

USER'S MANUAL

VK EC



Centrifugal fan

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This user's manual is a main operating document intended for technical, maintenance, and operating staff.

The manual contains information about purpose, technical details, operating principle, design, and installation of the VK EC unit and all its modifications.

Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

SAFETY REQUIREMENTS

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

Disconnect the unit from the power supply prior to any connection, servicing, maintenance, and repair operations.

Only qualified electricians with a work permit for electrical units up to 1000 V are allowed for installation. The present user's manual should be carefully read before beginning works.

Check the unit for any visible damage of the impeller, the casing, and the grille before starting installation. The casing internals must be free of any foreign objects that can damage the impeller blades.

While mounting the unit, avoid compression of the casing! Deformation of the casing may result in motor jam and excessive noise.

Misuse of the unit and any unauthorised modifications are not allowed.

Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

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

Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.

Do not close or block the intake or extract vents in order to ensure the efficient air flow.

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

The information in this user's manual was correct at the time of the document's preparation.

The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.

Never touch the unit with wet or damp hands.

Never touch the unit when barefoot.

This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.

Connection to the mains must be made through a disconnecting device, which is integrated into the fixed wiring system in accordance with the wiring rules for design of electrical units, and has a contact separation in all poles that allows for full disconnection under overvoltage category III conditions.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a safety hazard.

CAUTION: In order to avoid a safety hazard due to inadvertent resetting of the thermal cut-out, this unit must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

Precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances.

Ensure that the unit is switched off from the supply mains before removing the guard.

WARNING: If there are any unusual oscillating movements, immediately stop using the unit and contact the manufacturer, its service agent or suitably qualified persons.

The replacement of parts of the safety suspension system device shall be performed by the manufacturer, its service agent or suitably qualified persons.



**THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.
DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.**

PURPOSE

The product described herein is a centrifugal inline fan for supply or exhaust ventilation of premises.

The fan is designed for connection to ø 100, 125, 150, 200, 250 and 315 mm air ducts.

A model with a duct diameter of 150 mm can be mounted in a duct with a diameter of 150 or 160 mm.

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).

DELIVERY SET

Name	Number
Fan	1 pc.
Screws and dowels	4 pcs.
Mounting bracket	2 pcs.
User's manual	1 pc.
Packing box	1 pc.

DESIGNATION KEY

VK	100	EC	X	
				Additional options
				U : speed controller with an electronic thermostat and an integrated temperature sensor. Temperature-based operation logic
				U1 : speed controller with an electronic thermostat and an integrated temperature sensor. Timer-based operation logic
				Un : speed controller with an electronic thermostat and an external temperature sensor fixed on a 4-meter cable. Temperature-based operation logic
				U1n : speed controller with an electronic thermostat and an external temperature sensor fixed on a 4-meter cable. Timer-based operation logic
				U2 : speed controller with an electronic thermostat and an integrated temperature sensor. Temperature-based switching on/off
				U2n : speed controller with an electronic thermostat and an external temperature sensor fixed on a 4-meter cable. Temperature-based switching on/off
				P : integrated smooth speed controller
				Motor type
				EC : synchronous electronically commutated motor
				Air duct diameter [mm]
				100; 125; 150; 200; 250; 315
				Unit series
				Centrifugal fan

TECHNICAL DATA

The fan is designed for indoor application with the ambient temperature ranging from +1 °C up to +40 °C and relative humidity up to 80 %. Ingress protection rating against access to hazardous parts and water ingress is IPX4.

The ventilator is rated as a class II electric appliance. The heater must be grounded.

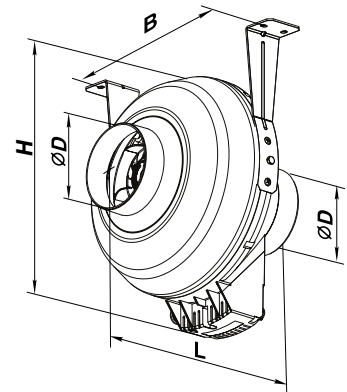
The unit design is constantly being improved, thus some models may be slightly different from those described in this manual.

To comply with the ErP 2018 regulation, a local demand controller must be used.

Parameter	VK 100 EC	VK 125 EC	VK 150 EC	VK 200 EC	VK 250 EC	VK 315 EC
Unit voltage [V/50 (60) Hz]	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230	1~ 230
Power [W]	82	84	82	84	165	165
Current [A]	0.62	0.64	0.63	0.64	1.10	1.15
Maximum air flow [m ³ /h]	340	420	630	885	1250	1500
RPM [min ⁻¹]	3400	3600	3400	2700	2600	2500
Maximum transported air temperature [°C]	-25 +60					
Ingress protection rating	IPX4					

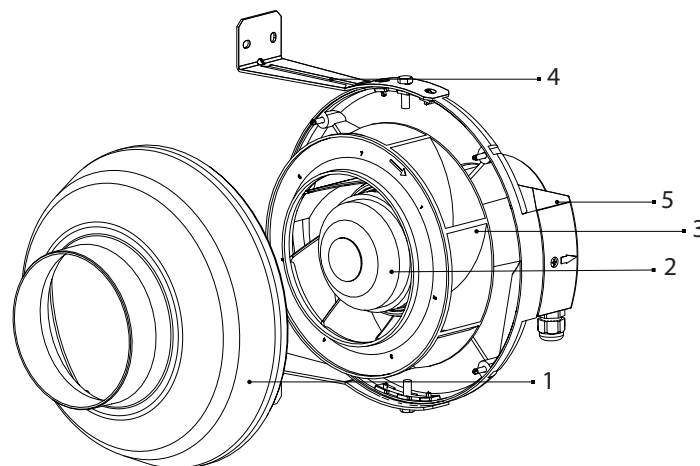
Overall dimensions of the unit [mm]

Model	Dimensions [mm]				Weight [kg]
	D	H	B	L	
VK 100 EC	100	250	270	230	2.0
VK 125 EC	125	250	270	220	2.2
VK 150 EC	150/160	300	310	286	2.5
VK 200 EC	200	340	354	276	3.0
VK 250 EC	250	340	354	265	4.3
VK 315 EC	315	400	414	276	4.9



DESIGN AND OPERATING PRINCIPLE

1. Casing
2. Motor
3. Impeller
4. Mounting bracket
5. Terminal box



The fan is equipped with a single-phase electronically commutated (EC) motor with an external rotor equipped with a centrifugal impeller.

The fan is rated for continuous operation.

Electronics operation algorithm

The **VK U/U1/U2** fan is equipped with an electronic module TSC (speed controller with an electronic thermostat) for automatic speed control (air flow) depending on the air temperature.

The terminal compartment incorporates 2 control knobs:

- presetting speed
- setting electric thermostat threshold value

The fan is equipped with two indicators:

- temperature sensor indicator (hereinafter referred to as TSI) - yellow colour
- motor control indicator (hereinafter referred to as MCI) - green/yellow colour

When the fan turns on, the TSI indicates the unit operation algorithm:

- one pulse - U
- two pulses - U1
- three pulses - U2

The MCI lights up in green when the motor rotates and in red when it stops (or rotates very slowly). To set the thermostat threshold, rotate the thermostat control knob clockwise to increase or counter-clockwise to decrease the temperature set point. To set the fan speed (air flow), rotate the speed control knob in the same way.

VK U: In this case, fan speed switching operations are rare.

The TSI lights up and the fan switches to the maximum speed as the room air temperature exceeds the set point.

As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the TSI goes out and the fan operates with the set speed.

VK U1: The speed switching operations are more frequent as compared to the temperature-based functioning logic (U), but one speed interval continues at least 5 minutes.

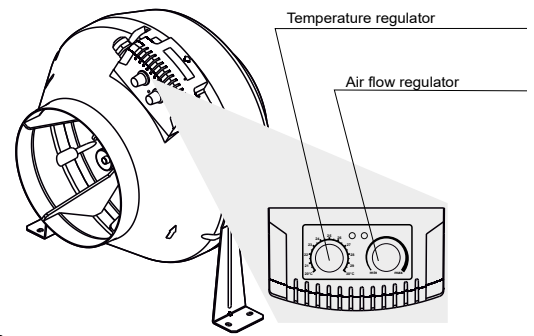
The TSI lights up and the fan switches to the maximum speed as the room air temperature exceeds the set point.

As the air temperature drops down below the set point, the TSI starts blinking, the timer starts a 5-minute countdown and then the fan switches to the set lower speed and the TSI goes out.

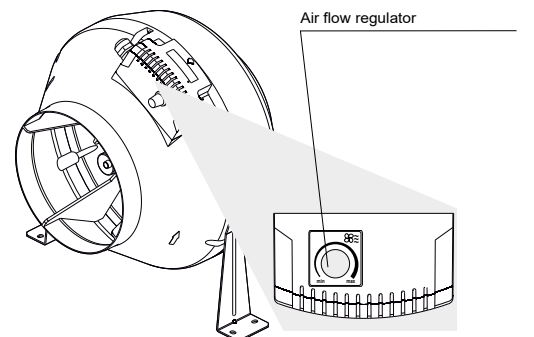
VK U2: The fan starts only at a certain air temperature.

The TSI lights up and the fan switches to the set speed as the room air temperature exceeds the set point.

As the air temperature drops 2 °C below the set point or if the initial temperature is below the set point, the TSI goes out and the fan turns off.



The **VK ... ECP** fan is equipped with a built-in smooth speed controller that enables switching the fan on/off, smoothly adjusting the rotation speed (air flow) in the range from minimum to maximum speed.



Temperature sensor failure

Alarm code	Alarm description
Two short pulses	Short circuit of the temperature sensor
One pulse	Breakdown of the temperature sensor

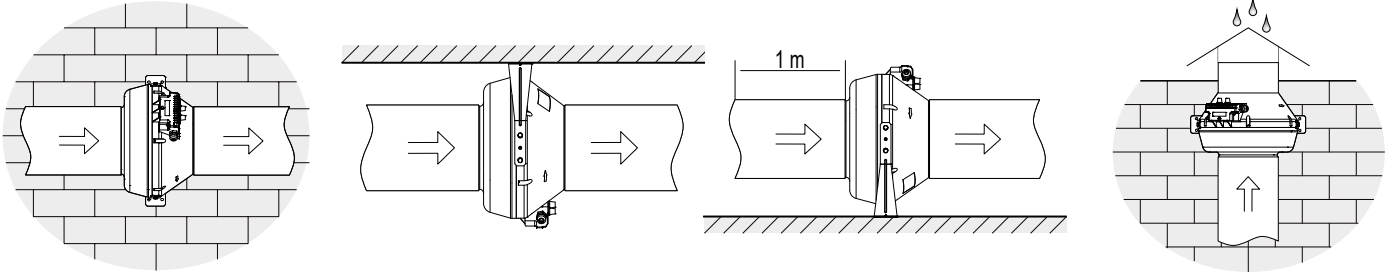
The motor shuts down

MOUNTING AND SET-UP



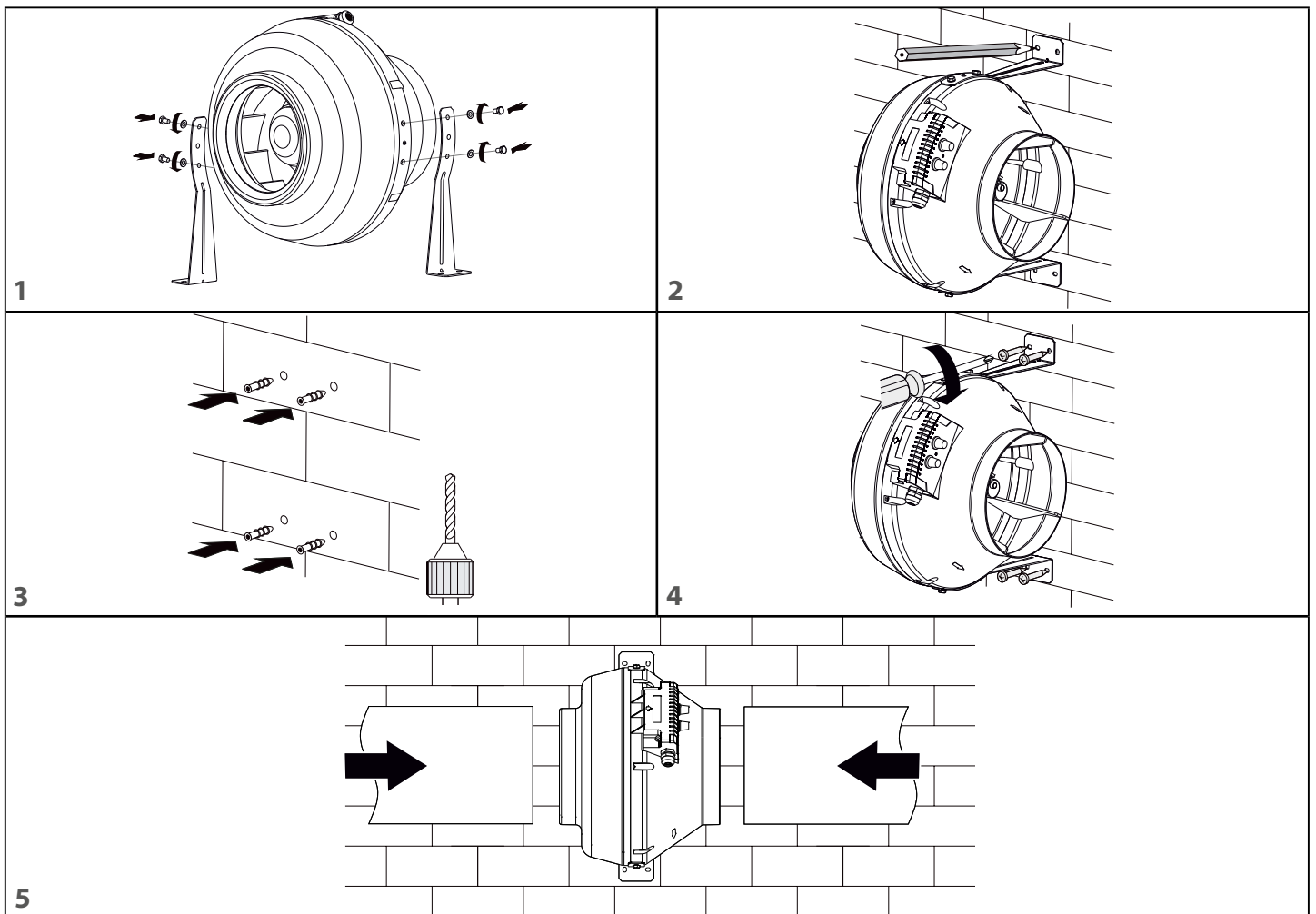
READ THE USER'S MANUAL BEFORE INSTALLING THE UNIT.

The fan is suitable both for horizontal or vertical mounting on the floor, on the wall or on the ceiling. Air motion in the system must be in compliance with the direction of the arrow on the fan casing. Install a hood on the intake spigot side in case of vertical fan installation. When installing the fan horizontally, provide a straight air duct section at least 1 m long on the intake spigot side.



Mounting sequence:

1. Remove the bolts on both sides of the casing, install the mounting brackets and tighten the bolts, aligning the holes in the brackets with the holes in the casing.
2. Mark the drilling holes.
3. Drill the holes in the wall or the ceiling for dowels.
4. Fix the fan with the screws.
5. Connect the air ducts of the corresponding diameter to the fan.



CONNECTION TO POWER MAINS



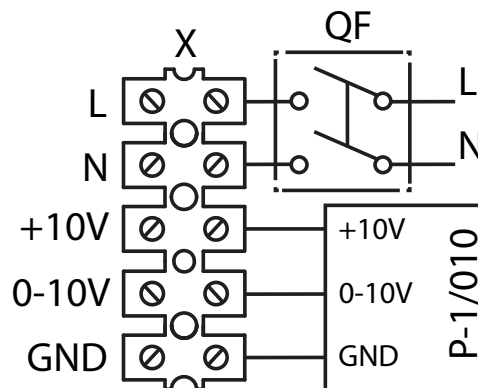
**POWER OFF THE POWER SUPPLY PRIOR TO ANY OPERATIONS WITH THE UNIT.
THE UNIT MUST BE CONNECTED TO POWER SUPPLY BY A QUALIFIED ELECTRICIAN.
THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE GIVEN ON THE
MANUFACTURER'S LABEL.**



**ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED
AND WILL VOID THE WARRANTY.**

- The unit is rated for connection to 230 V 50/60 Hz power mains.
- The unit must be connected to power mains using insulated electric conductors (cables, wires). The actual wire cross section selection must be based on the maximum load current, maximum conductor temperature depending on the wire type, insulation, length and installation method.
- The external power input must be equipped with an automatic circuit breaker built into the stationary wiring to open the electric circuit in case of overload or short-circuit. The circuit breaker installation place must provide quick access for emergency shutdown of the unit. The trip current of the automatic circuit breaker **QF** must exceed the maximum current consumption of the unit (refer to the technical data table). The recommended trip current of the circuit breaker is the next current in the standard trip current row following the maximum current of the connected unit. The automatic circuit breaker is not included in the delivery set.

WIRING DIAGRAM



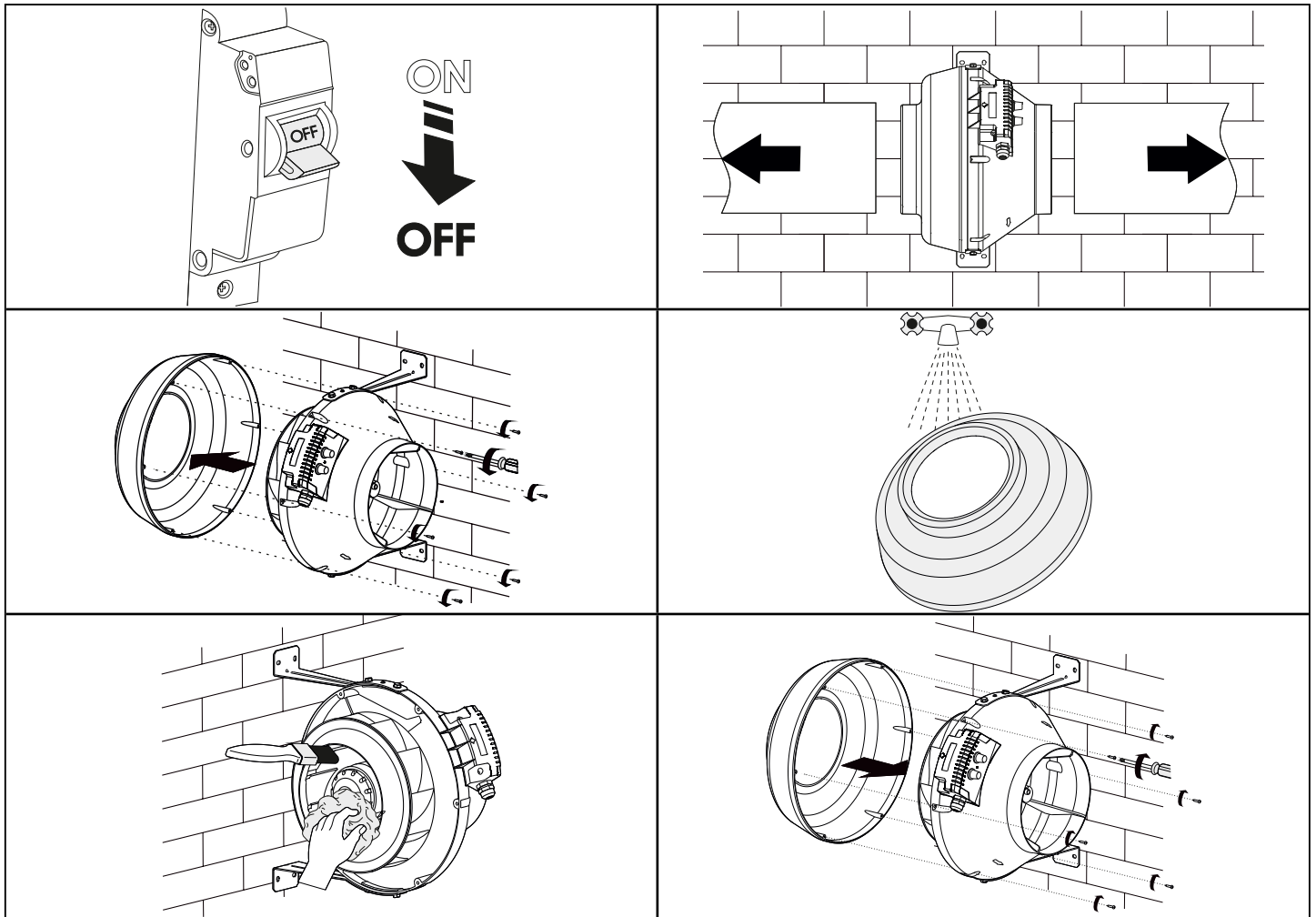
TECHNICAL MAINTENANCE



DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATIONS!

MAKE SURE THE UNIT IS DISCONNECTED FROM POWER MAINS BEFORE REMOVING THE PROTECTION

Clean the product surfaces regularly (once in 6 months) from dust and dirt. To clean the fan, remove the self-tapping screws and remove the fan cover. To clean the fan, use a soft cloth or a brush wetted in a mild detergent solution. Do not allow water or liquid come into contact with electric components. Wipe the unit surfaces dry after cleaning. Install the cover back in place and screw the self-tapping screws.



STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +5 °C to + 40 °C and relative humidity up to 70 %.
- Storage environment must not contain aggressive vapors 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 packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The product is in compliance with EU norms and standards on low voltage guidelines and electromagnetic compatibility. We hereby declare that the product complies with the provisions of Electromagnetic Compatibility (EMC) Directive 2014/30/EU of the European Parliament and of the Council, Low Voltage Directive (LVD) 2014/35/EU of the European Parliament and of the Council and CE-marking Council Directive 93/68/EEC. This certificate is issued following test carried out on samples of the product referred to above.

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, installation, 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 get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes 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 paperwork 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 packaging 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.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in 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.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- 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 paperwork certifying the unit purchase.



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



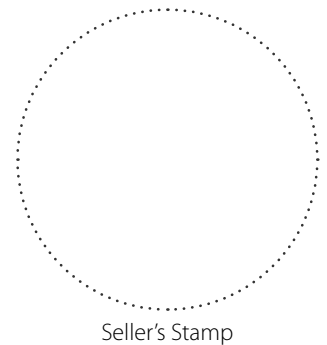
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP.

CERTIFICATE OF ACCEPTANCE

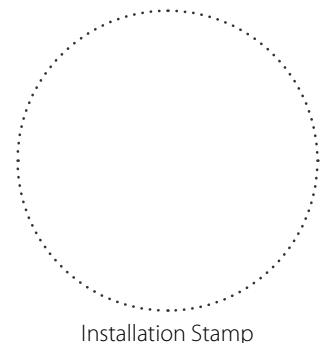
Unit Type	Centrifugal fan
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

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


INSTALLATION CERTIFICATE

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


WARRANTY CARD

Unit Type	Centrifugal fan
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	

