



HEAT RECOVERY SINGLE-ROOM VENTILATION UNIT

VENTO Solar V60 Pro



EN

OPERATION MANUAL



BLAUBERG
Ventilatoren

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BLAUBERG Company is happy to offer your attention a new heat recovery single-room unit **VENTO Solar V60 Pro / VENTO Solar V60 Pro2**.

INTRODUCTION

The present operation manual contains a technical description, technical data sheets, operation and mounting guidelines, safety precautions and warnings for safe and correct operation of the unit.

GENERAL

The single-room unit is designed for efficient energy saving supply and exhaust ventilation of flats, houses, cottages and other small premises.

The heat recovery technology is used to minimize ventilation heat losses.

The unit is powered by the solar energy generated by a solar panel. In case of a long-continued the unit changes into electric power supply mode.

The unit is equipped with a high-tech ceramic energy regenerator that provides extract air heat recovery for warming up of filtered supply air. The heat recovery efficiency of the energy regenerator is up to 88%.

The unit is designed for indoor application with the ambient temperature ranging from -20 °C up to +50 °C and relative humidity up to 80%.

The unit is designed for external through-the-wall installation. The unit is designed for continuous operation always connected to power mains.

The unit is allowed for operation only after final mounting that includes installation of protecting devices in compliance with DIN EN ISO 13875 (DIN EN ISO 12100) as well as other construction safety equipment.

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

SAFETY RULES

All operations related to the unit electrical connections, servicing and repair works are allowed only after the unit disconnection from power mains.

All mounting and servicing operations are allowed for duly qualified electricians with valid electrical work permit for electric operations at the units up to 1000 V after careful study of the present operation manual.

The unit is rated as a Class I electrical appliance.

Please follow the safety regulations and working instructions (DIN EN 50 110, IEC 364).

Make sure the impeller and the casing are not damaged before connecting the unit to power mains. The casing internals must be free of any foreign objects which can damage the impeller blades.

Disconnect the unit from power mains prior to any operations related to the unit servicing and repair works. Make sure the rotating parts have come to a full stop.

Misuse of the product or any unauthorized modification are not allowed.

The unit is designed for connection to AC single-phase power mains, see «Technical Data». The unit is rated for permanent operation during non-stop power supply.

Take steps to prevent ingress of smoke, carbon monoxide and other combustion products into the room through open chimney flues or other fire-protection devices. Sufficient air supply must be provided for proper combustion and exhaust of gases through the chimney of fuel burning equipment to prevent back drafting. The maximum permitted pressure difference per living units is 4 Pa.



ATTENTION

The product is not allowed for use by children and persons with reduced physical, mental or sensory capacities, without proper practical experience or expertise, unless they are controlled or instructed on the product operation by the person(s) responsible for their safety. Supervise the children and do not let them play with the product.

The transported air must not contain any dust or other solid impurities, sticky substances or fibrous materials.

The unit is not designed for use in an inflammable and explosive medium.

Do not close or block the unit intake or exhaust vent not to disturb the normal air passage.

Do not sit on the unit and do not put objects on the unit.

In case of unusual sounds, smoke disconnect the unit from power supply and contact the service centre.

Follow the operation manual guidelines to ensure trouble-free operation and long service life of the unit.

Hazardous parts access and water ingress protection standard IP24.

TRANSPORTATION AND STORAGE RULES

Transportation of the unit is allowed by any vehicle provided the unit is transported in the original package and is protected against weather and mechanical damages.

Use hoist machinery for handling and transportation to prevent possible mechanical damages of the unit. Fulfil the requirements for transportation of the specified cargo type during cargo-handling operations.

Store the unit in a dry and cool place in the original packing.

The storage environment must not be subjected to any aggressive and/or chemical evaporations, admixtures, foreign objects that may provoke corrosion and damage connection tightness.

Store the unit in an environment with minimized risk of mechanical damages, temperature and humidity fluctuations.

Do not expose the unit to the temperatures below +10 °C and above +40 °C.

Connection of the unit to power mains is allowed after the unit has been kept indoor for minimum two hours.

MANUFACTURER'S WARRANTY

The product complies with the requirements according to the EU norms and directives, to the relevant EU-Low Voltage Equipment Directives, EU-Directives on Electromagnetic Compatibility.

We hereby declare that the following 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.

The manufacturer hereby warrants normal operation of the product over the period of 2 years from the retail sale date provided observance of the installation and operation regulations.

In case of failure due to manufacturing fault during the warranty period the consumer has the right for a replacement unit.

If case of no confirmation of the sale date, the warranty period shall be calculated from the manufacturing date.

The replacement is offered by the Seller.

The manufacturer shall not be liable for any damage resulting from any misuse of or gross mechanical interference with the unit.

Fulfil the operation manual requirements to ensure a trouble-free and long service life of the unit.



WARNING

Do not dispose in domestic waste.

The unit contains in part material that can be recycled and in part substances that should not end up as domestic waste.

Dispose of the unit once it has reached the end of its working life according to the regulations valid where you are.

DESIGN AND OPERATING LOGIC

The unit consists of a decorative front panel, a telescopic air duct with adjustable length, a ventilation unit, an energy regenerator, an outer ventilation hood, a solar panel and a control panel with a power unit.

The inner part of the telescopic air duct encloses a ventilation unit, a ceramic energy regenerator and a filter. The square telescopic air duct is made of polymer coated metal and is lined with insulation material. The duct length is adjustable and depends on the model:

– 255 up to 475 for VENTO Solar V60 Pro / V60 Pro2;

– 120 up to 430 mm for VENTO Solar V60 S Pro / V60 S Pro2.

The unit is equipped with a high-tech ceramic energy regenerator with heat recovery efficiency up to 88%. Due to its cellular structure the energy regenerator has a large heat exchange surface and a high efficiency. The energy regenerator is featured with high heat insulating and accumulating properties. The regenerator recovers extract air heat energy for warming up of supply air flow. A pull cord inside of the energy regenerator facilitates its withdrawal. The energy regenerator rests on an insulating material used as sealer as well.

A decorative front panel with a filter is to be installed on inner wall.

Air is supplied and extracted with an axial reversible EC-fan with low energy demand. The motor has overheating protection and ball bearings for a longer service life.

Two built-in filters with total filter class G3 are used for supply and extract air filtration and prevent contamination of the energy regenerator.

The outer ventilation hood must be installed on outer side of the building to prevent ingress of large objects and water into the unit.

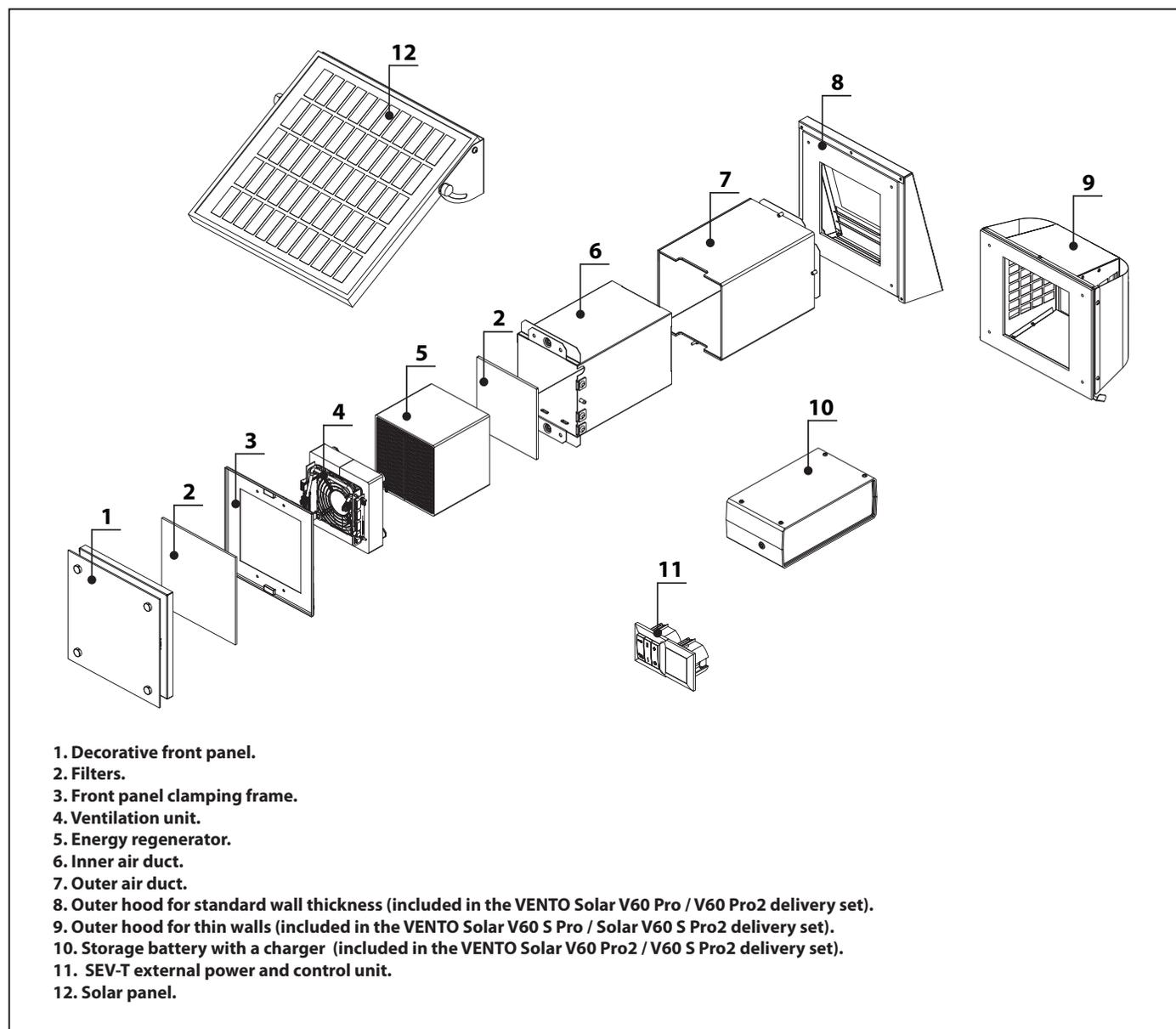
The integrated control system enables two-speed operation o at minimum or maximum speed:

operation in ventilation mode (air supply or air extract);

operation in reversible mode with heat regeneration.

The unit is operated with the external power and control unit SEV-T12 (included in the delivery set).

The VENTO Solar V60 Pro2 delivery set includes a storage battery with a charger that accumulates solar energy to enable standby operation of the unit in the night time.



1. Decorative front panel.
2. Filters.
3. Front panel clamping frame.
4. Ventilation unit.
5. Energy regenerator.
6. Inner air duct.
7. Outer air duct.
8. Outer hood for standard wall thickness (included in the VENTO Solar V60 Pro / V60 Pro2 delivery set).
9. Outer hood for thin walls (included in the VENTO Solar V60 S Pro / Solar V60 S Pro2 delivery set).
10. Storage battery with a charger (included in the VENTO Solar V60 Pro2 / V60 S Pro2 delivery set).
11. SEV-T external power and control unit.
12. Solar panel.

Fig. 1. Unit design

Unit operation logic in winter



- Warm polluted air is extracted from the room and flows outside through the energy regenerator. The extract air heat energy and partially moisture are accumulated by the energy regenerator.
- As the ceramic energy regenerator gets warm, the unit changes into air supply mode.

- Fresh cold air from outside flows through the energy regenerator and absorbs accumulated heat and humidity.
- When the energy regenerator cools down, the unit changes into the air extraction mode.

The unit has four ventilation modes:

- 1. Ventilation mode (air supply or air extract) at first speed.
- 2. Ventilation mode (air supply or air extract) at second speed.
- 3. Reversible mode (regeneration) at first speed.
- 4. Reversible mode (regeneration) at second speed.

MODIFICATIONS AND OPTIONS

VENTO Solar V60 Pro

The air handling unit for the wall thickness from 255 up to 475 mm. Supplied with SEV-T12 power and control unit.

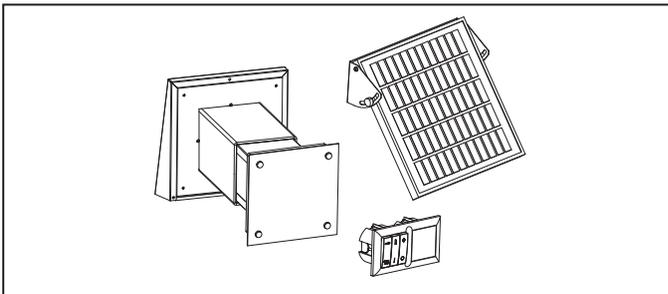


Fig. 2. VENTO Solar V60 Pro

VENTO Solar V60 Pro2

The air handling unit for the wall thickness from 255 up to 475 mm. Supplied with SEV-T12 power and control unit and a storage battery.

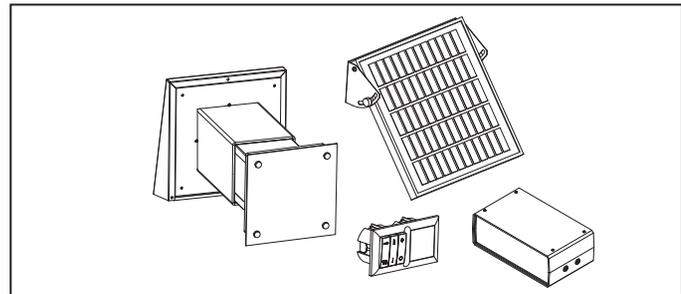


Fig. 3. VENTO Solar V60 Pro2

VENTO Solar V60 S Pro

The air handling unit for the wall thickness from 120 up to 430 mm. Supplied with SEV-T12 power and control unit.

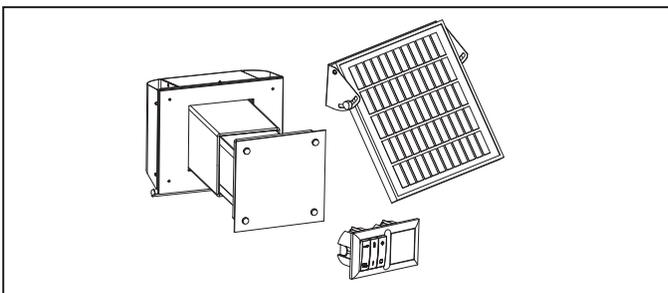


Fig. 4. VENTO Solar V60 S Pro

VENTO Solar V60 S Pro2

The air handling unit for the wall thickness from 120 up to 420 mm. Supplied with SEV-T12 power and control unit and a storage battery.

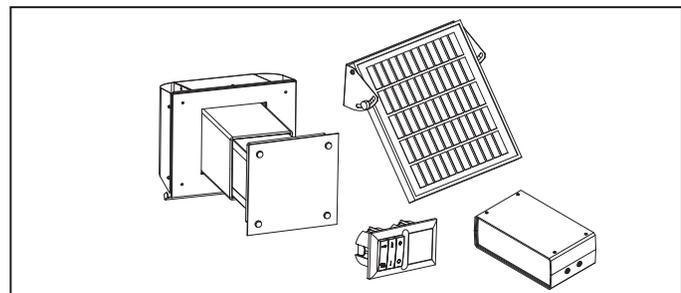


Fig. 5. VENTO Solar V60 S Pro2

DELIVERY SET

- ✓ Ventilation unit - 1 item;
- ✓ Solar panel - 1 item;
- ✓ SEV-T12 - power and control unit - 1 item;
- ✓ Storage battery for Pro2 models - 1 item;
- ✓ Cable (5x0.25), 3 m long - 1 item;
- ✓ Silicon plug - 1 item;
- ✓ Operation manual - 1 item;

- ✓ Packing box - 1 item.



WARNING

Make sure the unit has no visible transport damages while accepting the goods. Check the ordered and the delivered goods for compliance.

TECHNICAL DATA

Table 1. Technical data of the unit

Parameters	VENTO Solar V60 Pro \ Solar V60 Pro2 \ Solar V60 S Pro \ Solar V60 S Pro2	
Supply voltage [V]	12	
Speed	1	2
Total unit power [W]	2,8	4,8
Total unit current [A]	0.018	0.028
Max. air flow [m³/h]	35	58
Sound pressure level at 1 m distance [dB(A)]	34	41
Sound pressure level at 3 m distance [dB(A)]	24	29
Transported air temperature [°C]	-20 up to +50	
Total filter class, 2 filters	G3	
Replacement filter set	FP VENTO Solar V60 G3 (separate order)	
Heat recovery efficiency [%]	up to 88	
Heat exchanger type	Ceramic energy regenerator	
Ingress protection rating	IP24	

Table 2. Solar panel technical data

Parameters	Solar panel
Voltage [V]	18
Current [A]	1,12
Power [W]	20

Table 3. Storage battery technical data

Parameters	Storage battery
Voltage [V]	12
Charge storage capacity [Ah]	3,5

Table 4. Charger technical data

Parameters	Charger
Voltage [V]	12
Current [A]	3

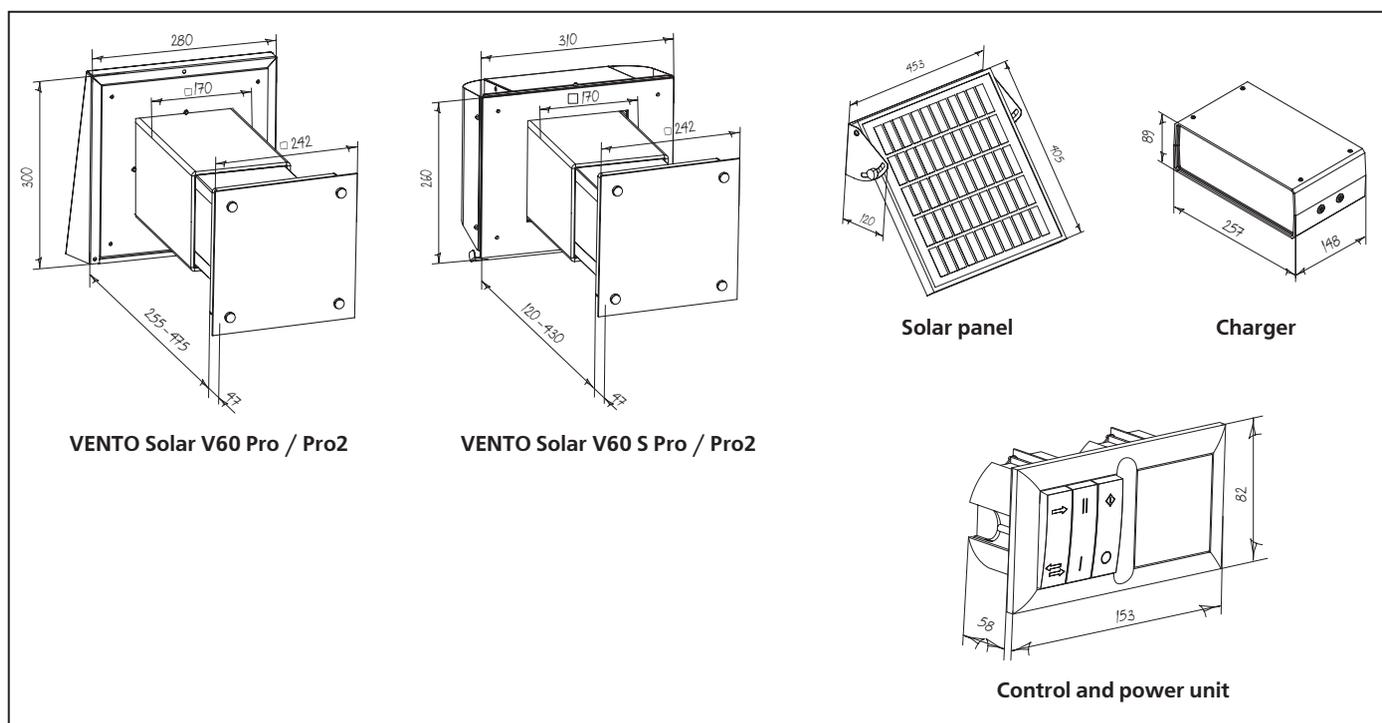


Fig. 6. Overall dimensions

MOUNTING

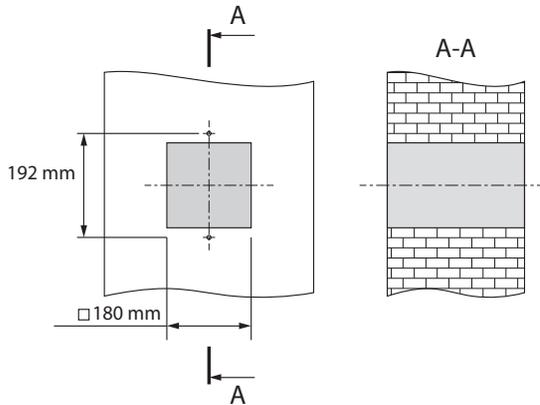


ATTENTION

Read the operation manual prior to any electric installations. Connection of the unit to power mains is allowed by qualified professionals.

The unit is designed for external through-the-wall installation.
The unit mounting is as follows:

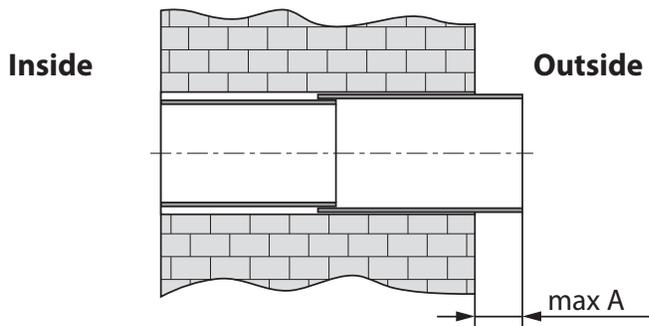
1. Prepare a square core hole through the outer wall.



Prepare two holes for the dowels 5x25 and insert those in the wall.

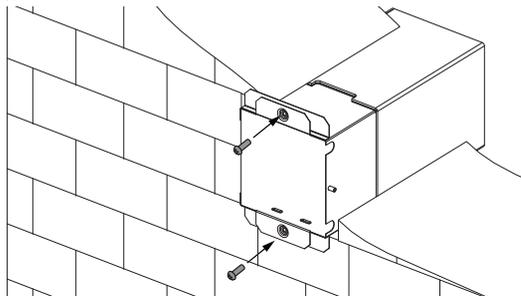
While mounting several connected in series units provide a recess for the cable layout during the hole preparation to enable connection of several units in series.

2. Install the telescopic air duct in the wall. The protruding telescopic air duct section on outer wall side must be equal to the distance A.

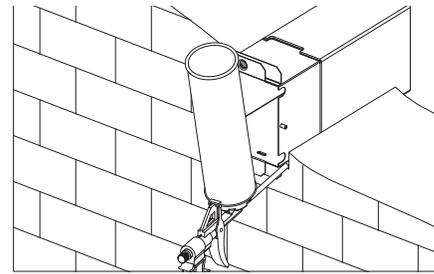


Model	A, mm
VENTO Solar V60 Pro / Pro2	10
VENTO Solar V60 S Pro / S Pro2	10 -110

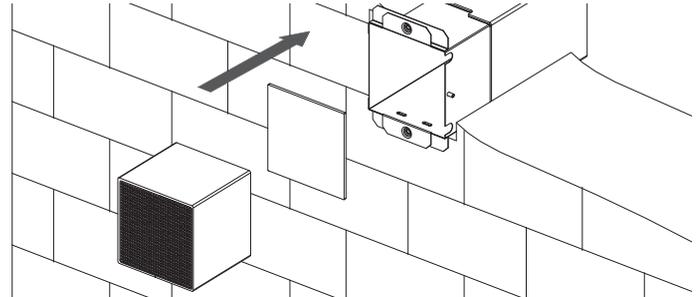
3. Fix the inner part of the telescope on inner wall using the screws 3x25 from the delivery set.



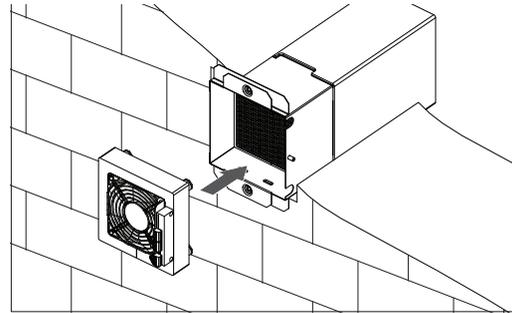
4. Fill the gaps between the wall and the telescopic air duct with a mounting foam.



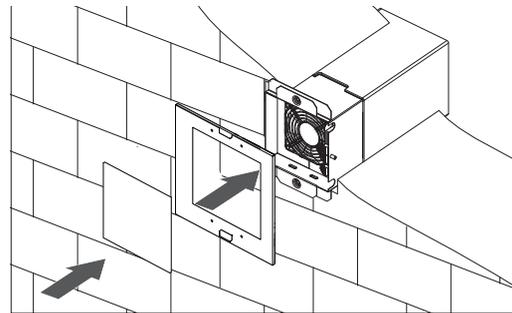
5. Install the filter and the energy regenerator in the telescopic air duct.



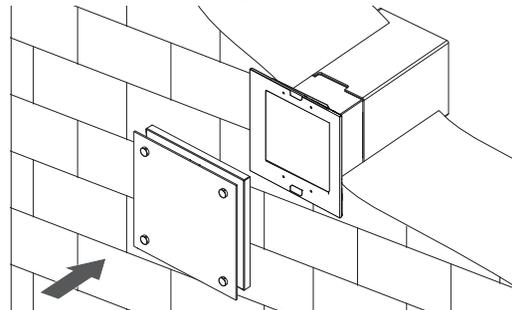
6. Install the fan, perform electrical connections and install the cables in the wall.



7. Attach the clamping frame for the front panel to the telescopic air ducts using the four screws M4. Install the filter in the frame.



8. Press the front panel against the magnets to fix it.



9. Mark the fixing holes for the outer ventilation hood.

- Fig. 7a for VENTO Solar V60 Pro / Pro2;

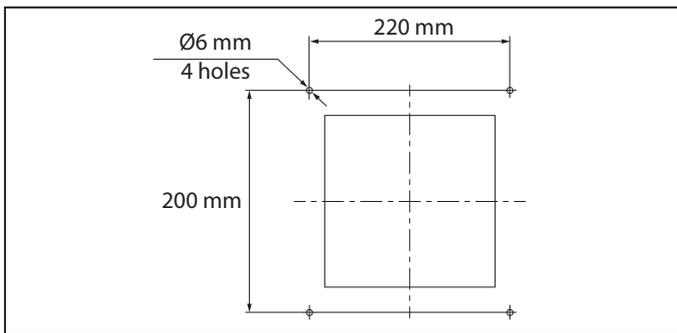


Fig. 7a.

• Fig. 7b - for the VENTO Solar V60 S Pro / S Pro2 models.

Drill the holes, 40 mm deep, for the dowels 6x40.

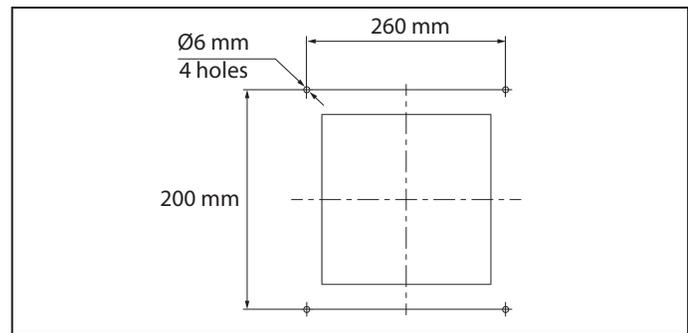


Fig. 7b.

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

11. Disassemble the outer ventilation hood to enable access to the fixing holes:

- Fig. 8a - for the VENTO Solar V60 Pro / Pro2 models. Disassemble the front part of the outer ventilation hood.

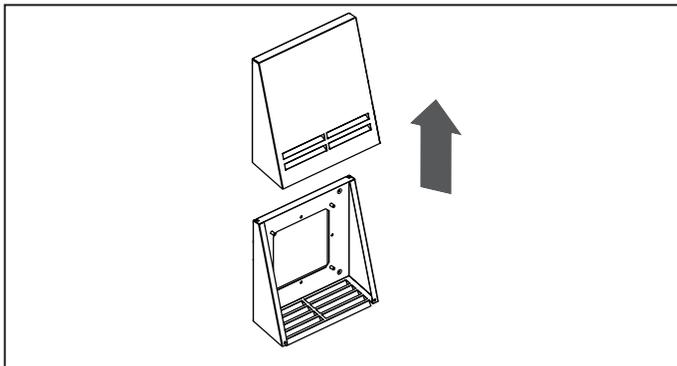


Fig. 8a.

• Abb. 8b - for the VENTO Solar V60 S Pro / S Pro2 models. Remove the 5 screws and take off the front part of the outer ventilation hood.

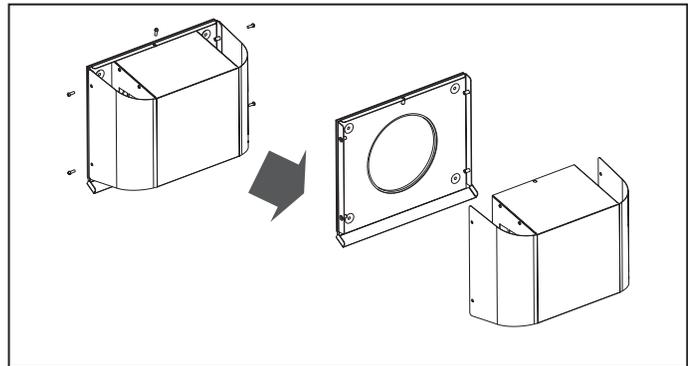


Fig. 8b.

12. Attach the back part of the ventilation hood to the wall:

- Fig. 9a - for the VENTO Solar V60 Pro / Pro2 models. Attach the back part of the ventilation hood to the wall using the screws 4x40 from the delivery set.

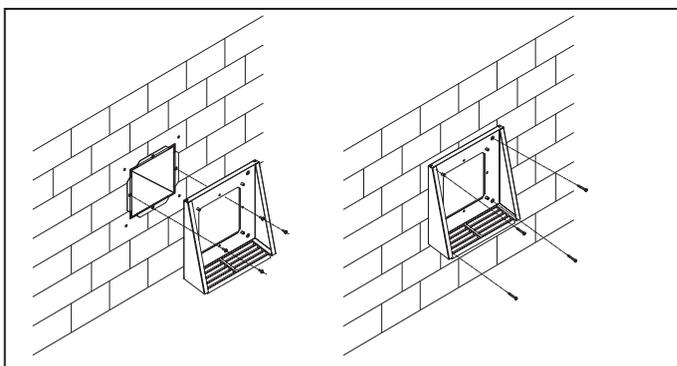


Fig. 9a.

- Fig. 9b - for VENTO Solar V60 S Pro / S Pro2. Attach the back part of the ventilation hood to the wall using the screws 4x40 from the delivery set.

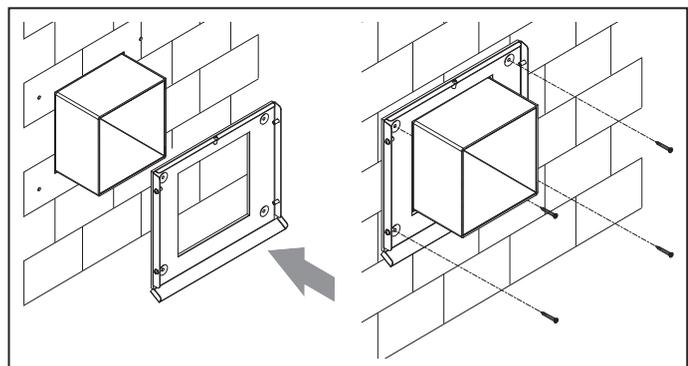
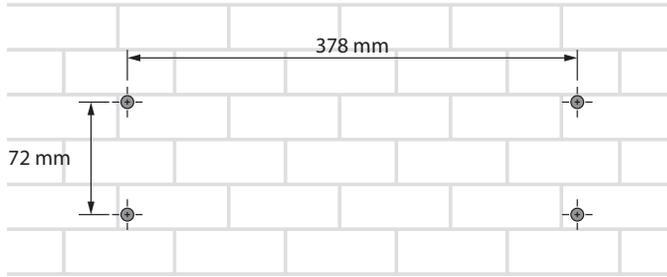


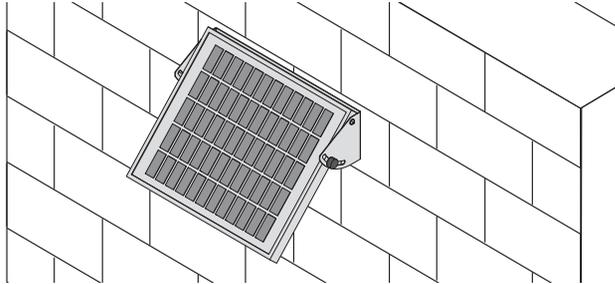
Fig. 9b.

13. Assemble the outer ventilation hood in the reverse order.

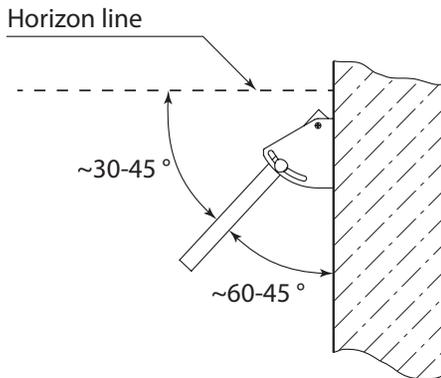
14. Mark the holes for the solar panel and drill 40 mm deep holes for the dowels 6x40.



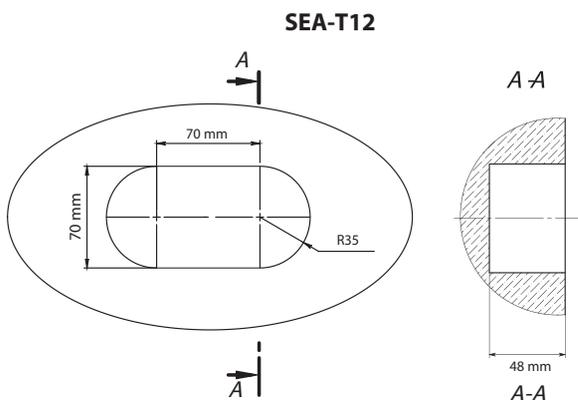
15. Attach the solar panel to the wall. Prepare an opening or a cable duct for laying of the power cable from the solar panel.



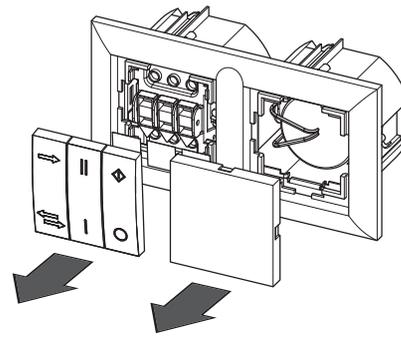
16. The correct functioning of the solar panel depends on its positioning on the wall or any other surface, in particular, depending on the solar cell tilt angle. The solar panel must be positioned at the straight angle to the sun rays to attain the maximum solar energy absorption. In moderate latitudes 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 on both sides. Do not place the solar panel in shadows!



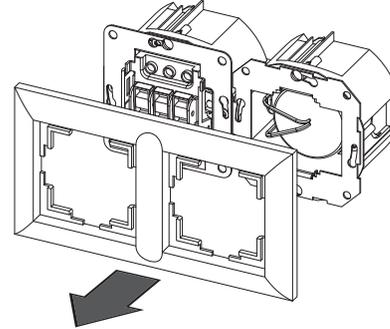
17. Install SEV-T12 power and control unit in a prepared hole in the wall as shown below. The installation place must be selected with respect to the supplied cable length. A longer cable may be used on a customer request. The cable type is LIYY UL CSA 5xAWG/7 (5x0.25).



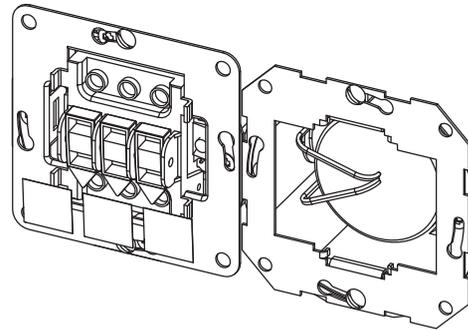
18. Uplift gently the buttons and the plug from the power and control unit and remove those.



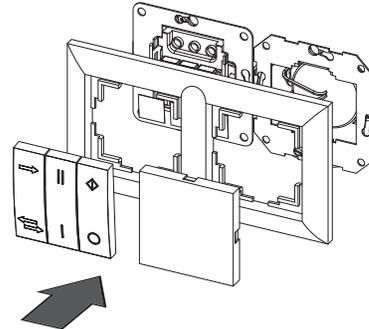
19. Unlatch the frame of the power and control unit.



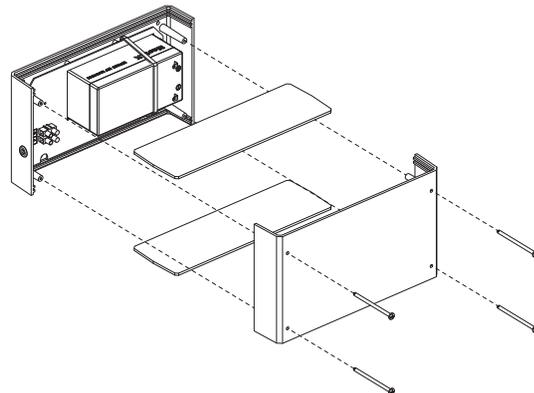
20. Install the power and control unit in the wall.



21. Install the frame, the buttons and the plugs in the reverse order.



22. Install the storage battery for the models Pro2 in the wall or in any other place with the dowels and screws. A service access must be provided. The installation place of the storage battery must not be subjected to high humidity, direct sun rays and temperature fluctuations.



CONNECTION TO POWER MAINS



WARNING

Read the operation manual prior to any electric installations. Connection of the unit to power mains is allowed by a qualified electrician only.

The rated electrical parameter are stated on the rating plate. No modifications of internal connections are allowed and will result in void warranty.

Connect the unit only to power mains with valid electric norms and standards. The unit must be connected to a correct mounted socket with a grounded terminal or connected to a fixed installed cable.

Follow the respective electric standards, safety rules (DIN VDE 0100), TAB der EVUs. The house cabling system must be equipped with an automatic switch at the external input. Connect the unit to power mains through the automatic switch. The contact gap on all poles at least 3 mm (VDE 0700 T1 7.12.2 / EN 60335-1).

Install the automatic switch to ensure prompt access.

The unit is operated with the SEV-T12 external power and control unit.
 The SEV-T12 power and control unit consists of a three-key control panel and a 12 W power transformer, Fig. 10.
 The unit is rated for connection to single-phase alternating current power mains 230 V / 50 Hz or 120V / 60 Hz, depending on the used transformer type.
 All electric connection to the power and control unit and the ventilation unit are performed with the socket connectors (detachable terminal blocks) for mounting and servicing facilitation. Each mating part of the socket connector has colour marking in compliance with marking on the circuit board to ensure correct and quick electric installation.

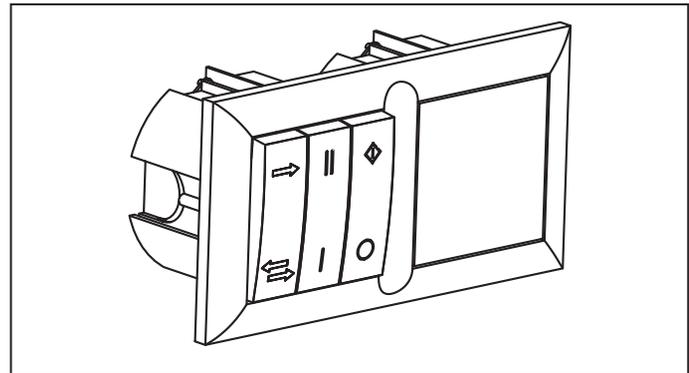


Fig. 10. SEV-T12 Power and control unit

SEV-T12 power and control unit is used to set one of four operation mode of the unit, Fig. 11:

1. Ventilation mode (air extract / air supply)* at the first speed.
2. Ventilation mode (air extract / air supply)* at the second speed.
3. Reversible (regeneration) operation at the first speed. The ventilation unit changes air flow direction (air extract / air supply) every 70 seconds.
4. Reversible (regeneration) operation at the second speed with air flow 50 m³/h. The ventilation unit changes air flow direction every 70 seconds.

* - air flow direction depends on position of the jumper JMP1 on the circuit board. The jumper is set to supply mode by default, Fig. 12.

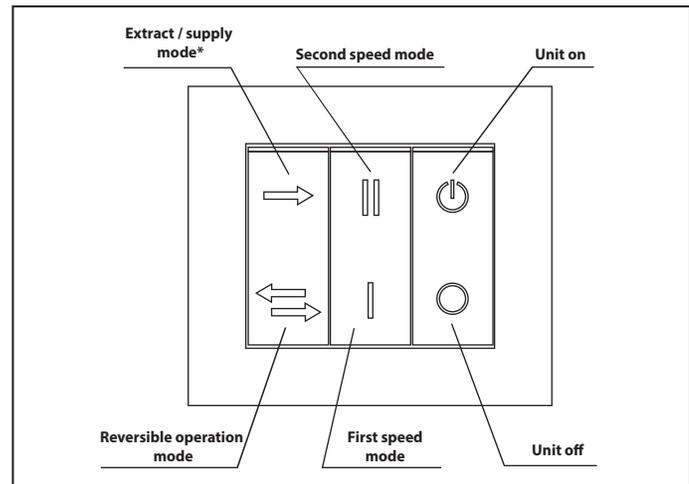


Fig. 11.

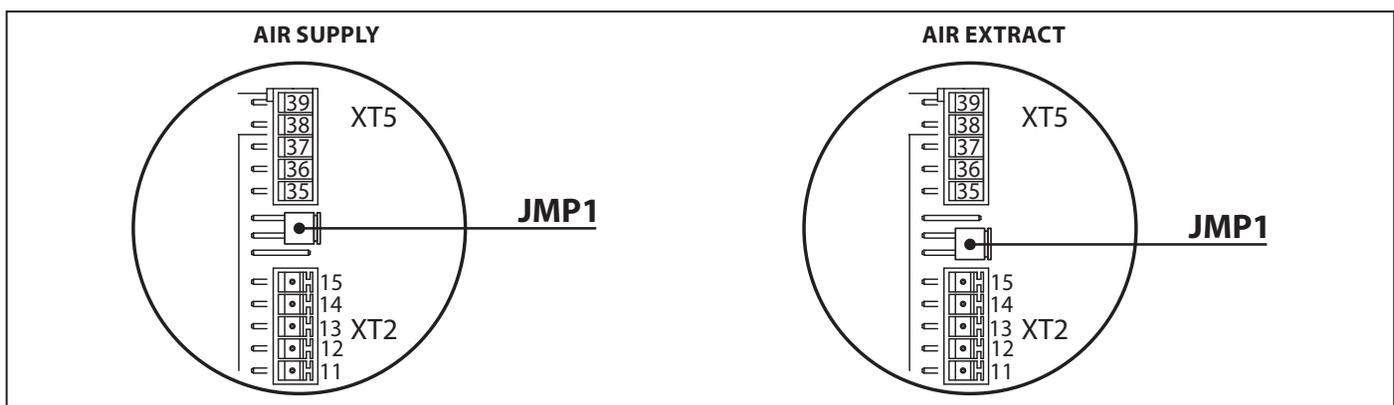
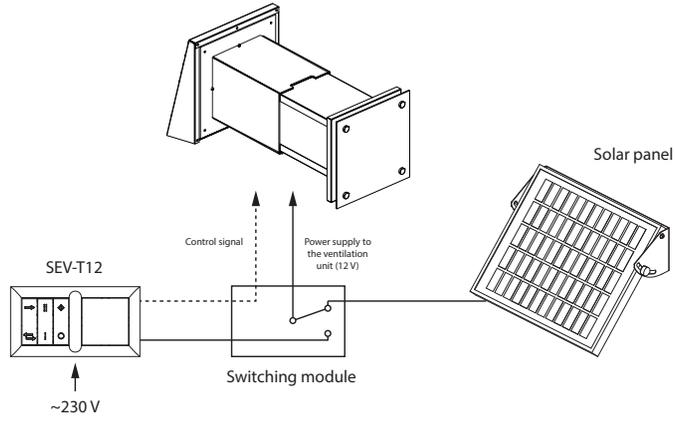


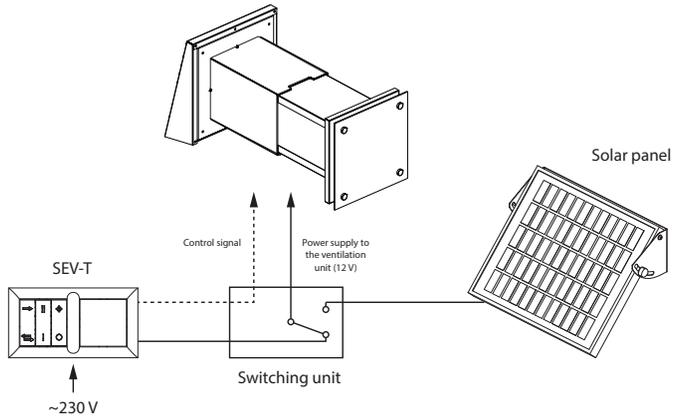
Fig. 12.

VENTO SOLAR V60 PRO / VENTO SOLAR V60 S PRO operation modes:

- In the day time the unit is powered by the solar panel.

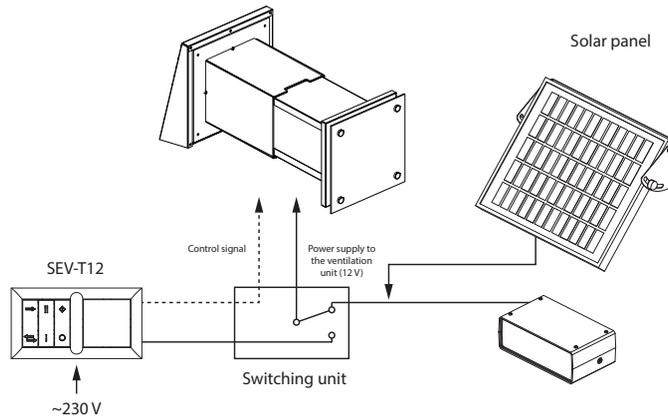


- In the night time or in low light conditions the unit is powered by power mains.

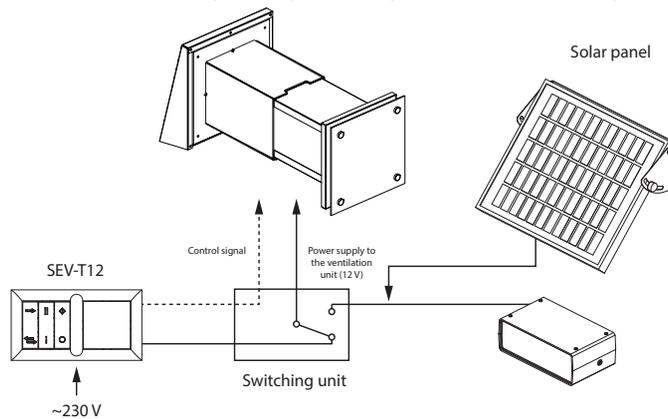


VENTO SOLAR V60 PRO2 / VENTO SOLAR V60 S PRO2 operation modes:

- In the day time or when the storage battery is charged the unit is powered by the accumulated in the storage battery solar energy.



- In the night time, in low light conditions or when the storage battery is discharged the unit is powered by power mains.



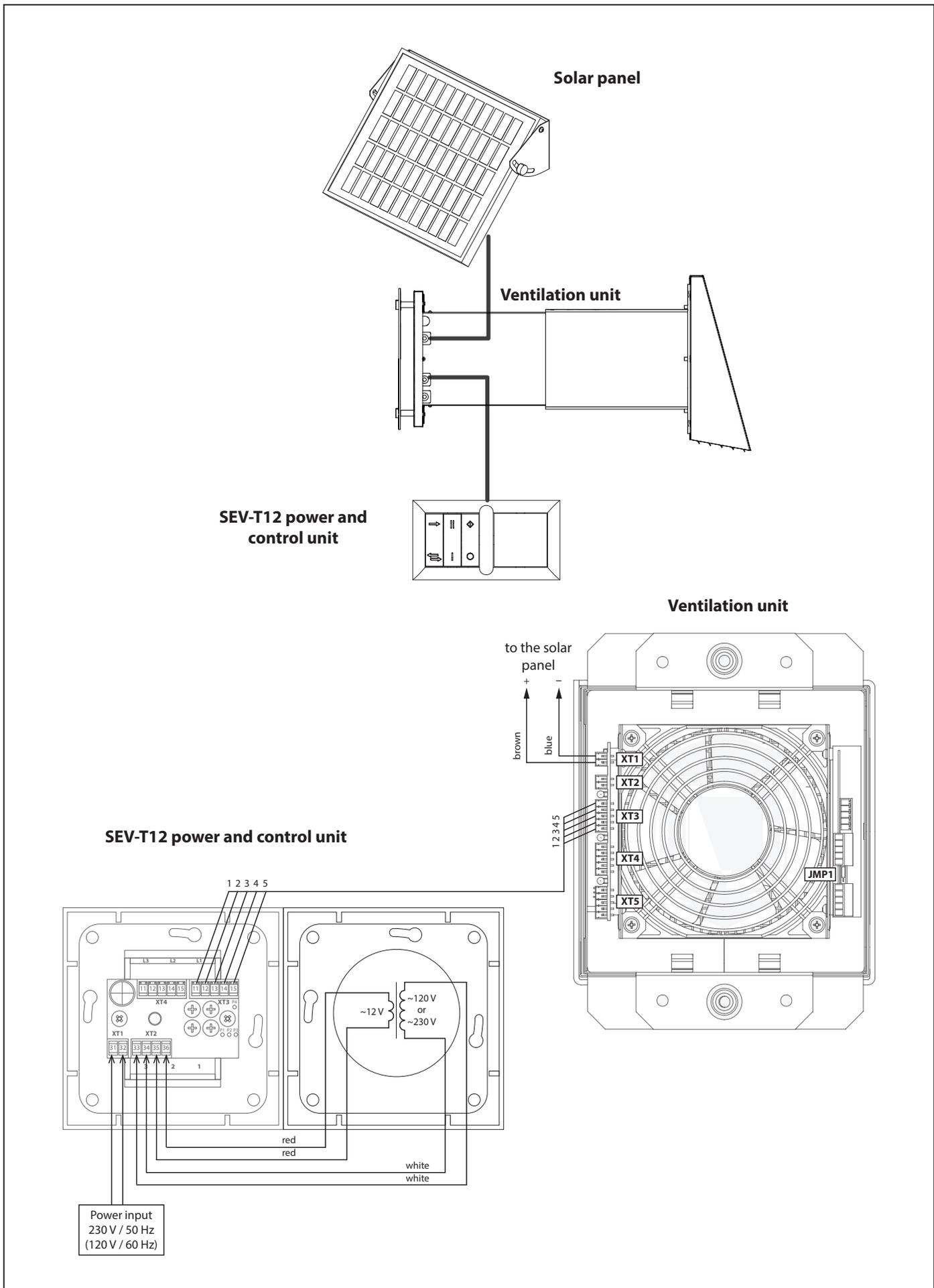


Fig. 13. External wiring diagram for VENTO Solar V60 Pro / VENTO Solar V60 S Pro

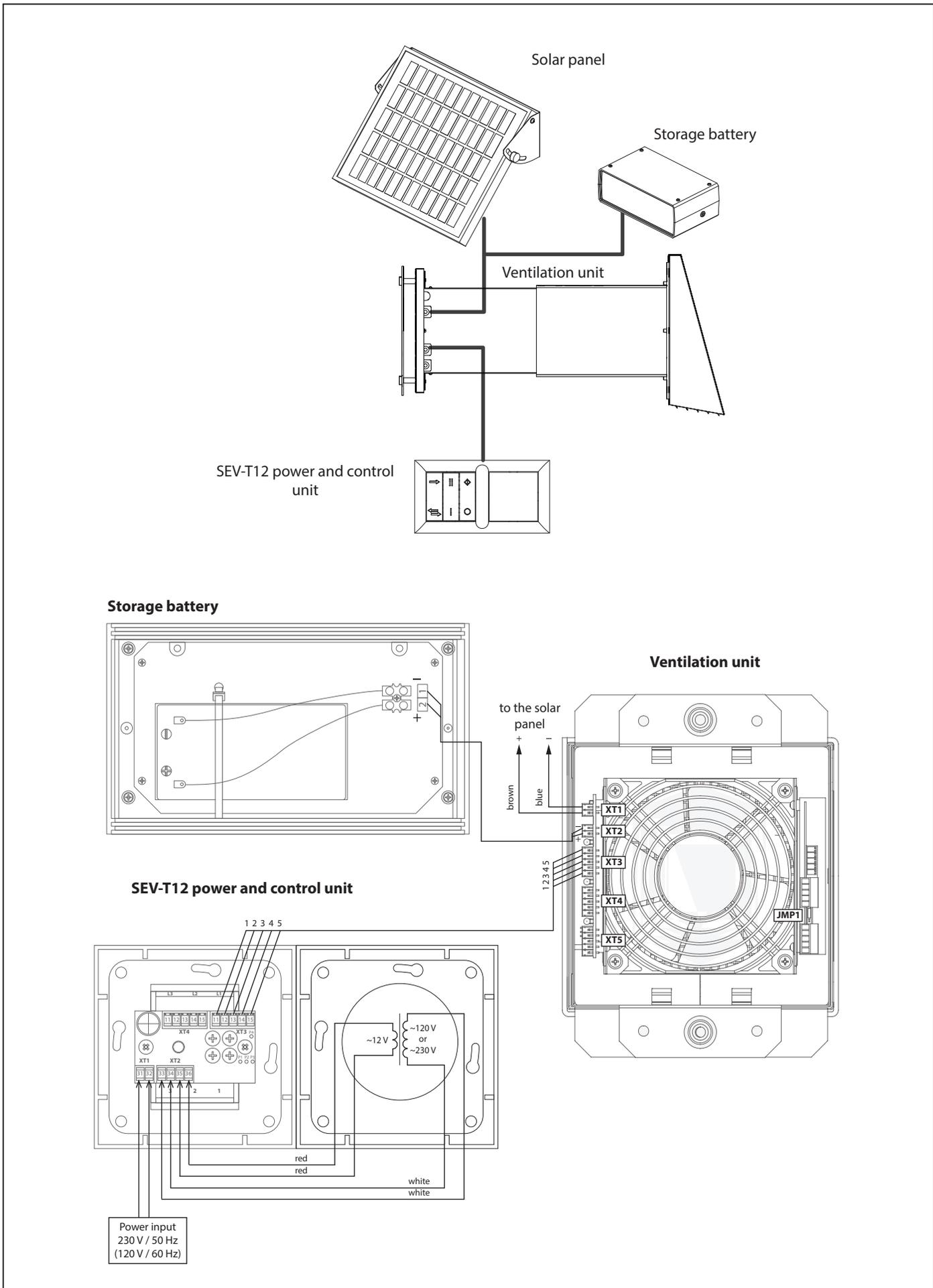


Fig. 14. External wiring diagram for VENTO Solar V60 Pro2 / VENTO Solar V60 S Pro2

Connection of several units.

A single power and control unit SEV-T12 is able to operate unlimited number of VENTO Solar V60 units under condition that each ventilation unit is connected to an individual solar panel or to an individual storage battery. 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 ventilation units in compliance with the terminal numbers as stated in Fig. 15.

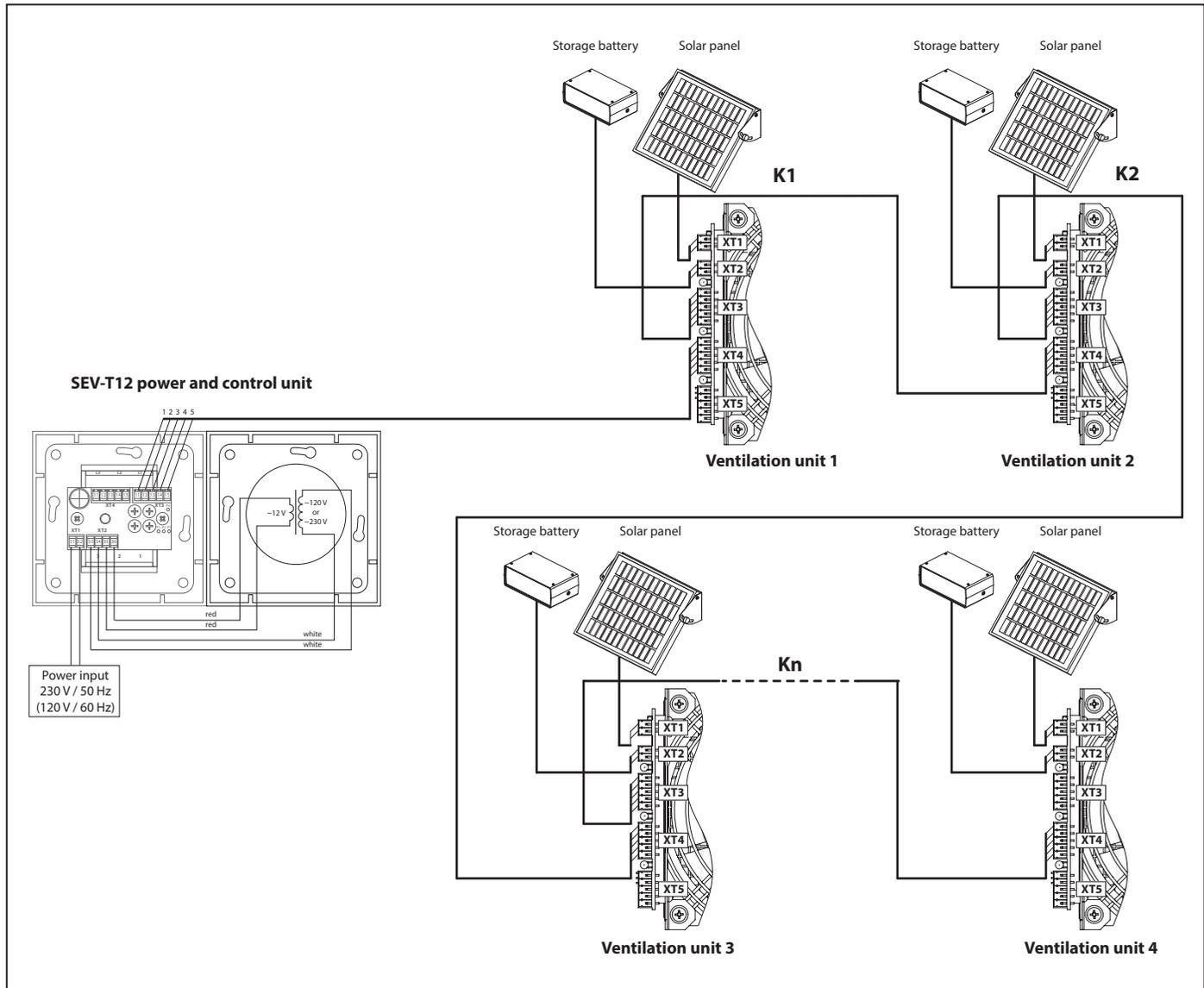


Fig. 15. Wiring diagram for connection of several VENTO Solar V60 Pro2 units

MAINTENANCE



WARNING!

Disconnect the unit from power mains prior to maintenance operations!

The unit technical maintenance consists in the periodic cleaning of the unit surfaces and cleaning or replacement of the filters. Remove dust with a soft brush, cloth or a vacuum cleaner. Do not use water, abrasive detergents, solvents, sharp objects.

1. Fan maintenance (once a year).

- Pull out the decorative fan grille and clean it.
- Disconnect the wires from the fan.
- Clean the impeller blades, Fig. 16. Remove dust with a soft brush, cloth or a vacuum cleaner. Cleaning with water, abrasive detergents, solvents, sharp objects is not allowed. Clean the impeller blades at least once a year.

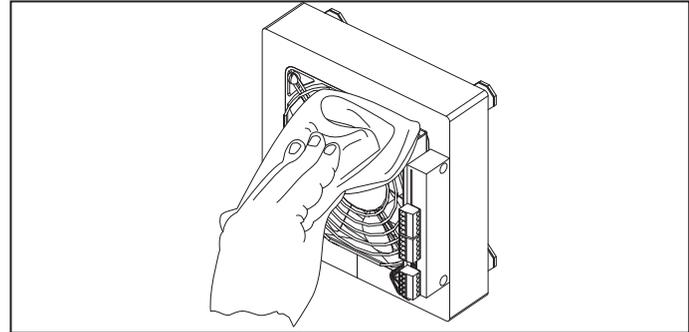


Fig. 16. Impeller blade cleaning

2. Heat regenerator and filter maintenance (4 times a year).

- Take off the decorative panel and clean it. Remove the filter.
- Pull the cord to remove the regenerator and the filters from the air duct. Do not let the regenerator fall down, Fig. 17.
- Clean the filters as often as required, but at least once in three months. To clean the filters flush those under running water or use a vacuum

cleaner, Fig. 18. Let the filters dry and install the dry filters inside the air duct. Contact a local distributor for the filters stated above in the section "Technical data".

- Even regular filter maintenance may not completely prevent dust ingress into the heat regenerator. Clean the heat regenerator with a vacuum cleaner at least once a year to keep its high heat recovery properties.

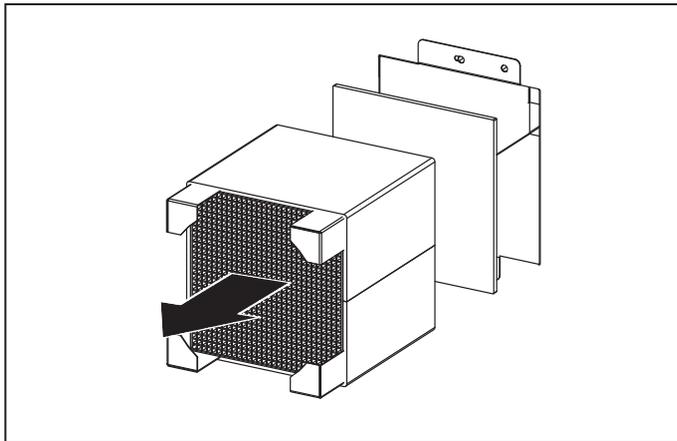


Fig. 17. Heat regenerator removal

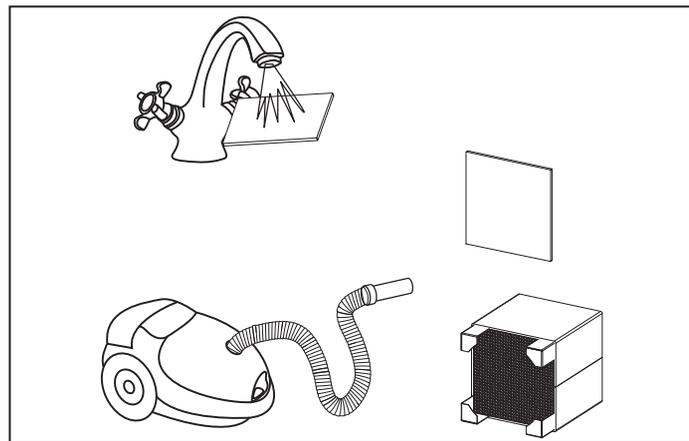


Fig. 18. Regenerator and filter cleaning

3. Outer ventilation hood maintenance (once a year).

The outer ventilation hood may get clogged with leaves and other objects that reduce the ventilation unit capacity.

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

Ventilation hood cleaning procedure is as follows:

- remove the upper part of the outer ventilation hood: Fig. 19 – for VENTO Solar V60 Pro / Pro2; Fig. 20 – for VENTO Solar V60 S Pro / S Pro2.
- clean the outer ventilation hood and the air duct.

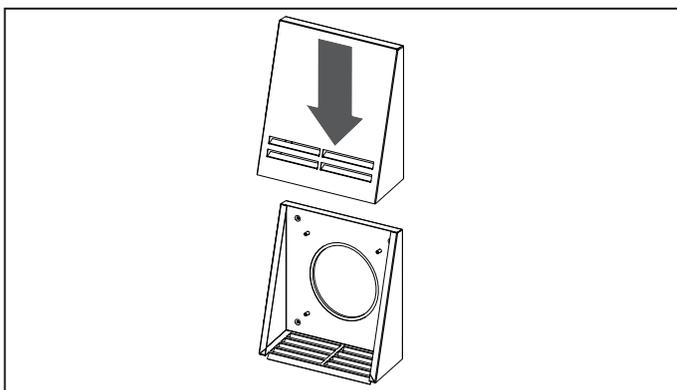


Fig. 19.

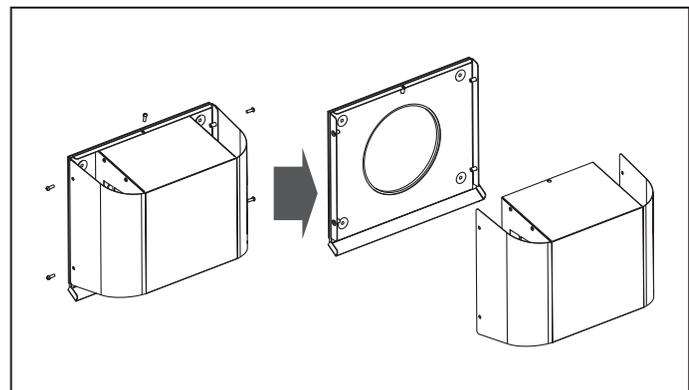


Fig. 20

4. Solar panel maintenance (4 times a year).

Keep the solar panel clean and remove regularly any contaminations to ensure its high performance, Fig. 21. Do not scratch and do not damage the solar cells.

Perform preventive maintenance operations 4 times per year or more often, depending on the environmental conditions. The solar modules must not be shadowed by the plants.

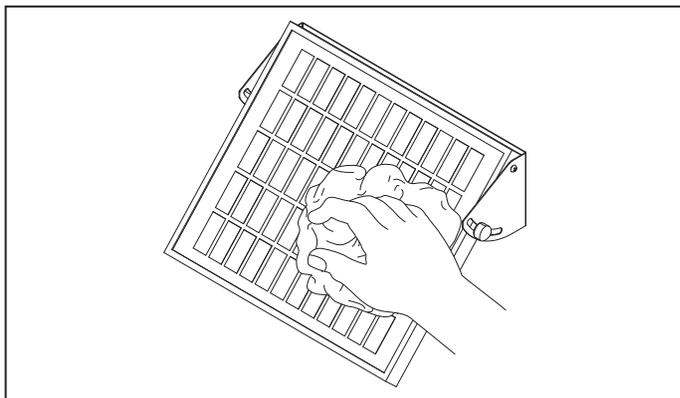


Fig. 21.

TROUBLESHOOTING

Fault	Possible reasons	Fault handling
The fan does not start when the ventilation unit is on.	No power supply.	<ul style="list-style-type: none"> Make sure of correct power supply, otherwise troubleshoot the connection error.
	Jammed motor, soiled impeller blades.	<ul style="list-style-type: none"> Turn the unit off. Troubleshoot the motor jam and the impeller clogging. Clean the blades. Restart the unit.
Automatic switch tripping during the ventilation unit start.	High current consumption in power mains as a result of a short circuit.	<ul style="list-style-type: none"> Turn the unit off. Contact the product seller.
Low air flow.	Low set fan speed.	<ul style="list-style-type: none"> Set higher speed.
	The filters, the fan or the energy regenerator are soiled.	<ul style="list-style-type: none"> Clean or replace the filter. Clean the fan and the energy regenerator. Refer to the maintenance procedure of the energy regenerator and the filters.
Noise, vibration.	The impeller is soiled.	<ul style="list-style-type: none"> Clean the impeller.
	Loose screw connection of the unit casing or the outer ventilation hood.	<ul style="list-style-type: none"> Tighten the screws of the unit or the outer ventilation hood.

ACCEPTANCE CERTIFICATE

The single-room reversible heat recovery ventilation unit

VENTO Solar V60 Pro		VENTO Solar V60 Pro2	
VENTO Solar V60 S Pro		VENTO Solar V60 S Pro2	

is recognizes as serviceable.

The unit complies with the requirements according to the EU norms and directives, to the relevant EU-Low Voltage Equipment Directives, EU-Directives on Electromagnetic Compatibility. We hereby declare that the following 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.

This certificate is issued following test carried out on samples of the product referred to above.

Approval mark Manufacturing date _____

CONNECTION CERTIFICATE

The single-room reversible heat recovery ventilation unit

VENTO Solar V60 Pro		VENTO Solar V60 Pro2	
VENTO Solar V60 S Pro		VENTO Solar V60 S Pro2	

is connected to power mains in compliance with the operation manual requirements by the professional:

Company: _____

Name: _____

Date _____ Signature _____

WARANTY CARD

VENTO Solar V60 Pro		VENTO Solar V60 Pro2	
VENTO Solar V60 S Pro		VENTO Solar V60 S Pro2	

SELLER

SALES DATE

REPRESENTATIVE IN EU

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