



Fiberglass Cone Fan

ENGLISH
Installation Instructions - Operating Instructions



IMPORTANT - READ CAREFULLY BEFORE USE

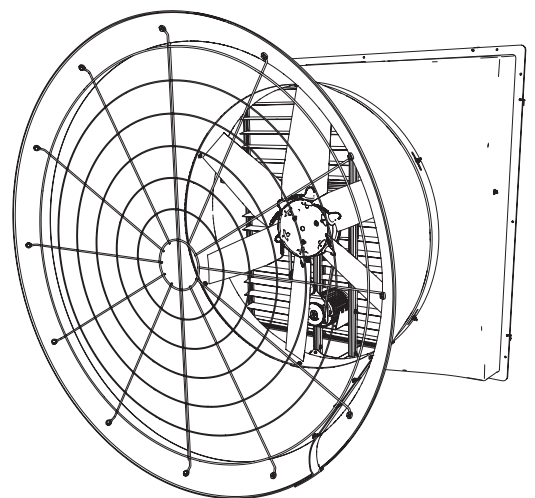


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1 Introduction

IMPORTANT: READ THESE INSTRUCTIONS CAREFULLY BEFORE USE

KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

These instructions are a part of this fan and must be passed on to any subsequent owner and/or user.

Contact your supplier if there are parts of these instructions that you do not understand. Compliance with these instructions will ensure a safe and correct use of this fan.

**NOTICE**

This fan is for professional, industrial or commercial use only.

Packaging

When the packaging materials are no longer needed, discard them according to the regulations that apply in your area.

Modification of this fan

Modifying this fan without written permission of Vostermans Ventilation B.V. is not permitted.

Warranty will be void when this fan is modified without permission.

Legal notice / Disclaimer

The scope of delivery may vary from product images shown. This document was created with all due care. The information, instructions and parts listed are current on the date this document was issued.

Improper use

No liability is accepted for damages resulting from improper use.

2 Safety

Safety messages

Your safety and the safety of others are very important. Important safety messages are provided in these instructions.

READ THESE MESSAGES CAREFULLY

A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety symbol and one of four signal words: DANGER, WARNING, CAUTION or NOTICE.

Explanation of the signal words used in these instructions

- DANGER** : You will be killed or seriously hurt if you do not follow instructions.
- WARNING** : You can be killed or seriously hurt if you do not follow instructions.
- CAUTION** : You can be hurt if you do not follow instructions.
- NOTICE** : Is used to address practices not related to physical injury.

Explanation of the safety symbols used

	General warning symbol
	Warning for electricity
	Warning for hot surfaces
	Warning for sharp elements
	Warning for automatic activation
	Warning for explosive materials
	General mandatory action sign

3 Assembly

This product is shipped partially assembled. Instructions to assemble and install the cone, cone guard and shutter are supplied separately.

NOTICE

Assembly must be carried out by skilled persons

Before commencing assembly, check that nothing has been damaged during transport.

No special tools are needed to assemble this product.

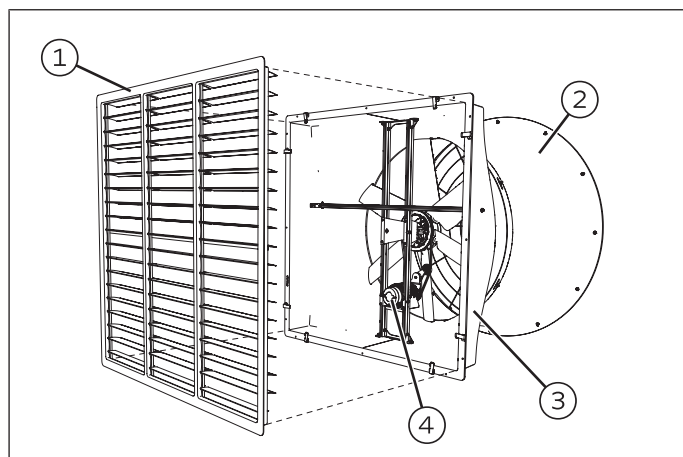
CAUTION

Some parts may have sharp edges

Risk of cuts

4 Information

4.1 Overview



1	Shutter
2	Cone
3	Casing
4	Motor and motor rating plate

The number and type of fan blades in the impeller in your fan may vary from illustrations shown in this document.

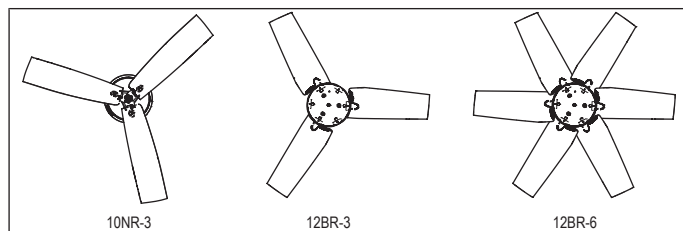


Illustration 1: Possible impeller models used in this fan series

Identification of the product

A rating plate is permanently attached to the Fiberglass Cone Fan and it must not be removed.

The rating plate displays electrical, mechanical and identification information.

Each fan has a unique 14-digit numerical serial number which is listed on the rating plate. The serial number must be provided in any future correspondence regarding this fan as it is the unique information used for identifying the fan in question.

A QR-code is displayed on the rating plate. This QR-code contains a link to an information page about this product. Here you can find a digital copy of these instructions as well as other information about this product.

4.2 Intended use

Intended use

This Fiberglass Cone Fan is intended to be used as an exhaust fan for the mechanical ventilation of livestock houses (pigs, poultry, dairy).



DANGER

Do not use this fan in explosive or potentially explosive atmospheres.



NOTICE

This fan is intended for moving air only.

4.3 Technical information

For detailed technical information please visit our website from which technical datasheets can be viewed and downloaded.

<http://productselector.vostermans.com>

4.4 Other information



DANGER

Ventilation system failure

This fan is manufactured to the highest quality standards. Nevertheless, failure of a fan can always occur.

This fan is intended to be used as a component of a ventilation system. Where the health and well-being of humans and/or animals is dependent on the functioning of this ventilation system, an appropriate backup system must be provided such that in the event of failure of the main system, sufficient air renewal is guaranteed to preserve the health and well-being of the humans and/or animals.

An alarm system, which will operate even if the principal electricity supply to it has failed, must be provided to give warning of any failure in the system.

5 Installation

► Before commencing installation

1. Check the fan after you have received it and make sure it has not been damaged during transport.
2. Briefly rotate the impeller and/or motor shaft by hand to make sure they rotate freely.
3. Check all the information on the rating plate and verify that this fan is suitable for the intended application.

5.1 Mechanical

Preparation

Before commencing the installation, plan the installation distance between the fans properly. **NOTICE! Keep in mind that the cone is wider than the fan housing.**

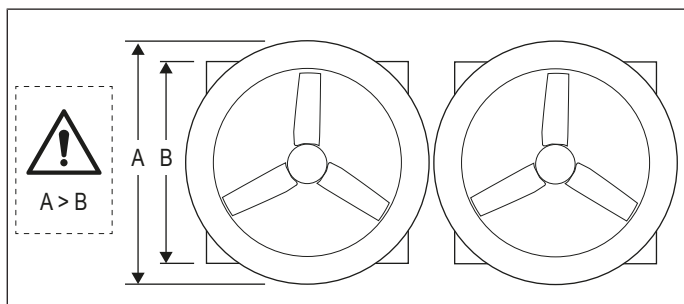


Illustration 2: Cone wider than fan housing

The opening in the wall in which the fan will be installed must be square, plumb and flat. The surface on which the fan rests must be flat.

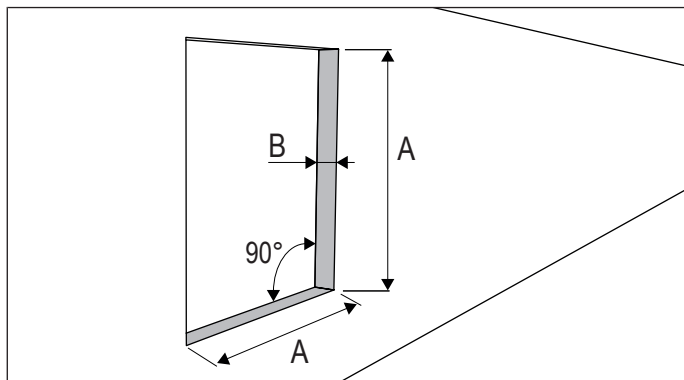


Illustration 3: Wall opening dimensions

A	50"	1460mm / 57.5"
	54"	1640mm / 64.5"
B	min 150mm / 5.9" max 300mm / 11.8"	

External mounting (flange fastened to the outside of the building) is not allowed.

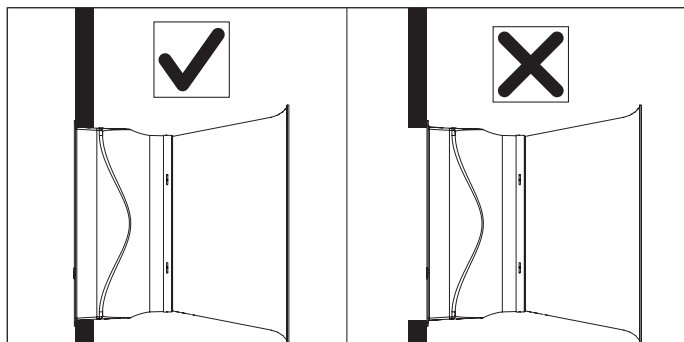


Illustration 4: External mounting is not allowed

! NOTICE

Snow and ice sliding off the roof or accumulating on the fan can cause serious damage to the fan.

Ensure that there is sufficient roof overhang or other means of protection in areas where snow and ice can cause damage.

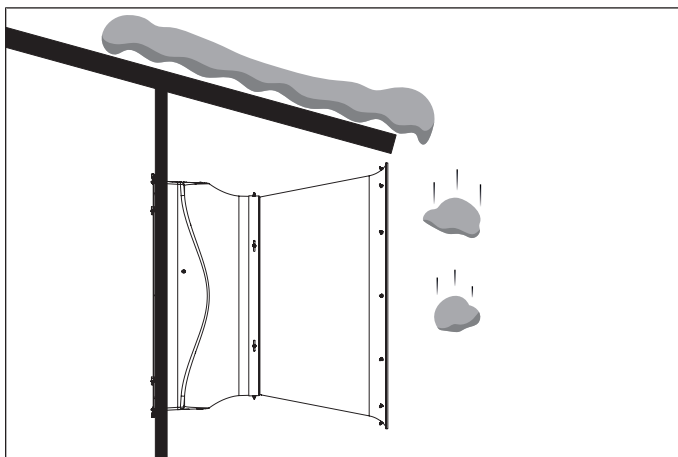


Illustration 5: Sufficient roof overhang required

Condensate drain holes

The fan motor has drain holes to allow condensation that may form inside the motor to leave the motor. After installation, the drain hole at the lowest point of the motor must be open, the other drain holes must be closed.

Spare condensate drain plugs are supplied with the fan. Keep all the drain plugs as they must be temporarily reinserted in the open drain holes during wet cleaning.

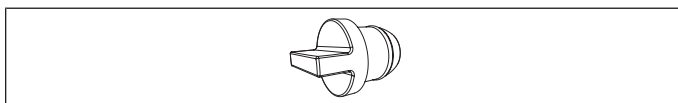


Illustration 6: Condensate drain hole plug

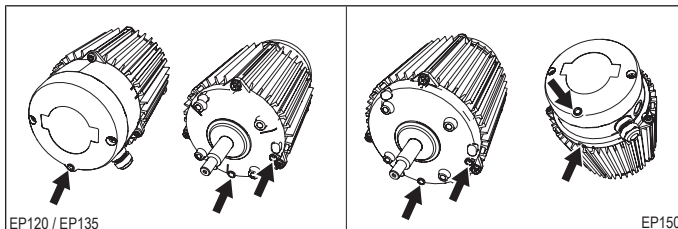


Illustration 7: Condensate drain hole locations

Guarding

! NOTICE

The fan must be guarded according to local regulations

5.2 Electrical

Wiring diagram

The wiring diagram is shown on the inside of the terminal housing cover. The wiring diagram is also shown on the technical data sheet.

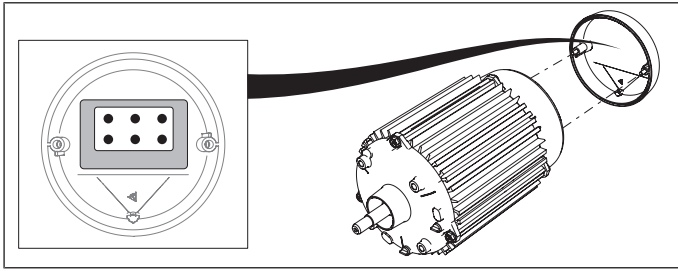


Illustration 8: Wiring diagram location

NOTICE

Electrical connection must be carried out by a qualified electrician. Electrical connections must be made in accordance with local regulations.

Check the rating plate and verify that this fan is suitable for the available power supply.

For 3~ fan motors: check that STAR / DELTA is properly configured on the terminal block.

Control

This fan is supplied without a control or control system. A control or a control system must be provided for operation of the fan.

Isolator

This fan is supplied without an electrical isolator. An electrical isolator must be provided to facilitate safe maintenance and troubleshooting.

Grounding



The fan must be grounded. Ground the fan according to local regulations.

NOTICE

Overcurrent protection

The use of an individual separate overcurrent protective device per fan is highly recommended.

NOTICE

Overload protection

The use of an individual separate overload protective device (Motor Protective Circuit Breaker) per fan is highly recommended.

5.2.1 Thermal protection

1~ fan motor thermal protection

Thermal detectors are built-in standard in 1~ fan motors. Thermal detectors are of the thermostat type TB: thermostat opening on increase of temperature.

In 1~ fan motors, the thermostat (TB) is by default wired in series with the phase (L) of the supply. The motor is as such self-resetting: when the motor overheats, the thermostat will switch off the motor automatically and once the motor has cooled down, the motor will start automatically again.

The presence of the text "Thermally Protected" on the rating plate and/or datasheet indicates that thermal protection is built-in the 1~ fan motor and that it is wired in series with the phase (L) of the supply.



WARNING

If the unexpected start of the motor by the thermostat can cause a hazard or is prohibited by local regulations, the thermostat must be connected into a control circuit that will not allow the motor to restart until the circuit is manually reset.

3~ fan motor thermal protection (optionally available)

Thermal detectors are optionally available in 3~ fan motors. Thermal detectors are of the thermostat type TB: thermostat opening on increase of temperature.

In 3~ fan motors, the thermostats (TB) are by default wired to separate terminals on the terminal block. An external control circuit can be connected here. **NOTICE! The thermostats in 3~ fan motors cannot be wired in series with the power supply.**

5.2.2 Speed control

Verify that this fan is suitable for speed control. On the datasheet and rating plate the following (combination of) codes can be found:

F = suitable for frequency control / VFD (Variable Frequency Drive)

E = suitable for electronic voltage control (TRIAC / phase cutting)

T = suitable for transformer voltage control



WARNING

If none of these codes is listed, this fan cannot be speed controlled!

Variable Frequency Drive (FC / frequency control)

- Do not reduce the frequency to less than 20% of the nominal frequency as listed on the rating plate.
- When using a variable frequency drive, the wiring instructions of the variable frequency drive manufacturer must be followed.



WARNING

Do not increase the frequency beyond the nominal value as listed on the rating plate

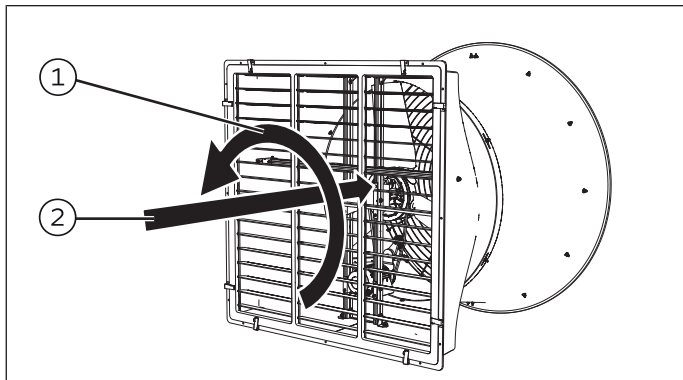
Electronic Voltage Control (TRIAC / SOLID-STATE / phase cutting)

- Do not reduce the voltage to less than 40% of the nominal voltage as listed on the rating plate.
- Motor noise (humming) can occur due to this type of control

Transformer voltage control

- Do not reduce the voltage to less than 40% of the nominal voltage as listed on the rating plate.

6 Commissioning



- | | |
|---|-----------------------------|
| 1 | Impeller rotation direction |
| 2 | Airflow direction |

Before initial start-up verify that:

1. Installation and electrical connection have been properly completed.
2. No foreign material is present within the fan and fan housing.
3. All necessary safety devices such as guards are in place.

Initial start-up

1. Briefly switch on the power supply and check if the impeller rotates in the correct direction. Correct if necessary:
 - For 3~ fans interchange any 2 of the 3 phases of the supply.
 - For 1~ fans contact your supplier.
2. Run the fan and check for quiet (no unusual noises), low vibration operation. Check that the current draw is within the full load limits as listed on the rating plate and datasheet.
3. Refer to the troubleshooting section of these instructions if anything seems out of the ordinary.

7 Operation

Always be alert when the fan is in operation. Immediately switch off and isolate the fan from the electrical supply if anything seems out of the ordinary. Refer to the troubleshooting section of these instructions if anything seems out of the ordinary.



DANGER

If the built-in thermal protection is in series with the power supply and is activated, the fan motor will automatically re-start after cooling down.

Risk of injury due to unexpected start.



CAUTION

The fan motor can get hot during operation

Do not touch it to prevent burns

Infrequent use

If the fan is used less frequently than once per month, run the fan each month at least 2 hours at full speed to avoid buildup of moisture in the fan motor and to keep the bearing lubricant in good condition.

8 Maintenance



DANGER

Switch off and completely isolate the fan from the electrical supply before commencing maintenance.



WARNING

All moving parts must be at a complete standstill before commencing maintenance.



WARNING

Even when electrically isolated, fans may be subjected to free spinning or „wind milling“. Secure the impeller physically to restrict rotational movement where this poses a risk.

8.1 Maintenance schedule

► Maintenance tasks – TO BE CARRIED OUT EVERY MONTH

1. Examine the fan housing for defects and remove any dirt that has accumulated.
2. Examine the motor and remove any dirt that has accumulated on the motor and between the motor cooling fins.
3. Examine the impeller for defects and remove any dirt that has accumulated.
4. Examine the condition of the guards (if fitted) and remove any dirt that has accumulated.
5. Examine the shutter for defects and remove any dirt that has accumulated.

► Maintenance tasks – TO BE CARRIED OUT EVERY 3 MONTHS

1. Check the condition of the bearings.
2. Check the tension and condition of the v-belt.
3. Check the tightness of fasteners and fixings.

► Maintenance tasks – TO BE CARRIED OUT ANNUALLY

1. Only for 1~ fan motors: check the capacitor capacitance.

8.2 Maintenance subjects

Cleaning

In areas of application where high levels of contamination are present, cleaning intervals should be adjusted accordingly.

Cleaning is preferably done using a soft brush. Do not use any aggressive detergents, solvents or chemicals for cleaning.

Wet cleaning

Wet cleaning is allowed using low pressure clean water spray. Avoid directing water jets at bearings and electrical connections as much as possible.

When wet cleaning is planned, close any open condensate drain holes before commencing wet cleaning.



WARNING

Do not use a high pressure cleaner.

Water may penetrate electrical connections and bearings.

► After wet cleaning

1. Open the condensate drain hole at the lowest point of the fan motor.
2. Run the fan for 2 hours at full speed to remove any moisture that may have entered the fan motor.

Bearings

The bearings used in the fan and/or fan motor are maintenance free and greased for life. Average lifespan during normal operation is >30.000 hours.

Defects in the bearings can usually be detected by listening. When the shaft / impeller is rotated by hand, it should move freely with a smooth uniform sound. Squeaking or grinding noises indicate the bearings may require replacement.

Impeller

Cleaning the impeller is very important. A dirty impeller will suffer from imbalance resulting in vibrations. A dirty impeller will also result in reduced fan performance and reduced fan efficiency.

V-belt tension

For proper function of a V-belt, the V-belt requires correct tension. If the V-belt tension is too low, the V-belt can slip causing premature wear of the V-belt. If the V-belt tension is too high, the motor and impeller bearing life will be considerably shorter.

V-belt tension check

► Simple method to check proper V-belt tension

1. Measure span length A
2. Calculate deflection length C

$$\Rightarrow C = 0.0156 \times A \text{ (mm)}$$

⇒ Pushing with deflection force B, deflection should be C

Deflection force B:

V-belt profile: A	Deflection force B (kg)	
	Min	Max
Small pulley Ø (mm)		
75 to 90	1.6	2.4
90 to 118	2.0	2.8
118 to 180	2.3	3.3

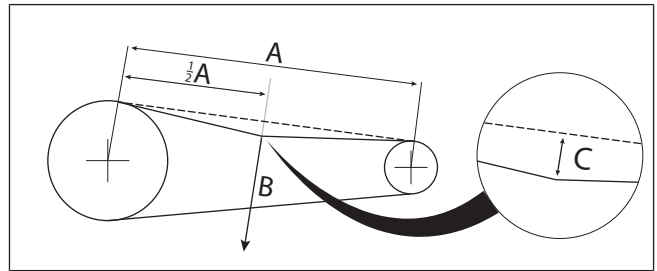


Illustration 9: V-belt tension check

Adjusting the V-belt tension

This fan is equipped with an automatic V-belt tensioner. If the automatic V-belt tensioner no longer provides the correct V-belt tension, it must be adjusted.

Adjusting the automatic V-belt tensioner

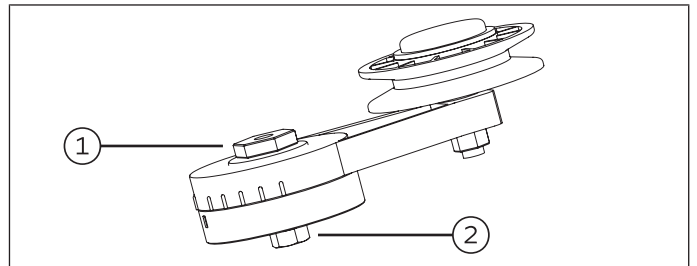


Illustration 10: Automatic V-belt tensioner

1. Place a wrench on the hex nut on the tensioner body (1) and a wrench on the mounting fastener (2).
2. Loosen the mounting fastener.
3. Using the wrench on the tensioner body (1), rotate the tensioner body and apply pressure in the appropriate direction until the V-belt is properly tensioned.
4. With the tensioner body securely held in position, tighten the mounting fastener (2).

Capacitor (1~ fan motor)

Capacitor capacitance decreases slowly over time. Average lifespan is ± 30.000 hours. Replace the capacitor when the capacitance has dropped below the value as listed on the capacitor.

Start capacitor (1~ fan motor)

The start capacitors' lifespan is 500.000 starts. Replace the start capacitor when the number of starts has reached 500.000.

The start capacitor cannot be serviced or repaired. The start capacitor must be replaced if it is not functioning properly anymore.

Louvre shutter

Cleaning the shutter is very important. A dirty shutter will reduce the amount of air moved by the fan reducing your fan efficiency. Clean the louvres carefully to avoid bending or damaging them. Damaged louvres can cause the shutter to leak.

9 Troubleshooting and repairs**WARNING**

Troubleshooting and repairs must be performed by skilled persons only!

Fault	Possible cause	Possible remedy
Airflow too high	Fan speed (rpm) too high	Check supply voltage and frequency
	System resistance lower than specified	Reduce fan speed (if fan can be speed controlled) Choose alternative fan
Airflow too low	System resistance higher than specified	Choose alternative fan
		Lower system resistance
Excessive vibration	Impeller imbalance -> impeller damaged	Replace the impeller
	Impeller imbalance -> impeller dirty	Clean the impeller
	Bearings are damaged or worn	Replace the bearings
Fan does not start	No power supplied to fan	Check all power supplies Check fuse/circuit breaker
	(If present) VFD (Variable Frequency Drive) defective	Check VFD (refer to VFD manufacturers' instructions)
Fan does not start (supply voltage at fan motor terminals is present)	Thermal protection activated (Fan motor has overheated)	Clean the motor Check for overloading of fan system (intake or exhaust blocked?) Check if the supply voltage is not too high or too low
	Impeller blocked	Remove the blockage
	Only for 1~ fan motors: wrong or defective capacitor	Replace the capacitor
	Temperature too low for the bearing grease	Do not operate the fan outside the ambient temperature range as specified on the rating plate and technical data sheet
Fan motor overheats while running	Fan is overloaded	Check for overloading of the fan system (intake or exhaust blocked?)
	Fan motor overheated due to dirt in cooling fins.	Clean the motor
	Supply voltage too high or too low	Check the power supply
	Incorrect supply frequency	Check the power supply
	Only for 3~ motors: phase voltage imbalance	Check the power supply
	Only for 1~ motors: wrong or defective capacitor	Replace the capacitor
Fan motor overheats while running	Only for 1~ fan motors with start capacitor: Start capacitor does not disengage after motor has started (continuously on)	Replace start capacitor
Fan rotates in wrong direction	1~ fan motors: capacitor incorrectly connected	Connect according to wiring diagram (contact supplier)
	3~ fan motors: supply incorrectly connected	Swap any 2 of the 3 phases of the supply
Fan speed (rpm) is too low	Supply voltage is too low	Check the power supply
	Incorrect supply frequency	Check the power supply
	Only for 1~ fans: wrong or defective capacitor	Replace the capacitor
	Only for 3~ fans: STAR instead of DELTA connected	Connect as DELTA Check wiring diagram!
	3~ fan motors: Phase failure	Restore all 3 phases
High power consumption	Fan is overloaded	Check for overloading of the fan system (intake or exhaust blocked?)
	Fan speed is too high	Check the supply voltage and frequency
Unusual or excessive noises	Impeller hits fan housing	Check the installation and fixings and alignment
	Fan is operating in stall point	Lower the system resistance (Intake or exhaust blocked)
	Bearings are damaged or worn	Replace the bearings

Fault	Possible cause	Possible remedy
Unusual or excessive noises	Only for 1~ motors with start capacitor: Start capacitor does not disengage after motor has started (continuously on)	Replace the start capacitor

Detailed repair and replacement instructions are available from your supplier or Vostermans Ventilation B.V.

It is highly recommended to use genuine parts only for service and repairs.

10 End of life

Disposal

At the end of the life of this fan, dispose of it properly in accordance with regulations that apply in your area.

Recycling

The main materials used in the electric motor are copper, steel and aluminium.

Most of the fan parts have the recycling symbol with material code listed on them to facilitate proper recycling. Some parts are made of easy to identify materials such as steel, and have no recycling symbol on them.

Symbol	Material
	Polypropylene
	ABS (Acrylonitrile butadiene styrene)
	Polyamide
	Glass fibre reinforced polypropylene
	Unsaturated polyester – Sheet Moulding Compound
	Aluminium

Not all of the above symbols may appear on parts of this product. This is because the material in question is then not present in this product.

Multifan 
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