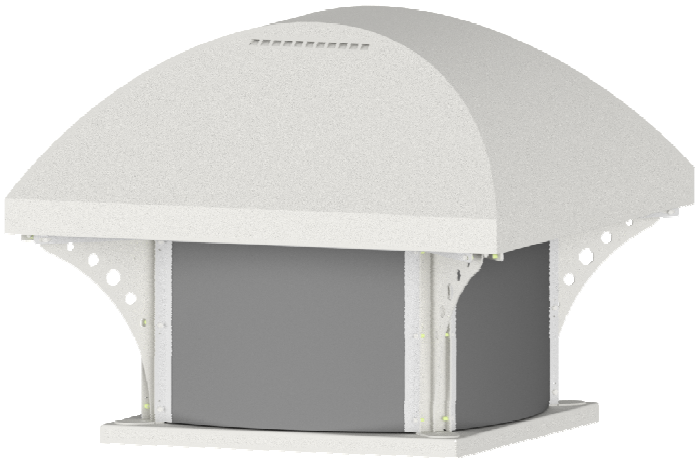
Venture Industries Sp. z o.o.

OPERATION AND MONTAGE MANUAL
ROOF FANS
RBH



Venture Industries Sp. z o.o. is not responsible for any damage caused by improper use of the fan and reserves the right to modify this document without informing the user.

INTRODUCTION

This manual covers fan listed on frontpage. It is source of information necessary for safe and proper use. Read this manual carefully before any use of the device, comply with it requirements and keep it in place with easy access for users and service. If case of any doubts about use of the fan, please contact with manufacturer.

After receiving the device - check

- whether the device is in compliance with order,
- whether the data on the rating plate are the same as desired.
- whether fan was not damaged during transport (e.g. there are no dents/cracks)
- whether a motor documentation (containing manual) is attached

In case of any irregularities, contact with your dealer or Venture Industries Sp. z o.o. service.

1. GENERAL INFORMATION

1.1 Information about device

- The fan is a not completed machine within the meaning of the Machinery Directive 2006/42/WE (please refer to the manufacturer's declaration – Appendix D).
- Fan is designed for use by trained, qualified adult persons in industrial environment. The fan is not designed for household or similar use.
- The device is designed to transport clean air and fine solid materials (e.g. wood chips) - required contact with manufacturer. **Do not transport the explosive mixtures**, solid elements (does not apply for solids approved by manufacturer), liquids, **substances that cause abrasion**, chemically reactive compounds. Minimal temperature of transported medium is -20°C, maximum is determined on rating plate.
- Fan is designed for outdoor use. It must be protected from effects of lightning. The fan surrounding cannot contain **explosive atmospheres**, substances causing abrasion, chemically aggressive substances, viscous substances, substances with high humidity. Maximum ambient temperature is determined on fan rating plate, minimum is -15°C.
- The device must not be exposed to radiation (such as microwave, UV, laser, x-ray).
- The impeller has been balanced in accordance with minimum G6.3 class ISO 1940-1, and general construction of the fan in accordance with cat. BV-3 ISO 14694
- Description of construction of the fan has been included in Appendix E.
- Additional information of the fan usage has been indicated on the device. Additional information have been included in Appendix A.

1.2 General risk and guidelines

During entire fan life cycle pay particular attention to the **risk and guidelines** presented below:

1.2.1 moveable components

- The fan is equipped with moveable components (impeller). Contact with them may cause serious injury or death. The fan must not be used if covers (grids) and safety measures against contact with rotating parts have not been installed.

1.2.2 suction

- The fan has high suction power. Clothing, hair, foreign particles, and even body elements can be easily sucked in. It is forbidden to approach the fan in “loose” clothing or reaching toward inlet of working fan. It need to be ensured, that no foreign body can be sucked in.

1.2.3 thrown elements

- The air at the outlet of the fan has high energy. Elements sucked or placed inside the fan can be thrown with a high speed. The fan has stable, solid construction, but as a result of damage or improper use some parts (elements with high kinetic energy) may be thrown away. Make sure that before start and during operation of the fan there are no elements, that may be sucked in (pay special attention to fan inlet side) and there are no person in stream of transported medium (on inlet and outlet side). Do not use fan without proper inlet, outlet and moveable elements covers (grids).

1.2.4 sharp edges

- During manufacturing the fan sharp edges was grinded. However the fan may have edges touching which may cause injury. We recommend the use of relevant protective gloves.

1.2.5. inertness

- The fan has a high inertness. In case of no permanent fix turning on the fan will lead to it uncontrolled movement. The unit can be turn on only after proper installation.

1.2.6 noise

- The sound pressure level is dependent on the operation point. Check the sound pressure level and if necessary use silencers and/or individual protection measures for personnel.

1.2.7 materials

- In case of fire or transport of improper medium – fan parts can generate fumes hazardous to health.

1.2.8. environment

- The fan can make over and under pressure. In areas where a specified air pressure and the quantity of air are required (e.g. in places with combustion) make sure that there would be no deficit/excess of air.

1.2.9 temperature (hot surfaces)

- The housing and fan elements take the temperature of transported medium. During work (e.g. as a result of compression process) the temperature of medium, housing and fan components increase. Electric motor heat up to high temperatures (especially when overloaded/overheated). The appropriate steps need to be made to prevent from fire and burns caused of high temperatures. **In case of fire – to extinguish a fire use fire extinguisher approved for electrical equipment and follow recommendation of fire department.**

1.2.10 unexpected start / connecting power supply

●Before undertaking any kind of work on fan (e.g. installation, maintenance and inspection, disassembly), it has to be completely and reliably disconnected (isolated) from power supply (check there is no voltage). It has to be ensured, that power supply will not be connected during work on fan and moveable parts are not moving.

●Capacitor (only single phase fans) is still energized for certain period of time after turning off the power supply.

●The appropriate steps need to be made in order to provide protection against electric shock and to prevent from access to electrical components by unauthorized person.

●Fan is not equipped with control system – the connecting of power supply causes immediate start-up. The device is not equipped with system, that would permanently shut it down in case of temporary power supply loss. It has to be ensured, that any dangerous or unpermitted event does not occur in case of temporary loss of power supply.

●Thermal sensors installed in motor (if fitted) after tripping caused by motor overheat turn back to initial state after cooling down. It has to be ensured, that any dangerous or unpermitted event does not occur in case of action of thermal sensors and after motor cooling down.

●In case of impeller jamming – its unblocking may cause sudden movement. Appropriate steps need to be made in order to avoid impeller jamming. In case of impeller jamming, fan need to be completely disconnected from power supply and repaired.

●After disconnecting from power supply fan still works for certain time (moveable parts are moving) as a result of energy accumulation.

1.2.11 use

●Improper installation and/or use may lead to damage of the device and occurrence of dangerous situation. The unit can by installed, maintained, dismantled and used only by qualified and authorized personnel, in accordance to safety rules and current regulations in the country of use (including proper electrical authorization). Personnel need to be familiar with reactions caused by the fan.

●**Using of fan in dismantled/uncompleted state is forbidden, e.g. without junction box cover.**

●During the works (e.g. maintenance, installation) the fans surrounding needt to be protected from bystanders approach.

●Any modifications of the unit are forbidden. Complicated maintenance work (such as dismantling the motor or impeller) need to be made by Venture Industries Sp. z o.o. service or with it permission - according to additional guidance. Improper assembly may lead to reduce the fan parameters, damage the unit and lead to the dangerous situation.

1.2.12 Accumulation of dust

●Prevent the accumulation of dust, sediment on and inside the fan. Dirt accumulated on: grids – reduce the fan parameters; impeller – may lose it balance; housing and motor – can reduce the cooling; hot surfaces (see 1.2.9) – may ignite.

1.2.13 explosive atmospheres

●Contact of the fan with explosive atmospheres cause in ignition. It is forbidden to contact the fan with explosive atmospheres.

2. TRANSPORT AND STORAGE

During transport and storage follow the guidelines contained in 1 chapter and **transport and storage guidelines**.

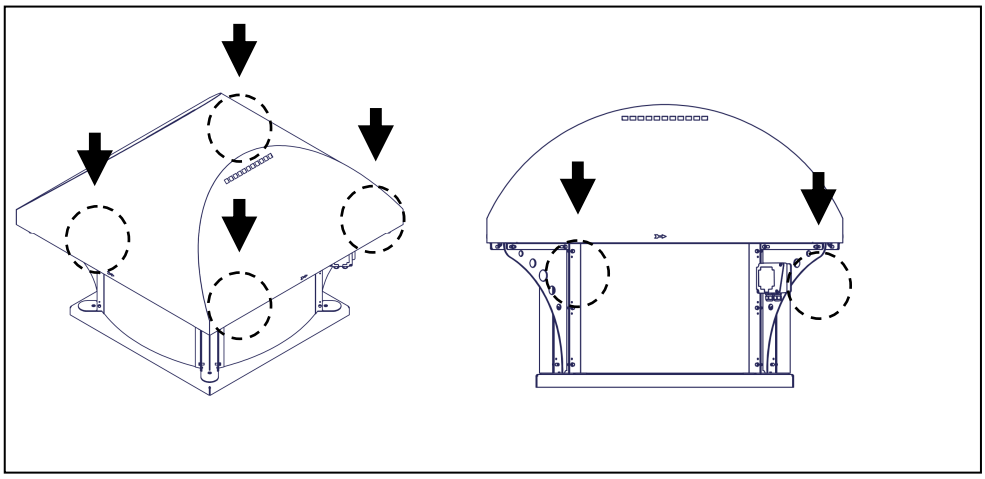
2.1 transport and storage guidelines

• The fan should be transported and stored in original packaging, without excessive shocks. The device must be protected from weather conditions, transported and stored in dry, well ventilated, and free from substances harmful to the device areas. The fan cannot be transported and stored in areas with fertilizers, chlorinated lime, acids and other aggressive chemicals. Fan should be protected against foreign body entrance.

• During transport and storage protect the fan against damage (including crush).

• The unit should be lifted by elements designed for it (according to Fig. 1). Do not lift the unit by motor elements, wires, etc. **During lifting the unit must remain stable.**

Fig. 1



●Do not come beneath lifted unit. When cables break, falling unit could cause serious injury or death.

• It is recommended that storage time not exceed one year. After long storage, check the fan. (chapter 5). It is recommended to once a month manually rotate the impeller (at least 3 rounds).

3. MONTAGE AND INSTALLATION

During installation follow the guidelines contained in 1 section of this instruction and and **installation guidelines**.

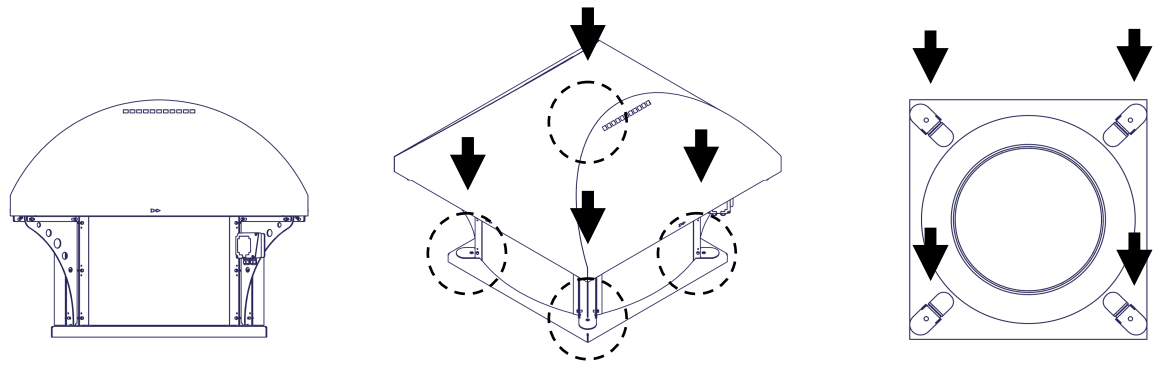
3.1 installation guidelines

•The fan is a machine not ready for use (within the meaning of the Machinery Directive 2006/42/WE - before use ensure conformity with requirements of Machinery Directive 2006/42/EC and current editions (with changes) of: EN ISO 12100, EN ISO 13857, EN 349+A1, EN ISO 13850, EN 60204-1.

• Before installation remove temporary items that protect fan during transport and storage (e.g. box, foil, caps – do not remove any guards) – Starting the fan with those items could lead to damage of the fan. Make sure that the fan is not damaged.

• The device must be mounted in the horizontal orientation with cover on top, in accordance with drawing below (the arrows show the air flow direction). The fan needs to be mounted to external constructions (we recommend use of dedicated roof stand) with use all montage holes placed on the fan base. Due to the use of the fan outdoor – prevent form leakage of water between the fan base and montage construction by proper sealing.

Fig. 2



Mounting position

Mounting holes

•The fan support construction must be able to support the fan working with the full power (start-up, breakdown, improper use should by also consider). For installation use connecting elements secured against self-loosening.

•Install proper protective structures, grids (inlet, outlet, moving parts), if not mounted by manufacturer. Open inlet of the fan need to be protected proper by proper grid.

Note: Although normally used shields the device should be installed in such a way that prevent from getting access to the device (rotor) from the outlet.

• It is recommended to use accessories to minimize the vibration transmitted from/to the fan.

• It is recommend to provide the distance of 3 inlet dimensions of clearance between inlet and any obstructions (such as filters, bends, wall) and distance guaranteeing free air movement.

• After fan mechanical installation make all electrical connections and check the impeller direction of rotation in accordance with points 3.2 and 3.3.

• Ensure that there are no foreign bodies (eg. mounting elements, tools) inside and near of the unit, that impeller is not blocked, the fan is properly secured after installation (the cover is closed and secured, the terminal box/service switch is closed, the fastening elements are properly tightened).

3.2 electrical connection guidelines

• The fan and power supply network must be secured in accordance with local law requirements.

• Use protection agianst short circuits, overloads and for fans with three phase power supply - voltage failure/unbalance. The protection need to be appropriate to the nominal fan current (see fan nameplate) and starting fan current.

• The electrical connection need to be made in accordance with the data on the fan and motor nameplates, wirning diagram and fan marking.

• Use appropriate protection against electric shock - it is required to connect fan grounding terminal placed inside connection box to proper grounding system.

• Use electrical wires with proper insulation and size. Wires should be pleaced in way that in any situation will not touch the moving elements, and that the water (eg. from condensation) not flow inside the junction box. Wires should be connected to the terminal box, through properly tightened cable glands and wire fasteners.

3.3 rotor rotation direction

Make sure that after end of installation and when using the fan the impeller would rotate in correct direction. After mounting fan to the proper construction turn on fan for 1 sec. and check the impeller rotation direction and generates air flow in correct drection. The checking motor direction should be made in accordance with chapter 1 and 4 and with caution.
The work with impeller rotating in the wrong direction reduces fan parameters and may damage it. In case of improper impeller rotation turn off the power supply, wait until impeller stops to move, and change proper wires in the terminal box (three phase power supply), contact with manufacturer (single phase power supply fan).

4. USE

During fan use follow the guidelines contained in 1 section of this instruction and **use guidelines**.
Before first start of the fan follow guidelines from chapter 5.

4.1 use guidelines

- Make sure that turning on of the fan does not make any risk for personnel and property.
- Fan cannot work with voltage, frequency, current higher than shown on the fan nameplate.
- The fan is designed for continuous operations (S1) – too high frequency of turning may lead to the motor regulator overheat and damage (see also chapter 4.2 Guidelines for regulation).
- **The fan is not adapted to rotation speed regulation.** Power supply parameters (voltage, frequency) have to be equal with those indicated on the nameplate.
- In case of activation of any electrical protection, detection of damage, working with current greater than specified on the fan nameplate – unit must by immediately turn out off use.
- The device is adapted to work in certain range of characteristic. Too high volume flow rate of medium, start/work of device with completely closed inlet and/or outlet may lead to motor overheat caused by current consumption exceeding value on the rating plate (current consumed by fan grows as resistance of installation grows)

5. MAINTENANCE, REVIEW

During maintenance and review follow the guidelines contained in 1 chapter of this instruction and maintenance guidelines.

5.1 maintenance guidelines

- Fan must be subject of regular review and maintenance (point 5.2). The set between routine checks and maintenance should be determined by user, based on the observation of unit and specific conditions and actions. If irregularities are found, the device must be taken out of service and repaired.
- To clean fan use slightly damp delicate material. It is prohibited to use detergents, liquids under pressure and tools that may scratch the unit surface. After fan cleaning (after end of maintenance) turn on the fan for 30 minutes (with full speed).
- In case of long fan downtimes it should be run at least once per month for 2 hours (with full speed).
- Prevent the accumulation of dust/dirt on and inside the fan. Dirt accumulated on: grids – may reduce the fan parameters; impeller – may lose it balance; housing and motor – can reduce the cooling; hot surfaces – in extreme situations may ignite. If the device is secured by filter - filter should by regularly inspected and replaced if it pollution is too high. The dirt accumulated on the filter reduces the fan parameters.
- Ensure that there are no foreign bodies near and inside the fan, the impeller is not blocked, the unit is clean, dry and secured after maintenance and review.
- Fan motor is equipped with bearing with life expectancy 40 000 hours (ambient temperature 40˚C). Bearings do not need refill lubricate.

5.2 Unit maintenance and review

During review and before first use of the unit or after long time period of storage attention to the following should be paid:

- accumulation of the dirt on the unit and filter (if used), state of grid / covers,
- is the device stable, not damaged, the structure is complete, moving elements can move freely,
- if there are any foreign bodies or loose elements inside the fan,
- if there is loose bearing and rotating the shaft cause in its heavy/noisy work,
- are connecting elements tightened, is fan surface without corrosion, are electrical wires not damaged,
- is the safety equipment working and property set, is shock protection effective,
- if there are leaks from the motor, overheating and vibrations.

During operations, especially after first start pay attention to:

- correct operation,
- there are no unusual noises and vibrations, leaks from the motor, overheating or vibrations,
- the grids are in proper condition,
- the fan current is not higher than show on nameplate. Exceed of current placed on the name plate could by a sign of unit damage.

6. REPAIR, WARRANTY

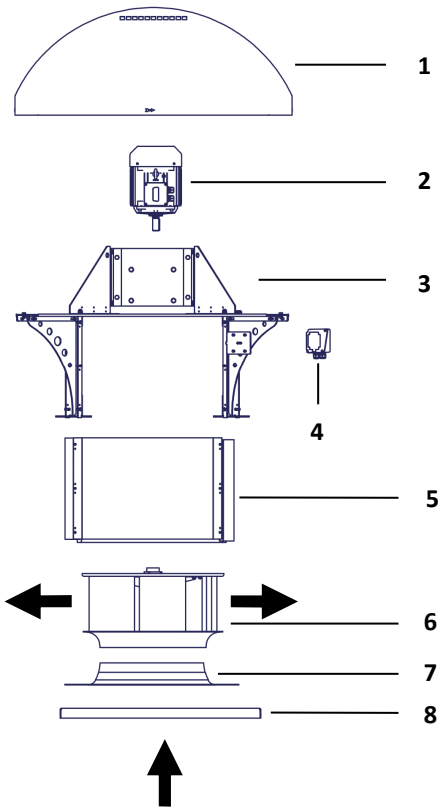
Use only original spare parts and original accessories. Fan repairs need to be made by manufacturer or after manufacturer permission.
Warranty conditions are placed in the fan warranty card.

7. DISMANTLING AND RECYCLING

Disconnect unit from its power supply, and dismount according to the guidelines from section 1 of this instruction. Therefore, please deposit all left-over material and packaging in their corresponding recycling containers and hand in the replaced machines to the nearest handler of this type of waste product.

APPENDIX A - (SCHEMATIC DIAGRAM OF THE FAN / LIST OF DEVICES)

Basic elements



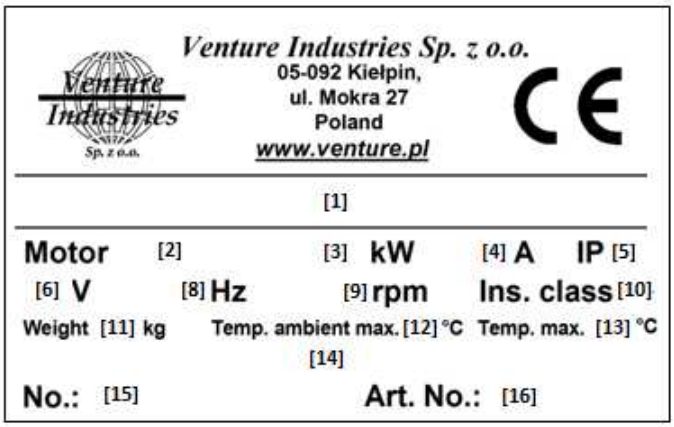
1. fan casing
2. motor
3. base elements
4. cable gland
5. impeller cover
6. Impeller
7. inlet
8. base

direction of air flow

Base elements (3) made of painted steel. Impeller (6) welded with aluminium sheet.

Detailed information on applied componenets and tighten torques (not applicable to motor) have been attached to following manual an are available on request.

APPENDIX B - (PRODUCT INDICATION)



[1] – product full name
[2] – motor type
[3] – motor power
[4] – nominal current
[5] – motor IP class
[8] – nominal voltage
[8] – power supply frequency
[9] – nominal fan speed
[10]- motor insulation class
[11] - weight
[12] – max ambient temperature
[13] – max temperature of transproted medium
[14] – informetion of accordance with ErP Directive (if apply)
[15] – serial number
[16] – Art. No.

Additional information indicated on the device
- arrow informing about correct direction of impeller rotation
- indications related to safe use of device

DO NOT TOUCH - UNIT WITH HOT SURFACE. HIGH RISK OF BURNING
KEEP UNIT AWAY FROM OTHER OBJECTS - HIGH RISK OF FIRE

APPENDIX C - (RECEIPT FORM)

Before launch	Check confirmation
Type and model of fan are in accordance with the order.	
The fan is undamaged.	
There is no foreign body inside fan and the fan is clean.	
The fan is reliably and solidly fixed in workplace.	
The fan is properly levelled	
Wires are properly tightened.	
Ambient temperature and transported medium temperature are compatible with fan nameplate	
Proper electrical protection is applied	
Grounding of fan is applied.	
Mains supply is compatible with fan power supply.	
Power supply disconnecting switch (with 3mm visible gap) is applied.	
Personnel using the fan read and understood the operation and montage manual.	
Proper inlet and outlet covers (grids) have been applied	
After fan launch (continuous work period minimum 30 minutes)	
Readings and set of vibration measurement device has been written (they are available in future)	
Value of current for each of phase does not exceed nominal one	
The vibration value is not higher than permitted.	

APPENDIX D - (EXAMPLES OF DEVICE FAULTY WORKING)

SYMPTOMS	POSSIBLE REASONS
Excessive vibration or noise	•Used or damaged impeller •Fan levelled in wrong way •Dirt accumulated on impeller caused loss of balance; •Impeller loss of balance •Parts rubbing; •Damage or wear of bearings; •Damage of measurement system, that is responsible for signalization of excessive vibration. •Deformed motor shaft; •Loose of impeller fix screw, impeller is loose on motor shaft; •Loss of balance of motor impeller or damage of motor (wear/damage of bearing)
Motor overload	•Rubbing between fan impeller and housing; •Damage or wear of bearings; •Damage of motor windings (overheat, insulation degradation, insulation breakdown etc.); •Damage of switch or security system; •Failure of one of supply phases; •Exceeding of maximum motor speed; •Too low flow
Failed fan start-up	•Rubbing between fan impeller and housing or foreign body (e.g. tool left after installation); •Failure of one of supply phases; •Failure of start-up system, e.g. Y/D •Reset of security devices has not been made, wrong security device •Motor connected in wrong way or damaged •Too low supply voltage
Protective devices activation during fan work and overheating	•Excessive start-up time •Motor overload •Motor launching done too often (thermal protection – if applied or overheating) •Improper set of protection system e.g. in system with PTC or thermocontact sensors (if applied) •Improper cross-section of power supply wires •Lack of sufficient motor cooling eg. dirt placed on motor cooling impeller (thermal protection – if applied or overheating)
Too low flow	•Damage of device •Too low power supply frequency •Obstacles in ventilation installation

APPENDIX E – (DECLARATION OF MANUFACTURER)

EU Declaration of Conformity in accordance with 2014/30/EU Directive
EC Declaration of Conformity in accordance with 2006/42/EC Directive

Manufacturer:
Venture Industries Sp. z o.o.
ul. Mokra 27
05-092 Łomianki-Kiełpin
Polska

doc. no. R2.1.02012019_EN

declares that the product described below:

Name:	Roof fan
Type:	JET / MPB-R / GMT-R / RBH / RVISP / RFHT
Model:	all manufactured
Serial no.:	all manufactured
CE marking date:	2010 / 2016 (GMT-R / RHFT)
Use/Function:	transport of specified medium **after incorporation into machinery/installation**

complies with the requirements of:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/UE

Compliance with 2014/30/EU Directive applies to the single product. When product is used with other components the installer is responsible for compliance of entire system with the provisions of 2014/30/EU Directive.

Following standards were applied (partially or full):

EN ISO 12100 EN 60034-1 EN 60204-1 EN ISO 13857

Compliance with EN ISO 13857 refers to safety devices supplied and installed in the product by the manufacturer.

Furthermore:

- The machinery into which the product is incorporated must particularly meet the requirements of current standards: EN ISO 12100, EN ISO 13857, EN 349+A1, EN ISO 13850, EN 60204-1. It is required to apply adequate protection (e.g. shield) from inlet side to prevent from contact with impeller.
- Product is in conformity with the Commission Regulation (EU) No 1253/2014 implementing ErP Directive 2009/125/EC with regard to eco-design requirements for ventilation units.
- The person authorized to comply the relevant technical documentation: *Piotr Pakowski (Lotnicza 21A, 86-300, Grudziądz, Poland).*
- Quality system is in accordance with ISO 9001:2015.

Wojciech Stawski
Managing Director

Date: 02.01.2019
Kiełpin