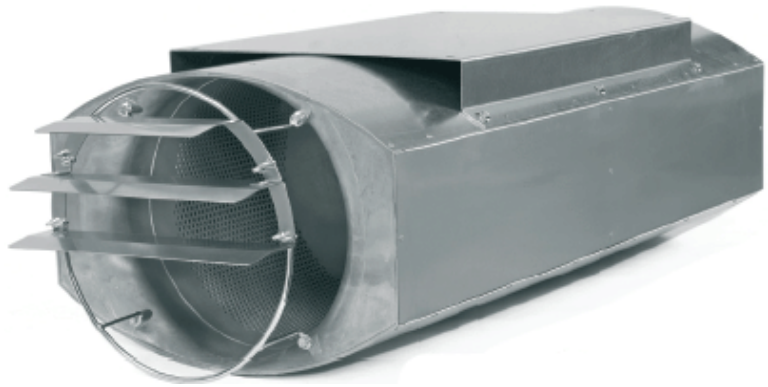
# Operation and Maintenance Manual for

## Jet Fans
## JFU/JFUO/JFRO



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# Contents

# 1 General safety notes

## 1.1 The operator's duty of care

The jet fans of the JF series have been constructed and built whilst taking into account an analysis of the hazards involved, and after careful selection of the harmonised standards to be observed, as well as other further technical specifications. They thus correspond to the current level of technology and guarantee a high degree of safety. In operational practice, however, this level of safety can only then be attained if all required measures are taken. It is incumbent upon the operator's duty of care to plan these measures and to monitor their execution.

In particular, the operator must ensure that

- the fan is only used as stipulated (cf. chapter, "Product Description")
- the fan is only operated in a faultless and functional condition and that safety fittings, especially, are regularly examined with respect to their functionality
- the operating instructions are always maintained in a readable condition and are available at the fan's location of deployment in their entirety
- only sufficiently qualified and authorised personnel operate, maintain and repair the machine
- these members of personnel are familiar with the operating instructions and especially the safety notes contained therein
- no safety and warning signs fitted to the fan are removed, and that they are kept in a readable condition.
- the fan's surrounding is kept clean to avoid items from being sucked into the fan and/or blocking the air flow

## 1.2 Explanation of the safety symbols used

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.

Note — Indicates user tips and other useful advice.

## 1.3 Basic safety measures

Wolter jet fans are, at the moment of delivery, manufactured to the current level of technology. Extensive materials, 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 jet fans into operation!

Only operate the fan in its enclosed state with properly fitted guide vanes and protective screens.

- 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!

## 1.4 Particular kinds of hazards

The jet fans of the JF series are axial fans. In this respect, particular hazards are caused by the rotor and through the flow of air, which can, at times, be considerable. For this reason the following points are to be observed:

-Never reach into the rotor when it is rotating. Do not try to use your hand as a brake for the rotor during maintenance work.

- Loose clothing or light parts can be sucked in by the draught of air. That is why you should always wear tight-fitting clothing during maintenance work and whilst near the fan inlet.

-Larger items can obstruct or totally ruin the rotor and other parts of the fan. For this reason, the guide vanes (on all JF jet fans) and protective screens (on JFUO jet fans) on the fan inlet and outlet must be fitted at all times during operation.

The motor-fan-assembly must not be put into operation while it is removed from the sound attenuator housing.

# 2 Product description

## 2.1 Stipulated usage

Our jet fans have been specially developed for use in modern car park ventilation systems. The rotors are statically and dynamically balanced at the factory, and manufacture is subject to the strictest intermediate and end checks and is certified in accordance with DIN/EN/ISO 9001.

**Conditions of use**

The air should correspond to tender specifications, as the corresponding components are determined for this. If these are not listed in more detail, then the following applies:

The jet fans of the JF series are suitable for the conveyance of

-clean air

-air containing car exhaust emissions

-air which has little dust and grease content

-gases and vapours which are non-explosive and only slightly aggressive in nature

-media up to a maximum air density of 1.3 kg/m$^3$

-flow volumes at temperatures ranging from - 30ºC to +40ºC (except 300ºC/1 h temperature rated fans during emergency smoke exhaust operation)

-media up to a max. humidity of 95%

**Conditions of fitting**

The fans are not designated for any types of usage other than those cited here, and any such use shall be considered as improper usage!

In particular, we especially draw your attention to the following points. Non-compliance can either result in considerable material damage or personal injury, or that the demanded fan output values are not attained.

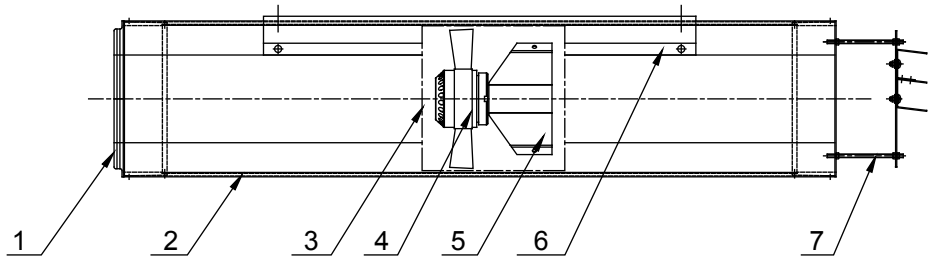
The fan may not be operated without the necessary safety fittings. For this reason, the guide vanes (on all JF jet fans) and protective screens (on JFUO/JFUjet fans) on the fan inlet and outlet must be fitted at all times during operation in order to prevent access to rotating parts.

In order to avoid any damage to the fan and specially to the rotor blades, you must prevent the possibility of loose parts being sucked in by the fan or of other items being able to find their way into the fan.

The fitting notes regarding inlet and outlet flow conditions are to be observed (see 5.1.1).

## 2.2 Construction

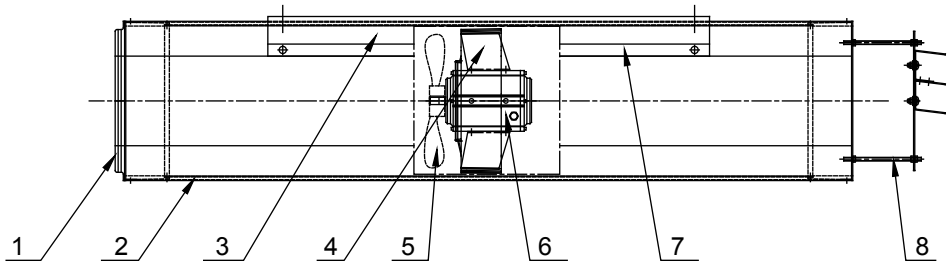
### 2.2.1 JFU .../...-AE series




The jet fan consists of the following main parts:

(1) Inlet protective screen
(2) Sound attenuating housing
(3) Motor-fan-assembly unit (removeable type)
(4) Rotor motor with welded impeller
(5) Motor support
(6) Ceiling mounting brackets
(7) Guide vane

### 2.2.2 JFUO/JFRO series




The jet fan consists of the following main parts:

(1) Inlet protective screen (JFUO) or guide vane (JFRO, see (8))
(2) Sound attenuating housing
(3) Bar for removal of motor-fan-assembly (L type only)
(4) Motor-fan-assembly designed as slide-in tube
(5) Fan impeller
(6) Electric motor
(7) Ceiling mounting brackets
(8) Guide vane

## 2.3 Functional description

The jet fan is designed for installation on the ceiling of over- and underground car parks with free-suction and free-blowing operating condition. It draws air from the surrounding on the suction side through the rotating impeller and conveys this air in axial direction to the outlet side. This high-velocity airstream induces a secondary airflow downstream of the fan outlet and is used to mix and convey the air and the contained car exhaust emissions in the car park. In normal applications, the jet fan is not a stand-alone product, but part of a complete jet fan ventilation system including other jet fans, sensors, control equipment, and main exhaust and/or supply fans.

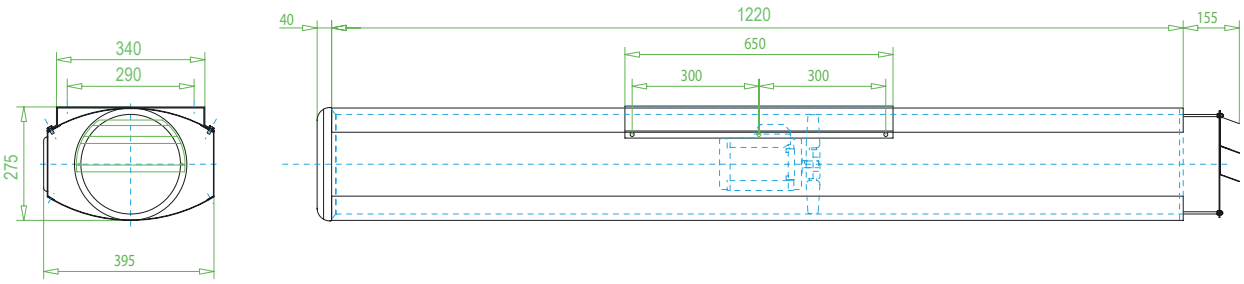
If the jet fan has been supplied as a temperature rated execution (Model designation JF .. - ... - ... - .. - .. -300°), it may also be used to convey smoke for emergency smoke extract applications and will withstand temperatures of up to 300°C for a duration of up to 1 hour.

The motor is positioned in the air flow and is cooled by the flow.

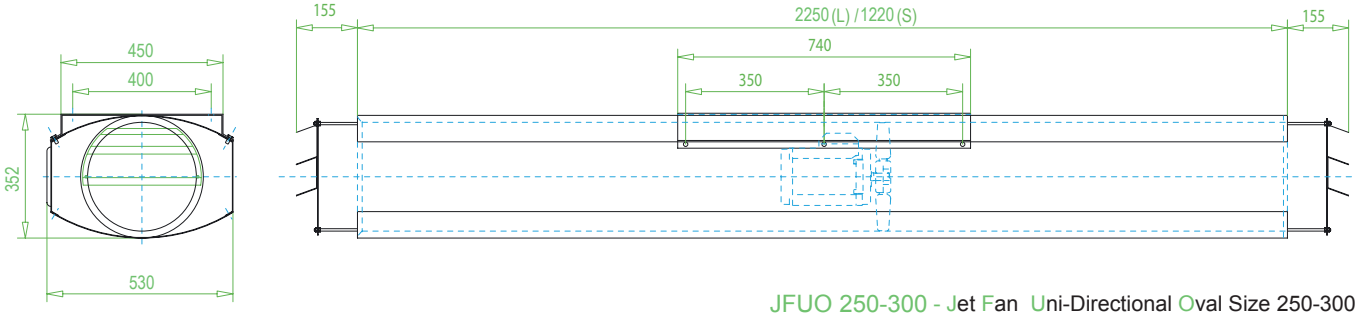
Control and regulation of the jet fan is carried out by an external control unit. This does not form part of the jet fan itself. The corresponding operating instructions are to be consulted with regard to the control unit's operation.

## 2.4 Dimensions

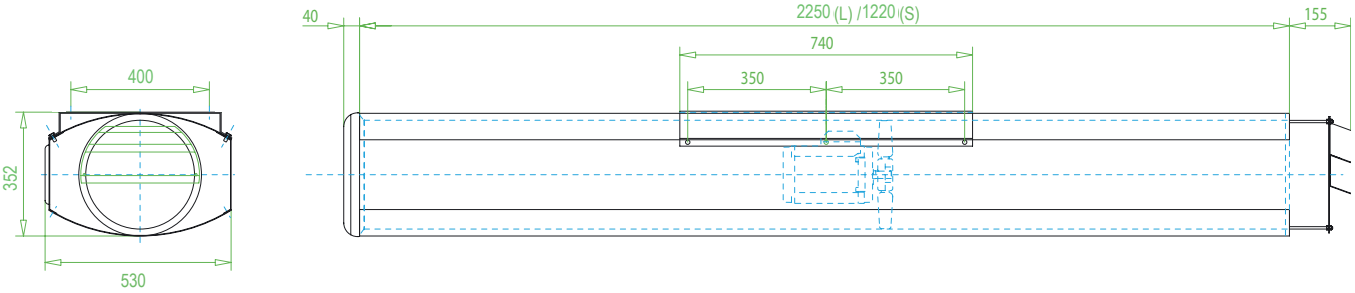
JFU 180-200-250AE - Jet Fan Uni-Directional Oval Size 180-200-250



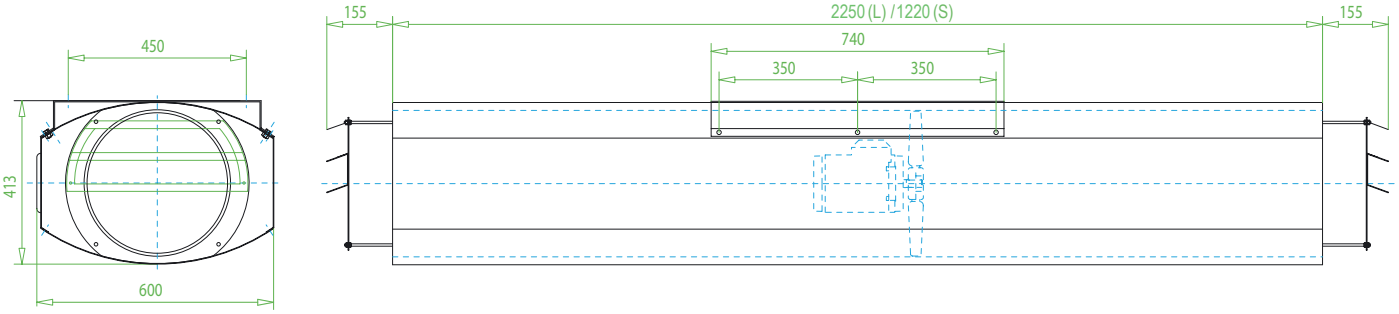

JFRO 300 - Jet Fan Fully Reversible Oval Size 300



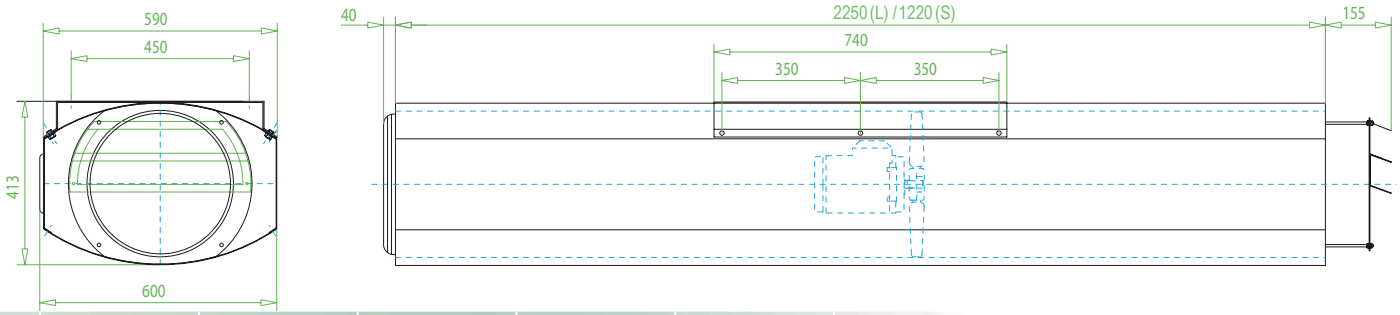

JFUO 250-300 - Jet Fan Uni-Directional Oval Size 250-300




JFRO 370 - Jet Fan Fully Reversible Oval Size 370




JFUO 315-355-370 - Jet Fan Uni-Directional Oval Size 315-355-370



# 3 EC Declaration of Conformity

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

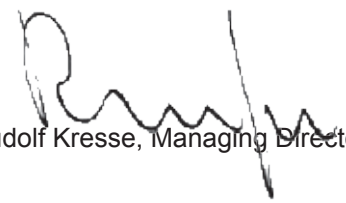
| | |
|---|---|
| The manufacturer: | **Wolter GmbH<br>Maschinen- und Apparatebau KG<br>Am Wasen 11<br>D-76316 Malsch** |
| Hereby declares that the machine described in the following: | **Car park Jet Fan** |
| Meets the health and safety requirements of the following EC Directives: | **In accordance with Machinery Directive (98/37/EG), Appendix II A<br>in accordance with the Low Voltage Directive (73/23/EWG)** |

Harmonised standards applied:

| | |
|---|---|
| DIN EN 60335-2-2 | Safety of electrical equipment for household use and similar purposes; Part 2: Special requirements for dust and water suction machinery. |
| DIN EN 60335-2-80 | Safety of electrical equipment for household use and similar purposes; Part 2: Special requirements for fans. |
| DIN VDE 0700-220 | Safety of electrical equipment for household use and similar purposes; Fans and associated control units for use on ships |
| DIN EN 1037 | Machine safety; Avoiding the unexpected start up of the machinery. |
| DIN EN 1088 | Machine safety; Locking systems in combination with detachable protective fittings; Guiding principles for layout and selection. |
| DIN EN 25136 | Acoustics; Determining the irradiated noise output of fans in ducting. Ducting behaviour (ISO 5136:1990 and Technical Corrigendum 1:1993) |
| DIN EN 292-1 | Machine safety; Basic terms, general guiding principles of lay-out; Part 1: Basic terminology, methodology. |
| DIN EN 294 | Machine safety; Safety distances for the prevention of upper limbs coming into the vicinity of danger areas. |
| DIN EN 811 | Machine safety; Safety distances for the prevention of lower limbs coming into the vicinity of danger areas. |
| DIN EN ISO 11200 | Acoustics; Noise irradiation of machines and appliances; Guidelines on the application of basic standards for establishing noise emission levels at the workplace and at other fixed locations (ISO 11200:1995) |
| DIN EN ISO 5801:1997 | Performance tested to ISO5801:1997 (Airside performance) and equal to BS848-10:1999 Fans for general purposes - Performance testing of Jet Fans |

**Any changes in construction which have an effect on the technical data specified in the operating instructions and on the machinery's stipulated usage, I.e, those changes which essentially change the machine, shall invalidate t is declaratio of conformity!**

Malsch, 04.10.2007



Hans Rudolf Kresse, Managing Director

# 4 Transportation and Storage

## 4.1 Transportation

Wolter fans are packed at the factory to suit the respectively agreed mode of transportation.
Transport the fan in its original packaging.

- 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!
- Read the chapter, "General Safety Notes".

## 4.2 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. swart, stones, wire etc.)
- Avoid extremes of cold and heat.
- 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.

# 5 Assembly

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

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

Use only the fan's ceiling mounting brackets (see 2.2) to install the fan to the ceiling.
Use adequate mounting hardware suitable for the fan's weight.
The ceiling must be suitable to bear the weight of the fan.
The jet fan must be mounted in horizontal position.

When lifting the fan into its position on the ceiling during installation, secure it from falling down until it is securely installed

**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 terminal box housing

Feed in and seal the cable into the connection cabinet properly

If the motor is equipped with thermal contacts, they must be properly connected. Failure to do so will void the warranty.

**Before checking the direction of rotation:**

Remove foreign bodies from the fan area.

Guide vane and inlet protective screen (see 2.2) must be fitted.

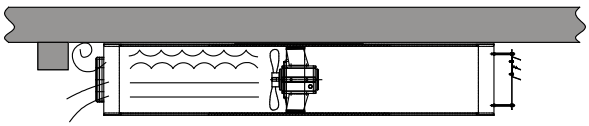
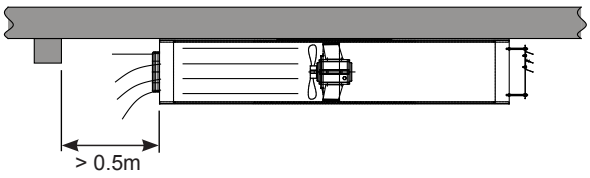
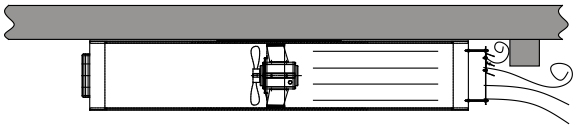
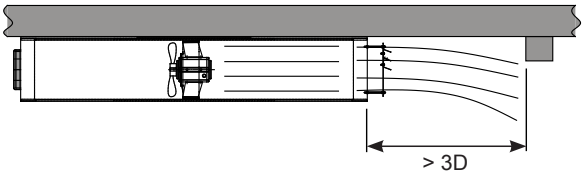
Turn the rotor through a few revolutions by hand in order to test its ease of movement.

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

If necessary, alter the direction of travel for 3-phase AC 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).

## 5.1 Inlet and outlet flow conditions

| Incorrect | Correct |
|---|---|
|  |  |
| Incorrect: The jet fan's duty will be reduced if an obstacle (e.g. ceiling beam, pipe, sign etc.) is situated too close to the inlet. A stall condition might occur that can damage the fan and creates additional noise. | Recommended: The distance to obstacles on the inlet side has to be chosen according to the size of the obstacle, but must be at least 0.5m. |
|  |  |
| Incorrect: The jet fan's duty will be reduced if an obstacle (e.g. ceiling beam, pipe, sign etc.) is situated too close to the outlet. A stall condition might occur that can damage the fan and creates additional noise. | Recommended: The distance to obstacles on the outlet side has to be chosen according to the size of the obstacle, but must be at least 3D. |

On reversible fans (JFRO), both sides of the fan can act as outlet side, depending on the direction of operation. Therefore, a minimum distance of 3 times the fan diameter to any obstacles must be observed on both sides of the fan.

The guide vane is adjustable to change the horizontal orientation of the airflow.

# 6 Initial Start-up

The following points are to be observed in order to avoid damage to the machinery or life-threatening injury during initial start -up:

Only qualified personnel may carry out the machine's initial start-up and this must take place in compliance with the safety notes.

Prior to initial start -up, check that all tools and foreign bodies have been removed from the machine.

Activate all safety devices and Emergency Stop switches prior to initial start -up.

Check the motor's direction of travel prior to initial start-up.

Read the chapter, "General Safety Notes ".

## 6.1 Checks prior to initial start-up

Proceed with the fan's initial start-up in the following sequence:

Check that the mechanical assembly has been carried out properly

Remove foreign bodies located in the suction and outflow areas and in the fan space

Check that the electrical installation has been completed in accordance with regulations

Does the mains voltage match the motor voltage specified on the rating plate?

Is the switchgear used suitable for the motor both with respect to the switching functions to be carried out and also to the switching conditions and switched output of the motor?

Is the motor protection system set correctly with regard to the motor's nominal current? The setting must be carried out in accordance with the corresponding details contained on the motor output plate.

Has the motor been connected correctly in accordance with the wiring diagram?

The connection schematic supplied by the motor suppliers applies for the connection of the motor.

Accident prevention

Inlet protective screen and guide vane (JFU/JFUO) or two guide vanes (JFRO) must be fitted on the inlet and outlet of the fan to meet safety regulations.

## 6.2 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.

Monitor its correct function (quiet running, vibration, imbalance, power consumption, controllability)

Always keep suction openings clear! Check protective screens or protective anti-intrusion fittings for dirt, and clean if necessary!

## 6.3 Checks after initial start-up

Check the mechanical connections of the fan to the ceiling after initial start -up.

# 7 Help with Malfunctions

The following points must be observed in order to avoid damage to the machinery or life-threatening injury when eliminating machine malfunctions:

- Only eliminate any malfunction if you have the specified qualifications necessary for the task.
- First of all ensure that the machine cannot be switched on inadvertently, by locking the equipment's off switch or control cabinet by means of a padlock.
- Secure the hazardous area with respect to moving machine parts.
- Read the chapter "General Safety Notes".

## 7.1 Tabular overview of possible malfunctions and aids in eliminating those malfunctions

| Symptom | Cause | Elimination |
|---|---|---|
| Motor or motor control system switches off. | Motor too hot, thermo contact activates. | Allow the motor to cool off. Depending upon the control equipment in use, the fan will either start itself up or will have to be re-started again.<br>Check whether:<br>-The conveyed medium is too hot<br>-All phases are evenly loaded and connected<br>-Operating point does not match the lay-out<br>-Rotor blocked |
| Air output incorrect | Incorrect direction of travel of the fan (JFU/JFUO) | Change the direction of travel (see electrical assembly) |
| | Fan assembled incorrectly | Either the rotor is incorrectly mounted on the motor shaft or the whole motor-fan-assembly has been incorrectly fitted into the installation.<br>Switch off the fan.<br>Correct the incorrect assembly (rotor or motor-fan-assembly). |
| | Rotor blocked | Switch off the fan.<br>Remove the blockage. Ensure that the accident prevention regulations are observed in the process. |
| | Rotor defective | Switch off the fan.<br>Dismantle the rotor and fit a new one. |
| Fan is labouring under load, air flow is periodically interrupted | Fan is operating at an unfavourable duty point | Make sure there are no obstacles too close to the jetfan's inlet and outlet (see 5.1). Possibly, the impeller interrupted blade pitch angle must be reduced(JFUO/ JFRO series only), but this alteration must be authorized in writing by the manufacturer.<br>Please contact the Wolter for assistance. If this laboured operation of the fan continues over a prolonged period, the rotor and motor will take damage! |

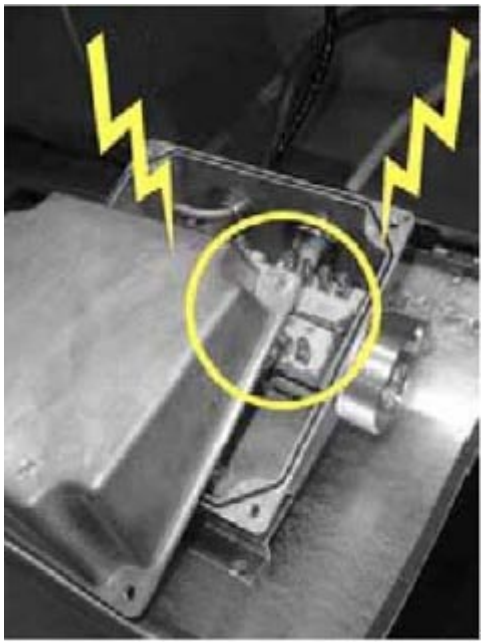
# 8 Maintenance

The following safety notes must be observed when maintaining the machine - life-threatening injuries to personnel, damage to the machine and other material damage, as well as environmental damage, will be avoided in this way.

- Cleaning, lubrication and maintenance work may only be carried out by authorised operating personnel operating instructions are to be observed.
- Repair work may only be carried out by authorised craftsmen - accident prevention regulations are to be observed.
- Secure the operational area over a large area prior to the commencement of maintenance work.
- The specified sequence of the working stages is to be observed exactly.
- All work on the machine's electrical equipment may only be carried out by trained electricians.
- Self-locking screws and nuts are always to be renewed.
- All specified screw torque settings are to be observed precisely.
- Read the chapter "General Safety Notes".

**If the jet fan is equipped with a combined terminal box / repair switch, it is still necessary to disconnect the mains supply to the terminal box when performing electrical maintenance or repairs that require opening the terminal box!**

**Setting the repair switch to the "OFF" position cuts off the power supply from the terminal box to the motor, but the connection terminals inside the terminal box are still energized! When unscrewing the terminal box cover, there is a danger of contact between the cover and the connection terminals, therefore the mains supply MUST be disconnected to avoid the danger of electrical shock!**



## 8.1 Servicing

The rotor and housing are subject to natural wear and tear through the action of dust, acidic and corrosive vapours, as well as the gases which are mixed into the conveyed flow. The type and concentration of the dust, as well as the gases and vapours, can lead to deposits, abrasion and corrossion at the rotor and housing.

The materials can be attacked by this natural wear and tear to the extent that they can no longer stand up to the strains imposed on them. Unevenly distributed deposits on the rotor lead to an imbalanced state and thus to noisy running, which in turn can result in damage to the impeller and motor bearing. Deposits in the housing lead to a narrowing of the available cross-sectional area or to a roughening of the housing panels and can thus have an unfavourable effect on the fan's output duty. Should the checks, the regularity of which depend on the conveyed media and other operating conditions which differ in each individual case, reveal only slight wear and tear, then the individual parts must be cleaned in good time, or replaced if necessary.

**Prior to all servicing work:**

- 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 components (fan housing, inlet cone, sound attenuator tube, rotor). Do not use high-pressure water devices for cleaning.

Only use cleaning agents generally available through the trade and in compliance with the prescribed safety measures. Do not use scratching or scraping tools (protective surface coating will be damaged).

- If required, remove the motor-fan assembly from the sound attenuator housing
- Do not overload the motor!
- Do not bend the impeller blades

**Recommended periodic inspection intervals Jet - -**

- Jet fans used for CO-ventilation only: 12 months
- Jet fans used for CO-ventilation and emergency smoke ventilation: 6 months
- Jet fans used for emergency smoke ventilation only: 3 months

**Periodic Inspection checks**

- Check for excessive bearing play
- Check for lubricant leaking from the bearings
- Visual inspection of motor, impeller, sound attenuator housing and electric connection for damages, dirt and dust deposits, foreign matter
- Check for unusual noises or vibration during operation
- Check tightness and security of fan suspension

## 8.2 Overhaul

Prior to all overhaul work:

- Bring the fan to a halt in the prescribed manner and completely isolate the fan from the mains supply!
- Wait for the rotor to come to a halt!
- Ensure that the machine cannot be switched on again!

Only use spare parts which have been tested and approved by Wolter!

### 8.2.1 Removal and installation the motor-fan-assembly

Removal:

- Disconnect mains supply to terminal box and set repair switch to "Off" position, if equipped.
- Open terminal box cover and disconnect motor leads on connection terminals.
- Push motor connection cable through grommets, so that it can be taken out together with the motor-fan-assembly later.

- JFUO/JFU: Remove inlet protective screen.

- JFU, JFUO and JFRO of only L type will come with pullout bars secure on mounting plate to remove casing. As per figure 1.

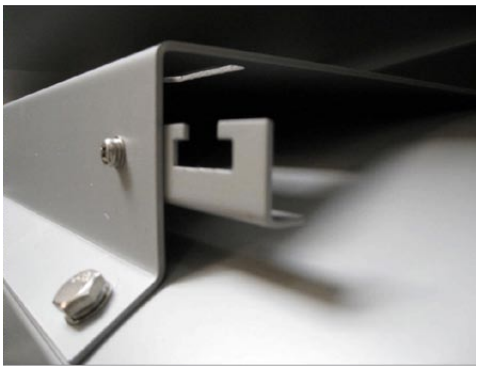


Figure 1

- Remove two screws securing the pullout bars to the side of the fan mounting.

- JFU, JFUO and JFRO for L type, use the pullout bars for removing the motor-fan-assembly usually from the inlet side or one end that is usually of bigger diameter.

Remove the inlet protection screen or guide vane accordingly

JFUO and JFRO - Remove two screws attaching motor-fan assembly to inner sound attenuator tube (accessible through access door in sound attenuator housing)

JFU- Remove four screws on the mounting foot attaching motor-fan assembly to inner sound attenuator tube (accessible through access door in sound attenuator housing)

- Carefully pull motor-fan-assembly from inner sound attenuator tube, taking care not to damage the motor connection cable. Secure the motor-fan-assembly from falling down when pulling it out of the casing.

Installation:

- Reverse above procedure. Make sure the motor-fan-assembly is inserted into the sound attenuator tube with the correct orientation. After complete reassembly of the jet fan, check that the direction of airflow is correct.

## 8.2.2 Dismantling the rotor

- Jet Fans with blade welded on rotor motor (JFU..-…-AE-..-..-...): Remove the complete unit with 4 supporting screws

Jet Fans with 150 mm hub (Model designations JF .. - ... -150- .. - .. - ... ):

Slacken off securing screw (Allen key), completely undo one grub screw and slacken off the tension cone using the forcing drilling.

Jet Fans with 110mm hub (Model designations JF .. - ... -110- .. - .. - ... ):

Loosen central locking screw fixing the impeller hub to the motor shaft. Remove washer.

- Note orientation of impeller on motor shaft for reassembly. Pull off the rotor from the motor shaft (possibly using a puller tool).

## 8.2.3 Assembling the rotor

Jet Fans with blade welded on rotor motor (JF..-…-AE-..-..-...): Assembly the complete unit with 4 supporting screws.

Push the rotor onto the motor shaft, minding the correct orientation of the rotor on the motor shaft.

Jet Fans with 150 mm hub (Model designations JF .. - ... -150- .. - .. - ... ): Tighten both grub screws evenly, whilst observing the torque settings given in the adjacent table.

Jet Fans with 110 mm hub (Model designations JF .. - ... -110- .. - .. - ... ): Put washer in place and tighten central locking screw fixing impeller hub to motor shaft.

After complete reassembly of the jet fan, check that the direction of airflow is correct.

| Bushes | | Torque | |
|---|---|---|---|
| Type | Drilling | Tightness | |
| | [mm] | [Nm] | |
| 1008 | 12, 19, 24 | 6 | |
| 1108 | 19, 24, 28 | 1/4" sw 3 | |
| 1210 | 16, 19 | | |
| 1215 | 24, 32 | 20 | |
| 1310 | 14, 25, 35 | 3/8" sw 5 | |
| 1610 | 19, 24 | | |
| 1615 | 38, 42 | | |

Torque setting for taper hubs (jet fans with 150mm hub)

### 8.2.4 Impeller blade pitch angle

Jet Fans with blade welded on rotor motor (JF..-...-AE-..-..-...): this pitch angle cannot be adjustable type.

For JFUO and JFRO type, the blade pitch angle has been factory-adjusted to the optimum setting with a special tool. Do not attempt to change this factory setting, as this is unnecessary. Doing so can result in damage to the motor and impeller, will influence the performance of the jet fan, and will void the warranty.

In rare cases where the jet fan is operating at an unfavourable duty point (see 7.1), please contact Wolter for assistance.

### 8.2.5 Motor bearing service intervals

The roller bearings of the standard AC motors are equipped with a permanently sealed lubrication system consisting of a high-quality, temperature-resistant, roller bearing grease. The amount of lubricant supplied to the bearing by the motor manufacturer is sufficient for 10,000 to 20,000 operating hours. All rotor motorize impeller (JFU…AE) is sufficient for 20,000hours operating hours. Unfavourable operating conditions, such as lengthy operating periods, changes in bearing loads etc., requirethat the motor bearings are monitored carefully. The service intervals or lubrication deadlines and amounts depend on the motor's operating conditions, the rotary speed and size of bearing.

| **Motor** | **Service intervals in operating hours for** | | |
|---|---|---|---|
| **size** | **3000** min' | **1500** min' | **1000** and **750** min' |
| **71** | 20000 | 20000 | 20000 |
| **80** | 18000 | 20000 | 20000 |
| **90** | 16000 | 20000 | 20000 |
| **100** | 14000 | 20000 | 20000 |
| **112** | 14000 | 20000 | 20000 |

Service intervals for motor bearings

As only the construction size and rotary speed of the motors are usually known, the service intervals specified in the adjacent table should be applied. They refer to a coolant temperature of 40°C in the case of horizontal fitting (construction form 83). You should consultthe manufacturer in the event that motor repairs are required within the warranty period.

### 8.2.6 Instructions on correct bearing replacement

Only allow work on the electric motor to be carried out by a craftsman or by a suitable motor winding workshop.