GEOVENT

INSTRUCTION MANUAL

FAN

LEF/MEF 250 - 630

Version 1.0 30.04.2024

www.geovent.com

Contents

1.0 Introduction

This manual is made and designed in order to facilitate the best and most secure interaction with the product. The manual is relevant for people involved in transportation, stocking, installation, using, maintaining and all other thinkable interaction with the product.

The manual must be read in full and understood before interacting with the product.

When the manual has been read and understood in full, the table of contents can be used to find the relevant information in each case.

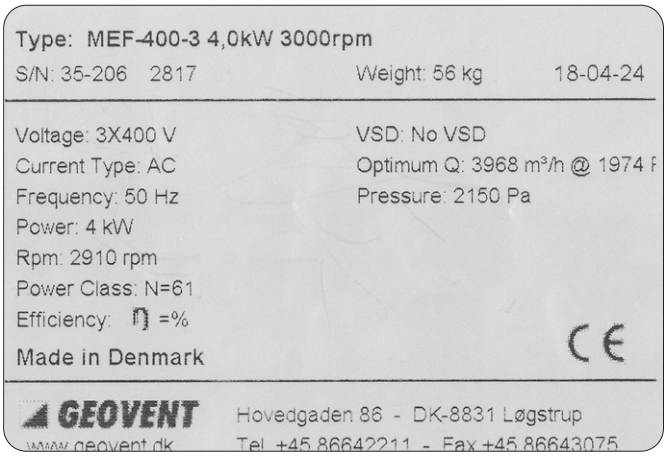
The product is manufactured by:

Geovent A/S
Hovedgaden 86
DK-8861 Løgstrup
DENMARK

Tel.: (+45) 86 64 22 11
E-mail: salg@geovent.dk
www.geovent.com

This manual is to be used for all interactions with the product including: Transportation, stocking, installation, operation and maintenance.

This product is marked with: (example)



2.0 Safety

2.1 General safety

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.

2.2 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.

3.0 Machine overview

3.1. Description

Geovent LEF/MEF fans are versatile galvanized steel fans for use in the extraction of LPG, welding fumes, dust and many other gases, fumes and air.

3.2 Intended use

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.

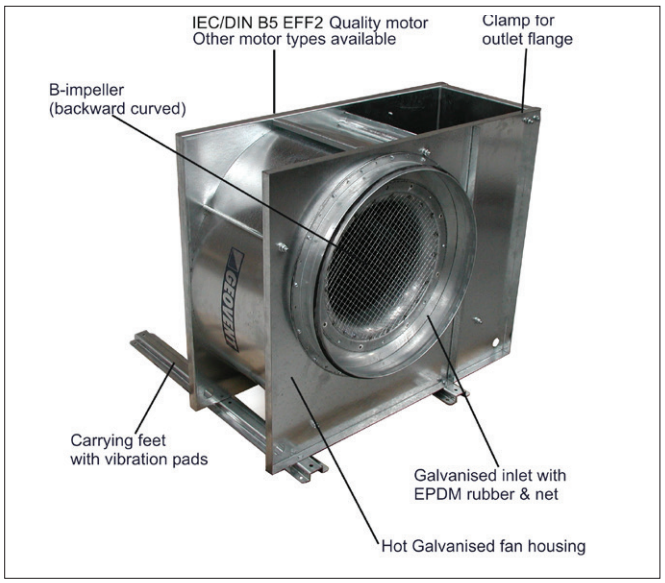
The product is not to be used in areas categorised as ATEX zones, e.g. with dust from aluminium, flour, wood, and other mediums that present an explosion hazard.

The fan are available in a spark-proof version with spark-proof inlet and EEX-e motor, but without ATEX documentation, or as a fully documented ATEX fan.

When extracting large amounts of dusty air, the fan wheel may become unbalanced due to dirt adhering to the wheel. To avoid this, it is recommended to use a filter to minimize the dust content in the air.

3.3 Machine specifications

3.3.1 Design



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

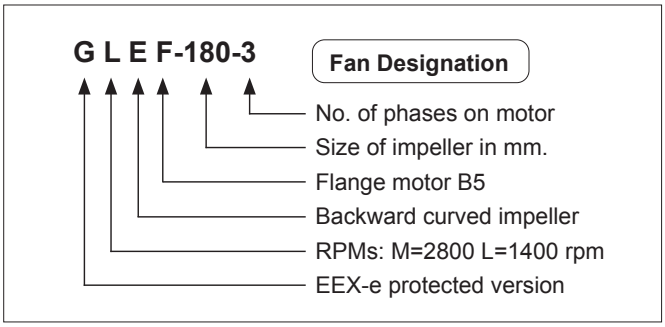
Impeller: Backward curved B-impeller in painted Domex sheet metal.

Motor: B5 flange motor, directly driven quality motor in protection class IP-55. See the manual of the motor supplier. Other motor types available on request.

Console: 4.0kW motors and above or heavy custom motors come with a supporting console to carry the weight. Motors of less than 4.0 Kw do not have a console to support the weight of the motor.

3.3.2 Technical data

The fan name plate is located to the top left of the motor on the fan housing and contains the type designation and production data.
The actual ampere consumption and the kW of the motor are shown on the name plate on the fan.



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

For higher temperatures, special motors are to be used. Contact us for more information.

1.6 Soundbox

Noise: The noise level depends on several factors under different circumstances. For example, the location of the fan in the room, the size of the room, the temperature in the room, the room sound and the connection (hose/pipe) of the fan also affect the sound level.

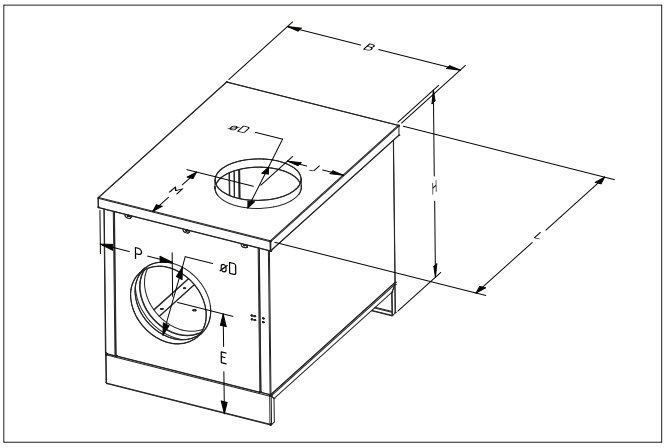
Where noise emission can cause a nuisance, the fan should be shielded from noise, e.g. by placing it in a sound box.

A sound box is optional and is ordered together with the fan

A sound box will under normal conditions, reduce the noise level by approx. 50%, corresponding to 10-15 dB(A). In addition to the noise reduction, the box provides effective protection against wind and weather.

The sound box is made of fully galvanized steel, insulated with 40 mm thick self-adhesive comprex insulation, and includes a flex connection.
The box is equipped with an air intake at the bottom for cooling of the motor.

Dimensions and weight



***Dimensions table for soundbox 250-630* - in mm**

Type	146/ 180/ 200	225/ 250	315	355/ 400	450/ 500	560/ 630
B	518	615	715	873	986	1290
H	592	652	778	915	1046	1277
L	685	784	984	1080	1272	1390
øD	200	250	315	400	500	630
E	330	345	415	485	546	673
P	226	268	298	354	420	525
M	212/262	254	335	308	379	429
J	169/189	205	233	269	318	393
weight	34 kg	42 kg	63 kg	81 kg	105 kg	155 kg

OBS: Use gloves when you are handling the soundbox.

4.0 Transport, handling and storage

During transport in a truck or in another means of transportation the product must be securely packed in a box or a pallet and covered with a water proff material.
The product must be securely stowed in the truck so that it will neither tilt nor shift during transport.

During transport over a short distance e.g. in a stock or a factory, the product can be moved by means of a forklift or a stabeler.
When moved it must be secured that the product does not tilt or shift. And it must be secured that the limitations of the means of transportation is not exceeded.

Secure that there are no people around the product, when the product is moved.

The product must be placed in a dry place and covered securely, in order to secure that moist, metal parts or other substances do not damage the product.
It is not allowed to place anything on top of the product.

5.0 Assembly, installation and start of operation

5.1 Location

Before installing the fan, please make sure that the optimum installation area is selected.

- Location (inside/outside)
- Space for installation and service of the fan
- Connection options for piping and automation

Place the product on a level and stable base (e.g. a concrete floor, wall or roof bracket) and secure it.

5.2 Installation

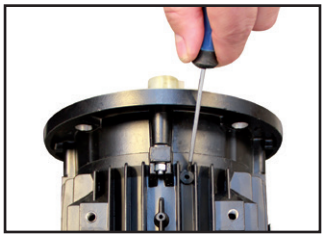
The fan is supplied assembled and ready for connection to piping and to the mains.

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 problems, and ensure that 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.

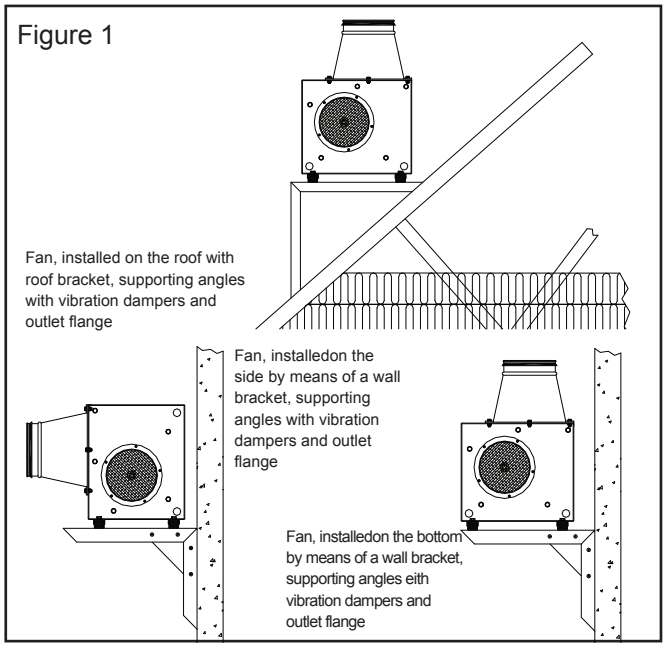
Drain holes should be drilled at the bottom of the scoop and the drain plugs / screws in the engine removed in order to drain away condensation water.

Drain screws



Drain plugs

Figure 1



The following installation should only be carried out by a trained installer.

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 outlet flange (optional) is attached to the fan by means of the supplied clamps. Remember to seal the connection with filler!

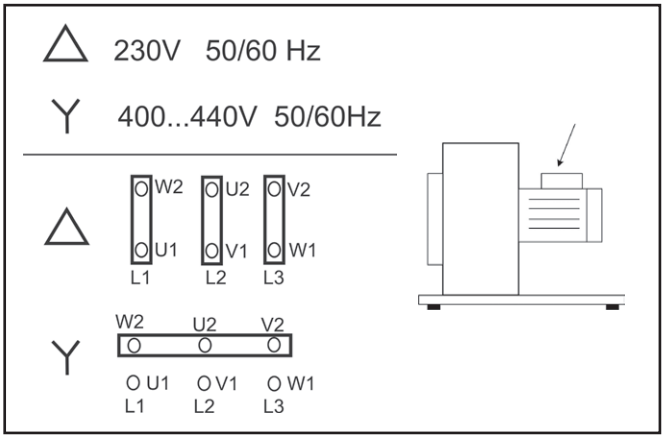
4. The outlet flange is then attached to the piping on the outlet side by means of self-cutting screws. Remember to seal the connection!

5. For outdoor installation, it is important to protect the fan against driving rain and to seal the pipe system against leaks.

5.3 Connection of fan

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

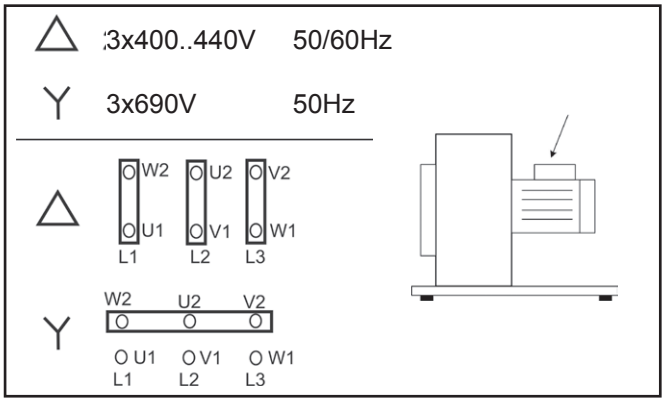
2. Our 3-phase motors may be configured to both 3x230V and 3x400V. From the factory, the motor has not been configured and the enclosed jumber bars are to be mounted in such a way in the terminal box that they fit the voltage.



Motors at 4,0 kW and larger

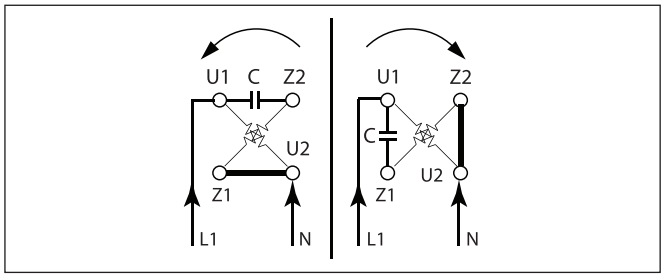
3. Our 3 phased motors at 4,0 kW and larger are configurable for both 3x400, 440V and 3x690V.
   By default the motor is not configured and the jumper bars must be installed in the terminal box according to voltage.

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.

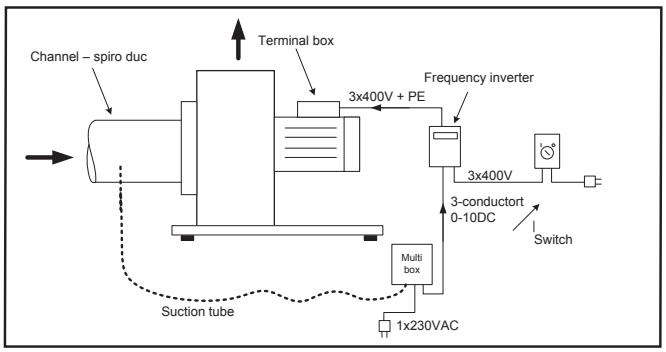
Connecting the fan to the mains - motor with integrated frequency inverter

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

5.4 Installing optional extras

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

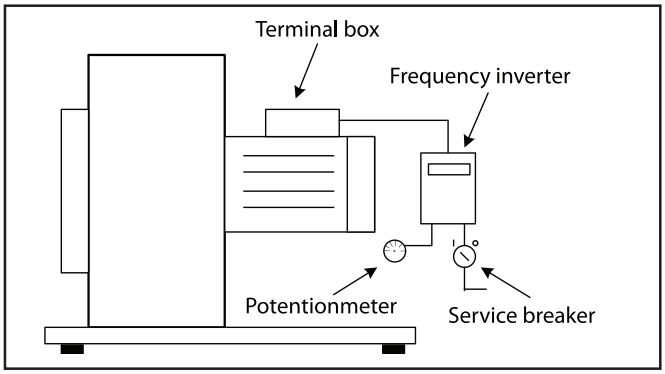
Installation of frequency inverter
Our standard 3-phased LEF/MEF fans are highly suitable for operation with frequency inverter allowing for pressure control and speed control.
For installation of a frequency inverter, see the separate manual from the supplier.



Sketch of installation with frequency inverter:

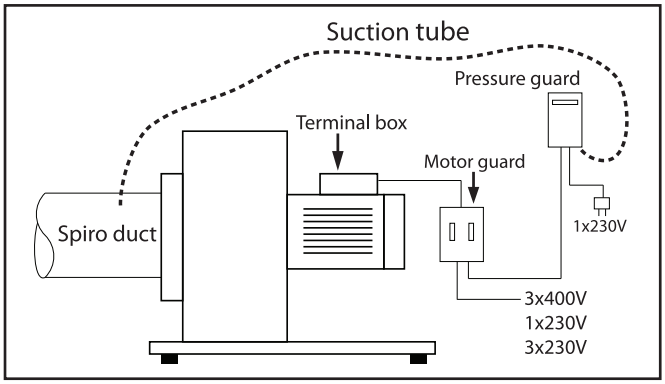
Sketch of installation with pressure guard and motor guard:

Potentiometer and repair switch are connected to the frequency inverter.
Principle sketch:



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

Installation of motor protection and pressure guard



5.3 Control and test of the security system

After the installation is complete, check:
- Shaking in the fan.
  See section 9.0 Problem solving.
- Air volume. The fan must deliver the air volume the system is dimensioned for. Adjust to the correct airflow using the adjustment damper.
- Power consumption (Amps). If the system has excess capacity (air volume), the power consumption can exceed the motor's capacity and cause the motor to burn out. See the manufacturer's manual (enclosed).

6.0 Commissioning

In most 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.

6.1 After installation

Check the installation according to chapter 5.5.

7.0 Control, test and maintenance

7.1 Control

Check the installation according to chapter 5.5.

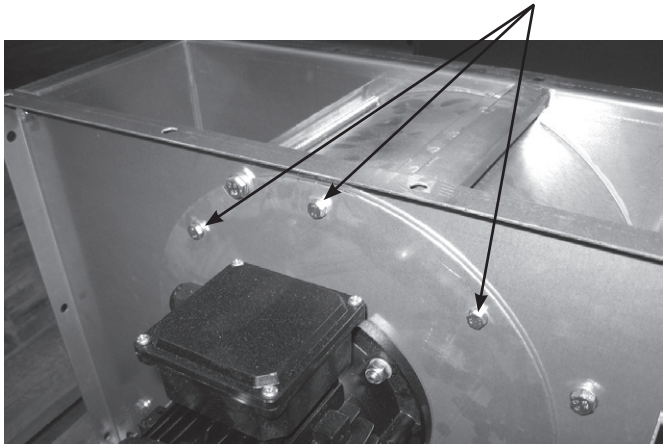
7.2 Maintenance

7.2.1 Periodic maintenance

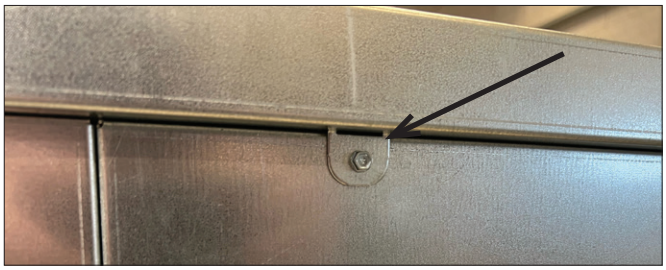
- In principle, the motor is maintenance-free because of the factory-mounted, completely closed special ball bearings, which do not require any maintenance. Replacement of worn bearings should only be handled by an electrician.
- The wheel and the fan housing should be cleaned every year or according 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 dry 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 unscrewing the umbracko screws on the back of the fan.

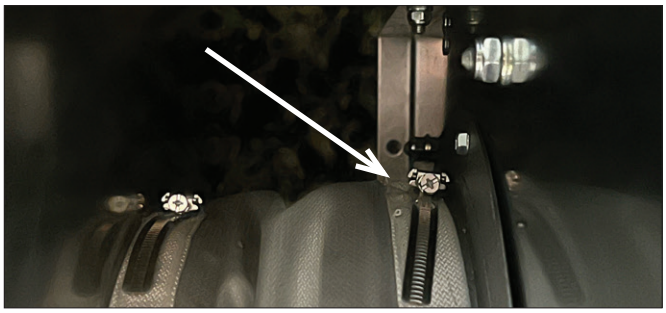
Always remember to cut off the power.



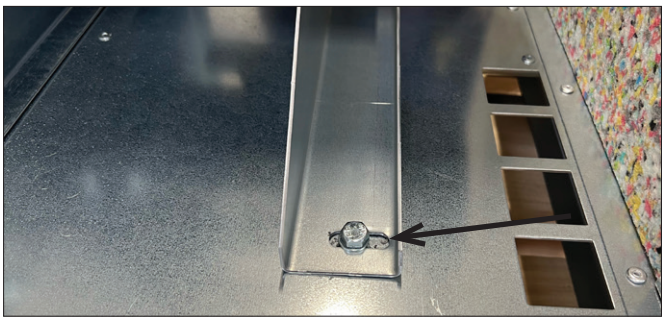
7.2.2 Replacing wheels on a fan in a Soundbox



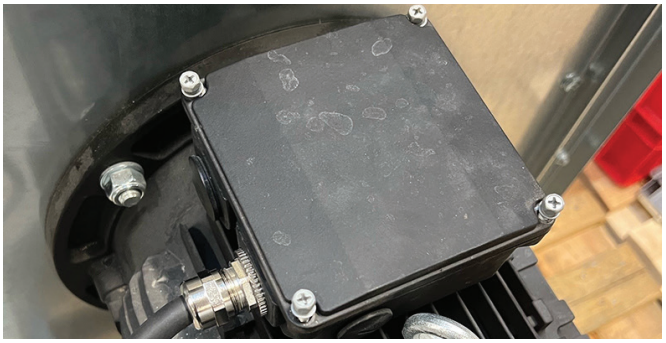
Remove the sound box roof and the 2 sides.

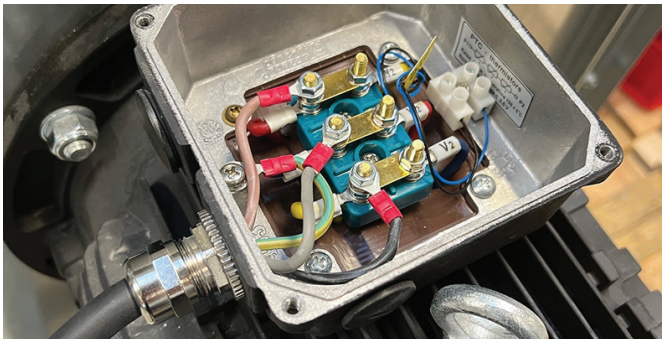


Loosen the flex connections on both inlet and outlet.



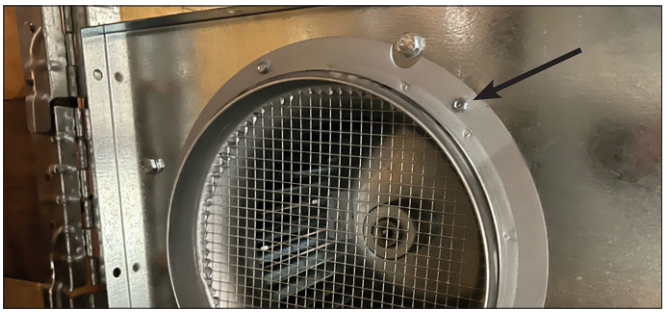
Loosen the 4 M8 bolts on which the fan housing is mounted. Also loosen the bolts at the motor support.
Remove all cables.
Now the fan can be rotated on the bottom of the sound box or lifted out.



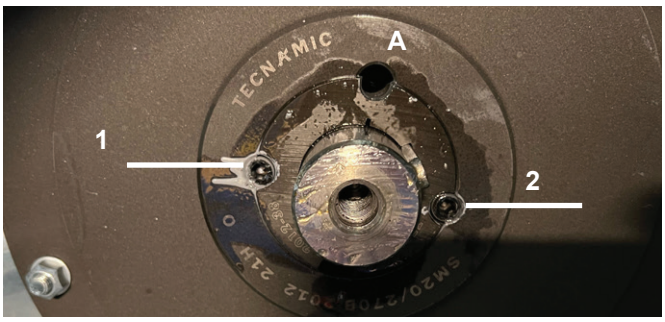


Remove all cables.

Now the fan can be rotated on the bottom of the Sound Box and/or lifted out.



Remove the suction nozzle.



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.

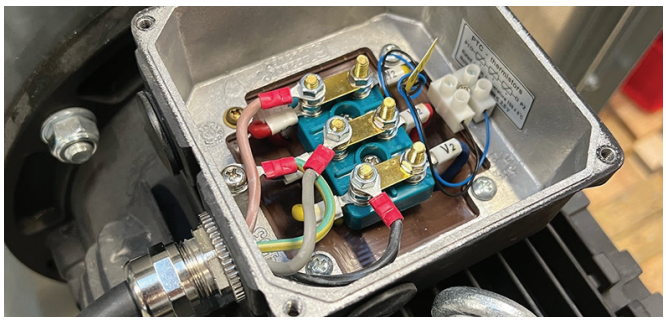
When installing a new wheel, tighten the grub screws slightly so that the taper lock is not too loose.

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.

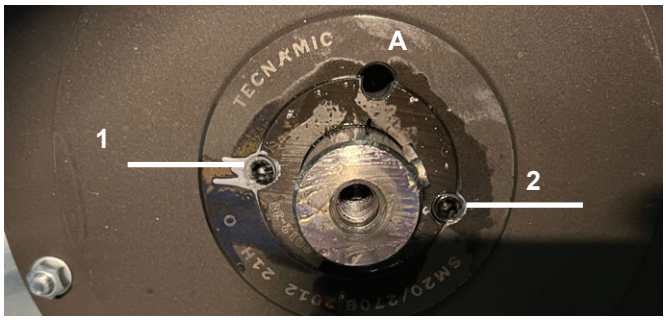
7.2.3 Replacing wheels on a freestanding fan

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

Remove the suction nozzle.



Remove all cables.



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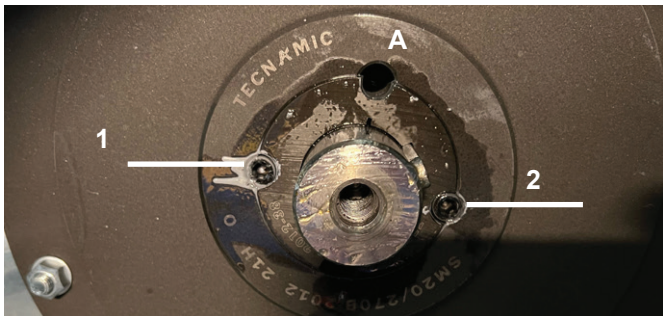


Start at screw 1 and tighten evenly up to 25nM.
The wheel is now tightened with the correct torque and installation can begin.

Note: Make sure that the fan runs in the right direction.

8.0 Cleaning

The wheel and the fan housing should be cleaned annually or as needed. The wheel and housing can be cleaned with a soft brush and dishwashing water. Remember to disconnect the power before washing and dry with a dry cloth. This will ensure longer life of the fan.

9.0 Troubleshooting

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.

10.0 Dismantling, disabling and scrapping

Deactive the product by disconnection the electrical mains. Dismantle compressed air pipes and other pipes or wires etc.

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.

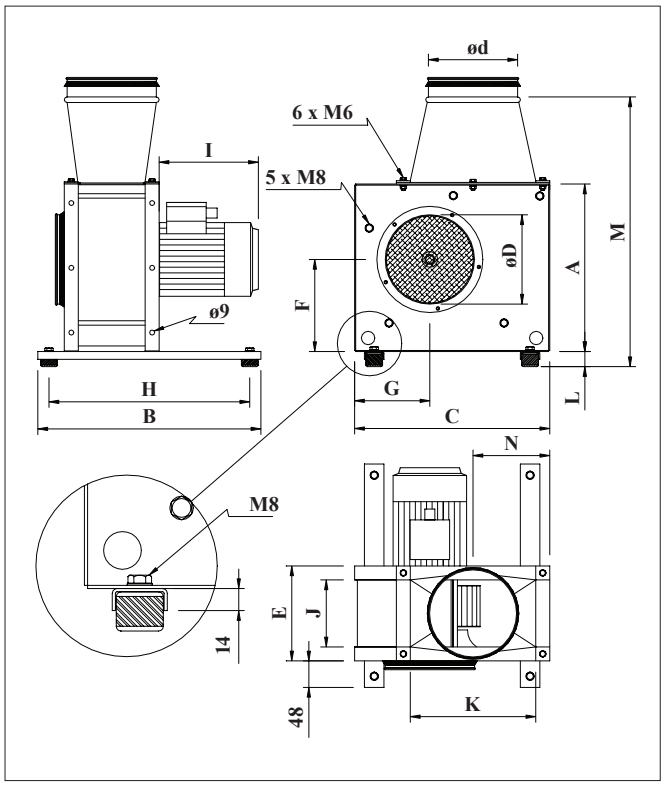
Dismantle plastic parts and dispose of it according to local regulations.

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

Dismantle the electronics, wires and cables and put these into a suitable bag. Afterwards dispose of it according to local regulations.

11.0 Dimensions

LEF/MEF 250 - 630



Type	A	B	C	øD	ød	E	F
LEF/MEF 250	410	500	500	250	***	215	230
LEF/MEF 315	510	550	600	315	***	260	290
LEF/MEF 355	570	655	680	400	***	284	329
LEF/MEF 400	648	800	756	400	***	308	367
LEF/MEF 450	715	800	850	500	***	340	408
LEF/MEF 500	758	800	871	500	***	345	421
LEF/MEF 560	907	800	1070	630	***	425	523
LEF/MEF 630	989	800	1175	630	***	446	563

Type	G	H	I	J	K	M	N	Vægt
LEF/MEF 250	210	460	**	170	320	637	185	38kg*
LEF/MEF 315	240	460	**	210	400	720	225	43kg*
LEF/MEF 355	272	460	**	234	450	797	250	48kg*
LEF/MEF 400	304	760	**	260	500	965	275	56kg*
LEF/MEF 450	340	760	**	290	560	1045	305	71kg*
LEF/MEF 500	362	760	**	295	510	1065	263	81kg*
LEF/MEF 560	440	760	**	375	709	1340	380	125kg*
LEF/MEF 630	467	760	**	400	800	1340	425	135kg*

*/**/*** - depends on the choise of engine. NB: For LEX/MEX versions, the engine will typically have larger physical dimensions than standard, and therefore a higher unladen weight!

12.0 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

13.0 Declaration of conformity

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

Hereby declares that:

The product: Fan
Model: LEF/MEF 250 - 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: 30.04.2024

Position: Director
Name: Thomas Molsen

Signature: 

CE

14.0 Spare part list

Art. No.	Description
91-30X	Vibration damper
33-72X	Fan wheel
L3SB5-0,25	Motor
30-01X	Outlet flanges
20-10X	Motor protection

GEOVENT

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