



**GEOVENT**

# INSTRUCTION MANUAL



# FAN

LSFG/MSFG 146 - 250



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### 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 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

Geovent fan LSFG is typically used for comfort ventilation and smaller process extraction tasks where high pressure is not required. fan MSFG is used for process extraction in industry for tasks such as welding fumes, exhaust gases, grinding dust and vapors.

The fan must not be used in areas categorized as ATEX zones, e.g. for extraction of aluminium, flour, textile and wood dusts and other media (e.g. fumes) associated with explosion hazards. For ATEX-related processes, the ATEX fan must be used.

Both fan types are available in spark-proof design, with spark-proof inlet and EEX-e motor, but without ATEX documentation. If you need fans with ATEX documentation please contact us.

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 through the fan.

### 1.3 Handling

Always wear gloves when handling the fan, it is best to lift the fan with one hand under the motor and under the housing. If 2 people are handling the fan, one should lift under the motor and the other in the housing. Heavy fans are handled with suitable lifting gear, and the lifting eye in the motor can be used to lift the entire fan. Check that the lifting eye is securely fastened before lifting.

### 1.4 Technical data

G	M	S	F	G-180-3	Description
					No. of phases
					Wheel diameter mm
					Galvanized
					Flange motor
					Scirocco wheel
					Motor speed.
					M=2800 L=1400 Rpm

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

If the temperature of the extracted air exceeds 80°C, special bearings must be used.

Please contact Geovent.

### Noise

#### Fans 1.400 rpm, noise emission to the surroundings

Type	Lp, dB(A)	Lp, 1m
LSFG-146	51	45
LSFG-180	56	50
LSFG-200	61	55
LSFG-225	63	57
LSFG-250	67	61

#### Fans 2.800 rpm, noise emission to the surroundings

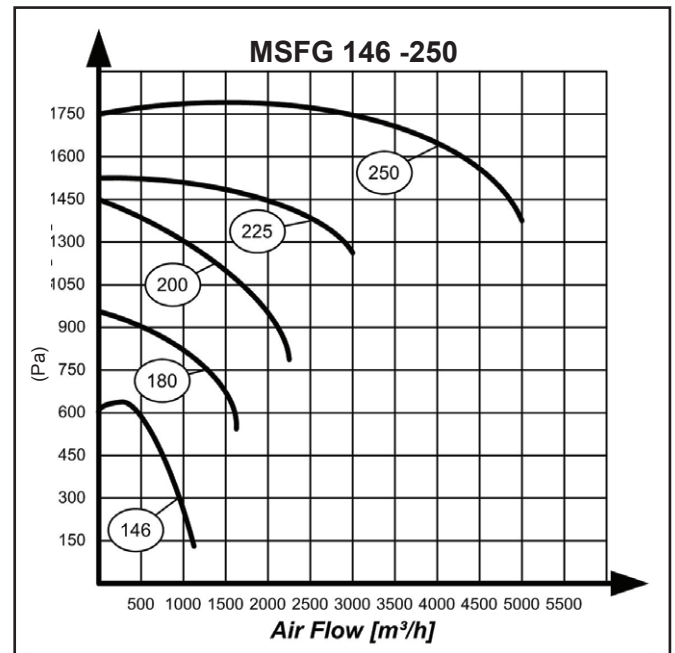
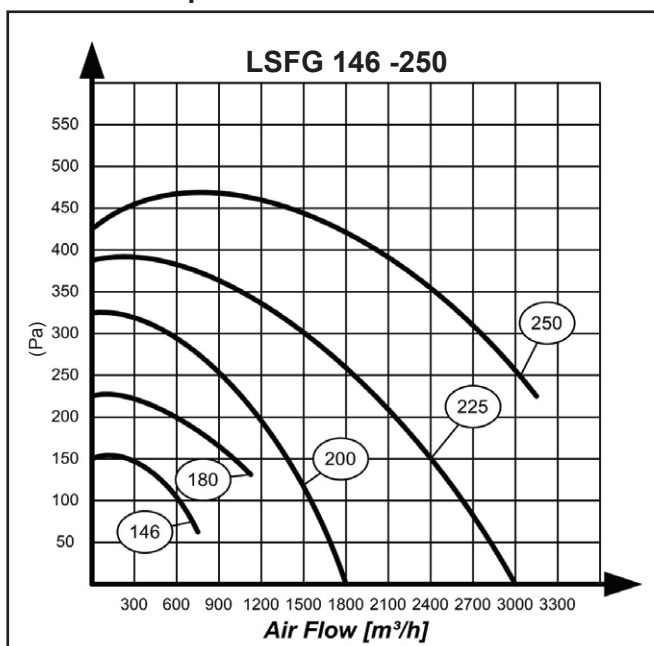
Type	Lp, dB(A)	Lp, 1m
MSFG-146	69	63
MSFG-180	74	68
MSFG-200	78	72
MSFG-225	81	75
MSFG-250	84	78

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.

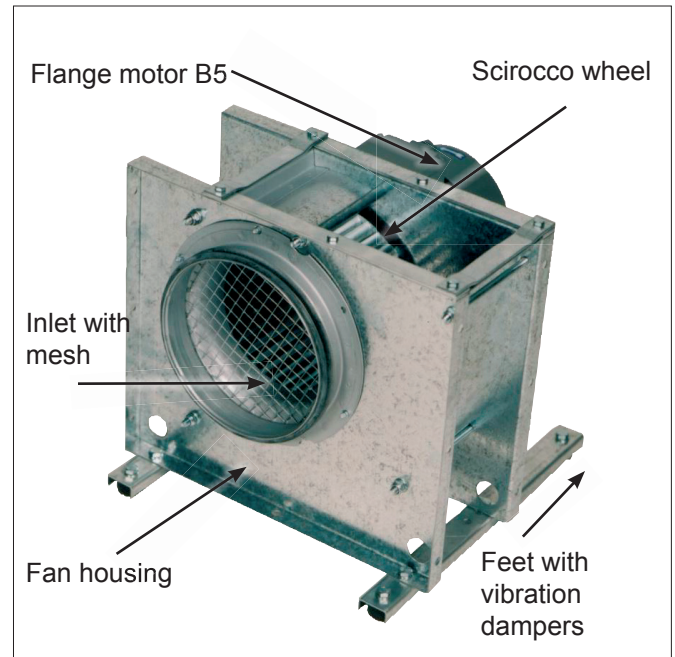
For more sound measurements – see [www.geovent.com](http://www.geovent.com) (data sheet for LSFG/MSFG-146 – 250).

Where emitted noise can cause a nuisance, the fan must be shielded, for example. by placing it in a sound box.

### Pressure drop for fans LSFG/MSFG



### 1.4 Construction



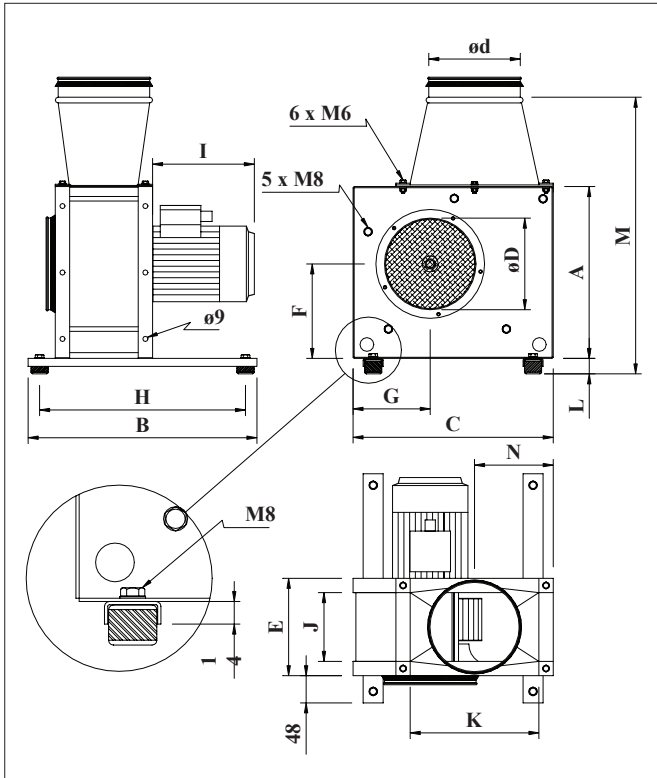
Fan housing: 100% galvanized steel for optimal corrosion resistance. Brackets are standard on all fans as well as inlet nozzle with safety net.

Impeller: Fan wheel: Forward curved scirocco-fan wheel (F-wheel) in hot-galvanized sheet metal.

Motor: B5 flange motor, directly driven in protection class IP 54.

Console: 5.5kW motors and above or heavy custom motors come with a supporting console to carry the weight of the fan.

## 1.5 Dimensions



**Table of dimensions LSF/MSFG 146 - 250**

Type	146	180	200	225	250
A	245	300	350	370	410
B	400	400	400	500	500
C	295	350	400	450	500
D	160	160	200	250	250
E	145	168	180	195	215
F	134	165	205	210	230
G	113	135	165	190	210
H	360	360	360	460	460
I	178	178	205	219	300
J	95	120	130	145	170
K	185	225	250	280	320
L	27	27	27	27	27
M	402	527	577	597	637
N	118	138	150	165	185
Weight	12 kg	14 kg	18 kg	24 kg	38 kg

NB: This data is present for standard fan LSF/MSFG 146-250. If there is any change please look at your invoice.

## 1.6 Soundbox



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

A sound box will, as a starting point, reduce the sound level by approx. 50%, corresponding to 10-15 dB(A). In addition to the sound reduction, the box provides effective protection against wind and weather.

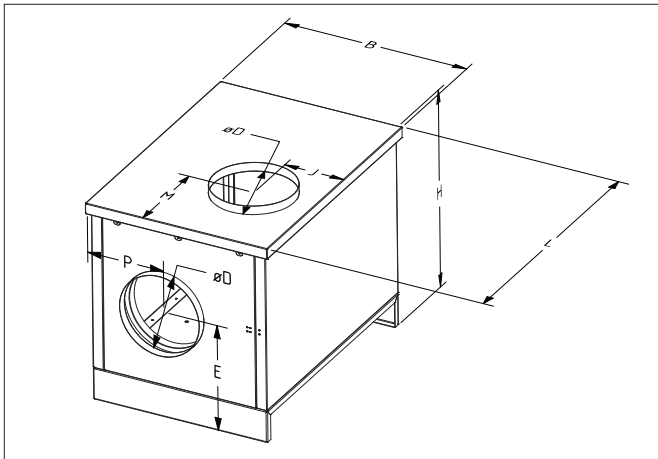
The sound box is made of fully galvanized steel, insulated with 40 mm thick self-adhesive complex insulation, including flex connection.

The box is equipped with an air intake at the bottom for cooling of the motor.

Installation example



1.7 Table

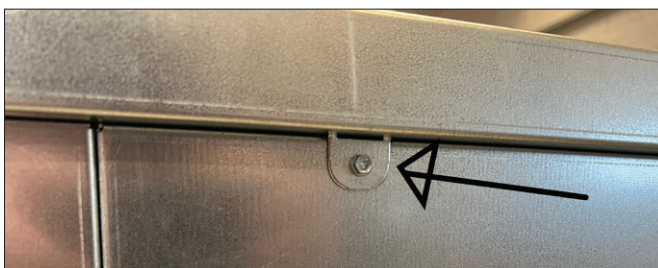


Dimensions table for soundbox 250-630 - in mm

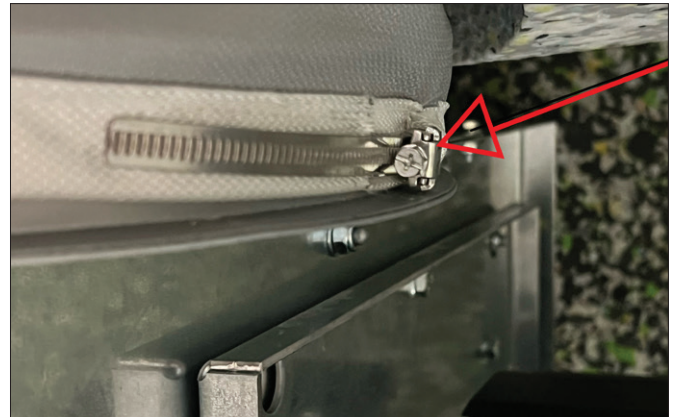
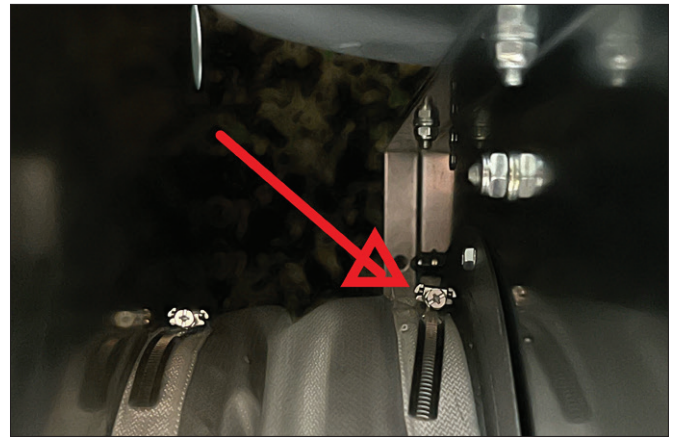
Type	146/ 180/ 200	225/ 250	315	355/ 400	450/ 500	560/ 630
<b>B</b>	518	615	715	873	986	1290
<b>H</b>	592	652	778	915	1046	1277
<b>L</b>	685	784	984	1080	1272	1390
<b>øD</b>	200	250	315	400	500	630
<b>E</b>	330	345	415	485	546	673
<b>P</b>	226	268	298	354	420	525
<b>M</b>	212/262	254	335	308	379	429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

OBS: Use gloves when you are handling the soundbox.

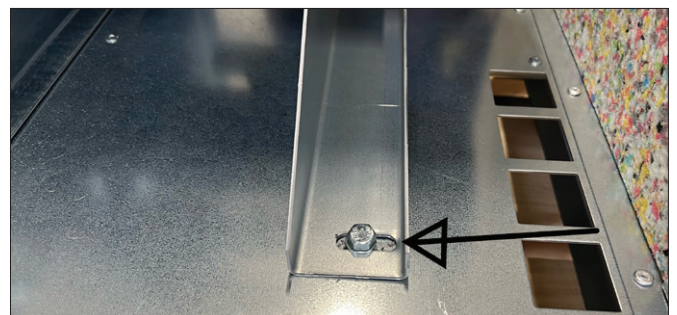
Replacing wheels on fan in Soundbox



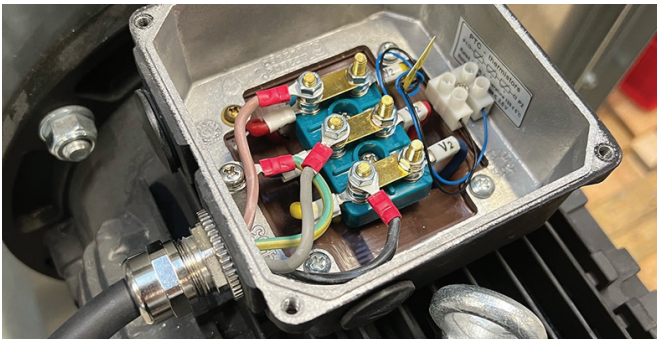
Remove the sound box roof and the 2 sides.



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 the suction nozzle.



Remove the fan wheel by loosening the grub screw.

Then remove the wheel from the axle and mount the new wheel and fix it.

- Check that the wheel does not run against the suction nozzle.
- Mount the fan and the sides and roof of the sound box.
- The fan is now ready to be wired and started up.

**Note: MAKE SURE THE FAN HAS THE CORRECT CIRCULATION DIRECTION.**

### 1.8 Rain cover

Rain cover is optional and ordered together with the fan. If the fan is placed outdoors, exposed to heavy rain, it is recommended to protect the motor with a rain cover

### 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.

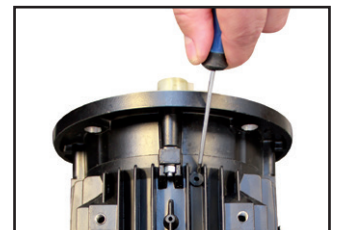
For outdoor installation, be aware of noise, it is also important to ensure the fan is protected against heavy rain, and to seal the pipe system against leaks.

Rain and noise can be remedied by installing the fan in a sound box.

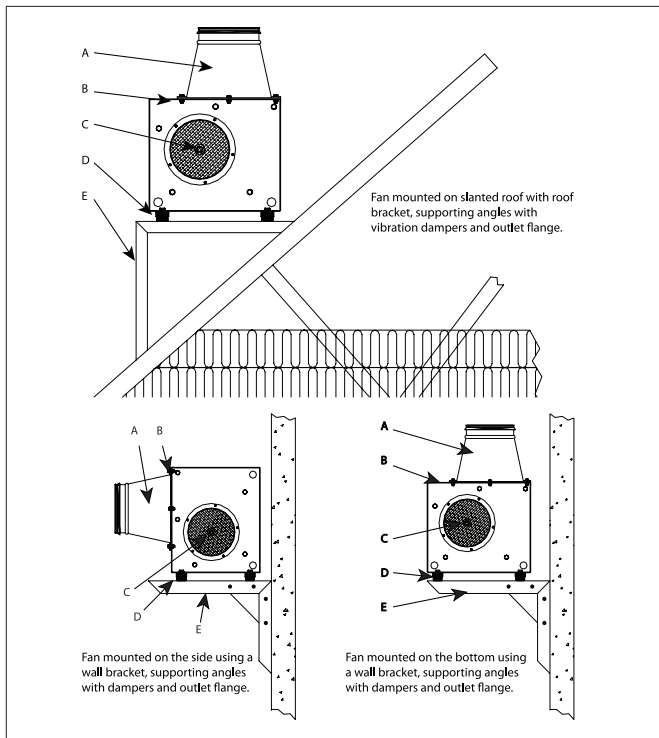
Drilling holes should be drilled at the bottom of the scoop and the drain plug / screws in the engine removed in order to drain away condensation water.



Drain screws



Drain plugs



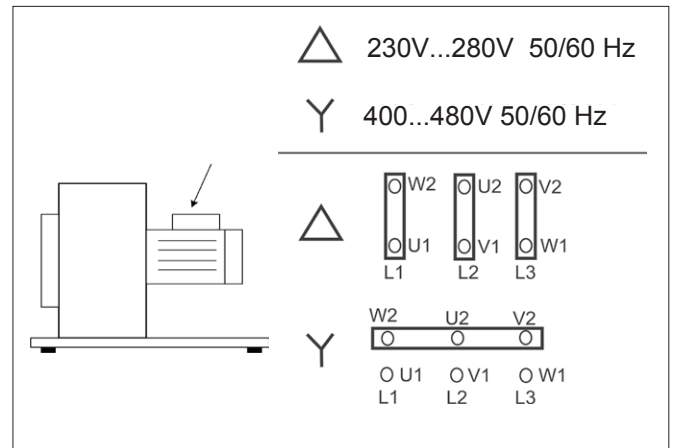
The following installation should only be carried out by a trained fitter.

**Procedure:**

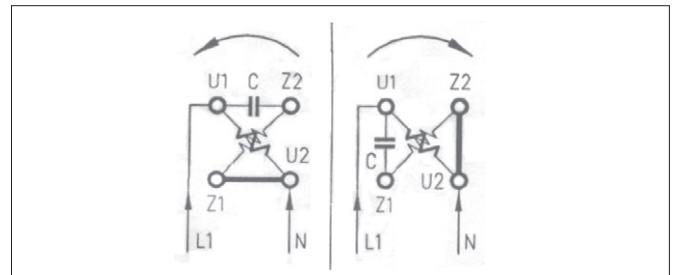
1. The Fan is solidly fixed to the roof/floor or to a ceiling bracket or wall bracket (see above). The Fan is fixed by attaching the vibration dampers with 4 off M8 bolts. The fan is to be mounted in one of the shown ways. Do not install the Fan with the intake in vertical direction.
2. The piping is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

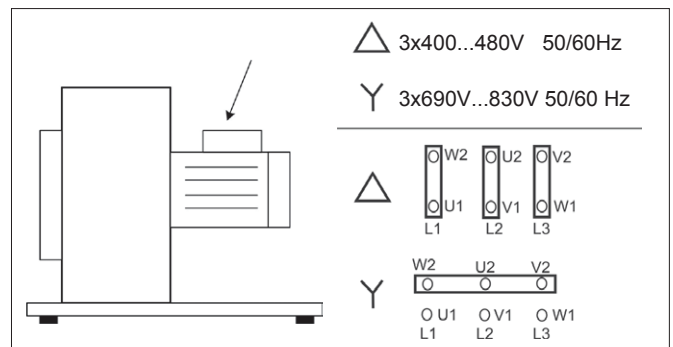
5. The Fan should only be connected to the mains by a certified electrician and a motor protection switch should always be used.
6. Our 3-phase motors may be configured to both 3x230V and 3x400V. From the factory, the motor has not been configured and the enclosed metal cover plates are to be mounted in such a way in the terminal box that they fit the voltage.



NB: The coupling diagram below is guiding.



7. Circuit diagram 1-phase motor 1x230V, 50Hz (non-adjustable)



8. Circuit diagram 4 KW motor MSFG-250-3

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

**2.3 Installation of optional equipment**

**Mounting of sound box**

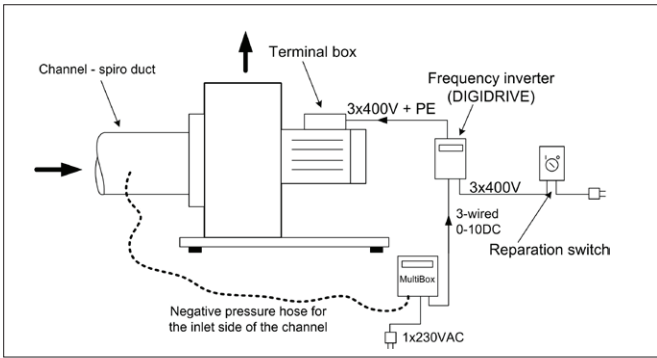
From the factory, the fan will be installed in the sound box (optional equipment). The box must be mounted on horizontal surfaces and may only be mounted with vertical outlet.

**Mounting of frequency converter**

Our standard 3-phase motors are particularly suitable for frequency converter operation



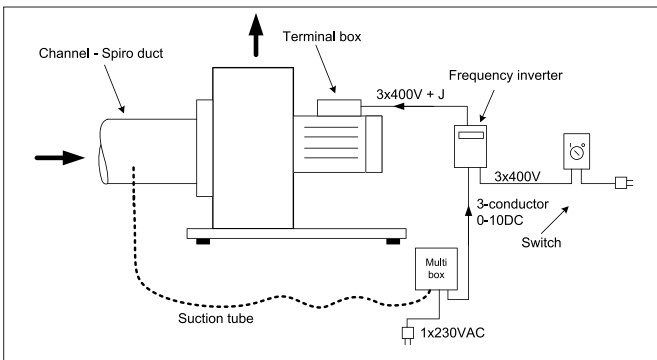
## Suggested application – frequency inverter



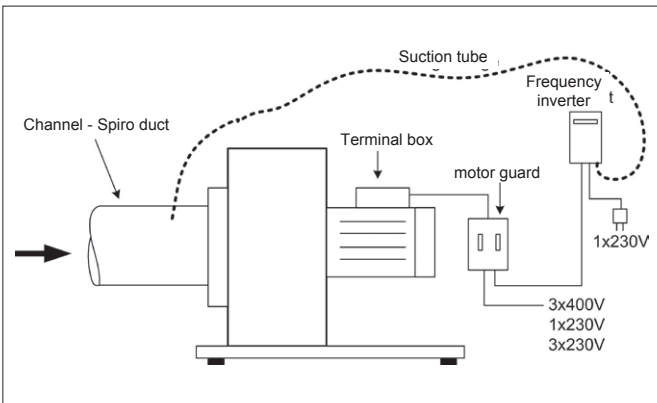
### Installation of frequency inverter

Our standard 3-phased LEF/MEF fans are highly suitable for operation with frequency inverter allowing for pressure control and speed control.

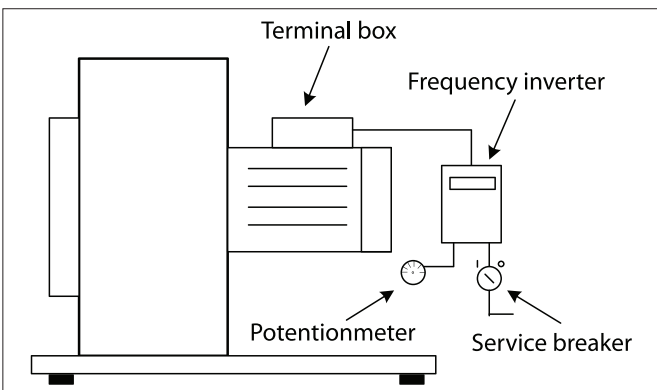
### Draft of installation with frequency inverter:



### Draft of installation with pressure guard and motor guard:



### Draft of installation with potentionmeter:



## 2.4 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 does not work according to the purposes, 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

## 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.

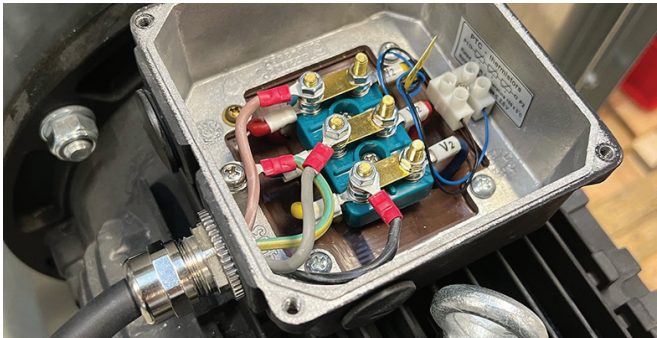
Remember to always cut the power.

## Replacing wheels on a freestanding fan

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



Dismantle the suction nozzle.



Disconnect all cables.



Remove the fan wheel by loosening the grub screw. Then remove the wheel from the axle and mount the new wheel and fix it.

- Check that the wheel does not run against the suction nozzle.
- Reattach the ducts to the suction nozzle and the outlet.
- Mount the fan and the sides and roof of the sound box.
- The fan is now ready to be wired and started up.

**Note: MAKE SURE THE FAN HAS THE CORRECT DIRECTION OF OPERATION.**

### 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.
- Elements coming from the outside 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.

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

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](http://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: LSFG/MSFG

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.

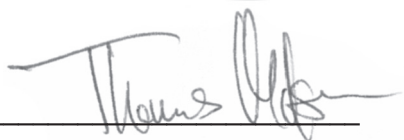
Authorized to collect the technical file:

Lise Cramer

Date: 11.03.2024

Position: Director  
Name: Thomas Molsen

Signature: \_\_\_\_\_











***GEOVENT***

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