INSTRUCTION MANUAL
CE DECLARATION OF COMPLIANCE
Ambient

EC GREEN TECHNOLOGY INDUCTION FANS

EC-PV 120 A twin ©

ATTENTION!!

In case of changes to the machinery which have not been reconciled with the manufacturer or in case of removal of the original type plate / CE-marking of the ventilation unit the CE declaration will lose its validity and the manufacturer's warranty will immediately expire.

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CONTENTS:

Because the use of this unit / motor is a safety product and in many cases a certificated F300 safety product in S1/S2 use special attention is required to the installation and maintenance of this product. It is strongly advised to have a well-programmed installation and maintenance, especially of the electric motors, summed up as a periodical inspection (daily, weekly, monthly etc.).

1. INTRODUCTION.

The safety precautions regarding possible (life-threatening) personal injury are designated in the margins with this symbol.

You will find this symbol in places in the manual where important instructions are given for the proper operational methods for preventing damage or malfunctioning of the fan unit.

The fan units which Ventispecial BV supplies are of the utmost modernity and meet all safety regulations of the EC machine guideline 2006/42/EC, EMC guideline 2006/95/EC/EG and low voltage guideline 2004/108/EC.

However, any fan unit can present a danger if:
- the fan unit is not installed, serviced or maintained by personnel especially trained for this purpose,
- the fan unit is not used in accordance with the guidelines.

In this case you will be posing danger of (fatal) injury to personnel and may case damage to materials and buildings, besides reducing the fan's efficiency.

This manual must be read and followed by anyone wishing to use the fan unit.

This manual:
- Describes proper use of the fan unit of type:
  - EC-PV 120 A©, and

  warns against improper usage (Ch. 3),
- contains safety precautions which must be strictly adhered to (Ch. 4),
- contains warnings against possible dangers which may arise, even in the case that the precautions are followed
- contains important instructions for safe usage of the fan unit,
- must be filled in with the relevant (national) regulations and standards.

Ventispecial BV bears no liability for damage or operational faults arising from non-compliance with the instructions contained in this manual.

In the case of modifications carried out on the fan unit without prior written approval from the manufacturer or in the case of removal of the fan unit's original type plate/CE designation, both the CE designation as well as the manufacturer's guarantee shall become immediately void.

Ventispecial BV bears no liability for consequential damage.

2. DESCRIPTION OF MACHINE

2.1. Product description

Parking garage fan units from the EC-PV 120 A© series with unilateral extraction have been developed for a room in a building whereby, in the case that air pollution is present, a directional air flow can be initiated through which the polluted air (cold smoke, etc.) can be extracted from the room.

The air is drawn up by via the grate through the motor/impeller combination and blown out via the outflow opening.

The fan unit has a direct drive from a built-in EC motors in the airflow. The impeller, complete with slot-winding, has back-bent blades and is installed directly on the standard motor's axle.

The applied EC motors are IP 54, ISO B, S1 . The connection voltage is 200~240/1/50/60 The power supply connection is through an outer terminal box (OTB1) and the speed control including maximum airflow connection is also through an outer terminal box (OTB2). The fan must be properly grounded at all times.

The fan unit is intended for installation on a ceiling/wall whereby it is not permitted to have the fan unit arranged (vertically) blowing out upwards. Safety precautions must comply with the requirements contained in EN 292.

2.2. Technical specifications.

The technical specifications and permissible boundary values are contained in the technical specifications sheet (attachment). These values may not be exceeded.

3. INTENDED USAGE

3.1. Intended usage.

The fan units are intended for extraction/conveyance of clean and slightly polluted air and other, non-aggressive gasses or fumes (with a temperature range of -20° C to 50° C in **the standard operational situation**).

Any usage deviating from that stated above is not permitted; Ventispecial BV bears no liability for any personal or material damage resulting from such deviation! The validity of the CE designation shall likewise expire.

In the case that regulating equipment with electronic components (such as frequency modulators) is used, the manufacturer's recommendations must be complied with (for example: grounding, cable lengths, cable guards, etc.)

3.2. Unintended usage.

Improper usage includes, but is not limited to, the transfer of:
- gasses and fumes with a temperature higher or lower than the prescribed temperature,
- aggressive gasses or fumes,
- gasses or fumes with a high dust content.

Possible results:
corrosion damage, equilibrium loss, vibration, deformation, damage from tear.

Possible dangers:
Personal or material damage due to impeller fracture, axle fracture, fatigue fracture or fire resulting from spark formation.

The fan units from the EC-PV 120 A© standard series are not to be integrated into any area where danger of explosion is present.

4. GENERAL SAFETY PRECAUTIONS

- Always read through these safety instructions with care and be sure to follow them,

- **electricity must be turned off before you can begin cleaning or maintenance work (see Ch. 8),**

- have maintenance work on the fan unit be carried out by a technically qualified professional, contact the supplier to do so,

- **safety precautions have been created for each operation, such as;**
  - **installation,**
  - **electrical connection,**
  - **implementation**
  - **maintenance and repairs,**

- never use the fan unit for applications that it is not designed for,

- use electrical cables which are suitable for the maximum motor load (see technical specifications sheet),

- the operator/assembler/installer must be conscious of the fan unit's safe operation before beginning maintenance work,

- safety grates and similar which are removed or disassembled for installation or maintenance work must be returned to their proper position after the installation or maintenance work **and before** reconnection to the power supply.

- before using the fan unit, check to see that all safety guards are properly installed and/or the fan unit can function properly. When in doubt, do not take any chances; call for the supplier,

- turning the fan unit on and off must always be done with care (see Ch. 7),

- never overload the fan unit (see Ch. 7),

- when an abnormality appears, such as excessive vibration or noise, turn the fan unit off immediately.

- always wear protective clothing when working on the fan unit,

- for questions or doubts regarding the safe operation of the fan unit, always contact the supplier.

5. TRANSPORT

5.1. Transport damage.

You must immediately check the shipment to make sure it is undamaged and complete and must do so in the presence of the supplier. In the case of transport damage, contact the service department for advice (see contents).

The fan units can be shipped in their original packaging (on 1 pallet and plastic-wrapped).

The fan units must be transported in accordance with the applicable guidelines/standards.

Unprofessional transport such as setting the product down too hard or on its side can lead to:

- **the impeller becoming jammed in the fan unit or being thrown off balance,**
- **misshaping of the axles,**
- **damage to the bearings,**
- **damage to electrical components,**
- **damage to the paint,**

5.2. Transport safety.

The transport device must be suitable for lifting the weight of the pallet (meaning the fan units plus packaging (see technical specifications sheet)).

The fan units can be shipped in their original packaging (on 1 pallet and plastic-wrapped). Once on location, position the units as close as possible to the place where they will be installed.

The following can act as leverage points for the fan unit:

1. Pallet *(if still in original packaging)*
2. Mounting plate (pos.5, fig.2) with auxiliary tool [1] *(per piece)*

No other options for lifting the product are permitted.

The following leverage points are unsuitable:

- packaging
- the grid
- the fan unit's outflow opening,
- any operational switch, frequency regulator or outer terminal box that may be installed.

[1] *to be ordered from the supplier*

5.3. Temporary storage.

For temporary storage of the fan unit, the following points must be strictly adhered to:

- Humidity 50% and temperature between 5º C and 60º C, free of dust, dirt, gasses and corrosive atmosphere
- It is recommended to store the fan not longer than 12 months after delivery
- Before installation check the motor bearing

6. ASSEMBLY/INSTALLATION

6.1. Safety precautions.

Assembly may be carried out only by technically qualified personnel, whereby this manual and the applicable specifications must be adhered to.

Assemble the unit with the correct locking/torque wrench.

Check the 4 mounting points with which the fan is secured directly to the ceiling/wall. No antivibration mounts/isolators may be used. Use an automatic vibration control system.

safety grates and similar which are disassembled for installation must be immediately returned to their proper position after installation and **before reconnection to the power supply**.

The fan units must be installed in such a way that their positioning and stability are guaranteed at all times during operation.

6.2. Securing the unit.

The mounting place must, as regards conditions, ambient temperature and surrounding medium, be suitable for the fan unit in question (see also Ch. 3)

The bearings may be damaged by pressure, causing fatigue fractures whereby the fan unit's operation may be obstructed.
Vibrations, increased power consumption and smoke are some of the possible results.

For this reason, no force should be applied to the fan unit via installation components. The ceiling must be flat at the places where the fan unit is secured.

6.3. Electrical connection.

6.3.1. Safety precautions.

The electrical installation of the fan unit and its components may only be carried out by specially trained professionals, under compliance with this manual and applicable specifications.

The following standards and guidelines must be adhered to:

- IEC 364/DIN VDE 0100; DIN 57105, part 1 / VDE 0105, part 1; EN 60204, part 1 / VDE 0113, part 1.
- Specifications of the local energy company, EN 1010.

For protection against unexpected start-up, installations must be assembled in conformity with EN 60204/DIN VDE-113 (such as lockable inspection switches).

6.3.2 Motor/motor connection.

The motor connection must take place in accordance with the attached connection diagram (see technical specifications sheet).

The Installer must employ the appropriate safety category, which corresponds to valid European norms, when carrying out the electrical installation of the unit.

6.3.3 Motor protection.

Fuses and contact breakers do not suffice as motor protection. The manufacturer's guarantee becomes void in the case of damage as a result of insufficient motor protection.
The EC motor protection is integrated in the motor electronics , be sure that in case a fault occurs, the EC motor can not switch on again automatically after it has cools down.

6.3.4 Motor start-up.

Motors with a nominal capacity of up to 2,2 kW can be turned on immediately. These motors have been developed for class S1 continuous processes.
The applicable capacity of the power utility in question must be conformed to in all cases.

In the case of pulsing operation, please contact the supplier.

6.4 Installation.

- The locations where the units / motors are installed should be allow easy access for inspection and maintenance services. The supplier of the units / motors are not liable for removing units / motors form the site.
- Install cable glands to protect the main and accessories lead wires. Handle this leads carefully in order to avoid insulation damages on leads and cable in general.
- Check carefully the leads, the special leads protection must be removed before connecting to ensure good power supply.
- Bearings are sensitive to standstill vibration or impacts caused during handling. All units are balanced (and tested) better the G.6.3. It is important to handle the units during internal transport and mounting with care because it can cause unacceptable vibration when not.
- Check the specific lead connection diagram indicated on the main motor nameplate or the wiring diagram attached to each unit, noting the correct lead indication.
- For power connection use only material that ensures excellent electrical conductivity.
- Unit / motor must be operated in accordance with the defined design duty.

7. IMPLEMENTATION

7.1. Safety check.

Check to see that all mechanisms and electrical protections are in place and connected.

The following checks must be made before the unit can be switched on:

Make sure that an uncontrolled start-up of the fan unit during implementation is impossible (such as with a lockable work switch)!'

7.1.2. Before starting up.

- Turn the impeller/motor by hand to ensure free running of the impeller.
- Is the unit / motor/ impeller clean, free in- and outlet / no parts in the in- and outlet.
- Is the correct power supply (V/Ph/Hz) according the indication on the nameplate.
- Is the unit / motor mounted correctly and flat on a complete flat ceiling without any torsion → correctly aligned.
- Make sure that all four bolts of the mounting plate of the unit are tightened firmly and correctly.
- Are the bearing lubricated correctly, also after long term storage.
- Is the motor / unit correctly grounded.
- Is the inlet air ventilation passing freely the motor to ensure the cooling of the motor..
- Are all required unit/ motor protection on.

7.1.3 Make sure that the connected regulating equipment is functioning properly.

The fan unit may only be switched on once all safety measures have been applied!

7.2. Carry out check when commissioning and record results in the commissioning report.

Commissioning may only be carried out by qualified persons. Warranty claims can only be made if commissioning work is carried out correctly and written evidence therefor is provided.
Turn the fan unit on for a short time to check that the rotational direction of the impeller conforms to the rotational direction given by the arrow on the fan unit. If the direction is wrong, the motor (under compliance with the safety precautions) must be electrically reversed.

7.2.1 First starting check-up / commissioning report.

- After the unit is switch on, the motors starts an initialization, after a few seconds of the initialization the control input is active. The unit can be switch on via the control input. Do the commissioning tests at maximum speed, as soon as the commissioning tests are done switch of the unit via the control input.

- The unit / motor serial number, rpm, mounting power, voltage and current.
- Do a visual inspection on the unit / motor; - cleanness; - terminal box/service switch;
  - leads cables; - cable glands; - bolts; - fittings
- The type of start; DOL, soft starter, frequency inverter, etc...
- The voltage between phases and compare with the voltage on the nameplate the unit.
- The current in each phase and compare with current on the nameplate of the unit.
- The speed of the unit and compare it with the speed on the nameplate of the unit.
- The bearings temperature.
- The vibration of the unit / motor and the acceleration.
- Final condition → approved or not approved and who is responsible for the approving.

If some / one of above mentioned variables do not meet standard specification(s) or are out of supplier characteristics and recommendations, please inform the supplier immediately and **SWITCH OF THE UNIT / MOTOR** to avoid serious damage of unit. If this information is not communicated with the supplier immediately the warranty terms may be avoid.

8. MAINTENANCE AND REPAIRS

8.1. Safety precautions.

Maintenance personnel will be faced with danger of personal (fatal) injury if these precautions are not complied with.

Maintenance and repairs may be carried out only by technically qualified personnel, whereby this manual and the applicable specifications must be adhered to.

Take note of the following before maintenance work can be begun on the fan unit:
All drive motor poles must be detached from the power supply!
The impeller must come to a complete stop!
Check the temperature of the fan unit's exterior to prevent fire!
Make sure that an uncontrolled start-up of the fan unit maintenance is impossible (such as with a lockable work switch)!

Before beginning maintenance work, remove any damaging or dangerous rests which are in the fan unit as a result of the medium, making sure to use the proper tools!

Assembly takes place in the reverse order of disassembly. for all bolt connections, it is necessary to use a torque wrench, besides the usual locking agents (spring washers, etc.).

Reimplementation of the fan unit may only occur after all safety checks have been made in compliance with chapter 7.

This excludes operations which may only be carried out when the fan unit is in operation, such as vibration measurements. In these cases, the applicable safety and accident-prevention guidelines must still be adhered to.

8.2. Maintenance advice.

Depending on the surroundings, we advise:
1st check 1 month after implementation, followed by preventative maintenance after a maximum of 6 months.

8.3. Motor/impeller.

If wear or soiling of the motor or impeller can be expected as a result of the medium used (i.e. corrosion, tears, caking), the unit must be inspected and cleaned. Under normal conditions, the bearings have a life expectancy of 40.000 hours. Replacement of the complete EC fan/motor unit must occur in consultation with the supplier.

Never use a high-pressure cleaner (steam cleaner) or pressurised air to clean the motor!

8.4. Fan housing.

Check (welding, corrosion, damage) internally via the impeller and outflow outlet and inspection window. Externally as well. Remove dirt/dust.

8.5. Reserve components.

Only original factory reserve components as stated in the components list (see technical specifications sheet) may be used.

8.6. Motor maintenance.

A check-up is advisable for the motor every 6 months, whereby special attention should be given to:

- Insulation resistance must be above 100 M ohms (R>100MΩ). If it is less than this value, then this motor must either be taken to the furnace or replaced.
- It is strongly advised to have a well-programmed maintenance, especially of the electric motors,
  summed up as a periodical inspection (daily, weekly, monthly, etc). These inspections must be include checking procedure like;
  - Cleanness (motor fins, fan cover, casing, motor, grid, etc)
  - Current and voltage
  - Bearings / motor temperature
  - Ambient temperature
  - Vibration levels
  - Seals conditions
  - Casing conditions
  - Grid / motorholder conditions
  - Balancing conditions
  - Noise → bearing noise
  - Lubrication condition and useful life
  - Connection condition
  - Screw tightness in general (of unit, motor, service switch, etc...)
  - Winding life of the motor
  - Insulation resistance
  - Drain condensed water
  - etc.....

Ventispecial BV bears no liability for damage arising as a result of the use of components which have not been supplied through the manufacturer.

9. OPERATIONAL FAILURE

Deviations from the fan unit's normal operating condition (noise, vibrations, smoke, current strength) indicate a fault in the fan unit and must be investigated immediately by maintenance personnel.

Long-term faults can lead to serious damage to the fan unit and installation components and can result in personal injury!

If the maintenance personnel are unable to remedy the fault, you must contact the fan's supplier.

Fault	Possible Cause	Remedy
Fan doesn't turn, switch is on	Work switch is at "0" or the cables in the terminal box are not connected properly	Turn the work switch to "1" or (properly) connect the cables in the terminal box
Fan is not turning, Switch is on, Work switch is on / terminal is connected	a. There is no power supply or the control fuse is defective	Check the power supply, fuses and connections
	b. The motor protection is activated	
The motor protection becomes activated during ventilation or test works	Bearing is defective	Check the motor at max. run, check power supply, check power consumption, check the impeller's movement
Impeller is off balance	Ceiling is not flat, Damage to fan unit	Check the impeller for foreign objects, level out the attachment plate, ascertain damage (call the supplier)
The fan turns but moves no or little air	a. Airflow interrupted	Create a free air passage, Clean the impeller, Check the extraction and blow-out sides
	b. Improper fan rotational direction	Electrically reverse the motor to change the rotational direction (change phase)
Vibrations in the fan	a. There is dirt/dust caked on the impeller blades	Clean the impeller
	b. The impeller is damaged	Contact the supplier
	c. The impeller is off-balance	Contact the supplier
Extreme noise level	The bearing is defect, impeller is improperly turning	See corresponding fault

9.1. Dis-/Assembly

Disassembly takes place in the reverse order of assembly. For all bolt connections, it is necessary to use a torque wrench, besides the usual locking agents (spring washers, etc.).

Reimplementation of the fan unit may only occur after all safety checks have been made in compliance with chapter 7.

10 CE DECLARATION OF COMFORMITY: EC-PV 120 A.

We hereby declare that the machine named below, on the basis of its design and construction as well as in its execution as put on the market by ourselves, complies with the relevant health and safety requirements of the following EG guidelines.
In the case of machine modifications which have not been approved by the manufacturer or in the case of removal of the fan unit's original type plate/CE designation, this designation shall become void.

Description:	Ambient EC parking garage fan
Machine type:	EC-PV 120 A ©
Construction year:	see type plate
Type indication:	see type plate

Relevant EG guidelines:

- EC Machine Guideline (2006/42/EC)
- EC-EMC Guideline (2014/30/EU)
- ErP directive (2009/125/EU)
- RoHS Guideline (2011/65/EU)

Applied, harmonised standards, in particular:

- NEN-EN-ISO 12100-1
- NEN-EN-ISO 12100-2
- NEN-EN-ISO 60204-1
- NEN-EN-ISO 61000-6-1
- NEN-EN-ISO 61000-6-3

Date Signature:

01-12-2021 ....

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