

## **TwinFresh Solar:**

- **SA-60**
- **SA-60-M**
- **SA-60-L**
- **SA-60-2**
- **SA-60 Pro**
- **SA-60-2 Pro**
- **SA-60-M Pro**
- **SA-60-L Pro**



**Single-room reversible energy  
regeneration ventilator**



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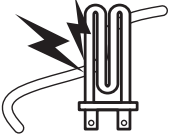
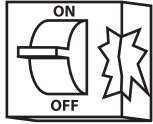

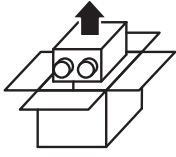

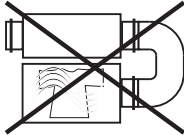
**SAFETY REQUIREMENTS**

- Read the user’s manual carefully prior to the operation and installation of the single-room reversible energy regeneration ventilator, hereinafter the ventilator.
- Installation and operation of the ventilator shall be performed in accordance with the present user’s manual as well as the provisions of all the applicable local and national construction, electrical and technical codes and standards.
- The warnings contained in the present user’s manual must be considered most seriously since they contain vital personal safety information.
- Failure to follow the safety regulations may result in an injury or ventilator damage.
- Read the manual carefully and keep it as long as you use the ventilator.
- While transferring the ventilator control the user’s manual must be turned over to the receiving operator.


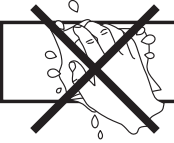
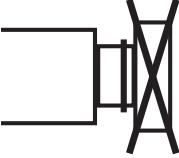
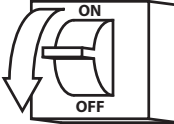
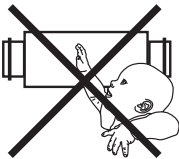

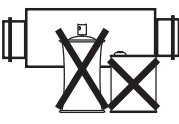
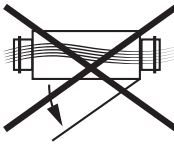
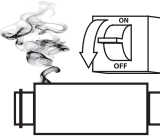

Symbol legend used in the manual:

	<b>WARNING!</b>
	<b>DO NOT!</b>

**VENTILATOR MOUNTING SAFETY PRECAUTIONS**

	The ventilator must be disconnected from the power supply prior to every installation or repair operation.		The ventilator must not be operated outside the temperature range stated in the user’s manual or in aggressive or explosive environments.
	Do not position any heating devices or other equipment in close proximity to the ventilator power cord.		Do not use damaged equipment or conductors to connect the ventilator to power mains.
	While installing the ventilator follow the safety regulations specific to the use of electric tools.		Unpack the ventilator with care.
	Do not change the power cord length at your own discretion. Do not bend the power cord. Avoid damaging the power cord.		Use the ventilator only as intended by the manufacturer.

## VENTILATOR OPERATING SAFETY PRECAUTIONS

	<p>Do not touch the controls with wet hands. Do not carry out the ventilator maintenance with wet hands.</p>		<p>Do not wash the ventilator with water. Protect the ventilator electric parts from water ingress.</p>
	<p>Do not block the air duct when the ventilator is on.</p>		<p>Disconnect the ventilator from power supply before maintenance.</p>
	<p>Do not let children operate the ventilator.</p>		<p>Do not damage the power cable while operating the ventilator. Do not put any objects on the power cable.</p>
	<p>Keep explosive and inflammable products away of the ventilator.</p>		<p>Do not open the operating ventilator.</p>
	<p>In case of unusual sounds, smoke disconnect the ventilator from power supply and contact the service centre.</p>		<p>Do not let air flow from the ventilator be directed to the open flame devices or candles.</p>

## INTRODUCTION

This user's manual includes technical description, operation, installation and mounting guidelines, technical data for the energy regeneration ventilator TwinFresh Solar, hereinafter the ventilator.

## USE

The ventilator is designed to arrange permanent controllable air exchange in flats, cottages, hotels, cafes and other domestic and public premises. The ventilator is equipped with a ceramic regenerator that enables supply of fresh air due to 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 various thickness, see the table below:

Wall thickness	Ventilator model
from 255 mm (10 1/16") up to 475 mm (18 11/16")	<ul style="list-style-type: none"> <li>• TwinFresh Solar SA-60</li> <li>• TwinFresh Solar SA-60 Pro</li> <li>• TwinFresh Solar SA-60 (120 V/60 Hz)</li> <li>• TwinFresh Solar SA-60 Pro (120 V/60 Hz)</li> </ul>
from 475 mm (18 11/16") up to 690 mm (27 3/16")	<ul style="list-style-type: none"> <li>• TwinFresh Solar SA-60-M</li> <li>• TwinFresh Solar SA-60-M Pro</li> <li>• TwinFresh Solar SA-60-M (120 V/60 Hz)</li> <li>• TwinFresh Solar SA-60-M Pro (120 V/60 Hz)</li> </ul>
from 690 mm (27 3/16") up to 1150 mm (45 1/4")	<ul style="list-style-type: none"> <li>• TwinFresh Solar SA-60-L</li> <li>• TwinFresh Solar SA-60-L Pro</li> <li>• TwinFresh Solar SA-60-L (120 V/60 Hz)</li> <li>• TwinFresh Solar SA-60-L Pro (120 V/60 Hz)</li> </ul>
from 120 mm (4 3/4") up to 470 mm (18 1/2")	<ul style="list-style-type: none"> <li>• TwinFresh Solar SA-60-2</li> <li>• TwinFresh Solar SA-60-2 Pro</li> <li>• TwinFresh Solar SA-60-2 (120 V/60 Hz)</li> <li>• TwinFresh Solar SA-60-2 Pro (120 V/60 Hz)</li> </ul>

The ventilator is powered by the solar energy generated by a solar panel. In case of a long-term lack of sunshine the ventilator switches to power supply from 230 V / 50 Hz (120 V / 60 Hz) power mains.

Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, coarse dust, soot and oil particles, sticky substances, fibrous materials, pathogens or any other harmful substances.



**THE VENTILATOR IS NOT INTENDED TO BE USED BY CHILDREN, PHYSICALLY OR MENTALLY DISABLED PERSONS, PERSONS WITH SENSORY DISORDER, PERSONS WITH NO APPROPRIATE QUALIFICATION.**

**INSTALLATION AND CONNECTION OPERATIONS MUST BE PERFORMED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE SAFETY BRIEFING.**

**THE VENTILATOR INSTALLATION SITE MUST PREVENT ACCESS BY UNATTENDED CHILDREN.**

## DELIVERY SET

Name	Quantity
Ventilator	1 item
Solar panel	1 item
Power and control unit KVS-T	1 item
Cable, 3 m long (5x0.25)	1 item
Battery unit (only for the Pro models)	1 item
Silicone plug	1 item
Fastening kit	-
User's manual	1 item
Packing box	1 item

## DESIGNATION KEY

## TwinFresh Solar SA-60-X XXX

- **Battery unit**  
\_ - no battery unit is included  
Pro - battery unit is included in the delivery set
- **Outer ventilation hood type**  
\_ - tapered metal ventilation hood for standard wall thickness  
2 - metal ventilation hood for thin walls
- **Rated air capacity [m<sup>3</sup>/h]**
- **Controls availability**
- **Telescopic air duct section profile**  
S - square cross section
- **Equipped with a solar panel**
- **TwinFresh Solar series**

## MAIN TECHNICAL PARAMETERS

The ventilator is designed for indoor application with the ambient temperature ranging from -20°C (-4 °F) up to +50°C (+122 °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.

## VENTILATOR TECHNICAL DATA

Speed	Supply Voltage [V]	Power [W]	Current [A]	Air Capacity [m <sup>3</sup> /h] (CFM)	RPM	Noise Level [dB(A)] (Sones)	Max. Transported Medium Temperature [°C (°F)]	Heat Recovery Efficiency [%]	IP
1	12	2,4	0,20	35 (20,6)	1150	22(0,5)	from -20 °C (-4 °F) up to +50 °C (122 °F)	<91	24
2		3,0	0,25	58 (34,1)	2100	29(0,81)			

## SOLAR PANEL TECHNICAL DATA

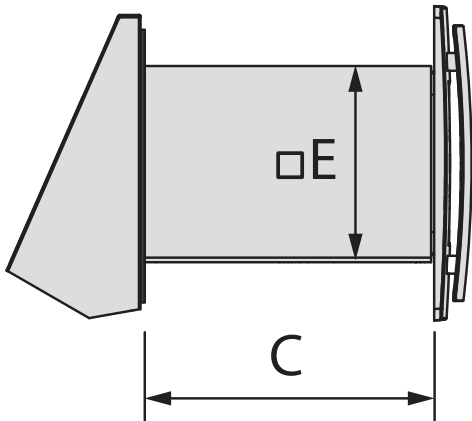
Supply Voltage [V]	18
Current [A]	1,12
Power [W]	20

## BATTERY UNIT TECHNICAL DATA

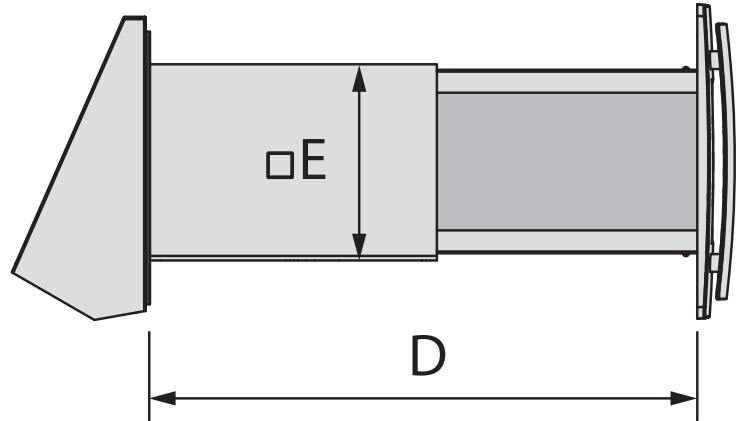
Battery unit	
Supply Voltage [V]	12
Charging capacity [Ah]	3,5
Charger	
Supply Voltage [V]	12
Current [A]	3

## TWINFRESH SOLAR OVERALL DIMENSIONS

Minimum air duct length



Maximum air duct length



Outer ventilation hood	Ventilation grille	Solar panel	Battery unit

Dimensions [mm (inch)]	TwinFresh Solar SA-60	TwinFresh Solar SA-60-M	TwinFresh Solar SA-60-L	TwinFresh Solar SA-60 Pro	TwinFresh Solar SA-60-2	TwinFresh Solar SA-60-2 Pro
A	300 (11 13/16")				260 (10 1/4")	
B	280 (11")				310 (12 3/16")	
C	255 (10 1/16")	475 (18 11/16")	690 (27 3/16")	255 (10 1/16")	120 (4 3/4")	
D	475 (18 11/16")	690 (27 3/16")	1150 (45 1/4")	475 (18 11/16")	470 (18 1/2")	
E	164 (6 7/16")					
F	274 (10 13/16")					
G	426 (16 3/4")					
I	356 (14")					
J	122 (4 13/16")					
K	28 (1 1/8")					
L	-	-	-	257 (10 1/8")	-	257 (10 1/8")
M	-	-	-	148 (5 13/16")	-	148 (5 13/16")

## DESIGN AND OPERATING LOGIC

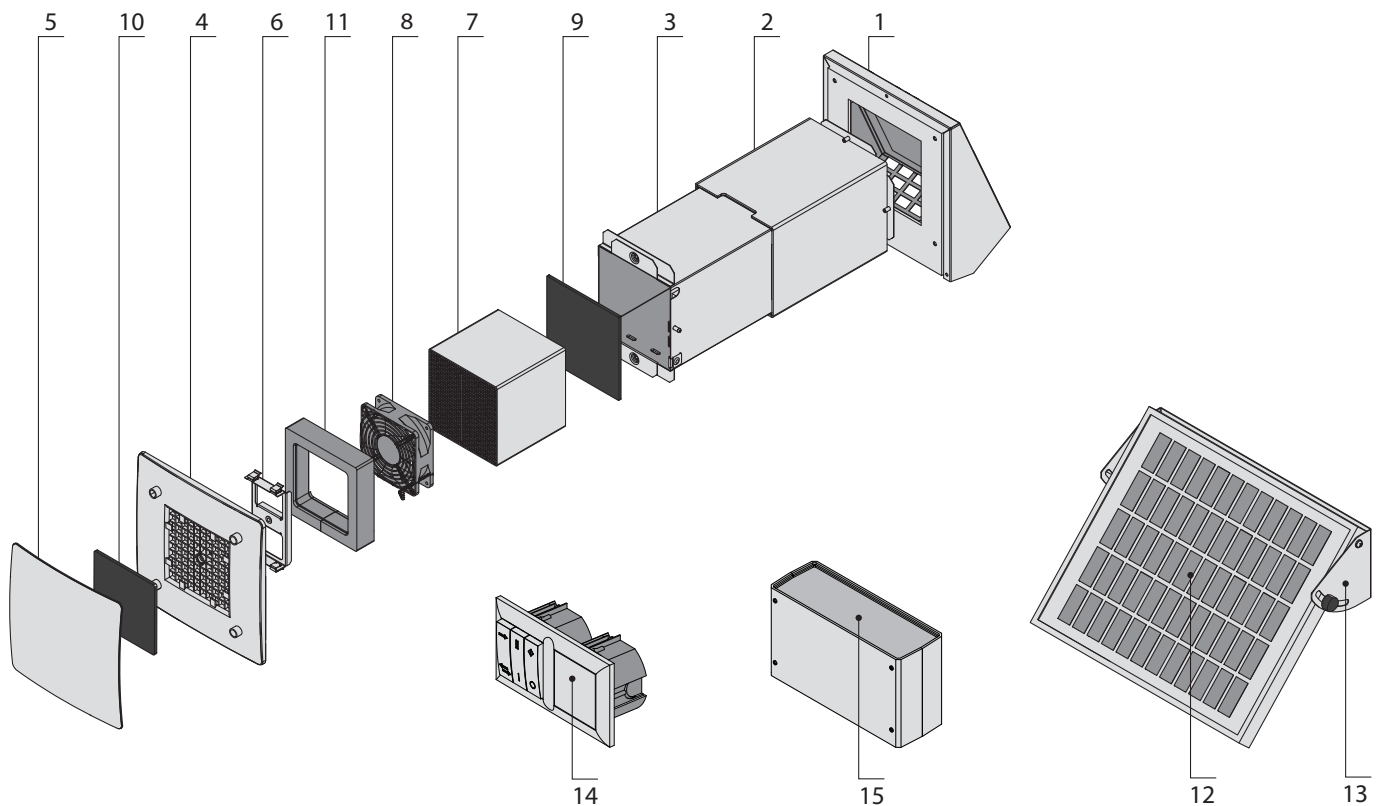
The ventilator consists of a telescopic air duct with adjustable length (inner part 3 and outer part 2), a fan 8, a ventilation grille 4, an outer ventilation hood 1 and a solar panel 12.

The inner filter 9 and the ceramic regenerator 7 are located inside the inner air duct of the telescope 3. The inner filter is designed to clean supply air and prevent foreign object ingress to the regenerator and the fan. The 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 for maintenance. The fan 8 is installed on a foam rubber layer 11 used as a sealer and a vibration mount for vibration absorbing.

The ventilation grille 4 with the decorative front panel 5 must be installed on the holder 6 on indoor side. The filter 10 located inside the ventilation grille is used to prevent dust and dirt ingress into the inner parts of the ventilator. The inner grille unit consisting of a holder 6, a ventilation grille 4, a grille filter 10 and a front panel 5 is fixed in the ventilator casing by means of the holder springs.

The outer ventilation hood 1 used to prevent direct ingress of water and other objects to the ventilator and the solar panel 12 used for powering of the ventilator are to be installed outside.



1	<b>Outer hood (cover, back wall).</b> Prevents direct water and foreign objects ingress to the ventilator.	1 item
2	<b>Outer air duct.</b> Outer part of the telescopic air duct.	1 item
3	<b>Inner air duct.</b> Inner part of the telescopic air duct.	1 item
4	<b>Ventilation grille.</b> Protects the ventilator from foreign object ingress from inside.	1 item
5	<b>Decorative front panel.</b>	1 item
6	<b>Ventilation grille holder.</b>	1 item
7	<b>Ceramic regenerator.</b> Uses extract air heat energy recovery to warm up supply air flow.	1 item
8	<b>Fan.</b> Generates air flow.	1 item
9	<b>Internal filter.</b> Purifies supply air flow and prevents dust and foreign objects ingress to the ventilator. Prevents soiling of the regenerator.	1 item



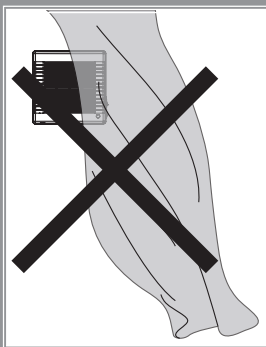
10	<b>Ventilation grille filter.</b> Strips intake air flow of dust and impurities. Prevents soiling of the regenerator.	1 item
11	<b>Rubber sealer.</b> Doubles as a sealer and a vibration mount.	1 item
12	<b>Solar panel.</b> Generates power supply for the ventilator.	1 item
13	<b>Solar panel holder.</b>	1 item
14	<b>Power and control unit KVS-T.</b> Operates the ventilator.	1 item
15	<b>Battery unit (only for the Pro models).</b> Accumulates the solar energy supplied from the solar panels in the day time.	1 item

The delivery set includes the required fasteners.

**MOUNTING AND SET-UP**



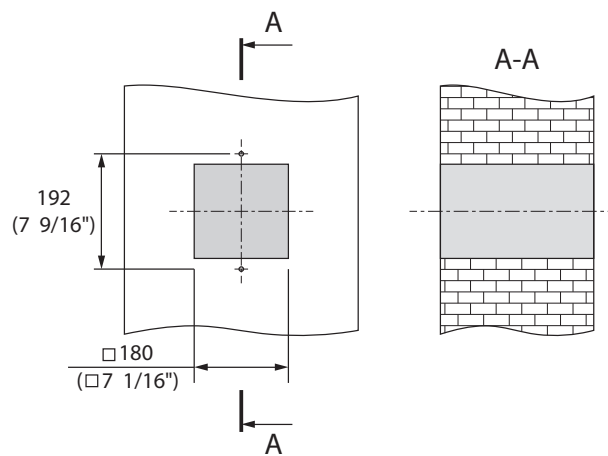
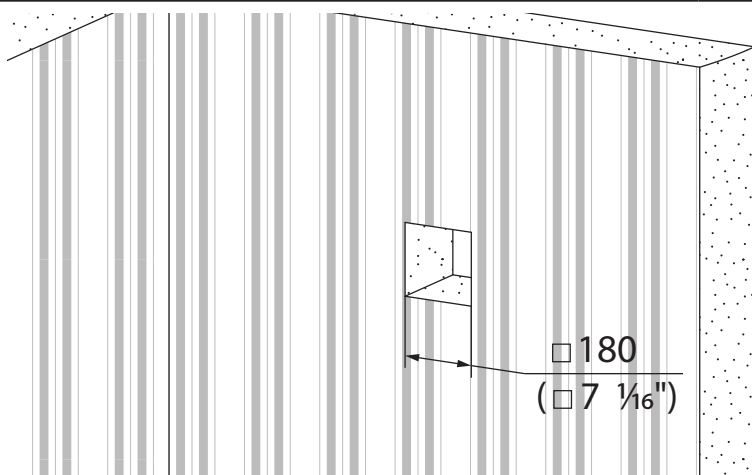
**READ THE USER'S MANUAL PRIOR TO MOUNTING THE VENTILATOR.**



**ATTENTION!**  
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.

**VENTILATOR MOUNTING**

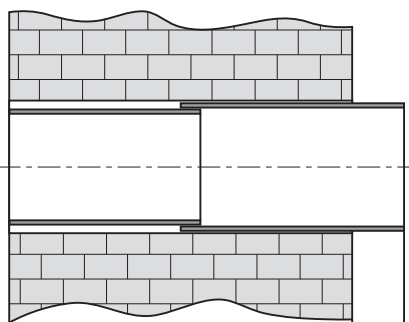
**1.** Prepare a square thorough hole in the outdoor wall. The hole size in the wall is shown in the figure below. Bore two holes for the 5x25 dowels and insert the dowels in the wall.



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

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

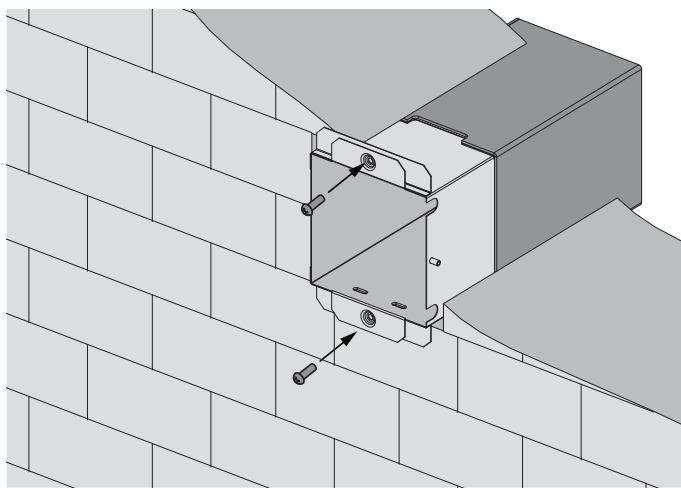
 **Inside**



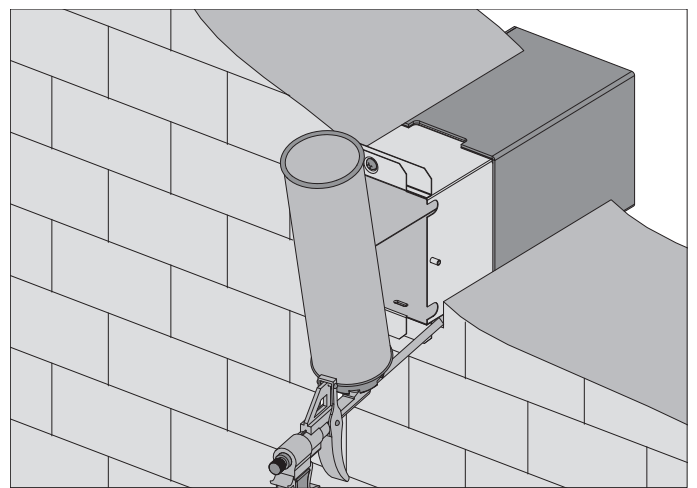
 **Outdoors**

**max A**

Ventilator model	A [mm (inch)]
TwinFresh Solar SA-60	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-M	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-L	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-2	10 ( $\frac{3}{8}$ " )-110( $4 \frac{5}{16}$ " )
TwinFresh Solar SA-60 Pro	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-M Pro	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-L Pro	10 ( $\frac{3}{8}$ " )
TwinFresh Solar SA-60-2 Pro	10 ( $\frac{3}{8}$ " )-110( $4 \frac{5}{16}$ " )

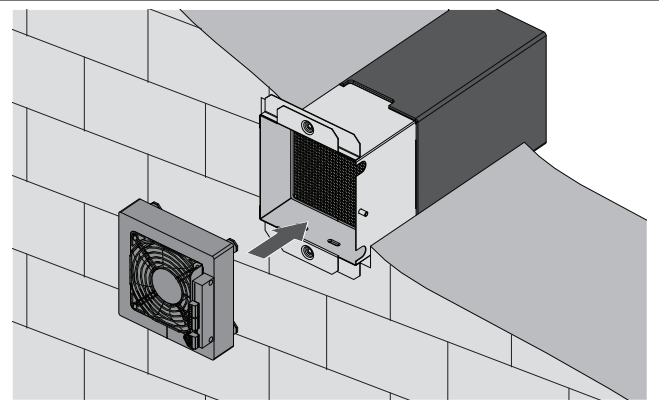
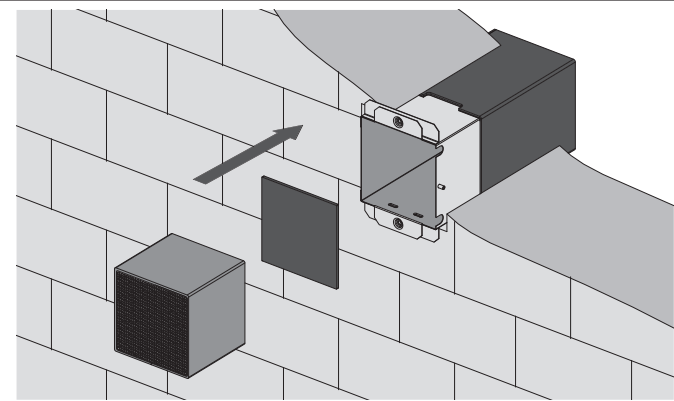


Fix the inner part of the telescope on inner side by means of the 3x25 screws from the delivery set.

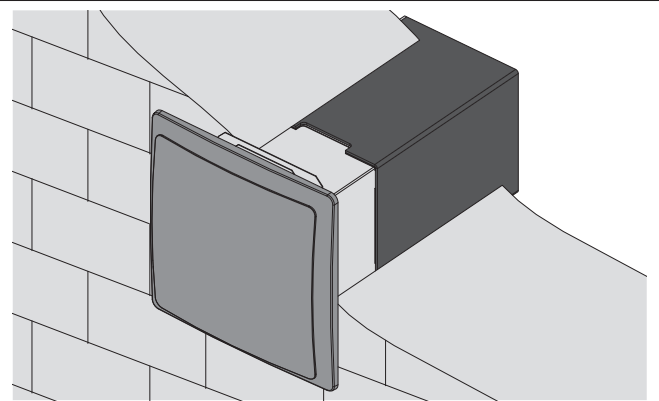
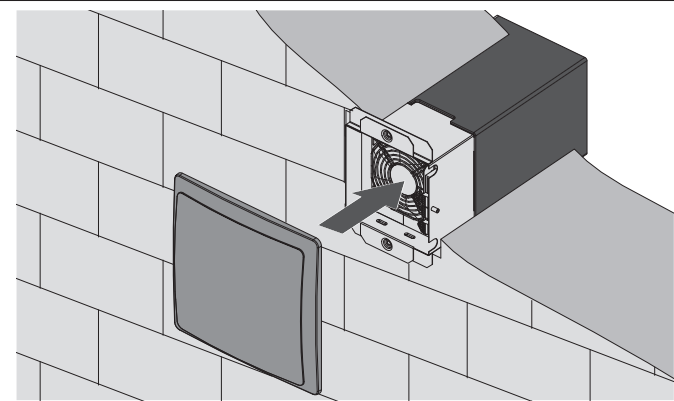


Fill the gaps between the wall and the telescopic air duct with a mounting foam.

**3.** Install the filter and the ceramic regenerator the telescopic air duct. Then install the fan, wire the ventilator and lay cables in the wall.



**4.** Install the front panel of the ventilation unit.

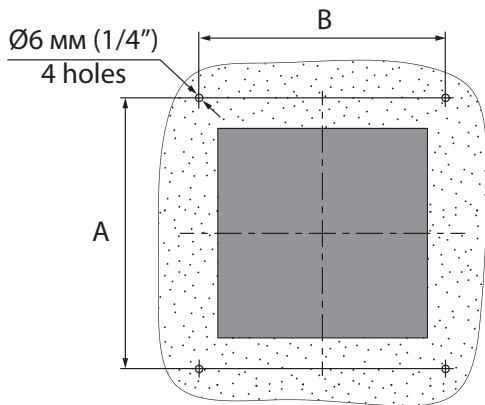


**VENTILATION HOOD MOUNTING**

TwinFresh Solar SA-60  
 TwinFresh Solar SA-60-M  
 TwinFresh Solar SA-60-L  
 TwinFresh Solar SA-60 Pro

TwinFresh Solar SA-60-2  
 TwinFresh Solar SA-60-2 Pro

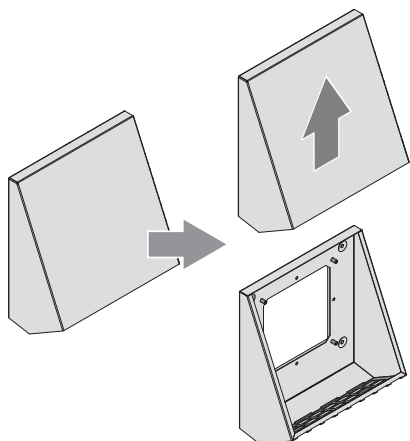
**1. Mark the fastening holes for the outer ventilation hood and drill 40 mm (19/16") deep holes for the 6x40 dowel.**



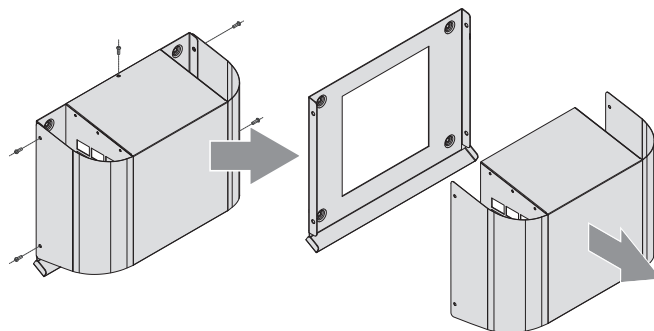
A, [mm (inch)]	B, [mm (inch)]	A, [mm (inch)]	B, [mm (inch)]
200 (7 7/8")	220 (8 11/16")	200 (7 7/8")	260 (10 1/4")

**2. Insert the 6x40 dowels from the delivery set in the holes.**

**3. Disassemble the outer ventilation hood.**

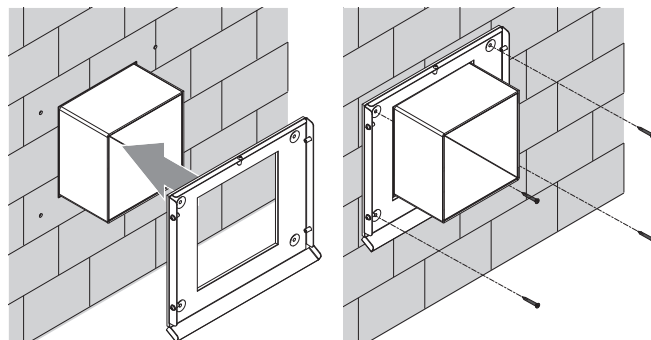
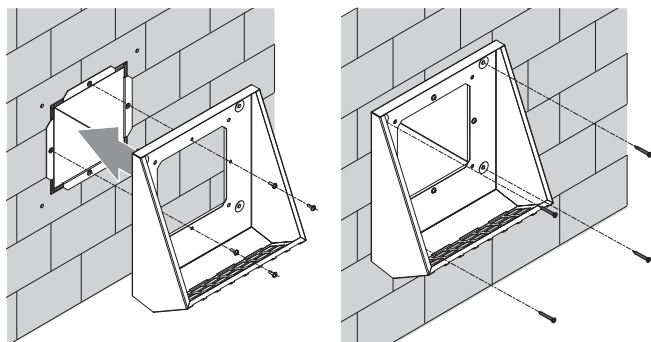


Take off the front part of the outer ventilation hood.



Remove the 4 screws and take off the front part of the outer ventilation hood.

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

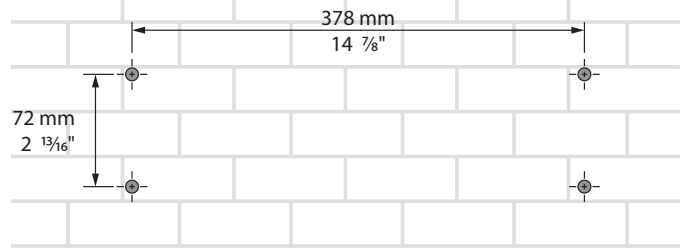


The telescope can be inserted into the ventilation hood for maximum 110 mm (4 5/16").

**5. Assemble the outer ventilation hood in the reverse order.**

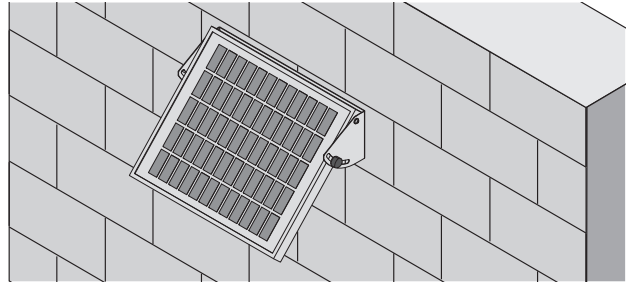
### SOLAR PANEL MOUNTING

1. Mark the fastening holes for the solar panel and drill 40 mm deep holes for the 6x40 dowels.

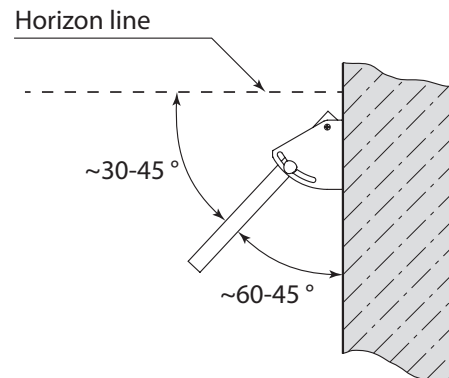


2. Install the 6x40 dowels into the holes.

3. Fix the solar panel on the wall.  
Prepare a cable recess or a cable duct for the cable layout.

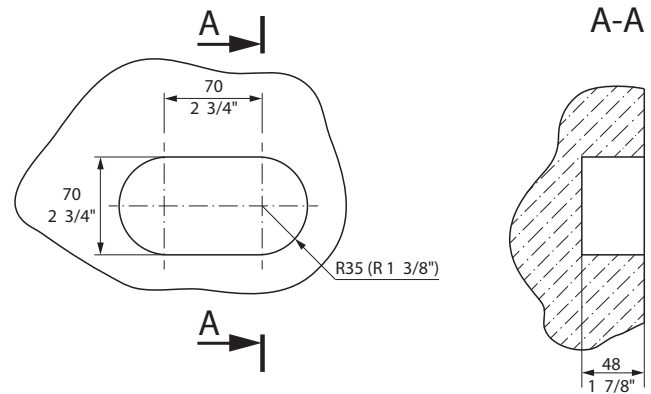


4. The correct functioning of the solar panel depends on its positioning on the wall or any other surface, in particular, depending on the solar cell tilt angle. Position the solar panel at the straight angle to the sun rays for maximum solar energy absorption. The recommended tilt angle of the solar panel with respect to the horizontal line is about 30-45°. After positioning of a solar cell fix it by means of plastic screws. Do not place the solar panel in shadows!



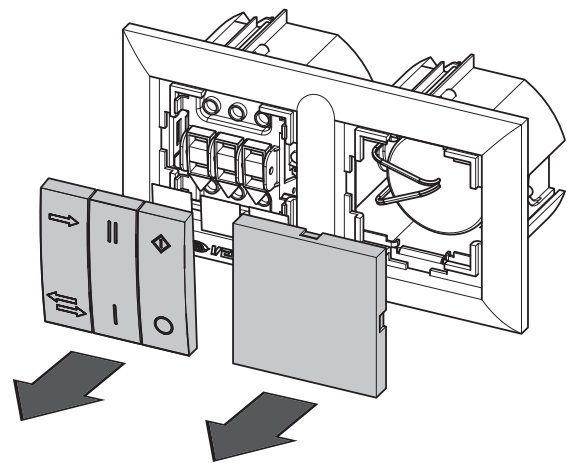
**KVS-T POWER AND CONTROL UNIT MOUNTING.**

1. Prepare a cavity in the wall for mounting of the power and control unit.  
Install a junction box.  
While mounting the power and control unit consider the supplied cable length.  
A longer cable may be used on customer demand. The recommended cable type is Unitronic LIYY UL CSA 5xAWG/7 (5x0.25).

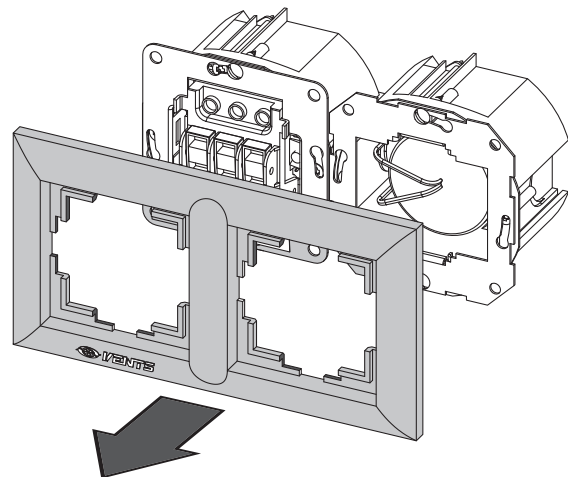


Hole spacing for installation of the power and control unit.

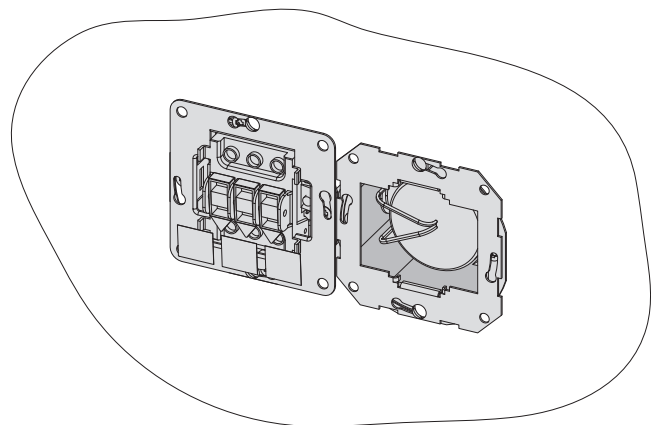
2. Uplift gently the buttons and the plug of the power and control unit to remove.



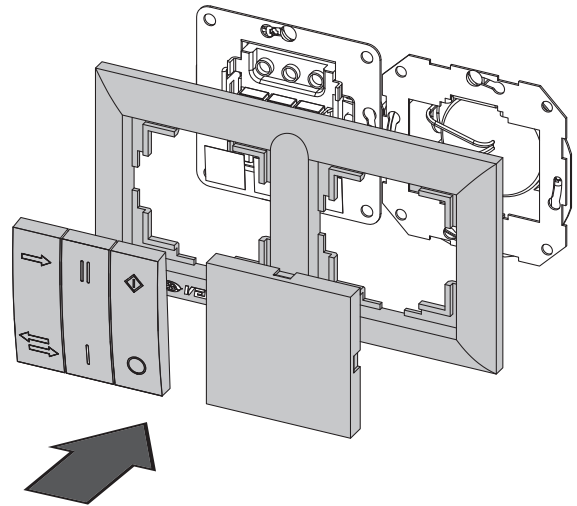
3. Unlatch and take off the frame of the power and control unit.



4. Install the power and control unit in the wall hole.



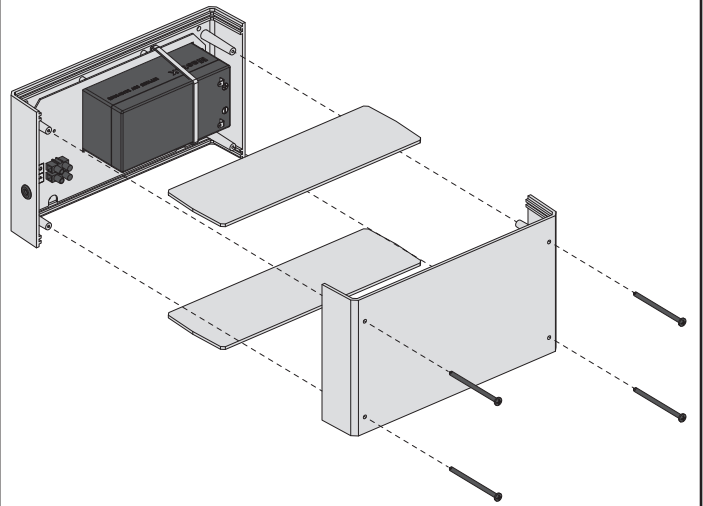
5. Install the frame, the buttons and the plug in the reverse order.



#### BATTERY UNIT MOUNTING (supplied only with the Pro models)

Fasten the battery unit to the wall or to any other comfortable surface with dowels and screws.

While mounting the battery unit consider the need to ensure service access. Children must not have access to the installed battery unit. The installation place must not be subjected to high humidity, direct sunshine and temperature fluctuations.



**CONNECTION TO POWER MAINS AND CONTROL**



**DISCONNECT THE VENTILATOR FROM POWER MAINS PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS.**  
**THE VENTILATOR MAINTENANCE AND INSTALLATION 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 OF THE VENTILATOR ARE STATED ON THE RATING PLATE. ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.**

The ventilator is controlled via the external power and control unit KSV- T (included in the delivery set).

The control and power unit is designed for operation mode control. It consists of the control unit and the transformer unit.

The ventilator is rated for connection to single-phase ac 230 V/50 Hz or 120 V/60 power mains, depending on the used transformer type.

The control unit is a three-key switch with an integrated circuit board mounted inside of the junction box.

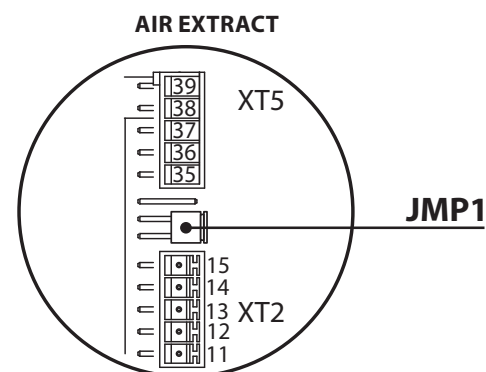
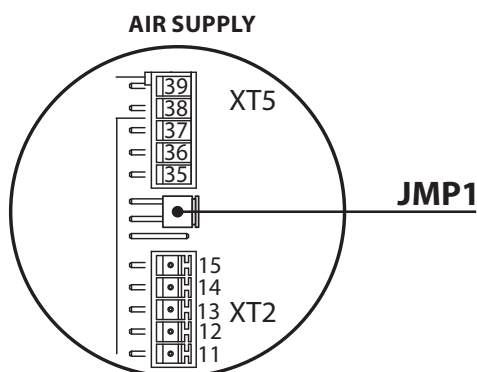
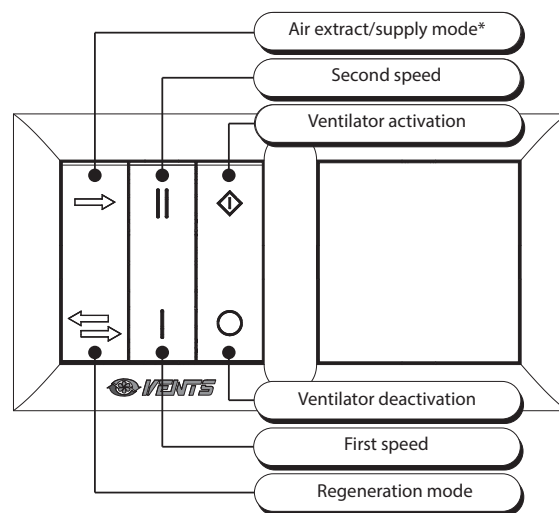
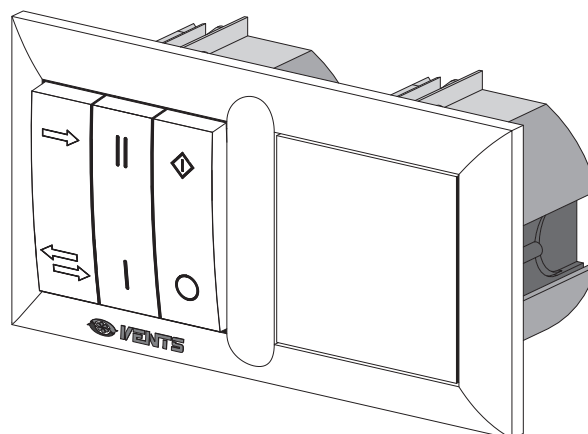
All electric connection to the control unit and the ventilator are performed with the socket connectors for mounting and servicing facilitation. Each mating part of a socket connector has a colour marking in compliance with marking on the circuit board to ensure correct and quick electric installation.

The KVS-T control and power unit is used to set one of four operation modes of the ventilator:

1. Ventilation mode (air supply/air extract)\* at the first speed.
2. Ventilation mode (air supply/air extract)\* at the second speed.
3. Reversible (regeneration) mode at the first speed. The air direction changes each 70 seconds.
4. Reversible (regeneration) mode at the second speed. The air direction changes each 70 seconds.

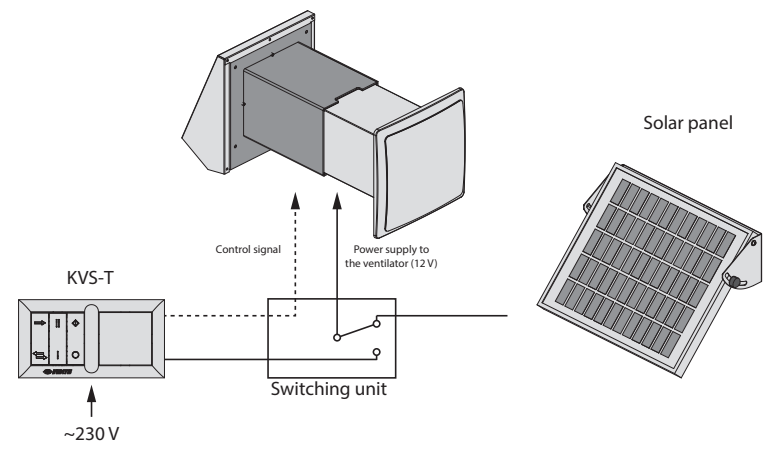
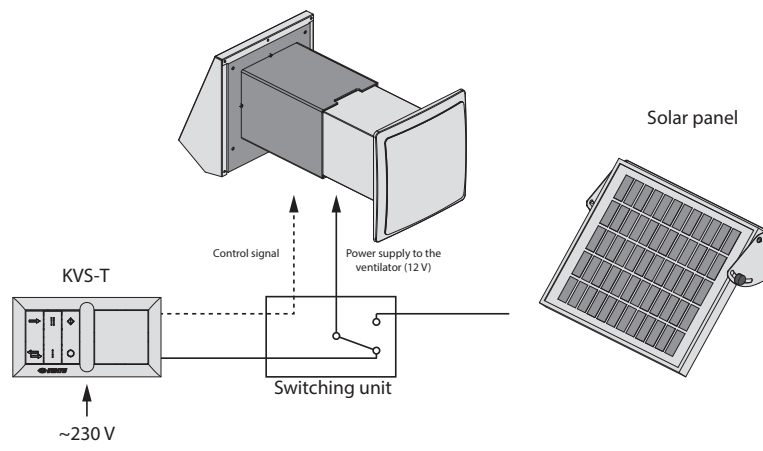
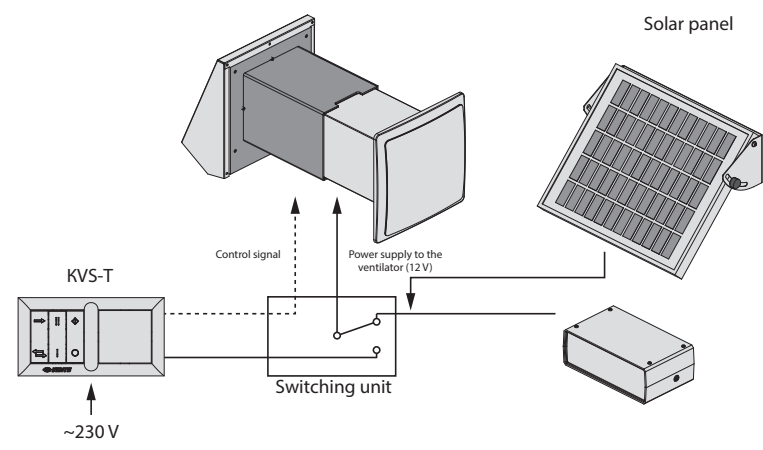
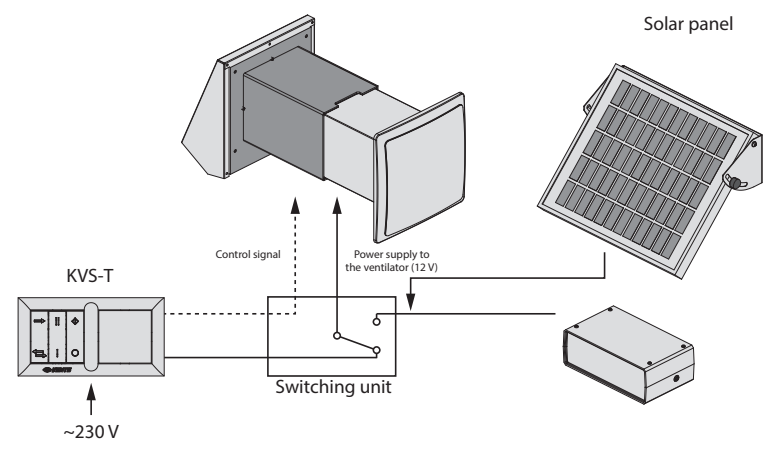
\*- air flow direction is determined by the JMP1 jumper position on the ventilator circuit board. By default the jumper is set to air supply mode.

**POWER AND CONTROL UNIT (GENERAL VIEW)**





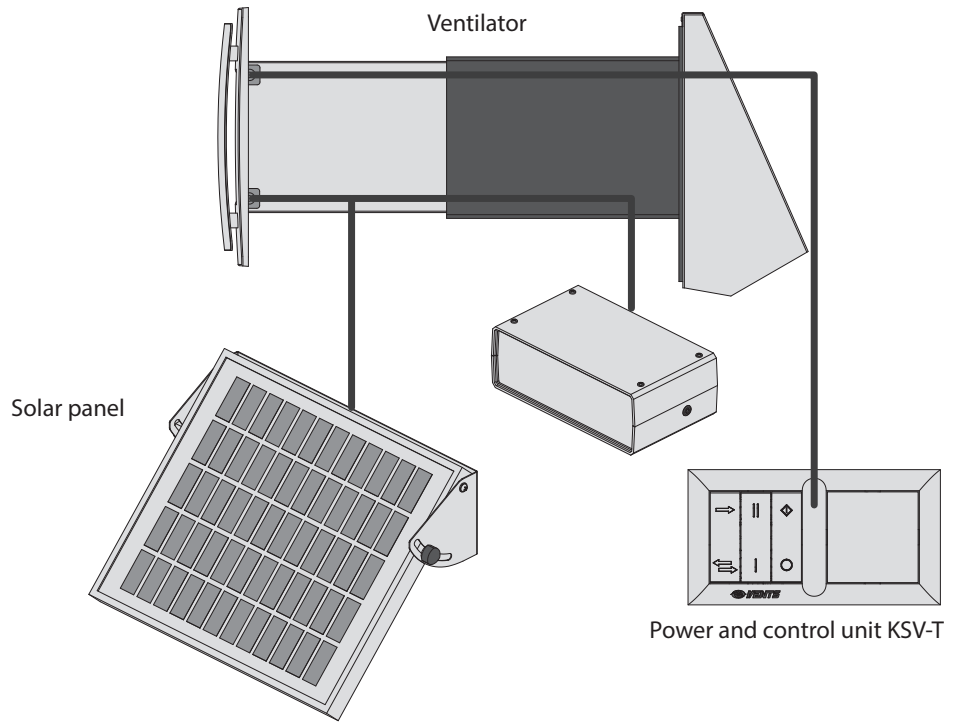
VENTILATOR OPERATION MODES

<p>TwinFresh Solar:</p> <ul style="list-style-type: none"> <li>• SA-60</li> <li>• SA-60-M</li> <li>• SA-60-L</li> <li>• SA-60-2</li> </ul>	<p>In the day time the ventilator is powered via the solar panel.</p>	 <p>The diagram shows a ventilator unit connected to a switching unit. A KVS-T control module is connected to the switching unit and receives ~230 V AC. A solar panel is connected to the switching unit and provides power to the ventilator (12V). A control signal line connects the KVS-T module to the switching unit. The solar panel is labeled 'Solar panel'.</p>
	<p>In the night time or in bad light conditions the ventilator is powered via the electric power mains.</p>	 <p>The diagram shows a ventilator unit connected to a switching unit. A KVS-T control module is connected to the switching unit and receives ~230 V AC. The switching unit is connected to the electric power mains. A control signal line connects the KVS-T module to the switching unit. The solar panel is labeled 'Solar panel'.</p>
<p>TwinFresh Solar:</p> <ul style="list-style-type: none"> <li>• SA-60 PRO</li> <li>• SA-60-2 PRO</li> <li>• SA-60-M PRO</li> <li>• SA-60-L PRO</li> </ul>	<p>In the day time or if the battery unit is charged the ventilator is powered by the battery unit that accumulates solar energy.</p>	 <p>The diagram shows a ventilator unit connected to a switching unit. A KVS-T control module is connected to the switching unit and receives ~230 V AC. A battery unit is connected to the switching unit and provides power to the ventilator (12V). A control signal line connects the KVS-T module to the switching unit. A solar panel is connected to the battery unit. The solar panel is labeled 'Solar panel'.</p>
	<p>In the night time, in bad light conditions or if the battery unit is low the ventilator is powered via the electric power mains.</p>	 <p>The diagram shows a ventilator unit connected to a switching unit. A KVS-T control module is connected to the switching unit and receives ~230 V AC. The switching unit is connected to the electric power mains. A battery unit is connected to the switching unit. A control signal line connects the KVS-T module to the switching unit. A solar panel is connected to the battery unit. The solar panel is labeled 'Solar panel'.</p>

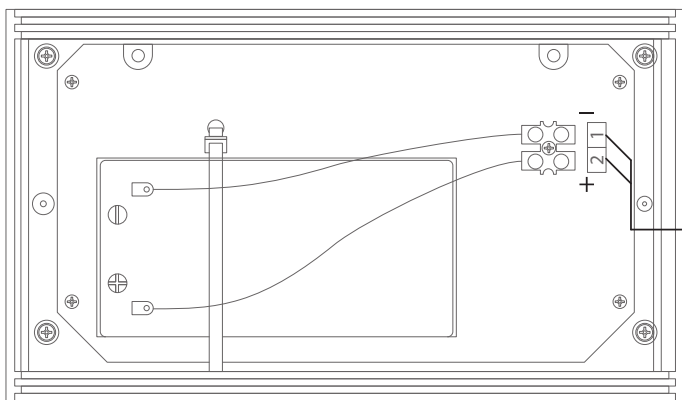


### EXTERNAL WIRING DIAGRAM

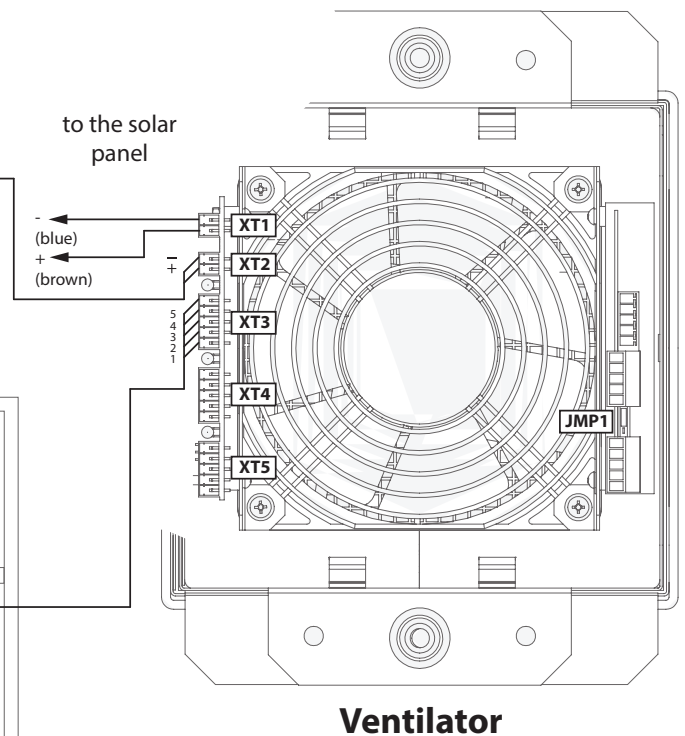
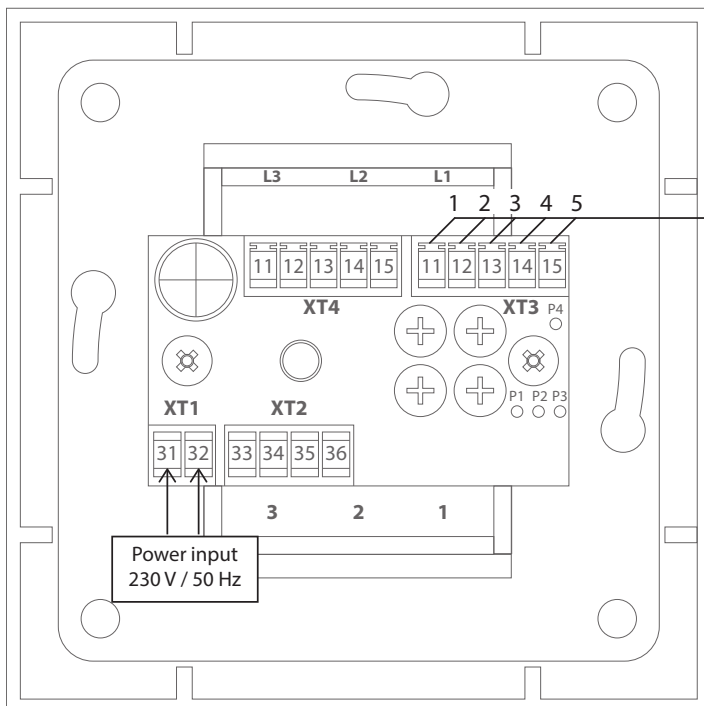
- TwinFresh Solar SA-60 Pro
- TwinFresh Solar SA-60-2 Pro
- TwinFresh Solar SA-60-M Pro
- TwinFresh Solar SA-60-L Pro



### Battery unit



### KVS-T controller



### Ventilator

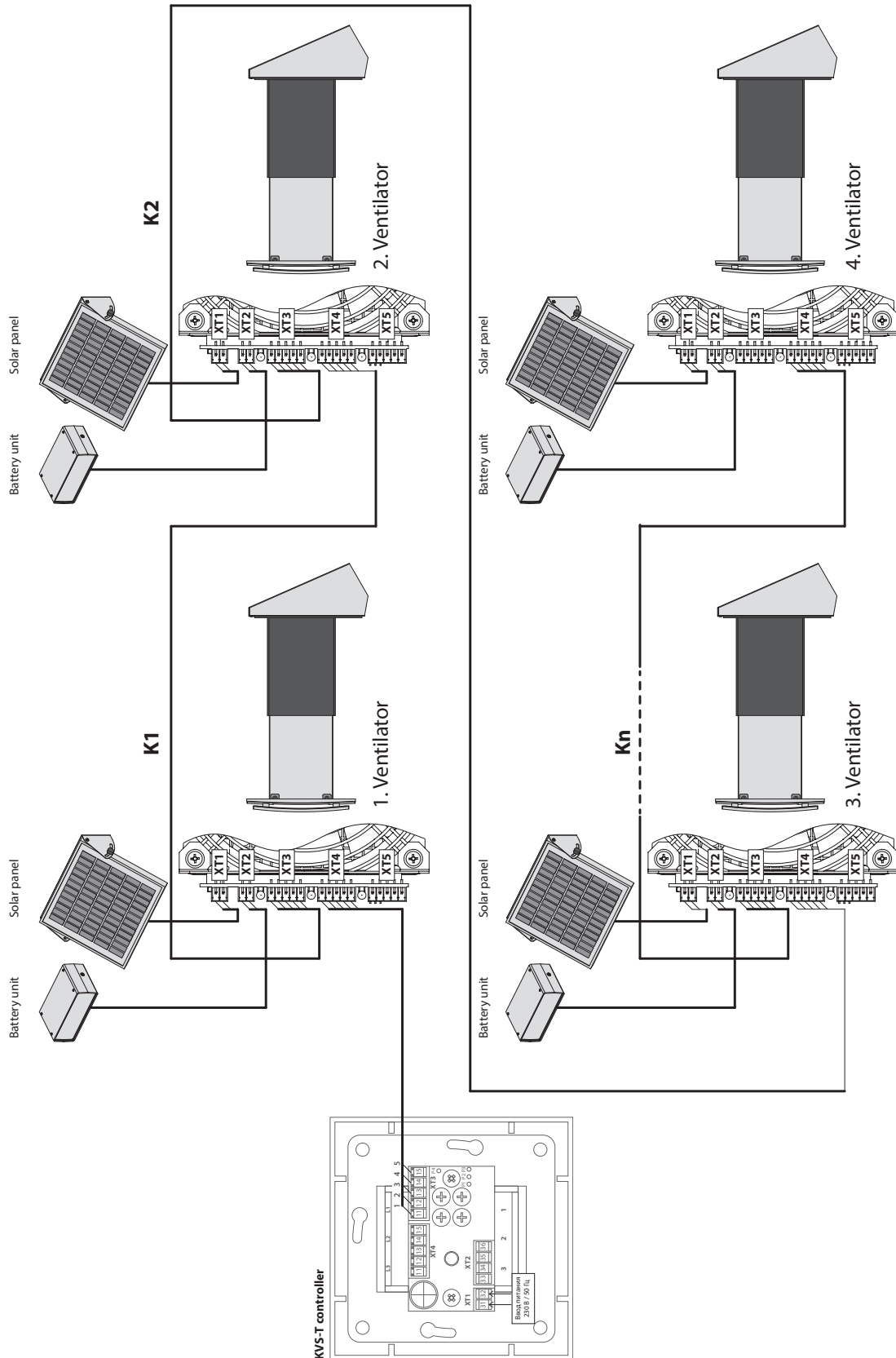
### CONNECTION OF SEVERAL VENTILATORS

One KVS-T power and control unit is able to control many TwinFresh Solar ventilators.

In case of connecting several TwinFresh Solar Pro ventilators each unit must be connected to its own solar panel or to its own battery unit. The connecting cables K1, K2, Kn (3x0,25/3xAWG 24) are not included in the delivery set.

To provide balanced ventilation set one half of the ventilators to the air supply mode (In) and the other half of the ventilators to the air extract mode (Out) by means of the JMP1 jumper.

Connect the ventilators in compliance with the terminal numbers as stated below.



## MAINTENANCE



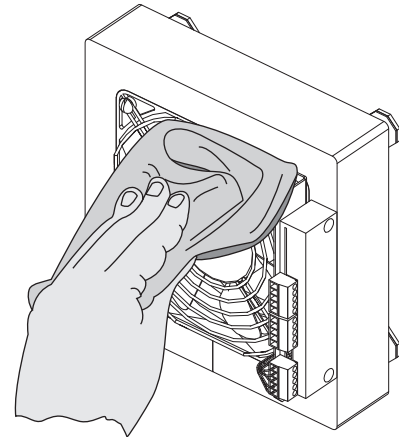
**DISCONNECT THE VENTILATOR FROM POWER SUPPLY PRIOR TO ANY MAINTENANCE OPERATIONS.**

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

### VENTILATOR MAINTENANCE

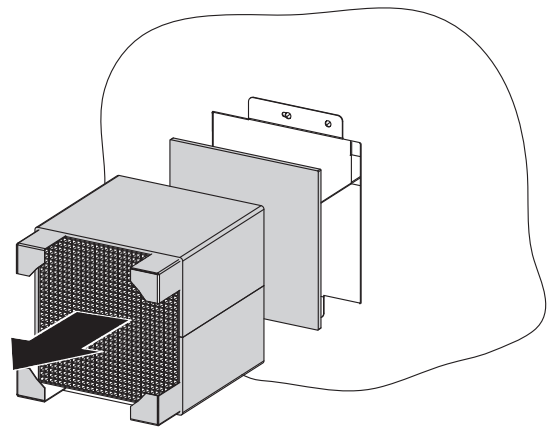
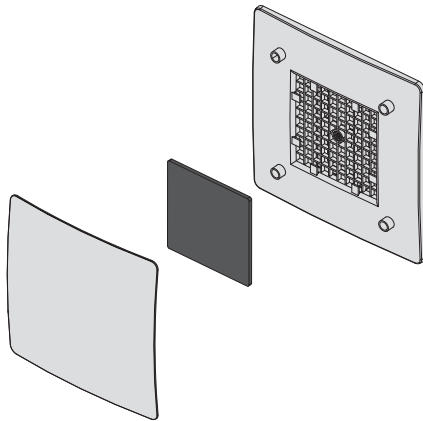
#### 1. Fan maintenance (once per year).

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.

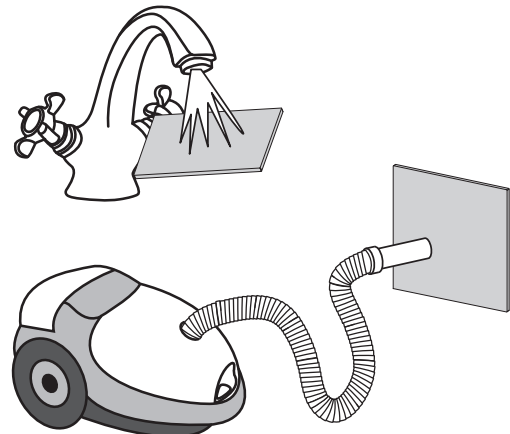


#### 2. Regenerator and filter maintenance (3-4 times per year).

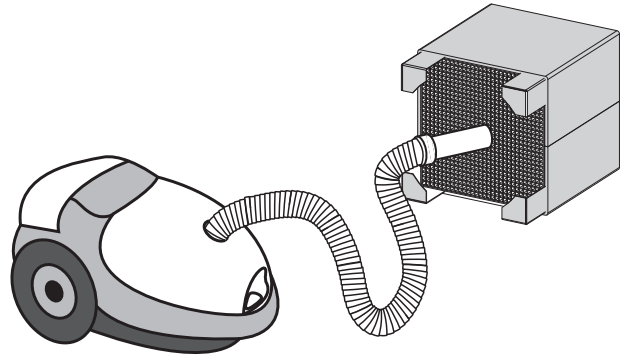
Remove the filters and the regenerators from the air duct.  
Be careful while pulling the regenerator to avoid its damage.



Clean the filters as often as those gets soiled, but at least 3-4 times a year.  
Wash the filters and let them get dry. Install dry filters in the air duct.  
Vacuum cleaning is allowed.  
The filter rated service life is 3 years.  
Contact the Seller for spare filters.

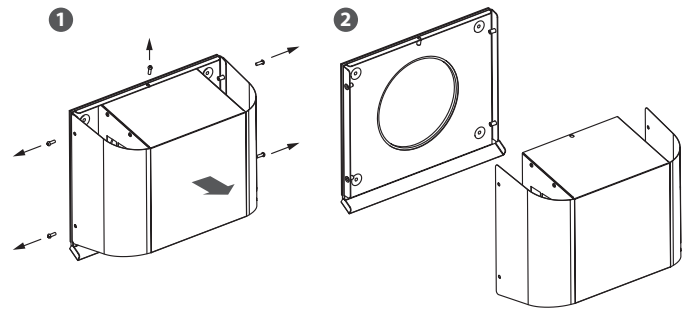
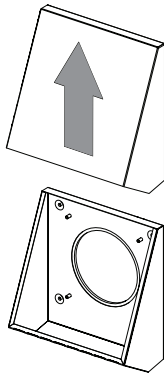


Even regular technical maintenance may not completely prevent dirt accumulation on the regenerator assemblies. Subject the regenerator to regular cleaning to ensure its high heat recovery efficiency. Clean the regenerator with a vacuum cleaner at least once in a year.



### 3. Ventilation hood maintenance (once per year).

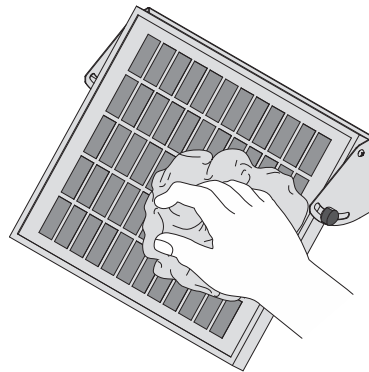
The ventilation hood may get clogged with leaves and other objects which impairs the unit performance. Check the ventilation hood twice per year and clean it as often as required. To clean the ventilation hood disassemble it, then clean the ventilation hood and the air duct.



### 4. Solar panel maintenance.

Keep the solar panel clean and remove regularly any contaminations to ensure its high performance. Do not scratch and do not damage the solar cells as it impairs the ventilator efficiency.

Perform preventive maintenance operations 4 times per year or more often, depending on the environmental conditions. The solar cells must not be in shadows. Remove tree branches with care not to damage the equipment.



## 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.
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 RULES

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

Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation.

Use hoist machinery for handling and storage operations to prevent the ventilator damage in consequence of falling or excessive oscillation. Fulfill the handling requirements applicable for the applicable freight type.

Transportation with any vehicle type is allowed provided that the ventilator is protected against mechanical and weather damage. Avoid any mechanical shocks and strokes during handling operations.

## MANUFACTURER'S WARRANTY

The manufacturer hereby warrants normal operation of the ventilator over the period of 24 months from the retail sale date provided the user's observance of the transportation, storage, installation and operation regulations.

Should any malfunctions occur during the ventilator operation through the manufacturer's fault during the warranty period the user is entitled to elimination of faults by means of warranty repair performed by the manufacturer.

The warranty repair includes work specific to elimination of faults in the ventilator operation to ensure its intended use by the user within the warranty period. The faults are eliminated by means of replacement or repair of the complete unit or the faulty part thereof.

### The warranty repair does not include:

- Routine maintenance;
- Ventilator installation / dismantling;
- Ventilator setup.

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

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

Contact the ventilator Seller for warranty service.

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

- User's failure to provide the ventilator with the entire delivery package as stated in the user's manual or with missing component parts previously dismantled by the user;
- Mismatch of the ventilator model and make with the respective details stated on the ventilator packing and in the user's manual;
- User's failure to ensure timely technical maintenance of the ventilator;
- External damage to the casing (excluding external modifications of the ventilator as required for its installation) and the internal components of the ventilator;
- Alteration of the ventilator design or engineering changes of the ventilator;
- Replacement and use of the ventilator assemblies, parts and components not approved by the manufacturer;
- Ventilator misuse;
- User's violation of the unit installation regulations;
- User's violation of the ventilator management regulations;
- Ventilator 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;
- User's discretionary repair of the ventilator;
- Ventilator repair performed by any persons without the manufacturer's authorization;
- Expiry of the unit warranty period;
- User's violation of the established regulations specific to the ventilator transportation;
- User's violation of the ventilator storage regulations;
- Wrongful acts against the ventilator committed by third persons;
- Ventilator breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, or blockade);
- Missing seals if provided by the user's manual;
- Failure to provide the user's manual with the sale date stamp;
- Missing payment document certifying the ventilator purchase.



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



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

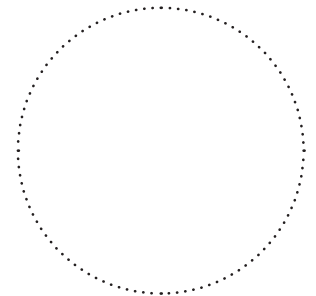


## ACCEPTANCE CERTIFICATE

<b>Product Type</b>	The single-room reversible energy regeneration ventilator
<b>Model</b>	TwinFresh Solar _____
<b>Serial Number</b>	
<b>Manufacturing Date</b>	
<p style="text-align: center;">Is recognized as serviceable.</p> <p>We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.</p> <p style="text-align: center;">This certificate is issued following test carried out on samples of the product referred to above.</p>	
<b>Quality Inspector's Stamp</b>	

## SELLER'S INFORMATION

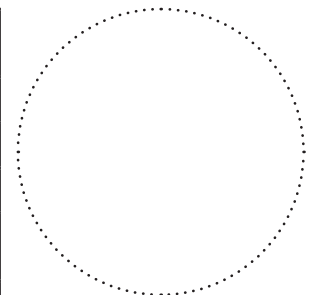
<b>Shop name</b>	
<b>Address</b>	
<b>Telephone</b>	
<b>E-mail</b>	
<b>Sales date</b>	
<p>This is to certify delivery of the complete unit with the user's manual. The warranty terms are acknowledged and accepted.</p>	
<b>Customer's signature</b>	



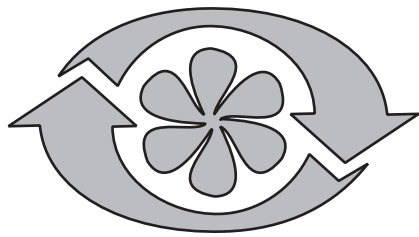
Seller's seal

## MOUNTING CERTIFICATE

<p>The single-room reversible energy regeneration ventilator TwinFresh Solar _____ has been connected to power mains pursuant to the requirements stated in the present user's manual.</p>	
<b>Company name</b>	
<b>Address</b>	
<b>Telephone</b>	
<b>Installation technician's full name</b>	
<b>Installation date:</b>	<b>Signature:</b>
<p>This is to certify that the works specific to the unit installation have been performed in accordance with all the applicable provisions of local and national construction, electrical and technical codes and standards. The ventilator operates normally as intended by the manufacturer.</p>	
<b>Signature:</b>	

Installation technician's  
company seal





**VENTS**