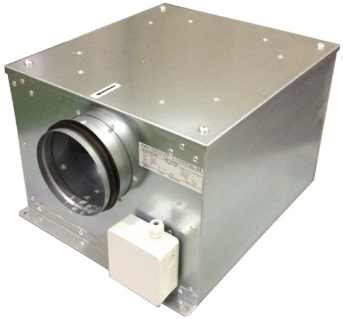
Duct Fans - Operations and Maintenance

www.flaktwoods.com/oandm



Safety, Installation, Operation and Maintenance Instructions

FläktWoods

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1 Contents

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2 Safety

The following symbols refer to particular dangers or give advice for safe operation:

Attention! Danger! Safety advice!

Danger from electric current or high voltage!

Crush danger!

Danger! Do not step under hanging load!

Important information

Fläkt Woods fans are produced in accordance with the latest technical standards. Our quality assurance programme includes material and function tests to ensure that the final product is of a high quality. Never the less these fans can be dangerous if they are not installed correctly and comply according to our instructions.

Before installing and operating our fans please read the following instructions carefully!

- Only use the fan after it has been securely mounted and fitted with protection guards to suit the application (tested guards can be supplied for all fans)
- Installation, service, electrical and mechanical maintenance should only be undertaken by qualified workers!
- The fan must only be used according to its design parameters, with regard to performance (type plate) and mediums passing through it!
- The fans cannot be used in hazardous areas for the transfer of gas, mist vapours or mixtures nor can they be used for the transfer of solid components in the transfer medium
- The thermal contact (TK) build in to motor windings serve as motor cut-out switch and must be connected!
- The operating instructions are important and must be available with product.

2.1 Directed operation

The fans are only to be operated when they are installed as instructed and when safety is complied with DIN EN 13857 or by other protection measures.

We refer that the existing operating instructions are only valid for the fan described in this manual.

3 Description and Scope

Fläkt Woods fans were especially developed for use in modern ventilation systems and air handling units. By using a external rotor induction motor there are significant technical advantages in operation over conventional radial fans. The fan sizes correspond to the standard number row R20 according to DIN 323. The fan size corresponds to the impeller diameter. By the use of theasynchronous - external rotor motors as drive, crucial technical advantages are offered. A special calculated motor winding makes it possible to reduce the number of revolutions with the supported motor voltage. If the fan is operated with an frequency inverter please consider the references in the section 9 operating conditions.

All fans are statically and dynamically balanced as a composite unit in our factory.

3.1 Roof Fans

Roof fans are equipped with an external rotor motor and they are 100 % variable voltage controllable.

3.2 Espada Ropera Fans (Tube)

Tube fans are equipped with an external rotor motor and they are 100 % variable voltage controllable. The Tube fans of the Espada range sizes 100L to 315L are supplied with plastic casings. The Tube fans of the Ropera range sizes 100 to 400 are supplied in metal casings, epoxy coated in RAL7032 (grey).

3.3 Katana, Katana Plus, Katana EC and Falcata Fans (Rectangular In Line Duct)

In Line Duct Fans are 100 % variable voltage controllable.

3.4 Estoc, Estoc Targe Fans (Power Box Ranges)

Estoc are equipped with an external rotor motor and they are 100 % variable voltage controlable.

3.5 Sabina Fans (Single Box)

Sabina are equipped with an external rotor motor and they are 100 % variable voltage controllable.

3.6 Deba Fans (Kitchen Exhaust)

The casing comprises of a double skinned galvanized steel encapsulating a non-flammable rock wool acoustic with moisture insulation. The motor and impeller are mounted on a hinged accessable door to allow easy access for inspection and cleaning.

To the drive 100 % variable voltage control external rotor motors in IP 54 protected, insulating class F, equipped with a thermal contact and/or IEC-standard motors B5 construction, IP 55 protected, insulating class F equipped with a thermal contact as well.

4 Condition of Use

Direct driven explosion proof fans can be used for ventilation in the following:

- Clean air
- Slightly aggressive gases and fumes
- Mediums up to an atmospheric density of 1.3 kg/m^3
- Mediums up to a maximum humidity of 95% (no condensing)
- Mediums passing through are normally within a temperature range of -30°C up to +40°C (if higher temperatures are allowed it will be stated on the name plate)
- Mediums up to a maximum humidity of 95%

5 Storage and Handling

- Store the fan in a dry place and weather protected in its original packing
- Cover open plates with a tarpaulin and protect the fans against dirt (i.e. stones, splinters, wires, etc.)
- Storage between temperature of -20°C and +40°C
- If stored for over 1 year please check the bearings on soft running before mounting (turn by hand). Prior to putting in operation the tip gap distances of rotating blades must also be checked (prior to assembly)
- Do not transport/hold via cable
- Transport the fan with suitable loading facilities (a weight as signed on the type plate)
- Avoid distortion of casing/blades or any other damage
- Use suitable assembling means as e.g. scaffolds conforming to specifications

Danger! Do not step under hanging load!

6 Installation

Installation and electric work must only be carried out by skilled and qualified personnel!

Once unpacked the fan has to be checked for any transport damages. Damaged fans must not be installed! Prevent any objects and foreign material from entering inlet and outlet when opening storage box and installing. The protection guards must be certified to DIN 31001 or VDMA 24167.

In hazardous areas connect components to a voltage equalizing system.

The following applies for all fans:

- Do not install without adequate support
- Warping and shifting must not result in knocking or grinding of moving parts
- Do not apply force (levering, bending)
- Fastening all fastening spots with suitable means of mounting
- Electric wiring must be in accordance with technical connection regulations and local ordinances and national electric codes as per enclosed wiring diagram in the terminal box or on the casing
- Insert cable according to rules in junction box and seal it (possibly "water bag")

Do not use metal compression gland fittings with plastic terminal boxes!

- Before control of direction of rotation:
- Remove any foreign matter from the fan
- Install protection guards (accessories) or give no entry to fan.

The system manufacturer or the machine builder is responsible that the inherent installation and security informations are harmonized with the valid standard and guidelines.

6.1 Roof Fan

- Only pick up the unpacked fan on the base frame or on support bracket
- When installing the roof fan on roof socket or on socket damper the mounting surface has to be sealed airtight on fan base frame with moss rubber seal or with a continuous elastic foam type. Attention: Take care that surfaces of sockets mounted on site are completely flat
- An uneven surface will lead to deformation of the base frame so that the impeller cannot rotate free. For installation on roof socket or socket damper please use screws and seal rings for sealing against water

All roof fans are suitable for installation in horizontal position or in a incline of up to 5°. If the degree of inclination is higher, the fixation between motor supporting plate and inlet cone has to be strengthened.

6.2 Espada Ropera Fans (Tube)

- Up to size 250L are directly connected in the tube system without special fixation, larger sizes only possible with sleeve coupling and suitable hanging mounts (e.g. punched metal tapes)
- Padded clamps reduce noise transmission
- Fixing of the mounting assembly via steel tube fans screw points is acceptable, so long as the screws do not protrude further than 10 mm into the housing inside. Turn impellor by hand to check smooth rotation
- For outside use mount weather protection guard and fix on side!

6.3 Katana, Katana Plus, Katana EC and Falcata Fans (Rectangular In Line Duct)

- Installation of the fan can be via mounting a flange directly to the duct system, in conjunction with a sound attenuator, or in order to avoid noise transmission, with flexible connectors, installed on the inlet and outlet
- The standard method of mounting is via a pre-prepared platform or for vertical mounting channel section brackets fixed to the fan casing
- Weight as per chart in enclosure

In line duct fans with the type designation Katana possess a swinging out fan. There is mortal danger if the screws of the swing out fan are removed (uncontrolled swing out of the fan part). The sign on the fan is to be noted!

6.4 Estoc, Estoc Targe Fans (Power Box Ranges)

- Installation of the Estoc via mounting a flange directly to the duct system, in conjunction with a sound attenuator, or in order to avoid noise transmission, with flexible connectors, installed on the inlet and outlet
- The standard method of mounting is via a pre-prepared platform or for vertical mounting channel section brackets fixed to the fan casing
- Weight as per chart in enclosure

6.5 Sabina Fans (Single Box)

- Sabina must be mounted with suitable fixing on a stable ground or console. Any mounting position is possible, but opening of maintenance cover must be accessable
- Mount tube system either directly on connection flange of the Sabina or fix with connection sleeve
- Padded connection sleeves allow reduction in noise!

6.6 Deba Fans (Kitchen Exhaust)

- Please use protection hood just in case objects or water enter the cooling blades of the motor.

7 Motor Protection

Motor protection over:
- Thermal contact: Attach thermal contact only to an appropriate protective motor switching and/ or five step speed controller (with voltage controllable motors only)
- Protective motor switch gear (only possible with non voltage controllable motors): Adjust the protective motor switch gear (commercial) to the motor rated current (a motor type plate) or
- PTC resistors: Attach PTC resistors duly to release equipment

8 Put into Operation

Prior to first commissioning check:
- Installation and electrical installation is properly completedSafety devices fitted - protective guards
- Assembly residue and foreign particles removed from fan area
- Continuous protective conductor connection present
- Fan must not rub on fixed housing components
- Cable entry is sealed tight
- Connection data correspond to data on type plate
- Motor operating capacitor data (1~motors) complies with the specifications on the type plate

Operation may only take place if all safety instructions have been checked and danger can be excluded. Fans with swinging out fan part (e.g. In Line Duct Fans, Exhaust Air Unit, Hinged Roof Fan...) start-up may take place only if the fan part is closed and secured.

Putting into operation:
- Switch on fan in accordance with power on requirements and local conditions
- Check for direction of rotation arrow

Put into operation according to local conditions. The regulations of the responsible power supplier are to be considered.

- Check sense of rotation
- Smoothness of running

8.1 Change of Direction of Rotation with Three Phase Motors

- Change the direction/rotation by changing two of the phases!

8.2 Change of Direction/Rotation with Single Phase Motors

- Change direction of rotation if necessary by changing Z1 and Z2. (to colour identification see connection diagram).

9 Operating Conditions

Do not operate the fans in a combustible atmosphere.

On/off switching frequency:

- The fan is limited for continuous operation S1
- To attach fan controllers/switch gears may not be permit in extreme operations

9.1 Operation with Frequency Inverters

Three phase Fläkt Woods fans are suitable for operation with frequency inverters when the following points are observed:

- Between the inverter and the motor, sinusoidal filters should be incorporated which are effective for all phases (sinusoidal output voltage, phase against phase, phase against protective conductor) as offered by manufacturers
- The attitudes on the frequency converter are to be made in accordance with the informations on the data plate

Du/dt filters (also called motor or suppression filters) cannot be used in place of sinusoidal filters.

9.2 Fans with Shielded Motor Cable

Fans delivered with a shielded motor cable can be operated with a frequency converter without using a sinusoidal filters.

10 Maintenance and Service

Repair of the fan can only by carried out by qualified and skilled personnel in accordance to relevant rules and regulations!

Due to the selection of bearings with “lifetime lubrication” the fan is maintenance free. Once the grease consumption period has expired (for standard applications, approx. 30-40,000 hrs) it is necessary to replace the bearings.

On 1~ motors, condenser rating can decrease with time. Life expectancy approx. 30,000 hrs.

For all maintenance and service works ensure:

- Fan impeller has stopped!
- Electrical circuit has been disconnected and protected against reconnection!
- Observe health and safety regulations!

The air passage of the fan must be unobstructed.

- Regular cleaning prevents distortions
- Never use high pressure cleaning equipment (“steam cleaners”)!
- Do not bend fan blades
- Listen for unusual running noises
- Replace the bearings at the end of the grease consumption period, or if they should become damaged
- Ask for our maintenance guide or contact our service department (special tools may be required!)
- Replace bearings only with original parts (Fläkt Woods special grease)
- In the event of any other damage (e.g. winding damage) please contact our repair department.

11 Service, Address of Producer

Fläkt Woods products are subject to steady quality controls and are in accordance with valid regulations. In case you have any questions with regard to our products please contact either your constructor to one of our distributors. Full address details please see back page.

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FläktWoods EE090BB1209W2_AL-Ventilatoren_Vorlage-Woods.doc	Einbauerklärung / *declaration of Incorporation* im Sinne der EG - Maschinenrichtlinie 2006/42/EG *as defined by the EC – Machinery Directive 2006/42/EC*

Hersteller / *Manufacturer* **Fläkt Woods**
Axial Way
GB-Colchester CO45ZD

Hiermit erklären wir, dass die unvollständige Maschine / *Herewith we declare that the incomplete machine*

Produktbezeichnung / *Designation of the machine*	Typ- oder Serienbezeichnung / model or *type of machine*	ab Baujahr / *since year of manufacture*
Rohrventilator / *Tube fan*	Espada Ropera	2010
Kanalventilator / *In line duct fan*	Falcata / Katana	2010
Ventilator-Geräte / Fan-*Units*	Estoc / Sabina	2010
Abluftbox / *Exhaust air unit*	Deba	2010

den grundlegenden Anforderungen der Richtlinie 2006/42/EG entspricht, insbesondere / *meets the basic requirements of the guideline 2006/42/EC, in particular:*

Anhang I, Artikel 1.1.2, 1.1.5, 1.3.2, 1.4.1, 1.5.1, 1.7.3

desweiteren den einschlägigen Bestimmungen nachfolgender Richlinien / *in additional is in accordance with the requirements of the following directives*:

Elektromagnetische Verträglichkeit (EMV-Richtlinie) (2004/108/EG) /
Elektromagnetic Compatibility (EMC-Directive) (2004/108/EC)
Niederspannungsrichtlinie 2006/95/EG / *Low voltage directive 2006/95/EC*

Ferner erklären wir, dass die speziellen technischen Unterlagen nach Anhang VII Teil B erstellt wurden und verpflichten uns diese auf Verlangen den Marktaufsichtsbehörden über unsere Dokumentationsabteilung in schriftlicher oder elektronischer Form zu übermitteln.
Furthermore we declare that the relevant technical documentation according to Appendix VII, Part B, have been issued and we commit ourselves to forward the documents on request to the market regulators as written documents or electronically.

Die Inbetriebnahme der unvollständigen Maschine wird solange untersagt, bis diese in eine Maschine eingebaut wurde welche dann den Bestimmungen der EG Maschinenrichtlinie 2006/42/EG entspricht.
The commissioning of the incomplete machine is prohibited until the incomplete machine has been installed in a machine which then meets the requirements of the EC Machinery Directive 2006/42/EC.

Name des Dokumentationsbevollmächtigten /
name of the person which is responsible for the documentation: Allan Hurdle

Adresse der benannten Person / *address of the nominated person:* siehe Herstelleradresse / *see manufacturers address*

Die Einbauerklärung wurde ausgestellt / *EC-Declaration of incorporation was issued:*

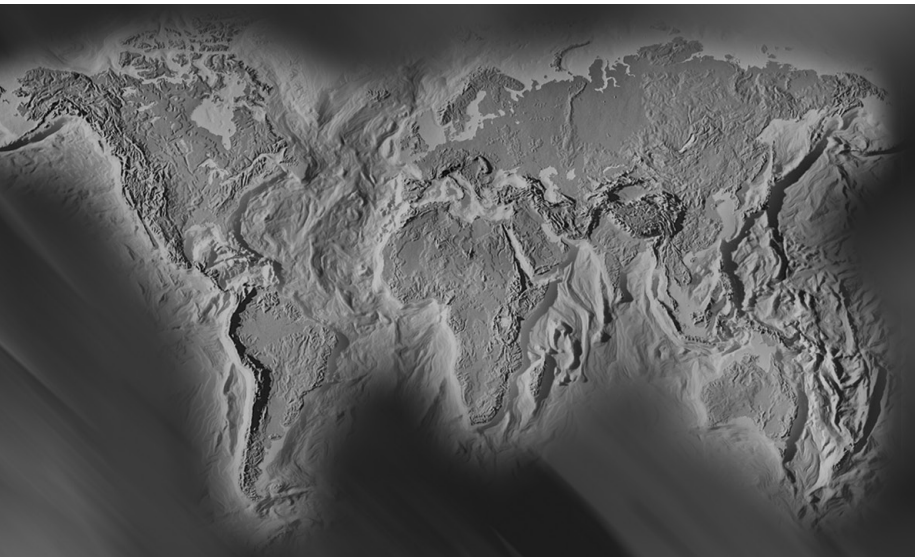
Colchester, UK, 19/03/13

....

Ort, Datum / *Place, Date*

Name – Allan Hurdle
Managing Director – Flakt Woods Ltd

We Bring Air to Life



Fläkt Woods Group provides a full range of products and solutions for buildings ventilation, air treatment and industrial air movement

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