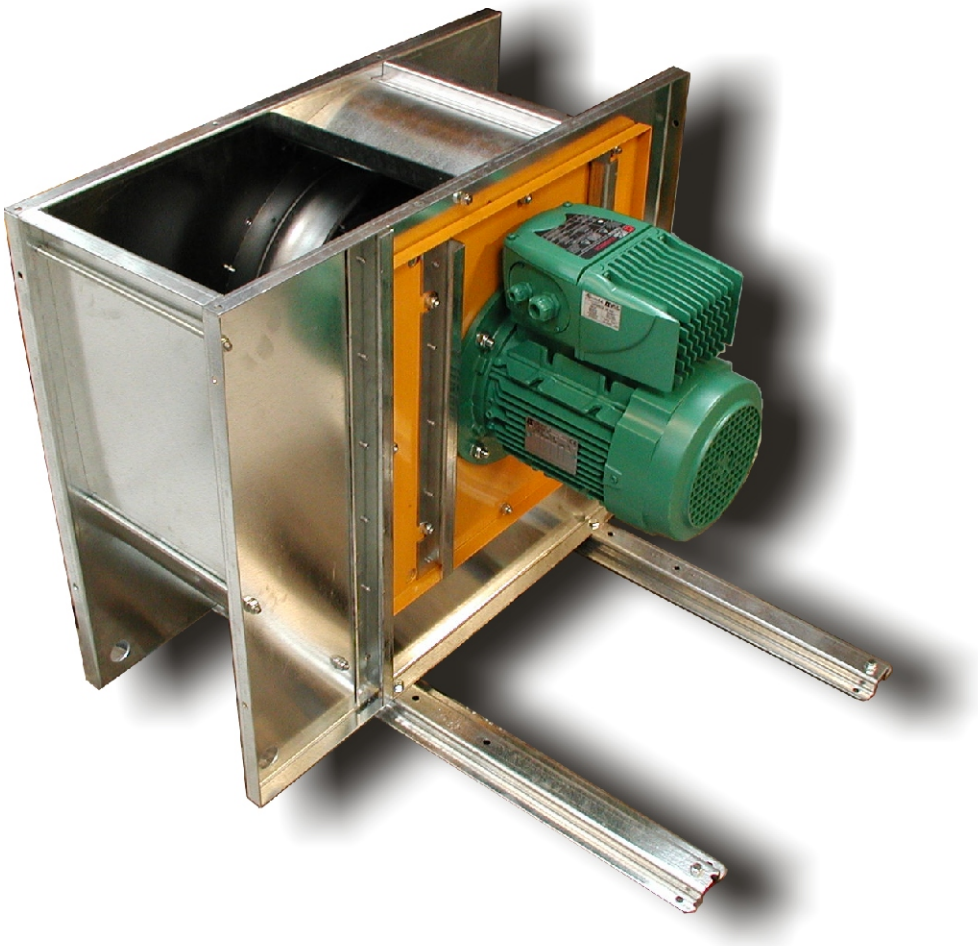
FAN

LEF(I)/MEF(I) 250-630

CE

With or with out integrated frequency inverter



UK *Instruction manual*

D *Bedienungsanleitung*

DK *Instruktionsmanual*

GEOVENT

www.geovent.com

Contents

1.0 General safety precautions
1.1 Danger
1.2 Field of application
1.3 Technical data
1.4 Construction – table of dimensions
2.0 Installation
2.1 Connection of fan to the mains
2.2 Connection of fan to the mains (freq. inv.)
2.3 Optional equipment
2.4 Trial run – exact adjustment
3.0 User instruction – application
4.0 Maintenance
4.1 Trouble shooting
5.0 Liability
6.0 Declaration of conformity

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, since 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.

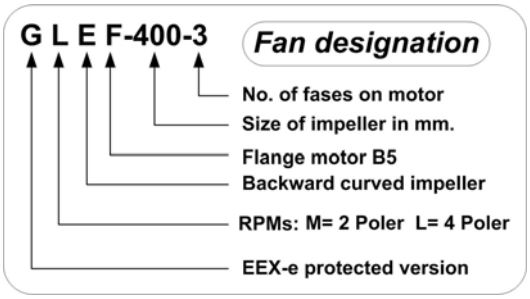
Always switch off the current when mounting something on the Fan or when servicing it.

1.2 Field of application

The GEOVENT Fan 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 specific approval from Geovent A/S.

1.3 Technical data



Temperature extracted air	**Max 180°C**
Temperature surroundings	**Max 40°C**

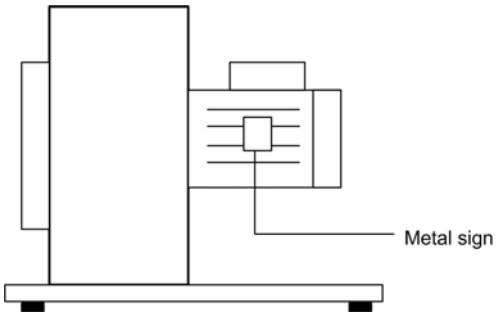
If the temperature of the extracted air exceeds 180°C, special bearings must be used. Please contact your dealer.

Sound pressure: The sound level for each fan will be show on the pressure curves on the next page.

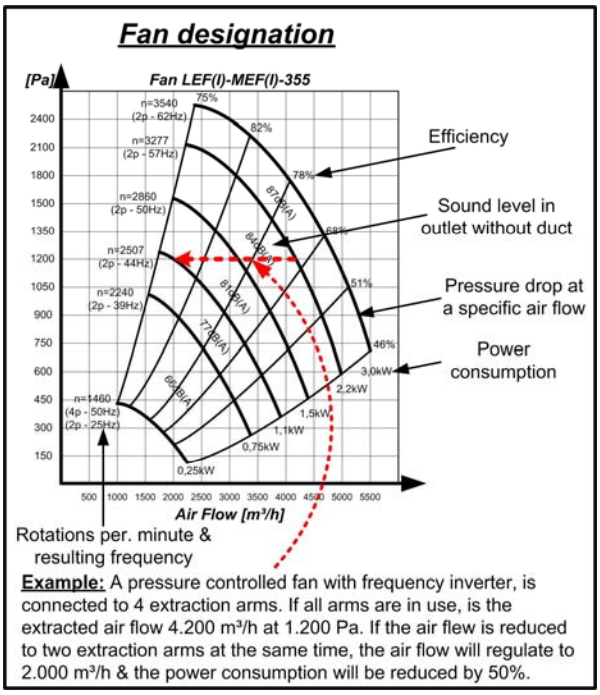
The sound level depends on various factors under various circumstances. For instance, where in the room the Fan has been installed, the size of the room, the temperature in the room, the sound of the room and also the connection (hose><pipe) of the Fan influences the sound level of the Fan.

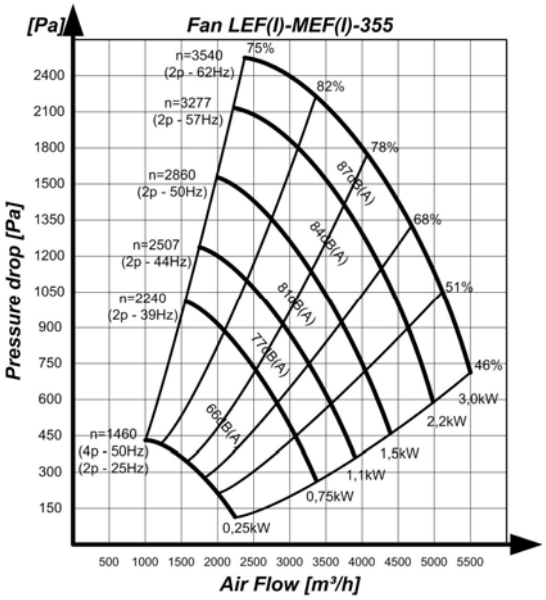
As a main rule, a sound box will reduce the actual sound level to only half the level without a sound box.

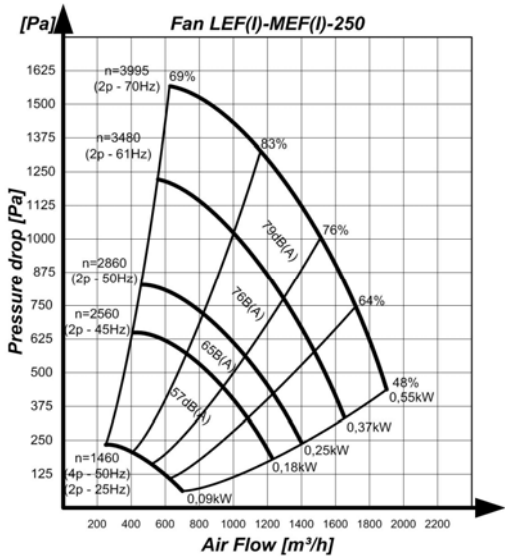
The actual ampere consumption and the kW of the motor are shown on the metal sign on the Fan.

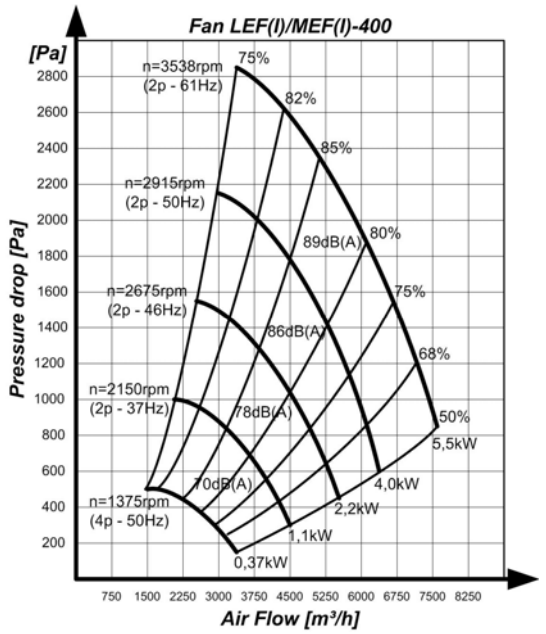


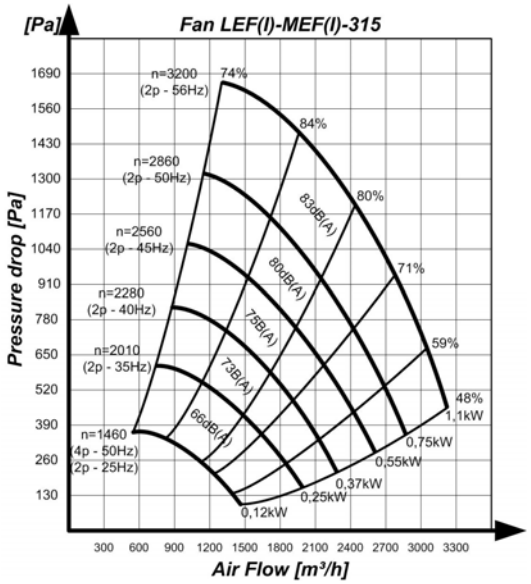
Pressure drop curves for fans

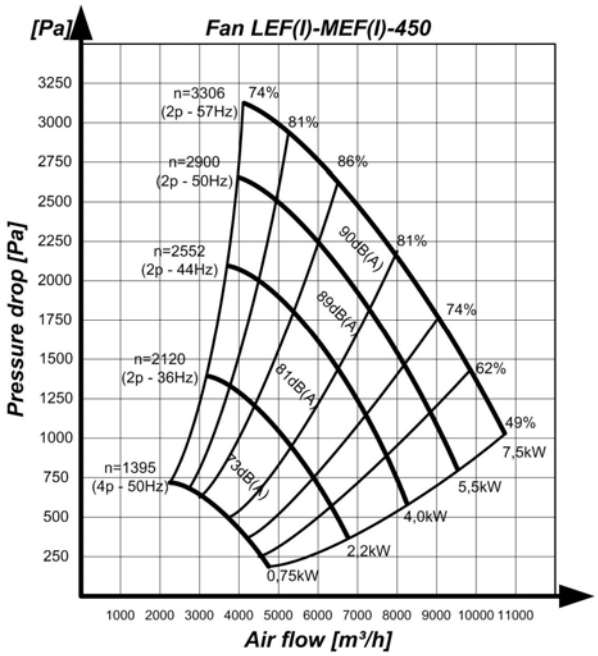


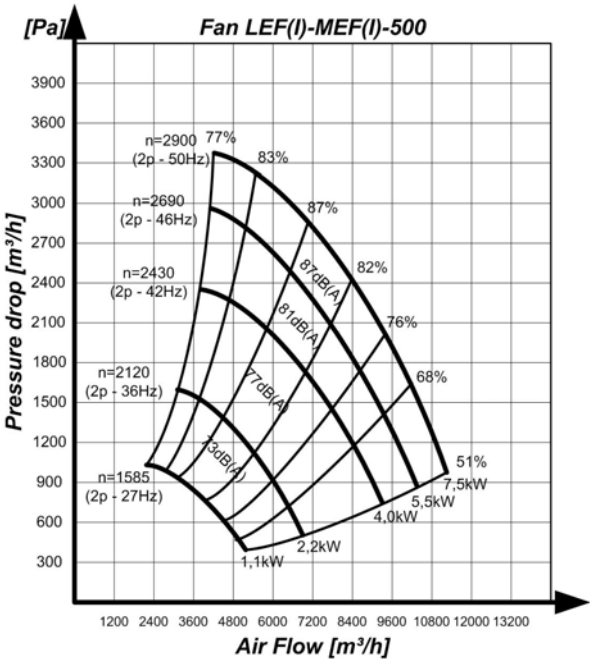


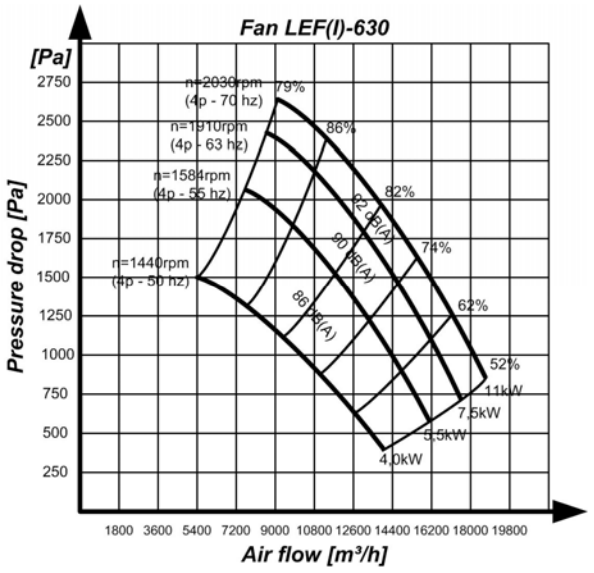




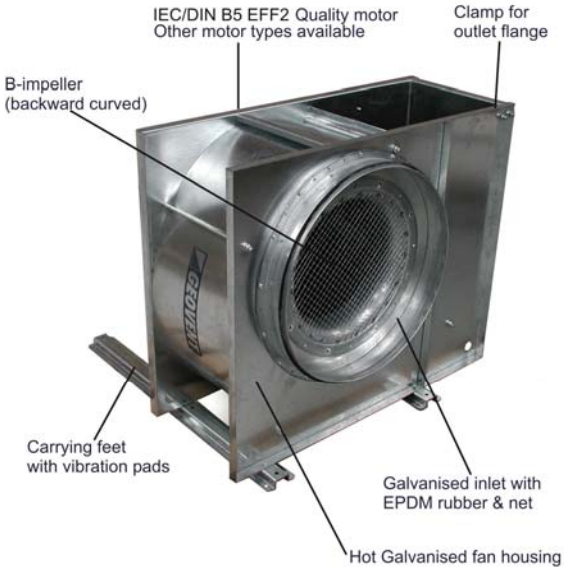








1.4 Construction



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.

Table of dimensions

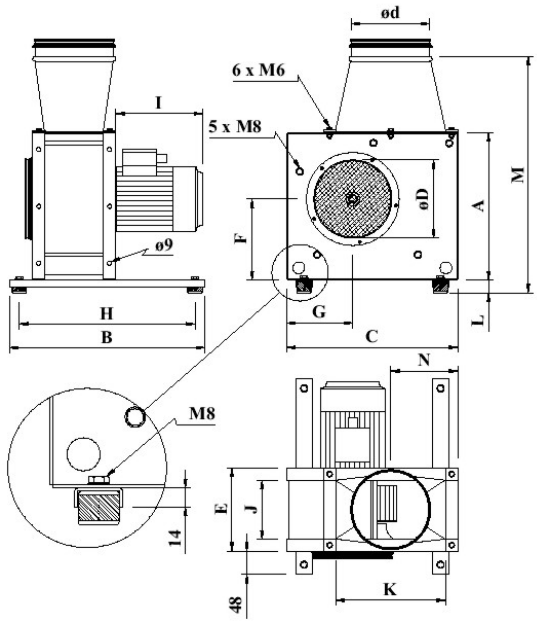


Table of dimensions LEF/MEF 250 - 630

Type	250	315	355	400	450	500	630
A	410	510	570	648	715	758	989
B	500	550	655	800	800	800	800
C	500	600	680	756	850	871	1175
D	250	315	400	400	500	500	630
E	215	260	284	308	340	345	446
F	230	290	329	370	408	421	563
G	210	240	272	304	340	362	467
H	460	190	190	760	760	760	760
I	**	**	**	**	**	**	**
J	170	210	234	260	290	295	400
K	320	400	450	500	560	510	800
M	637	720	797	965	1045	1065	1340
N	185	225	250	275	305	263	425
[kg]	(38)*	43*	48*	56*	71*	81*	135*

*The weight will varied and is dependent on which size of motor is chosen for the selected fan
**Depending on the motor size

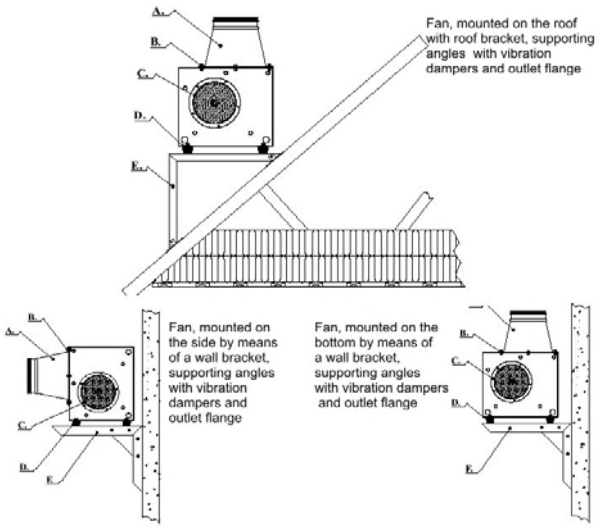
The shown dimensions are the same for the LEF & MEF fans.

2.0 Installation

The Fan is supplied in complete/assembled condition, ready for connection to piping and to the mains.

Before mounting the Fan, please make sure that the optimum installation area is selected. Is outdoor or indoor installation best? 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 otherwise this would reduce the yield 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.

Figur 1



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 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!

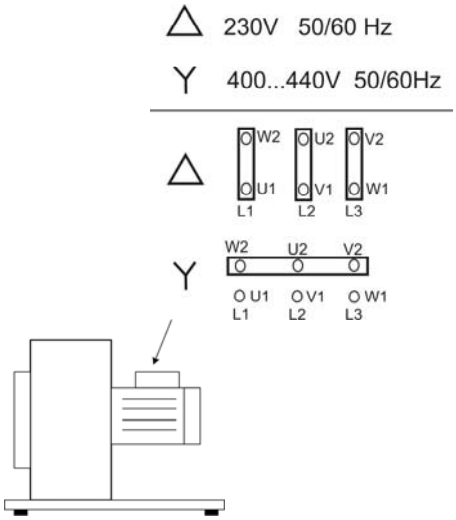
4. The pressure connecting piece is then attached to the piping on the outlet side by means of self-cutting screws. Remember to seal the connection with filler!

5. For outdoor mounting, it is important to protect the Fan from heavy rain and to seal the piping against leaks.

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.



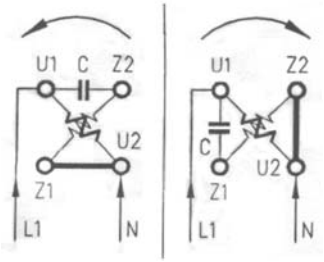
From 4,0 kW motors and up:

∆ 400… 460V 50/60Hz

Y 690 50Hz

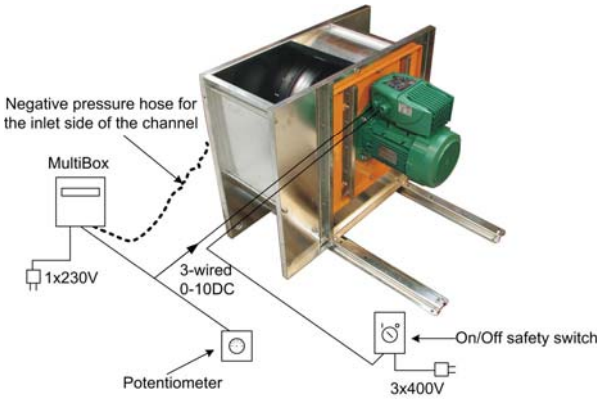
Always double check the metal sign on the motor and on the inner side of the cover for curent configurations (diagram).

3. Connection diagram 1-faset motor (Not suitable for regulation) up to 2,2 kW.

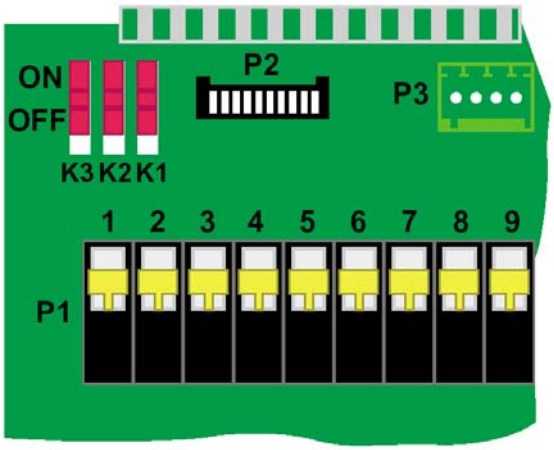


2.2 Connection of fan to the mains "Motors with integrated frequency inverter"

1. The following guide contains general descriptions, why more specific data regarding the frequency inverter can be found in the manual for the motor (Varmeca Motors with integrated frequency inverter).



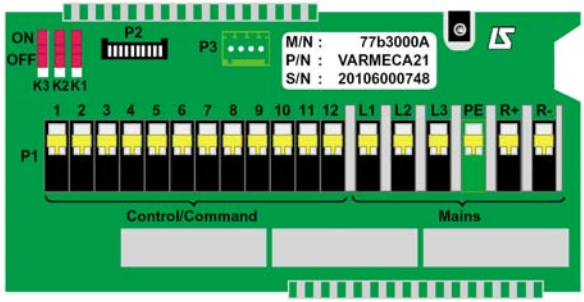
Adjusting the mini dip-switches (up to 4,0 kW)
These switches are used to select the reference, the U/F ratio and the reference on the analogue input of terminal 2 (see VARMECA - 20 parameter-setting manual).



MINI DIP	OFF	ON
K1 Speed reference	4 - 20mA reference	0 - 10V reference
K2 Analogue input terminal 2	4 - 20mA	0 - 10V
K3 U/F ratio	U/F ratio factory setting	U/F ratio constant

= FABRIKSINDSTILLING

Terminal blocks – Layout (up to 4,0 kW)

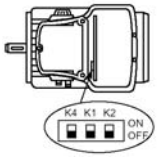


Standard configuration – P1 terminal block

Marking	Functions - Characteristics
L1, L2 L1, L2, L3	Connection of protected mains supply phases 200V to 240V ± 10 %, 50-60Hz in single-phase 200V to 480V ± 10%, 50-60Hz in 3-phase
PE	Earth connection
R1, R2	Connection of the braking resistor Min. resistance value = 180 Ohms

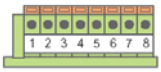
Marking	Functions - Characteristics
1	Locking logic input Terminals 1 and 3 not connected: drive disabled Terminals 1 and 3 connected: drive enabled
2	Analogue speed output 0 to +10V, 3mA 0V = zero speed 10V = maximum speed Analogue input (see VARMECA - 20 parameter-setting manual)
3	Source +24V, 30mA (± 10%) Common at terminal 10
4	Source +10V, 30mA (± 10%)
5	0V - Connected to the terminal block earth
6	Reference input 0 to +10V or 4-20mA 0-10V: input impedance = 100 kOhms 4-20mA: input impedance = 0.5 kOhms
7	Reverse/Stop logic input
8	Forward/Stop logic input
9	Ramp selection logic input 1s (for 0 at 50Hz) : terminals 9 and 10 not connected 3s (for 0 at 50Hz): terminals 9 and 10 connected
10	Source +24V - 30mA Common at terminal 3
11, 12	Fault relay - volt-free contact 250V 1A Contact open: switched off or faulty Contact closed: in run status

Adjusting the mini dip-switches (5,5 & 7,5 kW)



	K4	K1	K2
- Speed adjustment via local control knob	OFF	-	-
- Speed adjustment via remote potentiometer	ON	ON	-
- Speed reference via 0-10 V external reference	ON	ON	-
- Speed reference via 4-20 mA external reference	ON	OFF	-
- Max. frequency 50 Hz	-	-	OFF
- Max. frequency 80 Hz	-	-	ON

Terminal blocks – Layout (5,5 & 7,5kW)



Standard configuration

Marking	Characteristics
1	Source +10 V, 3 mA of the 10 kΩ potentiometer
2	0 to + 10 V or 4-20 mA reference input 0 -10 V: impedance = 100 kΩ 4 -20 mA: impedance = 0.5 kΩ
3	Speed analogue output 0 to +10 V, 3 mA 0 V = zero speed 10 V = max. speed
4	0 V common with terminal 6
5	Ramp selection logic input 10 s: terminals 5 and 6 connected 2 s: terminals 5 and 6 not connected
6	0 V common with terminal 4
7	Reverse/stop control logic input
8	Forward/Stop control logic input

On leaving the factory, terminals 5 and 6 are connected together (ramp 10 s) as are terminals 6 and 8 (forward).

Diagram for 0,25 to 0,75 kW (1x230V)

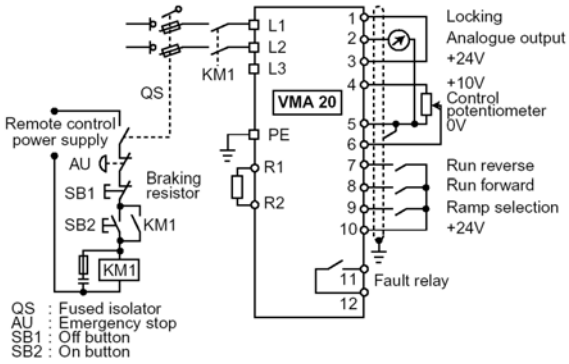


Diagram for 0,25 to 4,0 kW (3x400V)

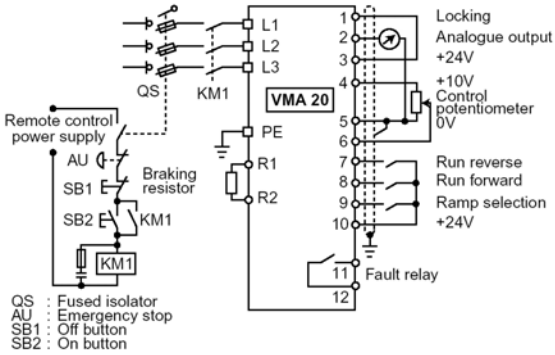
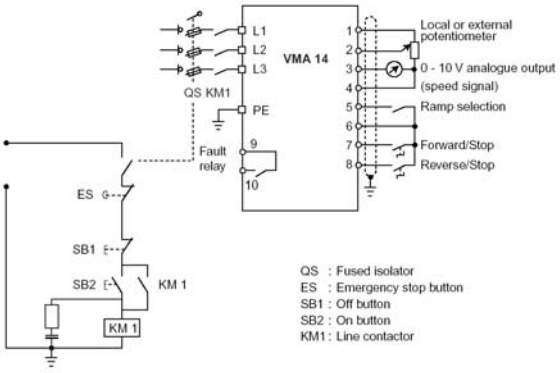
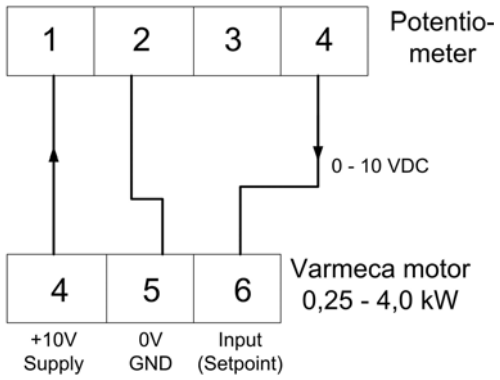


Diagram for 5,5 & 7,5 kW motors



Control signal



2.3 Installation of optional equipment

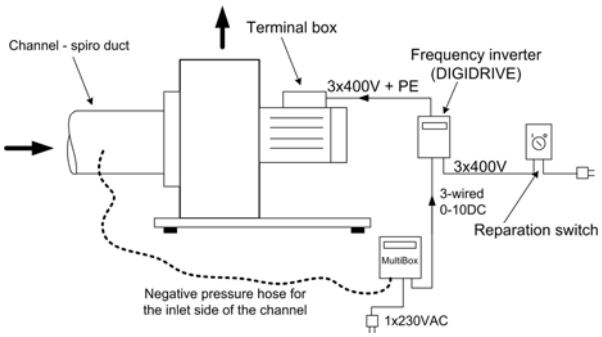
Mounting of sound box

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.

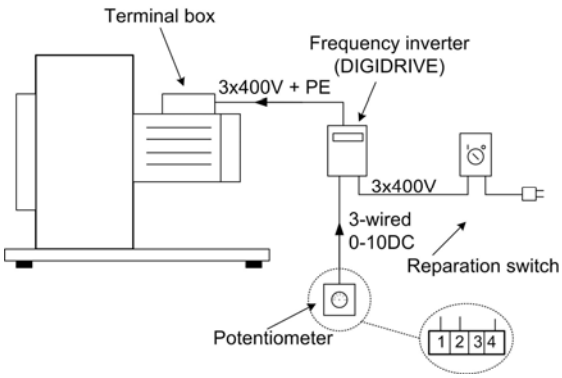
Mounting of frequency converter

Our standard 3-phase motors are particularly suitable for frequency converter operation (please see the separately enclosed manual (Digidrive)).

Suggested application – frequency inverter



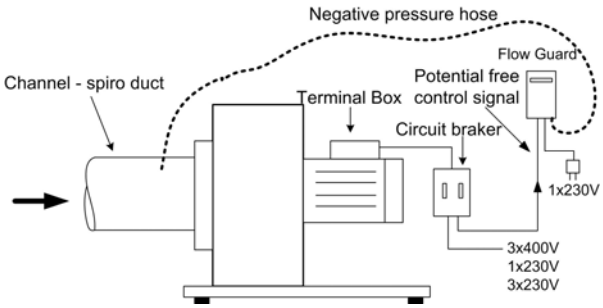
Suggested application – potentiometer



Potentiometer and repair switch are to be connected to the frequency converter.

The standard 1-phase motor is non-adjustable.

Mounting of the motor protection switch



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. Exchange 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 washing-up brush and dishwater. 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.

OBS! Not all older versions and some new versions do not have the shown design/ features.

At least once annually, the whole point extraction plant should be overhauled by an authorised serviceman.

4.1 Trouble-shooting

Remember always to 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 below the stated level:

- 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 Instruction 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

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

hereby declares that:

Product: Fan
Model: LEF(I)/MEF(I) 250-630

has been manufactured in compliance with the directions of the Directive Council of 14 June 1989 in common approximation to the legislation of the member states regarding machine safety (89/392/EEC amended by the directive 91/368/EEC) with special reference to appendix 1 in the Directive regarding basic health and safety requirements in connection with the construction and manufacturing of machinery.

GEOVENT A/S • HOVEDGADEN 86 • DK-8831 LØGSTRUP

Position: Managing Director
Name: Steen Molsen

Date: 15 October 2004

Signature: 

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