

BREEZE FAN

Manual for use and maintenance



+ CE Declaration of conformity

Breeze Fan

Air circulation fan

Breeze Fan

Manual for use and maintenance

This manual for use and maintenance is an integral part of the apparatus together with the attached technical documentation and has been produced with reference to Directive 2006/42/EC, paragraph A, Annex II.

This document is destined for the user of the apparatus: it may not be reproduced in whole or in part, committed to computer memory as a file or delivered to third parties without the prior authorisation of the assembler of the system. Munters A/S reserves the right to effect modifications to the apparatus in accordance with technical and legal developments.

Warranty

For Warranty information please refers to "General terms and condition of sale" available on https://www.munters.com/globalassets/terms-and-policies/condizioni_generali_vendita.pdf.

Conditions and Limitations:

- Products and Systems involved in a warranty claim under the "General terms and condition of sale" must have been properly installed, maintained and operated under competent supervision, according to the instructions provided by Munters;
- Malfunction or failure resulting from misuse, abuse, negligence, alteration, accident or lack of proper installation or maintenance shall not be considered a defect under the Warranty.



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1. CE DECLARATION

CE Declaration of Conformity

(complies with Subparagraph A Annex II Directive 2006/42/EC)

Munters A/S

with registered offices in Nordvestvej, 3 - 9600 Aars, Denmark
(Company registration nr. DK 89 54 94 18)

declares on its own responsibility that the apparatus:

Designation	Fan
Model	Breeze Fan
Year of manufacture	2017

conforms with the essential safety requirements stated by Apparatus Directive 2006/42/EC

with particular reference to the following provisions:

UNI EN ISO 12100, UNI EN ISO 13857, CEI EN 60204-1, CEI EN 61000-6-1, CEI EN 61000-6-3

Aars, 28th September 2017

Lasse Kiel Madsen



Legal Representative

1.1 Disclaimer

Munters reserves the right to make alternations to specifications, quantities, dimensions etc. for production or other reasons, subsequent to publication. The information contained herein has been prepared by qualified experts within Munters. While we believe the information is accurate and complete, we make no warranty or representation for any particular purposes. The information is offered in good faith and with the understanding that any use of the units or accessories in breach of the directions and warnings in this document is at the sole discretion and risk of the user.

1.2 Introduction

Congratulations on your excellent choice of purchasing a Breeze fan!

In order to realize the full benefit from this product it is important that it is installed, commissioned and operated correctly. Before installation or using the fan, this manual should be studied carefully. It is also recommended that it is kept safely for future reference. The manual is intended as a reference for installation, commissioning and day-to-day operation of the fans.

1.3 Notes

Date of release: 2017.

Munters cannot guarantee to inform users about the changes or to distribute new manuals to them.

All rights reserved. No part of this manual may be reproduced in any manner whatsoever without the expressed written permission of Munters. The contents of this manual are subject to change without notice.

1.4 Attached technical documentation

The listed documentation is to be considered an integral part of this manual:

- technical sheet/electric motor instruction booklet.

2. SAFETY ASPECTS

2.1 General

The safety of fans is assured by Munters in compliance with the safety requirements indicated by the CE label. Safe functioning is assured only when the installation procedure and the instructions for use have been carefully followed. The following points must be stressed:

- proper transport procedure must be followed;
- the maintenance operator must be kept informed on maintenance procedures (see also the 'Gear Motor manual');
- do not operate the fan without having it firmly fixed to the structure or without complying with the safety regulations for the electrical connection;
- do not install the fan in places where there might be explosion hazards as described by EN 60079 rules;
- do not handle any material which might produce explosive powders;
- the emission of harmful particles and/or gases into the atmosphere must be within the limits determined by local authorities;
- the fan is intended to be installed and used by qualified personnel who are familiar with relevant safety requirements;
- safety equipment necessary for the prevention of accidents at the mounting and operating site shall be provided by the buyer in accordance with the regulations prevailing in the local country;
- fans should not be installed in places where children aged 14 years or less are present.

2.2 Installation

After transportation, prior to assembly and installation of the Breeze Fan, a verification of the package condition is required: in case of any discrepancy or damage of the fan components, it is necessary to immediately notify the manufacturer or the transporter.



WARNING In order to prevent damage to the fan itself or risk to personnel, resulting from incorrect use, the assembly and installation of the fan has to be carried out by specialized operators only.

The assembly of the fan has to be carried out in the following phases:

- pre-assembly of the fan components;
- positioning and anchorage of the fan support;
- installation of the blades;
- electrical connection;
- functional verification and commissioning.

Selecting the location and verification of the requirements for installation

The user assumes the task of preparing a suitable area for installing the fan and in conformity to the requirements from European Directive and national laws which regulate the safety in the workplaces.

The operating environmental conditions of the plant are:

Ambient temperature during operation	-15°C to +40°
Ambient humidity during operation	80%

For the installation operations it is necessary to provide a suitable manoeuvring space adapted to the dimensions of the fan and selected lifting equipment: in the installation zone must be prepared the connection points of the fan to the power supply network.



WARNING The fan has to be installed exclusively at a height not under 2.7m from the ground floor. The building for the installation must have minimum height equal to 4.5m for the 3m, 4m and 5m versions and equal to 5.2m for the 6m and 7m versions, and must be equipped with adequate natural ventilation (no perimeter walls).

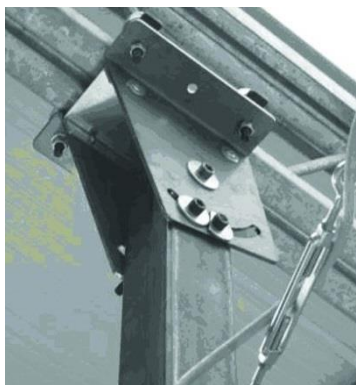


Fig.1

If the fan will be directly assembled to the metal structure of the building, it is necessary to use bolts M8 type 8.8 screwed in the appropriate inserts, placed on the stand for the anchorage (two per side).

Adjustable mounting plate for the rafter fixing.

2.3 Electrical connection

The fan is supplied together with an electrical casing containing the following equipment:

- frequency controller type Nordac 500E;
- automatic Climate Control Munters Temp Man, Automatic Speed Regulator Munters or similar (optional).

The characteristics of such devices are shown in the documentation attached to this manual.

The fan is supplied without any wired command and control circuit; in the assembly phase, the installer must predispose a control panel which meets the requirements of the standard CEI EN 60439-3 and proceed to the electrical wiring of the fan in accordance to the indications of the standard CEI EN 60204-1 and IEC 60364.

The electrical panel of the fan must be provided with the following equipment (provided with CE mark according to the directive 2006/95/CE).



Fig.2

Lockable isolator.



Fig.3

Thermo-magnetic switch (adapted to the electrical power of the motor). The necessity to install a differential switch is connected to the configuration of the electrical wiring that powers the fan: the installer is responsible for this evaluation in accordance to the indications of the normative IEC 60364.



Fig.4

Emergency stop button red type (mushroom), fitted with mechanical restraint and turn to release (according to UNI EN ISO 13850). The operation of the button must determine the electro-mechanical interruption of the power supply and the electrical motor (1st category according to CEI EN 60204-1).



Fig.5

Start/Stop selector (characteristics compatible with nominal electrical current motor) or general electrical panel with command equipment which act on the power supply of the fan.

2.4 Danger generated by noise

A noise survey was performed to the fan during normal operation, for detecting the equivalent noise level in the normal use conditions, and the values are shown in the following table.

Measuring point: 3 m from motor shaft (under fan blades)	Correct noise pressure level Lp [dB(A)]
3m	55
4m	53
5m	51
6m	50
7m	48

3. BEFORE USING

3.1 Delivery check

Upon receipt, inspect the fan for external damage and if found, inform the transport agent without delay. Check the data on all the rating plates, especially voltage and frequency. After placing the motor in the working position (see chapter 5, Installation), turn the propeller by hand while the fan is switched off to verify smooth rotation of the propeller.

3.2 Packaging and transport

The fan components are usually delivered with packaging. Each package has to be handled properly in order to avoid damages.

3.3 Structure

The fans consist of the following components:

- tilting bracket;
- suspension arm;
- gear-motor and frame complete fixture;
- propeller hub galvanized steel;
- propeller composed of 5 blades in aluminium alloy; blades will be attached to the hub using screws;
- suspension and attachment (stainless steel wire cable, clams, hooks, etc.).

4. OPERATING CONDITIONS

Circulation fans, such as the Breeze Fan, are products to be used to circulate the air inside a structure, thereby creating air movement inside the structure which helps to cool animals down during hot periods.

Normal ambient temperature limits are -15°C to +40°C. Maximum altitude is 1000 m above sea level. If a fan is required to operate at a higher altitude, the loss in mass flow (heat removing capacity) due to lower air density should be taken into consideration.

5. INSTALLATION

5.1 General



WARNING Personnel who are responsible for installation, operation, inspection and service must have appropriate knowledge of the instructions, be familiar with procedures for the prevention of accidents and be qualified to carry out the work in question. If the personnel do not have the requisite knowledge, instruction of the personnel must be carried out.

The reliability of the unit supplied can only be guaranteed if its use corresponds to the intended use according to the sales material and/or the order confirmation.

The owner is responsible for the instructions and safety precautions being observed in relation to current legislative requirements. The manufacturer assumes no responsibility for the Breeze Fan in the event of the incorrect or improper use of the unit.



NOTE Read the instruction carefully, before beginning the work.

The Breeze Fan is designed and constructed in accordance with current EN norms for ventilation equipment.

5.2 Tools required for the installation of the Breeze Fan

	Ring/open-ended spanner – 10
	Ring/open-ended spanner – 13
	Ring/open-ended spanner - 17
	Ring/open-ended spanner - 19
	AccuDrill

	Spiral drill bit - Ø6; Ø10; Ø12.5
	Phillips screwdriver
	Torx 20 Bits
	Allen key 6
Other	Spirit level, bits holder, adjustable spanner, polygrip pliers, rubber headed hammer, square tool

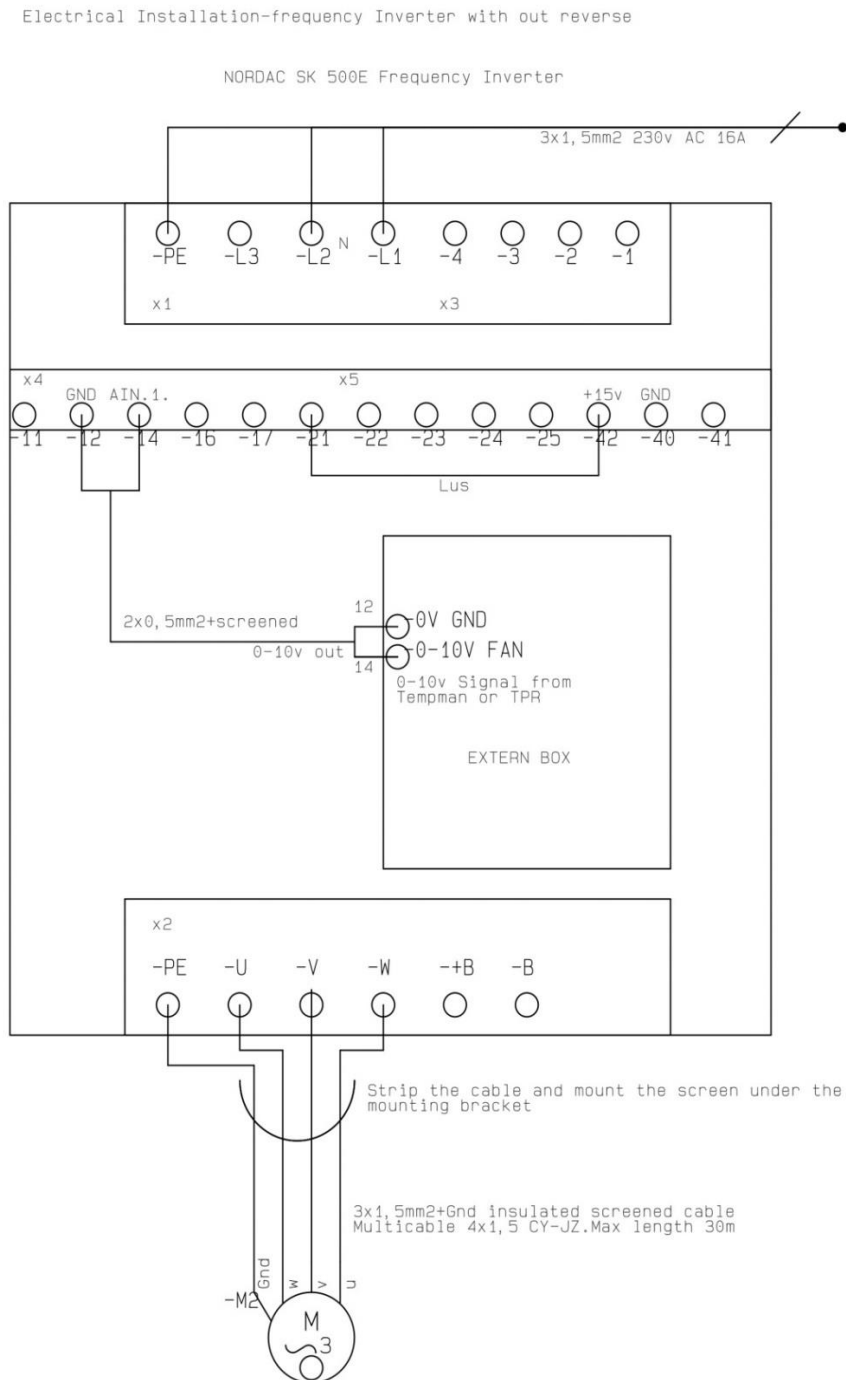


WARNING Please pay attention to use a torque wrench or a calibrated screwdriver to respect the following tightening torque:

- M8 Screw: 27 Nm
- M10 Screw: 53 Nm
- M12 Screw: 92 Nm

5.3 Electrical wirings

Electrical installation frequency inverter without reverse for Breeze Fan



Munters Turbovent Nordvestvej 3 9600 Års TLF.98623311

Fig.6

5.4 Spacing of fans

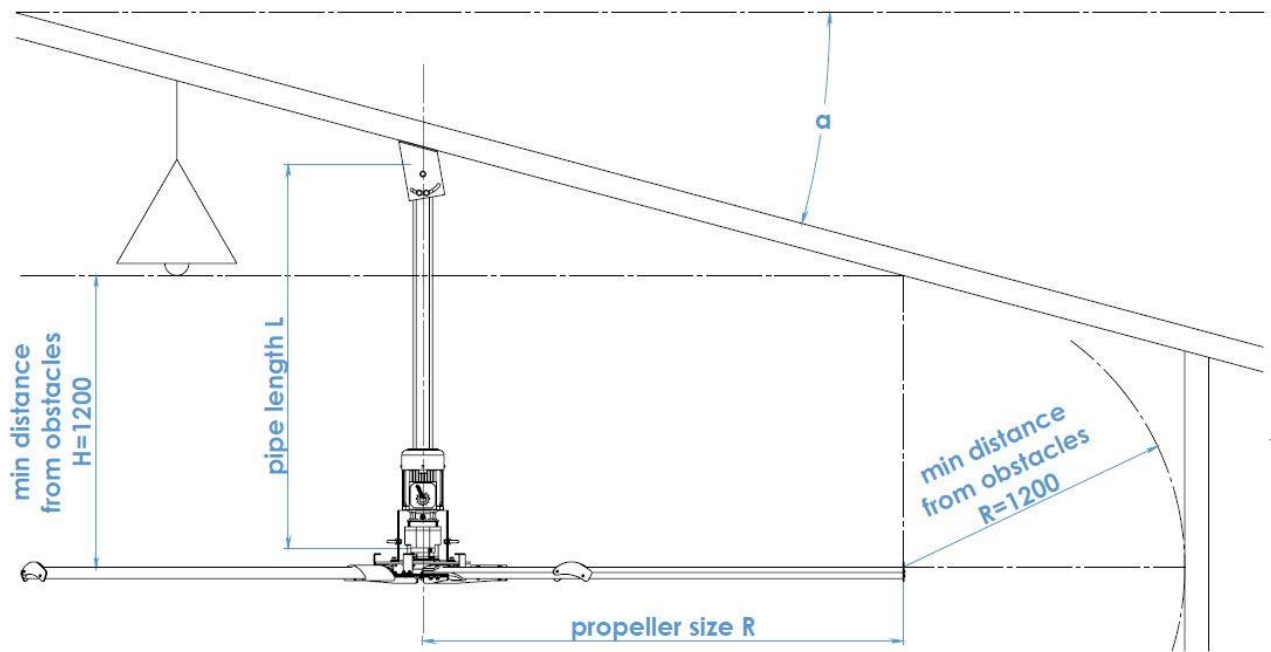


Fig.7

Propeller size		Gearbox	
R [m]	Ø [m]	Short pipe (L=1.6 m)	Long pipe (L=2.3 m)
1.5	3	0 → 20	21 → 40
2.0	4	0 → 15	16 → 32
2.5	5	0 → 12	13 → 27
3.0	6	0 → 10	11 → 23
3.5	7	0 → 9	10 → 20

The recommendations should be complied with since they represent the optimum efficiency for the Breeze Fan.

The Breeze fan must be installed at least 1 meter below the ceiling and at a height of 4 meters above the floor. The installer has also to assess any interference with machinery, balconies, balustrades, or anything else between the floor and the fan, that may interfere with it. Before beginning the installation, the area must be properly signaled and there must be no people or objects that may hamper or be damaged by accidental falling of parts of the fan. The area over which the Breeze fan's action is effective is about 3 times the diameter of the fan. Munters expressly forbids installations in which no space is left between one machine and another equal to the diameter of the fan itself. The installer is fully responsible for connecting the Breeze fan to the ceiling.

5.5 Installation of rafter suspension unit

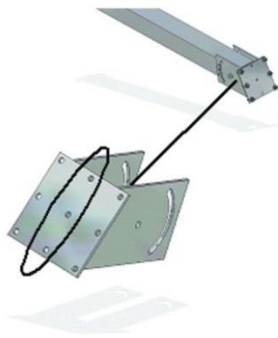


Fig.8

Fig.8 shows the tilting bracket that has to be attached to the rafter. In order to enable the bracket to adapt to different rafter widths, the extra set of holes on the top side (centre) of the bracket can be used.

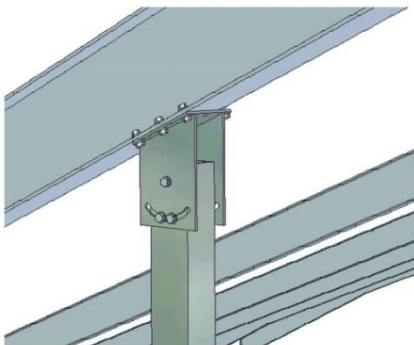


Fig.9

The bracket **MUST** be secured with the accompanying 6 bolts, although the attachment holes are arbitrary. It is recommended that the tilting bracket be held up against the rafter and the appropriate holes marked off. Holes should then be drilled all the way through the rafter. The tilting bracket should be fitted as shown in Fig.9.



Fig.10

When the tilting bracket has been attached to the rafter, it is ready to be fitted with the suspension arm.

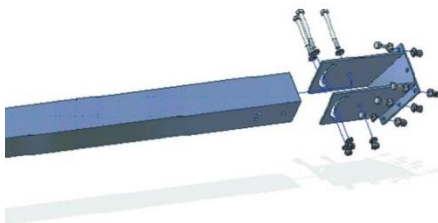


Fig.11

Fit the suspension arm into the tilting bracket and secure with the accompanying set of bolts.



WARNING Attach the suspension arm loosely so that the weight of the Breeze Fan pulls it to the vertical position - do not tighten before the Breeze Fan is fitted (hold a spirit level against the suspension arm to verify that it is 100% vertical).

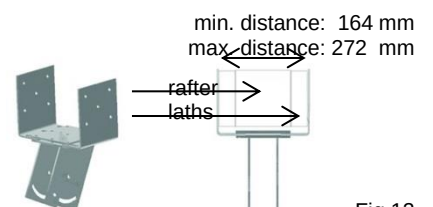


Fig.12

5.6 Installation of complete motor fixture including motor

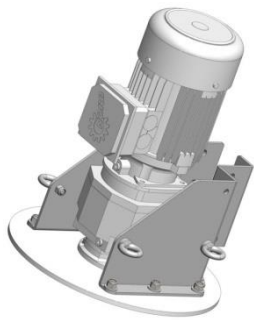


Fig. 13

As shown in Fig.13, the gear motor and motor fixture are available as a complete unit. The eye nuts shown are used for 4 x wire attachment. The attachment equipment makes up part of the Breeze Fan's stabilizing/safety equipment.

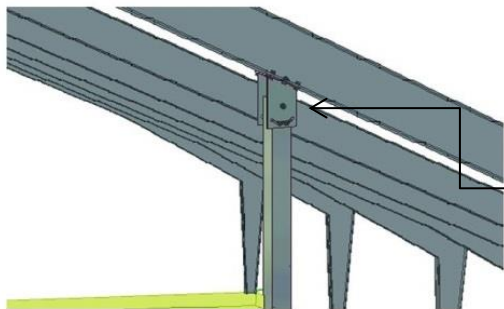


Fig. 14

Suspension arm tightened (must be vertical).

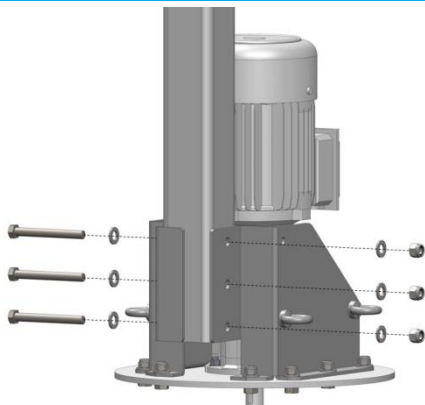


Fig. 15

Fit the suspension arm to the complete motor fixture by means of 3 screws M12, 6 washers Ø12 and 3 self-locking nuts M12 (tightening torque 80 Nm).

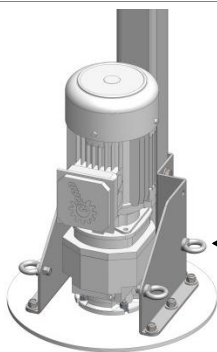


Fig. 16

Eye nut used for wire attachment (tightened firmly/loctite).

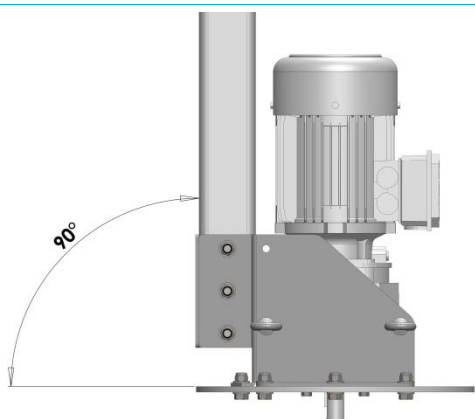


Fig.17

Using a square tool, make sure to have 90° between the suspension arm and the bottom flange motor.

5.7 Installation of attachment wires

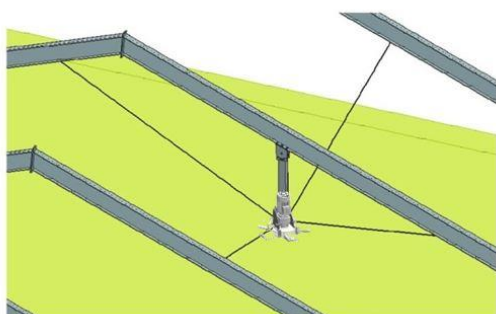


Fig.18

Fit the attachment wires as shown in Fig.18. In order to attach the safety hook to the rafter, drill a 12.5 mm diameter hole through the rafter (drill at a suitable distance that enables the safety hook to close). The wires will help to stabilise the Breeze Fan, thus ensuring that minor vibrations do not cause fatigue failures in the structural elements or attachment systems. It is important that when the attachment wires are fitted, the suspension arm does not deviate from the vertical position (the tension from the 4 wires must be distributed symmetrically around the centre of the Breeze Fan).

Installation sequence

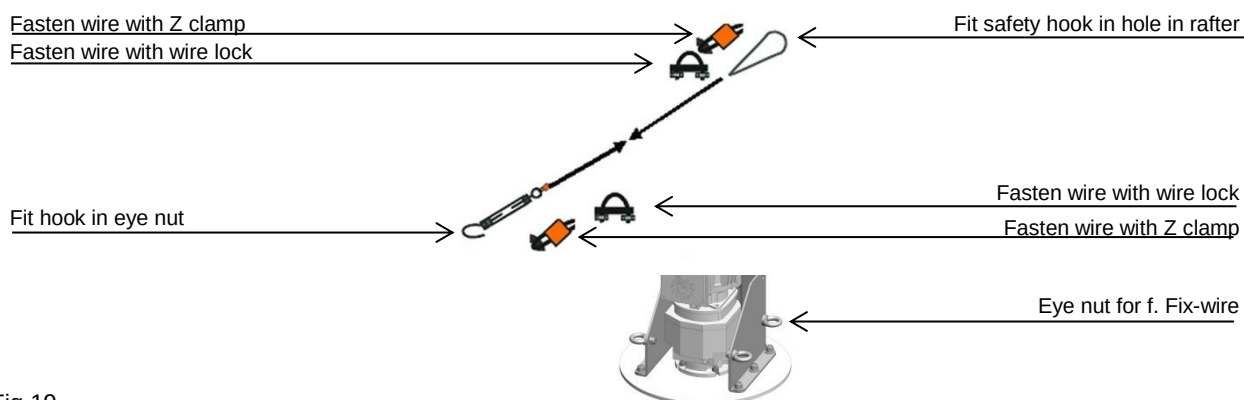


Fig.19



NOTE Tighten the wire with a wire strainer, hard by hand, then turn 3 times (Fig.19).

Munters provides an attachment wires kit for the Breeze fan. The attachment wires kit ensure the stability of the Breeze fan and maintain it at its height if, due to external causes, the fan is abnormally stressed or the ceiling mount with the suspension arm only does not guarantee a sufficient solidity over time.



WARNING Munters does not accept any responsibility for not using the attachment wires kit for installation.

5.8 Installation of fall protection



Fit the fall protection wire to the rafter in the same way as the attachment wire. Attach the wire to an arbitrary eye nut on the motor fixture. The fall protection wire should not be tightened using a wire strainer, but tightened to a tension that can be achieved manually.

Fig.20



WARNING It is important that when the fall protection is fitted, the suspension arm does not deviate from the vertical position.

5.9 Installation of hub

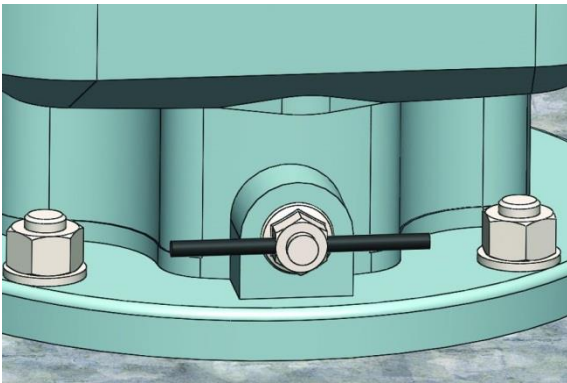


Fig.25

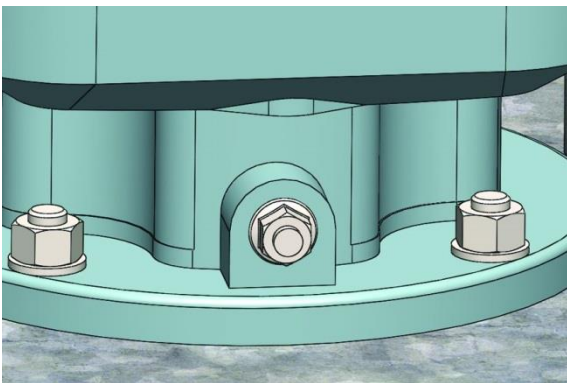


Fig.26

Important!

To prevent build-up of excessive pressure, the sealed vent must be activated as shown prior to gear unit start up.

5.10 Installation of blades

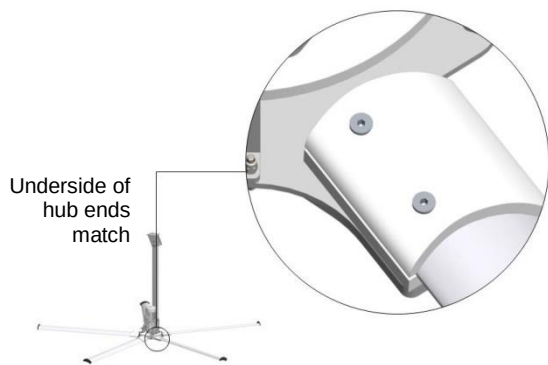


Fig.27/28

When fitting the blades to the hub, insert the blade profile into the accompanying adapter profile. The profiles must match at the ends.

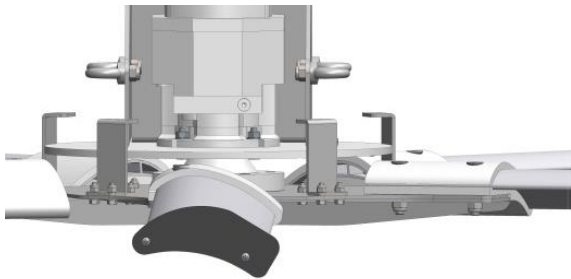


Fig.29

Hub edge with profile edge.

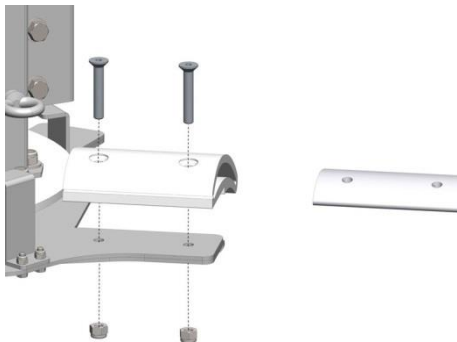


Fig.30

Fit the blade by means of 2 screws M10 and 2 self-locking nuts (tightening torque 10 Nm).

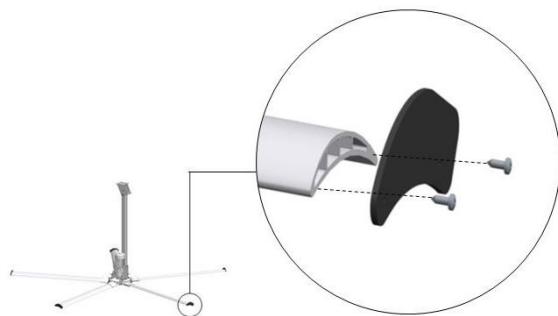


Fig.31

Fasten the fan end into pilot.

6. COMMISSIONING

After installation, follow the steps mentioned below to verify that the fan is working properly:

1. check if all the fans are secured tightly to the suspension;
2. ensure that all the necessary safety equipment is fitted to the fans;
3. ensure that all electrical connections are done properly and comply with local regulations;
4. note in which direction the propellers are supposed to turn;
5. remove all obstacles from the front and back sides of the fan;
6. ensure that all people and animals are standing clear of the fan;
7. turn the electrical power to the fans on;
8. observe the direction in which the propeller of each of the fans is turning;
9. turn the electrical power to the fans off.



WARNING Do not attempt to correct any problem observed during the above mentioned steps while the fan is in operation. Wait until the electrical power has been switched off and the fan has come to a complete stand still. Lock the electrical switch in the off position with a pad lock while working on the fan.

7. TECHNICAL DATA

7.1 General description

The fan is composed from following elements:

- rotor with five blades in aluminum alloy, fixed rigidly to the rotor structure and through removable elements (screws, bolts);
- anchorage system (suspension cables) in stainless steel cables with the gear-motor frame;
- gear-motor type asynchronous tri-phase at 50 and 60 Hz, F class isolation, IE2 standard efficiency, protection degree IP55, multi-voltage at variable speed adjustable in frequency using inverter.

7.2 Technical specifications

MODEL	Diameter	Weight	Power		Rotation speed
	[m]	[kg]	[hp]	[kW]	[rpm]
Breeze Fan 3m	3	95	1.5	1.1	100 – 140
Breeze Fan 4m	4	101	1.5	1.1	60 – 100
Breeze Fan 5m	5	108	1.5	1.1	40 – 80
Breeze Fan 6m	6	115	2	1.5	40 – 70
Breeze Fan 7m	7	122	2	1.5	32 – 55

7.3 Motor specifications

Code	Power		Current	Voltage	cosφ	Gearbox		
	[kW]	[hp]	[A]	[V]		Code	i	n ₂ [rpm]
SK80T1/4 TF	1.1	1.5	3.59/2.07	217/375	0.92	SK372.1	20.62	102
SK90T1/4 TF	1.5	2	4.94/2.82	214/370	0.93/0.92	SK572.1	24.58	85

8. MAINTENANCE

8.1 Introduction

Maintenance must only be carried out by qualified personnel only using suitable tools and working methods. Before any maintenance steps are taken, make sure the power switch is in the off position and locked by a padlock. Make sure the propeller is at a complete stand still.



WARNING Maintain clean the gear motor: a lack of cleaning may lead to overheating and breakage of the bearings and also gear motor itself.

It is forbidden the use of high pressure water in order to avoid damage to the gear motor of the fan (corrosion and bearing damage).

The responsibility lies with the operators to maintain the fan clean, free of foreign materials like dust, organic residue, etc.

8.2 Maintenance instructions for geared motor

As regards maintenance instructions for geared motor, please refer to the enclosed manuals.

8.3 Maintenance instructions for fan

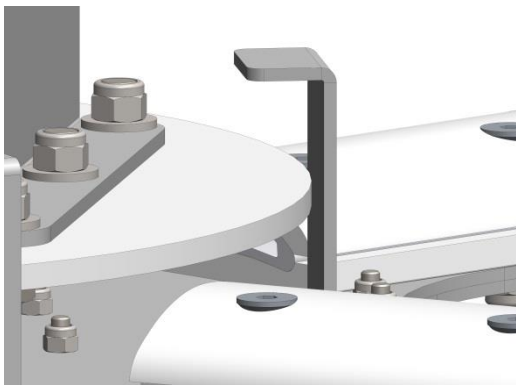


Fig.32

Check every 6 months the tightening torque (10Nm) of the safety brackets.

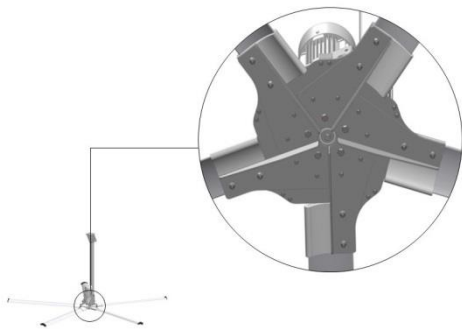


Fig.33

Check every 6 months the tightening torque (50Nm) of the propeller hub screw.



WARNING Verify every 6 months that all the structural screws of the fan and its support are correctly tightened.

Requests for technical assistance and spare parts must be made directly to the manufacturer, at the following address:

Munters A/S
Nordvestvej, 3
9600 Aars, Denmark
Tel: +45 986 233 11
Fax: +45 986 213 54
aghort@munters.dk

Breeze fan is developed and produced by Munters A/S, Denmark



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