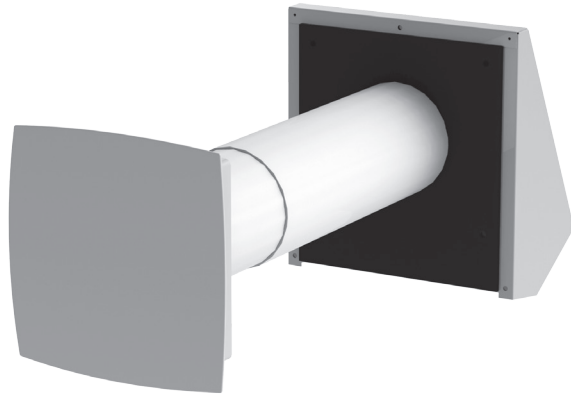


USER'S MANUAL

SAF HR

- RA1-50
- RA1-85



SINGLE-ROOM REVERSIBLE ENERGY REGENERATION VENTILATOR

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Safety requirements	3
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The user's manual consisting of the technical details, operating instructions and technical specification applies to the installation and mounting of the single-room energy regeneration reversible ventilator SAF HR, (hereinafter «the unit» as mentioned in the «Safety Requirements» and «Manufacturer's Warranty» sections as well as in warnings and information blocks).

SAFETY REQUIREMENTS

- Read the user's manual carefully prior to installing and operating the unit.
- Fulfil the user's manual requirements as well as the provisions of all the applicable local and national construction, electrical and technical norms and standards.
- The warnings contained in the user's manual must be considered most seriously since they contain vital personal safety information.
- Failure to follow the rules and safety precautions noted in this user's manual may result in an injury or unit damage.
- After a careful reading of the manual, keep it for the entire service life of the unit.
- While transferring the unit control the User's manual must be turned over to the receiving operator.

Symbol legend:

	WARNING!
	DO NOT!

UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS



- Disconnect the unit from power mains prior to any installation operations.



- The unit must be grounded!



- Do not lay the power cable of the unit in close proximity to heating equipment.



- While installing the unit follow the safety regulations specific to the use of electric tools.



- Do not change the power cable length at your own discretion.
- Do not bend the power cable.
- Avoid damaging the power cable.
- Do not put any foreign objects on the power cable.



- Unpack the unit with care.



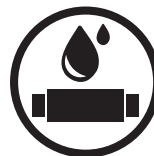
- Do not use damaged equipment or cables when connecting the unit to power mains.



- Do not operate the unit outside the temperature range stated in the user's manual.
- Do not operate the unit in aggressive or explosive environments.



- Do not touch the unit controls with wet hands.
- Do not carry out the installation and maintenance operations with wet hands.



- Do not wash the unit with water.
- Protect the electric parts of the unit against ingress of water.

UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS

- Do not allow children to operate the unit.



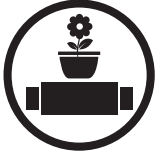
- Do not store any explosive or highly flammable substances in close proximity to the unit.



- Do not open the unit during operation.



- Do not block the air duct when the unit is switched on.



- Do not sit on the unit and avoid placing foreign objects on it.



- Disconnect the unit from power mains prior to any technical maintenance.



- When the unit generates unusual sounds, odour or emits smoke disconnect it from power supply and contact the Seller.



- Do not direct the air flow produced by the unit towards open flame or ignition sources.



- In case of continuous operation of the unit periodically check the security of mounting.



- Use the unit only for its intended purpose.

PURPOSE

The unit is designed to ensure continuous mechanical air exchange in houses, offices, hotels, cafes, conference halls and other utility and public spaces.

The ventilator is equipped with a ceramic regenerator that enables supply of fresh filtered air heated by means of extract air heat energy regeneration.

The ventilator is designed for through-the-wall mounting.

The telescopic ventilator design enables its installation in the walls with thickness 250 mm - 470 mm (9 13/16" - 18 1/2")

The ventilator is rated for continuous operation always connected to power mains.

Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).



THE UNIT MAY NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL OR SENSORY CAPACITIES, OR LACKING THE APPROPRIATE TRAINING.

THE UNIT MUST BE INSTALLED AND CONNECTED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE BRIEFING.

THE CHOICE OF UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.

DELIVERY SET

Name	Number
Ventilator	1 item
Fastening set	1 item
Remote control	1 item
User's manual	1 item
Packing box	1 item

MAIN TECHNICAL PARAMETERS

The ventilator is designed for indoor application with the ambient temperature ranging from -20°C (-4°F) up to $+50^{\circ}\text{C}$ ($+122^{\circ}\text{F}$) and relative humidity up to 80%.

The ventilator is rated as a class I electric appliance.

Ingress Protection (IP) rating from solid objects and liquids IP 24.

The ventilator design is regularly improved, so some models may slightly differ from those ones described in this manual.

DESIGN AND OPERATING LOGIC

The ventilator consists of the telescopic air duct with an adjustable length regulated by position of the inner air duct inside the outer air duct, the ventilation unit and the ventilation hood.

Two filters and the ceramic regenerator are located in the inner duct of the telescope.

The filters are designed to purify supply air and prevent foreign object ingress to the regenerator and the fan.

The ceramic regenerator uses extract air heat energy to warm up supply air flow.

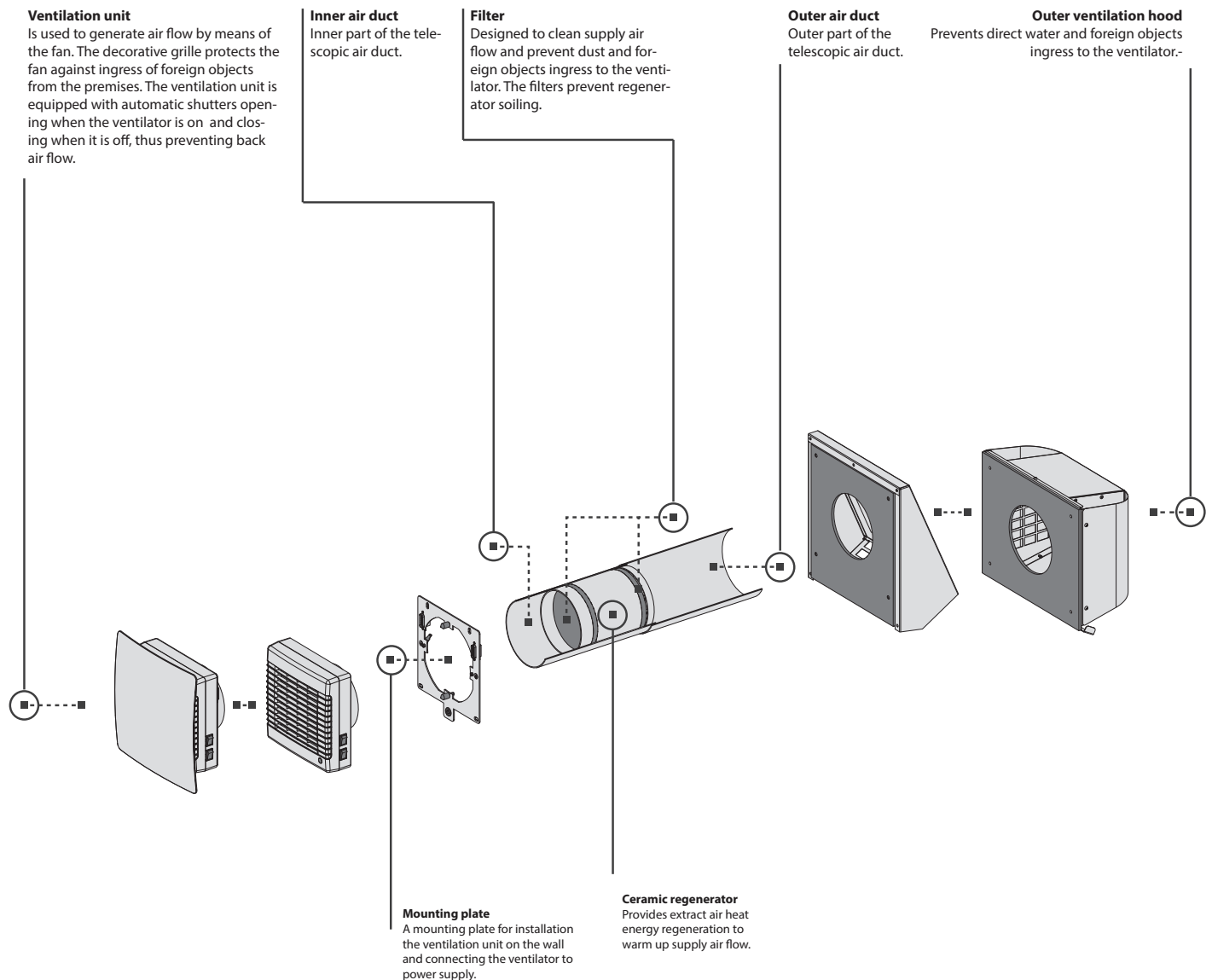
The regenerator is equipped with a pull cord inside to facilitate its withdrawal from the ventilator.

The regenerator is heat insulated with a specially designed insulating material.

The ventilation unit must be installed on inner side of the wall. The ventilation unit is equipped with automatic shutters that shut the air duct off during the ventilator standby and prevent air back draft.

The ventilation hood must be installed on the outer wall side. It is used for directed air discharge and prevention of ingress of water and other objects to the ventilator.

VENTILATOR DESIGN



AUTOMATIC SHUTTERS OPERATION

Ventilator is off - shutters are closed



Ventilator is on - shutters are open



VENTILATOR OPERATING MODES

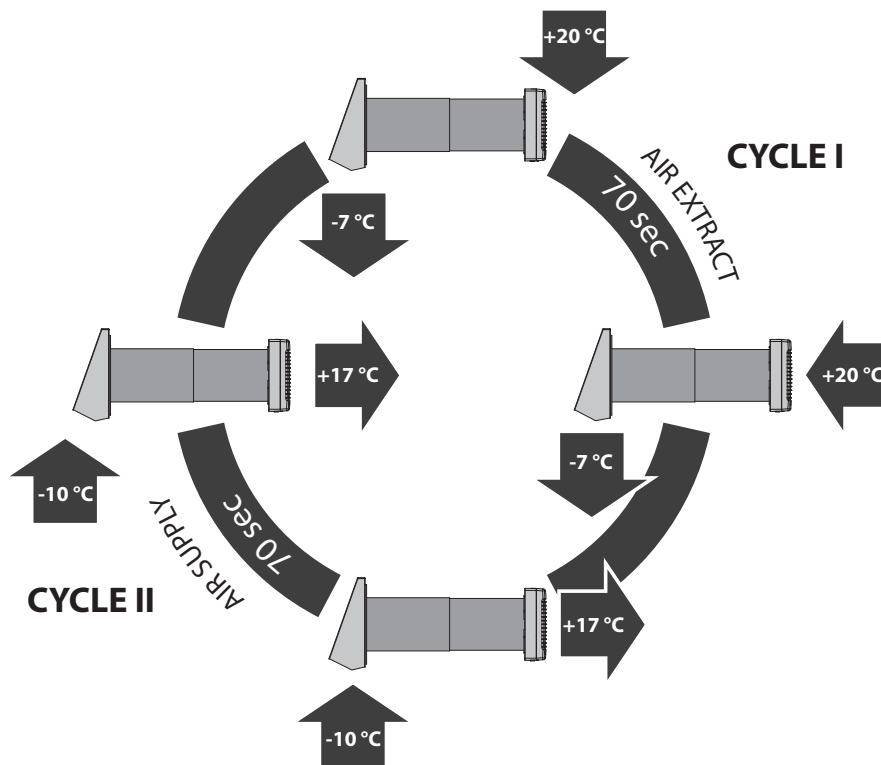
The ventilator has four ventilation modes:

- **Natural air supply** - the automatic shutters are opened, the fan does not run
- **Supply** - the ventilator supplies fresh air to the premise no matter of CN7 jumper position.
- **Ventilation** — the ventilator operates in permanent supply or extract mode at set speed depending on CN7 jumper position.
- **Regeneration** - the ventilator operates in reversible mode with heat and humidity regeneration.

In Regeneration mode the ventilator operates in two cycles, 70 seconds each.

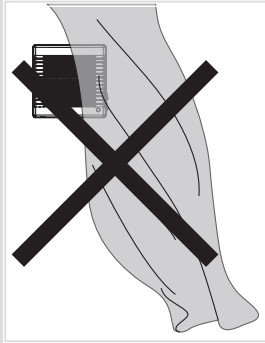
Cycle I. Warm stale air is extracted from the room. As it flows through the regenerator, it heats and moisturizes the regenerator, transferring up to 90% heat energy. In 70 seconds as the ceramic regenerator gets warmed the ventilator is switched to supply mode.

Cycle II. Fresh intake air from outside flows through the ceramic regenerator and absorbs accumulated moisture and heat up to the room temperature. In 70 seconds as the ceramic regenerator gets cooled down, the ventilator is switched into extract mode and the cycle is renewed.



MOUNTING AND SET-UP

READ THE USER'S MANUAL PRIOR TO MOUNTING THE VENTILATOR.

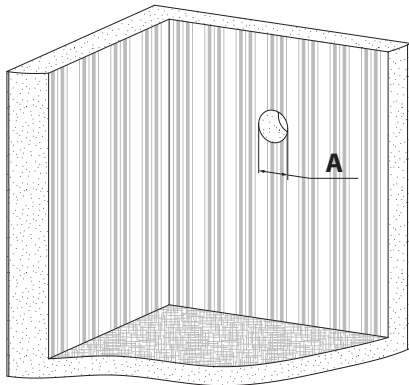


CAUTION!
DO NOT BLOCK THE AIR DUCT OF THE INSTALLED VENTILATOR WITH DUST ACCUMULATING MATERIALS, SUCH AS CURTAINS, CLOTH SHUTTERS, ETC. AS IT PREVENTS AIR CIRCULATION IN THE ROOM. BESIDES, THE CURTAINS MAY PREVENT NORMAL AIR CIRCULATION AND REDUCE THE VENTILATOR PERFORMANCE.

SAF HR RA-50 AND RA-85 VENTILATOR MOUNTING

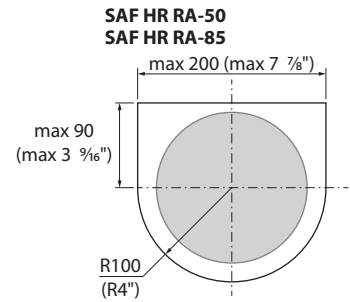
1. To mount the ventilator prepare a thorough hole in the wall. The hole size and profile are shown in the figure below.

2. After preparing a through hole in the wall cut out a 25 mm (1") deep recess for laying of the cables and the contact sockets connected to the mounting plate.
The recommended recess form is shown in the drawing below.



Model	A [mm]	A [inches]
SAFHRRRA-50	Ø 160	Ø 6 3/8"

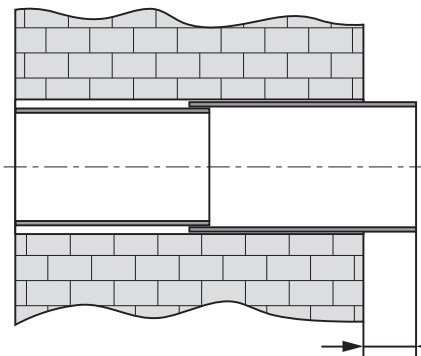
While mounting several connected in series ventilators provide a cavity for the cable layout during the hole preparation to enable series connection of several ventilators.



While mounting several connected in series ventilators provide a cavity for the cable layout during the recess preparation to enable series connection of several ventilators.

3. Install the telescopic air duct inside the wall. The telescopic air duct end must protrude to the distance A stated below:

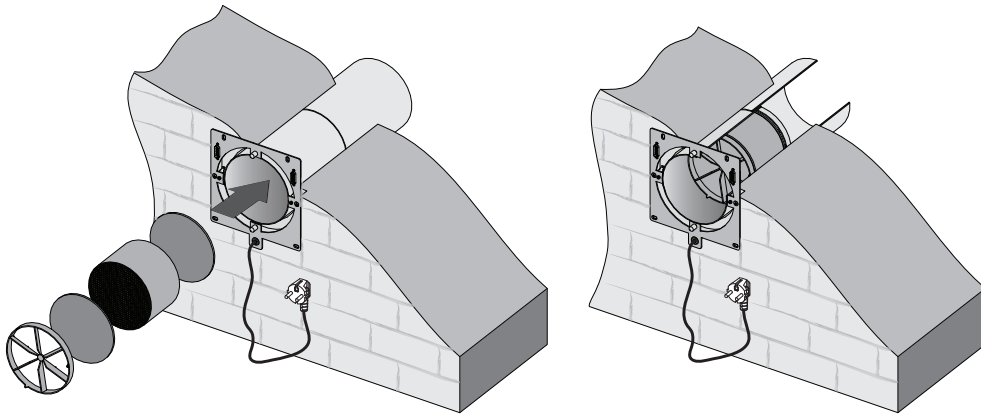
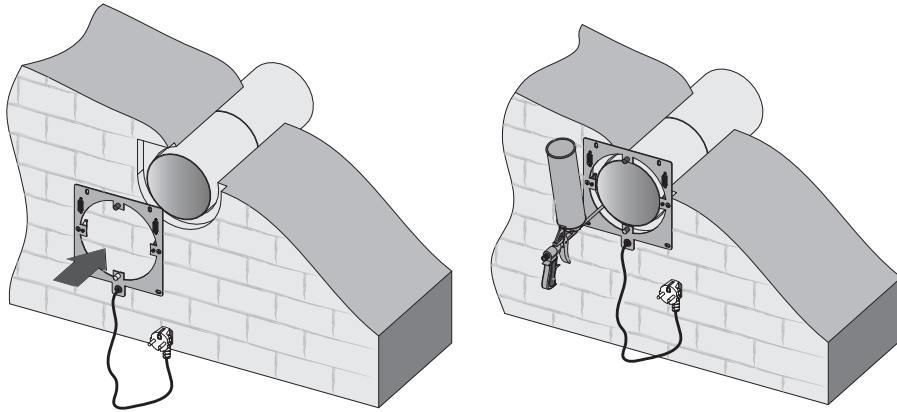

Inside



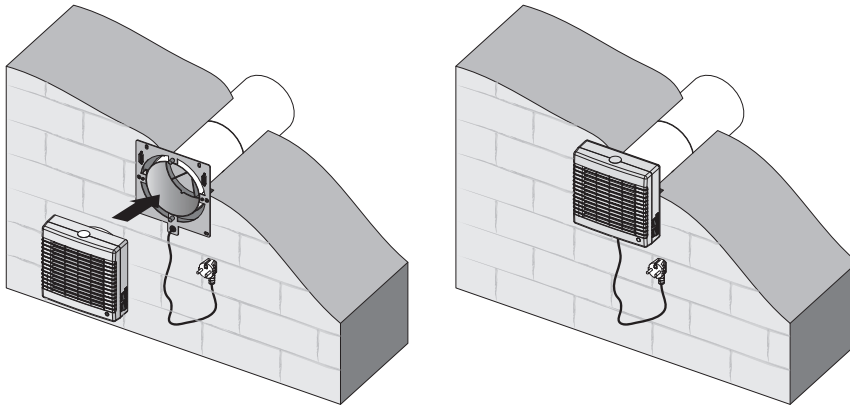

Outdoors

Ventilator model	A, mm (inch)
SAF HR RA1-50	10 (3/8")
SAF HR RA1-85	10 (3/8")

4. Connect the mounting plate following the Wiring Diagram section, page 15. Prepare four fastening holes and fix the mounting plate on the wall with four 4x40 screws and 6x40 dowels from the delivery set. Align the telescopic air duct with respect to the mounting plate and fill the gaps between the wall and the telescopic air duct with a mounting foam. The telescopic air duct must not protrude from the mounting plate surface.



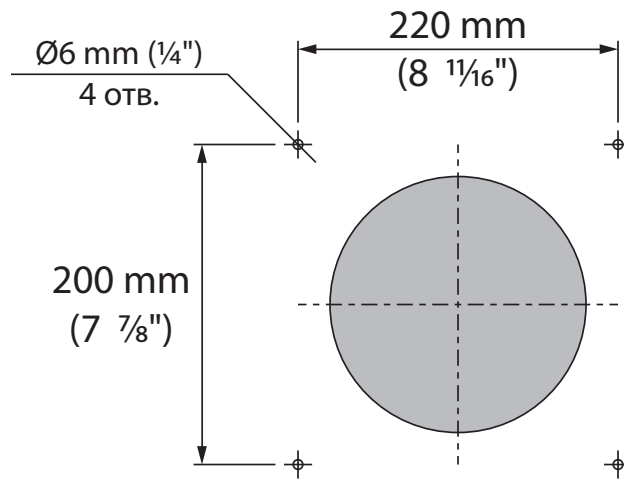
5. Install the ventilation unit on the mounting plate. The ventilation unit is fixed with magnets.



VENTILATION HOOD MOUNTING

1. Mark the fastening holes for the outer ventilation hood and drill holes for the dowel 6x40. For marking convenience use the ventilation hood back part.

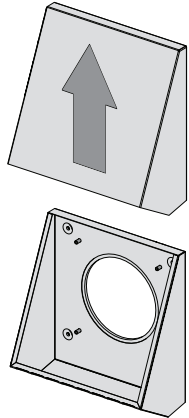
SAF HR RA1-50
SAF HR RA1-85



VENTILATION HOOD MOUNTING

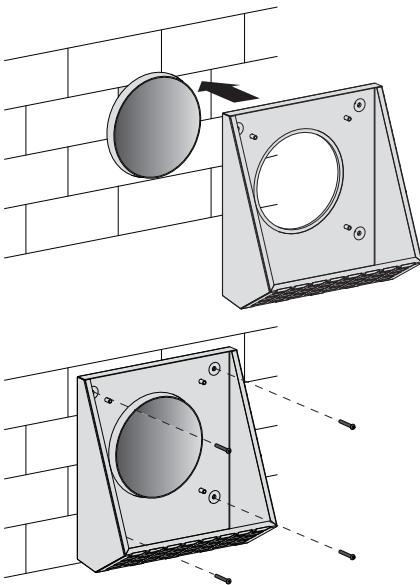
2. Insert the dowels 6x40 from the delivery set into the holes.

3. Disassemble the outer ventilation hood to enable access to the fastening holes.

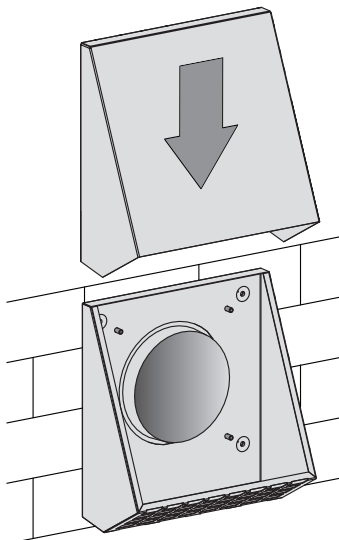


Take off the front part of the outer ventilation hood.

4. Fix the back part of the ventilation hood on the wall with 4x40 screws from the delivery set.



5. Mount the front part of the ventilation hood.



CONNECTION TO POWER MAINS



DISCONNECT THE VENTILATOR FROM POWER MAINS PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS. CONNECTION TO POWER MAINS SHALL ONLY BE PERFORMED BY A PROFESSIONAL ELECTRICIAN QUALIFIED FOR UNASSISTED OPERATIONS WITH ELECTRICAL INSTALLATIONS UP TO 1000 V AFTER CAREFUL STUDY OF THE PRESENT USER'S MANUAL.

THE RATED ELECTRICAL PARAMETERS ARE STATED ON THE RATING PLATE. ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

The ventilator is rated for connection to single-phase ac 1~100-230 V / 50-60 Hz power main using a pre-wire pre-wired power cord and a plug. Connect the ventilator to power mains through the automatic circuit breaker with magnetic trip integrated into the fixed wiring system.

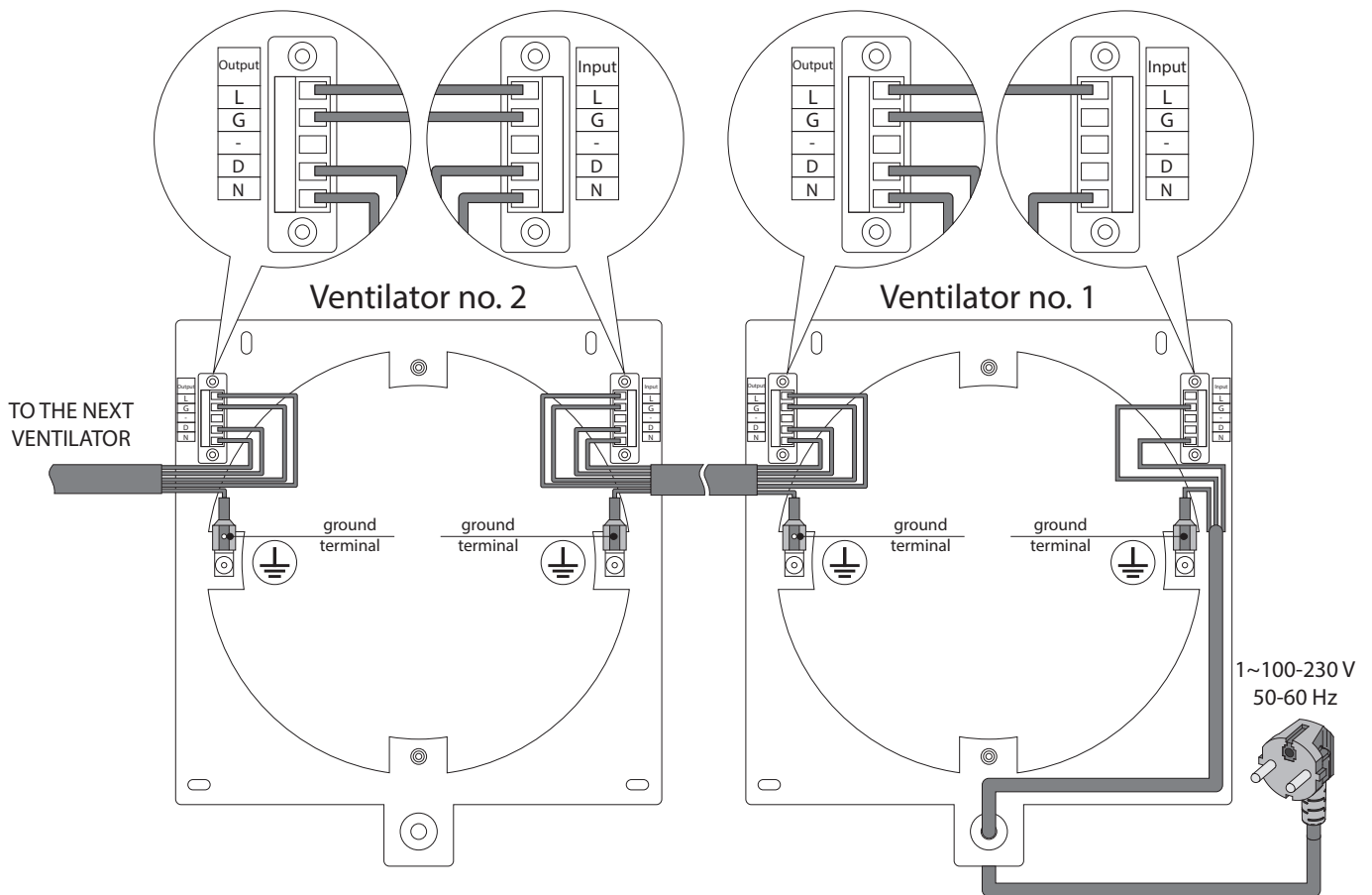
CONNECTION OF SEVERAL VENTILATORS IN SERIES

Connection of the ventilators enables controlling all the connected ventilators by the first ventilator and the common remote control.

To connect the ventilators in series connect the Output contact socket of the first ventilator mounting plate with the Input contact socket of the second ventilator mounting plate. Connect the second ventilator with the third ventilator in the same way, etc.

Up to 10 ventilators may be connected in series. For easy electric installations use a five-wire cable (not included into the delivery set) with the cable cross section not below 0.5 mm². The cable must be rated for operation in an alternating current power supply with the country-specific mains voltage. Disconnect the power cord while connecting the second, third, etc. ventilator in series.

CONNECTION OF SEVERAL VENTILATORS IN SERIES (BACKSIDE VIEW)

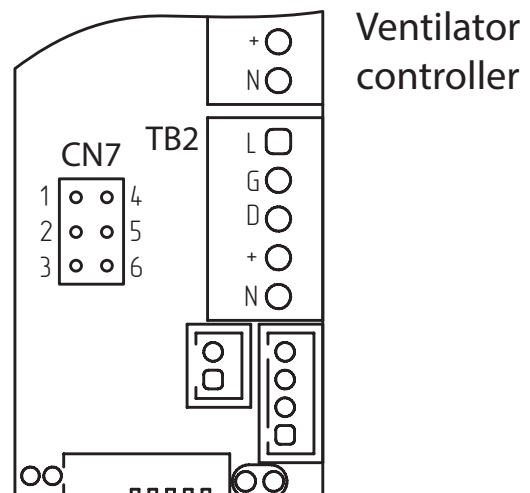


The first ventilator controls all the connected ventilators. The jumper between the contacts 1 and 2 or 2 and 3 of CN7 socket connector determines a flow direction in **Ventilation mode**.

- If the jumper connects the contacts 1 and 2, air is extracted from the room in Ventilation mode (factory setting).
- If the jumper connects the contacts 2 and 3, air is supplied in Ventilation mode.

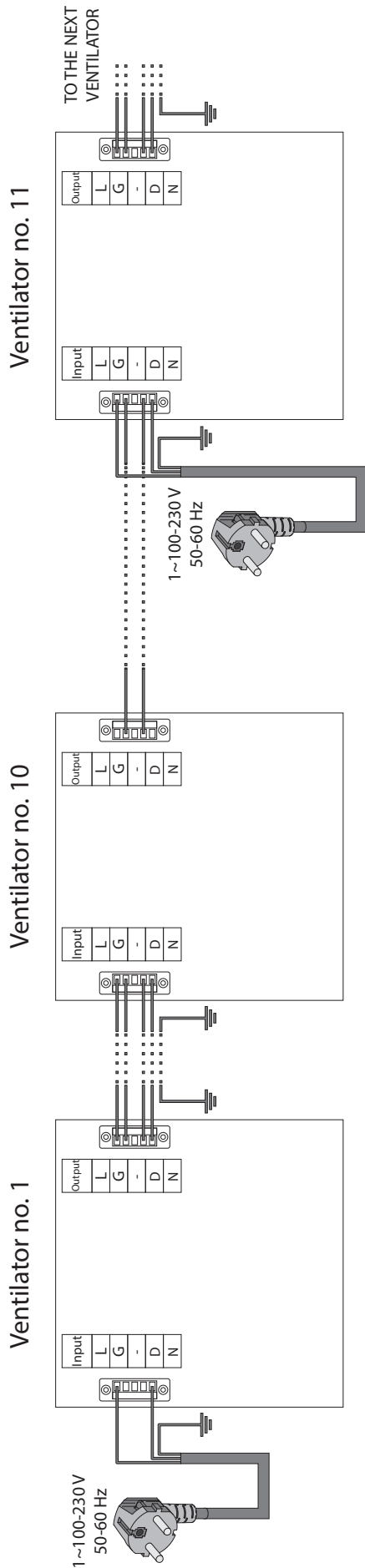
The jumper position at each connected in series ventilator determines a rotation direction in **Ventilation mode** and an operating phase in **Regeneration mode**.

I.e. if the jumper at the first ventilator connects the contacts 2 and 3 and the jumper at the second ventilator connects the contacts 1 and 2, the ventilators operate in opposite directions in **Regeneration mode**.



Ventilator controller

Connection in series of above ten ventilators



CONNECTION OF MORE THAN 10 VENTILATORS IN SERIES

In case of connection above 10 ventilators the ventilator 11 is energized not through the previous ventilator but from power mains (L and N terminals).

The control signals G and D from the 10th ventilator are transferred through the cable $2 \times 0.5 \text{ mm}^2$.

The ventilators no. 12...20 are connected to the ventilator no. 11 in the same way as the ventilators no. 1...10.

All the connected ventilators are controlled with the ventilator no. 1.

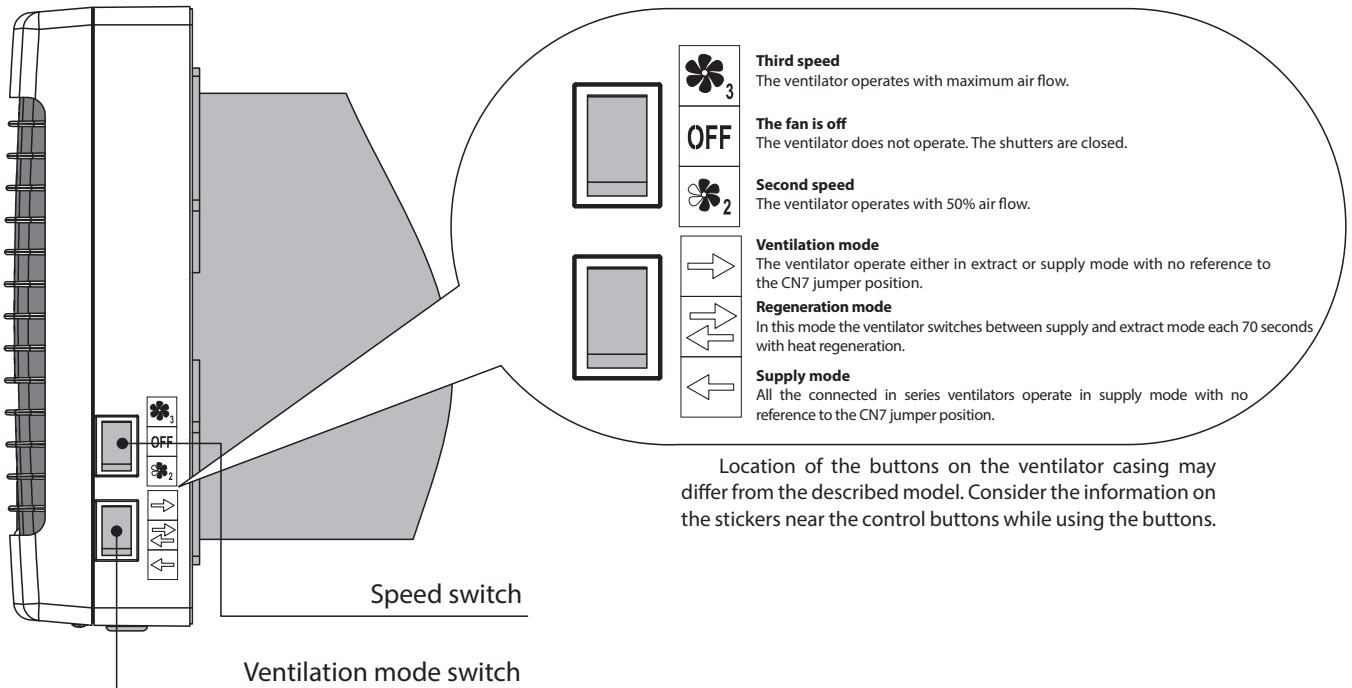


ALL THE CONNECTED IN SERIES VENTILATORS MUST BE GROUNDED!

VENTILATOR CONTROL

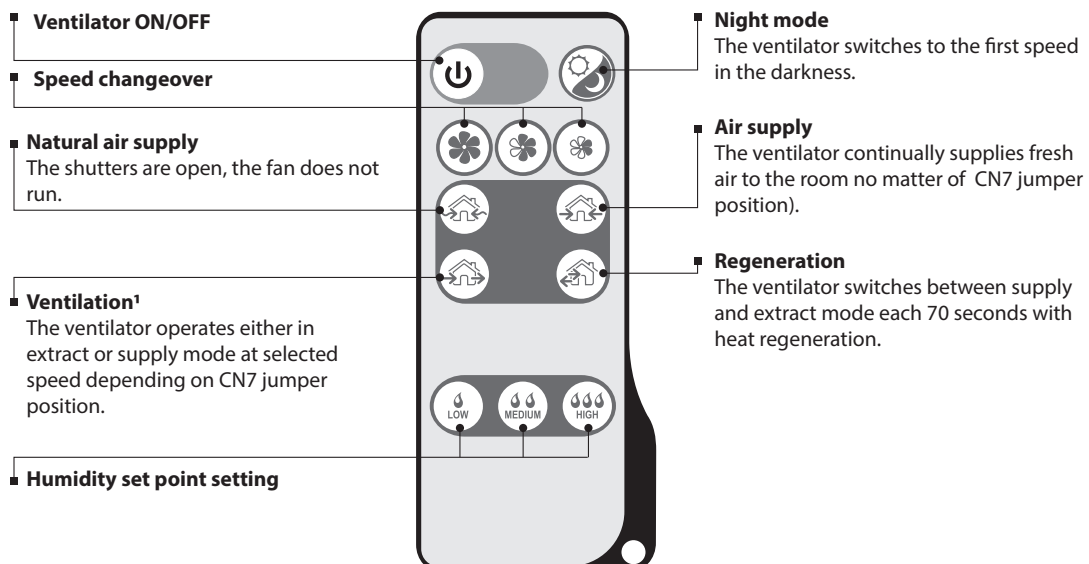
The ventilator is operated with a remote controller or the buttons on the ventilator casing, see the figure below. The operation buttons on the ventilator casing have limited functionality and include activating the second and third speed and setting three of four ventilation modes. The remote controller has wider control capabilities.

CONTROL BUTTONS ON THE VENTILATOR CASING



Location of the buttons on the ventilator casing may differ from the described model. Consider the information on the stickers near the control buttons while using the buttons.

REMOTE CONTROL



¹ - operation of all the connected in series ventilators is determined by the CN7 jumper position.

REMOTE CONTROL

Set the speed switch to  position and the ventilation mode switch to  position to enable remote control of the ventilation unit.

1. Turning ventilator ON/OFF.



ON/OFF

2. Night mode.



ON/OFF

If **Night mode** is activated, the ventilator switches to the first speed in the night, when the light is turned off. Activation of the night mode is confirmed by a long sound signal. Exiting the night mode is confirmed by a short sound signal.

3. Speed setting



First speed.



Second speed.



Third speed.

4. Operation modes.



Natural air supply mode. The room is ventilated in the natural way, the fan is off.



Air supply mode. Air is supplied to the room at a set speed. All connected in series ventilators operate in air supply mode no matter of CN7 jumper position.



Ventilation mode. Air is extracted (factory setting) or supplied at a selected speed. All the ventilators connected in series ventilators operate depending on position of CN7 jumper.



Regeneration mode. The ventilator operates 70 seconds in Supply mode and then 70 seconds in Extract mode with heat regeneration.

5. Humidity control.

The humidity control may be activated in Regeneration mode only by pressing one of the humidity control buttons. In humidity control mode the ventilator monitors the extract air humidity. If the humidity is above the set point, the ventilator turns to higher speed mode. When the actual humidity drops down to the set humidity point, the ventilator turns to lower speed mode. Press any speed button to deactivate the humidity control mode.



Setting humidity threshold - 45%



Setting humidity threshold - 55%



Setting humidity threshold - 65%

HUMIDITY CONTROL MAY BE ACTIVATED WITH THE REMOTE CONTROL ONLY!

MAINTENANCE



DISCONNECT THE VENTILATOR FROM POWER SUPPLY PRIOR TO ANY MAINTENANCE OPERATIONS.

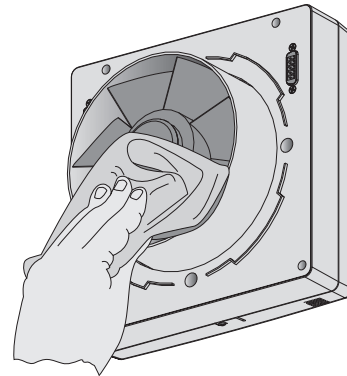
Maintenance of the ventilator means regular cleaning of the ventilator surfaces of dust and cleaning or replacement of the filters.

MAINTENANCE

1. Fan maintenance (once per year).

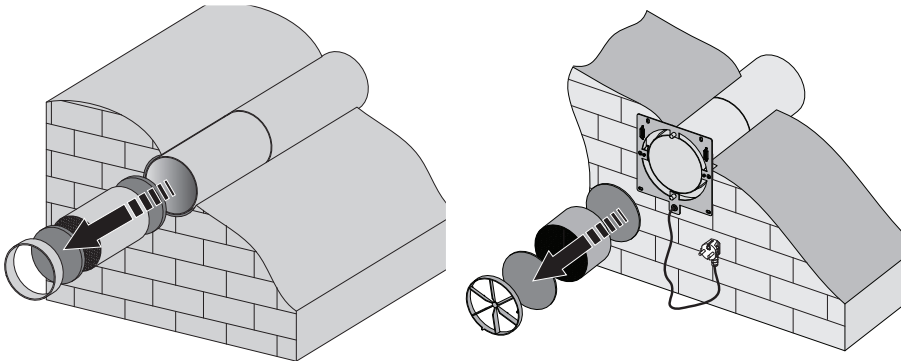
Take off the ventilation unit and clean the fan blades.

To remove dust use a soft brush, cloth or a vacuum cleaner. Do not use water, abrasive detergents, solvents, sharp objects. The impeller blades must be cleaned once in year.



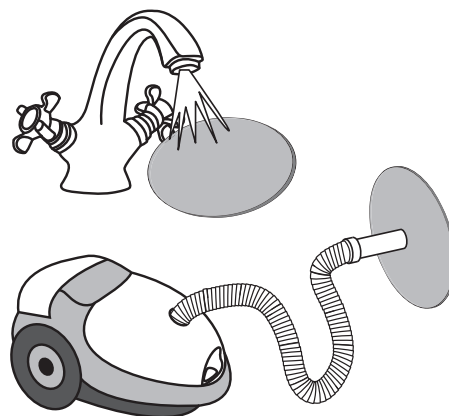
2. Regenerator and filter maintenance (3-4 times per year).

1. Remove the air flow rectifier.
2. Remove the filter in front of the regenerator.
3. Pull the regenerator cord to remove the regenerator from the air duct.
4. Be careful while pulling the regenerator to avoid its damage.
5. Remove the filter after the regenerator.



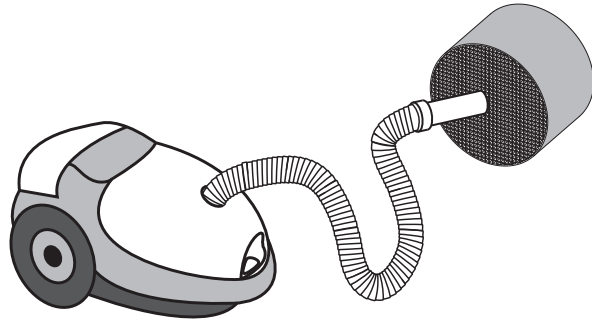
Clean the filters as often as required, but at least 3-4 times a year.


- Once a 90 day period of operation expires, the ventilator generates periodically a sound signal as a reminder of the need to replace or clean the filter. In this case turn the ventilator off and clean or replace the filters.
- Wash the filters, let those get dry and install the dry filters inside the air duct.
- Vacuum cleaning is allowed.
- The filter rated service life is 3 years.
- Contact the Seller for spare filters.



Even regular technical maintenance may not completely prevent dirt accumulation on the regenerator assemblies.

- Subject the regenerator to regular cleaning to ensure high heat recovery efficiency.
- Clean the regenerator with a vacuum cleaner at least once in a year.



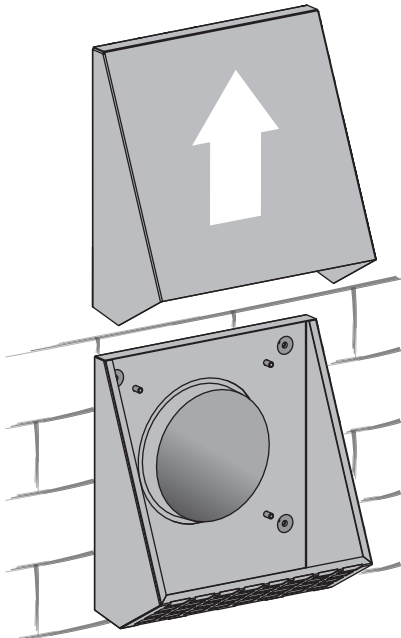
To reset the motor meter install the filters and the regenerator into the ventilator and then press and hold the button  for 10 sec. till a long sound signal.

3. Ventilation hood maintenance (once per year).

The ventilation hood grill may get clogged with leaves and other objects which impairs the unit performance.

Check the ventilation hood twice per year and clean it as often as required.

To clean the ventilation hood disassemble it, then clean the ventilation hood and the air duct.



4. Battery replacement in the remote control (as much as required).

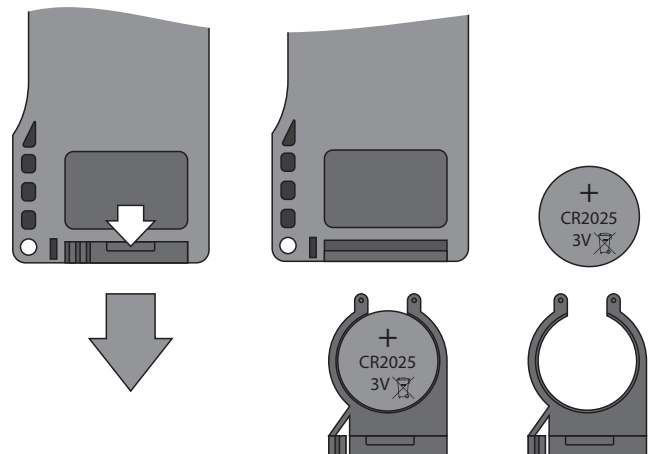
In case of a prolonged use of the remote control the battery must be periodically replaced.

The battery must be replaced in case of no response of the ventilator to pressing the remote control buttons.

The battery type is CR2025.

To replace the battery pull the holder together with the battery from the bottom part of the remote control.

Replace the battery and re-install the holder with a new battery into the remote control.



TROUBLESHOOTING

POSSIBLE FAULTS AND TROUBLESHOOTING

Fault	Possible reasons	Fault handling
The fan does not start up during the ventilator start-up.	No power supply.	Make sure that the ventilator is properly connected to the power mains and make any corrections, if necessary.
	Motor is jammed, the impeller are clogged.	Turn the ventilator off. Troubleshoot the motor jam and the impeller clogging. Clean the blades. Restart the ventilator.
Automatic switch tripping following the ventilator turning on.	Overcurrent resulted from short circuit in the electric circuit.	Turn the ventilator off. Contact the ventilator Seller.
Low air flow.	Low set fan speed.	Set higher speed.
	The filter, the fan or the regenerator are dirty.	Clean or replace the filter, clean the fan and the regenerator. Refer Maintenance, clause 1,2.
The ventilator generates sound signals.	The motor meter is actuated.	Refer Maintenance, clause 2.
High noise, vibration.	The impeller is soiled.	Clean the impeller.
	Loose screw connection of the ventilator casing or the ventilation hood.	Tighten the screws of the ventilator or the outer ventilation hood.

STORAGE AND TRANSPORTATION REGULATIONS

Store the unit in the manufacturer's original packing box in a dry ventilated premise at ambient temperatures from +5°C (+41 °F) up to +40°C (104°F).

Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation. Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit. Follow the handling requirements applicable for the particular type of cargo.

The unit can be carried in the original packing by any mode of transport provided proper protection against precipitation and mechanical damage.

Avoid sharp blows, scratches or rough handling during loading and unloading.

MANUFACTURER'S WARRANTY

The manufacturer hereby warrants normal operation of the unit for 24 months after the retail sale date provided the user's observance of the transportation, storage, mounting and operation regulations.

Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation the user is entitled to elimination of faults by the manufacturer by means of warranty repair at the factory free of charge.

The warranty repair shall include work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- Routine technical maintenance;
- Unit installation / dismantling;
- Unit setup.

To benefit from warranty repair the user must provide the unit, the user's manual with the purchase date stamp and the payment document certifying the purchase.

The unit model must comply with the one stated in the user's manual.

Contact the Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismantled by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packing and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- External damage to the unit casing (excluding external modifications as required for installation) and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- User's violation of the unit installation regulations.
- User's violation of the unit control regulations.
- Unit connection to the power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in the power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- User's violation of the unit transportation regulations.
- User's violation of the unit storage regulations.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment document certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT.



USERS' WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.