GEOVENT

# INSTRUCTION MANUAL

# FAN

## LEF 800, 900 and 1000

Version 1.0 02.09.2022

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.

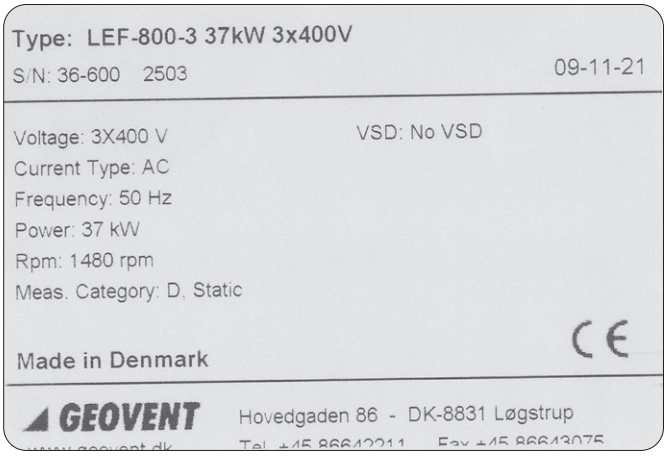
The product is manufactured by:


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 fan LEF 800, 900 and 1000 are centrifugal fans with stable and long-lasting characteristics.

## 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 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.

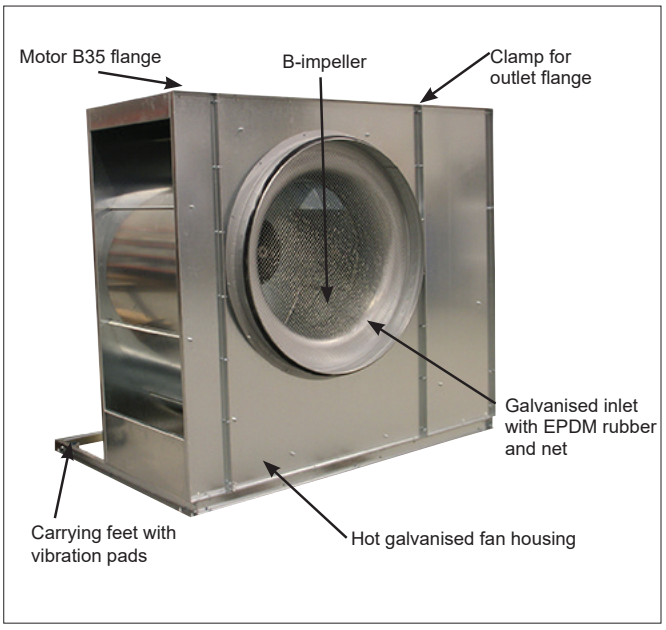
## 3.3 Machine specifications

### 3.3.1 Design

**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 galvanised steel.

**Motor:** B35 flange motor, directly driven, protection class IP-55.



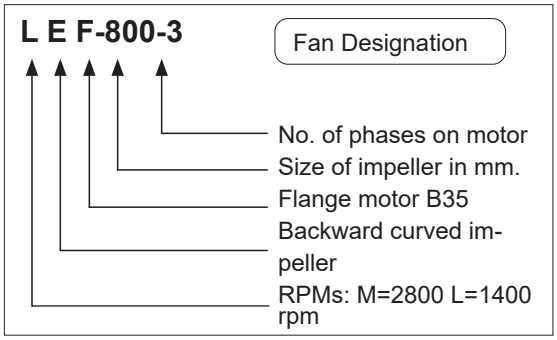

### 3.3.2 Technical data

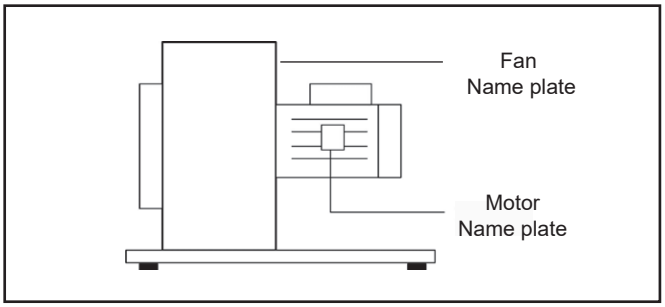
See dimensional drawing on page 7

***Dimensions***

| Type | 800 | 900 | 1000 |
|---|---|---|---|
| H1 | 877 | 995 | 1140 |
| H | 907 | 1020 | 1170 |
| B | 997 | 1110 | 1260 |
| I1 | 1200 | 1253 | 1350 |
| I | 610 | 593 | 620 |
| K | 998 | 1120 | 1250 |
| E | 590 | 660 | 730 |
| J | 530 | 600 | 670 |
| G | 616 | 690 | 766 |
| M | 45 | 45 | 45 |
| M1 | 708 | 800 | 859 |
| C | 1507 | 1690 | 1872 |
| L | 40 | 40 | 40 |
| F | 801 | 889 | 978 |
| A | 1339 | 1491 | 1644 |
| øD | 800 | 1000 | 1000 |

NB: The data above is valid for standard versions of fans LEF 800, 900 and 1000. Please be aware that these data can change in case of changes compared to the standard versions.




The fan nameplate is located on the upper left of the motor of the housing and contains the type designation and production data.
The actual ampere consumption and the kW of the motor are shown on the metal sign on the fan.

**Temperature**

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

## 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

The fan is mounted horizontally on a stable foundation. It is an advantage to use a roof bracket or a wall bracket.

### 5.2 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.

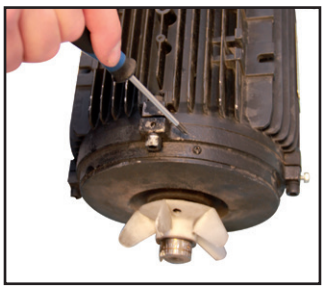
- Location (indoor / outdoor)
- Space for mounting and servicing the fan
- Ducting
- Electrical installation

**Important:**

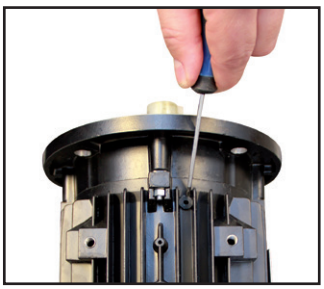
Avoid as far as possible bends just before inlet and after outlet, as it will decrease the fan performance.

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.

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



Drain screws



Drain plugs

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

**Procedure:**

1. The fan is fixed on a solid foundation. The fan must not be installed with the inlet in the 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!

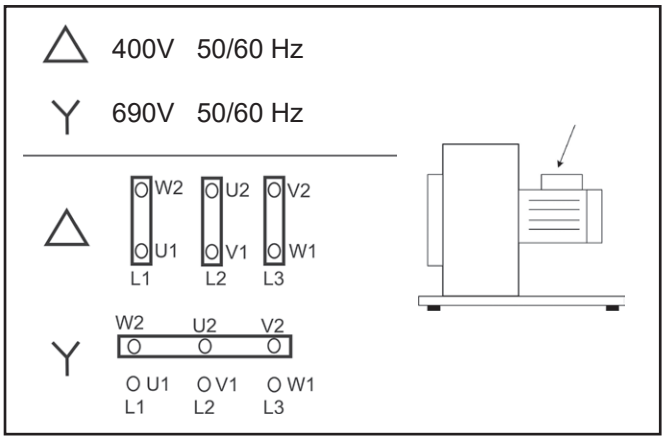
3 On the outlet side, the return channel (optional equipment) is attached to the fan. Remember to seal the connection with filler!

4. When installing outdoors, it is important to shield the fan from heavy rain as well as seal the piping to prevent any leaking. We can offer a optional rain cover.

### 5.2.1 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.

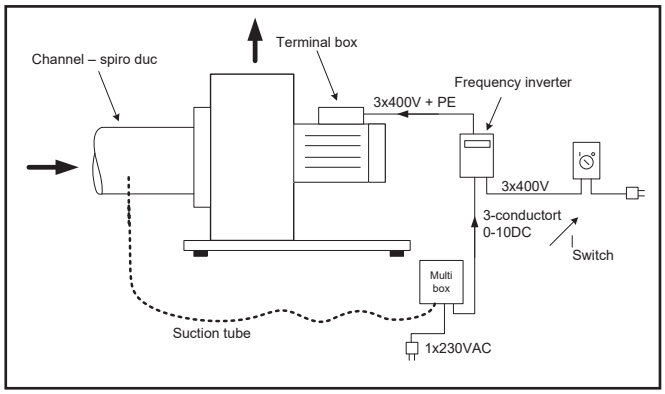
Note: The connection diagram above is a rough guide.




2. Our 3 phased motors are configurable for 3x400V.. 400V 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.

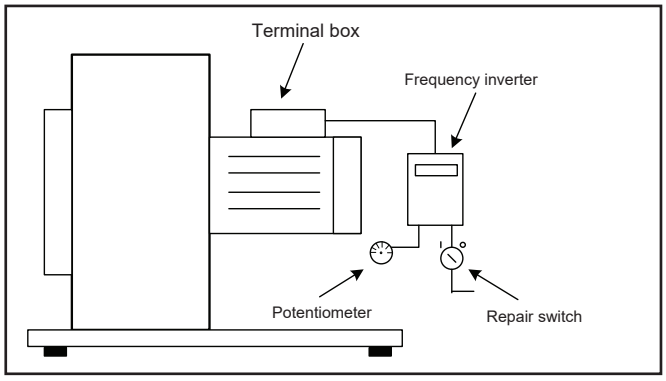
## 5.2.2 Installation of optional equipment

**Mounting of frequency inverter**
Our standard 3-phase motors are particularly suitable for frequency inverter operation.
(both speed regulation and pressure control)
When installing a frequency inverter, read the separat manual from the supplier.




**Installation with potentiometer**

Potentiometer and repair switch are connected to the frequency inverter.




## 5.3 Control and test of the security system

After the installation has been completed, please check:
- Vibrations in the fan.
  See section 9.0 Trouble-shooting
- Volume of air. The fan must supplies the correct volume of air as the unit is dimension for.
- Power consumption (ampere). If the installation is over capacity (amount of air), the power consumption can increase to more than the capacity of the motor, and cause motor failure. See the suppliers' manual (attached).

## 6.0 Commissioning

The user should under normal circumstances not need to interact with the fan itself.

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 is used.

## 6.1 After installation

Check the installation according to chapter 5.3.

## 7.0 Control, test and maintenance

## 7.1 Control

Check the installation according to chapter 5.3.

## 7.2 Maintenance

**NOTE: Always disconnect the power supply before servicing the product.**

Access to the inside of the fan housing and the impeller, can be gained by removing the intake.

**Periodic maintenance**

- 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.
- Motor maintenance should only be done after the factory's instructions, see the manual and 15.0.

Use only original spare part.

## 8.0 Cleaning

The outside of the product is cleaned with a vacuum cleaner or a cloth.
The wheel and the housing may be cleaned by means of a soft brush and detergent.

## 9.0 Troubleshooting

Remember to always use motor protection!

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. Switch 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.
- Wrong voltage or damaged cables.

**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 overloaded**
- 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!

## 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. The inside of the product may be cleaned by means of a soft brush and detergent.

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

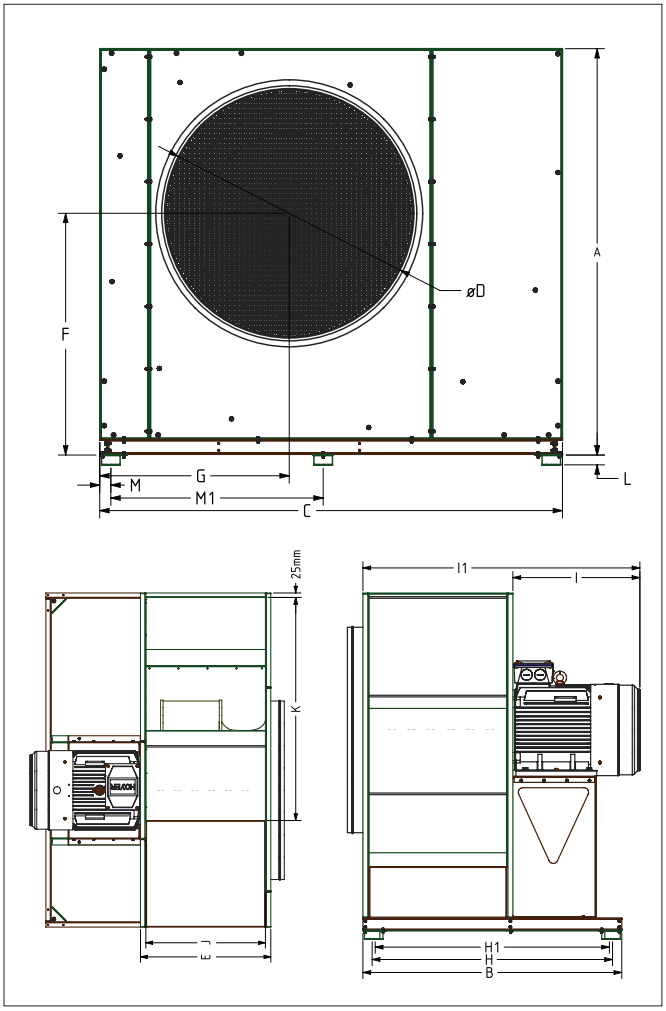
Dismantle the metallic parts by unscrewing screws and bolts. Afterwards cut the larger pieces into smaller pieces and dispose of it according to local regulation.

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

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

## 11.0 Dimensions

**LEF 800, LEF 900 and LEF 1000**




| Type | 800 | 900 | 1000 |
|---|---|---|---|
| H1 | 877 | 995 | 1140 |
| H | 907 | 1020 | 1170 |
| B | 997 | 1110 | 1260 |
| I1 | 1200 | 1253 | 1350 |
| I | 610 | 593 | 620 |
| K | 998 | 1120 | 1250 |
| E | 590 | 660 | 730 |
| J | 530 | 600 | 670 |
| G | 616 | 690 | 766 |
| M | 45 | 45 | 45 |
| M1 | 708 | 800 | 859 |
| C | 1507 | 1690 | 1872 |
| L | 40 | 40 | 40 |
| F | 801 | 889 | 978 |
| A | 1339 | 1491 | 1644 |
| øD | 800 | 1000 | 1000 |

## 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 800, LEF 900 and LEF 1000

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: 02.09.2022

Position: Director
Name: Thomas Molsen

Signature: 

CE

## 14.0 Spare part list

| Art. No. | Description |
|---|---|
| 36-620 | Fan impeller LEF-800 |
| 36-720 | Fan impeller LEF-900 |
| 36-810 | Fan impeller LEF-1000 |
| | Carrying feet |
| | Clamps |

## 15.0 Special conditions applicable to different motors

## Hoyer

**Maintenance**

Check the motor regularly, keep it clean and ensure that there is free air flow. Also check the condition of the shaft seals and replace if necessary. Both the electrical and mechanical connections should be checked and tightened if necessary.

The size and type of the bearings are indicated on the type plate. Motor types HMA3 and HMC3 are standard with lifetime sealed bearings in motor size ≤180 for cast iron and size ≤132 for aluminium. Motor types HMA2 and HMC2 are as standard with lifetime sealed bearings in motor size ≤225. Motor types MS and Y2E are as standard with lifetime sealed bearings in motor size ≤160.

Typical lifetime of lifetime sealed bearings.

| Framesize | Poles | Typical lifetime |
|---|---|---|
| 56-160 | 2-8 | 40.000 t. |
| 180 | 2 | 35.000 t. |
| 200 | 2 | 27.000 t. |
| 225 | 2 | 23.000 t. |
| 180-225 | 4-8 | 40.000 t. |

Motors with a relubrication system that require regular lubrication must be lubricated with a high quality lithium complex grease, NLGI class 2 or 3, with a temperature range between -40°C to +150°C.

Engines are normally provided with a nameplate with lubrication information. Use the following lubrication intervals if the type plate is missing:

| Frame-size | Fat (g) | 2 pole (t.) | 4 pole (t.) | 6 pole (t.) | 8 pole (t.) |
|---|---|---|---|---|---|
| 160 | 20 | 4.200 | 7.000 | 8.500 | 8.500 |
| 180 | 20 | 4.200 | 7.000 | 8.500 | 8.500 |
| 200 | 25 | 3.100 | 6.500 | 8.500 | 8.500 |
| 225 | 25 | 3.100 | 6.500 | 8.500 | 8.500 |
| 250 | 35 | 2.000 | 6.000 | 7.000 | 7.000 |
| 280 | 35 | 2.000 | 6.000 | 7.000 | 7.000 |
| 315 | 50 | 1.500 | 5.500 | 6.500 | 6.500 |
| 355 | 60 | 1.000 | 4.000 | 5.000 | 6.000 |
| 400 | 80 | 800 | 3.000 | 4.000 | 6.000 |

Lubricate the engine while it is running, open the grease trap and let the engine run for 1-2 hours before closing the grease trap again.

Lubricate the engine for the first time during commissioning. The following generally applies to both lifetime lubricated bearings and bearings requiring regular lubrication: At 60 Hz the time is reduced by approx. 20%.

The data for vertically mounted motors are half of the above values.
The values in the table are based on an ambient temperature of 25°C. The values must be halved for every 15 Kelvin increase in the bearing temperature. Operation at higher speed, e.g. using frequency converter, means shorter lubrication interval. Doubling the speed will typically reduce the values by 50%.

GEOVENT

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