioned as shown below to allow the attachment of the fan.

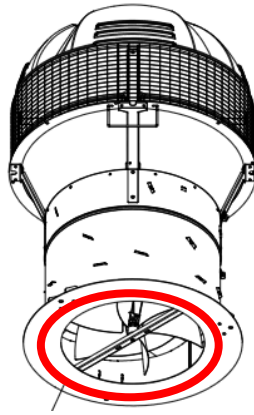


2) Remove the fan from the pallet.

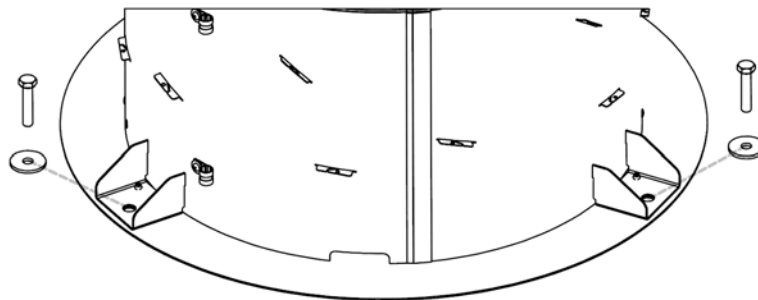


- Use only the 2 handles located under the uprights to handle the fan.
- Wear suitable gloves (some of the metal parts may be sharp)
- Do not set the fan down on an obstacle that might damage the turbine.

3) Place a gasket as a seal between the top plate and the base of the fan.

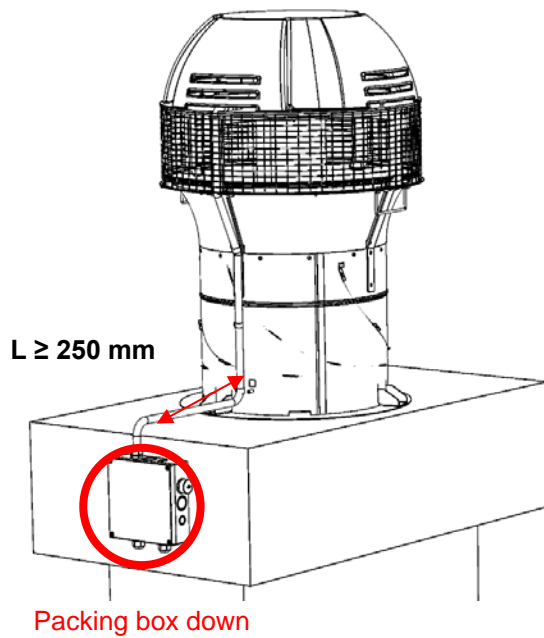


4) Attach the fan to its specific adaptation using 3 x Ø 8 mm stainless steel screws + washers.



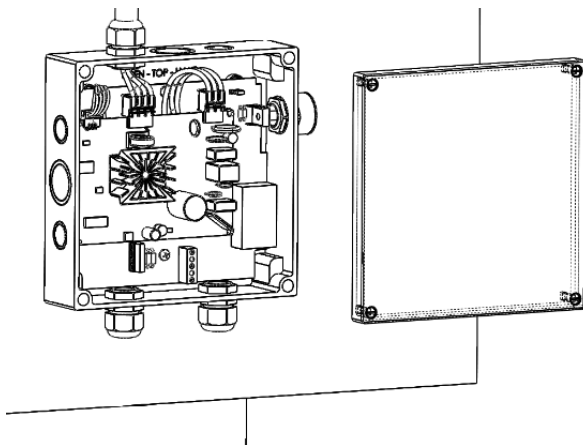
Note: The 2 handles can be removed by pinching them; this eliminates a potential source of noise due to mechanical vibration.

5) Position the control box as low as possible on a vertical surface. The surface must be accessible; **favour the side facing North to reduce the influence of direct sunlight.** It must be positioned so that the cable connecting the fan to it is not loose. If necessary, fit cable clamps.



- In all cases, the control unit must be at least 250 mm from the foot of the fan.
- The 2 unused packing boxes must be down

6) Remove the cover from the unit, then punch-mark the locations of the 4 points of attachment in the 4 corners of the unit.



Then attach the unit with 4 x Ø4 mm stainless steel screws in the 4 corners.

Close the cover.

4. Connections

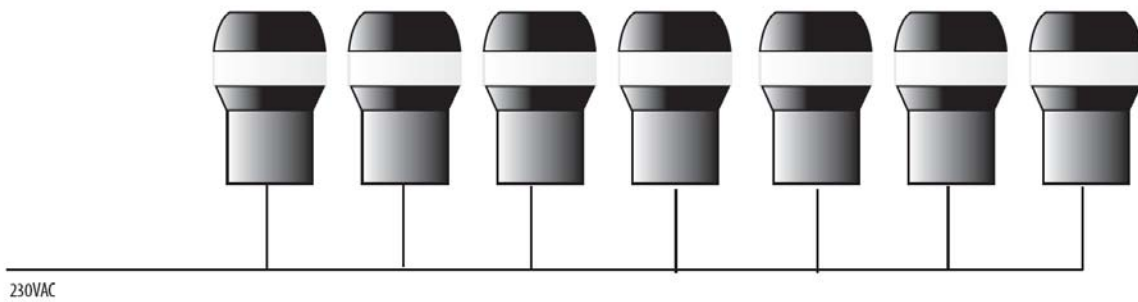


- All electrical connection operations must be made by a qualified professional and comply with the standards in force.

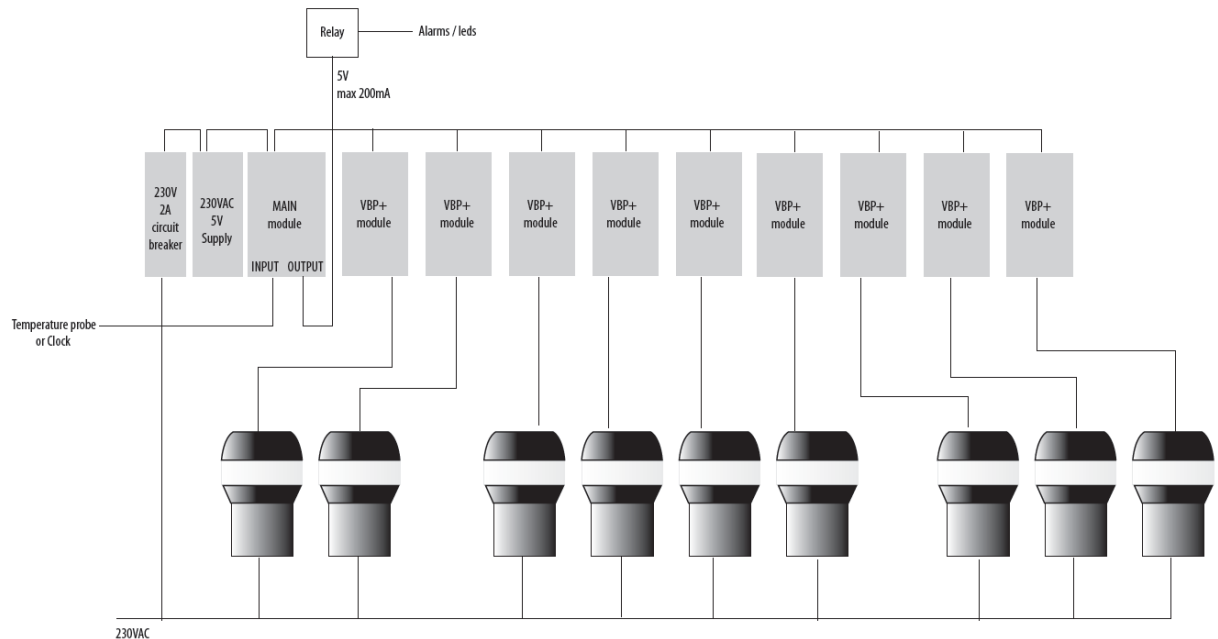
No cable used for the connection may pass through the interior of the stack or of the plenum.

4.1. General connection diagram

ST mode:



MS mode:



4.2. Power connection

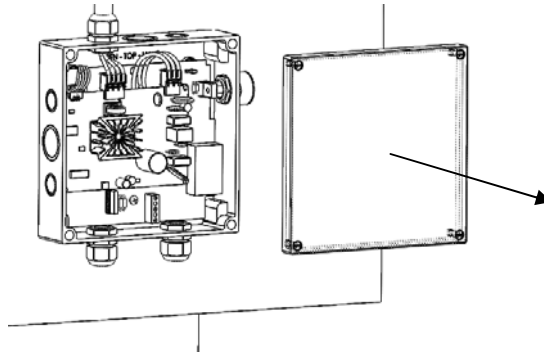
Each fan has its own power supply. The operation consists in connecting the 230 VAC mains to each unit.

⚠ The cable used must have 3 conductors, be between Ø6 mm and Ø12 mm, comply with the installation standards in force (colour code in particular), have conductors with a cross section of at least 1.5 mm², and be able to withstand the environment in which it is installed (in particular, be resistant to UV).

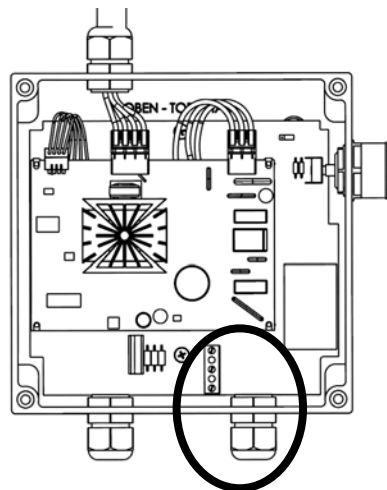
⚠ Reminder: Protection of the power supply circuit of each fan must be provided in the device, in the form of a fuse or circuit-breaker (thermal, current overload, or similar) in conformity with standard EN60335-1. Recommended fuse = 16A max.

A manual circuit-breaker must be placed on the mains upstream of the control unit. Make sure that it is in fact open (no power) during the installation work.
The fan must be connected directly to an electrical box but in any case on a end-used plug.

1) Remove the cover

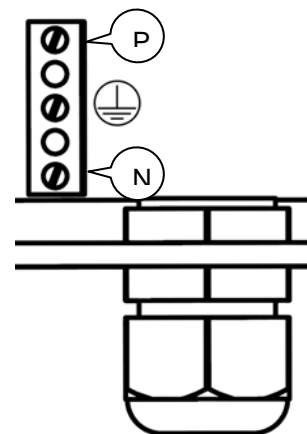


2) Remove the plug and insert the cable through the right-hand packing box (circled below)



3) Make the connection to the terminal block as shown below:

- Connect the "phase" wire to the "P" terminal
- Connect the earth to the middle terminal
- Connect the "neutral" wire to the "N" terminal



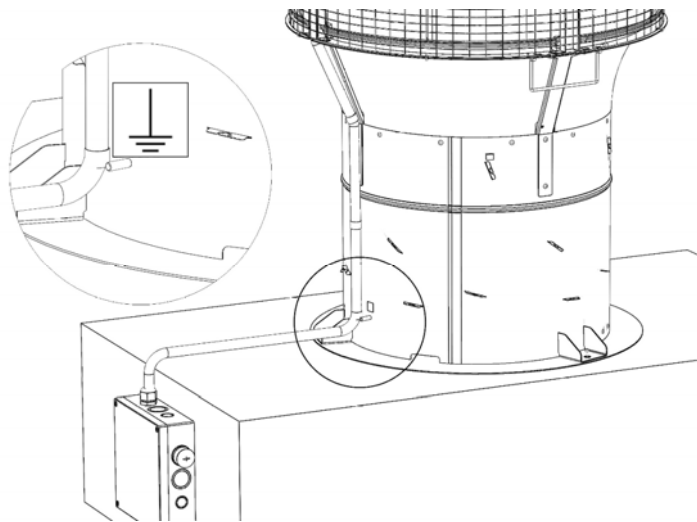
4) Push the cable in far enough to ensure that its outer sheath is properly in contact with the clamping part of the packing box.

5) Tighten the packing box

 **Tighten enough to ensure a good seal and hold the cable securely.**


6) Close the cover, and don't forget the screws.

7) Add a bonding jumper, connected to the stud provided for this purpose on the carcass of the fan.

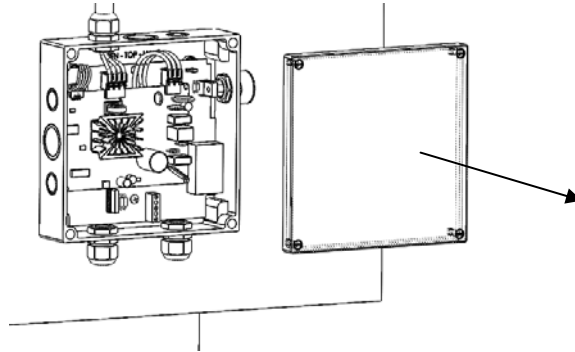


4.3. Configuring in ST or MS mode

The versions (ST and MS) are the same basic fan with different pre-configurations. It is therefore easy to change from one version to the other if necessary. The pre-configured mode is marked on the label on the outside of the product. If you wish to change the management mode, proceed as follows:

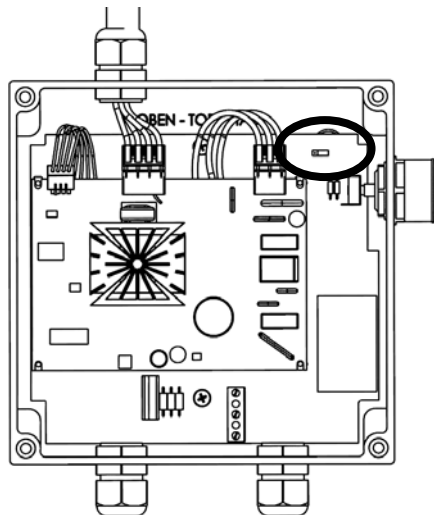
 **Check that the power supply has in fact been cut off for at least 5 minutes before starting (to eliminate the risk of electrical shocks from the discharging of certain components).**

1) Remove the cover from the control box.



2) Place the jumper at top right according to the chosen management mode:

- on pins 1 & 2 for the "MS" mode
- on pins 2 & 3 for the "ST" mode



4.4. Connection in ST mode

In the ST mode, the connections are complete. Close the cover, and don't forget the screws.

For the MS mode: finalize the connections as indicated below.

4.5. Connection in MS mode



Check that the power supply has in fact been cut off for at least 5 minutes before starting (to eliminate the risk of electrical shocks from the discharging of certain components).

In this mode, each fan has its own control line. The operation consists in connecting, on the unit, the control cable linking each management module to its fan. This section describes only the connection on the fan unit. For the complete installation of the MS mode, refer to the installation manual of the MS management components.

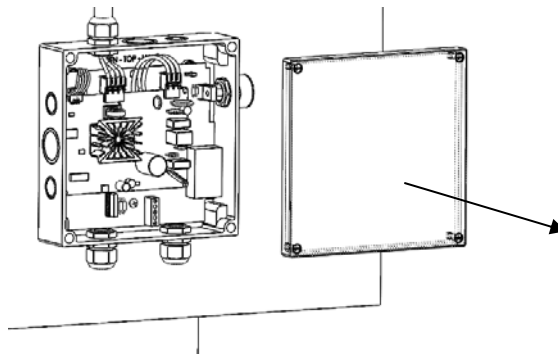


The cable used must be between Ø6 mm and Ø12 mm, comply with the installation standards in force, have 4 conductors each having a cross section of at least 1.5 mm², be not longer than 25 m between the fan and its management module, and be able to withstand the installation environment (in particular, be resistant to UV).

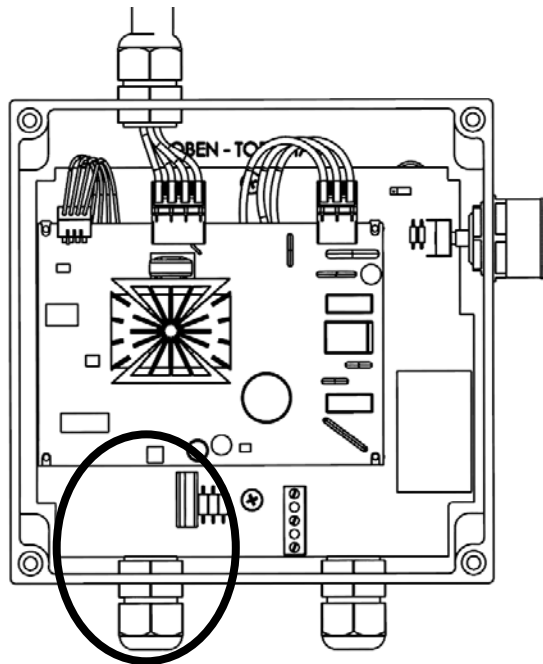
The current in these cables does not exceed 20 mA.

The cable must not include a yellow & green conductor, the colour pair used only for earth wires.

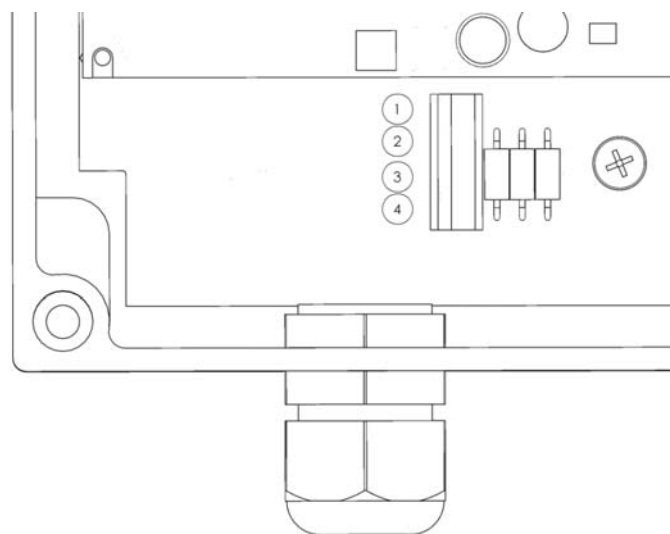
- 1) Remove the cover



- 2) Put the jumper of the contact plate at top right on pins 1 & 2, "MS mode" (see previous section).
- 3) Remove the plug and insert the cable through the left-hand packing box (circled below)



4) Connect each conductor to a location on the terminal block and mark each wire (identification by colour, for example) on the channel it connects: 1, 2, 3 and 4.



5) Push the cable in far enough to ensure that its outer sheath is properly in contact with the clamping part of the packing box.



6) Tighten the packing box



Tighten enough to ensure a good seal and hold the cable securely.

7) Close the cover, and don't forget the screws.

5. Starting up/operation



▪ **Before commissioning, check that the fan is securely attached to its stack and that no object has been left inside the duct or might interfere with the turbine.**

- **Do not insert anything through the fan.**
- **Never start up if the control unit is open.**
- **Check that a bonding jumper is in fact connected to the carcass.**

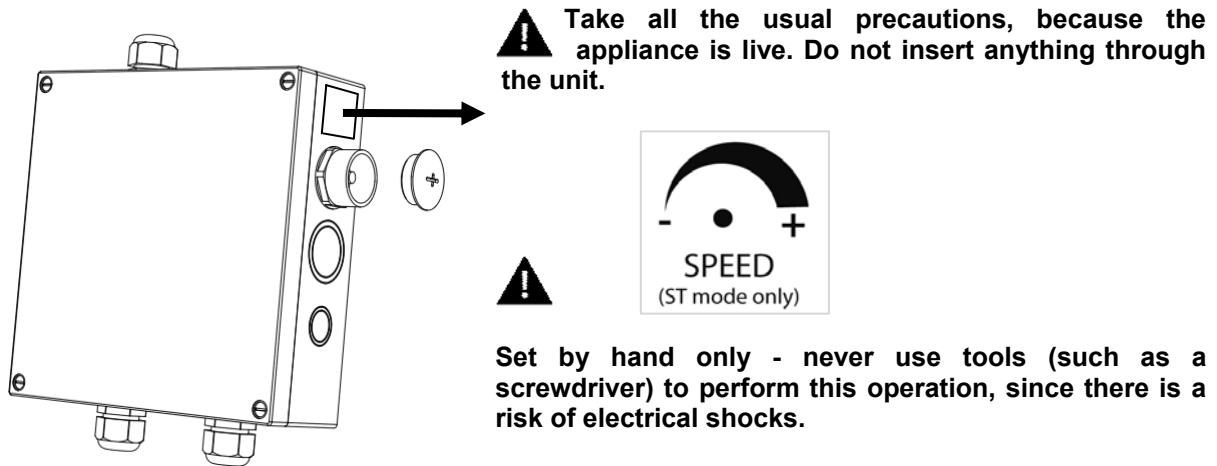
5.1. ST mode

1) Power up the appliance. It then starts.

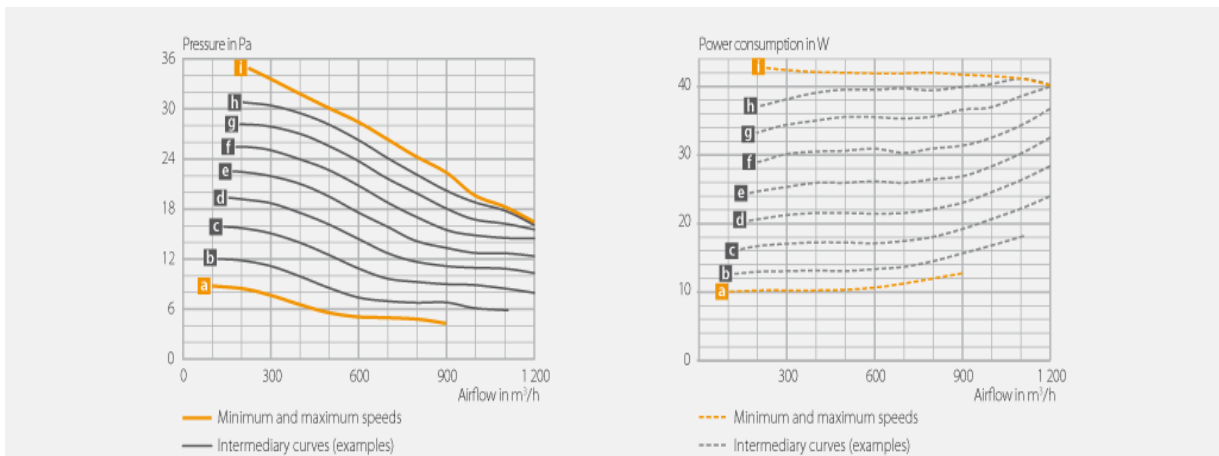


The motor technology used may lead to starting errors. If this happens, the appliance fails to start and begins vibrating slightly. **Do not touch anything**; the appliance will itself initiate a starting cycle, until it actually starts.

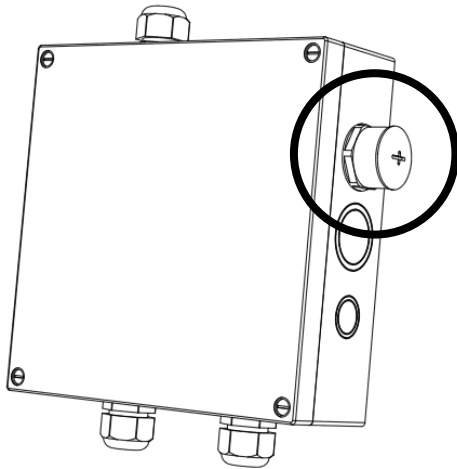
2) To adjust the speed, unscrew the plug on the right.



Any curve between the minimum (a) and maximum (i) curves presented in the graph below can be obtained. The number of possible adjustments between these curves is infinite. Curves (b) to (h) are given as examples, not exhaustive.



3) Screw the plug back in hard enough to ensure a good seal.



5.2. MS mode

1) Power up the appliance, which then waits for a setpoint command from the management system.

For the rest of the starting up process, refer to the installation manual of the management modules.

Once the MS mode has been activated, the appliance should start.

The motor technology used may lead to starting errors. If this happens, the appliance fails to start and begins vibrating slightly. Do not touch anything; the appliance will itself initiate a starting cycle, until it actually starts.

6. Maintenance

6.1. Prior warnings



Before doing any work on the appliance:

The appliance may still be charged even though the 230 VAC power supply circuit has been cut off, leading to a risk of electrical shocks.

→ Wait at least 5 min after cutting off the power supply before intervention on the appliance.



The appliance may be stopped but restarts automatically (for example if there is a momentary interruption in the control circuit of the MS version), with a risk of injury.



-
- Never insert anything through the fan, and in particular the suction stream in which the turbine is located.
 - Never handle an appliance or remove it from its stack when it is live.
 - Cut off the power supply and make sure that it cannot be reconnected.
 - Wait for the turbine to come to a full stop.

6.2. Maintenance

We recommend carrying out a visual observation of the proper operation of each fan and cleaning its blades once a year:

- 1) Cut off the power supply.
- 2) Remove the product from the base on which it is placed in order to reach the turbine.



Wearing suitable gloves while handling the product is strongly recommended (some of the metal parts have sharp edges).

- 3) Using a cloth moistened with a cleaning product or a brush, which should be non-metallic so as not to damage the galvanization, clean the blades of the turbine and the fixed vanes.



Take care not to twist the blades or the vanes of the fan during this operation. Do not apply solvent on the ball bearings (this might impair their lubrication).

- 4) Wipe with a dry cloth
- 5) Put the fan back in place
- 6) Reconnect the power supply. In the MS mode, restarting will take a few minutes, the time needed to reset the modules.



7. Technical Assistance



All work on the appliance must be done by an authorized individual. If a malfunction or other problem arises, or you have a question, please get in touch with your dealer.

Manufacturer:

Aereco

9 allée du Clos des Charmes

77090 Collégien

France

8. Warranty

This appliance is guaranteed for two years, counting from the date of purchase, against any manufacturing defects. In this context, Aereco replaces the appliance or supplies the parts found to be defective after appraisal by its customer service department. In no case does the warranty cover other expenses, such as labour costs, travel, or indemnification of any kind. The warranty does not cover damage due to installation other than as described in this manual, improper use, or an attempted repair by unqualified personnel. If there is any problem, please get in touch with your installer, or else your dealer.

9. Protection of the environment

Treatment of the electrical or electronic appliance at end of life (applicable in the countries of the European Union and other countries having selective collection systems).



This logo indicates that the product must not be treated as household waste. It must be taken to an authorized collection point for the recycling of electrical and electronic equipment. For any additional information about the recycling of this product, you can contact your local authorities, your wastes centre, or the shop where you purchased the product.