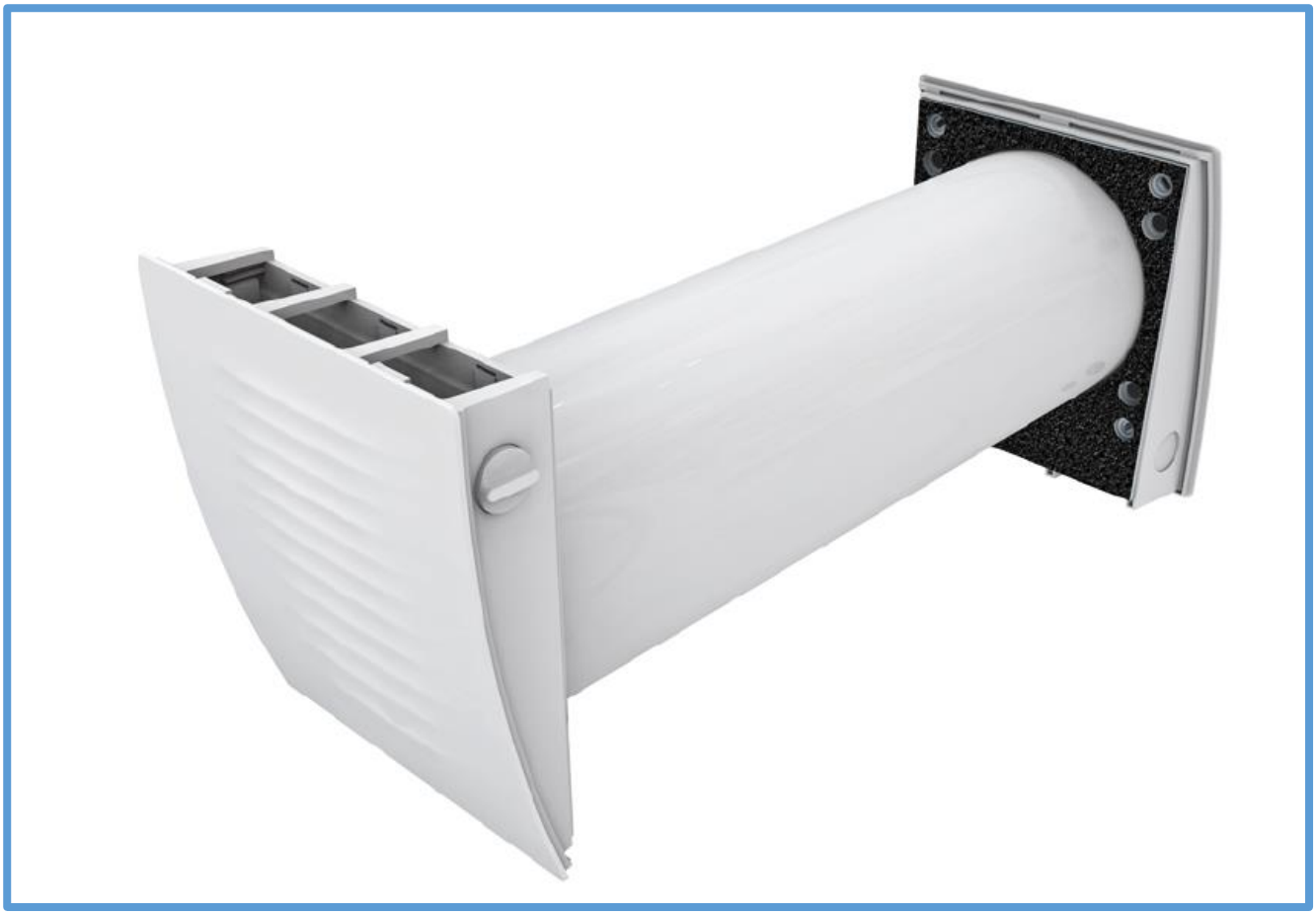
INSTALLATION AND USER'S MANUAL

Heat regeneration single-room reversible ventilator

PICO 50+



V2_2023

These instructions are intended for technical, maintenance and operational personnel.
The operating instructions contain information on the purpose, technical details, principle of operation, design and installation of the PICO 50+ and all its variants.
Technical and maintenance staff must undergo theoretical and practical training in the field of ventilation systems and must be able to operate in accordance with workplace safety regulations and construction norms and standards in force in the country. The information in this user guide is current at the time of writing.
The company reserves the right to change the technical characteristics, shape or configuration of its products at any time in order to take into account the latest technological developments.

Content

1 SAFETY REQUIREMENTS

- Please read the user's manual carefully prior to installing and operating the unit.
- All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.
- 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.

1.1 Unit installation and operation safety precautions

	Unpack the unit with care.		Disconnect the unit from power mains prior to any installation operations.
	The unit must not be grounded!		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.		Do not lay the power cable of the unit in close proximity to heating equipment.
	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.

	Do not store any explosive or highly flammable substances in close proximity to the unit.		When the unit generates unusual sounds, odour, or emits smoke, disconnect it from power supply and contact the Seller.
	Do not open the unit during operation.		Do not direct the air flow produced by the unit towards open flame or ignition sources.
	Do not block the air duct when the unit is switched on.		In case of continuous operation of the unit, periodically check the security of mounting.

	Do not sit on the unit and avoid placing foreign objects on it.		Use the unit only for its intended purpose.
	Do not allow children to operate the unit..		Disconnect the unit from power mains prior to any technical maintenance.

The product must be disposed separately at the end of its service life.
do not dispose the unit as unsorted domestic waste.

2 PURPOSE

The unit is designed to ensure continuous mechanical air exchange in houses, offices, hotels, cafes, conference halls, and other utility and public spaces as well as to recover the heat energy contained in the air extracted from the premises to warm up the filtered stream of intake air. The unit is not intended for organizing ventilation in swimming pools, saunas, greenhouses, summer gardens, and other spaces with high humidity.
Due to the ability to save heating energy by means of energy recovery, the unit is an important element of energy-efficient premises. The unit is a component part and is not designed for stand-alone operation.
It is rated for continuous operation.

The unit should not be operated by children or persons with reduced physical, mental, or sensory capacities, or those without 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.

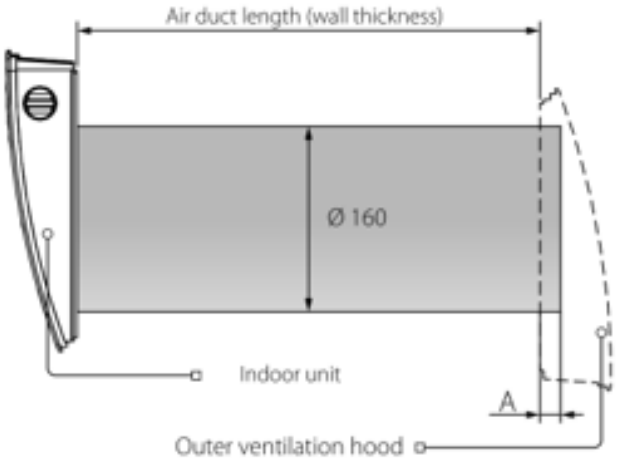
Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).

The temperature in the room where the indoor unit of the ventilator is installed must be in the range from +1 ˚C to +40 ˚C with relative humidity up to 65 % (no condensation build-up). If the conditions for using the ventilator are beyond the specified limits, turn off the ventilator and provide fresh air supply through windows. The inlet air temperature must be in the range from -15 ˚C to +40 ˚C.
The unit is rated as a class II electric appliance and must not be grounded. Valuated ingress Protection (IP) rating from solid objects and liquids is IP24.
The unit design is constantly being improved; thus, some models may be slightly different from those described in this manual.

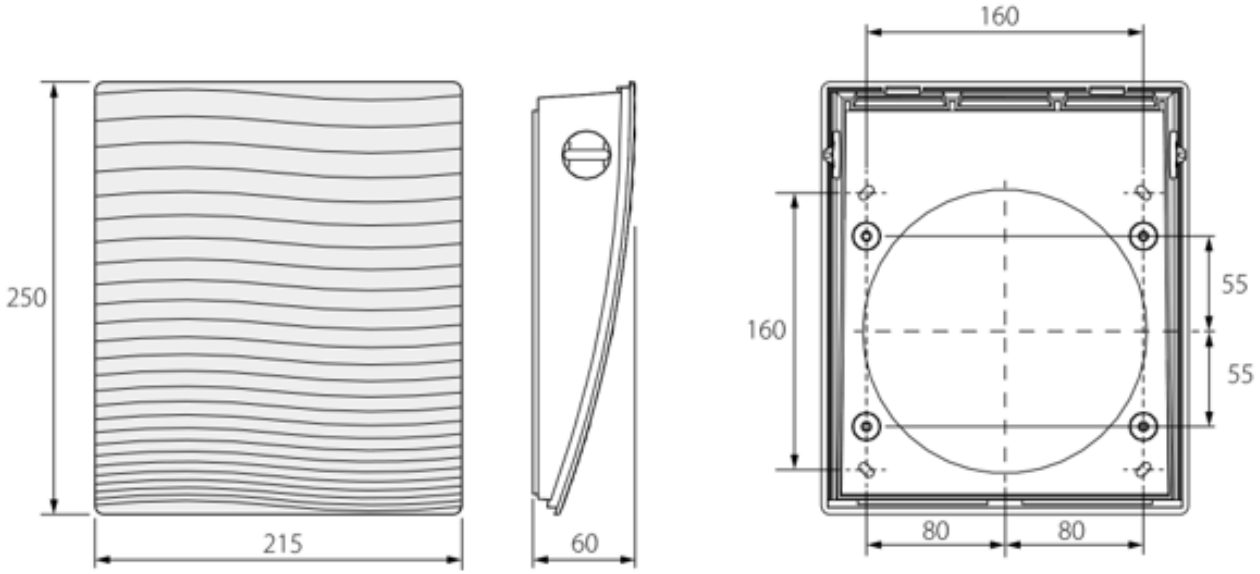
3 TEHNICAL DATA

SPEED	PICO 50+		
	I	II	III
Supply voltage (V)	230		
Power consumption [W]	1.00	2.1	4.3
Total current consumption [A]	0.024	0.026	0.039
RPM [min-1]	519	1555	2330
Air capacity in ventilation mode [m3/h]	15	30	50
Air capacity in regeneration mode [m3/h]	8	15	25
Filters	G3 (option F8)		
Transported air temperature [°C]	-15 do +40		
Sound pressure level @ 1 m [dB(A)]	28	33	39
Sound pressure level @ 3 m [dB(A)]	19	22	29
Heat exchanger material	ceramics		
Heat recovery efficiency [%]	≥ 92		
Pipe diameter [mm]	160		
Ingress protection rating	IP 24		

4 DIMENSIONS



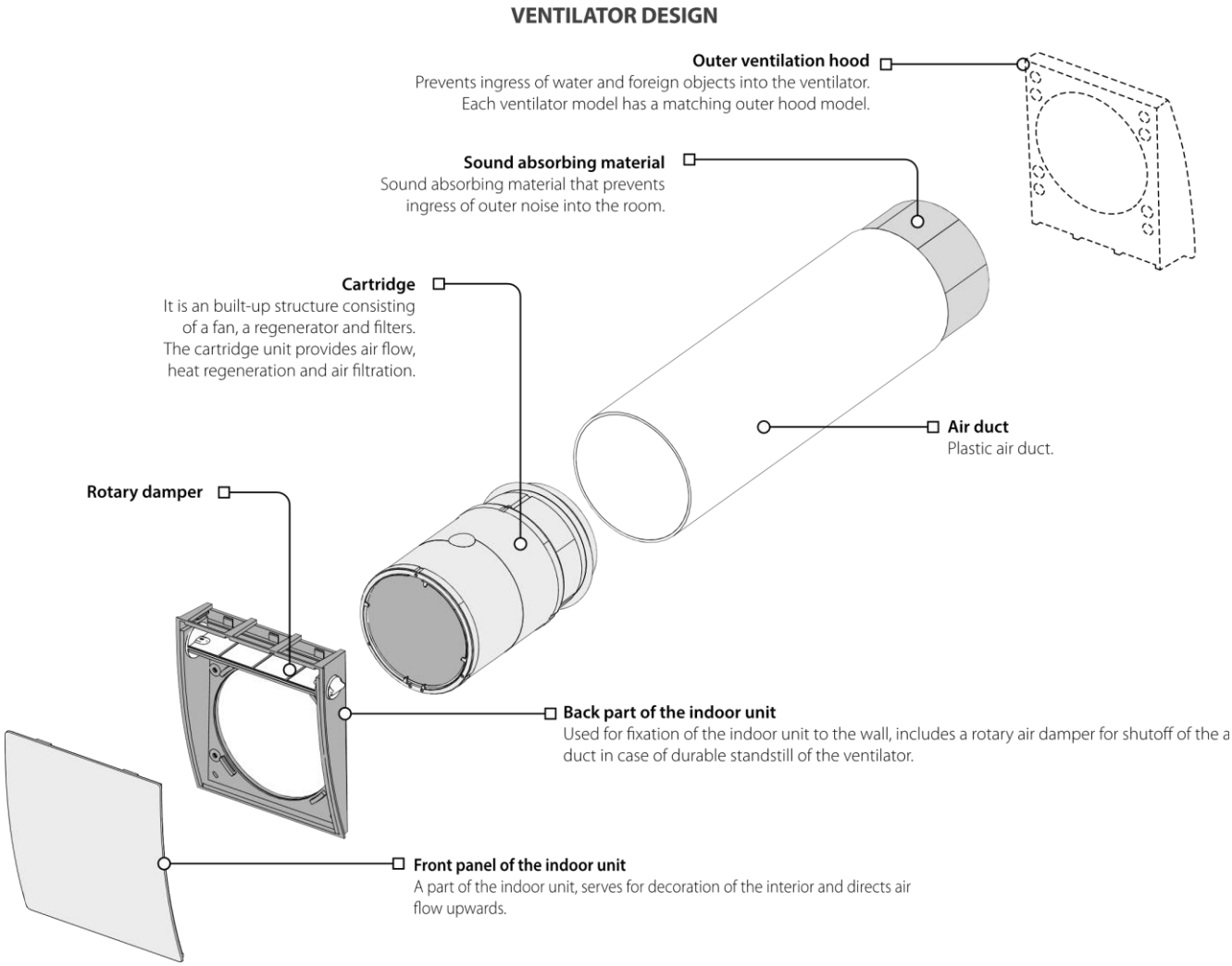
Overall dimensions of the indoor unit [mm]



5 FUNCTIONING

The ventilator consists of an indoor assembly unit with a decorative front panel, a cartridge, an air duct with a sound absorbing mat and an outer ventilation hood.
Cartridge is the basic functioning part of the unit. It consists of a fan, a generator and two filters that ensure primary air filtration and prevent ingress of dust and foreign objects into the regenerator and the fan.
The indoor unit is equipped with a manually operated rotary air damper.
Attention! During closing of air damper, the ventilator continues to run, but the air flow is closed.
The protecting grille or ventilation hood must be installed on the outer wall to prevent ingress of water and foreign objects into the ventilator.

5.1 Ventilator design



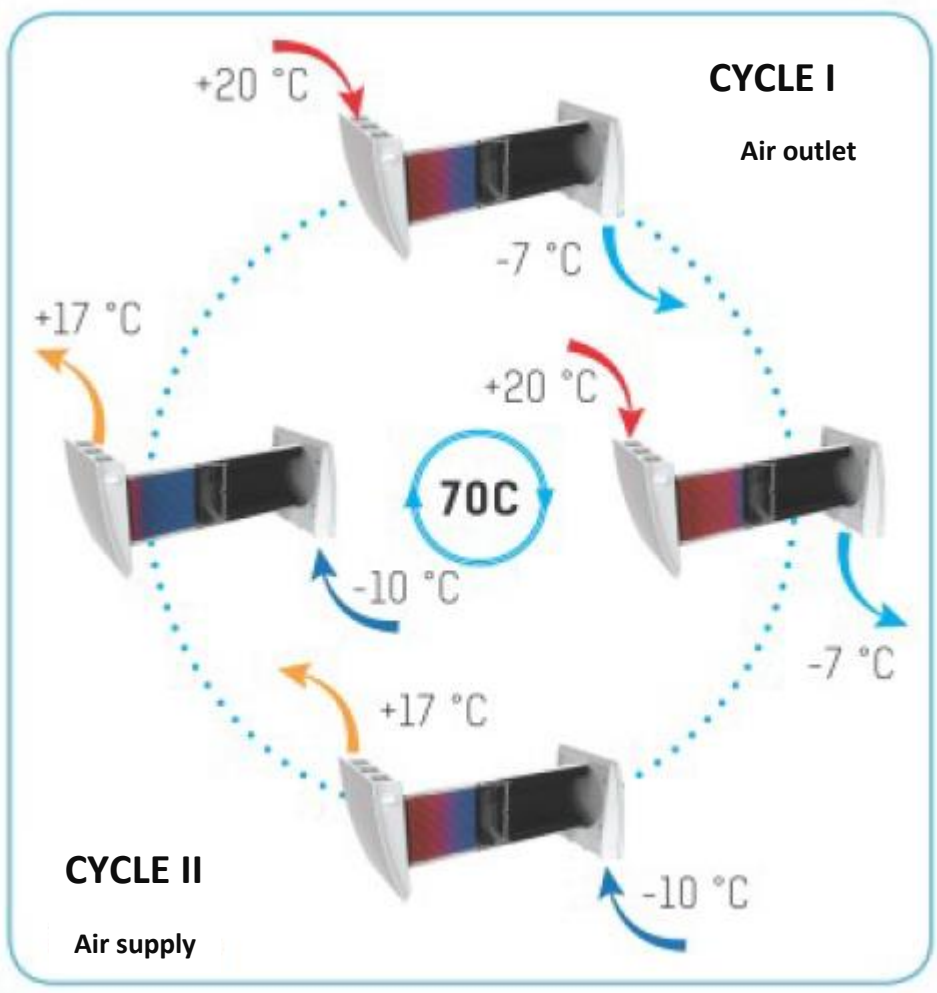
6 VENTILATOR OPERATION MODES

The ventilator has two operation modes:

Ventilation mode
The ventilation system operates in the air supply or exhaust mode at the set speed.
In this mode in case of the installation of two ventilators, one ventilator supplies air into the room and the other one extracts used air.

Regeneration mode.
The ventilator operates cyclically in two cycles, each of 70 seconds, with heat and humidity recovery.

- **Cycle I.** Warm air is removed from the room. As it flows through the heat exchanger, it heats and humidifies the heat exchanger and transfers heat and moisture to the air. 70 seconds after the ceramic regenerator starts to get warmed, the ventilator is switched to the air supply mode.
- **Cycle II.** Fresh inlet air from the outside flows through the ceramic transmitter and absorbs the accumulated heat, moisture and warms to room temperature. Within 70 seconds, after cooling the ceramic gearbox, the fan switches back to air extraction mode and the cycle resumes. In this mode, in the case of the installation of two fans, each runs in its own direction. One supplies air to the room while the other discharges the used air.



7 MOUNTING AND SET-UP

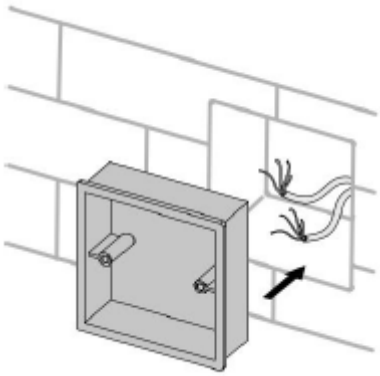
Attention!
The appliance should not be installed in a space where curtains and the like objects obstate air flow!

Read the users manual before installing the unit

7.1 Installation of the control panel with LCD display

Do not use a damaged control panel!
Do not install the control panel on an unequal surface!
Do not use excessive forces when screwing, don't damage the device!

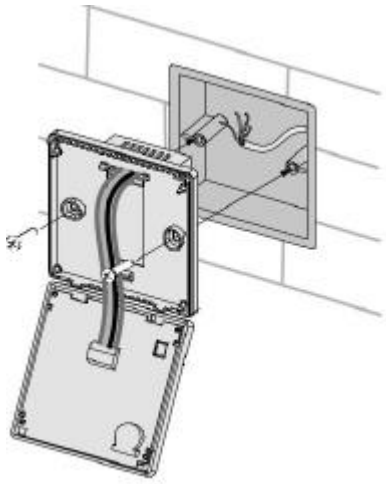
1. Prerpare wall openning, lay required wires and cables to the installation place of the control panel and install the mounting box for wall flush mounting. The mounting box is included in the delivery set

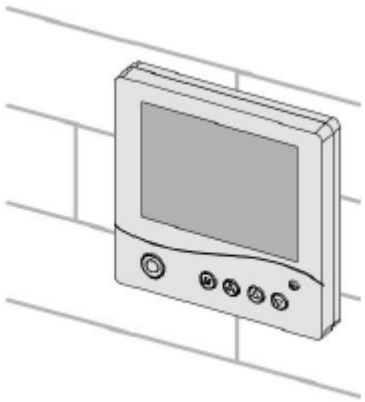


2. Unfasten gently the latches on the lower part of the control panel using a screwdriver and disconnect the front part from the back side. Do not disconnect the connectors on the circuit board in the casing.

3. Connect the wires to the terminal blocks on the back side of the control panel in compliance with external wiring diagrams. Fix the back side of the control panel on the mounting box through the fastening holes with supplied screws.

4. Press the control panel to the frame to click to fix it with latches.





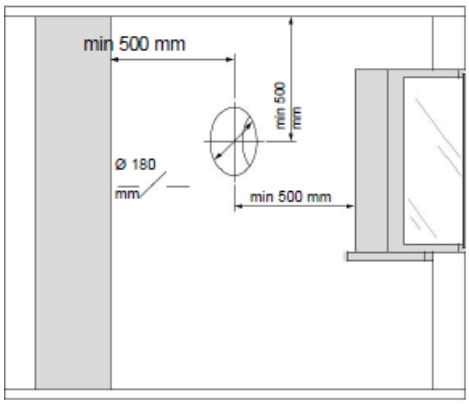
7.2 Ventilator mounting

Read the users manual before installing the unit

Do not block the air duct of the installed unit with dust accumulating materials, such as curtains, cloth shutters, etc. As it prevents air circulation in the room.

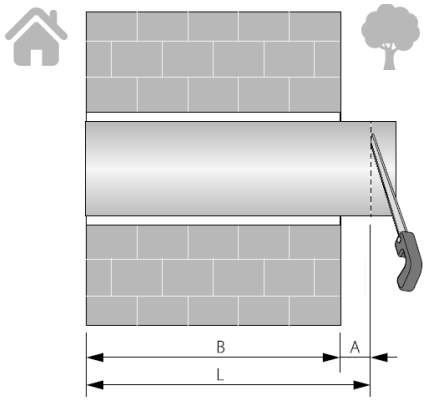
1. Prepare core holes in the outer wall

Make one or two holes in the exterior wall according to the configuration of the ventilation system. For efficient ventilation, the locations of ventilation systems must be as far apart as possible. When preparing the holes, it is recommended to also prepare places for laying the electrical cable and other necessary cables in the wall. The size of the hole and the minimum distance to the surface (eg wall, ceiling or window) and the minimum distance between the devices are shown below.



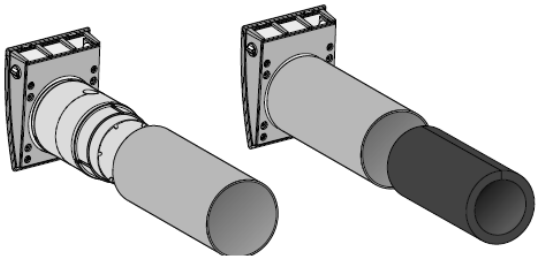
2. Measure the air ducts of the required length

Measure the wall thickness B
The required air tube length is calculated as L = B + A.
A means a part of the air tube from the outside that is required for installation of an external ventilation cover and for condensate drain.
A = 2 cm
Cut the air tube to length L.

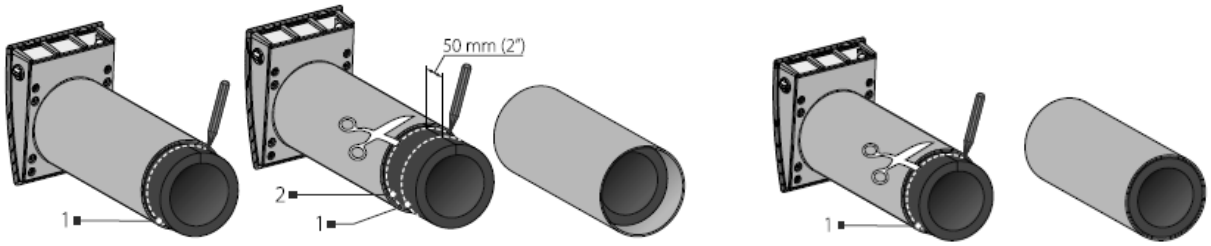


3. Insert the sound absorbing roll in the air duct

Before inserting the cover, adjust its length according to the dimensions of the cartridge, indoor unit, and vent. Insert the cartridge into the air hose during adjustment and close it with outer cover. Roll up the sound-absorbing liner to fit the diameter of the air tube so that the layer of protective paper is on the outside. Insert the sound-absorbing liner into the air tube
towards the end of the cartridge. **Do not remove the paper layers!**

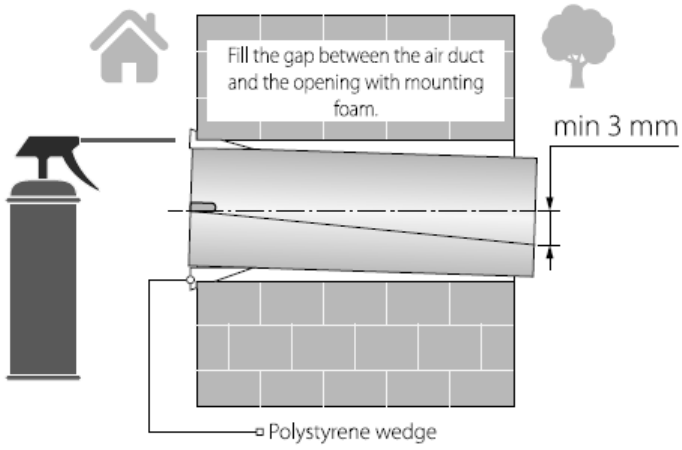


Mark the point 1 on the sound absorbing mat on the level of the air duct edge. Starting from the point 1 draw a line for 50 mm (2”) and mark the line 2. Cut out the excessive part of the sound absorbing mat. Insert the adjusted sound absorbing roll in the air duct. Do not use any adhesives for fixtation. Below on the left is shown ventilator with outer grille and on the right ventilator with outer hood (optionally)



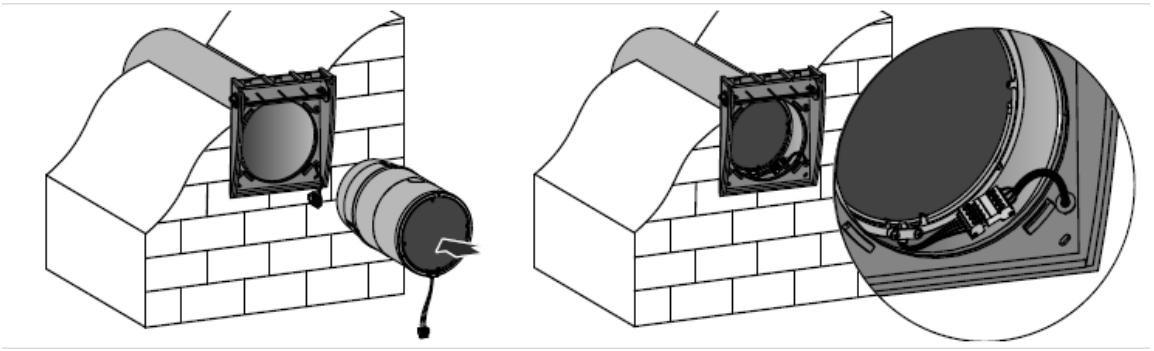
4. Install the air duct in the wall

Install the air hose with a minimum slope of 3 mm down to exterior walls with polystyrene wedges. Fill in the blanks with honey opening and air tube with mounting foam.

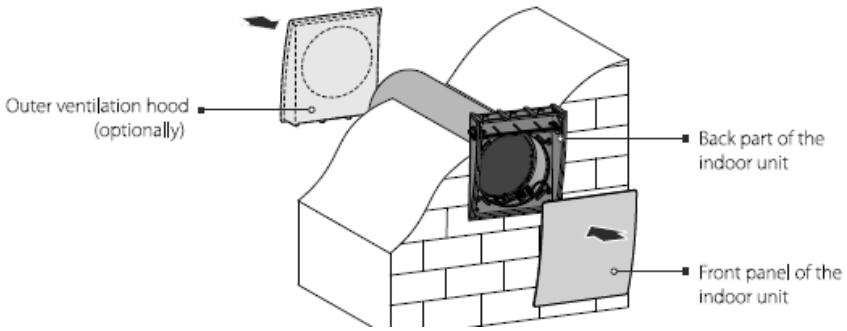


5. Cable mounting

Route the cable through the cable opening and secure the rear of the indoor unit. Insert the cartridge into the air tube. Disconnect the connector on the cartridge wire and connect the wires from the control panel to the steam section according to the wiring diagram on chapter 7.5. Connect the terminal parts.



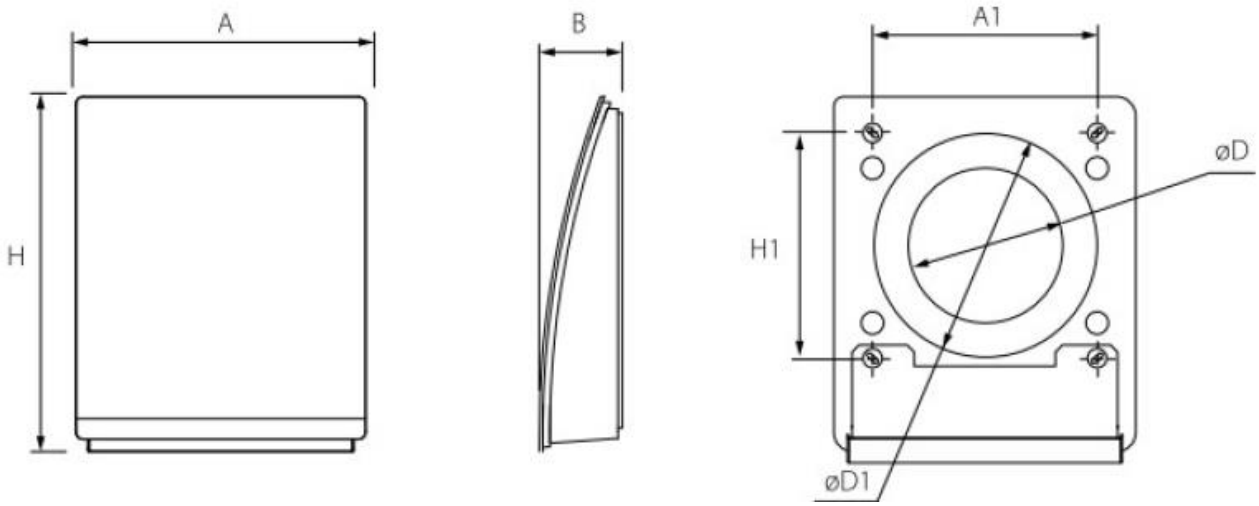
6. Mount the front panel of the indoor unit and fix the outer ventilation hood



Optional version with corner element for exhaust to the edge of the window (surcharge NP).

7.3 Installing the front panel

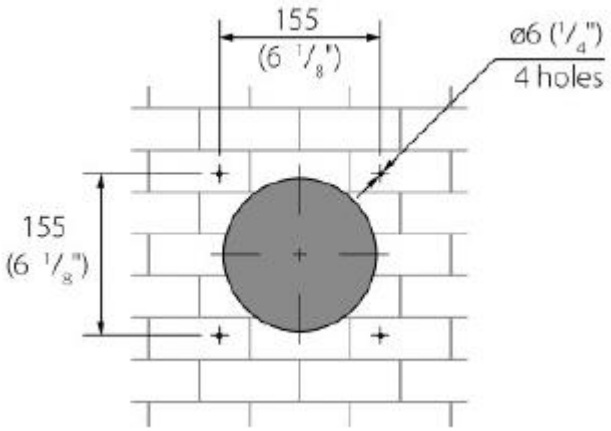
Front panel dimensions



MODEL	DIMENSIONS [mm]						
PICO 50+	ØD	ØD1	A	A1	B	H	H1
	106	164	212	160	60	260	160

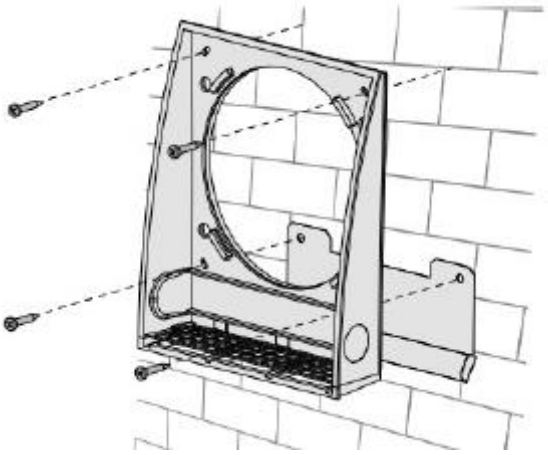
Installing the front panel

1. Mark the mounting holes for the cover and drill 4 holes, 50 mm deep, to fit the plastic inserts (6x40). Use the back wall of the cover for easier marking.

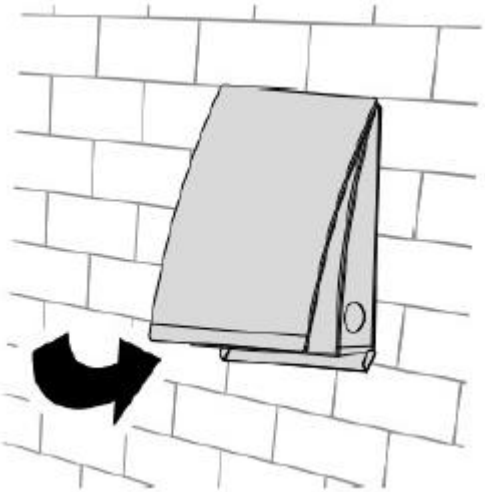


2. Insert the supplied 6x40 plastic inserts into the holes. Remove the outer cover to allow access to the mounting holes. Pull the front cover down towards you.

3. Attach the rear of the bracket to the wall with the supplied 4x40 screws.



4. Install the cover on the bracket.



7.4 Connection to power mains

Switch off before any work with the appliance.
The appliance must be connected to the electrical network by a qualified electrician. The electrical parameters of the device can be found at manufacturer's labels.

Any modification of the internal circuit is prohibited it will revoke the warranty.

The fan is designed for connection to a single-phase mains voltage of 230V / 50 (60) Hz.
For electrical installations, use insulated permanent heat-resistant conductors (cables, wires) with a minimum wire cross-section of 0.5 - 0.75 mm2 via an external circuit breaker mounted on the input power. The tripping current of the circuit-breaker must be selected according to the current consumption of the fan (see table on page 5). The cross-sectional value of the conductor must be selected according to the type of wire, the maximum permissible heating temperature, insulation, length and method of installation.

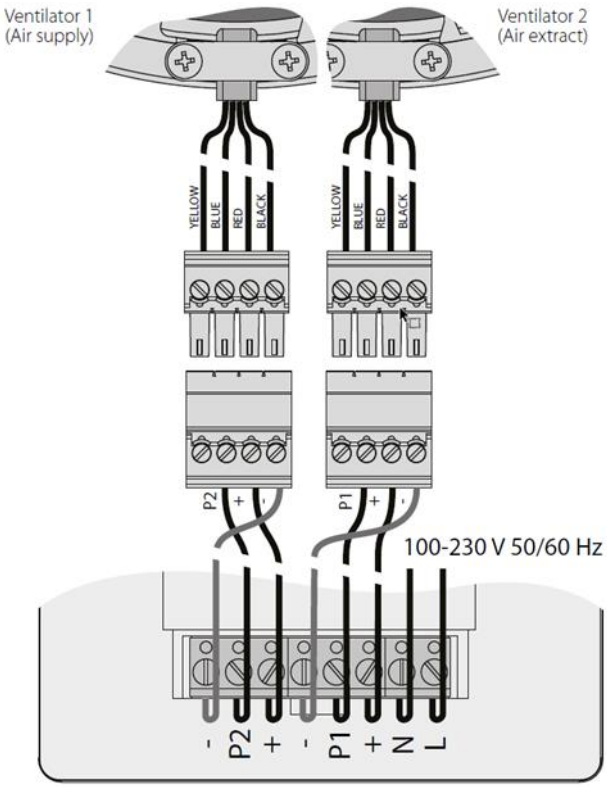
The choice of signal cable must be based on the following criteria:

- • Always use shielded cables.
- • The cross section of the wire depends on the length and is selected according to the table below

Cable length [m]	*Minimum wire cross section in the cable [mm2]*
< 5	*0.25*
< 10	*0.5*
< 15	*0.75*
< 30	*1.5*

- Select the signal cable in accordance with the relevant electrical norms and standards.
- Connect the shield of the signal cable to the "-" terminals of the control panel and the fan. Use only copper wires for all electrical wiring!
- The electrical connections of the ventilation system must be made in accordance with the wiring diagrams.

7.5 Wiring diagram for the ventilator with control panel with LCD display



Ventilation system management

The ventilation system is controlled by a control panel.
You can use the control panel to change the following parameters:

- ventilator speed level: low, medium, high

Mode of operation - regeneration or ventilation

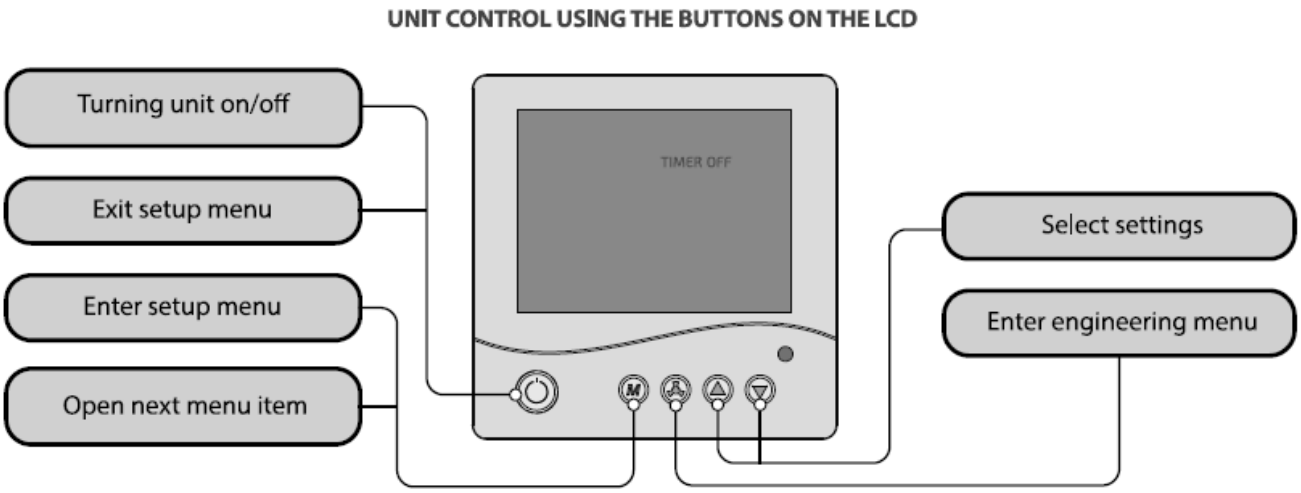
- operation of the ventilation system on the basis of a timer, which enables the following operation: 4 hours at high speed or 8 hours at low speed.

The display shows the following parameters:

- current speed
- current mode of operation
- timer-based operation status (*ON* / *OFF*)
- filter replacement / service required according to filter timer (factory setting 90 days)
- Switch off the ventilation system in the event of a motor failure

If the ventilation system is switched off, the set parameters are stored in the permanent memory of the control panel.

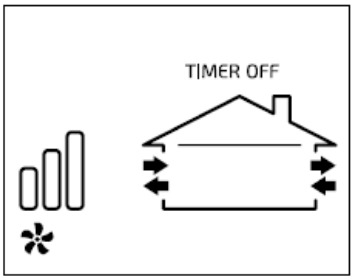
8 UNIT CONTROL USING BUTTONS ON THE LCD



Below are the buttons with the serial number used in the further instructions.

BUTTONS	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

Turning ventilator on



Connect the ventilator to power supply. The display shows the timer operating status.
Press the button ***(1)*** to turn the ventilator on.
The display shows current speed, active operation mode and timer operating status.

User menu

To navigate between the use menu items, press consistently the button ***(2)***.

Speed

Timer

Operation mode

Settings

Parameter setting in the user menu

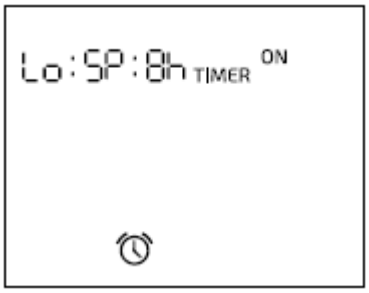
Speed
Parameter setting using buttons ***(8)*** and ***(9)***

Low speed	
Middle speed	
High speed	

Timer
Parameter setting using buttons (8) and (9)

4 hours at the high speed

8 hours at the low speed

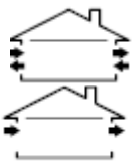


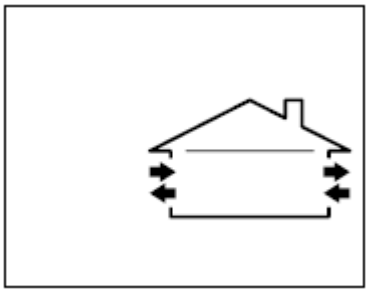
The ventilator reverts to operation with previous speed setting upon countdown of the set time period.

Operation mode
Parameter setting using buttons ***(8)*** and ***(9)***

Regeneration mode

Ventilation mode





In case of installation of two ventilators the air flow direction depends on the external wiring, refer the wiring diagram on the ***page 18***.

SETTINGS

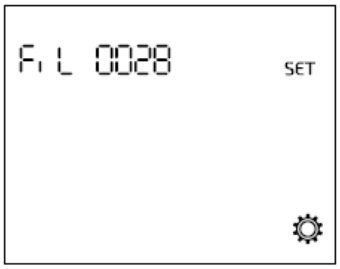
To enter settings press button . For switching across functions push button .

Filter servicing timer	FiL
Configuration	1r2
Deactivation mode	SLEEP
Speed setting	tYPE

Parameter setting in the settings menu

Filter servicing timer
The serviced hour number is displayed. To reset the filter servicing timer press and hold the button (***13***) for 4-5 seconds.

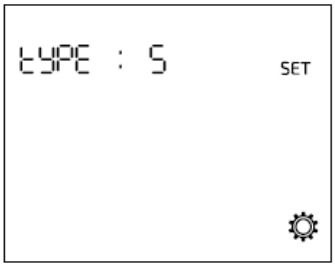
After 90 days on control panel lights up indicator for filter servicing



Configuration
Parameter setting using buttons ***(8)*** and ***(9)***
One ventilator 1
Two ventilators 2

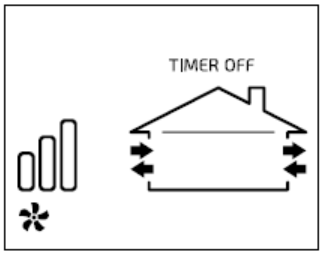
Deactivation mode
Parameter setting using buttons ***(8)*** and ***(9)***
ON: user can turn the ventilator off
OFF: user cannot turn the ventilator completely off, the ventilator will run at the permanent low speed

Speed setting
Parameter setting using buttons ***(8)*** and ***(9)***
Set the value 5.



Return to main screen

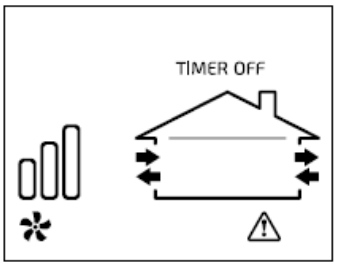
Press several times the button ***(1)*** till the main window of the user menu is displayed. Automatic reset to the main window is performed 20 seconds after the button on the control panel was pressed last time.



Alarm indicator

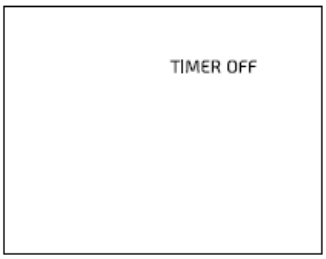
Indicator is displayed during motor alarm

Indicator 

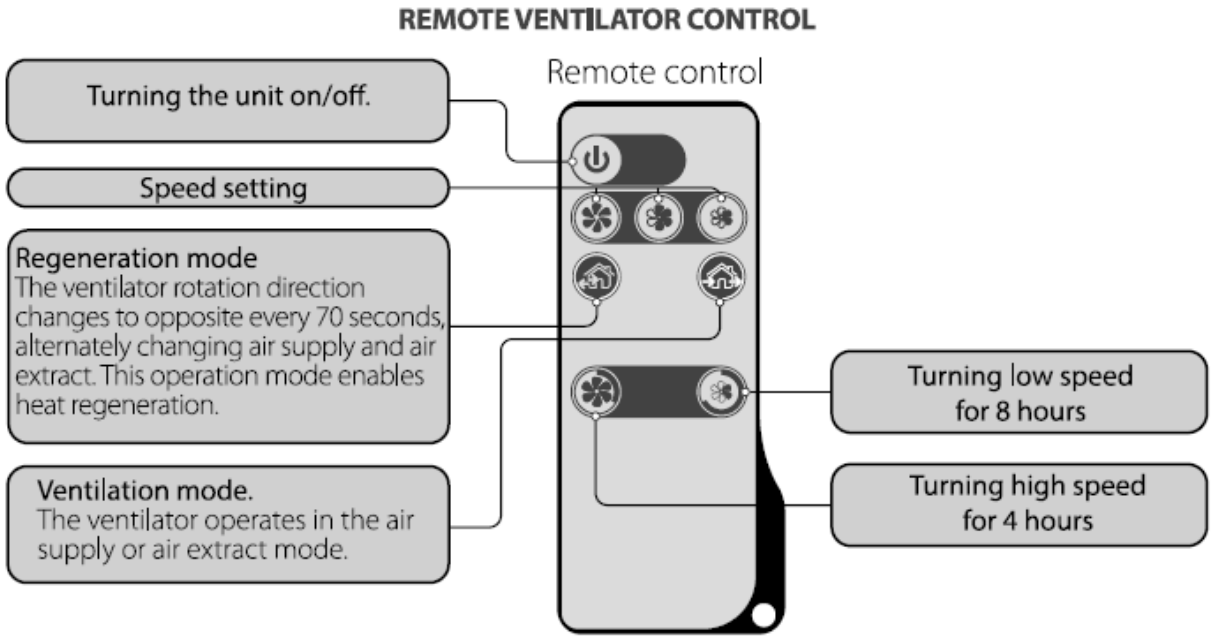


Ventilator turning off

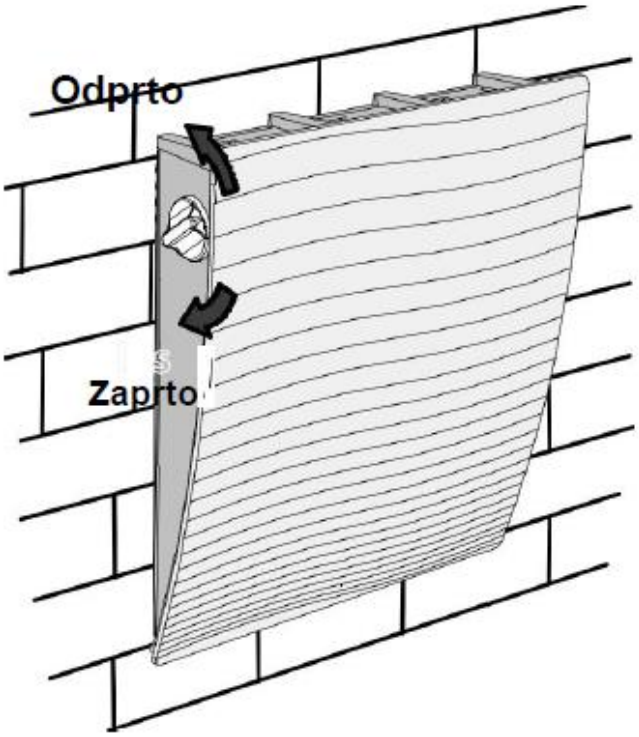
To turn the ventilator off go to the main window and press the button ***(1)***. If the timer was on, the ventilator turns off only after complete countdown of the set time.
To set the ventilator operation in the off status start from the ***point 2***.



9 REMOTE VENTILATOR CONTROL



	Turning ventilator on/off
	Ventilator speed setting: high-medium-low speed respectively
	Regeneration mode The ventilator runs 70 seconds in the supply mode and the next 70 seconds in the extract mode with heat regeneration
	Ventilation mode The ventilator runs exclusively in the supply or extract mode. In case of installation of two ventilators the air flow direction depends on the external wiring, refer the wiring diagram on the page 12.
	Timer control settings:  4 hours at high speed  8 hours at low speed After completing the set countdown, the ventilator reverts to operation with previous speed settings. Press any manual speed button to turn the timer off.



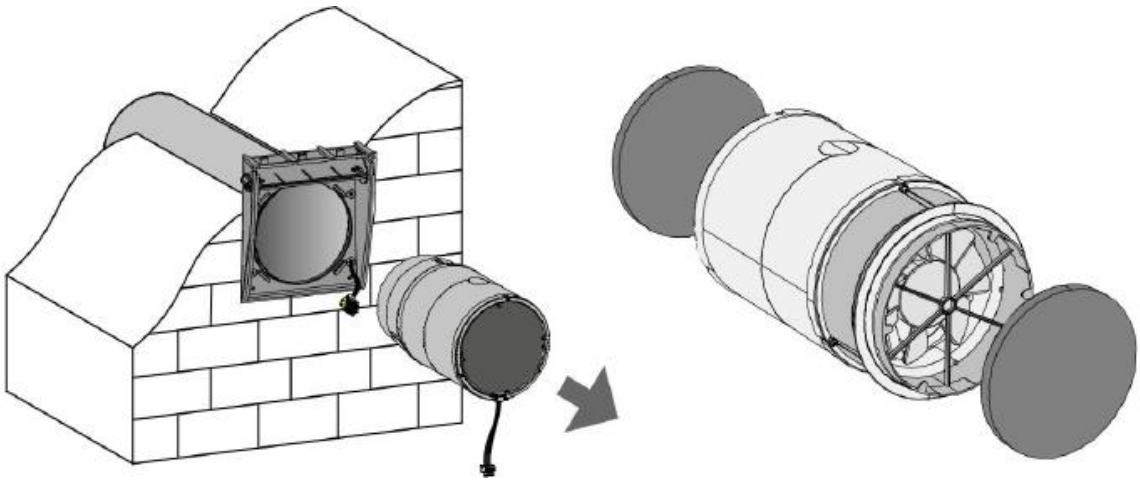
Closing air duct

The inner cover is equipped with a rotating air damper. To open or close the air hose, turn one of the levers on the side walls of the inner cover toward the stop as shown below. The position of the vertical lever corresponds to the OPEN position and the horizontal position corresponds to the CLOSED position.
Warning! Turning the air damper on or off does not turn the fan off or on,
so turn it off beforehand!

10 MAINTENANCE

Disconect the unit from power supply before any maintenance operations!

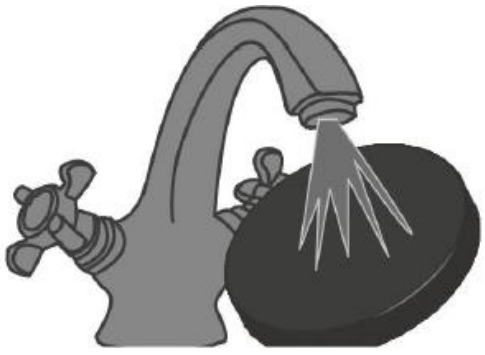
Fan maintenance consists of regular cleaning of dusty surfaces and cleaning or replacement of filters. Follow these steps to access the main service units:
Remove the inner cover front panel, disconnect the connector, and pull the cable to remove the cartridge from the air tube. Remove the filters from the cartridge.



Clean the filters according to the degree of clogging, but at least once every three months.

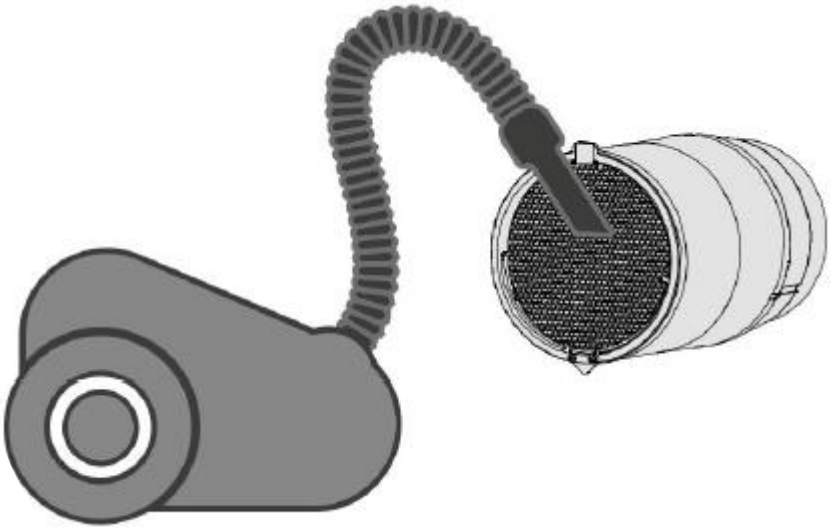
- When the filter timer countdown (90 days) is completed, the filter replacement indicator appears on the control panel.
- Wash the filters and allow them to dry completely. Insert the dry filters back into the air duct.
- Vacuum cleaning is allowed.
- To reset the filter servicing timer, press and hold the button for 4-5 s.
- The rated life of the filter is 3 years.
- Contact the seller for new filters to the ventilator

Replacement indicator



Even regular technical maintenance may not completely prevent dust accumulation on the regenerator and the fan.

- Clean the regenerator regularly to ensure its high heat recovery efficiency
- Clean the regenerator with a vacuum cleaner at least once in a year



11 TROUBLESHOOTING

TROUBLE	POSSIBLE REASONS	TROUBLESHOOTING
The fan does not move during starting the unit. The Control Panel does not display any information and does not respond to key presses.	*There is no power supply*	*To check the power supply contact a qualified person electrician and explore or perhaps there is a connection error.*
It appears on the control panel alarm indicator	*Engine downtime due to clogged rotor*	*Switch off the ventilation system. Try to unclog the rotor.*
	Loss of communication in cable connection between the engine fan and control panel	*Restart the device. For more information contact your dealer*
Triggering the fuse during starting the ventilation system	*Short circuit error in electrical circuit.*	*Switch off the ventilation system. For more information contact your dealer.*
Low air flow	*The fan speed is too low*	*Set a higher speed*
	The filter is clogged, fan or conditioner contaminated.	*Clean or replace the filter. Clean the fan or. conditioner.*
High noise, vibration.	*The rotor is dirty*	*Clean the rotor*

12 STORAGE AND TRANSPORTATION REQUIREMENTS

- Store the device in the original packaging of the manufacturer in a dry, closed ventilated room with a temperature range from + 5˚C to + 40˚C and relative humidity up to 70%.
- The storage area must not contain aggressive vapours and mixtures of chemicals that cause corrosion and impair insulation and sealing.
- Use a suitable lifting device for handling and storage to prevent possible damage to the device.
- Observe the requirements that apply to the handling of a particular type of load.
- The device can be transported in its original packaging by any mode of transport that provides adequate protection against precipitation and mechanical damage. The device should only be transported in the working position.
- Avoid sharp shocks, scratches or rough handling during loading and unloading.
- Allow the device to warm up to operating temperature for at least 3-4 hours before the first start-up after transport at low temperatures.

MANUFACTURY WARRANTY

Goods identification:

The Warranty Statement and Warranty Card apply only to the device listed on the Warranty Card.
The warranty does not apply to:

- - Built-in consumables (filters) that wear or consume when the device is used and need to be checked, cleaned and replaced regularly.

Warranty statement:

- We declare that the device will function properly during the warranty period if used in accordance with its purpose and instructions for installation, use and servicing. The warranty takes effect from the time the product is delivered to the customer, regardless of whether the customer started using it later.
- We undertake to take care of the elimination of defects and defects on the device at our own expense at the request of the customer, if it is given within the warranty period, no later than 45 days from the day of reporting the defect. A device that is not repaired within the specified period will be replaced with a new one at your request.
- The guarantee is valid in the territory of the Republic of Slovenia.
- Against payment, we provide service and spare parts for 3 years after the expiration of the warranty. Spare parts are also parts that are not visually identical to the original (color, shape, size, brand, etc.), but are comparable and have the same function as the original.
- The warranty does not exclude the buyer's rights arising from the seller's liability for defects in the goods.

Warranty periods:

- 2 years general statutory warranty on the device

The warranty does not apply if the defect / damage is due to:

- non-compliance with the operating and maintenance instructions and / or careless handling of the device
- damage caused by mechanical shocks to the customer or a third party
- natural disasters, weather conditions and force majeure (explosion, flood, earthquake, fire, storm, lightning strike, etc.)
- installation and / or commissioning of the device not carried out by a professionally qualified person in accordance with the instructions for installation, commissioning and use of the device
- repairs not carried out by a professionally qualified person
- changes made to the original equipment or if the device has been used for purposes other than those prescribed manufacturer
- installed non-original spare parts
- irregularities in electrical connections, electrical wiring, electrical current and inadequacies of fuses

SELLER: *STAMP:*

ORCA ENERGIJA D.O.O.
Vodovodna ulica 30c
2000 Maribor, Slovenija

ORCA®

INFORMATION