Operating Instructions
for

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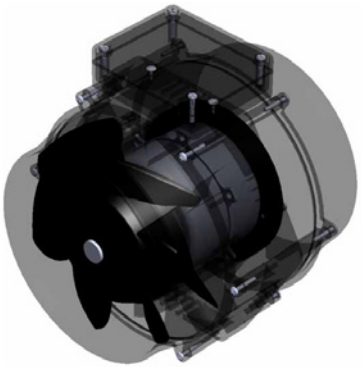
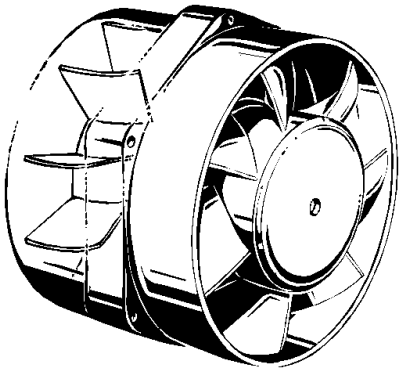
Mixed Flow Fan

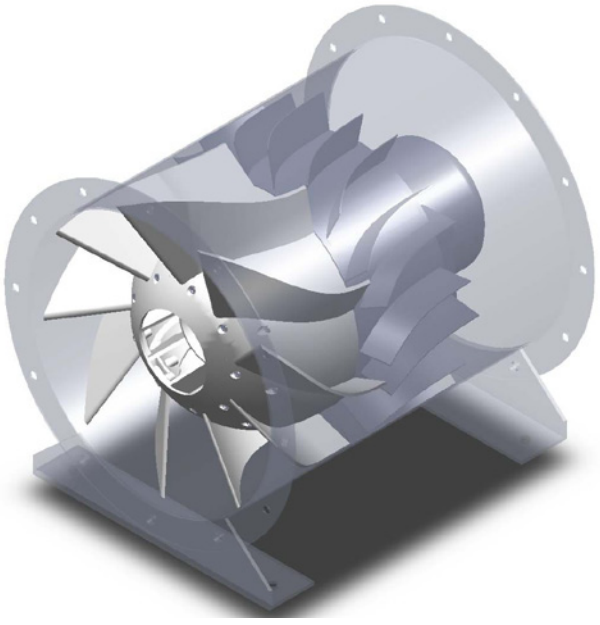
RFE, RFG 100-150



RFE 160L-250M



RFE/D 315-500



Wolter GmbH Maschinen- und Apparatebau KG•Am Wasen 11•D-76316 Malsch•Tel. 07204/92010•Fax. 07204/920111

Contents

1 General safety notes

This operation instruction contains important technical advice and information about safety. Therefore please pay attention to this operation instruction before unpacking, installation or any other work is undertaken on this fan!

1.1 Safety warnings in this manual

The following symbols are used in these operating instructions. These symbols are, above all, intended to draw the reader‘s attention to the text contained in the adjacent safety note.

Warning This symbol indicates that dangers exist which are hazardous to life and health

Mortal danger Electrical hazard. Serious and also fatal injury can result if these notes are disregarded.

Mortal danger Danger from hanging loads! Do not work under floating load if it can be avoided.

Crush danger Attention, keep your hands from parts wearing this sign!

Note Indicates user tips and other useful advice.

1.2 Basic safety measures

Wolter fans are, at the moment of delivery, manufactured to the current level of technology.
Extensive material, function and quality checks assure them of a high level of usefulness and long service life! Nevertheless, these machines can be dangerous if they are improperly used by untrained personnel or are used in a non-stipulated manner.

- Read these operating instructions carefully before putting the fans into operation!
- Only operate the fan in its enclosed state or with properly assembled protective anti-intrusion fittings, or with protective screens. (We can supply suitable, tested protective screens on request!)

- Assembly, electrical connection and maintenance may only be carried out by trained craftsmen!
- Only operate the fan in the manner stipulated and within the specified output limits (see rating plate) and with approved conveyed media!

- The manual has to be placed near by the fan and must always be kept in readable status.
- No sign or warning placed onto the fans must be removed.

2 Product descriptions

2.1 Description

RFE fans were especially developed for use in modern ventilation systems.

RFE 100-150	Using Single phase induction motor, Casing and impeller of flame retardant PA plastic. Mounting feet and clamp and EC motor type as optional
RFE 160L to 250M	Using external rotor motor. Casing of precision aluminum casted, Impeller of flame retardant PA plastic and fans are 0 to 100% speed controllable. Mounting feet and clamp and EC motor type as optional
RFE/D 315 to 500	Using Single or three phase induction motor, casing of powder coated steel or hot dipped galvanized. Impellers of precision aluminum casted. 2 speed motor as optional

All fans are statically and dynamically balanced in our factory.

2.2 Stipulated usage

Tube fans can be used for ventilation of:

- Clean air
- Air which has little dust and grease content
- Slightly aggressive gases and fumes (please refer to our engineers)
- Flow volumes at temperatures ranging from -30 °C to + 60 °C (out of these temperatures please see catalogue information)
- Mediums up to a max. humidity of 95% (avoid quick changes between dry and moistly air)

Do not use tube fans in explosive area

3 Transportation and Storage

3.1 Transportation

Wolter fans are packed at the factory to suit the respectively agreed mode of transportation. Small parts are packed in carton transport package. Larger size are packed on reusable pallets.

- Use original packaging for transport
- Only use suitable means of transport, such as pallet trucks or fork-lift trucks.
- If the fan is to be transported by hand, ensure that supporting and carrying loads are kept within reasonable limits for the personnel involved.

The following special hazards must be taken into account when transporting the equipment:

- The transportation packaging does not prevent damage to the equipment through improper transportation. The fans must not be dropped or thrown.
- Sharp, protruding edges can lead to injury through cuts

- Suspended loads can fall, which then constitutes a fatal hazard - stand well clear of suspended loads!
- Parts which have been stacked too high can collapse.
- If load-carrying devices other than those specified here are used, then this can lead to serious damage to the machine.
- A risk of fire exists due to the easily flammable nature of the packaging materials - do not use naked flames and do not smoke!

3.2 Storage

- Store the fan in a dry, weather-protected location in its original packaging or protect it from the effects of dirt and the weather until final assembly.
- Cover open pallets with tarpaulin sheets and protect the fans from the effects of dirt and contaminants (e.g. swarf, stones, wire etc.)
- Avoid extremes of cold and heat. Storage temperatures between - 30 °C and + 40 °C.
- Avoid lengthy storage periods (a maximum of one year is recommended) and check that the motor bearing assembly is in good functional order prior to fitting.
- With storage times of more than 1 year please check the bearings on soft running before mounting. (☞ turn by hand)

4 Installation

Assembly, installation and electrical work is only to be carried out by trained and instructed craftsmen and in accordance with the respectively applicable regulations!

4.1 Mechanical installation

The following points are to be observed when installing the fan:

- Keep an eye to the direction of flow of the tube fan.
- The fans must not be deformed or twisted during fitting!

Tube fans can be mounted in different ways:

o directly connected in the tube system.

o with brackets and clamps.(As per figure 1 for RFE100 to 150, as per figure 2 for RFE160L and 200M, as per figure3 for RFE 200L and 250M)

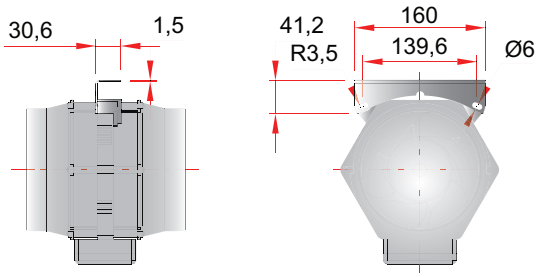


Figure1, RFE 100-150

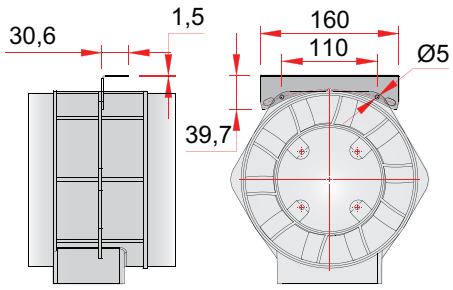


Figure2, RFE 160L, 200M

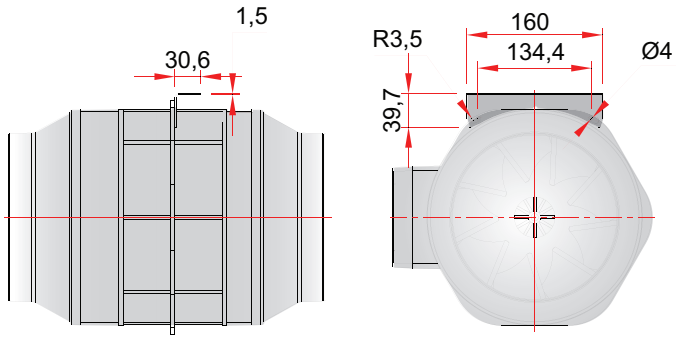


Figure3, RFE 200L, 250M

- Turn impeller by hand to check smooth rotation.
- For outside use mount weather protection guard and fix on side!

☞ don't drill holes and insert screws into the casing!

The duct system must not be supported by the fan casing!

4.2 Electrical installation

As a final step, the electrical installation and a test run has to be performed. Both is only to be carried out by trained and instructed craftsmen.

- Attention: Make the electrical connection in accordance with the technical connection conditions and the relevant regulations!
- Make the electrical connection as per the enclosed terminal plan in the motor connection cabinet or terminal cabinet housing.
- Do not use metal compression-gland fittings with plastic terminal boxes!

- Insert cable according to rules in junction box and seal it (possibly „Water bag“).
- If present, connect the posistor / thermo-contact for motor protection, as otherwise the warranty lapses!

Before checking direction of travel:

- Remove foreign bodies from the fan area
- Assemble contact protector, protective screen (☞accessories), or box in fan.
- Turn the rotor through a few revolutions by hand in order to test its ease of movement.

Check the direction of travel in accordance with the arrow on the housing by switching on and off very quickly.

- For RFE 315 to 500, If necessary, alter the direction of travel for AC induction motors by swapping 2 phases.
- In the case of single-phase motors, reverse the direction of travel by swapping Z1 with Z2 (attention: the direction of current flow in the auxiliary winding also changes.

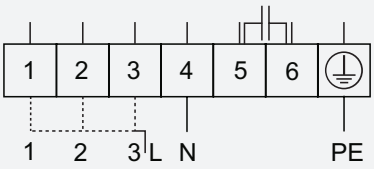
The fans must only be used with attached and sealed tube. Otherwise there is danger of hazard from the rotating impeller. Parts could be sucked in by the air flow! One can reach the rotating impeller with his hand.

4.3 Wiring diagrams

RFE 100-150
Nr. E19

3-speed single-phase AC motor with capacitor and thermostat. Thermostat in motor connected in series with the winding. Changing speed by connecting phase with one of the pinches 1..3.

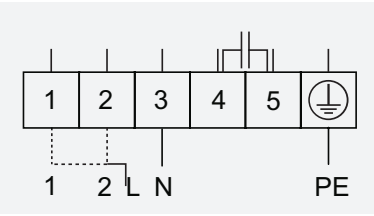
1 = red	2 = yellow	3 = white	4 = blue
5 = black	6 = brown	PE = yellow-green	



RFE 160L, 200M
Nr. 16-2

2-speed single-phase AC motor with capacitor and thermostat. Thermostat in motor connected in series with the winding. Changing speed by connecting phase with one of the pinches 1..2.

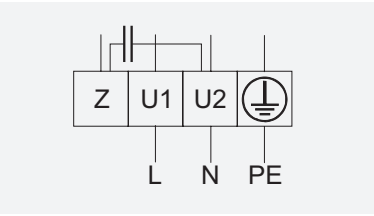
1 = blue	2 = red	3 = yellow
4 = white	5 = black	PE = yellow-green



RFE 200L, 250M
Nr. E11

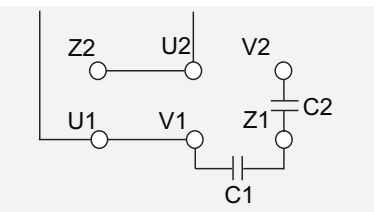
Single-phase AC motor with capacitor and thermostat. Thermostat in motor connected in series with the winding. Changing speed by connecting phase with one of the pinches 2..4.

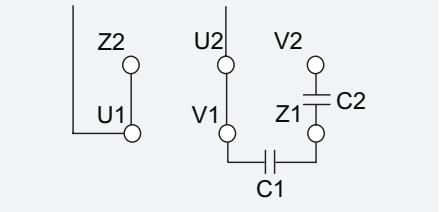
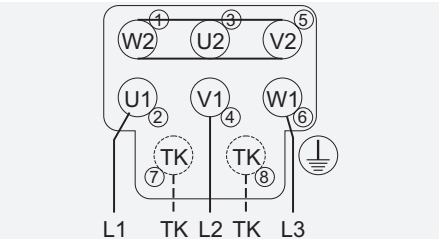
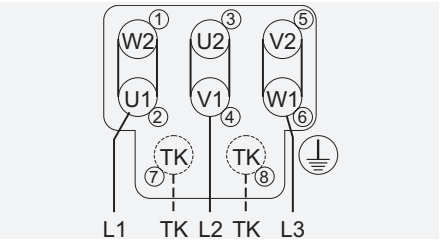
U1 = blue	U2 = black
Z = brown	PE = yellow-green



RFE 315-500
Nr. E21

Clockwise: Single-phase AC motor with capacitor and thermostat. Thermostat in motor connected in series with the winding.



RFE 315-500 **Nr. E21** Anticlockwise: Single-phase AC motor with capacitor and thermostat. Thermostat in motor connected in series with the winding.	
RFD 315-500 (motor kw ≤ 3kw) **Nr. DS1** 3-Phase motor in Y-connection with thermostat. Changing of rotation direction by interchanging 2 phases.	
RFD 315-500 (motor kw > 3kw or when using frequency invertor) **Nr. DD0** 3-Phase motor in Δ-connection with thermostat. Changing of rotation direction by interchanging 2 phases.	

5 Initial Start-up

5.1 Prepare fan for first operation:

- Correct mechanical installation
- Electrical installation in accordance with regulations
- Remove foreign matter from inlet and outlet area and from inside of fan
- Finger guard, protection guard (☞ accessories) installed, no entry to fan or fan being installed out of arm sweep.

5.2 Starting up the fan for the first time:

Only put the fan into operation after it has been assembled in accordance with the regulations!

- Put the fan into operation.
- Observe and check for the following - smooth vibration free running, uniform power consumption, a good controllability.

Current load must not be exceeded (☞ data plate)!
The thermo-protection system may be activated if the motor power consumption is too high!

By regular inspection of the fan inlet make sure debris has not collected on the guard and clean if necessary!

6 Maintenance

The following safety notes must be observed when maintaining the machine.
- Unexpected reconnection to power suplly could lead to serious harm. The fan has to be assured against accidental switch-on.
- Risk of injury at sharp-edged parts of fan housing.
- Insecure manual operation leads to a high risk of injury by shearing at the fan impeller. Never reach into the moving fan! Wear formfitting cloth - prevents catching cloth by airflow and winding up at the impeller.

6.1 Servicing and cleaning

Our fans are maintenance free with normal operation. In case servicing has to be done anyway:
- Bring the fan to a halt in the prescribed manner and completely isolate the fan from the mains supply!
- Wait until the rotor has come to a halt!
- Ensure that the machine cannot be switched on again!
- Clean the fan. Clean the suction apertures. Clean the rotor (if necessary dismantle the protective anti-intrusion fitting)

Normally the impeller should not show any sign of debris to ensure proper work of fan.
If there is debris anyway, please check your air filter.

Periodical cleaning prevents to rotor to become out-of-balance.
- ☞ Vacuum-clean would be best.
- ☞ Compressed-air must not be used! Dirt could be pressed into the bearings and causes consequential damage.
- ☞ High-pressure cleaner must not be used!
- ☞ Do not damage the impeller!
- ☞ Do not flood motor!
- ☞ Do not bend impeller!

6.2 Maintenance

Our fans are maintenance free in normal operation!

General controls:
- Unusual operation noise?
- Fan capacity for possibly exceeded duct system still sufficient?

6.3 Repair

Before any repairs are undertaken please:
- **Stop fan in accordance to regulations and disconnect all poles from mains supply.**
- **Wait until impeller is stationary!**
- **Make sure that a restart is not possible!**

Only use original spare parts manufactured and supplied by Wolter!

Change complete tube fan in the case of defect or faulty operation. (→ “Installation“)

7 Service, Address of Manufacturer

Wolter-products are subject to steady quality controls and are in accordance with valid regulations.
In case you have any questions with regard to our products please contact either your constructor or directly to one of our distributors:

Wolter GmbH Maschinen- und Apparatebau KG
Am Wasen 11
D-76313 Malsch-Völkersbach

Tel.: **07204/9201-0**
Telefax: **07204/9201-11**
Internet: **www.wolterfans.de**
email: **info@ wolterfans.de**

8 EC Declaration of Conformity

in accordance with Appendix II A of the EC Machinery Directive (89/392/EWG)

The manufacturer:	**Wolter GmbH** **Maschinen- und Apparatebau KG** **Am Wasen 11** **D-76316 Malsch**
hereby declares that the machine described in the following:	**Direct driven axial duct fans of versions RFE, RFG, RFD**
Meets the health and safety requirements of the following EC Directives:	**In accordance with Machinery Directive (98/37/EG), Appendix II A** **in accordance with the Low Voltage Directive (73/23/EWG)** **in accordance with the EMC Directive 89/336/EWG**

Harmonised standards applied:

DIN EN 292-1	Machine safety; Basic terms, general guilding principles of lay-out; Part 1: Basic terminology, methodology
DIN EN 292-2	Machine safety; Basic terms, general guilding principles of lay-out; Part 2: Technical guildlines and specifications
DIN EN 294	Machine safety; Safety distances for the prevention of upper limbs coming into the vicinity of danger areas
DIN EN 50081 part 1 a. 2	Subject basic standard; Emitted interference
DIN EN 50082 part 1 a. 2	Subject basic standard; Interference resistance
DIN EN 60335-1	Safety of electrical equipment for household use and similar purposes; Part 1: Basic requirements

National standards and technical specifications applied:

Any changes in construction which have an effect on the technical data specified in the operating instructions and on the fan's stipulated usage, i.e. those changes which essentially change the fan, shall invalidate this declaration of conformity!

Malsch, 31.08. 2010

Hans Rudolf Kresse, Geschäftsführer