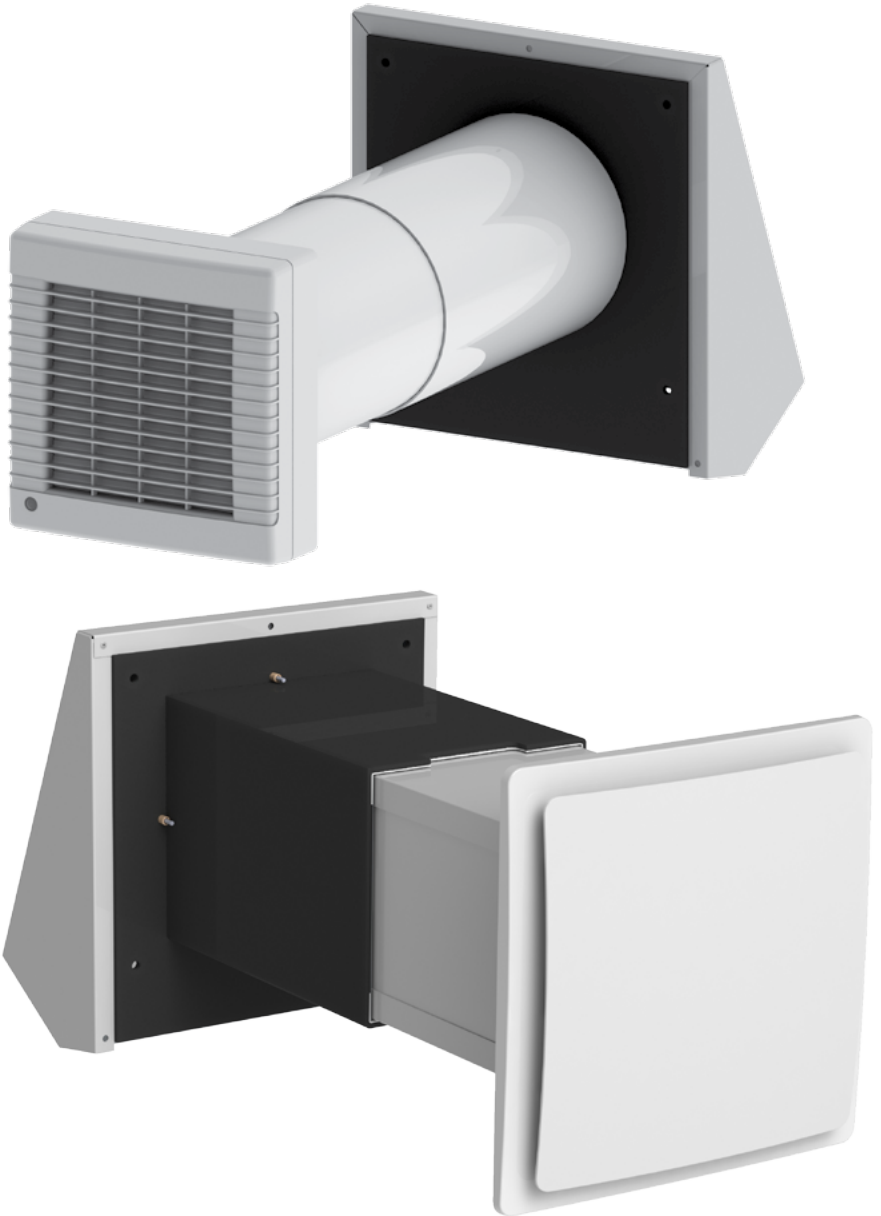


TwinFresh R-50
TwinFresh RA-50
TwinFresh R-50-2
TwinFresh RA-50-2

TwinFresh S-60
TwinFresh SA-60
TwinFresh S-60-2
TwinFresh SA-60-2
TwinFresh S1-50
TwinFresh SA1-50
TwinFresh S1-50-2
TwinFresh SA1-50-2



**Single-room reversible energy
regeneration ventilator**

CONTENT



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

SAFETY REQUIREMENTS

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

Symbol legend:

	WARNING!
	DO NOT!

UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS



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



- The unit must be grounded!



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



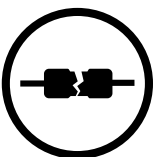
- While installing the unit follow the safety regulations specific to the use of electric tools.



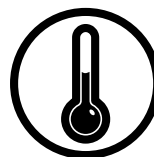
- Do not change the power cable length at your own discretion.
- Do not bend the power cable.
- Avoid damaging the power cable.
- Do not put any foreign objects on the power cable.



- Unpack the unit with care.



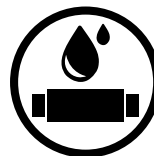
- Do not use damaged equipment or cables when connecting the unit to power mains.



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



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



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

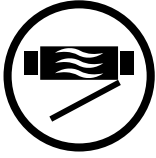
UNIT MOUNTING AND OPERATION SAFETY PRECAUTIONS



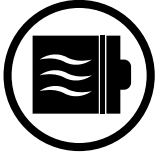
- Do not allow children to operate the unit.



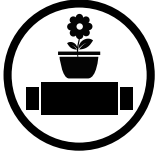
- Do not store any explosive or highly flammable substances in close proximity to the unit.



- Do not open the unit during operation.



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



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



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



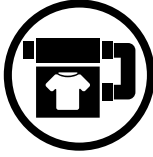
- When the unit generates unusual sounds, odour or emits smoke disconnect it from power supply and contact the Seller.



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



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



- Use the unit only for its intended purpose.

PURPOSE

The unit is designed to ensure continuous mechanical air exchange in houses, offices, hotels, cafes, conference halls and other utility and public spaces as well as to recover the heat energy contained in the air extracted from the premises to warm up the filtered stream of supply air.

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

The ventilator is designed for through-the-wall mounting. The telescopic ventilator design enables its installation in the walls with various thickness, see the table below:

Wall thickness	Ventilator model
from 250 mm (9 13/16") up to 470 mm (18 1/2")	<ul style="list-style-type: none"> • TwinFresh R-50 • TwinFresh RA-50 • TwinFresh RA-50 (120V / 60Hz) • TwinFresh R-50-1 • TwinFresh RA-50-1 • TwinFresh RA-50-1 (120V / 60Hz) • TwinFresh R-50-3 • TwinFresh RA-50-3 • TwinFresh RA-50-3 (120V / 60Hz) • TwinFresh R-50-4 • TwinFresh RA-50-4 • TwinFresh RA-50-4 (120V / 60Hz) • TwinFresh R-50-5 • TwinFresh RA-50-5 • TwinFresh RA-50-5 (120V / 60Hz) • TwinFresh S1-50 • TwinFresh SA1-50 • TwinFresh SA1-50 (120V / 60Hz)
from 255 mm (10 1/16") up to 475 mm (18 11/16")	<ul style="list-style-type: none"> • TwinFresh S-60 • TwinFresh SA-60 • TwinFresh SA-60 (120V / 60Hz)

The unit is rated for continuous operation.

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



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

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

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

DELIVERY SET

Model	Control unit	Ventilator	Cable, 3 m long 5xAWG/7 (5x0.25)	User's manual	Packing box	Mounting kit
TwinFresh R-50	✗					
TwinFresh RA-50	✓					
TwinFresh RA-50 (120V / 60Hz)	✓					
TwinFresh R-50-1	✗					
TwinFresh RA-50-1	✓					
TwinFresh RA-50-1 (120V / 60Hz)	✓					
TwinFresh R-50-2						
TwinFresh RA-50-2	✓					
TwinFresh RA-50-2 (120V / 60Hz)	✓					
TwinFresh R-50-3	✗					
TwinFresh RA-50-3	✓					
TwinFresh RA-50-3 (120V / 60Hz)	✓					
TwinFresh R-50-4	✗					
TwinFresh RA-50-4	✓					
TwinFresh RA-50-4 (120V / 60Hz)	✓	✓	✓	✓	✓	✓
TwinFresh R-50-5	✗					
TwinFresh RA-50-5	✓					
TwinFresh RA-50-5 (120V / 60Hz)	✓					
TwinFresh S1-50	✗					
TwinFresh SA1-50	✓					
TwinFresh SA1-50 (120V / 60Hz)	✓					
TwinFresh S1-50-2	✗					
TwinFresh SA1-50-2	✓					
TwinFresh SA1-50-2 (120V / 60Hz)	✓					
TwinFresh S-60	✗					
TwinFresh SA-60	✓					
TwinFresh SA-60 (120V / 60Hz)	✓					
TwinFresh S-60-2	✗					
TwinFresh SA-60-2	✓					
TwinFresh SA-60-2 (120V / 60Hz)	✓					

DESIGNATION KEY

TwinFresh RA1 - 50 - 2 (120 V / 60 Hz)

- **Power voltage**
 _ — 230 V / 50 Hz
120 V / 60 Hz — power voltage 120 V / 60 Hz
- **Ventilation hood type**
 _ — tapered metal ventilation hood
1 — round stainless steel ventilation hood
2 — metal ventilation hood for thin walls
3 — round plastic ventilation grille
4 — rectangular plastic ventilation grille
5 — angular mounting kit
- **Rated air capacity [m³/h]**
- **Front panel type**
 _ — ventilation grille
1 - panel with a flat front cover
- **Controls availability**
- **Telescopic air duct cross section**
R — round
S — square
- **TwinFresh Standard Series**

MAIN TECHNICAL PARAMETERS

The ventilator is rated 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.

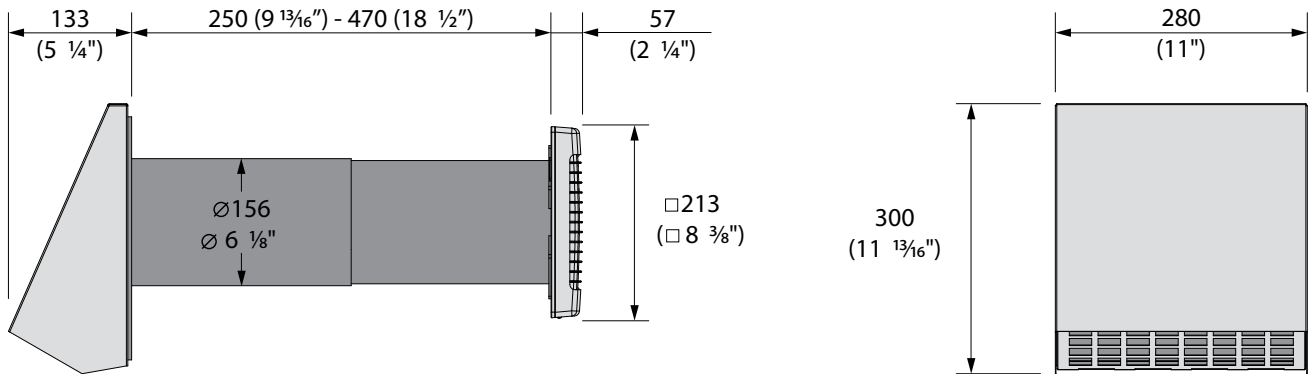
The ventilator design is regularly improved, so some models may slightly differ from those ones described in this manual.

	TwinFresh R-50 TwinFresh RA-50		TwinFresh S1-50 TwinFresh SA1-50		TwinFresh S-60 TwinFresh SA-60		TwinFresh R-50 (120V / 60Hz) TwinFresh RA-50 (120V / 60Hz)		TwinFresh S1-50 (120V / 60Hz) TwinFresh SA1-50 (120V / 60Hz)		TwinFresh S-60 (120V / 60Hz) TwinFresh SA-60 (120V / 60Hz)					
	1	2	1	2	1	2	1	2	1	2	1	2				
Speed	1	2	1	2	1	2	1	2	1	2	1	2				
Supply Voltage [V]	230 V / 50 Hz						120 V / 60 Hz									
Power [W]	3,5	4,6	3,5	4,6	2,8	4,8	4,1	7,0	4,25	7,1	3,2	5,4				
Current [A]	0,02	0,025	0,02	0,025	0,018	0,028	0,04	0,07	0,04	0,07	0,04	0,06				
Air capacity [m ³ /h] (CFM)	25 (15)	50 (29)	25 (15)	50 (29)	35 (21)	58 (34)	22 (13)	58 (34)	15 (9)	46 (27)	30 (18)	51 (30)				
RPM [min ⁻¹]	570	1100	570	1100	1150	2100	660	1410	660	1410	1500	2410				
Noise level, 1 m [dB(A)] (Sones)	24 (0,5)	34 (1,2)	24 (0,5)	34 (1,2)	34 (1,2)	41 (2,0)	26 (0,6)	36 (1,5)	26 (0,6)	36 (1,5)	36 (1,5)	43 (3,5)				
Noise level, 3 m [dB(A)] (Sones)	14 (0,3)	24 (0,5)	14 (0,3)	24 (0,5)	24 (0,5)	29 (0,7)	16 (0,3)	26 (0,5)	16 (0,3)	26 (0,5)	26 (0,5)	31 (0,8)				
Noise level [dB(A)] (Sones)*	18 (0,4)		19 (0,4)		19 (0,4)		18 (0,4)		19 (0,4)		19 (0,4)					
Max. transported medium temperature [°C (°F)]	from -20 (-4) up to +50 (122)															
Heat regeneration efficiency [%]	≤90				≤88				≤90				≤88			
Regenerator type	Ceramic															
Air duct size [mm] (inches)	Ø150 (6")		164x164 (6 7/16" x 6 7/16")		164x164 (6 7/16" x 6 7/16")		Ø150 (6")		164x164 (6 7/16" x 6 7/16")		164x164 (6 7/16" x 6 7/16")					

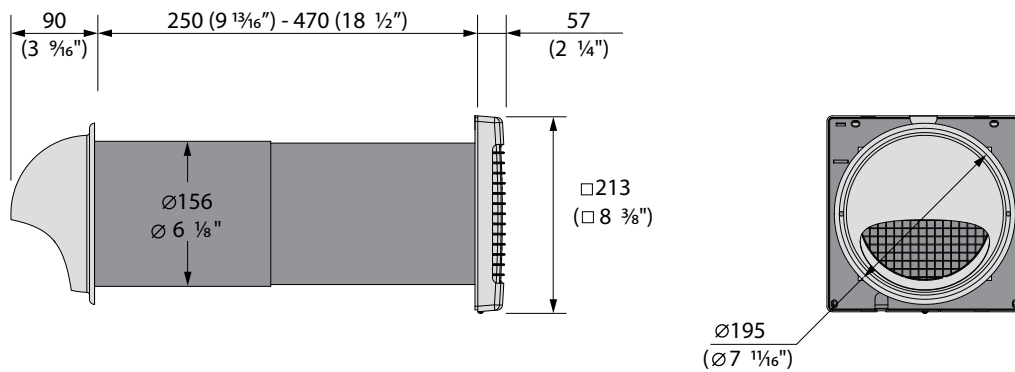
* Outdoor sound pressure attenuation is measured by comparing the indoor sound pressure level in an open air duct inside the wall and the indoor sound level with the ventilator built inside the wall.

VENTILATOR OVERALL DIMENSIONS [MM] (INCHES)

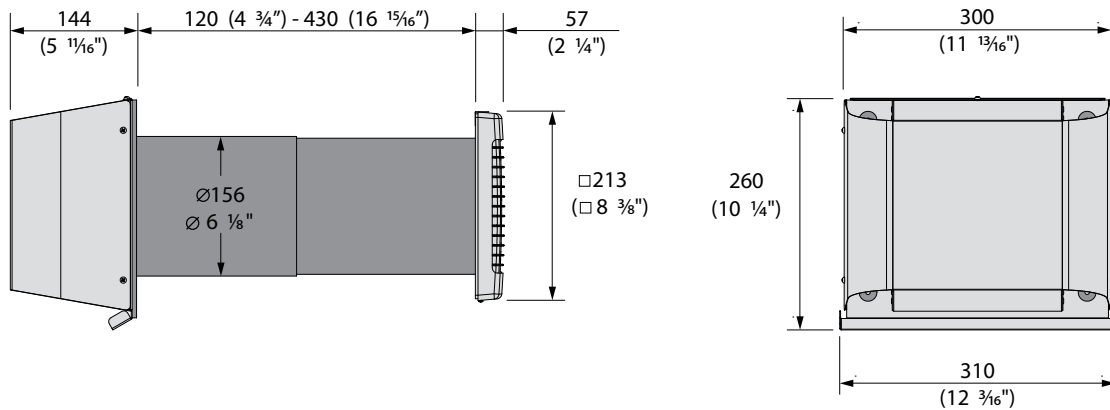
TwinFresh R-50 and TwinFresh RA-50



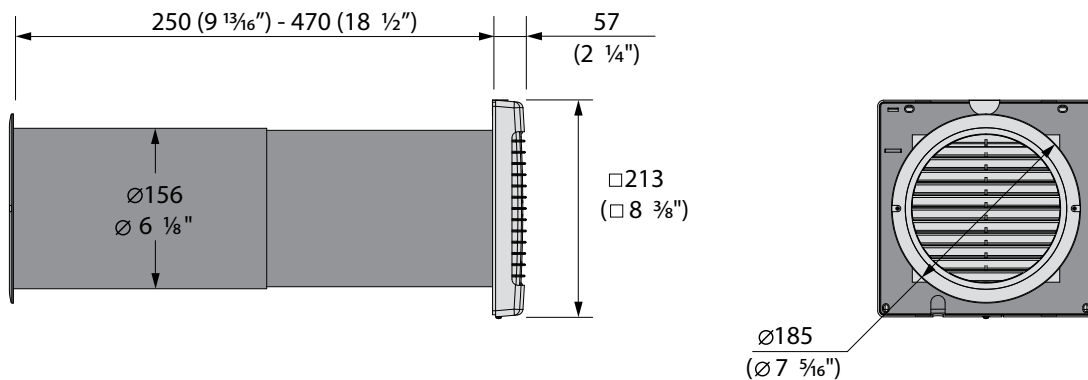
TwinFresh R-50-1 and TwinFresh RA-50-1



TwinFresh R-50-2 and TwinFresh RA-50-2

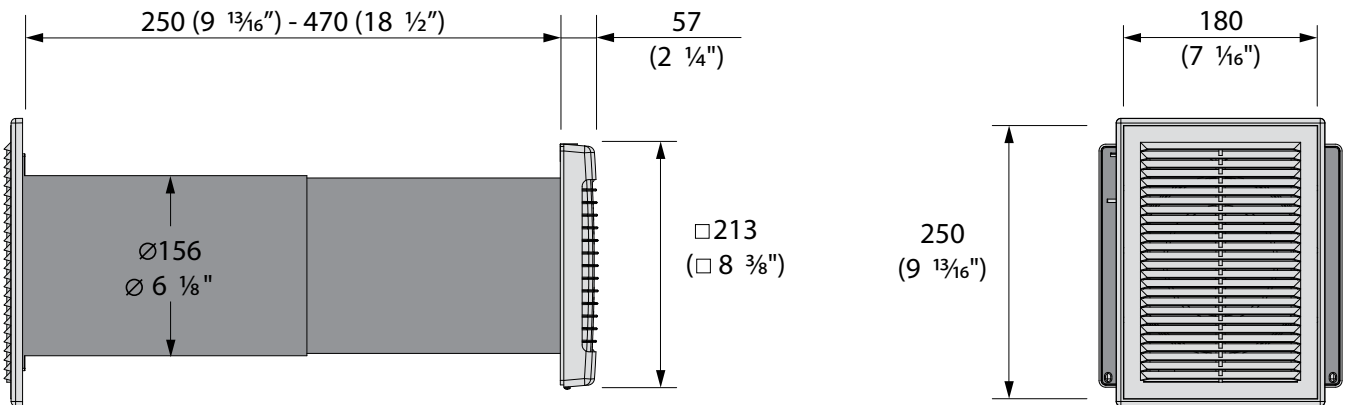


TwinFresh R-50-3 and TwinFresh RA-50-3

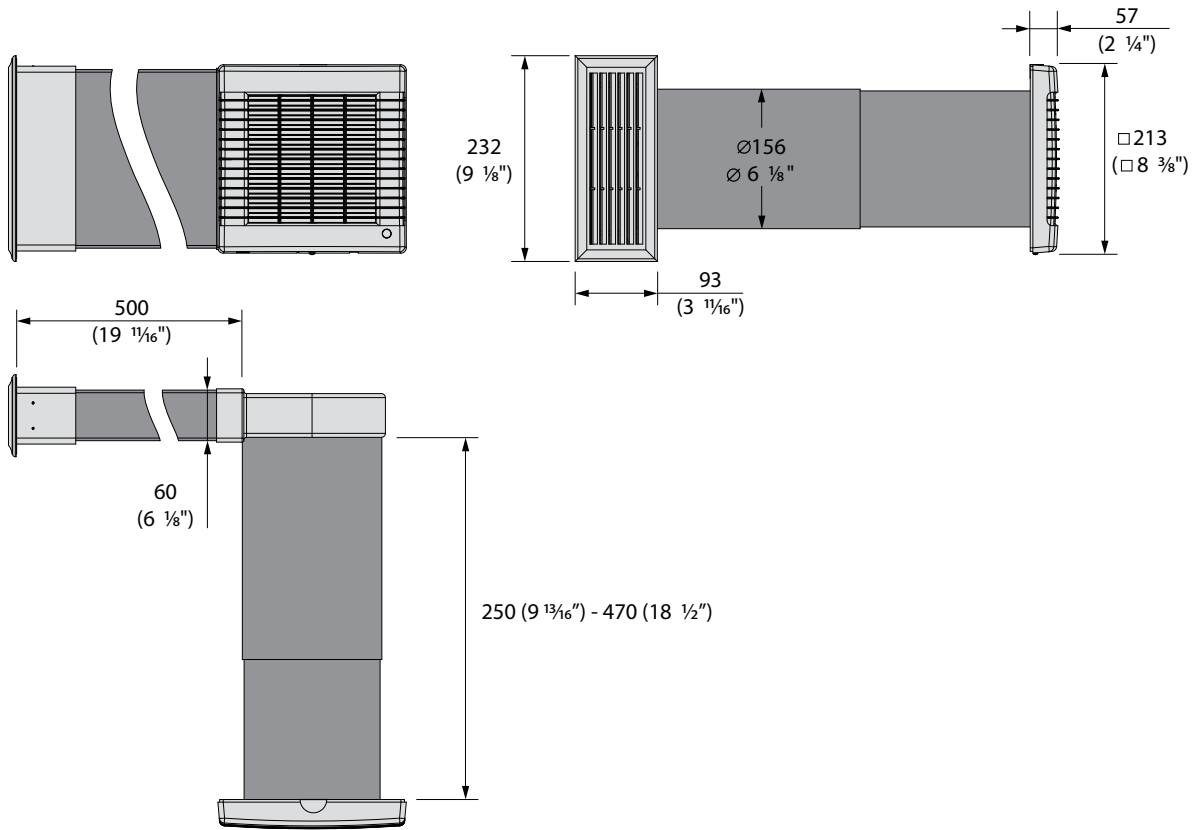


VENTILATOR OVERALL DIMENSIONS [MM] (INCHES)

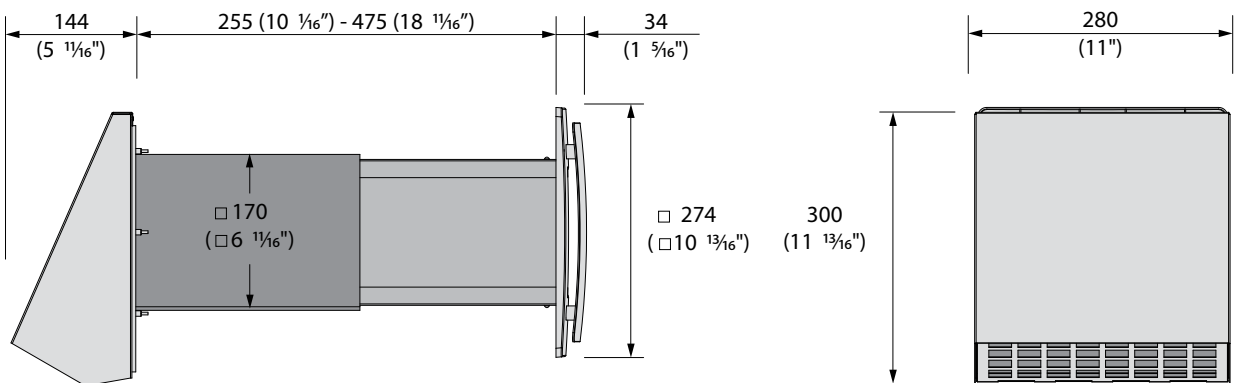
TwinFresh R-50-4 and TwinFresh RA-50-4



TwinFresh R-50-5 and TwinFresh RA-50-5

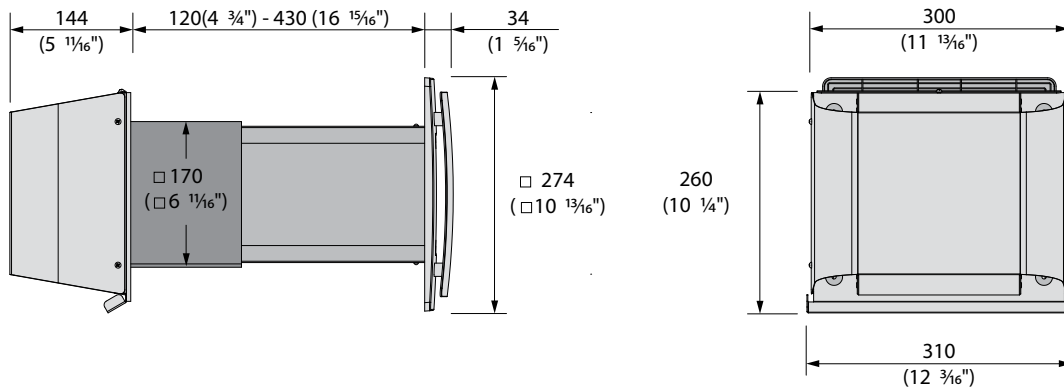


TwinFresh S-60 and TwinFresh SA-60

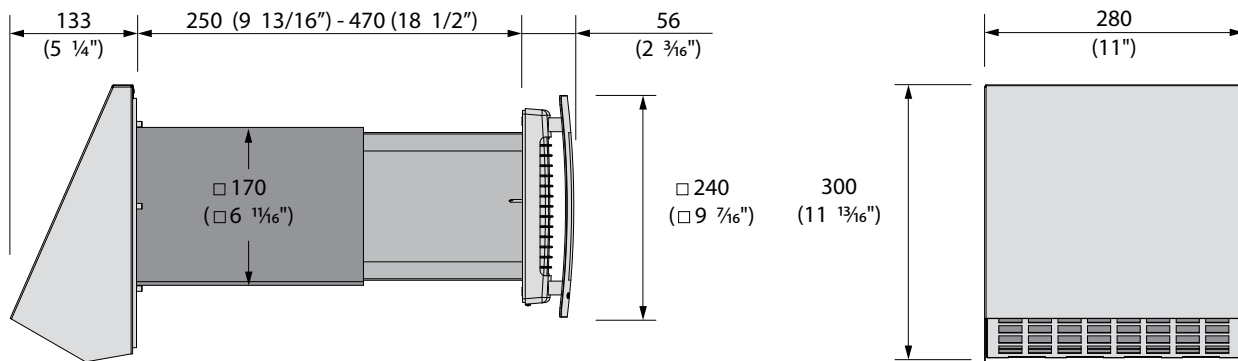


VENTILATOR OVERALL DIMENSIONS [MM] (INCHES)

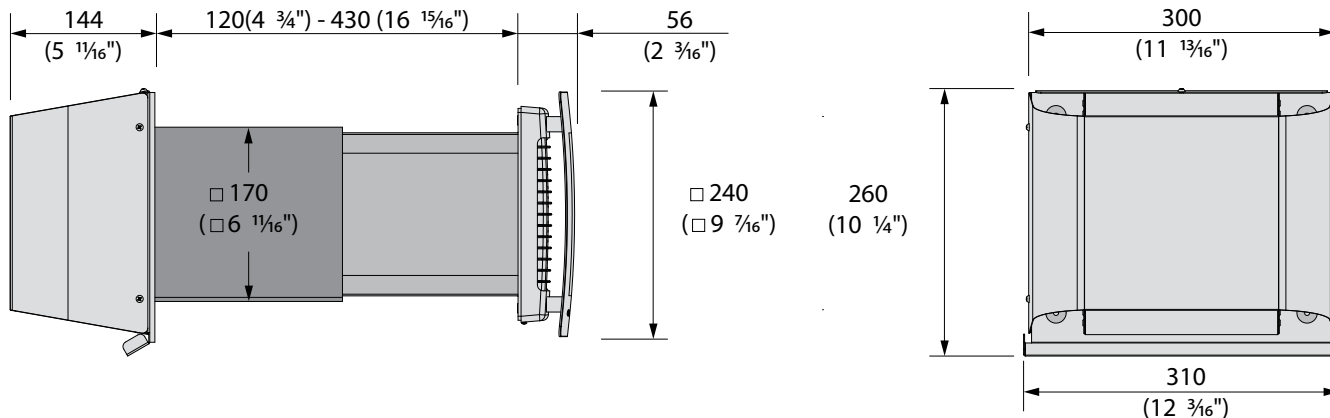
TwinFresh S-60-2 and TwinFresh SA-60-2



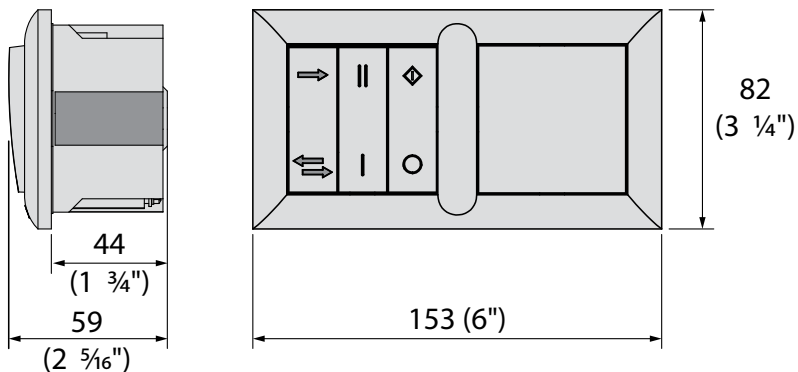
TwinFresh S1-50 and TwinFresh SA1-50



TwinFresh S1-50-2 and TwinFresh SA1-50-2



CONTROL UNIT OVERALL DIMENSIONS [MM] (INCHES)



DESIGN AND OPERATING LOGIC

The ventilator consists of a telescopic air duct with adjustable length (inner part and outer part), a ventilation unit and an outer ventilation hood.

The inner telescopic part contains one or two air filters, depending on the ventilation model and a ceramic regenerator.

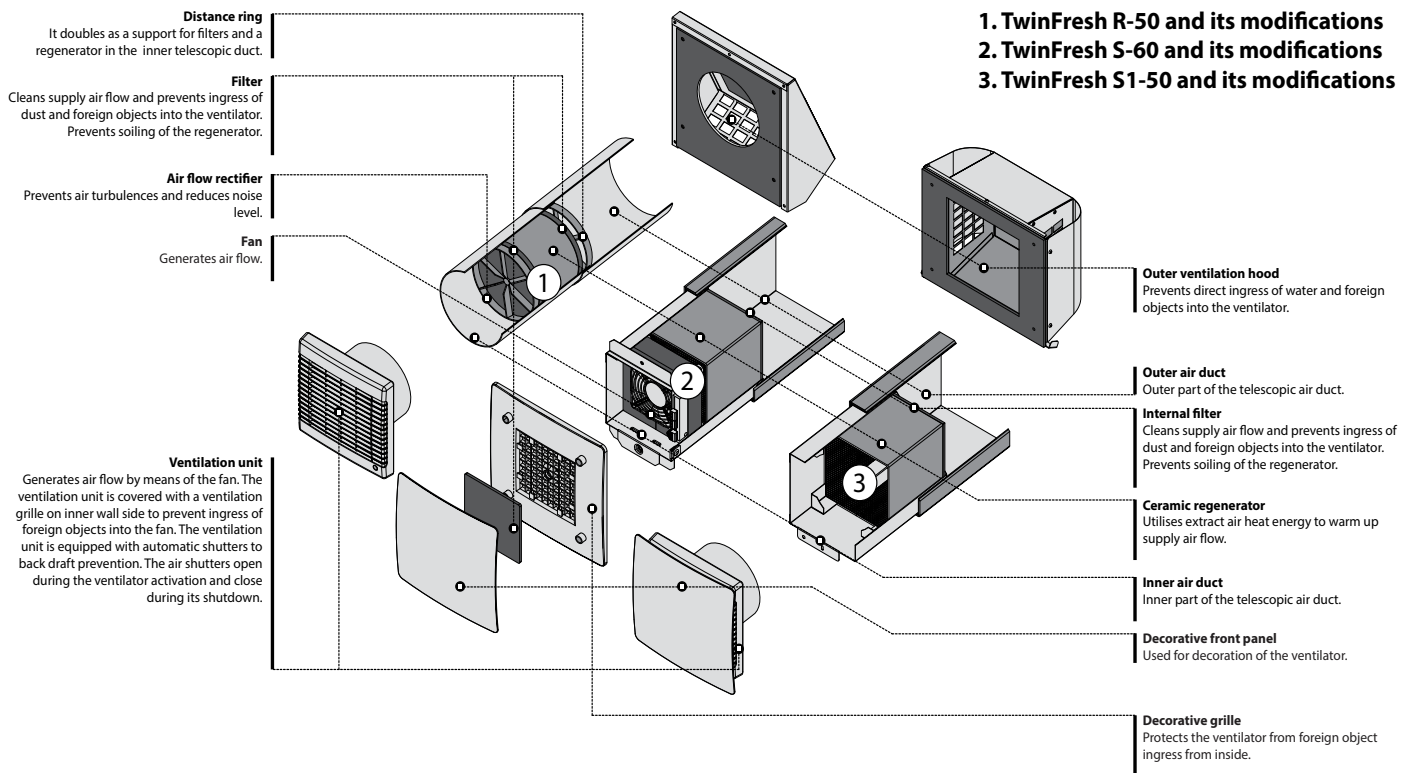
The air filters are designed to purify supply air and prevent foreign object ingress into the regenerator and the fan. The ceramic regenerator utilises extract air heat energy to warm up supply air flow. The regenerator is equipped with a pull cord inside to facilitate its withdrawal from the ventilator. The regenerator is installed on an insulating layer used as a sealer as well.

The ventilation unit must be installed on inner side of the wall. The ventilation unit is equipped with automatic shutters that shut the air duct off during the ventilator standby and prevent air back draft. TwinFresh S-60 and its modifications are not equipped with automatic shutters.

The outer ventilation hood is used to prevent direct ingress of water and other objects to the ventilator.

TWINFRESH STRUCTURE

- 1. TwinFresh R-50 and its modifications
- 2. TwinFresh S-60 and its modifications
- 3. TwinFresh S1-50 and its modifications



AUTOMATIC SHUTTERS OPERATION

Ventilator is off (the automatic shutters are closed)

Ventilator is on (the louver shutters are opened)



VENTILATOR OPERATION MODES

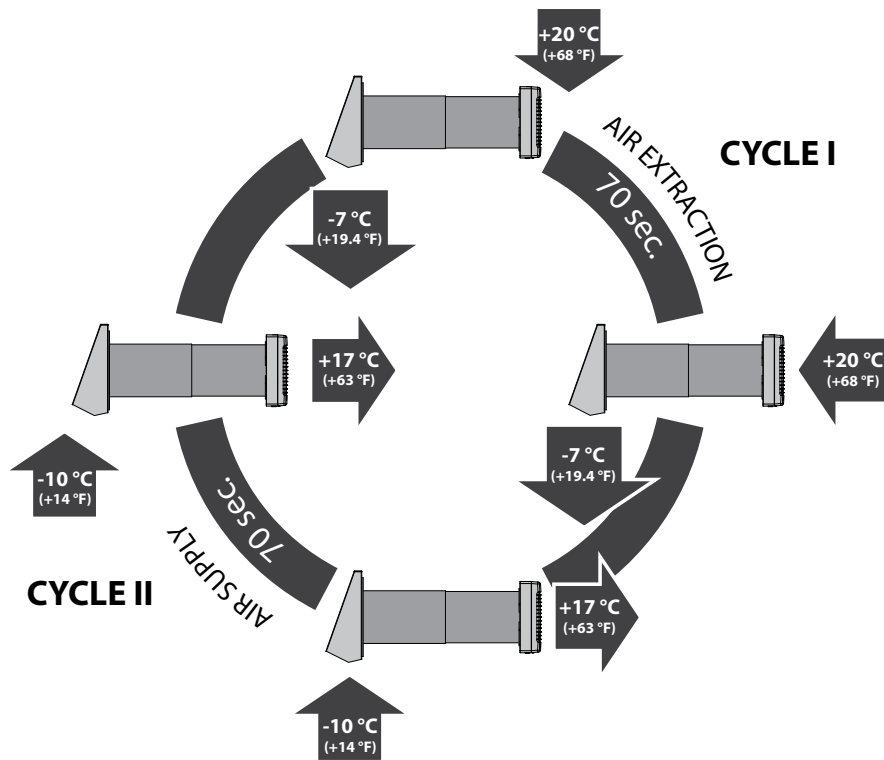
The ventilator has two ventilation modes:

- **Air supply / air extraction.** The ventilator operates in air supply or air extract mode with set air speed, see page 20.
- **Regeneration.** The ventilator operates in reversible mode with heat and humidity regeneration.

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

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

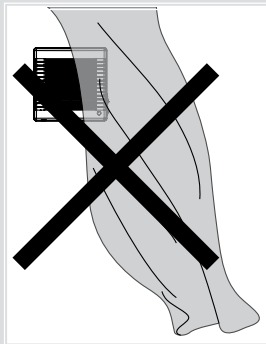
Cycle II. Fresh intake air from outside flows through the ceramic regenerator and absorbs accumulated moisture and heat up to the room temperature. In 70 seconds as the ceramic regenerator gets cooled down, the ventilator is switched into extract mode and the cycle is renewed.



MOUNTING AND SET-UP



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

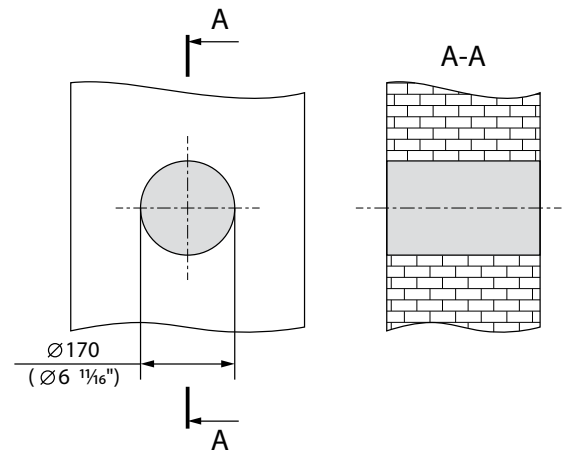
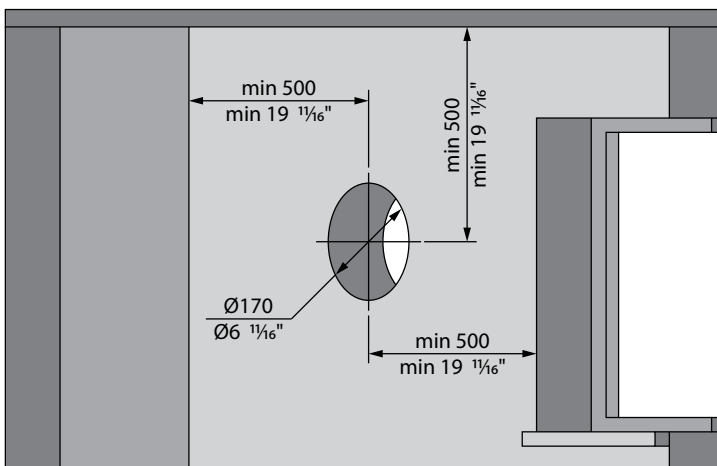


ATTENTION!

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. BESIDES, THE CURTAINS MAY PREVENT NORMAL AIR CIRCULATION AND REDUCE THE VENTILATOR PERFORMANCE.

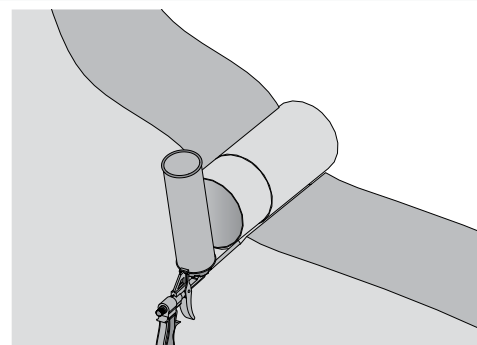
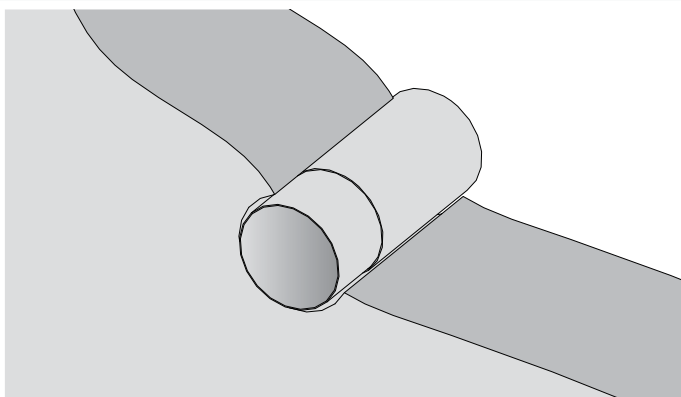
MOUNTING OF TWINFRESH R-50

1. Prepare a round through hole in the outer wall. The hole size in the wall is shown in the figure below.



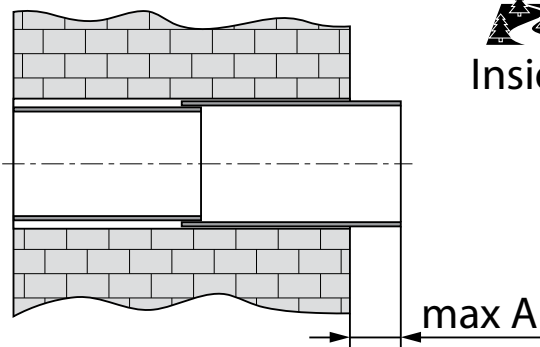
While mounting several connected in series ventilators provide a recess for the cable layout during the hole preparation to enable connection of several ventilators in series.

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



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

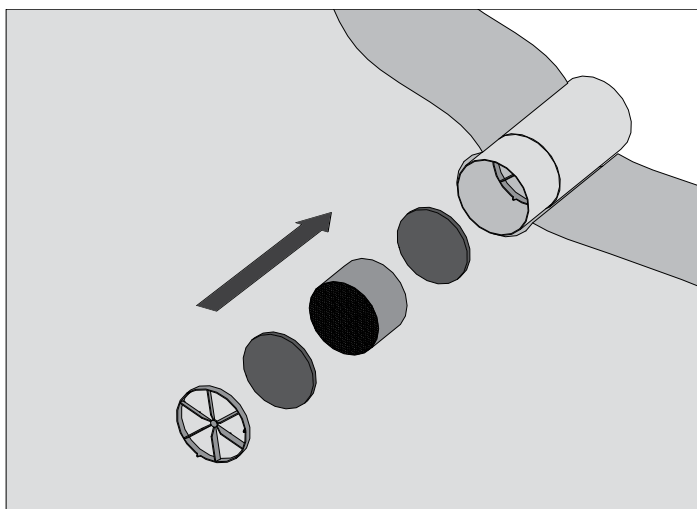
Outside



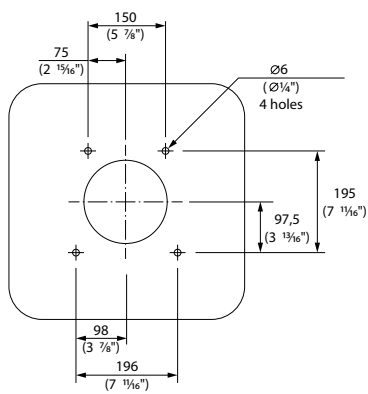
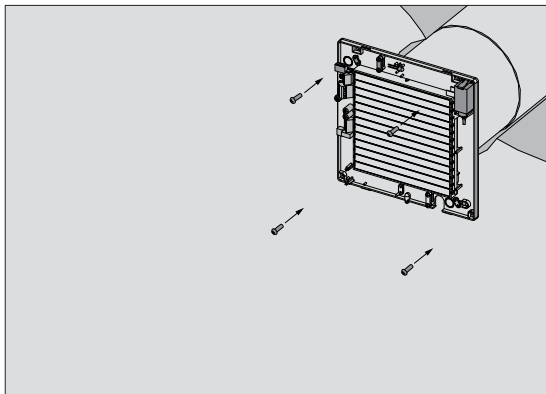
Inside

Ventilator model	A [mm] (inches)
TwinFresh R-50	10 ($\frac{3}{8}$ ")
TwinFresh R-50-1	0 (0")
TwinFresh R-50-2	10 ($\frac{3}{8}$ ")-110($4 \frac{5}{16}$ ")
TwinFresh R-50-3	0 (0")
TwinFresh R-50-4	0 (0")
TwinFresh R-50-5	0 (0")

3. Install the filter, the ceramic regenerator, another filter and the air flow rectifier in the consecutive order inside the telescopic air duct.

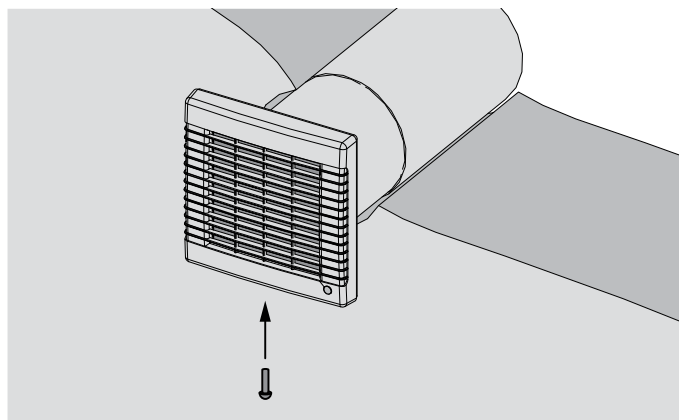
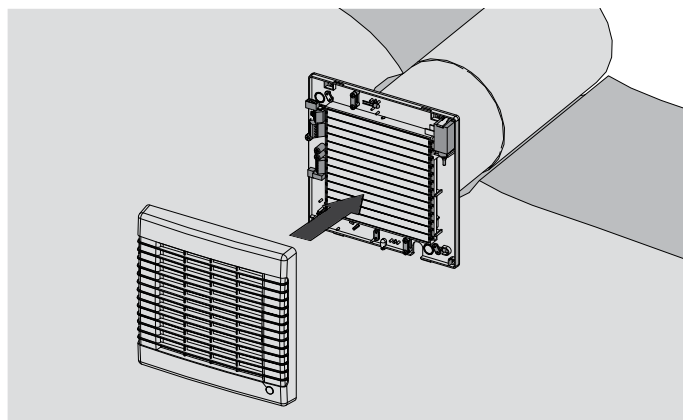


4. Prepare the holes for the dowels 5x25 and insert the dowels. Fix the back part of the ventilation unit on the inner wall by installing the supplied screws 3x25 into the drilled holes.



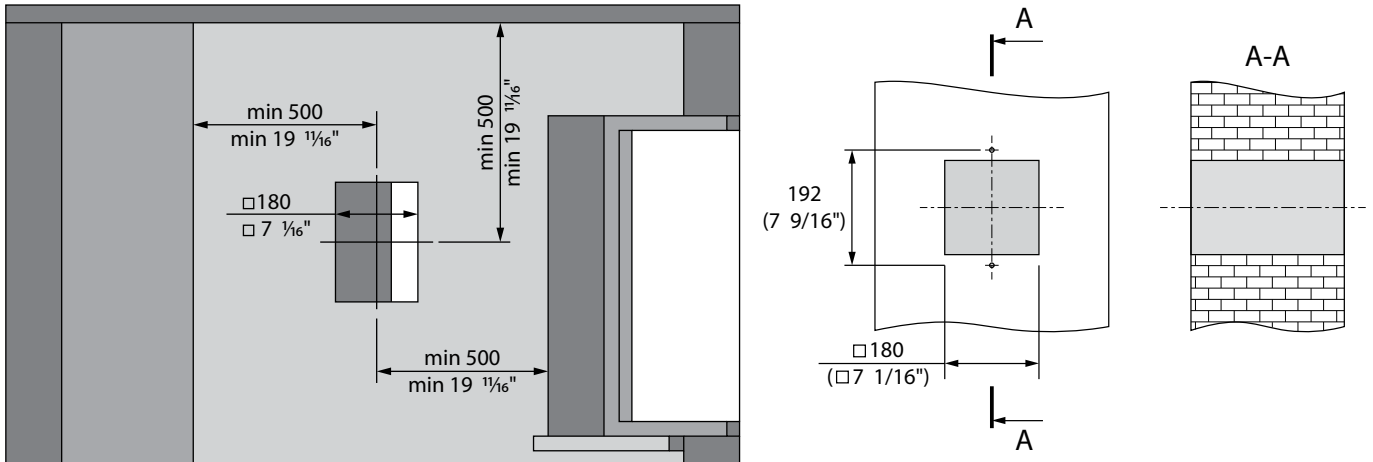
Mark and drill the fastening holes. Then insert the dowels.

5. Cover the ventilation unit with a front panel.



MOUNTING OF TWINFRESH S1-50, TWINFRESH S-60 AND MODIFICATIONS

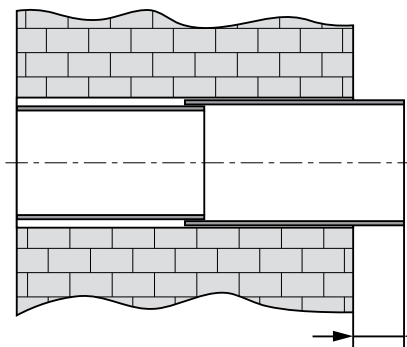
1. Prepare a square thorough hole in the outer wall. The hole size in the wall is shown in the figure below. Prepare two holes for the 5x25 dowels and insert the dowels.



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.

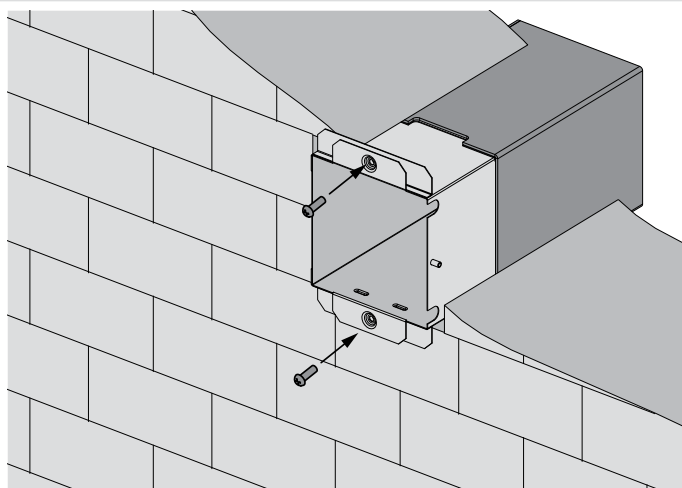
2. Install the telescopic air duct inside the wall. The telescopic air duct end must protrude to the distance A stated below:

 Outside

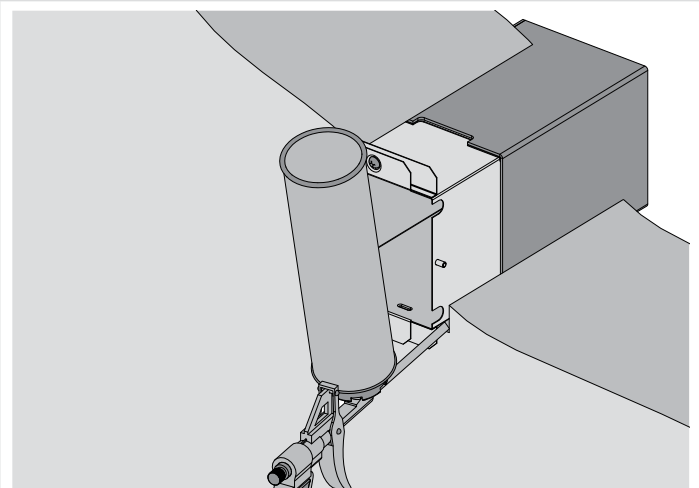


 Inside

Ventilator model	A [mm] (inches)
TwinFresh S1-50	10 (³ / ₈ ")
TwinFresh S-60	10 (³ / ₈ ")
TwinFresh S1-50-2	10 (³ / ₈ ")-110(4 ⁵ / ₁₆ ")
TwinFresh S-60-2	10 (³ / ₈ ")-110(4 ⁵ / ₁₆ ")

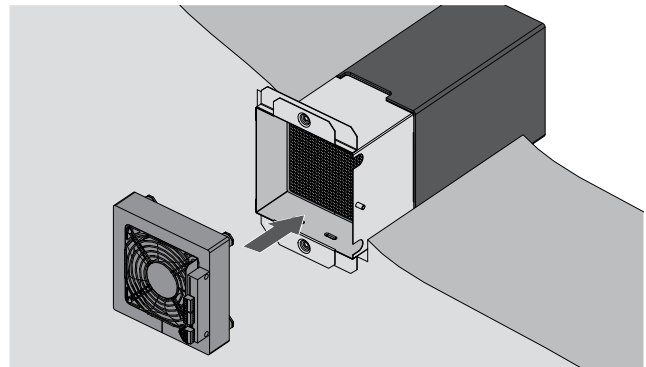
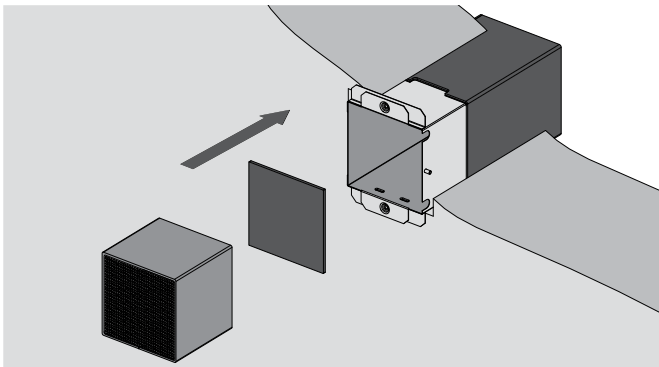


Fix the inner part of the telescopic air duct on the inner wall using the supplied 3x25 screws.

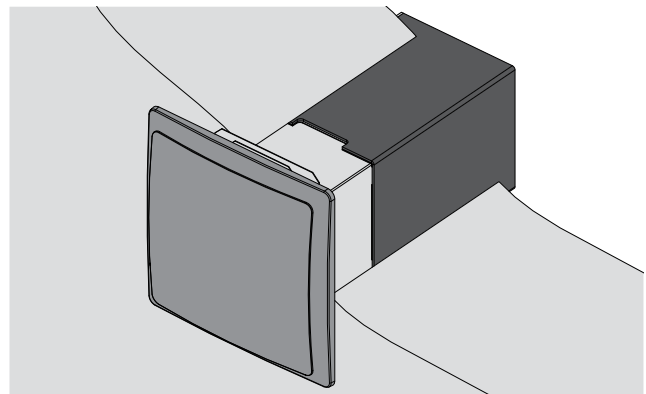
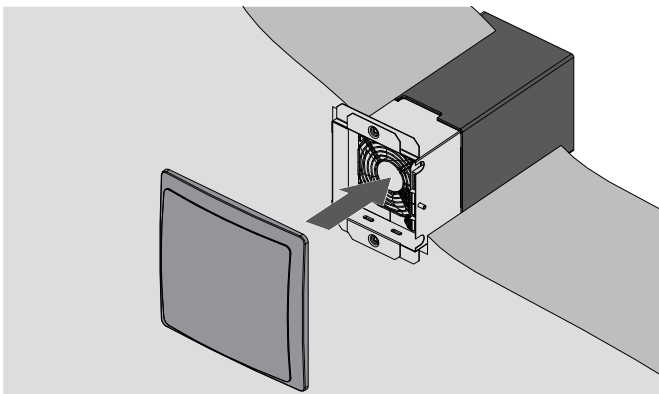


Fill the gaps between the wall and the telescopic air duct with a mounting foam.

3. Remove the protecting cardboard part. Install the filter, the ceramic regenerator and the fan in the telescopic air duct. Then perform electrical installations and lay out the cables in the wall. Install the TwinFresh S1-50 ventilation unit in the same way as TwinFresh R-50 ventilation unit, Page 14.



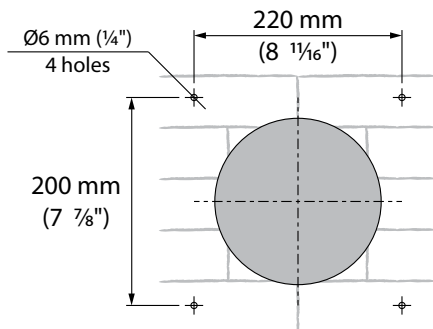
4. Cover the ventilation unit with a front panel.



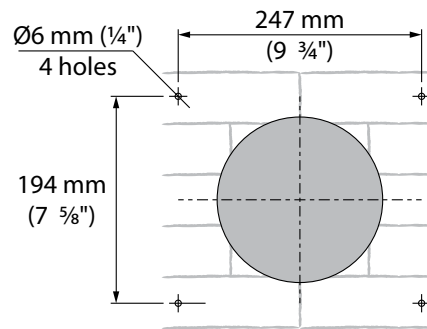
OUTER HOOD MOUNTING

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

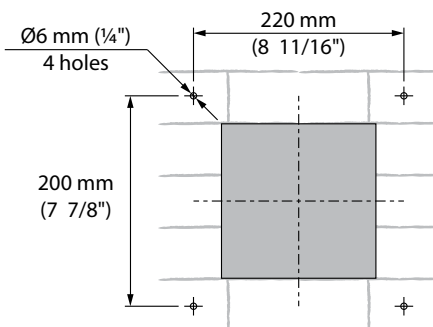
TwinFresh R-50



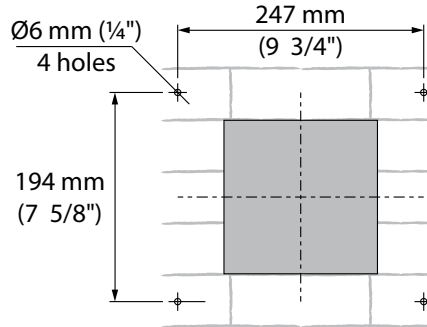
TwinFresh R-50-2



**TwinFresh S1-50
TwinFresh S-60**

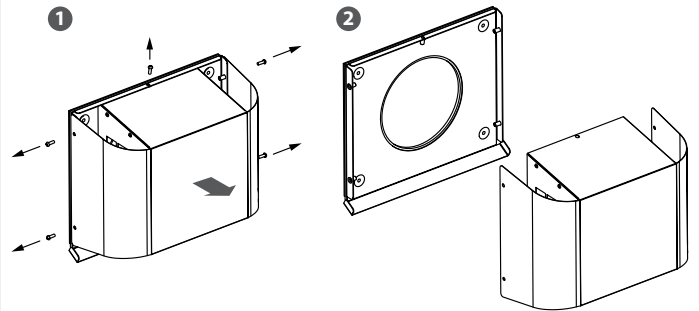
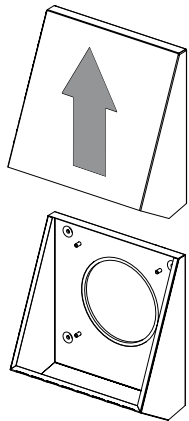


**TwinFresh S1-50-2
TwinFresh S-60-2**



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

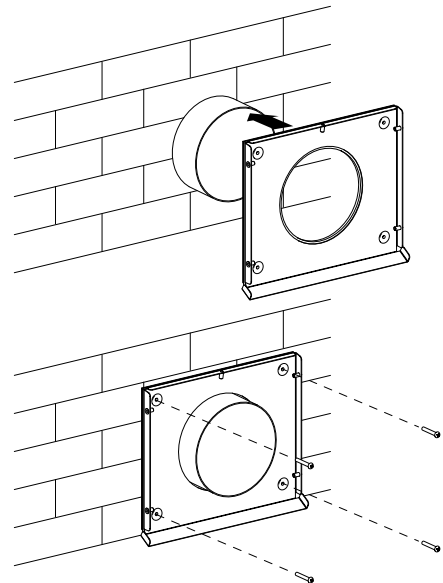
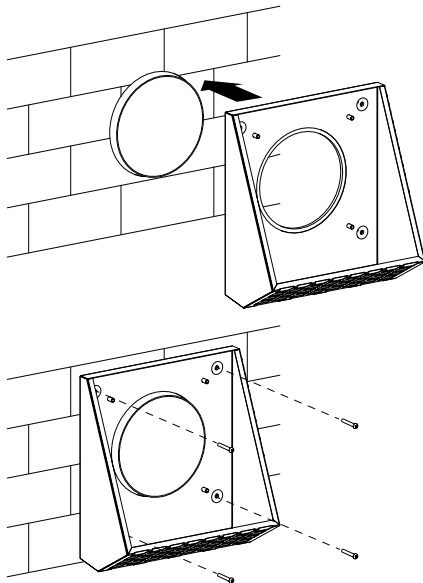
3. Disassemble the outer ventilation hood to enable access to the fastening holes.



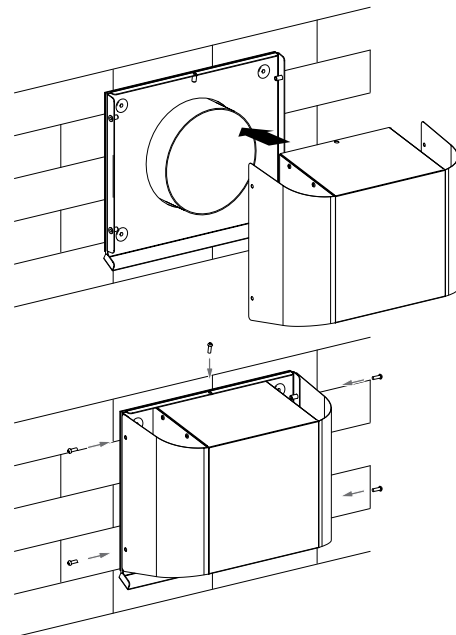
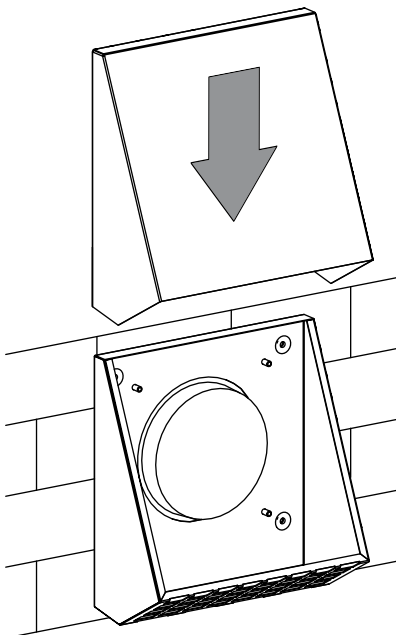
Take off the front part of the outer ventilation hood.

Remove 5 screws and take off the front part of the ventilation hood.

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

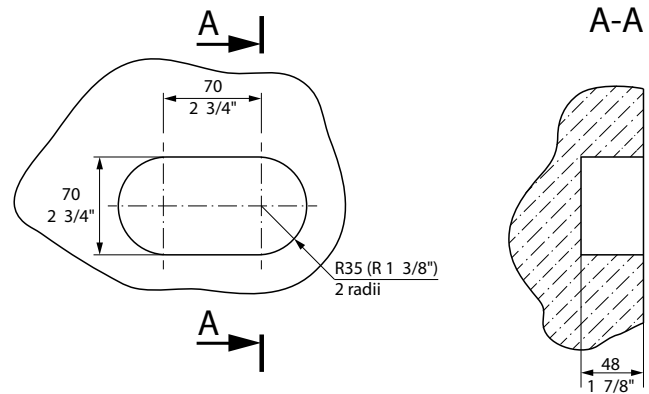


5. Install the front part of the ventilation hood.



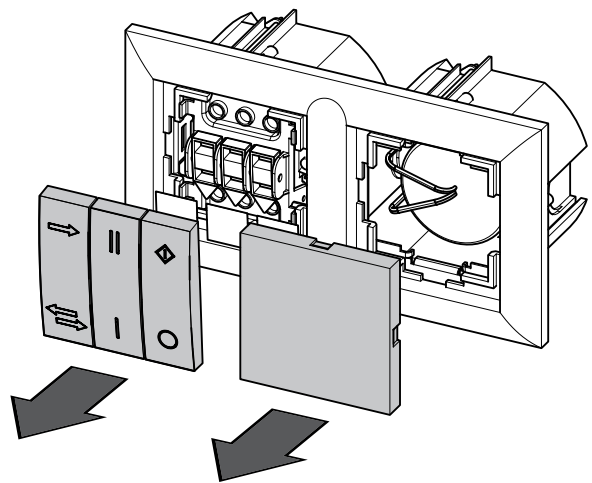
CONTROL UNIT MOUNTING

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

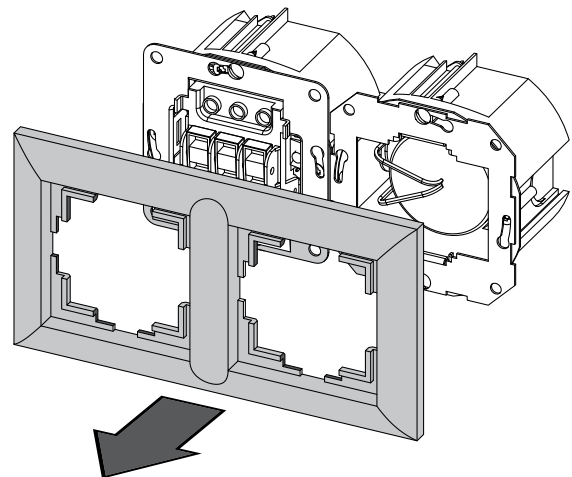


Hole spacing for installation of the control unit.

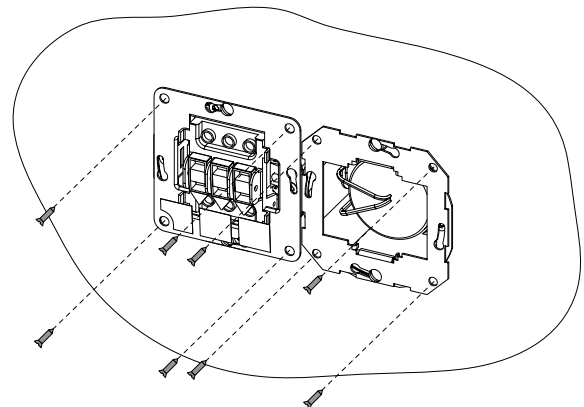
2. Uplift gently the buttons and the end cover of the control unit to remove.



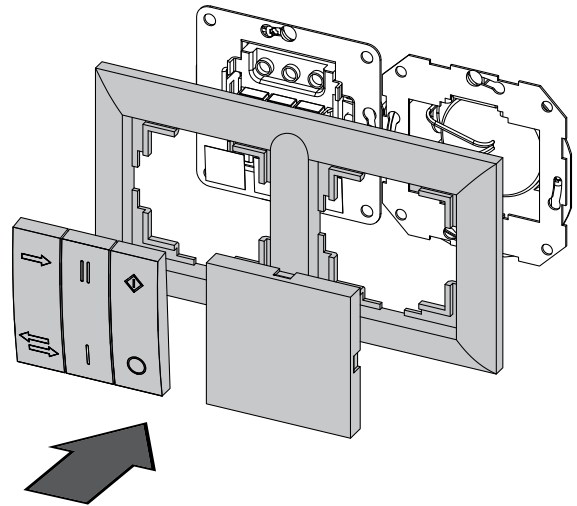
3. Unlatch and take off the frame of the control unit.



4. Install the control unit in the wall recess.



5. Install the frame, the buttons and the end cover in the reverse order.



CONNECTION TO POWER MAINS AND CONTROL



DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS. 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 ARE STATED ON THE RATING PLATE. ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

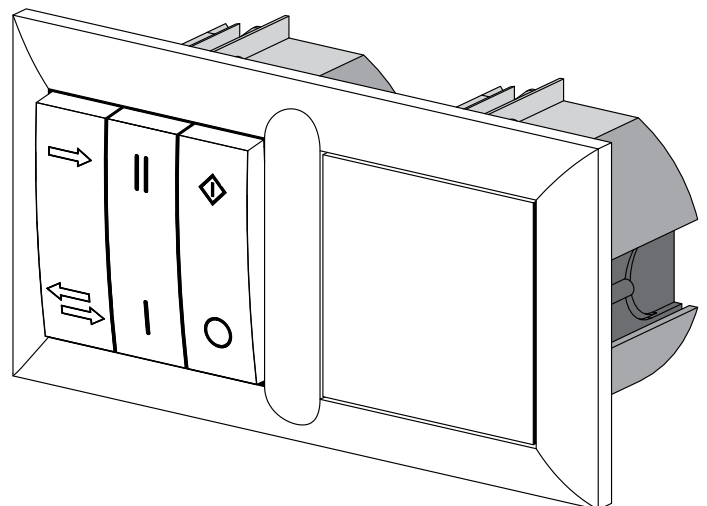
The ventilator is operated either via the external control unit KVR-T or KSV-T (included in delivery set of the ventilators supplied with a control system) or via the control unit KVR (KVS) and the transformer unit TRF 220/12-12 or TRF 220/12-40 (specially ordered accessories).

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 and a power transformer (in case of KVR-T and KVS-T only). The control unit is designed for installation in 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.

**CONTROL UNIT
(GENERAL VIEW)**



Selection of a required control unit modification is based on power supply voltage and transformer power, see the table below.

CONTROL UNIT KVR-T FOR THE VENTILATORS TWINFRESH RA-50 AND TWINFRESH SA1-50

Name	Transformer parameters			Note
	Power [W]	Voltage [V]		
		Input	Output	
Control unit KVR-T-12 (230 V / 50 Hz)	12	230/50 Гц	12	Maximum 4 ventilators to be connected
Control unit KVR-T-12 (120 V / 60 Hz)	12	120/60 Гц	12	Maximum 2 ventilators to be connected
Control unit KVR + transformer TRF 220/12-12	12	230/50 Гц	12	Maximum 4 ventilators to be connected
Control unit KVR + transformer TRF 120/12-12	12	120/60 Гц	12	Maximum 2 ventilators to be connected
Control unit KVR + transformer TRF 220/12-40	40	230/50 Гц	12	Maximum 12 ventilators to be connected
Control unit KVR + transformer TRF 120/12-40	40	120/60 Гц	12	Maximum 6 ventilators to be connected

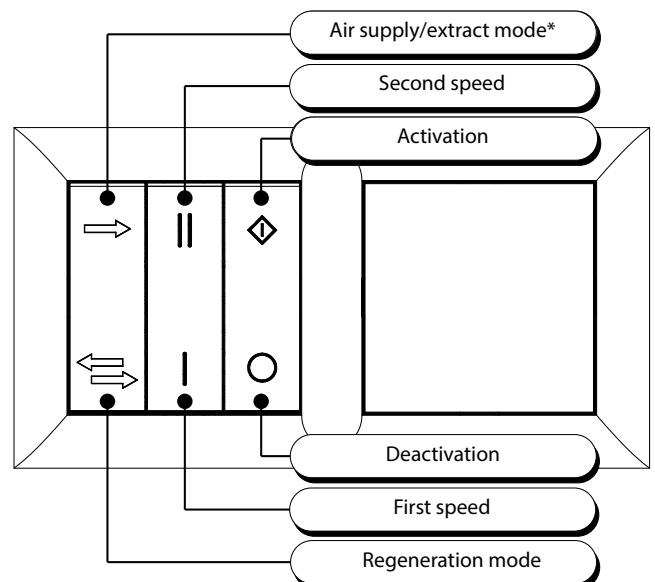
CONTROL UNIT KVS-T FOR THE VENTILATORS TWINFRESH SA-60

Name	Transformer parameters			Note
	Power [W]	Voltage [V]		
		Input	Output	
Control unit KVS-T-12 (230 V / 50 Hz)	12	230/50 Гц	12	Maximum 4 ventilators to be connected
Control unit KVS-T-12 (120 V / 60 Hz)	12	120/60 Гц	12	Maximum 4 ventilators to be connected
Control unit KVS + transformer TRF 220/12-12	12	230/50 Гц	12	Maximum 4 ventilators to be connected
Control unit KVS + transformer TRF 120/12-12	12	120/60 Гц	12	Maximum 4 ventilators to be connected
Control unit KVS + transformer TRF 220/12-40	40	230/50 Гц	12	Maximum 12 ventilators to be connected
Control unit KVS + transformer TRF 120/12-40	40	120/60 Гц	12	Maximum 12 ventilators to be connected

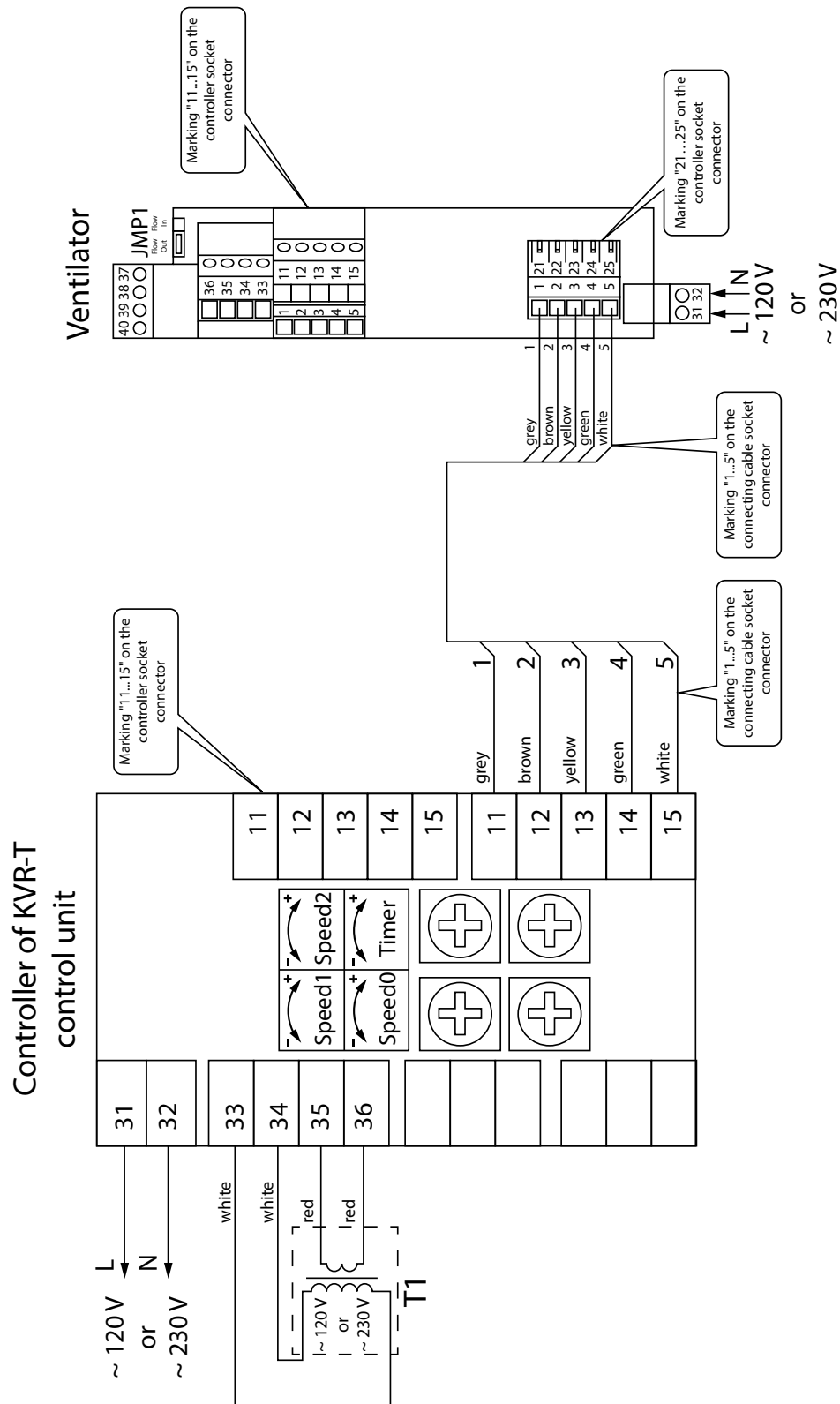
The control unit is used to set one of two operation modes of the ventilator:

1. Ventilation mode (air supply/air extract)* at the first and second speed.
3. Reversible (regeneration) mode at the first and 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.



GENERAL WIRING DIAGRAM FOR TWINFRESH RA-50 AND TWINFRESH SA1-50



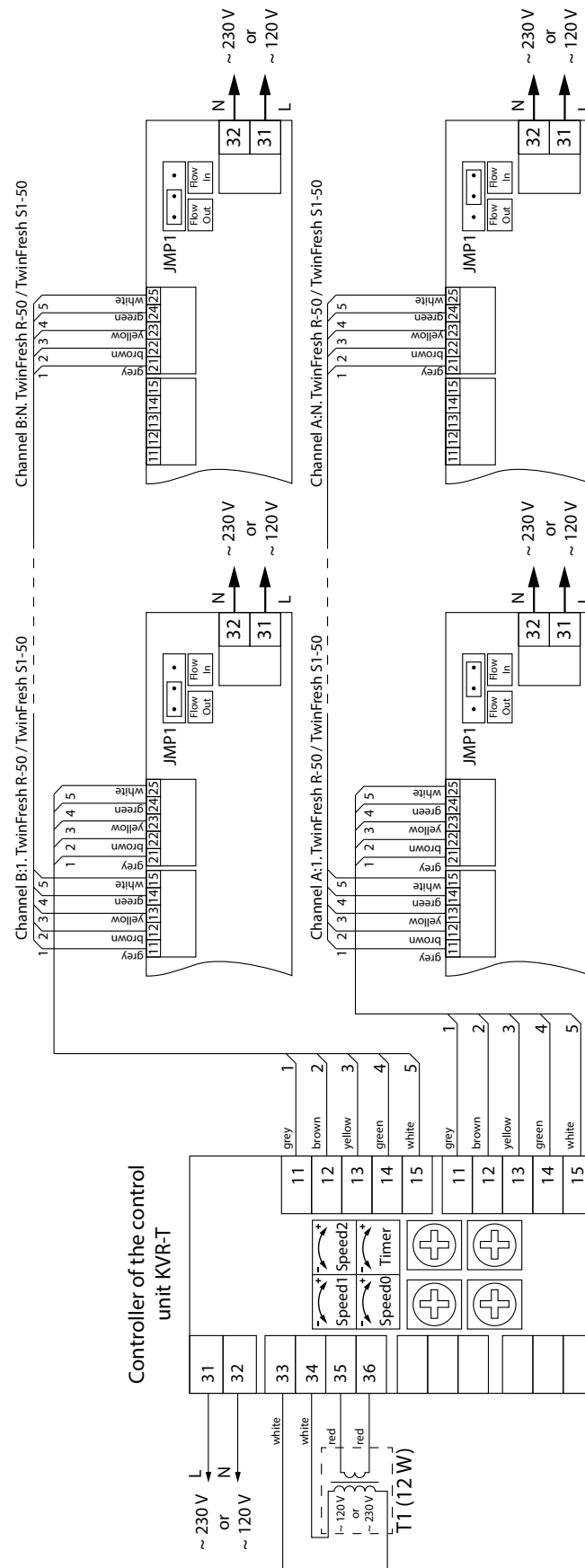
The ventilators are connected to the controller of control unit KVR-T by means of two cable channels. In ventilation mode all the connected units operate either in air extract mode (the JMP1 jumper on the circuit board is in "Flow out" position) or in supply mode (the JMP1 jumper on the circuit board is in "Flow in" position).

Use a five-wire cable for electric installations. The wires are marked in compliance with the delivered cable for easy installation.

The minimum conductor cross section is 0.25 mm² (23 AWG). Type and power of the step-down transformer T1 is selected to ensure AC voltage 12 V for correct operation of a single unit. For power demand, refer to the table in page 7.

Power supply 230 V / 50 Hz or 120 V / 60 Hz must be provided both to the control unit KVR-T and to the ventilator (socket connectors 31-21 in each case).

GENERAL WIRING DIAGRAM FOR CONNECTION OF UP TO FOUR TWINFRESH RA-50 AND TWINFRESH SA1-50 UNITS TO THE CONTROLLER OF THE CONTROL UNIT KVR-T



The electric connection in compliance with the wiring diagram above enables connection from 2 up to 4 ventilators in series. For this connection example is based on the control unit with a 12 W transformer.

Power supply 230 V / 50 Hz or 120 V / 60 Hz must be provided both to the control unit and to each ventilator (socket connectors 31-21 in each case).

A single control unit powered by a 40 W transformer (TRF 220/12-40, TRF 120/12-40) is capable to control up to 12 connected ventilators.

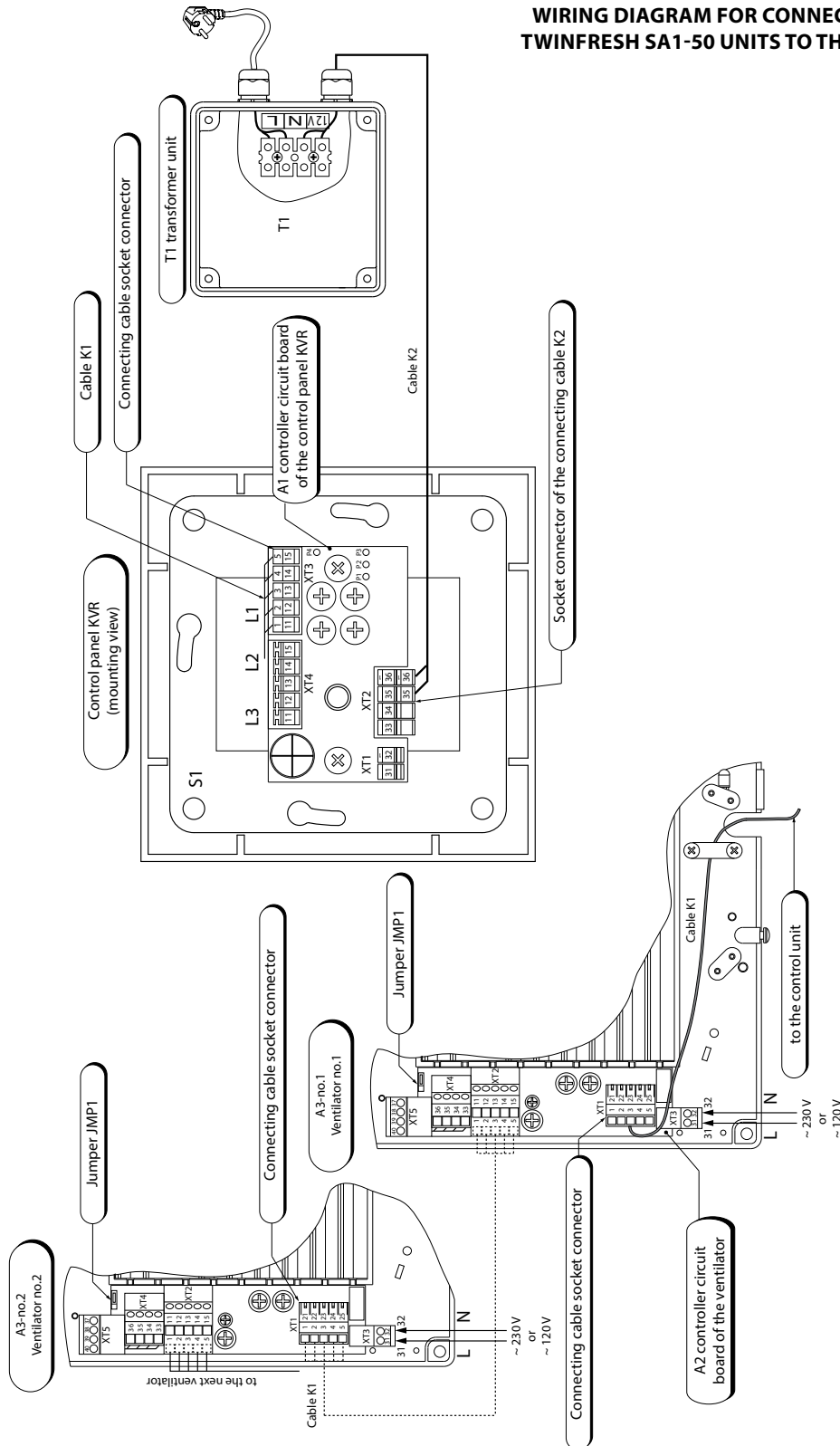
Connection sequence:

Connect the leads of the 12V power transformer T1 to the terminals A1:35, 36 of the controller A1 of the control unit KVR-T by means of the socket connector on the cable K2. K2 cable is supplied with a 40 W transformer unit.

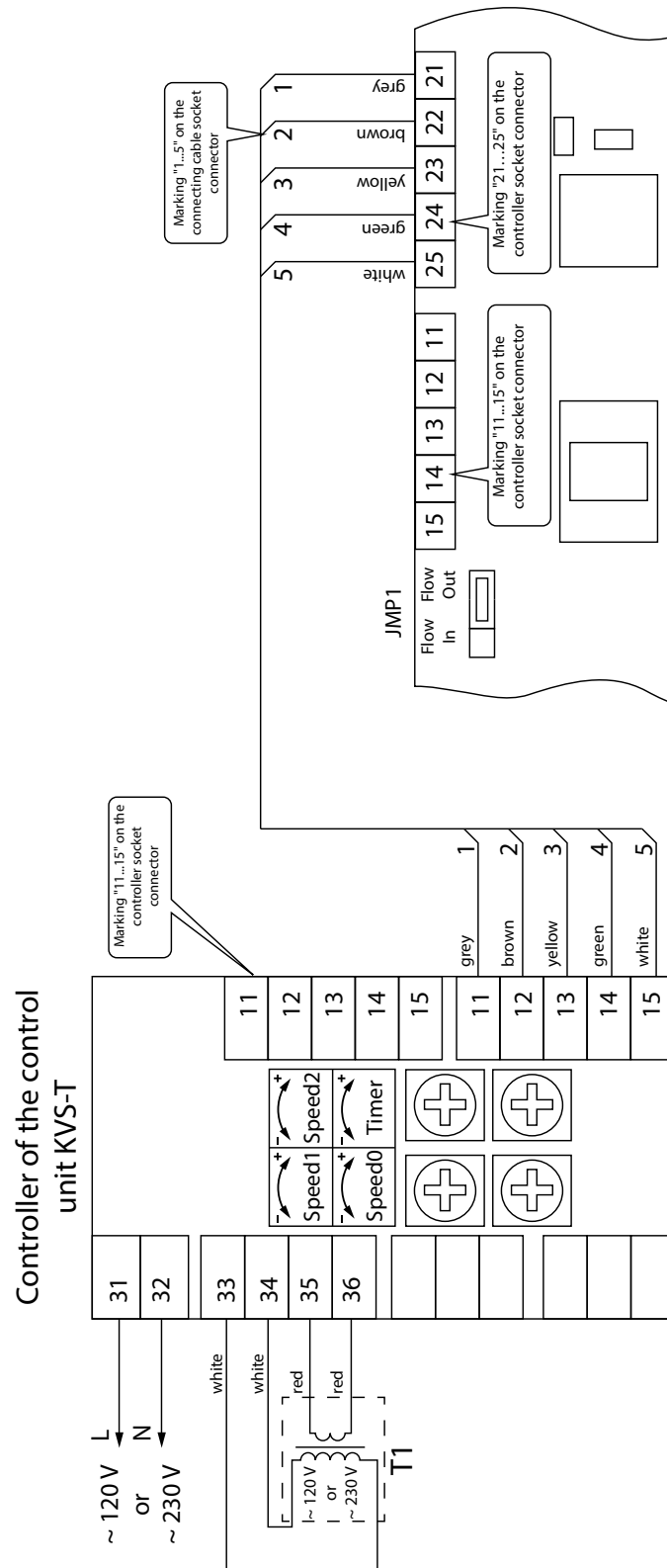
Then connect the first ventilator A3-no.1 to the terminals A1:11...15 of the controller of the control unit KVR using the delivered connecting cable supplied with the first ventilator. Connect the second ventilator A3-no.2 (terminals A2: 21...25) to the first ventilator (terminals A2: 11...15) using the connecting cable supplied with the second ventilator. Connect all the other ventilators (up to 12 items) in the same way. Power supply must be provided to the terminals A2: 31, 32 of each ventilator. The rotation direction of the fans is determined by JMP1 jumper position on the circuit board of the controller A2 fan in the ventilator no. 1. The jumper position sets rotation direction for each ventilator in the group.

Power is supplied to the transformer via the power cable with a plug, which is pre-wired to the transformed terminal block by the manufacturer.

WIRING DIAGRAM FOR CONNECTION OF UP TO 12 TWINFRESH RA-50 AND TWINFRESH SA1-50 UNITS TO THE CONTROLLER OF THE CONTROL UNIT KVR



GENERAL WIRING DIAGRAM FOR TWINFRESH SA-60



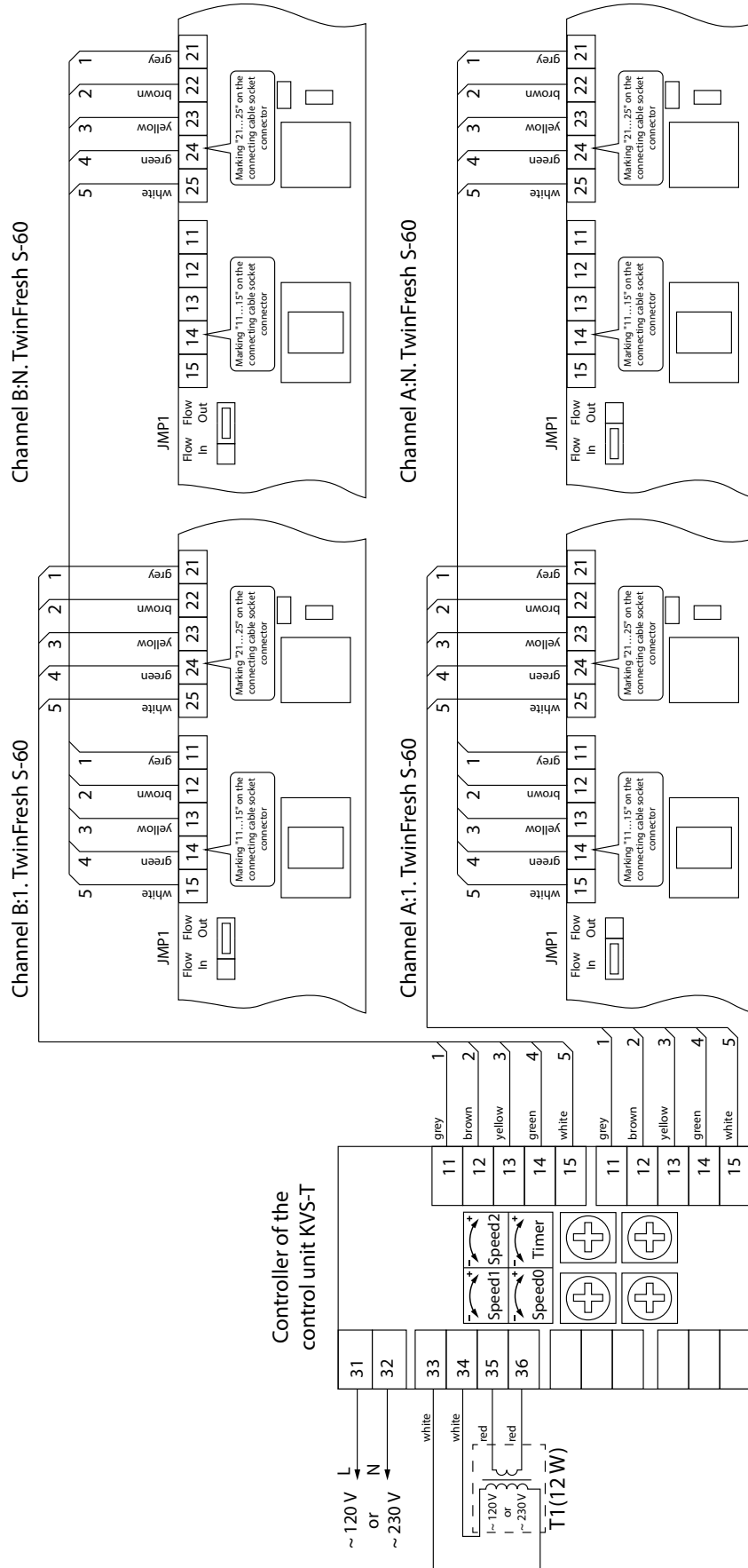
The ventilators are connected to the controller of control unit KVS-T by means of two cable channels. In ventilation mode all the connected units operate either in air extract mode (the JMP1 jumper on the circuit board is in "Flow out" position) or in supply mode (the JMP1 jumper on the circuit board is in "Flow in" position).

Use a five-wire cable for electric installations. The wires are marked in compliance with the delivered cable for easy installation.

The minimum conductor cross section is 0.25 mm² (23 AWG). Type and power of the step-down transformer T1 is selected to ensure AC voltage 12V for correct operation of a single unit. For power demand, refer to the table in page 7.

Power supply 230 V / 50 Hz or 120 V / 60 Hz must be provided to the control unit KVS-T only.

GENERAL WIRING DIAGRAM FOR CONNECTION OF UP TO FOUR TWINFRESH SA-60 TO THE CONTROLLER OF THE CONTROL UNIT KVS-T



The electric connection in compliance with the wiring diagram above enables connection from 2 up to 4 ventilators in series. For this connection example is based on the control unit with a 12 W transformer.

Power supply 230 V / 50 Hz or 120 V / 60 Hz must be provided to the control unit.

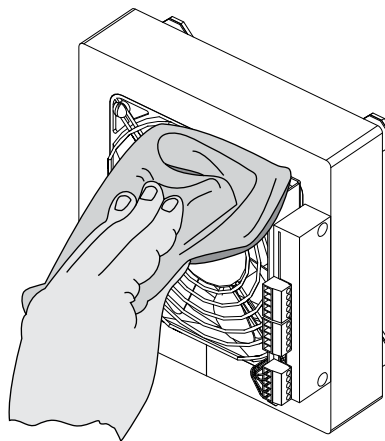
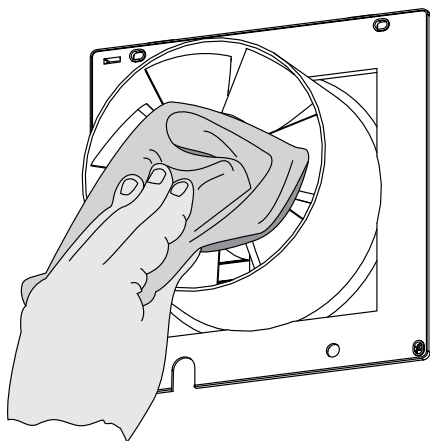
MAINTENANCE

DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATION WITH THE UNIT

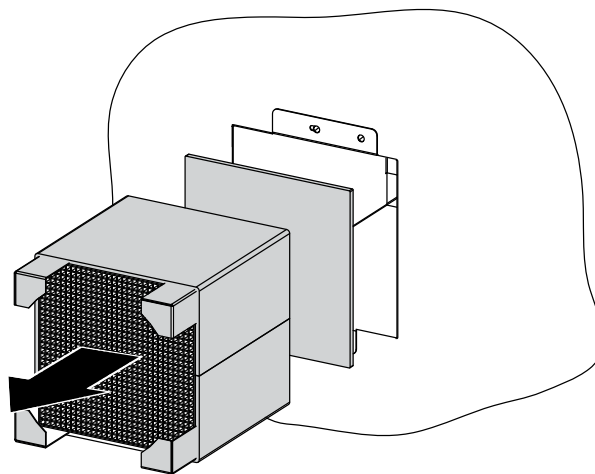
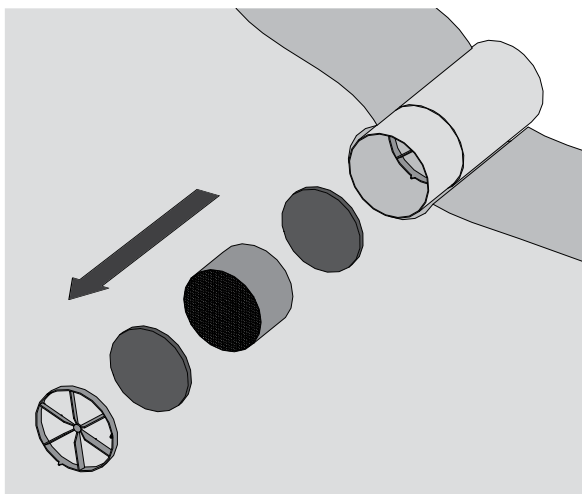
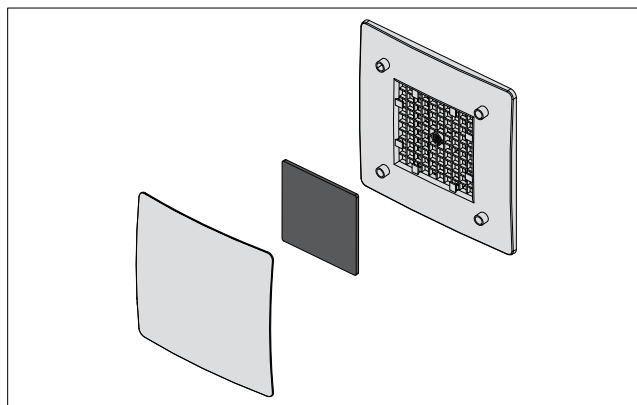
Maintenance of the ventilator means regular cleaning of the ventilator surfaces of dust and cleaning or replacement of the filters.

VENTILATOR MAINTENANCE**1. Fan maintenance.**

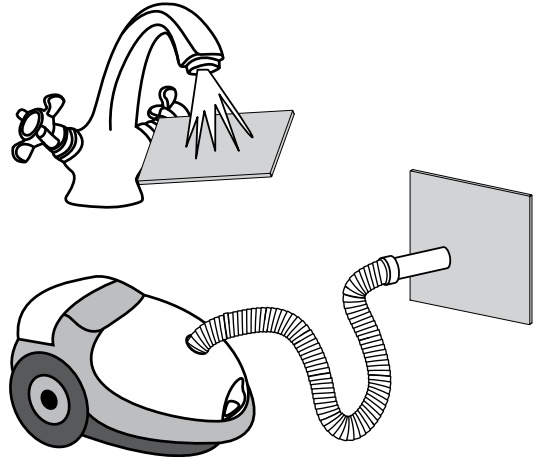
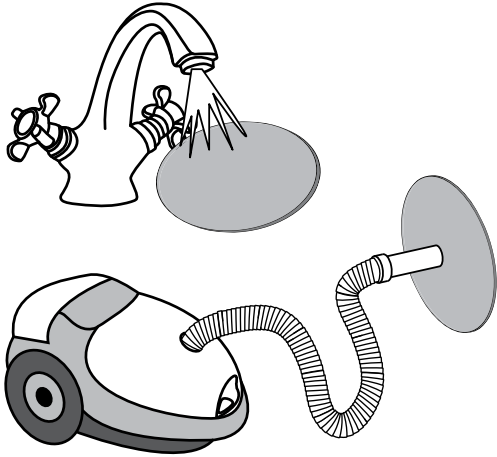
Take off the ventilation unit and clean the fan blades. To remove dust use a soft brush, cloth or a vacuum cleaner. Do not use water, abrasive detergents, solvents, sharp objects. Clean the impeller blades once in year.

**2. Regenerator and filter maintenance.**

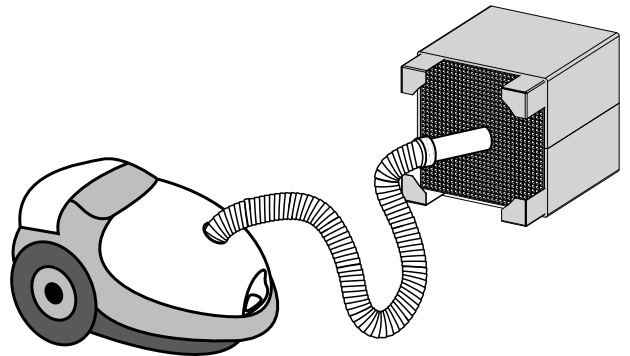
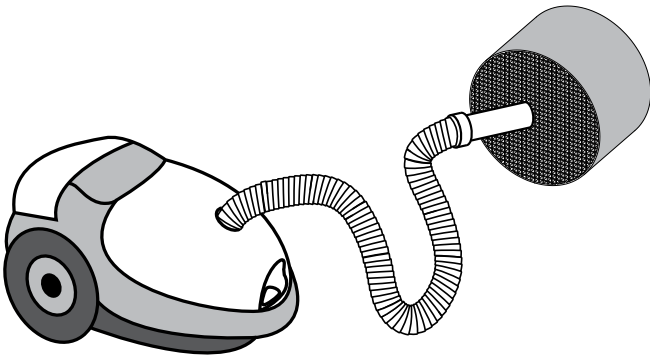
Remove the filters and the regenerator from the air duct. Be careful while pulling the regenerator to avoid its damage.



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.
Contact the Seller for spare filters.

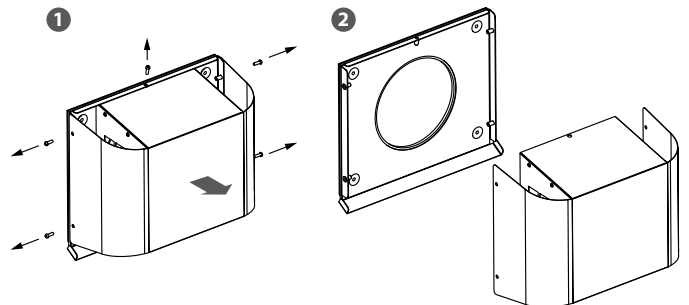
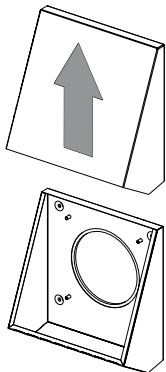


Even regular technical maintenance may not completely prevent dirt accumulation on the regenerator.
Clean the regenerator regularly to ensure its high heat recovery efficiency.
Clean the regenerator regularly to ensure high heat recovery efficiency.



3. Ventilation hood maintenance.

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.



TROUBLESHOOTING

POSSIBLE FAULTS AND TROUBLESHOOTING

Fault	Possible reasons	Fault handling
The fan does not start up during start-up of the ventilator.	No power supply.	Make sure that the ventilator is properly connected to power mains and make any corrections, if necessary.
	Motor is jammed, the impeller blades are clogged.	Turn the ventilator off. Troubleshoot the motor jam and the impeller clogging. Clean the blades. Restart the ventilator.
Circuit breaker tripping during the ventilator start-up.	Overcurrent as a result of short circuit in the electric circuit.	Turn the ventilator off. Contact the Seller for further information.
Low air flow.	Low set fan speed.	Set higher speed.
	The filter, the fan or the regenerator is soiled.	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 outer ventilation hood.	Tighten the screws of the ventilator or the outer ventilation hood.

STORAGE AND TRANSPORTATION REGULATIONS

Store the unit in the manufacturer's original packing box in a dry ventilated premise at ambient temperatures from +5 °C (+41 °F) up to +40 °C (104 °F). Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation. Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit. Follow the handling requirements applicable for the particular type of cargo. The unit can be carried in the original packing by any mode of transport provided proper protection against precipitation and mechanical damage. Avoid sharp blows, scratches or rough handling during loading and unloading.

MANUFACTURER'S WARRANTY

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

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

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

The warranty repair does not include:

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

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

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

Contact the Seller for warranty service.

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

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



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



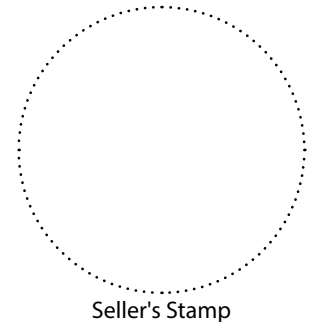
USERS' WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.

ACCEPTANCE CERTIFICATE

Unit Type	The single-room reversible energy regeneration ventilator
Model	TwinFresh _____
Serial Number	
Manufacture Date	
Is compliant with the technical specifications and is recognized as serviceable. 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. This certificate is issued following test carried out on samples of the product referred to above.	
Quality Inspector's Stamp	

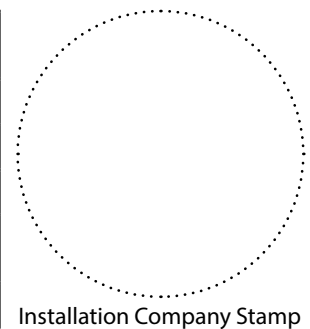
SELLER INFORMATION

Outlet Name	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete ventilator delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



INSTALLATION CERTIFICATE

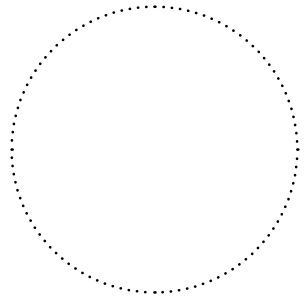
The single-room reversible energy regeneration ventilator TwinFresh _____ has been connected to power mains pursuant to the requirements stated in the present user's manual.	
Company Name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:



The ventilator has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The ventilator operates normally as intended by the manufacturer.	
Signature:	

WARRANTY CARD

Unit Type	The single-room reversible energy regeneration ventilator
Model	TwinFresh _____
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp

Large rectangular area with horizontal lines for notes or additional information.





VENTS