GEOVENT

INSTRUCTION MANUAL

FAN

LSFG/MSFG 146 - 250

Version 2.1 08.03.17

www.geovent.com

Contents

1.0 General safety precautions

IMPORTANT - Please study all the instructions before mounting and commissioning.
This instruction manual is valid for MEF(I)/LEF(I) fans. MEFI/LEFI is with integrated frequency inverter, while the LEF/MEF is standard motor where an external frequency inverter can be connected. More specific data regarding frequency inverters can be found in the specific manual for the inverter.

Please keep these instructions in a safe place and instruct all users in the function and operation of the product.
Do not dismantle any factory-mounted parts, as it impedes the commissioning of the equipment.
All electrical installations must be carried out by an authorised electrician

1.1 Danger

Explosive media – The Fan is not suitable for the extraction of aluminium dust, flour, textile dust nor for sawdust or other media, which are connected with danger of explosion, without specific approval from Geovent A/S.

Removing the protection net on the fan whilst in operation involves a risk of mutilation.

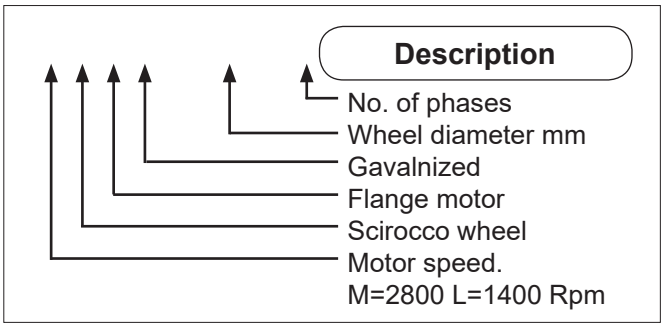
Always switch off the current when mounting something on the Fan or when servicing it.

1.2 Field of application

The GEOVENT fan LSFG is typically used for general ventilation as well as for smaller process extraction jobs, where a high pressure is not required. The Fan MSFG 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



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 your dealer.

Fans 1.400 min-1, noise emission to 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 min-1, noise emission to 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.
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

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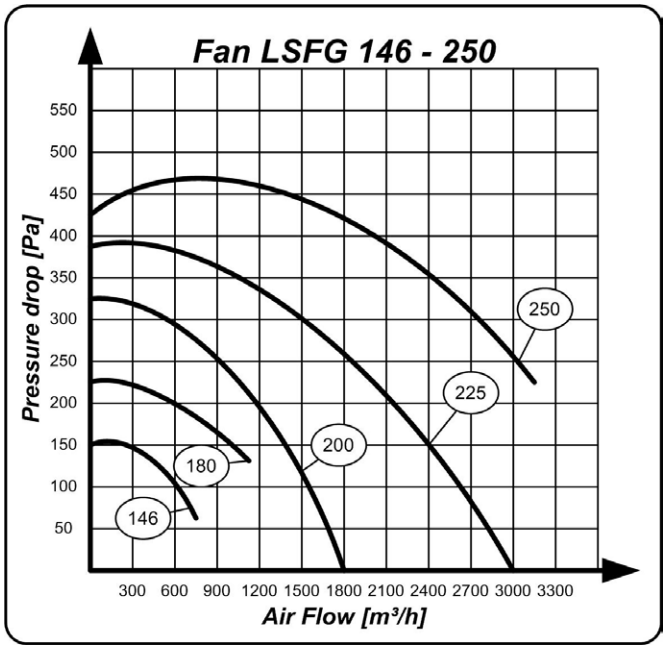
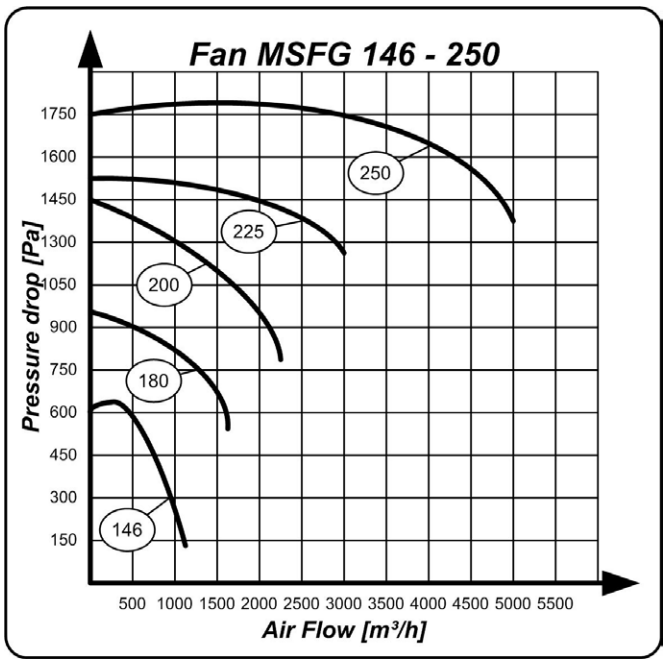
For more sound measurements – see www.geovent,-com (data sheet for LSFG/MSFG-146 – 250).

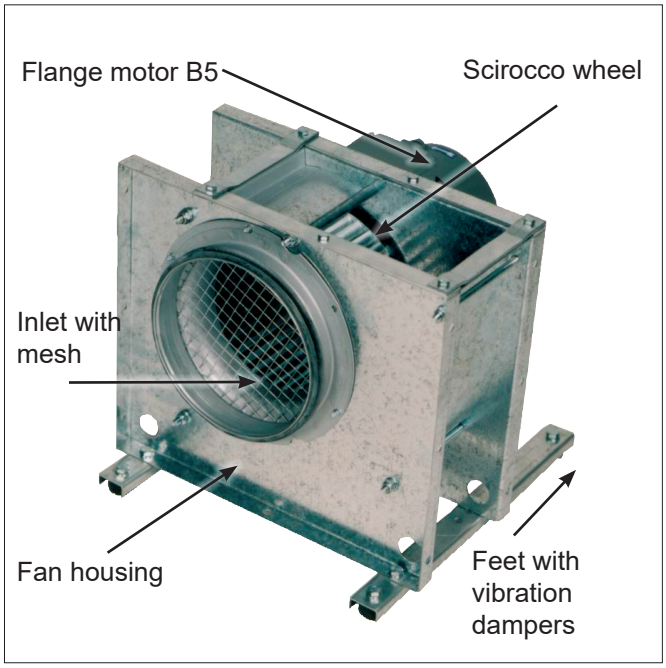
Where emitted noise can cause a nuisance, the fan must be shielded, for example. by placing it in a sound box.

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 sirocco-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

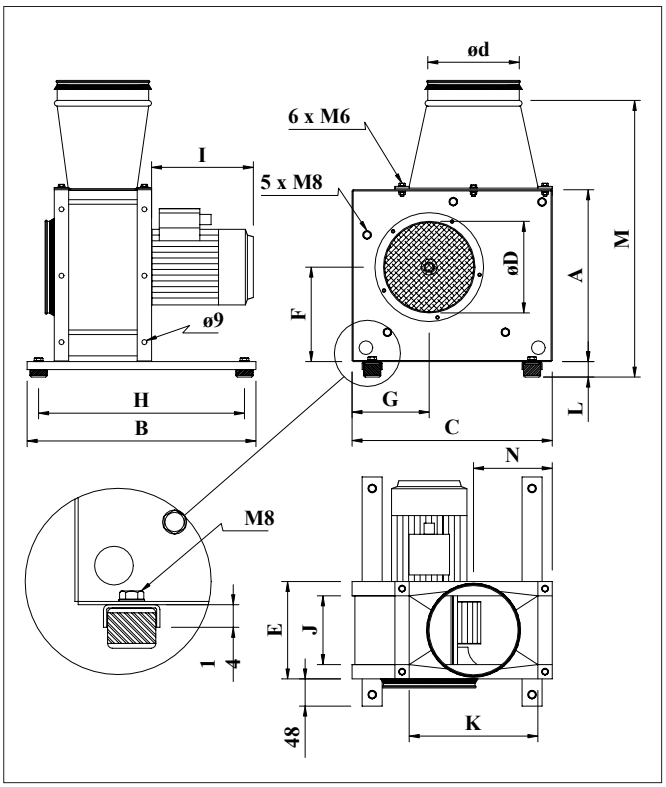
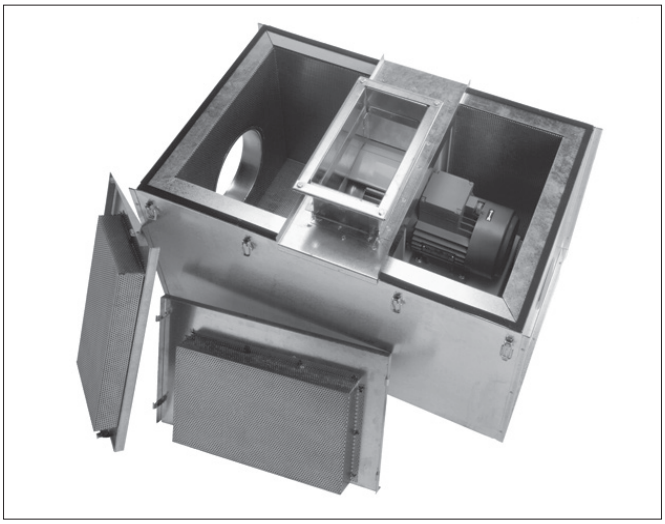


Table of dimensions LSFG/MSFG 146 - 250

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

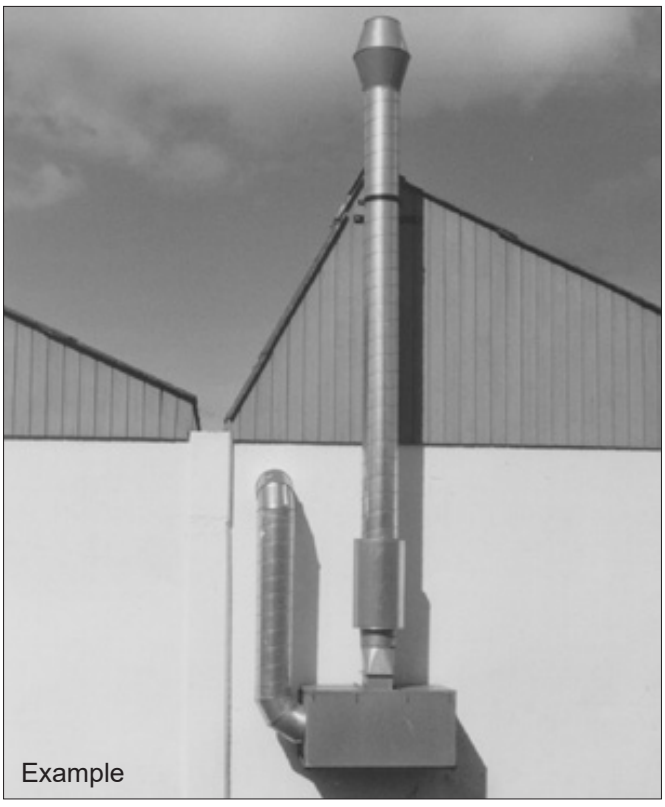
NB: This data is present for standard fan LSFG/MSFG 146-250. If there is eny change please look at your invoice.

1.6 Soundbox



Soundbox - optional

Sound box is optional and ordered together with the fan. A sound box can general reduce the noise level. 8–12 Db(A)
Besides soundproffing, the sound box will also protect the fan against wind and weather.
The Soundbox is made of galvanised plate and supplied with 50 mm thick insulating materials (glass wool). Inside the box is lined with a galvanised and perforated steel plate.
Furthermore, a sound absorber is saved on the suction side, since this sound absorber is built-in by means of the front suction chamber. The box is supplied with an ø80 mm air inlet on the suction side for the cooling of the motor.



Example

1.7 Table

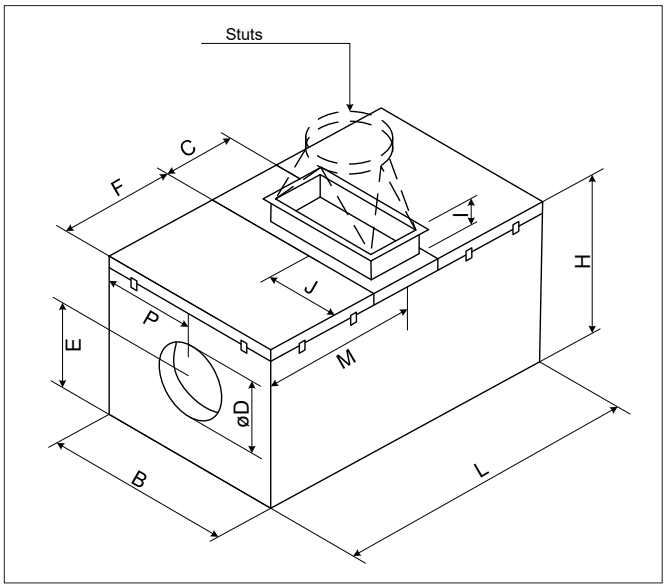


Table soundbox 146 - 250

Type	146/180	200	225	250
B	470	510	560	620
H	405	455	475	510
L	720	820	910	1015
øD	160	200	250	250
E	205	230	240	260
P	230	355	285	330
M	362	410	465	510
J	230	255	280	325
C	190	200	215	245
I	105	100	105	105
Vægt	29 kg	35 kg	43 kg	49 kg

OBS: Use gloves when you are handling the soundbox.

1.6 Rain cover

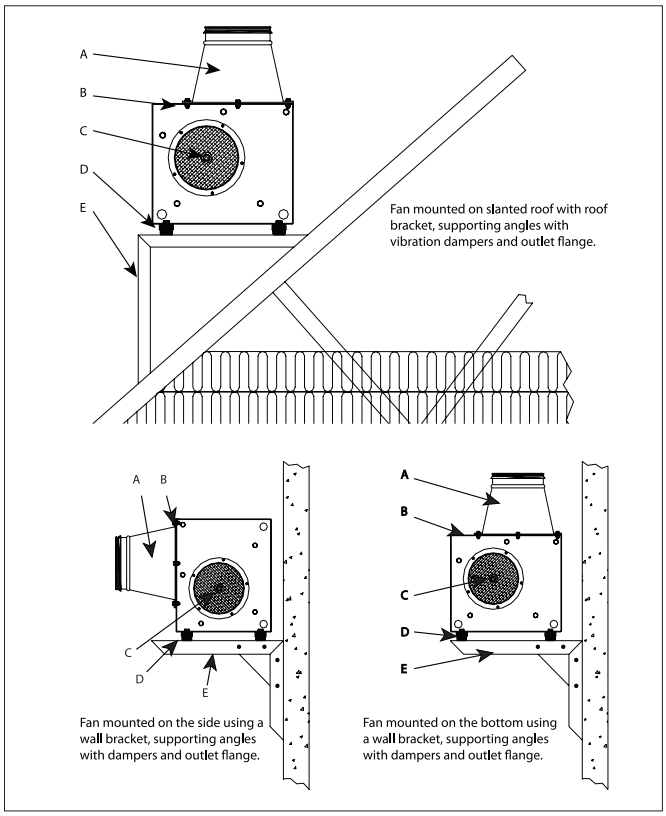
Rain cover is optional and ordered together with the fan. If the fan is placed outdoors, exposed to heavy rain, it is recommended to protect the motor with a rain cover

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..



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!

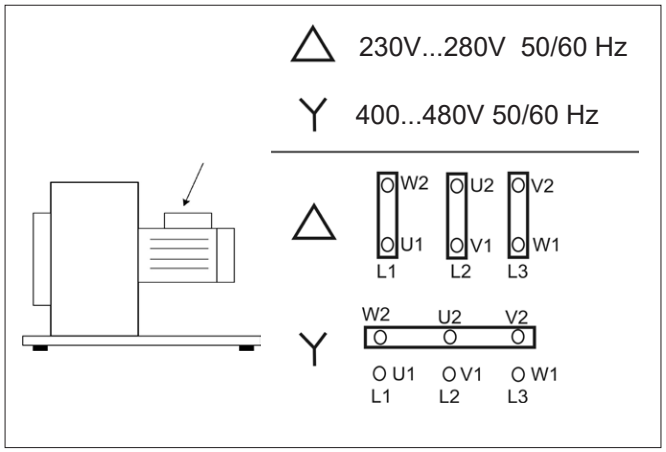
4. The pressure connecting piece is then attached to the piping on the outlet side by means of self-cutting screws. Remember to seal the connection!

2.1 Connection of the Fan to the mains:

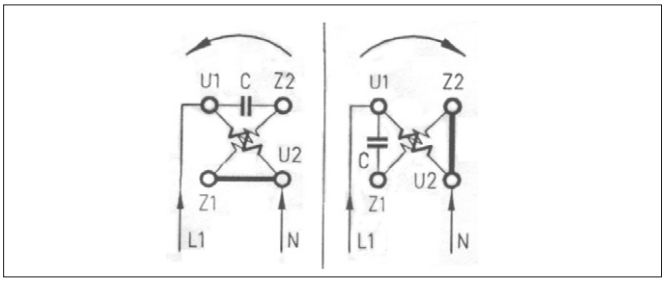
5. The Fan should only be connected to the mains by a certified electrician and a motor protection switch should always be used.

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.

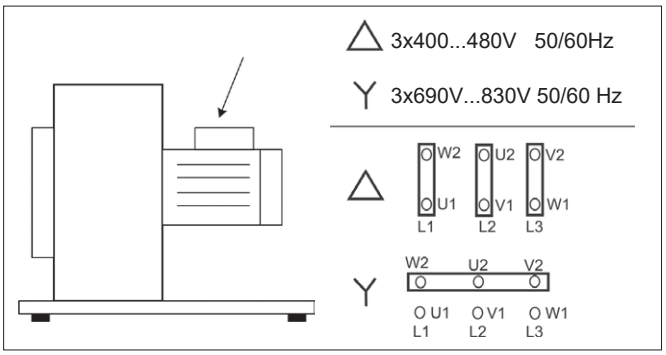
NB: The coupling diagram below is guiding.



7. Circuit diagram 1-phase motor1x230V 50Hz (nonadjustable)



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



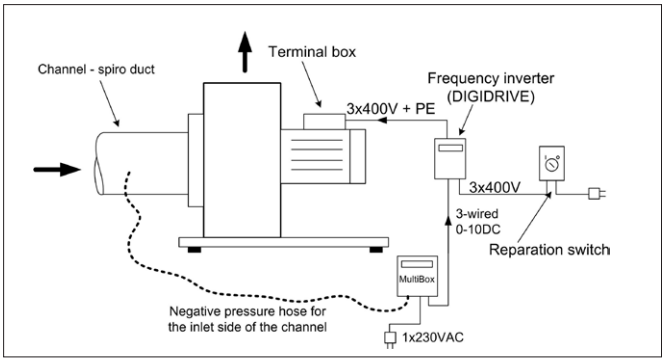
Always double check the metal sign on the motor and the inside of the cover for current configurations (diagram).

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.

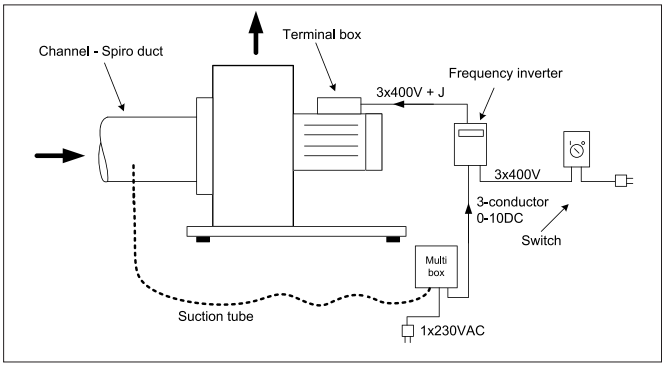
Mounting of frequency converter
Our standard 3-phase motors are particularly suitable for frequency converter operation

Suggested application – frequency inverter

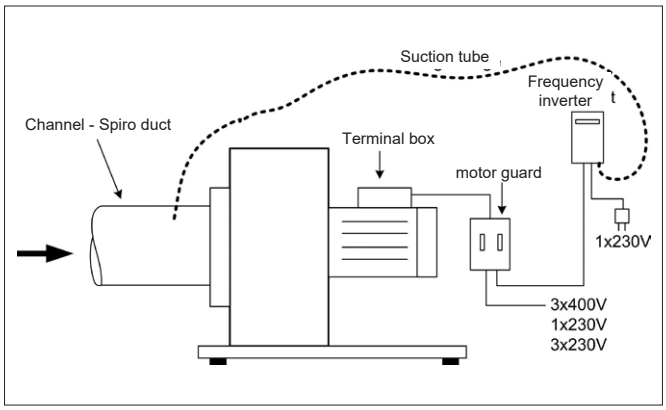


Installation of frequency inverter
Our standard 3-phased LEF/MEF fans are highly suitable for operation with frequency inverter allowing for pressure control and speed control.

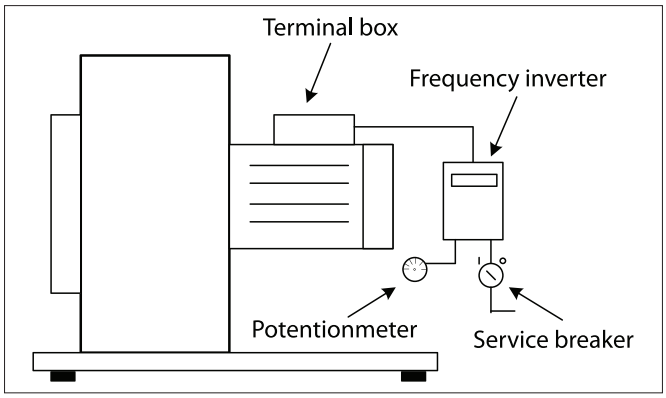
Draft of installation with frequency inverter:



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.

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!

5.0 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 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 parts like fan impellers are 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 manual in all respects.

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

6.0 Declaration of conformity

GEOVENT

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

Hereby declares that:

The product: Fan
Models: LSFG/MSFG 146 - 250

has been manufactured in compliance with the directions of the Directive Council 2006/42/EEC, regarding machine safety, changes of directive 95/16/EEC and following standards:

Council Directive 2006/42/EC (May 17, 2006) of the European Parliament on machinery, and amending Directive 95/16/EC.

EN ISO 14121-1:2007 Safety of machinery - Risk assessment - Part 1: Principles

EN ISO 12100-1:2005 Safety of machinery - Basic concepts, general principles for design

EN ISO 12100-1:2009 Construction and design
Part 1: Terminology, methodology

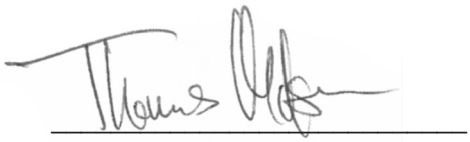
EN ISO 12100-2:2005 Basic concepts, general principles for design

EN ISO 12100-2:2009 Construction and design
Part 2: Technical principles

Date: 08.03.17

Position: Managing Director
Name: Thomas Molsen

Signature:



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