GEOVENT

INSTRUCTION MANUAL

FAN

LEF/MEF 250 - 630

Version 2.3 11.03.2024

www.geovent.dk

Table of content

1.0 General safety precautions

Carefully read this manual before use and observe the safety instructions in order to avoid injuries!
Keep this manual in a safe place!

Secure that all users of the product have read this manual and that they follow the instructions as described.
Observe all instructions marked on the product!
Observe the indications of the manufacturer.
Never use the product if you are in doubt about how it works or what you should do.

When doing maintenance follow the instructions in chapter 7.0.

Do not modify the product or use spare parts from other suppliers than Geovent, as this may hamper the product and the function.

1.1 Danger

You must wear safety gloves when handling or using the product to protect your hands from scratches etc.

Be aware that the product may tilt when you move it.
You must handle the product with care and tie it safely to the truck or the fork lift when it is in transport.

Follow the instructions in chapter 7.0 when the product is maintained.

When handling the product be sure that the there is no risk for the installer, and secure that there are no people around the product, secure that the product cannot fall down risking to injure persons or subjects.

The product is not to be used in areas categorised as ATEX zones, e.g. with dust from aluminium, flour, wood, and other mediums that present an explosion hazard.

If a repair is not possible you should dispose of the product. Please follow the instruction for disposal in chapter 10.0.

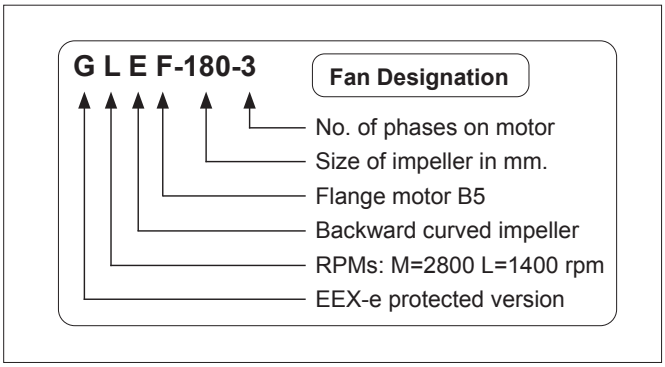
1.2 Field of application

The Geovent fan LEF is typically used for general ventilation as well as for smaller process extraction jobs, where a high pressure is not required. The fan MEF is applied for process extraction within the industry for the extraction of welding smoke, exhaust gasses, grinding dust and vapours.
The fan is neither suitable for the extraction of aluminium dust, flour, textile dust nor for sawdust or other media, which are connected with danger of explosion, without prior, written approval from Geovent A/S.

1.3 Technical data

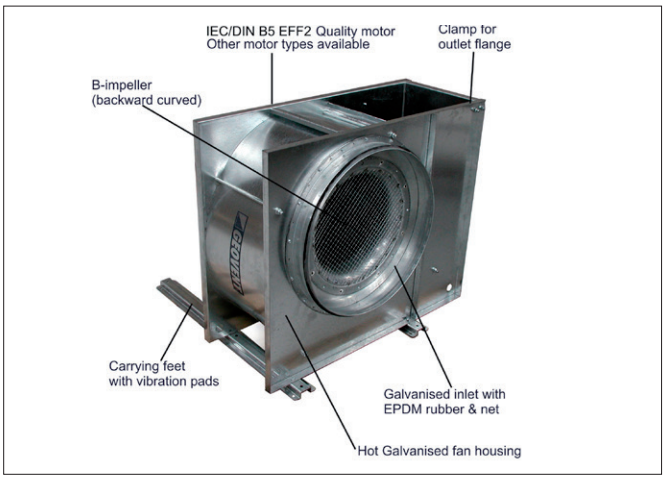
If the temperature of the extracted air exceeds 80°C, special bearings must be used. Please contact your dealer.
The sound level depends on various factors under various circumstances. For instance, where in the room the Fan has been installed, the size of the room, the temperature in the room, the sound of the room and also the connection (hose><pipe) of the Fan influences the sound level of the fan.
As a main rule, a sound box will reduce the actual sound level to only half the level without a sound box.

The actual ampere consumption and the kW of the motor are shown on the metal sign on the fan.



Temperature extracted air	Max 80°C
Temperature surroundings	Max 40°C

1.4 Construction



Fan housing: 100% galvanized steel for optimal corrosion resistance. Brackets are standard on all fans as well as inlet nozzle with safety net.

Impeller: Backward curved B-impeller in painted Domex sheet metal.

Motor: B5 flange motor, directly driven IEC/DIN B5 EFF2 quality motor in painted die cast aluminium in protection class IP-55. Other motor types available on request.

Console: 5.5kW motors and above or heavy custom motors come with a supporting console to carry the weight. Motors of less than 5,5 Kw do not have a console to support the weight of the motor.

2.0 Installation

The Fan is supplied assembled and ready for connection to piping and to the mains.

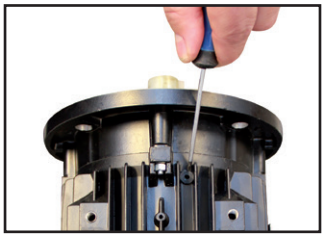
Before mounting the fan, please make sure that the optimum installation area is selected.
Is there space enough for carrying out satisfactory installation/service of the fan? What about optimum connection possibilities for piping and automatics?
If at all possible, please avoid bends just before the intake and after the outlet, since since this may reduce the effectivity of the fan.
For outdoor mounting, any noise nuisances for neighbours should be taken into account and also ensure that the motor is kept out of heavy showers.
Drill holes in motor housing and remove drain plugs from the motor.

Important:
Avoid as far as possible bends just before inlet and after outlet, as it will decrease the fan performance.

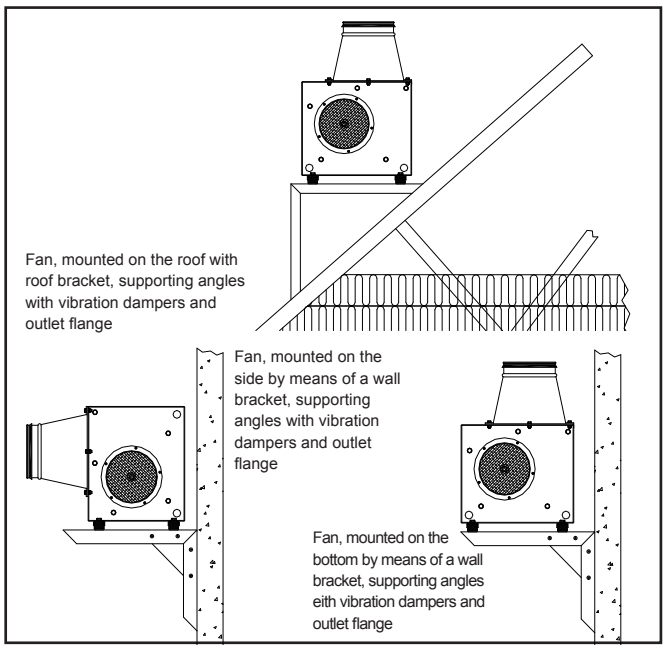
For outdoor installation, be aware of noise, it is also important to ensure the fan is protected against heavy rain, and to seal the pipe system against leaks. Rain and noise can be remedied by installing the fan in a sound box.

Drilling holes should be drilled at the bottom of the scoop and the drain plug / screws in the engine removed in order to drain away condensation water.

Drain screws



Drain plugs



Procedure:

1. The fan is solidly fixed to the roof/floor or to a ceiling bracket or wall bracket (see figure 1). The fan is fixed by attaching the vibration dampers with 4 off M8 bolts. The Fan is to be mounted in one of the shown ways. Do not install the Fan with the intake in vertical direction.

2. The piping is connected to the fan. On the inlet side, the pipe may be fastened by means of self cutting screws. Remember to seal the connection with filler!

3. On the outlet side, the pressure connecting piece (optional equipment) is attached to the fan by means of the supplied clamps. Remember to seal the connection with filler!

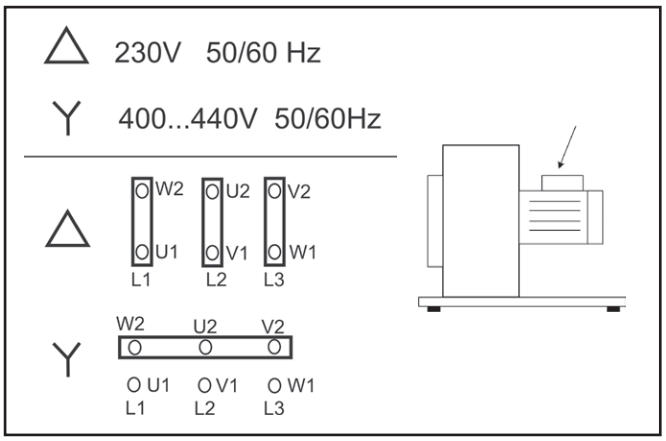
4. The pressure connecting piece is then attached to the piping on the outlet side by means of self-cutting screws. Remember to seal the connection!

2.1 Connection of fan to the mains - standard motor

1. The fan should only be connected to the mains by a certified electrician and a motor protection switch should always be used.

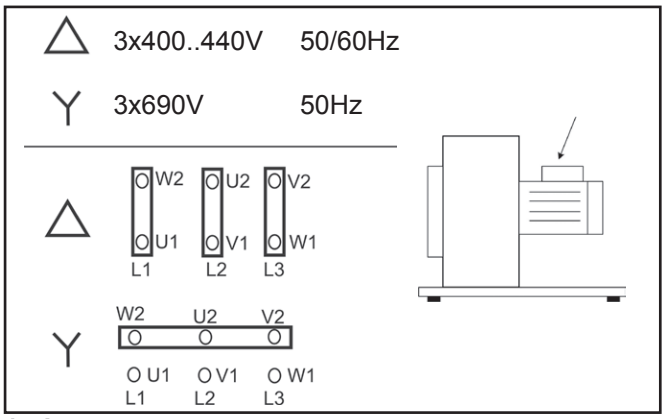
2. Our 3-phase motors may be configured to both 3x230V and 3x400V. From the factory, the motor has not been configured and the enclosed metal cover plates are to be mounted in such a way in the terminal box that they fit the voltage.

Always double check the metal sign on the motor and on the inner side of the cover for current configurations (diagram).



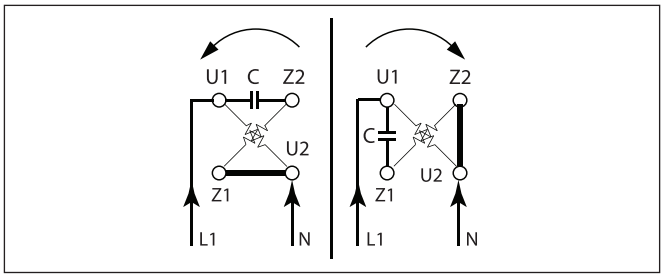
Motors at 4,0 kW and larger

Our 3 phased motors at 4,0 kW and larger are configurable for both 3x400, 440V and 3x690V.
By default the motor is not configured and the jumper bars must be installed in the terminal box according to voltage.
Double check the metal sign on the motor and the inside of the lid for current configuration.



1-phase motor

1. Connection diagram 1-phase motor up to 2,2 kW



Note: Standard 1-phase motor is not adjustable with frequency inverter.

Connecting the fan to the mains - motor with integrated frequency innverter

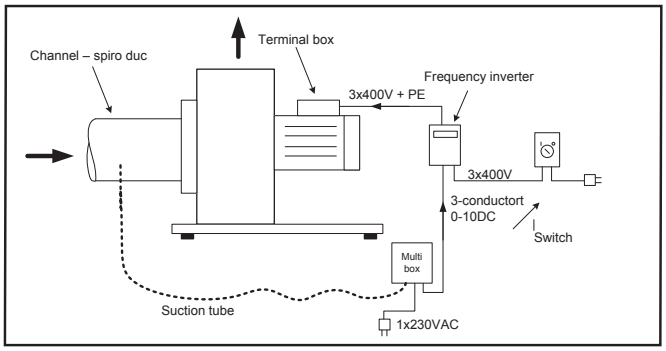
1. When connecting a fan with integrated frequency innverter, follow the instructions in the manufacturer's manual.

2.2 Connection of fan to the mains - Motors with integrated frequency inverter

Mounting of sound box
From the factory, the fan will be installed in the sound box (optional equipment). The box must be mounted on horizontal surfaces and may only be mounted with vertical outlet.

Installation of frequency inverter
Our standard 3-phased LEF/MEF fans are highly suitable for operation with frequency inverter allowing for pressure control and speed control.
For installation of a frequency inverter, see the separate manual from the supplier.

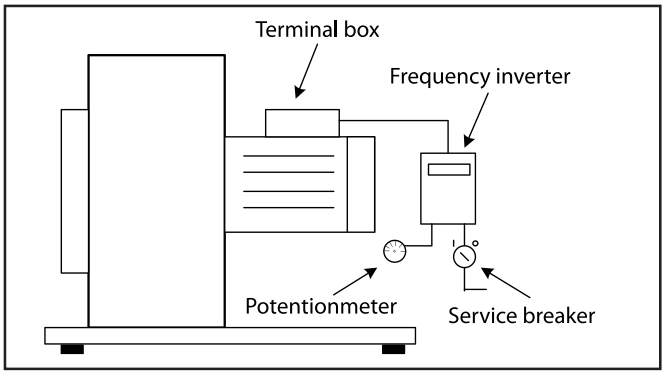
Sketch of installation with frequency inverter:



Sketch of installation with pressure guard and motor guard:

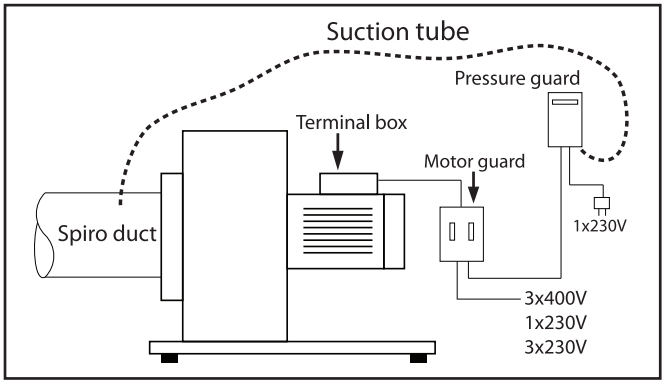
Potentiometer and repair switch are connected to the frequency inverter.

Principle sketch:



NB: Standard 1-phase motor is not adjustable with frequency converter.

Installation of motor protection and pressure guard



2.3 Trial run – exact adjustment

After the installation has been completed, please check whether there are any vibrations in the fan.

We recommend checking whether the fan supplies the correct volume of air, for which the equipment has been dimensioned. I.e. control the volume of air and make sure that it does not exceed the ampere capacity of the motor.

3.0 User instruction – application

When extracting large quantities of air, containing dust, the fan wheel may get out of balance due to dirt on the wheel. In order to avoid this, we recommend using a filter.

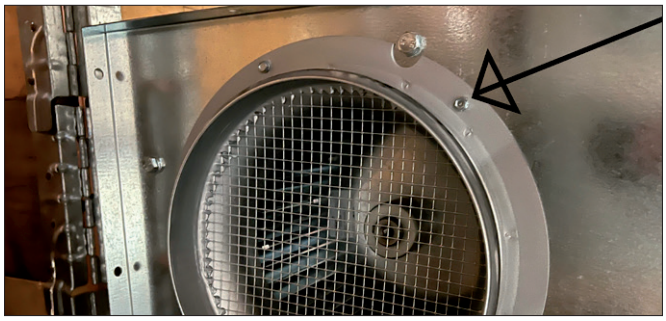
In many cases, the fan is started by pushing the green button on the motor protection switch (if automatics are not used).

The fan will not work as intended if:

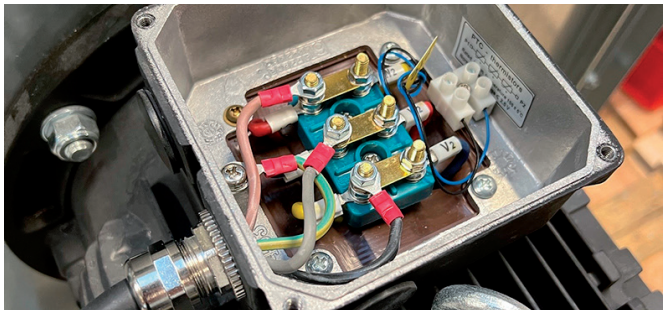
- unauthorised parts have been mounted on the fan (e.g. unauthorised wheel).
- the wheel runs in the wrong direction. It will still work, but the capacity will be reduced to a third of the normal capacity.
- no motor protection switch is used.

Replacing wheels on freestanding fan

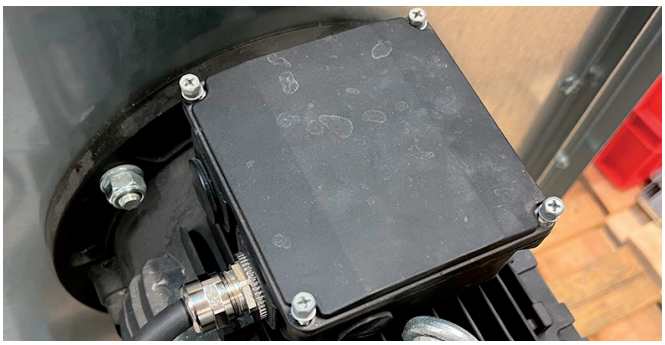
- If possible, remove the duct on the suction nozzle and exhaust.

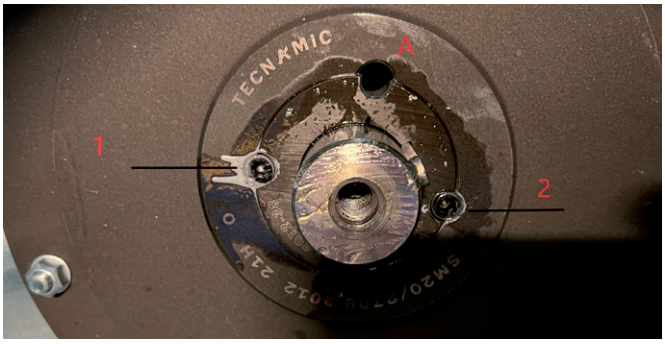


- Remove the suction nozzle.



- Remove all cables.
- Now lift the motor flange with motor and support out of the fan housing.
- Measure the position of the wheel on the axle before removing it.
  (Measure between the back of the wheel and the motor flange)
  This measurement must be used when reinstalling the wheel.





- Remove the fan wheel by loosening the grub screws on the taper lock. Move one of the socket head cap screws into the empty hole A and screw it in so that the taper lock loosens. Then remove the wheel from the axle.
- When installing a new wheel, tighten the grub screws slightly so that the taper lock is not too loose.
- When the wheel is placed on the axle, it should be at the same distance that was measured during removal before starting to tighten the grub screws.
- Tighten the socket head cap screws evenly, starting with screw 1 and then screw 2, so that the taper lock does not settle unevenly.
- Once the grub screws are evenly tightened, tighten them with a torque wrench.

- Start at screw 1 and tighten evenly up to 25nM.
- The wheel is now tightened with the correct torque and installation can begin.

Note: MAKE SURE THE FAN HAS THE CORRECT OPENING DIRECTION.

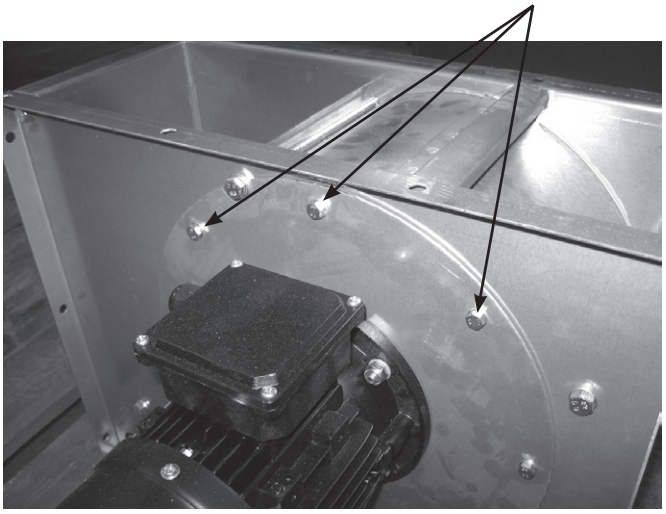
4.0 Maintenance

Periodic maintenance

- In principle, the motor is maintenance-free because of the factory-mounted, completely closed special ball bearings, which do not require any maintenance. Replacement of worn bearings should only be handled by an electrician.
- The wheel and the fan housing should be cleaned every year or according to requirement. The wheel and the housing may be cleaned by means of a soft brush and detergent. Remember to disconnect the power before the washing and to wipe the parts afterwards with a dry cloth. This operation results in a longer life of the fan.

Access to the inside of the fan housing and the impeller, can be gained by screwing off the umbracko screws on the back of the fan.

Remember to always cut the power.



4.1 Trouble-shooting

Remember to always use a motor protection switch!

Always use adjustment damper!

In case of problems with the fan, the following items may be reviewed in order to check whether:

The volume of air or the pressure is too low:

- Wrong direction of operation of the wheel. May be due to wrong electrical installation. Please double-check the direction of rotation. Change two phases, if necessary.
- Leaky channel system.
- Poor inlet/outlet possibilities near the Fan may reduce the yield (e.g. 90° bend before the inlet).
- Damaged wheel.
- The rotation speed has been set lower.
- If the temperature deviates substantially from the lab measurements, where the temperature was 20°C with an atmospheric pressure of 101.4 kPa.
- The dampers have not been correctly adjusted.
- The central lid on the sound box is turned the wrong way and thus blocks the air.
- The suction net has been blocked by cotton waste, a cloth or the like.

Vibrations and noise

- The base is not even/stable.
- Foreign objects are stuck in the fan.
- Damaged wheel or motor.
- The wheel is loose.
- The wheel may have become unstable, for instance as a result of dirt on the impellers.
- The wheel is rotating in the wrong direction.
- The fan supplies more air than for which the equipment has been dimensioned.
  Use adjustment damper.
- Loose bolts or screws.

The motor is overtaxed

- The cabling of the motor is not correct.
- The shaft has been bent.
- The fan has over-capacity in relation to the resistance in the system.
  Use adjustment damper.
- The speed of the motor is too high.
- Defective motor – please contact your dealer!

In some cases and with high resistance in the outlet (high chimney, high air speed, damper, etc.), leaks can occur at the inlet ring of the fan. This is remedied by sealing the joint with a sealant.

5.0 Dismantling, disabling and scrapping

Deactive the product by disconnection the electrical mains. Dismantle compressed air pipes and other pipes or wires etc.
Dismantle the filter cartridge by unscrewing the finger screws and remove the service hatch.
Turn the filter cartridge so that is loosens from the latches at the top of the cartridge.
Carefully remove the contaminated filter cartridge, place it in a plastic bag and seal the bag.
Dispose of it according to local regulations.
The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.
The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.

Dismantle the metallic parts by unscrewing screws and bolts. Afterwards cut the larger pieces into smaller pieces and dispose of it according to local regulation.

Dismantle plastic parts and dispose of it according to local regulations.

The packing material must be sorted according to local regulations in order to be able to reuse the material.

6.0 Liability

Warranty
Geovent A/S grants a warranty for products, which are defective, when it can be proved that the defects are due to poor manufacture or materials on the part of Geovent. The warranty comprises remedial action (reparation or exchange) until one year after the date of shipment.

No claims can be made against Geovent A/S in relation to loss of earnings or consequential loss as a result of defects on products from Geovent.

Wear on parts such as filter cartridges and hose is not included in the warranty.

User liability

In order for Geovent to be capable of granting the declared warranty, the user/fitter must follow this instruction manual in all respects.

Under no circumstances may the products be changed in any way, without prior written agreement with Geovent A/S.

Please refer to the current sales and delivery conditions at www.geovent.com

7.0 Declaration of conformity

The manufacturer: GEOVENT A/S
HOVEDGADEN 86
DK-8831 LØGSTRUP

Hereby declares that:

The product: Fan
Model: LEF/MEF 205-630

Complies with the relevant parts of the following directives and standards:

Directive 2006/42 / EC of the European Parliament and of the Council of 17 May 2006 on machines and amending directives 95/16 / EC.

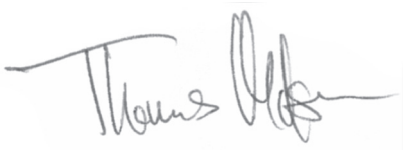
This declaration is no more valid if changes are made to the product by others than the manufacturer.

Authorized to collect the technical file:

Lise Cramer

Date: 11.03.2024

Position: Director
Name: Thomas Molsen



Signature: _____

CE

GEOVENT

HOVEDGADEN 86 • DK-8831 LØGSTRUP
Tlf.: (+45) 8664 2211 • e-mail: salg@geovent.dk